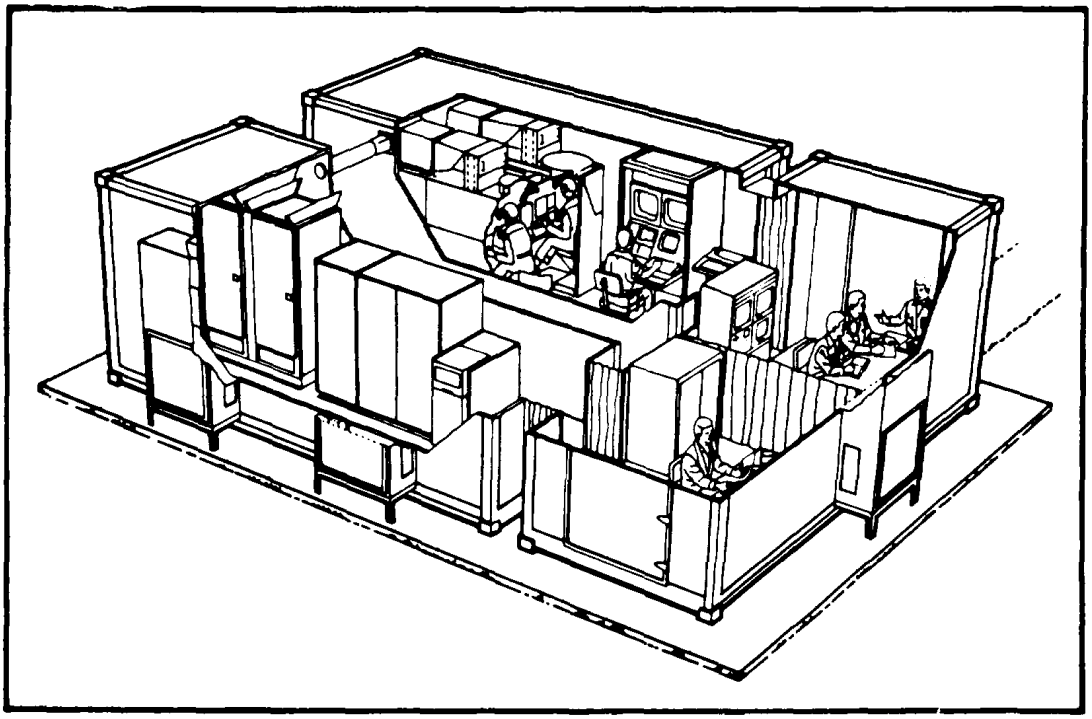
This copy is a reprint which includes current pages from Changes 1 and 2.

**DEPARTMENT OF THE ARMY TECHNICAL MANUAL**

**OPERATOR'S MANUAL**

**FOR**



**TRAINER,**

**UNIT.CONDUCT OF FIRE (U.COFT)**

**M2/M3 FIGHTING VEHICLES**

**(SHELTERED)**

**60 HZ (69201.158,6756)**
**50 HZ (6920.01158,6757)**

**OCTOBER 1985**

**CHANGE**
NO. 2

**HEADQUARTER**
**DEPARTMENT OF THE ARMY**
WASHINGTON, D.C., 5 February 1988

Operator's Manual

**TRAINER, UNIT-CONDUCT OF FIRE (U-COFT)**

**M2/M3 FIGHTING VEHICLES**
**(SHELTERED)**
**60 HZ (6920-01-158-6756)**
**50 HZ (6920-01-158-6757)**

TM 9-6920-737-10, 10 October 1985, is changed as follows:

1. This change was a general update to incorporate revised power-up/power-down procedures, engineering changes and editorial corrections.

2. New or changed material is indicated by a vertical bar in the margin of the page.

3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.

4. Remove old pages and insert new pages as indicated below.

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|---|---|
| a and b | a and b |
| 1-3 and 1-4 | 1-3 and 1-4 |
| 1-7 thru 1-14 | 1-7 thru 1-14 |
| 1-21 thru 1-24 | 1-21 thru 1-24 |
| 1-29 thru 1-36 | 1-29 thru 1-32 |
| 1-39 thru 1-42 | 1-39 thru 1-42 |
| 2-31 and 2-32 | 2-31 and 2-32 |
| 2-47 and 2-48 | 2-47 and 2-48 |
| 2-77 and 2-78 | (2-76.1 blank)/2-76.2 |
| | 2-77 and 2-78 |
| 2-97 and 2-98 | 2-97 and 2-98 |
| 2-101 thru 2-106 | 2-101 thru 2-106 |
| 2-109 thru 2-114 | 2-109 thru 2-114 |
| 2-127 thru 2-130 | 2-127 thru 2-130 |
| 2-130.3 and 2-130.4 | 2-130.3 and 2-130.4 |
| 2-133 and 2-134 | 2-133 and 2-134 |
| 2-141 thru 2-144 | 2-141 and 2-144 |

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| 2-159 thru 2-164 | 2-159 thru 2-164 |
| 2-195 and 2-196 | 195 and 2-196 |
| 2-209 and 2-210 | 2-209 and 2-210 |
| (2-213 blank)/2-214 | (2-213 blank)/2-214 |
| 2-217 and 2-218 | 2-217 and 2-218 |
| 3-3 thru 3-6 | 3-3 thru 3-6 |
| 3-15 and 3-16 | 3-15 and 3-16 |
| 3-25 and 3-26 | 3-25 and 3-26 |
| 3-31 and 3-32 | 3-31 and 3-32 |
| B-1 thru B-6 | B-1 thru 8-6 |
| B-9 and B-10 | B-9 thru B-11/(B-12 blank) |
| Index 1 thru Index 8 | Index 1 thru Index 8 |

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**By Order of the Secretary of the Army:**

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*General United States Army*
*Chief of Staff*

**Official:**

R. L. DILWORTH
*Brigadier General, United States Army*
*The Adjutant General*

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**CHANGE**
**NO. 1**

**HEADQUARTERS**
**DEPARTMENT OF THE ARMY**
**Washington, D.C.**
21 January 1987

Operator's Manual

**TRAINER, UNIT-CONDUCT OF FIRE (U-COFT)**

**M2/M3 FIGHTING VEHICLES**
**(SHELTERED)**
**60 HZ (6920-01-158-6756)**
**50 HZ (6920-01-158-6757)**

TM 9-6920-737-10, 10 October 1985, is changed as follows:

1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration.
4. This change provides revised power-up/power-down procedures.

| Remove Pages | Insert Pages |
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| 2-117 thru 2-130 | 2-117 thru 2-130 |
| None | 2-130.1 thru 2-130.4 |
| 2-199 thru 2-210 | 2-199 thru 2-210 |
| None | 2-210.1 and 2-210.2 |
| 2-211 thru 2-218 | 2-211 thru 2-218 |
| Index-1 thru Index-8 | Index-1 thru Index-8 |

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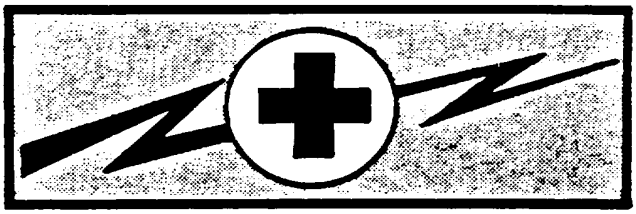
**WARNING**



**WARNING**

**HIGH VOLTAGE**

is used in the operation of this equipment

**DEATH ON CONTACT**

**may result if personnel fail to observe safety precautions**

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in ad-ministering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

WARNING Hazard of electric shock or burn. DO NOT remove cover around power panel circuit breakers.

WARNING Before you work around the SPC logic assemblies remove rings, bracelets and wristwatches. These items may be shorted across an electrical circuit and cause severe burns and electrical shock.

Whenever possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections of 115 volt ac input connections when installing or 'operating this equipment.

For Artificial Respiration, refer to FM 21-11.

## SUMMARY OF WARNINGS

- Proper and timely response to emergencies is vital to the safety of personnel. Failure to read, understand and follow established emergency procedures may result in injury to personnel or damage to equipment.
- Do not remove equipment panels. Panel removal may expose voltages which can kill you on contact.
- Do not tamper with spherical halon storage containers. The container is pressurized in excess of 300 psig (21.09 kg/sq. cm). Improper handling or accidental discharge can cause serious personnel injury.
- Do not tamper with smoke detectors. Radioactive material is sealed within each detector. Improper handling can expose personnel to harmful radiation.
- Do not look straight into the crew station sight in-use sensors when the eye is closer than 4 inches (10.2 cm) to a sensor. The sensors emit infrared radiation and can cause serious damage to eyesight.
- Avoid halon dispensing nozzles when fire alarm sounds. Halon is released at pressures great enough to cause damage to eyesight or cause injuries from sudden personnel reactions.
- The 120 volt ac power to the Crew Station Utility Panel cannot be turned off from the IOS Power Panel. The power will be on until Circuit Breaker No. 2 is set to OFF in the Computer Shelter Electronic Power Distribution Panel.
- Do not enter shelters and close doors unless at least one air conditioner blower is operating. Suffocation is possible without adequate fresh air.
- Use care to prevent spillage when filling humidifier water tank. Water spilled on electrical items or the shelter floor can create a hazard to personnel.
- Remove personal rings, bracelets, wristwatches, earrings, necklaces, ID tags or other metal jewelry before replacing Circuit Card Assemblies. SPC power remains on to maintain stable operation. Jewelry could short across an electrical circuit and cause severe burns or electrical shock.
- CVC Helmet must be worn when entering crew station and not removed until exit is completed.

**TECHNICAL MANUAL**

HEADOUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C.
10 October 1985

Operator's Manual

# TRAINER, UNIT-CONDUCT OF FIRE (U-COFT)
# M2/M3 FIGHTING VEHICLES
# SHELTERED
# 60 HZ (6920-01-158-6756)
# 50 HZ (6920-01-158-6757)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you.

TABLE OF CONTENTS

| | | | Page |
|---|---|---|---|
| HOW TO USE THIS MANUAL | | | iii |
| CHAPTER | I | INTRODUCTION | 1-1 |
| Section | I | General Information | 1-1 |
| Section | II | Equipment Description | 1-5 |
| Section | III | Technical Principles of Operation | 1-23 |
| CHAPTER | 2 | OPERATING INSTRUCTIONS | |
| Section | I | Description and Use of Controls and Indicators | 2-1 |
| Section | II | Preventive Maintenance Checks and Services | 2-117 |
| Section | III | Operation Under Usual Conditions | 2-117 |
| Section | IV | Operation Under Unusual Conditions | 2-209 |
| CHAPTER | 3 | MAINTENANCE INSTRUCTIONS | |
| Section | I | Lubrication | 3-1 |
| Section | II | Troubleshooting | 3-1 |
| Section | III | Maintenance Procedures | 3-8 |

TABLE OF CONTENTS (Continued)


| | | | Page |
|---|---|---|---|
| APPENDIX | A | REFERENCES | A-I |
| APPENDIX | B | COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST | B-I |
| APPENDIX | C | ADDITIONAL AUTHORIZATION LIST | C-I |
| APPENDIX | D | EXPENDABLE SUPPLIES AND MATERIALS LIST | D-I |
| APPENDIX | E | SYSTEM LOGBOOK | E-I |
| | | SUBJECT INDEX | Index-I |

# HOW TO USE THIS MANUAL

## GENERAL

This manual contains operation and maintenance data for use by Unit-Conduct of Fire Trainer (U-COFT) operating personnel. The manual is divided into three Chapters.

Chapter I - INTRODUCTION. This chapter provides general information about the trainer. It identifies the major assemblies and describes their basic functions.

Chapter 2 - OPERATING INSTRUCTIONS. This chapter identifies the operator's controls and indicators and explains what they do. The information is organized by major assembly. The chapter also explains how to operate the equipment under usual and unusual conditions

Chapter 3 - MAINTENANCE INSTRUCTIONS. This chapter explains what the operator is to do when something goes wrong with the equipment. It also describes how to initiate diagnostic tests (Built-in Tests) to identify a failed item. Removal and installation procedures tell how to identify and replace faulty components.

## WARNING CAUTIONS AND NOTES

WARNINGS, CAUTIONS and NOTES are included throughout this manual to provide necessary information. THEY SHOULD NEVER BE IGNORED. Warnings are included when the information is necessary to avoid injury to personnel. Warnings look like this:

**WARNING**

CVC Helmet must be worn when entering Crew Station and not removed until exit is completed.

General warnings are also provided at the front of the manual. These warnings should be read by anyone who enters the U-COFT Shelters.

Cautions are included when the information is necessary to prevent equipment damage. Cautions look like this:

**CAUTION**

Do not use excessive force to install CCA's. The cards are keyed with four slots at the connector end to prevent installation in the wrong location. Excessive force can break the socket.

Notes are included to highlight information of importance or to aid in job performance. Notes look like this:

**NOTE**

Retainer ring (5) cannot be reinstalled in Step 6 unless lamp is properly seated

## INTERNAL REFERENCING

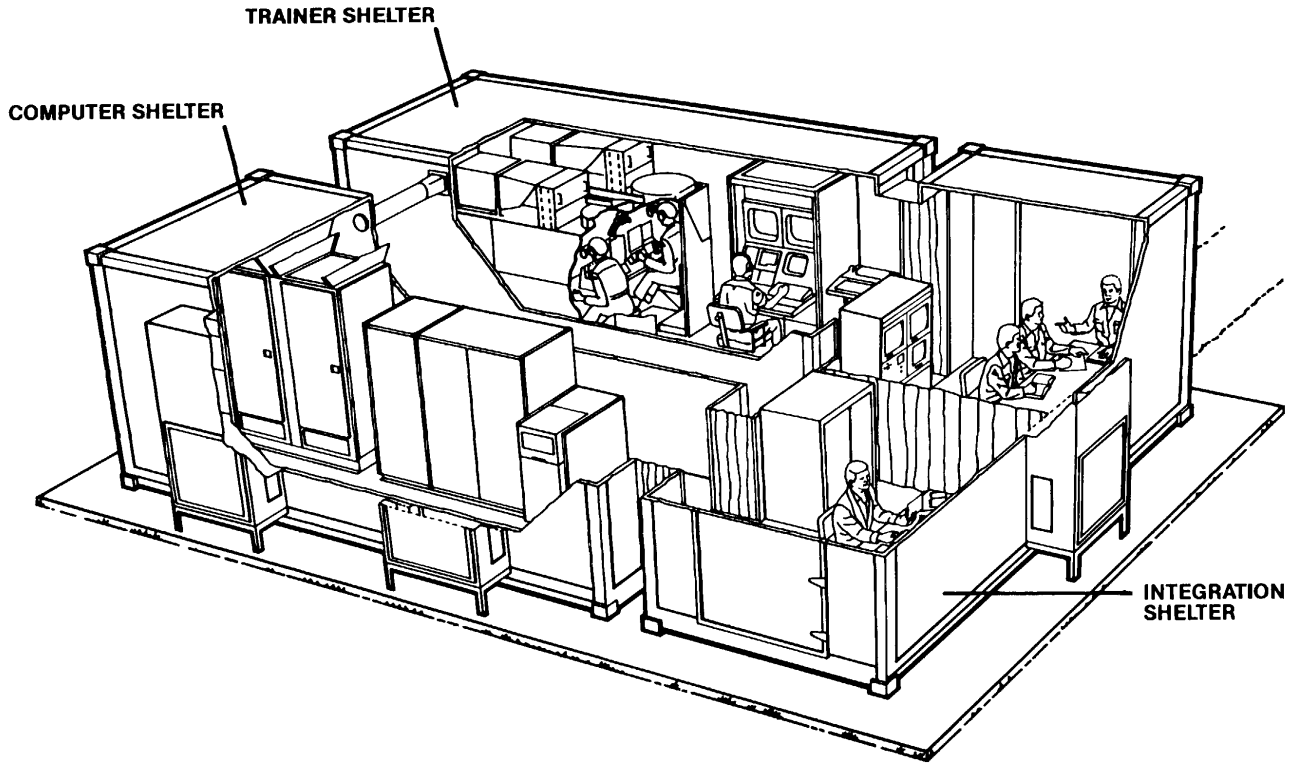
Referencing within this manual is done by page number. Example:

Reference to Mode Selection Display page (see 2-40) refers you to Chapter 2 page 40 of this manual

## EXTERNAL REFERENCING

Referencing outside this manual will be done by military publication number. Example:

Operate commander's station (see TM 9-2350-252-10). The note (see TM 9-2350-252-10) refers you to the Operator's Technical Manual for the Fighting Vehicle.




*M2/M3 Unit-Conduct Of Fire Trainer*

# CHAPTER 1

# INTRODUCTION

## Section I. GENERAL INFORMATION

### SCOPE

This manual describes the M2/M3 Unit Conduct of Fire Trainer (U-COFT) Training Device (Sheltered) 17-74 and gives the information necessary for the Instructor Operator, Training Manager and Crew Trainees to operate the equipment. The manual also gives information to check the U-COFT for proper operation and to keep it operational.

The M2/M3 U-COFT is a training device which simulates the M2/M3 Bradley Fighting Vehicle (BFV) Gunner's and Commander's Stations. It provides computer generated gunnery sight scenes of tactical battle situations. Based on these sight scenes the M2/M3 U-COFT simulates weapon operation under a variety of field conditions. The M2/M3 U-COFT allows commanders and gunners to practice critical gunnery skills and for drivers and loaders to cross train in the duties of gunners. It also allows familiarization of all crewmen in the duties of the commander. The mission of the M2/M3 U-COFT is to develop and/or sustain critical gunnery skills required of qualified commanders and gunners.

### MAINTENANCE FORMS AND RECORDS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

In addition to preparing standard TAMMS forms, the Instructor/Operator shall maintain the COFT System Logbook forms (SCS 1612) also contained in the TAMMS binder. See Appendix E of this manual for instructions.

### REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR'S)

If your M2/M3 U-COFT 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 an SF 368 (Quality Deficiency Report). Mail to us at Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAD, Rock Island IL 61299-6000. We'll send you a reply.

### NOMENCLATURE CROSS REFERENCE

Common nomenclature used in this manual is cross-referenced to its official nomenclature in the list below.

**NOMENCLATURE CROSS REFERENCE LIST**

| Common Name | M2/M3 U-COFT Unit No. | Official Nomenclature | Drawing No. |
|---|---|---|---|
| General Purpose Computer (GPC) | I | VAX 11/780-EW (includes11/780 Central Processing Unit; 1 Megabyte ECC MOS Memory; and H7112 battery backup) | 12710471-1 |
| Terminal Printer | 2 | LA 120 DECwriter | 12710471-5 |
| Disk Drive | 3 | RUA60-CA Disk Subsystem (includes one RA-60 Disk Drive, one RA60P disk pack and UDA50 Disk Controller mounted in a cabinet) | 12710471-14 |
| Special Purpose Computer (SPC) also called Image Generator (IG) | 10 | Special Purpose Computer Assembly | 12710854-2 |
| Instructor Operator Station (IOS) | 20 | Instructor Operator Station Assembly | 12714056-1 |
| Display Terminal | Part of 20 | VT-102 Video Terminal(includes video screen, keyboard and auxiliary keypad) | 12710435-2 |
| Remote Monitor Station(RMS) | 21 | Remote Monitoring Subsystem | 9368736-1 |
| Crew Station | 30 | M2/M3 Crew Station Assembly (includes Electronics Station 12712506-1 and Crew Member's Station12712507-1) | 12714542-1 |
| Computer Shelter | 51 | Computer Shelter Assembly(Type MIL-M-81957/IA with modifications) | 12714051-3 |
| Trainer Shelter | 52 | Trainer Shelter Assembly (Type MIL-M-81957/1A with modifications) | 9368450-1 |

## NOMENCLATURE CROSS REFERENCT LIST

| Common Name | M2/M3 U-COFT Unit No. | Official Nomenclature | Drawing No. |
|---|---|---|---|
| Integration Shelter | 53 | Integration Shelter Assembly (Type MIL-M-81957/2A with modifications) | 12714096-1 |
| Air Conditioner | Part of 51,52 and 53 | Air Conditioner Model No. F36-GE | 12712700-1 |

## LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviations used for the first time in each chapter are contained in parentheses after the spelled out definition. The following list of abbreviations are those special abbreviations used in the manual.

| | | | |
|---|---|---|---|
| A/C | Air Conditioner | D | Direction, Dispersion |
| A/N | Alphanumeric | DAY-F | Daylight Obscured Visibility (Fog) |
| ACT | Active | | |
| ASU | Auxiliary Sight Unit | DAY-L | Daylight Limited Visibility |
| BIT | Built-in Test | DAY-L I | Daylight Limited Visibility but less than DAY-L |
| BMP | Soviet Armored Personnel Carrier with Antitank Missiles | DAY-U | Daylight Unlimited Visibility |
| BR SIT | Boresight | | |
| BRIGHT | Brightness | DSR | Data Set Ready |
| CAL .50 | Caliber .50 Machinegun | EIR | Equipment Improvement Recommendations |
| CAPS | Capital Letters | | |
| CCP | Commander's Control Panel, Computer Control Panel | En | Enemy |
| | | Ex | Exercise |
| CDR | Commander | | |
| CFP | Commander's Front Periscope | FI | Fire |
| | | FOV | Field of View |
| CIU | Computer Interface Unit | FR | Friendly |
| CMDR | Commander | FRII | Frame Two CIG Processing Time |
| COAX | Coaxial 7.62mm Machinegun | | |
| CONT | Contrast, Continued | | |
| CPCH | Commander's Power Control Handle | GPC | General Purpose Computer |
| | | GPCH | Gunner's Power Control Handle |
| CR | Commander's Relay | | |
| CTS | Clear To Send | GUNR | Gunner |
| CVC | Combat Vehicle Crewmen | | |

**LIST OF ABBREVIATIONS AND ACRONYMS (Continued)**

| | |
|---|---|
| HEFDR | HE Ammo Feeder |
| HIND-D | Soviet Armored Helicopter |
| HZ | Hertz (Cycles per second) |
| ID | Identify, Identification |
| IFV | Infantry Fighting Vehicle |
| IG | Image Generator (Special Purpose Computer) |
| INU | Integration Unit |
| IOS | Instructor Operator Station |
| ISU | Integrated Sight Unit |
| ISUW | Integrated Sight Unity Window |
| KBD | Keyboard |
| LRF | Laser Rangefinder |
| M I | U.S. Battle Tank, General Abrams |
| M2/M3 | U.S. Fighting Vehicle |
| M2AI/M3A | U.S. Fighting Vehicle (TOW II System) |
| M60A3 | U.S. Battle Tank, Predecessor of the M1 |
| MAN | Manual, Management |
| MGMT | Management |
| MNLTR | Manual Traverse |
| MOV | Moving |
| MW | Main Weapon |
| NUMB | Number |
| PAT | Pattern |
| PS | Power Supply |
| RA | Reticle Aim |
| RAE | Reticle Aim Evaluation |
| REDU | Reduced Advancement |
| RET | Reticle |
| RMS | Remote Monitor Station |
| SDT | Standard Data Terminal |
| SM | System Management |
| SME | System Management Evaluation |
| SNGL | Single |
| SPC | Special Purpose Computer |
| STN | Stationary |
| TA | Target Acquisition |
| TAE | Target Acquisition Evaluation |
| TAMMS | The Army Maintenance Management System |
| TIS | Thermal Imaging System |
| TMS | Training Management System |
| TNK | Tank |
| TOF | Time of Fire |
| TTS | Tank Thermal Sight |
| TTSE | Tank Thermal Sight Extension |
| T72 | Soviet Main Battle Tanks |
| U-COFT | Unit-Conduct of Fire Trainer |
| UNANO | Unannounced |
| VAX/VMS | Virtual Address Extension/Virtual Memory System |
| VIS | Visibility |
| X | Variable Data, Magnification, East/West Axis - I |
| Y | Yes, North-South Axis |
| Z | Up-Down Axis |

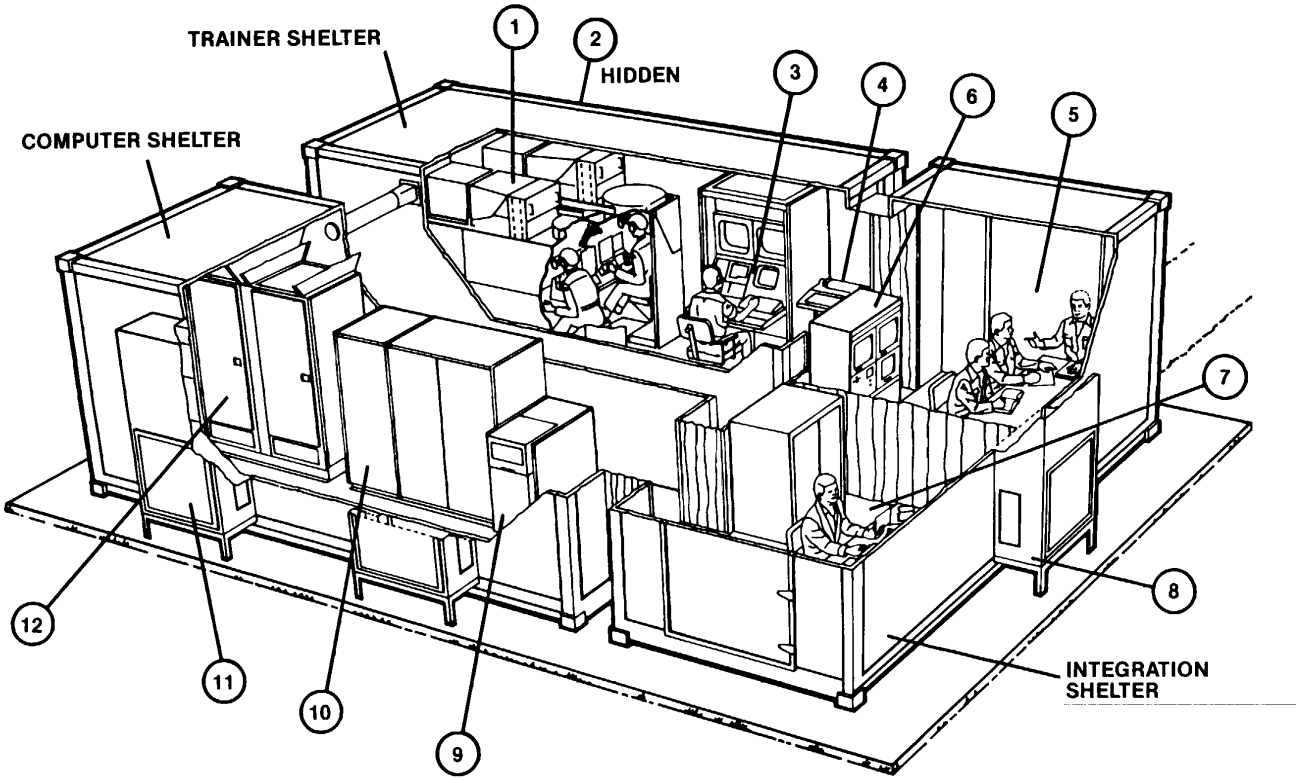
## Section II. EQUIPMENT DESCRIPTION

### EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

A transportable training system to provide BFV crews with training and practice in the use of the M2/M3 combat tank gunnery systems. The U-COFT system provides:

- Sequential upgrading of gunnery skills from basic operations to full qualifications.
- Retention of gunnery qualification skills.
- M2/M3 gunnery qualification for crewmen qualified in another tank model.
- Cross-training of drivers and loaders in the duties of gunners.
- Familiarization of all crewmen in the duties of commanders.
- M2/M3 BFV gunnery training without expenditure of fuel, ammunition, or equipment wear.
- One Instructor/Operator required to operate system and train one Commander or one Gunner or both as a crew.
- Air conditioned training environment.
- Automatic crew and unit performance evaluation.
- Automatic storage of training record data with hard copies presented on demand.
- Simulation of single and multiple equipment malfunctions during training.
- Built-in Test (BIT) programs to determine equipment failures down to the circuit card assembly level.
- Shelters (with equipment enclosed) are transportable.

## Location and Description of Major Components



## LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

The U-COFT is installed on a concrete pad and consists of three, interconnected shelters:

- Computer Shelter
- Trainer Shelter
- Integration Shelter

The Computer and Trainer Shelters are placed parallel to each other, approximately four feet apart. The Integration Shelter is placed across the end doors of the Computer and Trainer Shelters to provide a U-shaped interconnected complex. Butting kits between the end doors of the parallel shelters and the side doors of Integration Shelter provide the connections for a weather tight integrated complex. Entrance to the complex is provided at the right-hand end of the Integration Shelter. Emergency exits are provided at the Integration Shelter, opposite the entrance, and at the far ends of the Computer and Trainer Shelters.

The Interior of the U-COFT complex is environmentally controlled by air conditioning units installed in each shelter. The air conditioning units provide the heating cooling, and humidity control necessary for equipment operation and human comfort.

The Trainer Shelter contains the Crew Station (1), Air Conditioner (2), Instructor Operator Station (IOS) (3), and Terminal Printer (4).

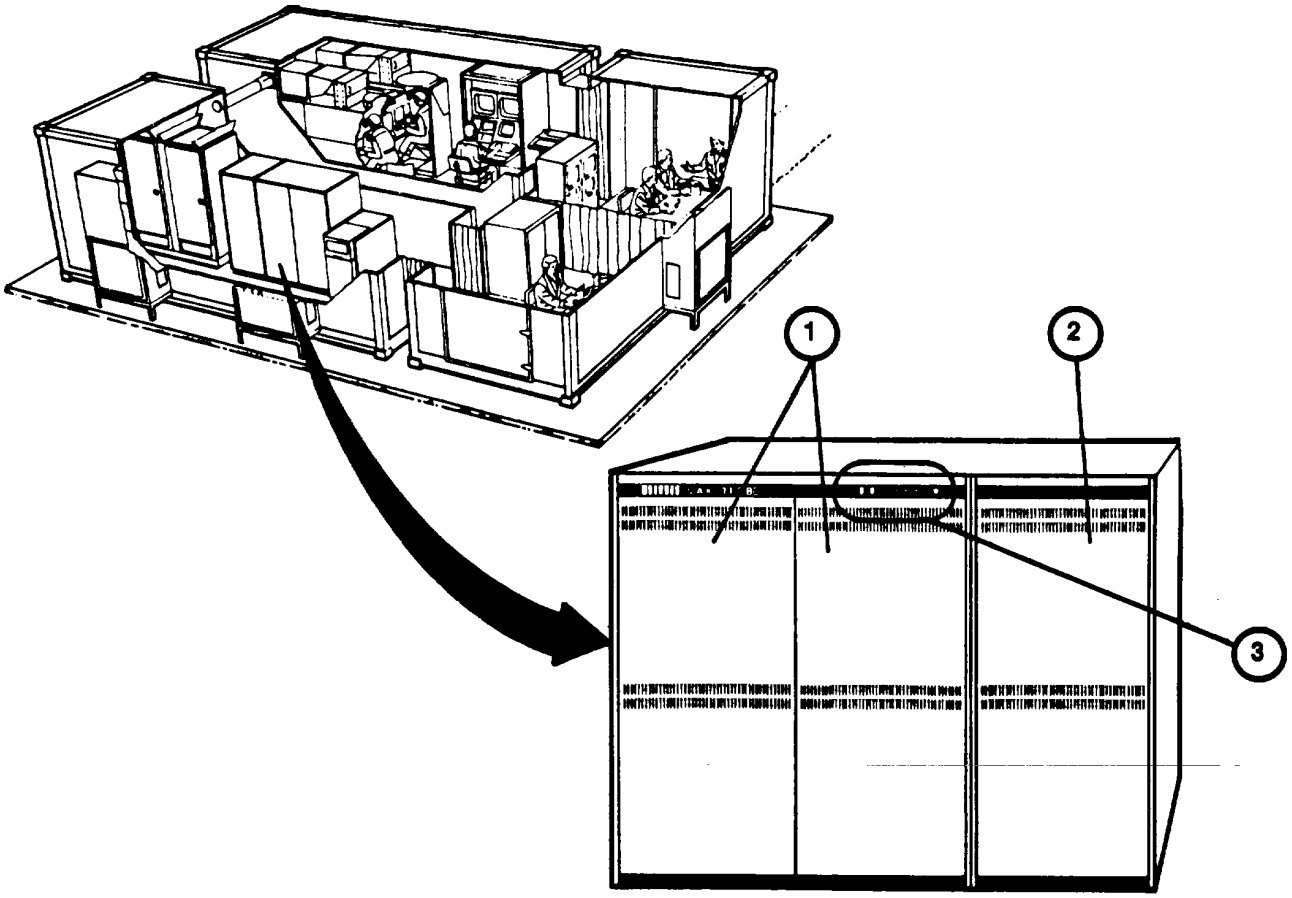
The Integration Shelter provides a student briefing area (5) containing the Remote Monitor Station (6) and a maintenance area (7). These areas are divided by a folding curtain. An air conditioner (8) is located between the two areas.

The Computer Shelter contains the Disk Drive Unit (9), General Purpose Computer (GPC) (10), three Air Conditioners (11) (two on one wall and one on the opposite wall), and the Special Purpose Computer (SPC) (12).

The following paragraphs provide the location and descriptive details of the major units contained within each shelter.

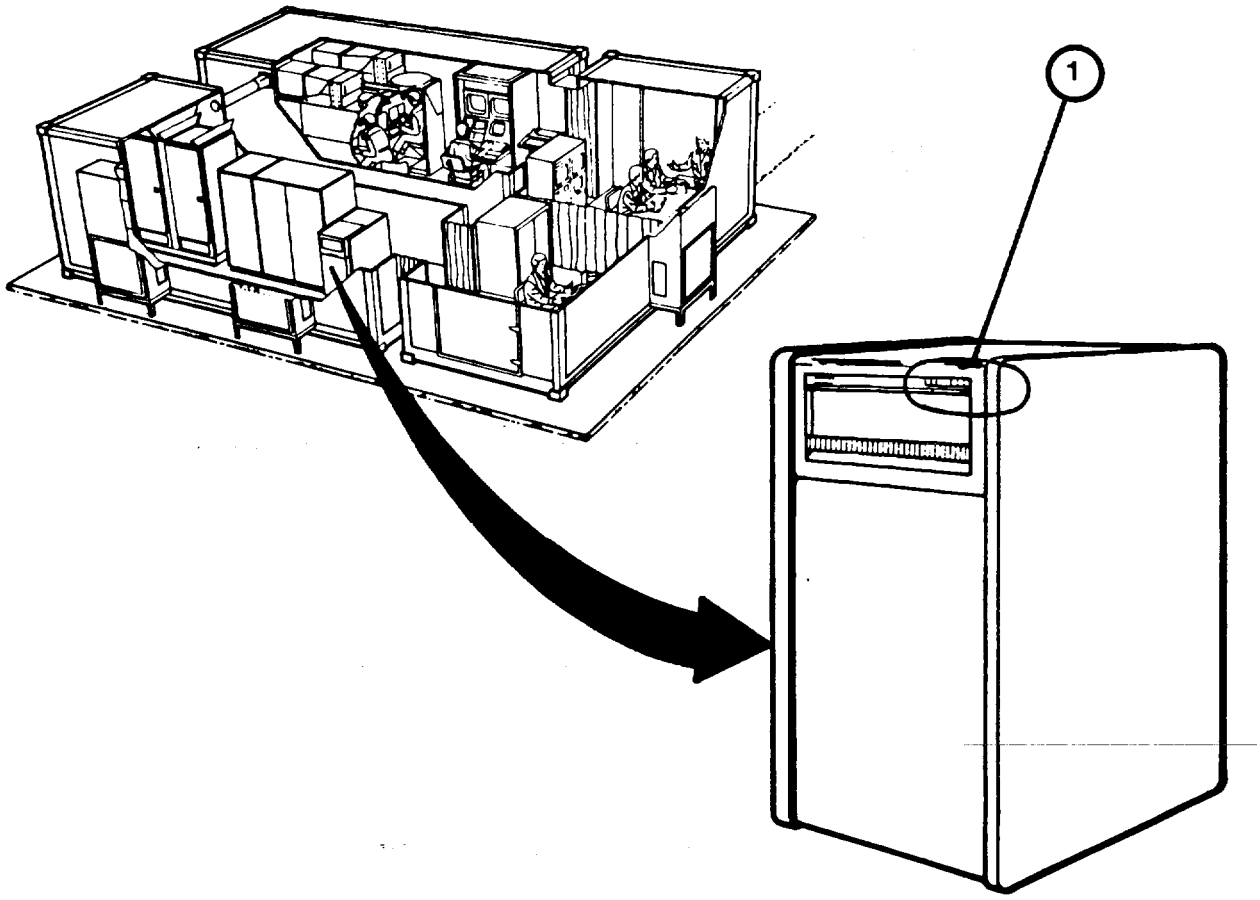
**GENERAL PURPOSE COMPUTER (GPC) - UNIT 1**

The General Purpose Computer (GPC) is located in the center of the Computer Shelter. It consists of a double-wide main console (1) with an expansion cabinet (2) side-by-side. The front of the cabinets face the center of the shelter complex. Doors on the front and back of each cabinet are key locked and entry is not required for operation of the U-COFT. Operational controls to power-up, initialize operation and to power-down are located on the front, upper right-hand side (3) of the main console. The operator uses these controls only for power up, initialization and power-down of the trainer. All other operations occur automatically through remote use of controls in the Trainer Shelter.



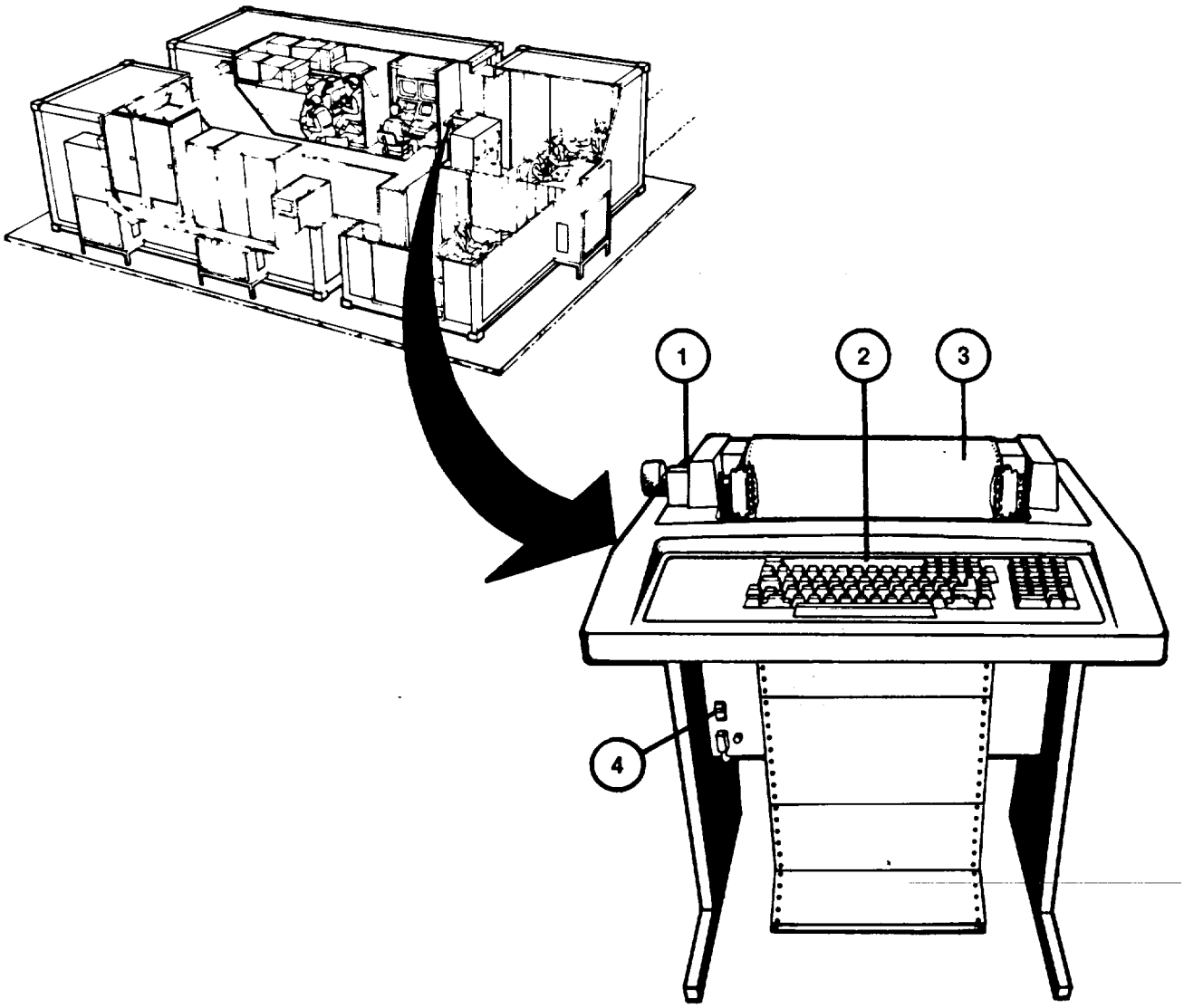
**DISK DRIVE - UNIT 3**

The Disk Drive consists of a single console located on the left side of the GPC in the Computer Shelter. The Disk Drive consists of a low-boy console cabinet containing a drive unit, a power control unit, and a mass memory disk. Access to the interior is not required for operation of the U-COFT. Operational controls are located on the front, upper right hand side of the console (1). The only operator interface with these controls occurs during power-up to start the unit and during power-down to stop the unit. All memory inputs and outputs are controlled by the GPC, automatically.



**TERMINAL PRINTER - UNIT 2**

The Terminal Printer (1) is a typewriter style console located on the right-hand side of the IOS in the Trainer Shelter. The Terminal Printer consists of a keyboard (2) and paper printer (3). On/off control is provided by a rocker switch (4) located on the lower front of the console. The keyboard (2) is an input device to the GPC. It operates in a manner similar to the keyboard of the 1OS Display Terminal keyboard (see 1-14). Data entered on the keyboard sends commands to the GPC. Responses from the GPC are then printed on the paper printer (3). The Terminal Printer also responds to commands entered on the Display Terminal keypad. When the Instructor/Operator requires a paper printout of training data, he enters a "print" command at the Display Terminal keypad. The Terminal Printer then prints the required data on the continuously fed paper.

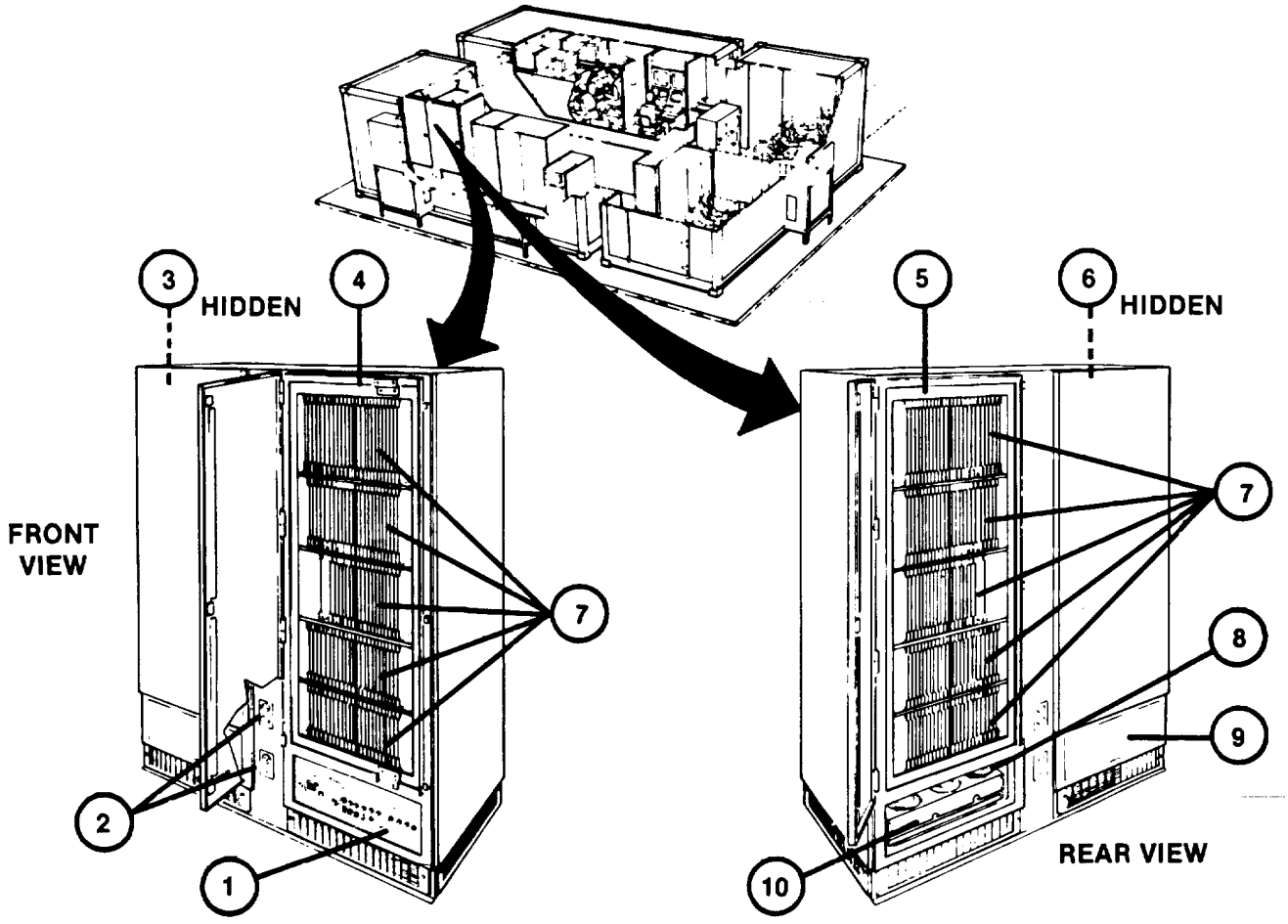


**SPECIAL PURPOSE COMPUTER - UNIT 10**

The SPC is located in the Computer Shelter facing the center of the complex. The SPC consists of a two-bay cabinet assembly with two access doors on the front and two on the rear of the assembly. Each bay of the SPC contains a logic card file assembly mounted on a swingframe and accessed when the doors are opened. The lower, front portion of the SPC contains a Power Management Assembly (1) with front panel controls and indicators. Duplex utility power receptacles and communication jacks (2) are mounted on the center supports of the cabinet, both front and rear.

Card file assemblies Al (3) and A2 (4) are accessed from the front of the cabinet and A22 (5) and A21 (6) from the rear of the cabinet. Each card file assembly contains 5 rows of plug-in circuit card assemblies (7) which provide the electronics for development of sight scene visual displays and simulated sounds. Identification and replacement procedures for the circuit card assemblies are described in Chapter 3, Section III. Each card file assembly also contains eight cooling fans, four at the top and four at the bottom of the assembly.

Power Management Assembly A4 (I) is mounted in the front, lower right-hand side of the cabinet and contains a front panel circuit breaker, elapsed time indicator, power supply "ON" indicators, and over-temperature indicators. Six blowers (8) in the assembly provide additional cooling air for SPC. Plates (9) at the lower rear of each cabinet cover the access to air filters (10).



## INSTRUCTOR OPERATOR STATION (IOS) - UNIT 20

The IOS resides in the Trainer Shelter. It consists of a doublewide console with a writing surface. The IOS provides the operating station for the Instructor/Operator. It contains controls, indicators, and visual displays for functional control of training programs, training records review and management, and maintenance diagnostic tests of the U-COFT.

The Power Panel (1) is mounted across the upper, front of the 1OS. It provides controls and indicators for ac power on/off status and control, dc power supply status, and total operating time.

The Commander's and Gunner's 19-Inch Color Monitors, (2) and (3) are front mounted (side-by-side) below the Power Panel (1). The monitors display the same sight scenes being viewed by the Commander and Gunner in the Crew Station sights. Front panel controls (4) below the display screens provide on/off, brightness, and contrast control for the Instructor/Operator's viewing preference.

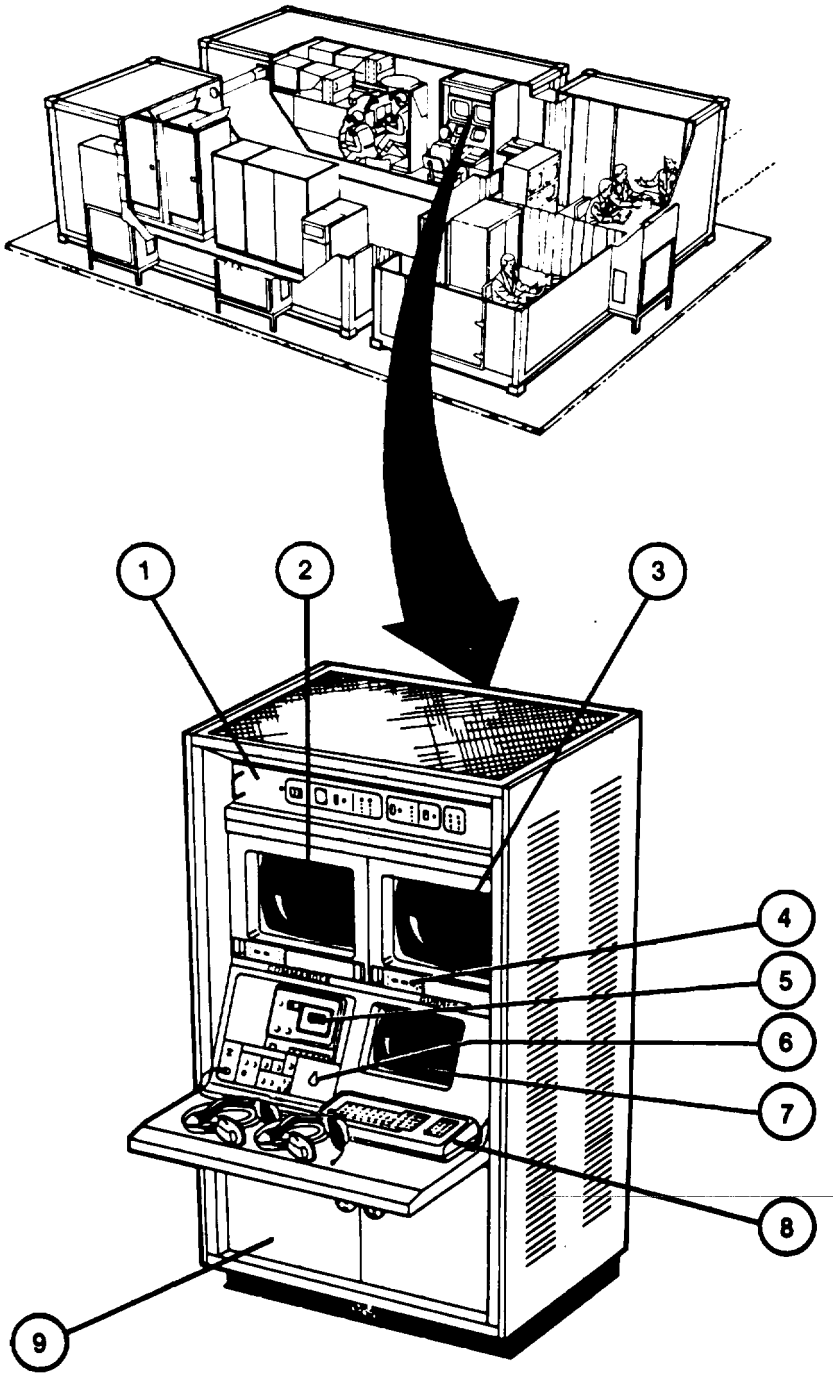
A Tape Recorder (5) mounted on the slanted portion of the writing surface is connected internally to the intercom system. The Tape Recorder provides pre-recorded orientation narratives for crew training and permits the Instructor/Operator to record verbal commands and communication during training sessions. Controls on the recorder provide the standard functions of on/off control, record, playback; tape controls of fast forward, rewind and start/stop; and volume control. A tape counter and speed control are used at the discretion of the Instructor/Operator.

The Communication Panel (6) is mounted below the Tape Recorder (5). It provides the Instructor/Operator's headset jack and volume controls for voice communications And aural cues. Two headsets with press-to-talk switches and a splitter cable are provided for use at the Communication Panel. An audible alarm and overtemperature indicators alert the Instructor/Operator if an overtemperature condition should occur in the Crew Station, SPC or the IOS console itself. A two-position switch allows interchanging displays on the 19-inch monitors (2) and (3).

The Display Terminal consists of an alpha-numeric display screen (7) mounted to the right of the Tape Recorder (5) and a keyboard/keypad (8) which rests on the con- sole writing surface. The Display Terminal is an input/output device for the GPC (see1-10). It provides the Instructor/Operator with the means of communicating with the GPC to control training selections and record reviews. Data is entered on the keyboard/ keypad (8) and alphanumeric responses are viewed on the display screen (7).

The ISU/CR/ASU 3-CRT Power Supply is located behind latched door (9). The power supply provides dc power to the sight scene display devices in the Crew Station. The power supply is turned on when power is applied at Power Panel (1).

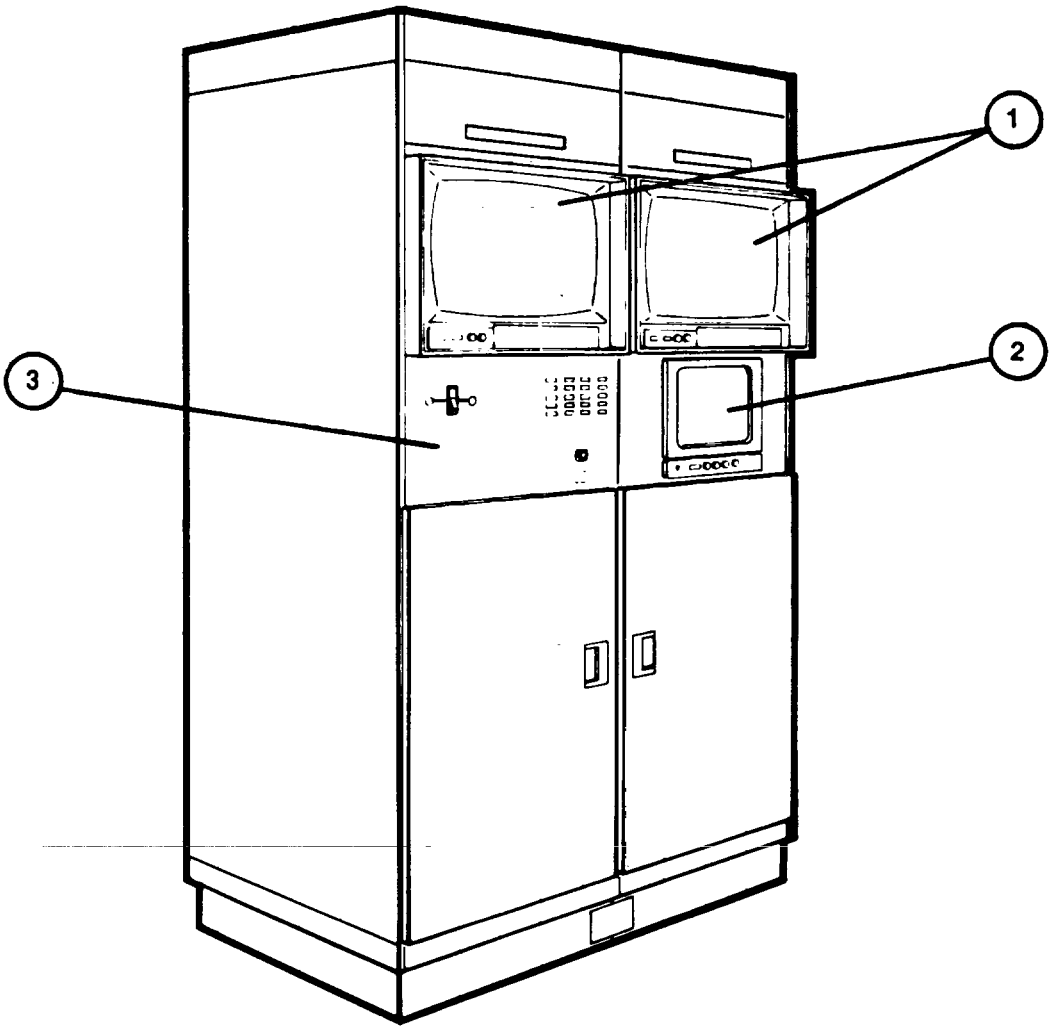
**INSTRUCTOR OPERATOR STATION (IOS) - UNIT 20 (Continued)**



## REMOTE MONITOR STATION - UNIT 21

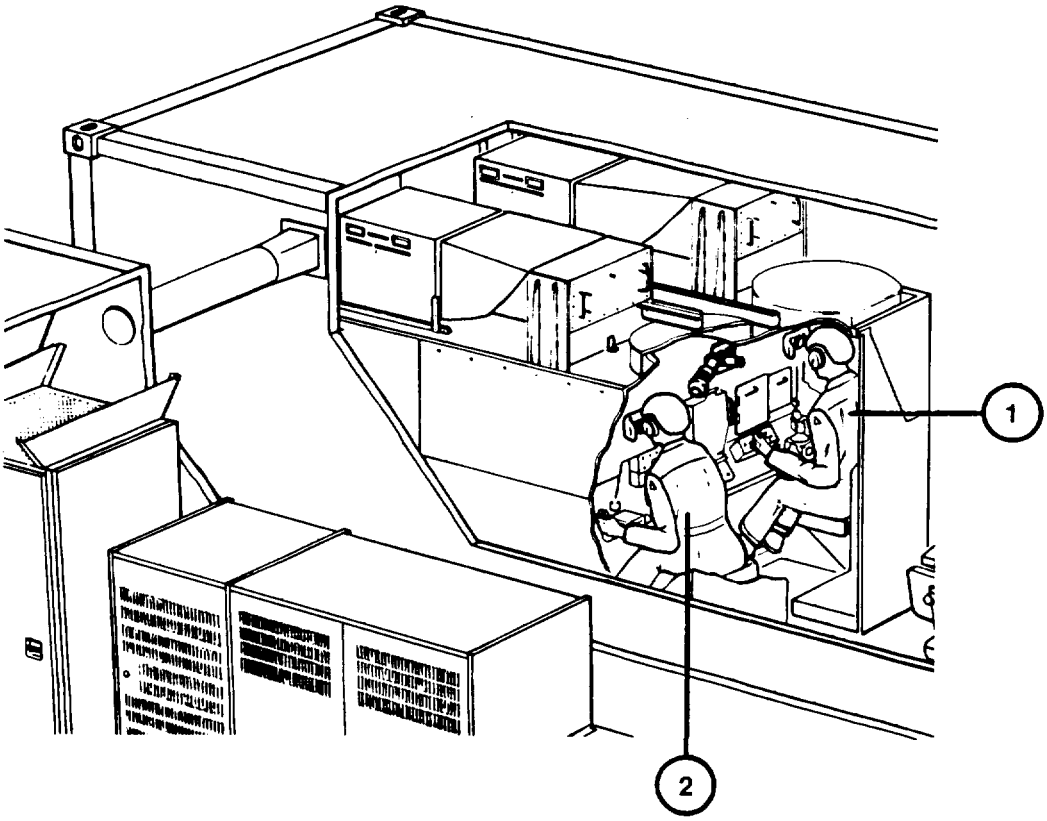
The Remote Monitor Station (RMS) is positioned against the inside wall of the Integration Shelter briefing area. It consists of a doublewide cabinet which houses three CRT displays and an audio/power control panel used for remote monitoring of training exercises. The lower half of cabinet provides an enclosed area for equipment storage.

The COMMANDER'S and GUNNER'S 19-inch color monitors (1) display the sight scenes seen by the Commander and Gunner during a training exercise. The 12-inch monochrome monitor (2) displays the same instructional and performance evaluation data seen by the instructor. The audio/power control panel (3) provides a speaker with volume control for monitoring exercise generated sounds, crew commands and responses and instructional communication between crew and instructor.



**CREW STATION - UNIT 30**

The Crew Station is an enclosed cabinet assembly located in the Trainer Shelter. The interior is designed to simulate the Commander's Station (1) and Gunner's Station (2) in the turret portion of an M2/M3 BFV. A rear doorway provides entry to the Crew Station. Controls, indicators, gunsights and panels within the Crew Station are located in the same positions as those in the BFV. They look the same, operate the same, and provide realistic, simulated responses. Certain controls and indicators in the U-COFT Crew Station that are not functional or that differ from those in the actual BFV are described under Commander's Station and Gunner's Station paragraphs.



**CREW STATION - UNIT 30 (Continued)**

COMMANDER'S STATION. The Commander's Station is a model of the Commander's Station in the BFV (see TM 9-2350-252-10-2). Certain controls and indicators in the BFV that are not used for target acquisition and gunnery tasks are not functional in the trainer. The following controls and indicators are not functional and/or have specific differences in the trainer:

a. The Commander's front periscope (1) is functional but the other seven periscopes around the Commander's hatch (2) are not.

b. The Commander's hatch (2) does not open but an open-hatch malfunction is simulated during training when driver or cargo hatches are open.

c. Coax ammo box (3) and forward access door (4) are simulated but not functional for ammo load/reload.

d. Zeroing the coax to the Commander's relay (5) will be performed during training exercises with the assumption that all external tasks have been accomplished.

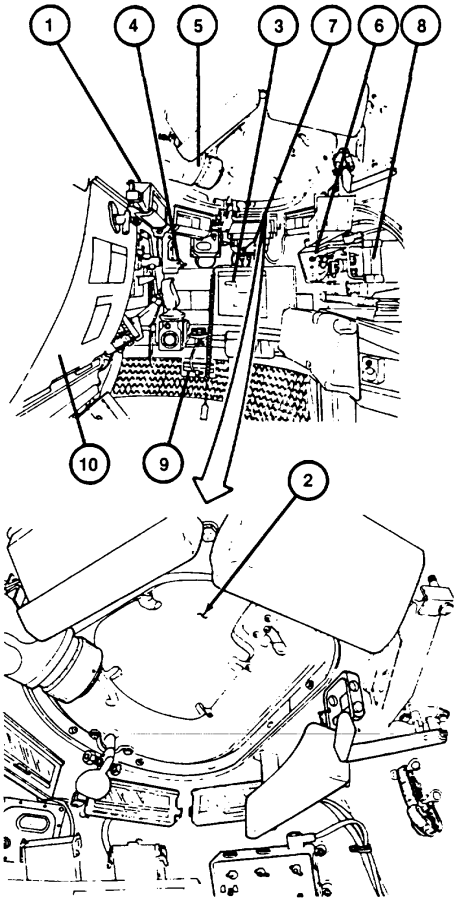
e. The Commander's intercom amplifier control box (6) is not simulated.

f. The intercom monitor switch (7) is simulated but function is the same for all positions.

g. Radio sets (8) are not simulated.

h. The vehicle azimuth indicator and pointer (9) are simulated using a Liquid Crystal Display (LCD) instead of tape.

i. The 25mm gun guard (10) is not removable.



**CREW STATION - UNIT 30 (Continued)**

GUNNER'S STATION. The Gunner's Station is a model of the Gunner's Station in the BFV (see TM 9-2350-252-10-2). Certain controls and indicators in the BFV that are not used for target acquisition and gunnery tasks are not functional in the trainer. The following controls and indicators are not functional and/or have specific differences in the trainer:

a. Gunner's hatch (1) is simulated but not functional in U-COFT.

b. The two Gunner's periscopes (2) are simulated but not functional.

c. Gunner's ISU Thermal FOCUS knob (3) is simulated but not functional.

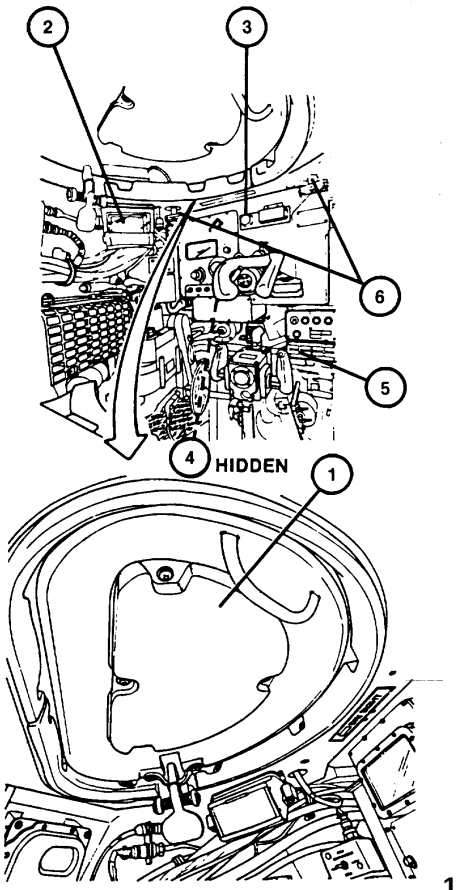
d. Gunner's ISU NIGHT VISION PWR ON/OFF/BR SIT switch (4) function isthe same in the ON and BR SIT positions (buddy boresight is not simulated).

e. Annunciator Box AMMO SW REVERSE indicator (5) is not functional but lights when lamp test is performed.

f. The Gunner's ballistic sight cover doors (6) function is simulated for each training session. The closing is done from outside the BFV and not simulated except by computer reset.

g. External tow launcher controls are not simulated. Actual load, unload or reload tow launcher is not simulated. Time to do this task and turret positioning is simulated.

h. Grenades Launcher load/stow/reload and unload tasks are not simulated. One grenade salvo is simulated per training exercise.



## EQUIPMENT DATA

### SIMULATED WEAPONS

a. M242 25mm Automatic Gun
b. M240C 7.62mm Coax Machinegun
c. BGM-71 TOW Missile Launcher
d. M250 Grenade Launchers

### SIMULATED AMMUNITION

a. M791 25mm armor piercing, discarding sabot, tracer (APDS-T)
b. M792 25mm high-explosive, incendiary tracer
c. BGM-71 Guided Missile Surface Attack (TOW Missile)
d. L8AI/A3 Smoke Screening Grenade
e. M61 Armor-piercing 7.62mm Cartridge
f. M62 Tracer 7.62mm Cartridge

### COMMANDER'S STATION EQUIPMENT SIMULATION

a. Commander's Relay Sight
b. Commander’s Front Periscope
c. 7.62mm Coax Machinegun and Mount
d. Utility Light
e. Coax Ammo Box and Chute
f. Commander's Control Handle
g. Slope Indicator
h. Azimuth Indicator Pointer and Tape
i. Turret Position Indicator
j. Turret Control Box
k. Intercom Control Box
1. Commander's Seat
m. Dome Light
n. Open Hatch Override Control Box
o. 25mm Automatic Gun Shield and Gas Bag
p. Browpad
q. Coax Access Doors
r. Re mote Intercom Switch

**EQUIPMENT DATA (Continued)**

**GUNNER'S STATION EQUIPMENT SIMULATION**

a. Integrated Sight Unit (ISU)
b. Ballistic Sight Cover Door Controls
c. TOW Control Box
d. Annunciator Panel
e. Weapon Control Box
f. Turret Traverse Drive Select Lever
g. Gun Elevation Drive Select Lever
h. TOW Elevation Select Lever
i. Traverse Handwheel
j. Elevation Handwheel
k. Gunner's Control Handle
1. Slope Indicator
m. Turret Position Indicators
n. Fan Defogger Control Box
o. Gunner's Seat
p. Dome Light
q. Browpad
r. Intercom Control Box
s. Remote Intercom Switch
t. Turret Travel Lock

**NORMAL GUNNERY MODE SIMULATION**

a. Stabilized Coax Machinegun
b. Stabilized 25mm Gun
c. Thermal Imaging Sight
d. Target Ranging up to 3000 meters
e. Night or Day Conditions
f. Normal Azimuth and Elevation Drift
g. rowpad Recoil
h. Weapon Impact Sensing
i. Aural Cues
j. Projectile Tracer Paths
k. Smoke Grenade visual effects
l. TOW Missile Exhaust
m. Enemy and Friendly Fire
n. Hit on ownvehicle

**EQUIPMENT DATA (Continued)**

**EMERGENCY GUNNERS MODE SIMULATION**

a. Weapon Stabilization System Failure
b. Commander's Control Handle Failure
c. Gunner's Control Handle Failure
d. Coax Machinegun Failure
e. TOW Missile Misfire
f. 25mm Gun Feeder Failure
g. Day ISU Failure
h. 25mm Gun Misfire
i. Catastrophic Turret Power Failure
j. TOW Tracker Failure
k. TOW Command Guidance Electronics Failure
l. TOW Electronics Power Supply Failure
m. TOW Circuit Open Failure
n. Open Hatch Malfunction

**GUNNER'S ISU**

| | Field-of-View | Sense DAY | Sense NIGHT |
|---|---|---|---|
| a. | LOW MAG (4x) vertical | 12 +0.24 degrees | 3.3 +0.066 degrees |
| b. | LOW MAG (4x) horizontal | 15 +0.3 degrees | 6.6 +0.132 degrees |
| c. | HIGH MAG (12x) vertical | 4 +0.08 degrees | 1.1 +0.022 degrees |
| d. | HIGH MAG (12x) horizontal | 5 +0.1 degrees | 2.2 +0.044 degrees |
| e. | Eye Relief | 36 +4mm | 36 +4mm |
| f. | Exit pupil size | 6 +0.5mm | 6 +0.Smm |
| g. | Diopter adjustment | +4 diopters | |
| h. | Resolution | 12 line pairs/mm at 5% MTF, minimum | |
| j. | Luminance | 5 foot lamberts, minimum | |

**GUNNER'S ISUW FIELD-OF-VIEW**

| | | |
|---|---|---|
| a. | Instantaneous vertical | 8 +0.16 degrees |
| b. | Instantaneous horizontal | 21 +0.42 degrees |
| c. | Total vertical | 1 1.5 +0.23 degrees |
| d. | Total horizontal | 27 +0.54 degrees |

**EQUIPMENT DATA (Continued)**

**COMMANDER'S RELAY SIGHT**

Same as Gunner's ISU.

**COMMANDER'S FRONT PERISCOPE FIELD-OF-VIEW**

| | | |
|---|---|---|
| a. | Instantaneous vertical | 8 +0.16 degrees |
| b. | Instantaneous horizontal | 23 +0.46 degrees |
| c. | Total vertical | 12 ;0.24 degrees |
| d. | Total horizontal | 32 +0.64 degrees |

**AUXILIARY SIGHT UNIT**

| | | |
|---|---|---|
| a. | Field-of-View | 10 degrees circular |
| b. | Eye Relief | 27, +3mm |
| c. | Exit Pupil Size | 6mm minimum |
| d. | Diopter Adjustment | 4 diopters minimum |
| e. | Magnification | 5x |
| f. | Resolution | 12 line pairs/mm at 5% modulation, minimum |
| g. | Luminance | 5 foot lamberts minimum |
| h. | Elevation Scan | -10 degrees +0.5 degrees to 60 degrees +1 degree |

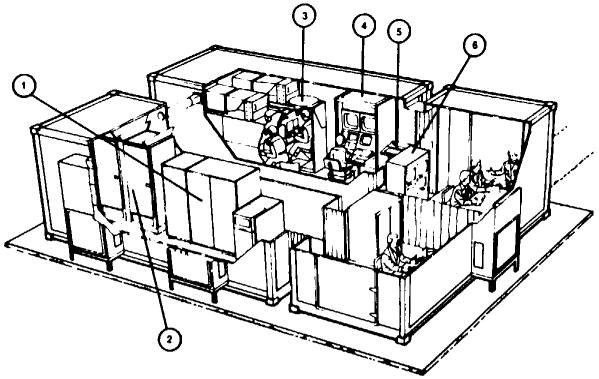
**SHELTER DIMENSIONS (EACH UNIT)**

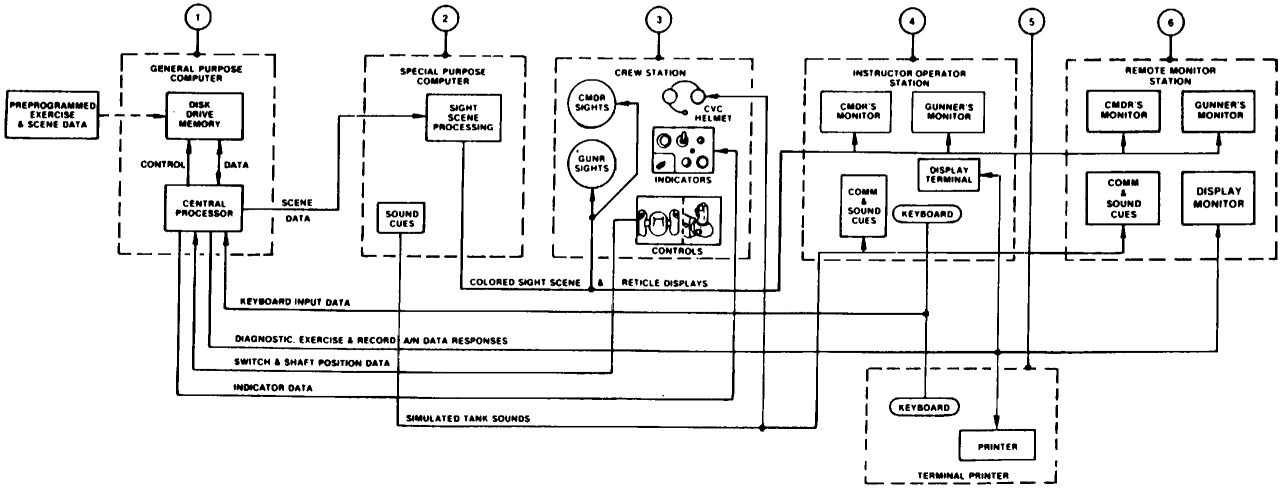
| | | | |
|---|---|---|---|
| a. | Width | = | 8 feet |
| b. | Length | = | 20 feet |
| c. | Height | = | 8 feet |
| d. | Weight (Max/Shelter) | = | 20,000 pounds |
| e. | Total Weight (max) | = | 32,000 pounds |

**OPERATIONAL ENVIRONMENTAL CONDITIONS**

| | | |
|---|---|---|
| a. | Internal Temperature: | 590F (15°C) to 860F (30°C) |
| b. | Internal Relative Humidity: | 20% to 70% (no condensation) |
| c. | External Temperature: | 400F(-400C) to 1260F(520C) plus solar load such that the external skin of the shelter reaches a maximum temperature of 1810F (830C). |

## SYSTEM BLOCK DIAGRAM



## Section III. TECHNICAL PRINCIPLES OF OPERATION

### GENERAL

The U-COFT consists of six major functional units:

a. General Purpose Computer (GPC)
b. Special Purpose Computer (SPC)
c. Instructor Operator Station (IOS)
d. Crew Station
e. Remote Monitor Station (RMS)
f. Shelter Facilities

The GPC (1) provides the central control and data storage for the U-COFT computer program operations. Training exercise sight scene programs, functional readiness test programs, and diagnostic test (built-in test) programs are entered in the Disk Drive memory (1) by the manufacturer. Training records are also stored in the Disk Drive memory during training exercise performance. The SPC (2) processes sight scene data received from the GPC (1). The SPC (2) generates the colored television-type scenes displayed in the Crew Station sights (3) and the Instructor Operator Station monitors (4). The sight scenes are separated into two channels, one for the Commander's view and one for the Gunner's view. Vehicle and battle sounds are also generated in the SPC (2) and sent to the intercom headsets of the Crew Station (3) and IOS (4).

Trainees at the controls of the Crew Station (3) view the tactical battle scenes through the gunnery sights, ISUW and the CFP as they would in an actual BFV turret. They operate the controls in the same manner in a BFV. Movement of these controls sends a change of switch or shaft position data to the GPC (1). The GPC, in turn, senses the change and alters the scene data affected by the switch or shaft position change. The SPC (2) processes the new data to alter the scenes viewed in the Crew Station sights (3) and IOS monitors (4). If an action in the Crew Station initiates a requirement for a change in the state of a Crew Station indicator, the GPC (1) returns the changed indicator data to the Crew Station to change the on/off state of the appropriate indicator.

The IOS (4) is the Instructor/Operator's control station. When training is in progress he can monitor the performance of the trainees by observing the Crew Station (3) sight scenes on the Commander's and Gunner's monitors in the IOS (4). He receives the tank and battle sound cues from the SPC (2) in his headset and can communicate with the trainees in the Crew Station (3) through the same headset. The IOS (4) Display Terminal and Keyboard provides the means of communicating with the GPC (1). The Instructor/Operator can select the mode of operation (training, training records check, diagnostic tests, functional tests) by entering input data on the IOS (4) keyboard. The GPC (1) responds with data pages and prompts (requests for additional data) displayed on the screen of the IOS (4) Display Terminal. The Instructor/Operator answers the prompts by entering the additional data on the keyboard as required.

The Terminal Printer (5) provides paper printouts of crew performance data during training sessions, of training unit records for training management, and of diagnostic test results for maintenance purposes. The printouts are obtained by entering the requests on the IOS Keyboard (4). The request is received by the GPC (1) which responds by sending the data to the Terminal Printer (5). The Terminal Printer (5) keyboard is also an input device for the GPC (1), and is used by the Instructor/Operator for power-up and power-down only.

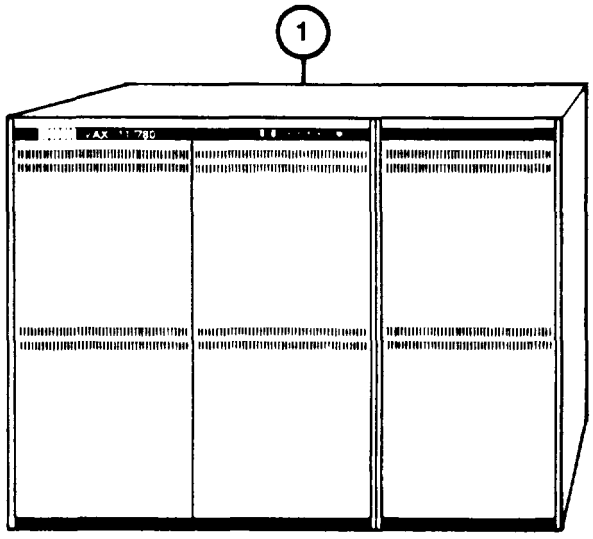
The RMS (6) permits observers to monitor Integration Shelter briefing area. It features two 19-inch color monitors which display

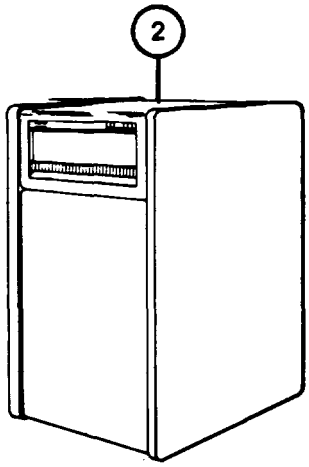
**GENERAL (Continued)**

gunner and commander sight scenes, a 12-inch monochrome monitor which replicates instructional displays seen by the Instructor/Operator and an audio system which enables the observer to hear exercise generated sounds, fire commands and crew duty responses.

**GENERAL PURPOSE COMPUTER**

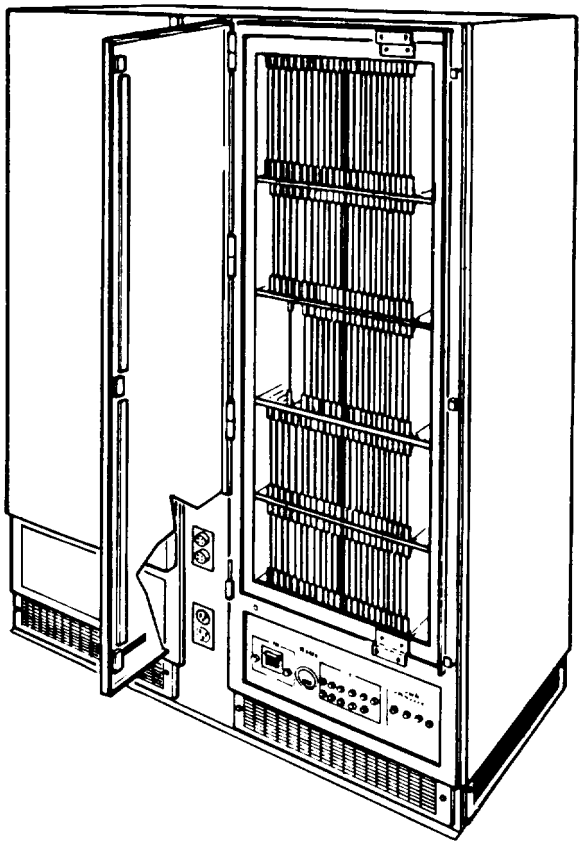
The GPC (I) provides the mass data storage and control of data for preoperational checks, training exercise programs, training management records and equipment maintenance diagnostic (built-in test) programs. The sight scenes are developed from models of typical battle areas and developed in computer format. The program data is predetermined and entered into the Disk Drive memory (2) by the trainer manufacturer. Training record data is automatically developed during training and also stored in the Disk Drive memory (2) during operation. The records can be recalled and reviewed at the IOS Display Terminal or printed as required.



**SPECIAL PURPOSE COMPUTER**

The SPC develops two-dimensional, colored sight scene data from the data received from the GPC. The two-dimensional sight scene data is separated into two channels and sent to the television type displays for the Crew Station sights and IOS monitors. One channel drives the scenes for the Commander's view and the other channel drives the scenes for the Gunner's view. The SPC also develops the tank and battle sounds synchronized to the sight scene activity and crew actions.



CREW STATION

The Crew Station (1) is a full-sized model of the BFV Commander and Gunner Stations (see TM 9-2350-252-10-2). The Loader's and Driver's Stations are not simulated. Vehicle and weapon sounds are simulated and heard through the CVC helmets (2). The noises and sounds that are simulated are hits on ownvehicle, 25mm gun firing, TOW firing, 7.62mm coax firing, smoke grenade firing, enemy fire and friendly fire. Other BFV sounds included are Night Vision System cooling, gun exhaust fan, crew ventilation fan, and engine and transmission noises, including idle and tread clutter at various speeds. The intercom and simulated radio system also serves as a direct link between the Commander, Gunner and the Instructor/Operator. Ownvehicle movement is simulated and modified by movement of the normal sight scenes. Ownvehicle movement can be stopped and restarted by the Instructor/Operator. The 25mm gun recoil is simulated through the browpads (3) of the sights. The vehicle Commander's and Gunner's sights that are simulated are the ISU (4) the ISUW (5) the CR (6), the CFP (7) and the Auxiliary Sight Unit (ASU) (8).

The BFV Gunner's sight scenes are viewed in the ISU, ISUW and ASU. The BFV Commander's sight scenes are viewed in the CR CFP and the ASU. The ISU, CR and Auxiliary sight scenes, as viewed by the Gunner and Commander, are displayed by the same display equipment. Four in-use sensors (9) detect which sight is being used by the crew.

**WARNING**

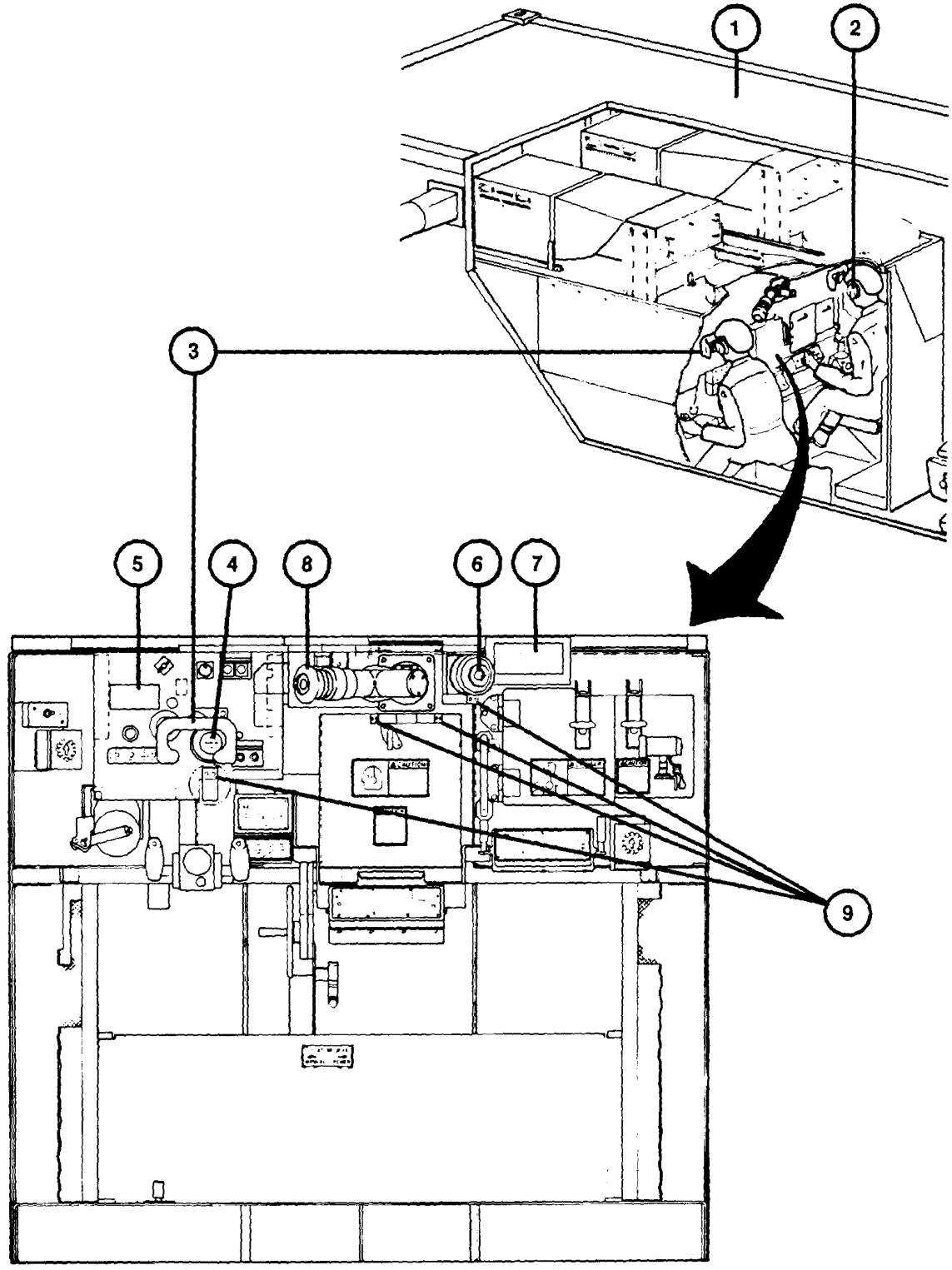
Do not look straight into the in-use sensors (9) when the eye is closer than 4 inches to the sensor. The sensors emit infrared radiation and can cause serious damage to eyesight.

When the crewman's head is moved close to the sight, the in-use sensor is turned on. The two in-use sensors for the Gunner's Station are mounted near the ISU and the ASU sights. When the Gunner moves his head to the ISU or ASU, a sensor is turned on. The GPC switches the scene to the sight the Gunner is using. When the Gunner is not using the ISU or the ASU, both in-use sensors are off, and the sight scene is shown on the ISUW. The two in-use sensors for the Commander's Station are mounted near the CR and the ASU. When the commander moves his head to the CR or ASU, a sensor is turned on. The GPC switches the scene to the sight the Commander is using. When the Commander is not using the CR or the ASU, both in-use sensors are off and the sight scene is shown on the CFP.

The 25mm Gun and turret pointing controls simulate those in the BFV. Each Power Control Handle and its manual backup system simulates the force, movement and resulting weapon system responses as in the BFV equipment. All palm switches, trigger switches, and manual firing handles are functionally simulated. Manual controls are blocked when in the powered or stabilized mode. Traverse and elevation are simulated by visual scene movement in the sights.

CREW STATION (Continued)

CREW STATION (Continued)



**CREW STATION (Continued)**

The following Crew Station equipment is simulated:

a. Utility and dome lights

b. HATCH INTERLOCK OVERRIDE, RADIO/INTERCOM, FAN DEFOGGER, and intercom floor switches.

c. Turret position indicators, gun elevation indicator and pointer, azimuth indicator and pointer, and slope indicators.

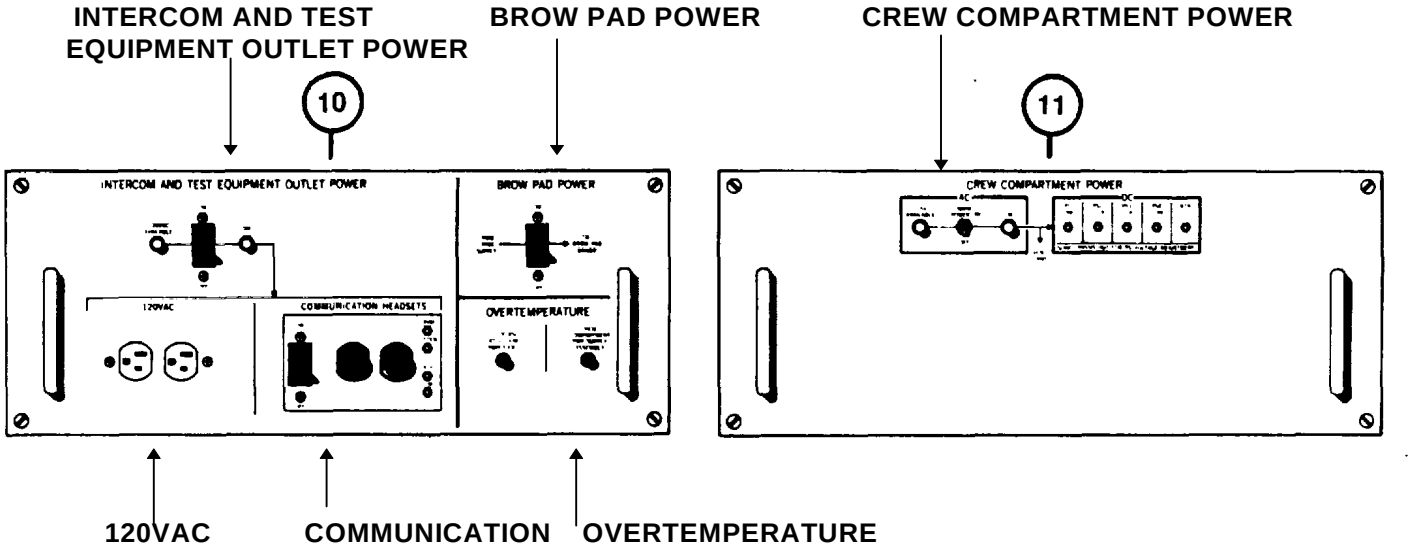
d. Turret travel lock, turret traverse drive select lever, TOW elevation drive select lever, gun elevation drive select lever, turret traverse handwheel and trigger, gun elevation handwheel, coax access doors, 7.62mm machinegun and mount, day and night sight cover handles, and browpad recoil.

e. ISU, ISUW, CR, CFP, and auxiliary sights.

f. Gunner's and commander's hand-stations, intercom control boxes, turret control box, weapon control box, TOW control box, and Annunciator box.

The positions of switches and controls are monitored by the GPC. The GPC senses any change in controls which will affect the visual scene and sends this information to the SPC. The SPC responds by changing the visual scene accordingly; such as reticle lay, own weapon fire, and turret traverse. The GPC also determines when the crew station equipment requires an input and simulates this input by initiating browpad recoil, panel lights and indicator readouts. The GPC can also block responses to the Crew Station actions to simulate malfunctions.

Utility Panel (10) and Power Panel (II) are on the front of the Crew Station. These panels are primarily for the use of maintenance personnel. However, the Crew Station will not function unless the switch and circuit breakers are on. The Instructor/Operator should be aware of these controls. In addition, overtemperature indicators are on Utility Panel (10). These indicators allow the Instructor/Operator to pinpoint the location of an overheated unit in the Crew Station.



## INSTRUCTOR OPERATOR STATION (IOS)

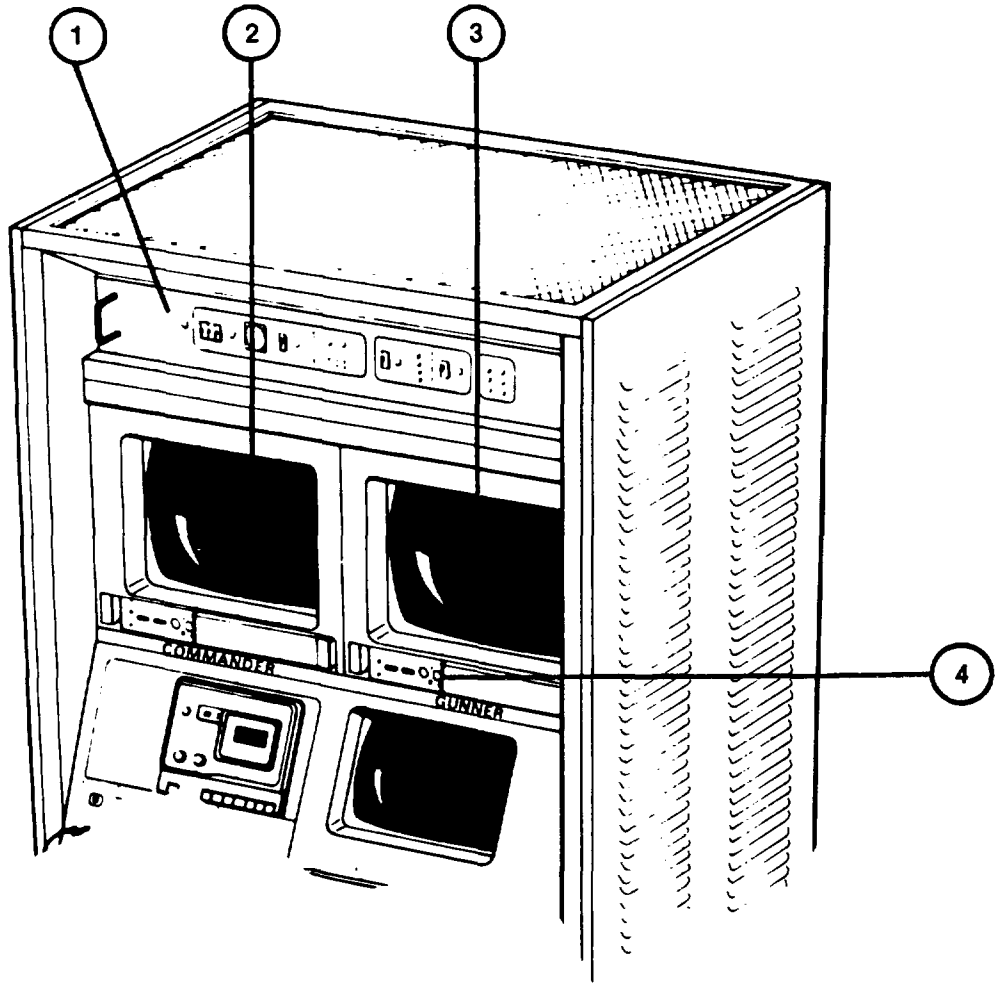
The Instructor/Operator sits at the 10S to control and monitor operation of the U-COFT. With the exception of power-up, power-down, and student activities in the Crew Station, operation of the system is initiated and controlled from the IOS.

### POWER PANEL

Power Panel (1) provides ac and dc power on/off control and power status indication for equipment in the Crew Station and IOS. An elapsed-time indicator also shows the total time that the 1OS has been operating.

### SIGHT SCENE MONITORS

Two identical sight scene monitors, one for the Commander (2) and one for the Gunner (3), provide the same views being observed in the Crew Station sights in use. The monitors let the Instructor/Operator observe how well the students are performing target acquisition, tracking, reticle aim, etc. Brightness and contrast controls (4) in the lower left corner of each monitor allow the Instructor/Operator to adjust the scenes for his viewing preference.



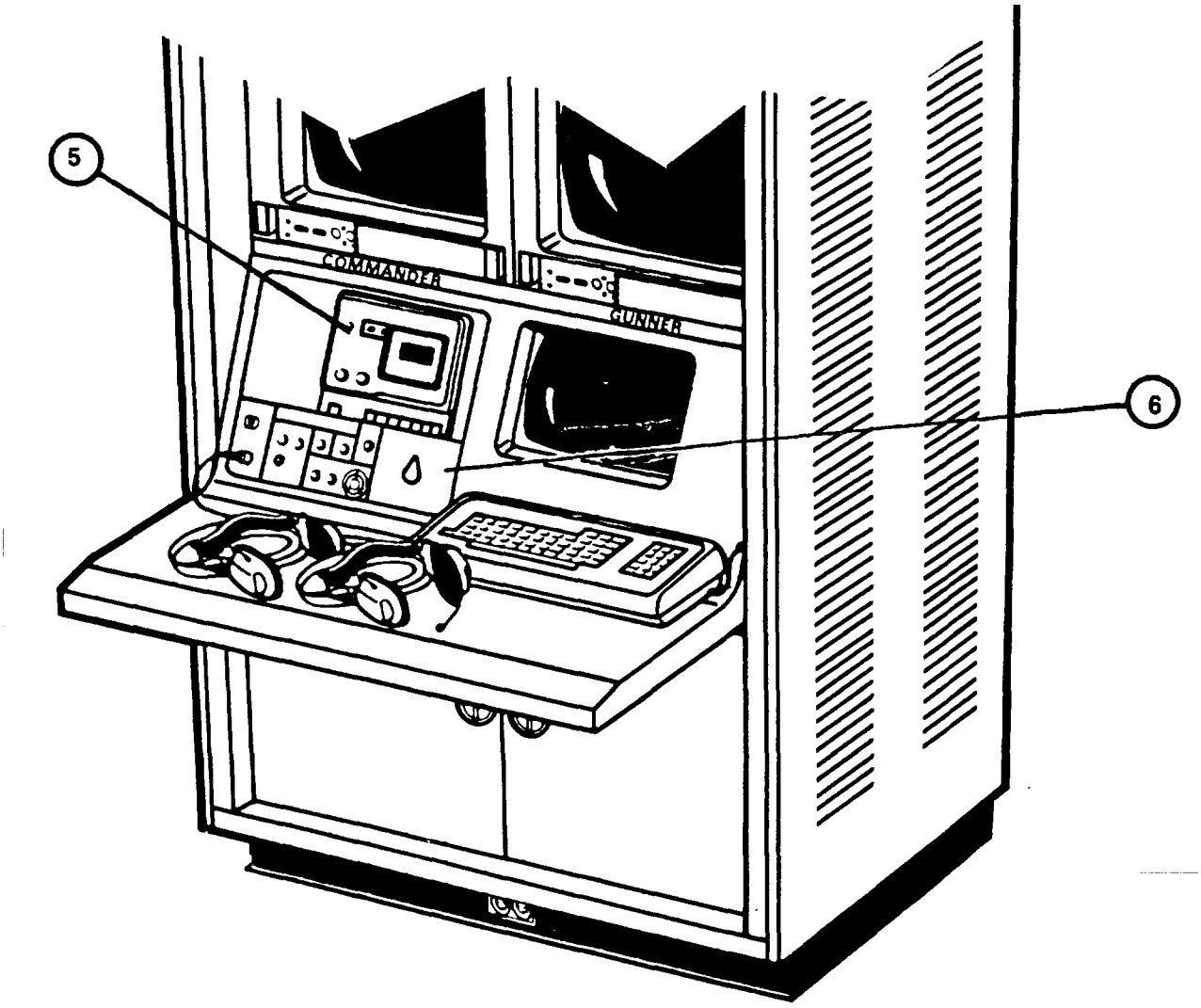
**INSTRUCTOR OPERATOR STATION (IOS) (Continued)**

**TAPE RECORDER**

The IOS Tape Recorder (5) output is connected to the intercom system. It provides pre-recorded descriptions during orientation training exercises. The Instructor/Operator may also use the Tape Recorder to record voice communications during an exercise for later review with the students.

**COMMUNICATION PANEL**

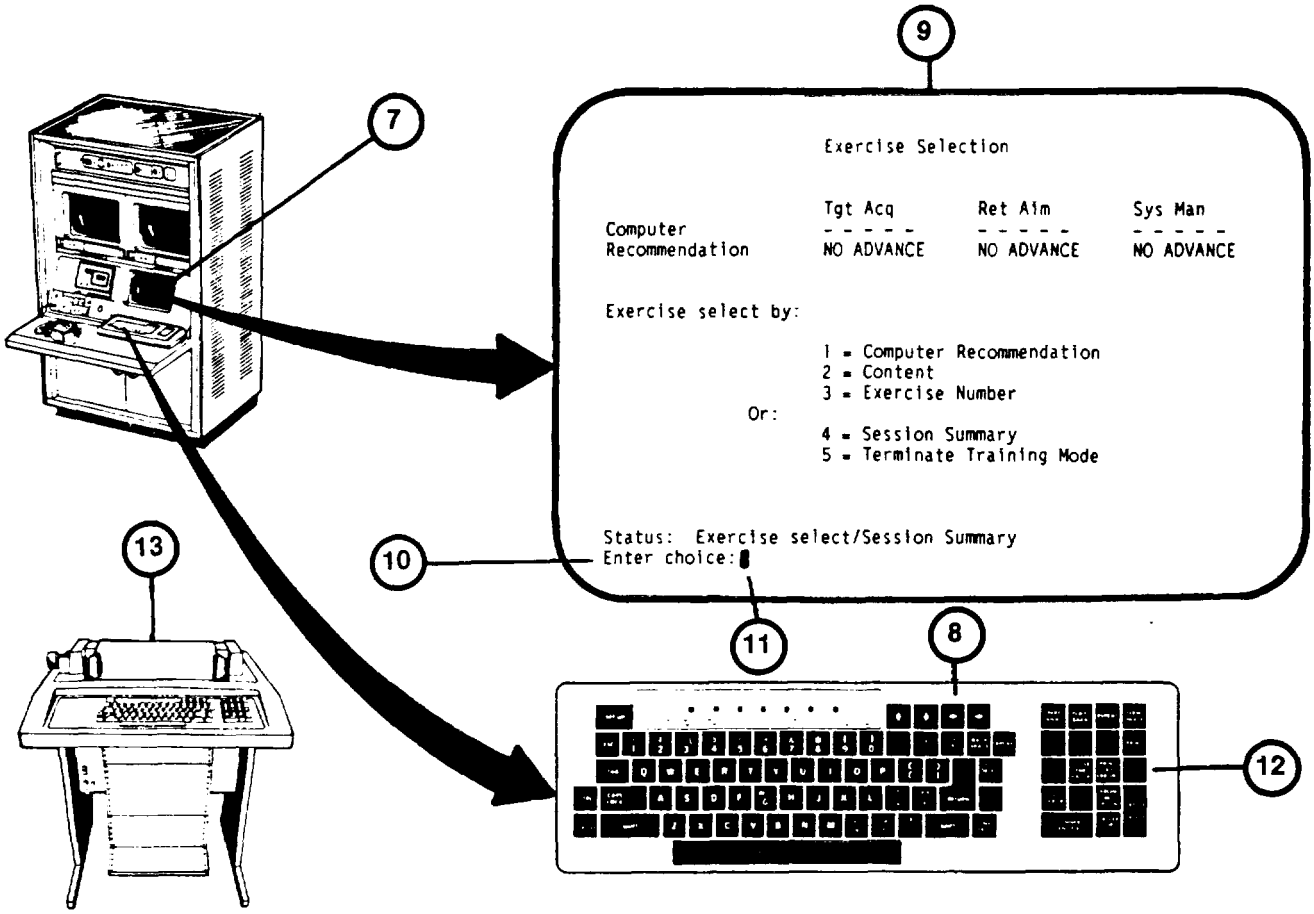
The Communication Panel (6) provides a headset jack and volume control for the Instructor/Operator's intercommunication with the Crew Station students. Two headset with press-to-talk switches and a splitter cable are provided for use at the Communication Panel. The aural cues volume control adjusts the level of tank and battle sounds heard over the intercom system. A monitor assignment switch lets the Instructor/Operator interchange the views on



**INSTRUCTOR OPERATOR STATION (IOS) (Continued)**

**DISPLAY TERMINAL**

The Display Terminal screen (7) is an output device for the GPC and displays alpha-numeric information received from the GPC. The Display Terminal keyboard (8) is an input device for the GPC and is similar to a standard typewriter keyboard. The Display Terminal directs the user by showing pages of written information (9) with prompting statements or questions (10). The prompt (10) is followed by a blinking cursor (I ) when the computer requires an input from the Instructor/Operator. He responds to the prompt by entering the required data at the keyboard (8). When the data is typed in, it will appear on the screen next to the prompt (II). If an error is made, the typed data can be deleted and corrected symbol by symbol. To correct, the DELETE key on the keyboard (8) is pressed and the proper number or letter entered. When the correct data has been typed in, the RETURN key must be pressed to enter the data in the GPC before operation can continue. The Keypad (12) is used to initiate an input to the GPC to record commands issued verbally by the students during training exercises. The Keypad (12) also provides one key inputs to control exercise performance; such as, starting/stopping, playing back part of the exercise, repeating the exercise, analyzing performance, or printing a display on the Terminal Printer (13).

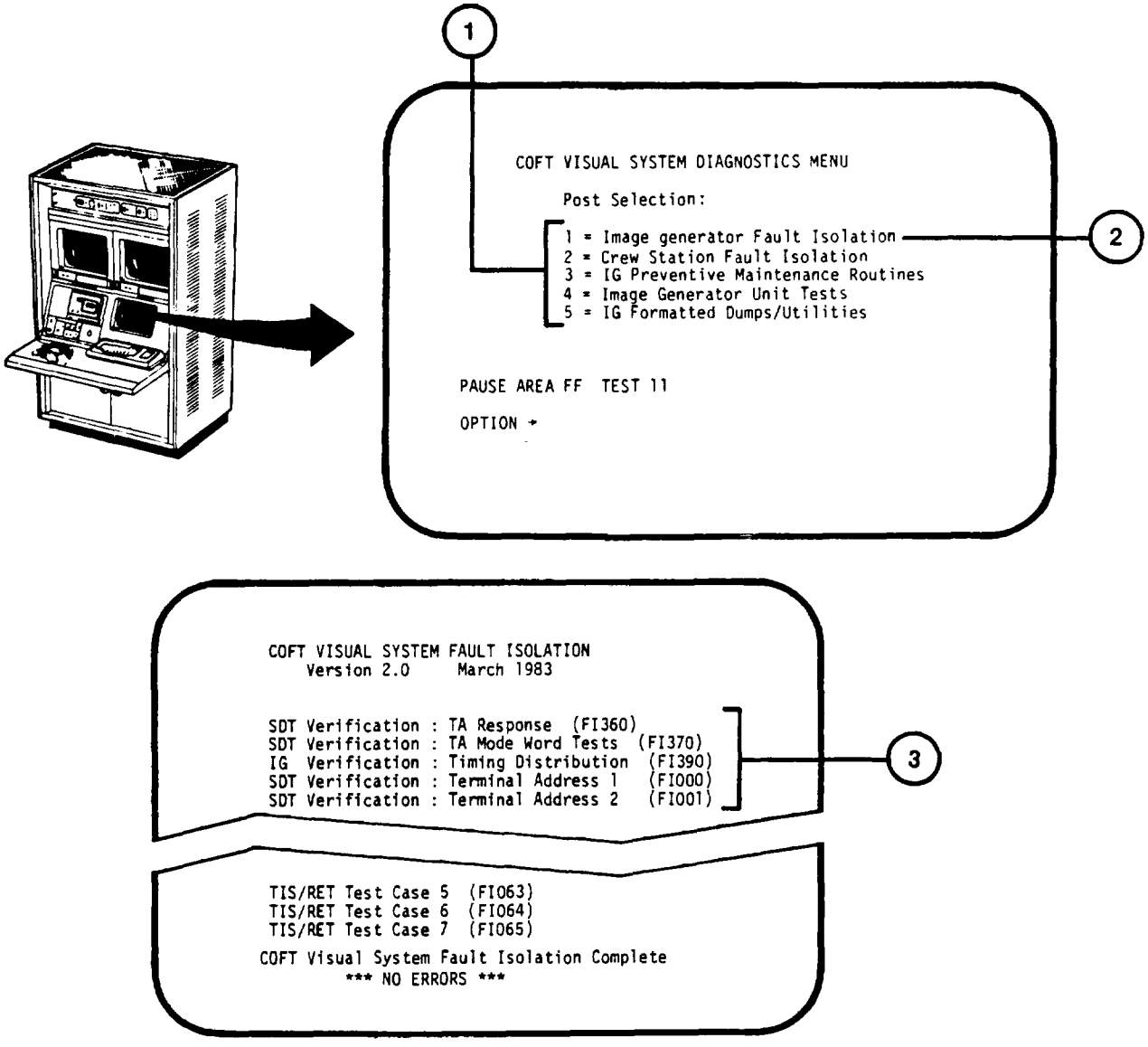


All flowchart data on this page and pages 1-33 thru 1-36 deleted.

## DIAGNOSTIC TEST PROGRAM (BUILT-IN TEST)

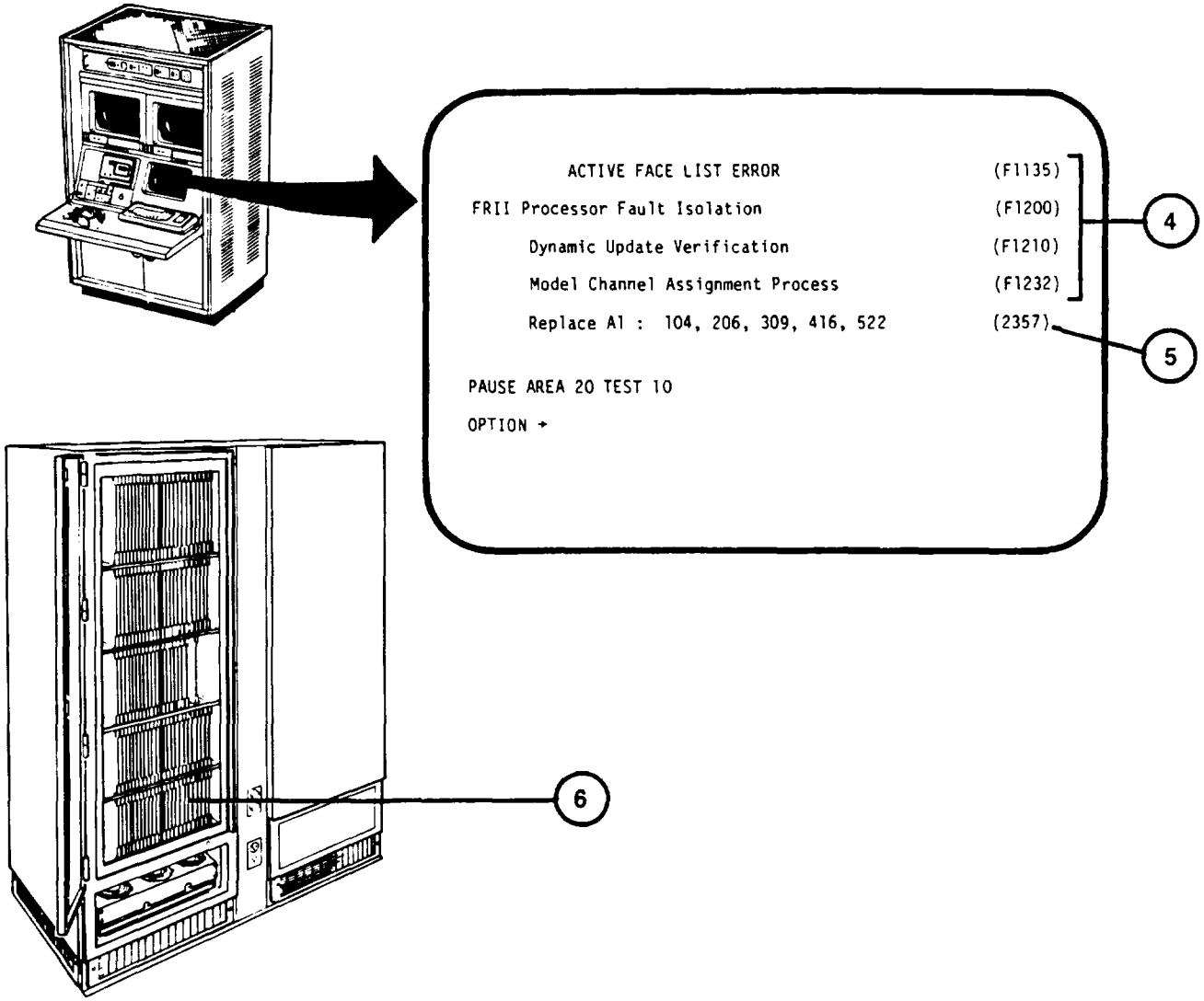
Diagnostic Tests for the U-COFT are automated, built-in tests to troubleshoot and isolate faults occurring in the SPC system. Diagnostic Test routines are stored in the GPC Disk Drive. The routines may be called up on the IOS Display Terminal when a problem with the system sight scenes occurs. There are five different levels of diagnostic test routines for the U-COFT (1). The only routine to be used for Instructor/Operator troubleshooting is the Image Generator Fault Isolation routine. If Fault Isolation does not detect the problem, Organizational Maintenance must be notified.

Diagnostic Tests are called up from the Mode Selection display page presented on the Display Terminal (see 2-40). When the COFT VISUAL SYSTEM DIAGNOSTICS MENU is displayed and number 1 = Image Generator (SPC) Fault Isolation (2) is selected, the GPC will automatically run the test. As each test function is performed, the test description (3) is displayed on the Display Terminal.



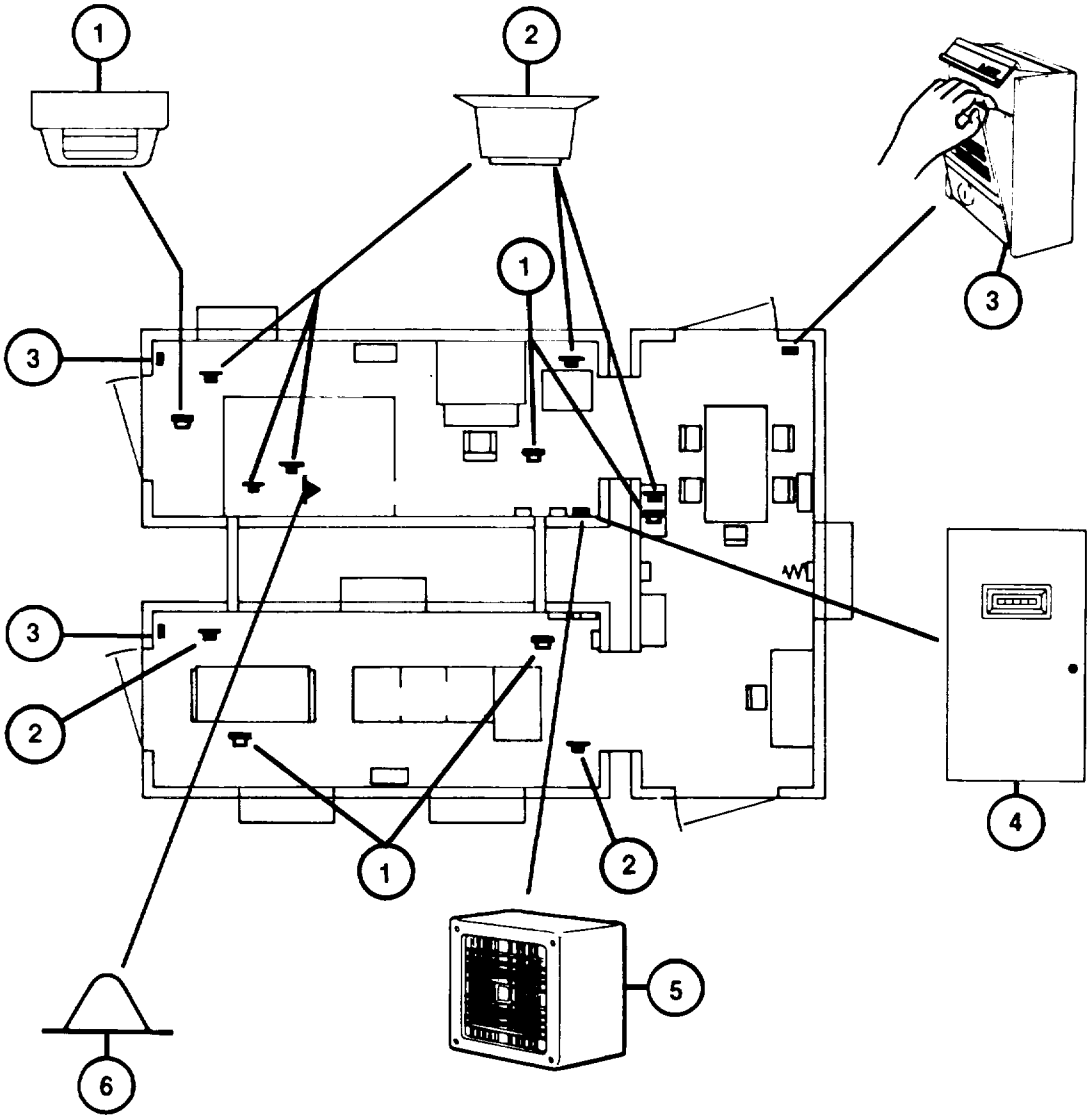
**DIAGNOSTIC TEST PROGRAM (BUILT-IN TEST) (Continued)**

If a fault is detected, the problem area is identified (4) and a replacement board list (5) is displayed. This list identifies Circuit Card Assemblies (CCA's) of the SPC (6) where a possible problem exists. The list may identify from one to twelve CCA's. The first CCA on the list is replaced with a spare CCA from stores (see 3-24). The test is resumed by pressing RETURN on the Display Terminal keyboard. If the replaced CCA did not correct replacement list will appear on the Display Terminal. The original CCA is then reinstalled and the next board on the list is replaced. The procedure is repeated until all CCA's on the list have been replaced or the program continues to completion, showing that the faulty CCA has been replaced. If all boards on the list have been replaced and the problem is not corrected, Organizational Maintenance must be notified to perform CCA did not other Diagnostic Tests and detailed same board troubleshooting.



SHELTER FIRE PROTECTION EQUIPMENT

The Shelters contain an automatically and manually initiated fire control system. Heat sensors (1) and smoke sensors (2) are located on ceilings of the Computer and Trainer Shelters and within the Crew Station Manual Pull Stations (3) for shelter personnel to sound an alarm are located at shelter exits. The sensors and Manual Pull Stations send a signal to the Fire Control Panel (4). In the Trainer Shelter. The Fire Control Panel Trainer (4) sounds an alarm horn (5) and flashes a strobe light (6) in the Crew Station if smoke or high temperatures are present in the shelters.



**SHELTER FIRE PROTECTION EQUIPMENT (Continued)**

In addition to the alarms, a fire control agent (halon) contained in storage bottles (7) is released if a heat sensor or Manual Pull Station is activated.

WARNING

Avoid halon dispensing nozzles (8) and (9) when a fire alarm sounds. Halon is released at pressures great enough to cause damage to eyesight or cause injuries from sudden personnel reactions.

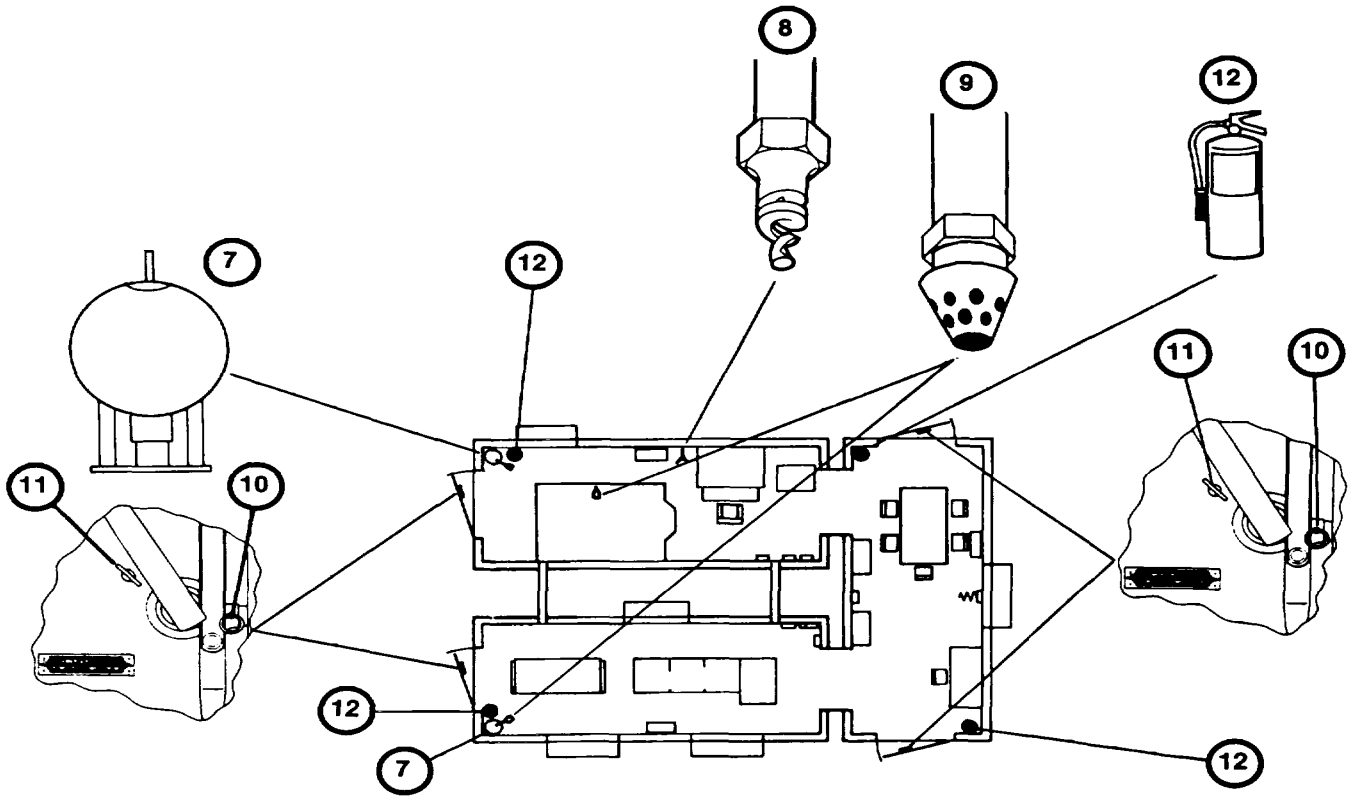
NOTE

Any shelter door locked on the outside may be released from the inside in an emergency situation. First, make sure that locking pin (10) is removed. Then, unscrew thumbscrew (11) to give the handle a sharp downward thrust to break the seal outside.

The halon release is delayed for 20 seconds to allow time for personnel to leave the shelters and close the doors. The halon agent is dispensed at high pressure through nozzles (8) and (9) in both the Computer and Trainer Shelters.

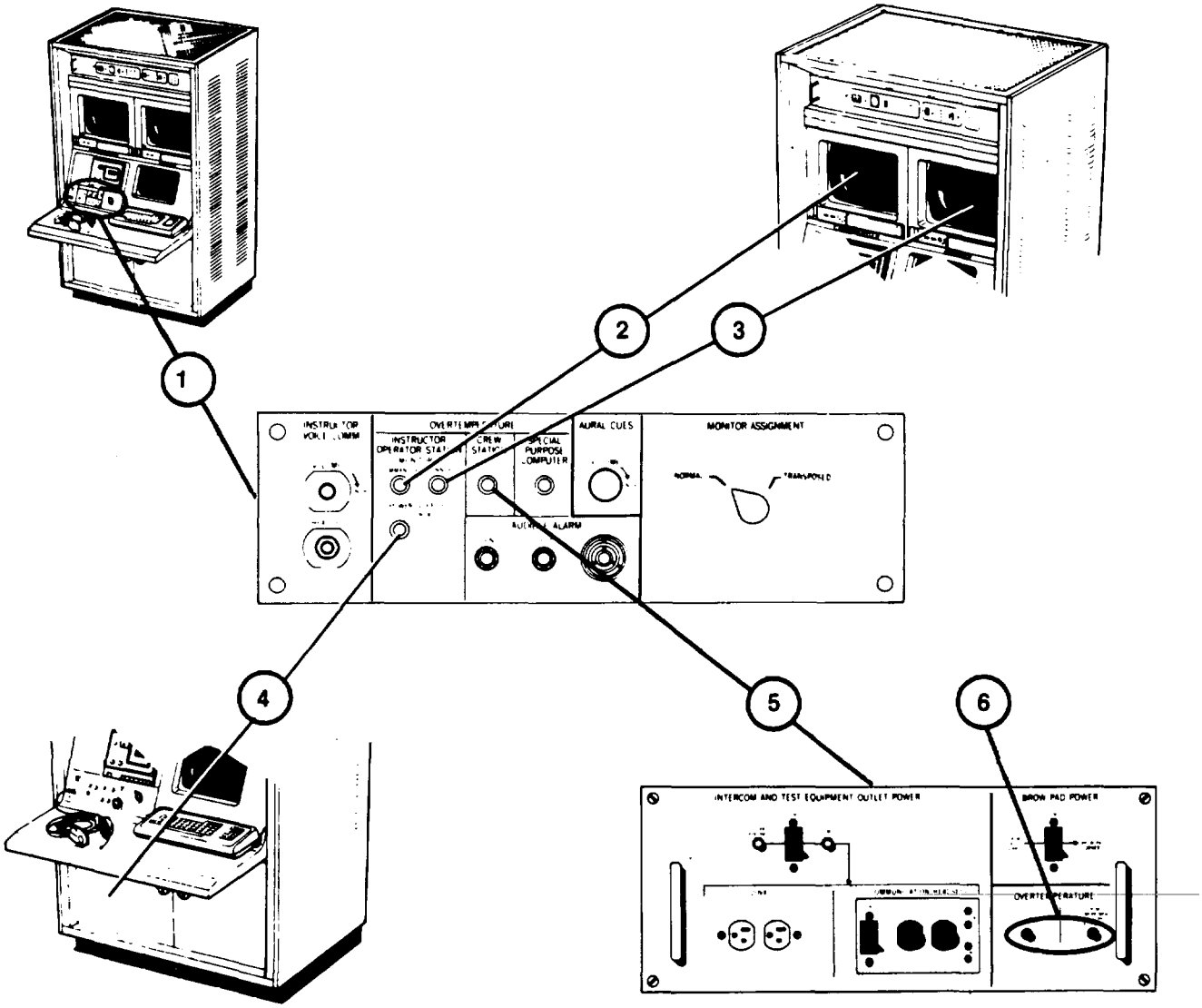
To prevent the spread of electrical fires, main power from the shelter distribution boxes is automatically shut off when an alarm is sounded. When this occurs the emergency lighting (on battery supply) turns on.

Hand-held halon fire extinguishers (12) are also located at each shelter exit. They are for use on small, contained fires discovered before an alarm is sounded.



## EQUIPMENT OVERTEMPERATURE ALARM SYSTEM

Overtemperature indicators and a buzzer on the IOS Communication Panel (1) inform the Instructor/Operator that an overtemperature condition exists in the IOS, Crew Station, or SPC cabinet. The indicators identify the location of he problem so that the Instructor/Operator can take corrective action. The Overtemperature indicators for the IOS pinpoint the location to the Commander's Monitor (2), Gunner's Monitor (3), or ISU/CR/ASU Power Supply (4). The Crew Station overtemperature indicator -(5) identifies an overtemperature condition exists somewhere in the Crew Station. The Power Panel on the lower front portion of the Crew Station contains two additional overtemperature indicators (6) to pinpoint the location of the problem within the Crew Station.



**EQUIPMENT OVERTEMPERATURE ALARM SYSTEM (Continued)**

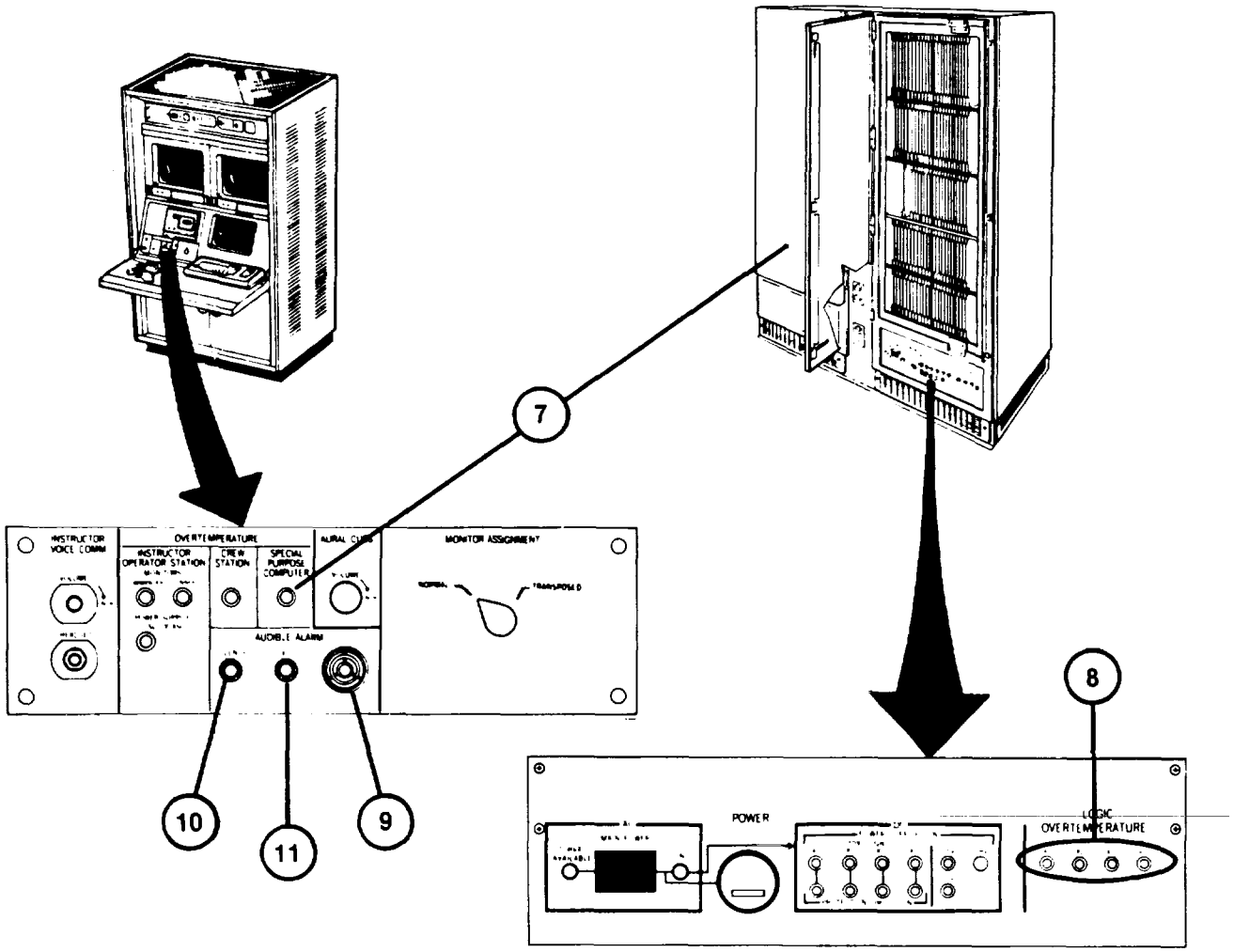
The SPC Overtemperature indicator (7) indicates an overtemperature condition in one of the SPC cabinets. The SPC Power Management Panel contains four additional overtemperature indicators (8) to pinpoint the problem to one of the four SPC logic card file assemblies.

An AUDIBLE ALARM buzzer (9) on the Communication Panel alerts the Instructor/Operator of an overtemperature condition. He may silence the alarm by pressing the SILENCE pushbutton (10), but the overtemperature light will remain on until the problem is corrected.

TEST pushbutton (11) allows the Instructor/Operator to test the buzzer and verify that it is operable.

Additional overtemperature sensors in the SPC will shut off the SPC subcircuit breaker in the Electronics Power Distribution Panel if the temperature approaches a hazardous level.

Overtemperature sensors in the ceilings of the Computer Shelter and Trainer Shelter are connected into the fire protection system (see 1-39).



## POWER DISTRIBUTION AND PROTECTION

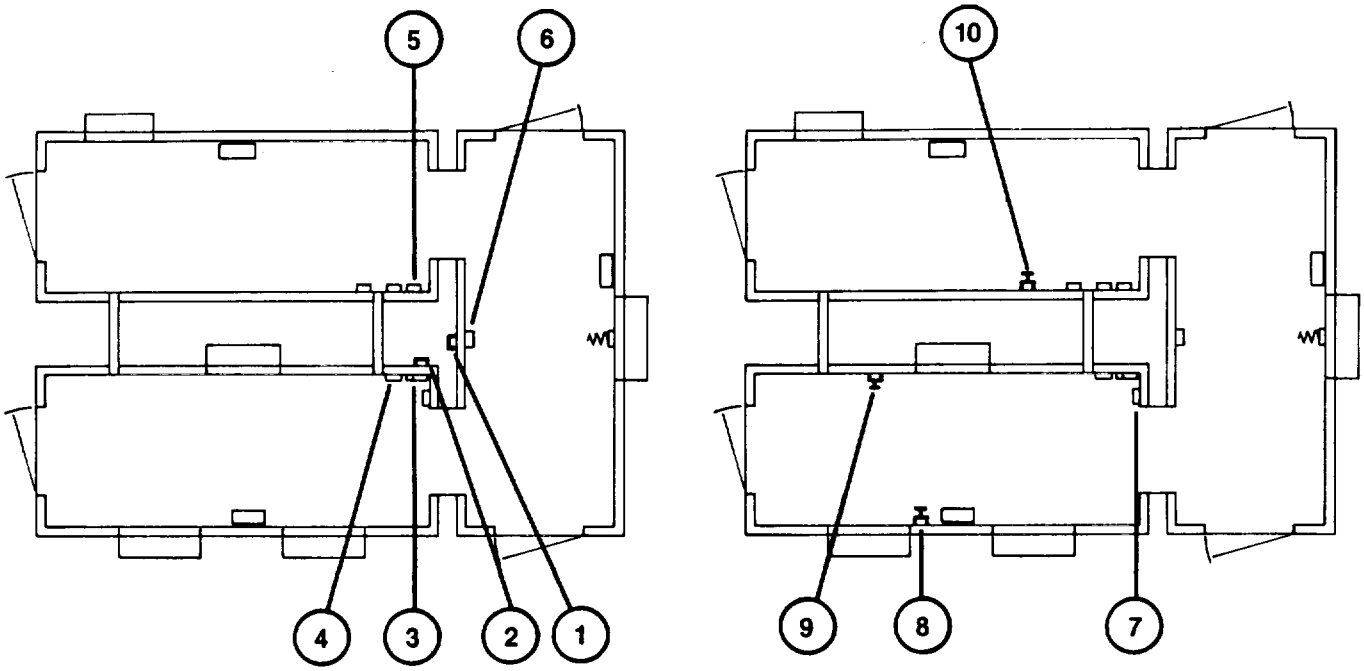
External power is connected at entry panels in the Integration Shelter (1) and the Computer Shelter (2). Power for the electronics equipment in the Computer and Trainer Shelters is fed from the Electronics Power Distribution Panel (3) in the Computer Shelter. The panel contains a main circuit breaker and seven subcircuit breakers for the protection of the individual electronic sub-system circuits.

Utility power for lighting, wall plugs and air conditioners in the Computer and Trainer Shelters is fed from the Utility Power Distribution Panel (4) in the Computer Shelter. The panel (4) contains a main circuit breaker and ten subcircuit breakers for individual circuit protection of the lighting, wall plugs and air conditioners. One of the circuits is used to feed the Fire Protection Panel (5) in the Trainer Shelter.

Utility power for lighting, wall plugs and the air conditioner in the Integration Shelter is fed from the Utility Power Distribution Panel (6) in the Integration Shelter. The panel contains a main circuit breaker and four subcircuit breakers for the protection of the lighting, wall plug and air conditioner circuits.

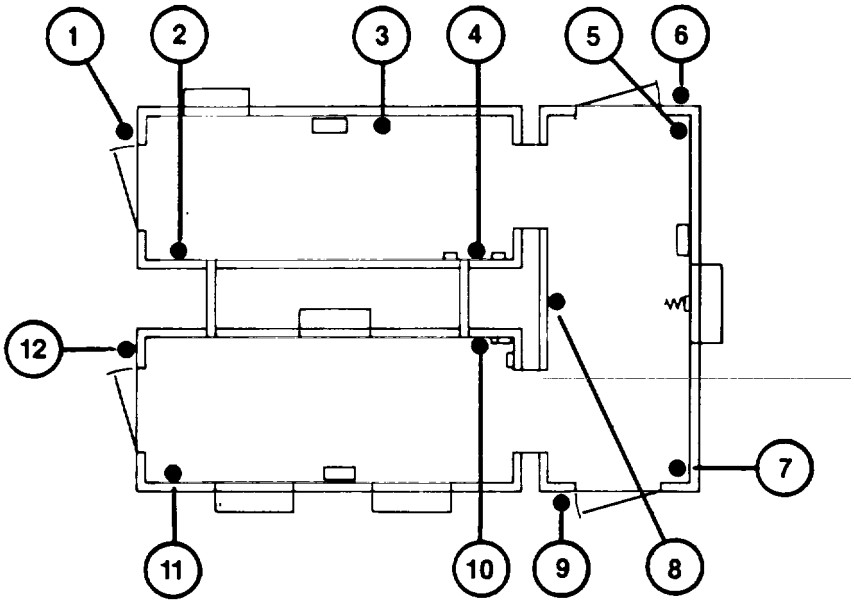
All of the circuit breakers provide on/off control as well as overload protection. If a circuit breaker trips because of an overload protection. If a circuit breaker trips because of an overload, a red flag appears on the switch. To reset, the circuit breaker must be set to OFF, then ON again.

Power Monitor Panel (7) initiates automatic power shutdown in the even of external power faults. A control circuit, fed from the Fire Protection Panel (5), shuts down all AC Power in the event of a fire alarm or manual emergency shutdown. Emergency off push-button switches (8), (9), and (10) are located on the walls of the Computer and Trainer Shelters.



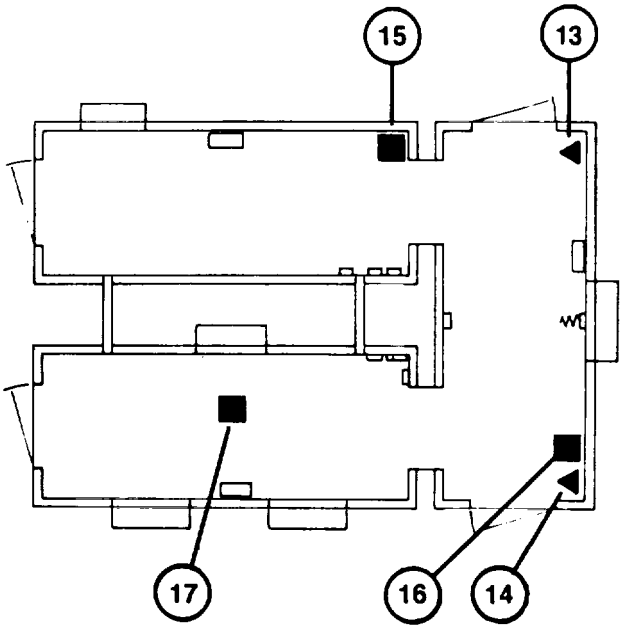
## UTILITY OUTLETS

Duplex utility outlets (I through 12) are provided on the interior and exterior walls of each shelter. Each duplex outlet provides 120 volts ac for the connection of test equipment, auxiliary lighting, etc. The exterior outlets are weatherproofed. All of the outlets are protected by Ground Fault Interrupters to assure near instantaneous opening of the circuit breakers to protect personnel from electrical shock if a fault occurs in equipment connected to the outlets.




## TELEPHONE AND COMPUTER DATA LINK JACKS

Modular type telephone jacks (13 and 14) are located at each end of the Integration Shelter. The computer data link jacks (15, 16, and 17) provide modem connections for computer maintenance.



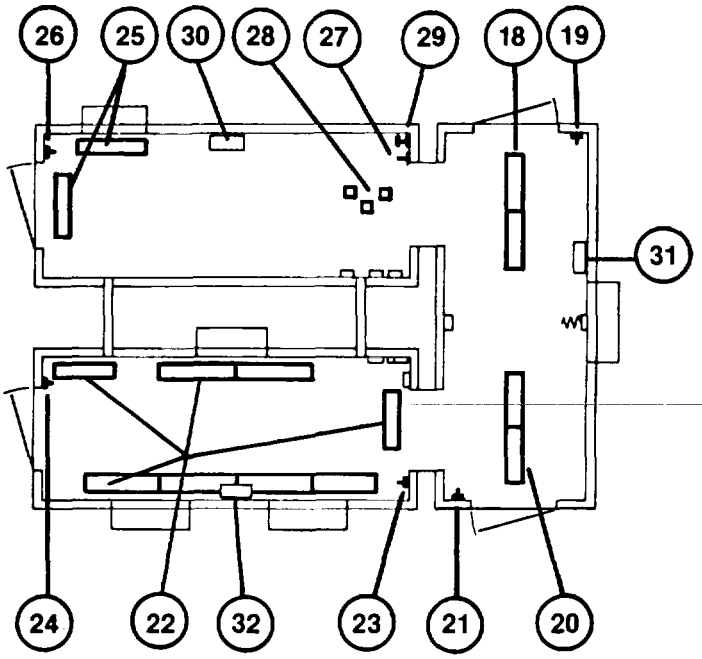
**LIGHTING**

Each shelter is provided with normal and emergency lighting. The Integration Shelter is equipped with overhead fluorescent lighting. The lighting in the briefing area (18) is controlled by wall switch (19). The lighting in the maintenance area (20) is controlled by wall switch (2 1).

The Computer Shelter contains corner mounted fluorescent lights (22) which are controlled from either wall switch (23) or (24).

The Trainer Shelter contains corner mounted fluorescent lighting (25) which are controlled by either wall switch (26) or (27). The Trainer Shelter also contains a three-foot track light with three 100 watt incandescent lamps (28). The on/off control and brightness for the track lights is controlled from dimmer switch (29).

Emergency lights (30), (31) and (32) are provided on the shelter walls. Each light contains 2 battery-operated lamps that turn on automatically when lighting supply voltage is turned off by the utility panel associated circuit breaker.

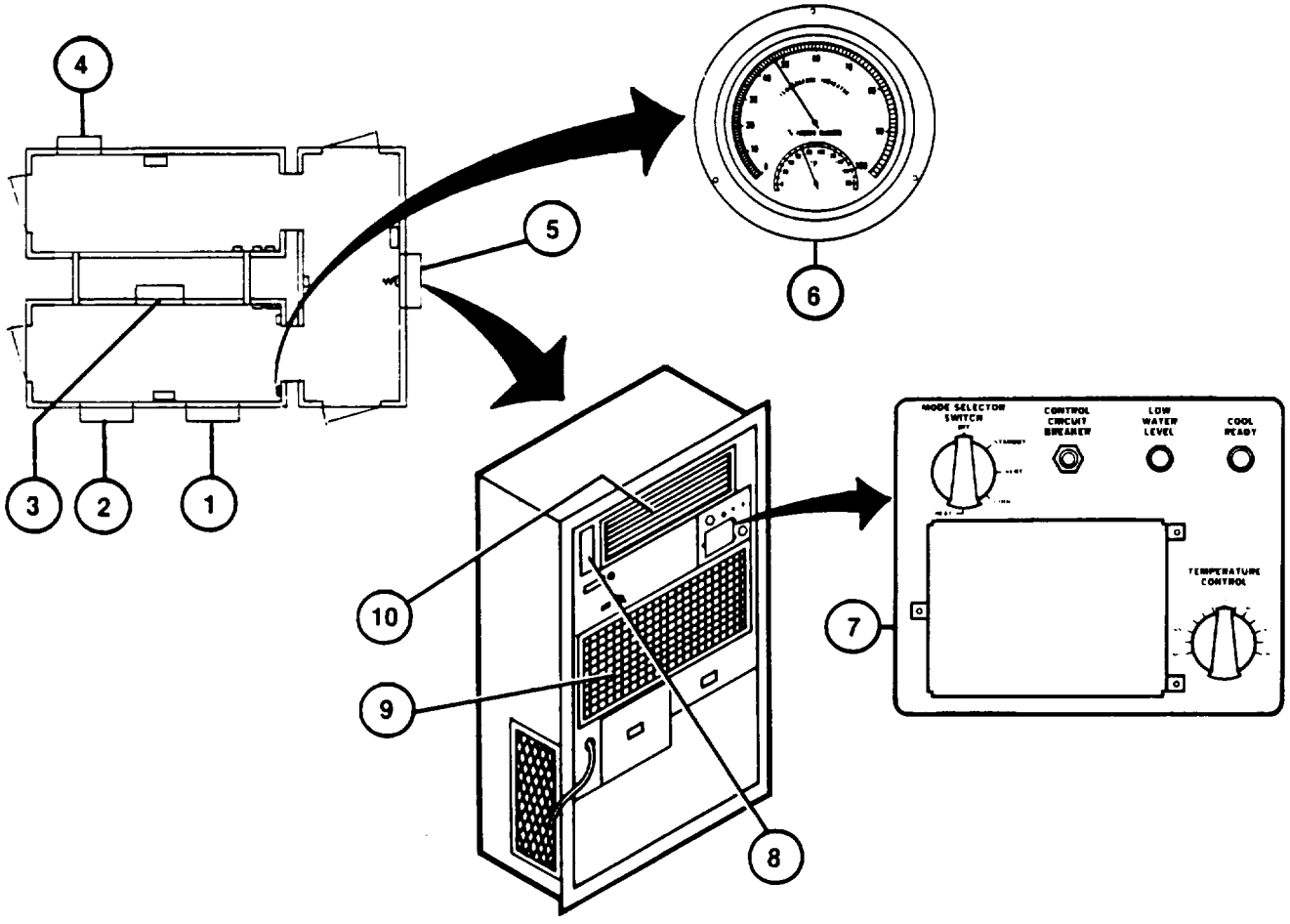


## AIR CONDITIONING UNITS

Five identical air conditioning units (1, 2, 3, 4 and 5) are mounted through openings in the outer walls of the U-COFT Shelters. Temperature and humidity conditions within the shelters are shown on indicator (6) located in the Computer Shelter.

The air conditioners provide heating, cooling and humidity control for the shelters. Three units (1, 2 and 3) are provided in the Computer Shelter. One unit (4) is in the Trainer Shelter and one unit (5) in the Integration Shelter. The air conditioning units are mounted flush with the interior walls. Two legs and a frame support the air conditioners on the outside of the shelters.

A control panel (7) in the front, upper right hand of each unit provides on/off control, mode selection (heat, cool, etc.) and temperature control. The controls for each unit are independent and must be set individually. The humidifier water tank is filled, manually, from the front, through the water filler cap (8). When the air conditioners are operating, air from the shelters enters the lower grill (9) where it is filtered. The air is then conditioned and blown into the shelters through adjustable louvers (10).

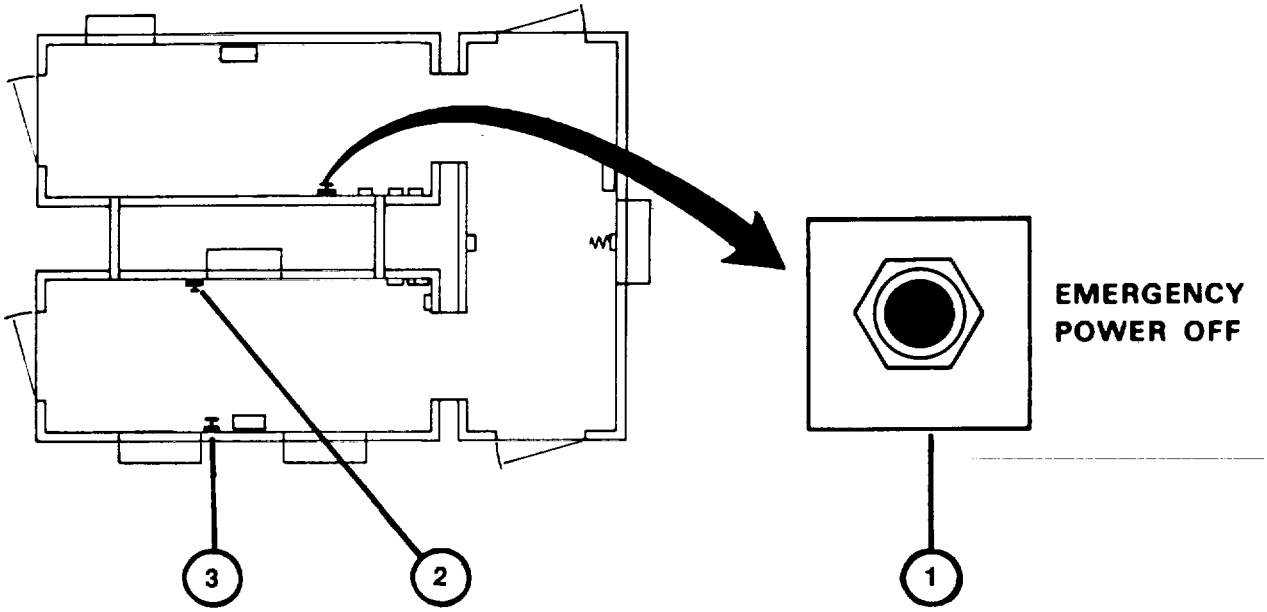


# CHAPTER 2

# OPERATING INSTRUCTIONS

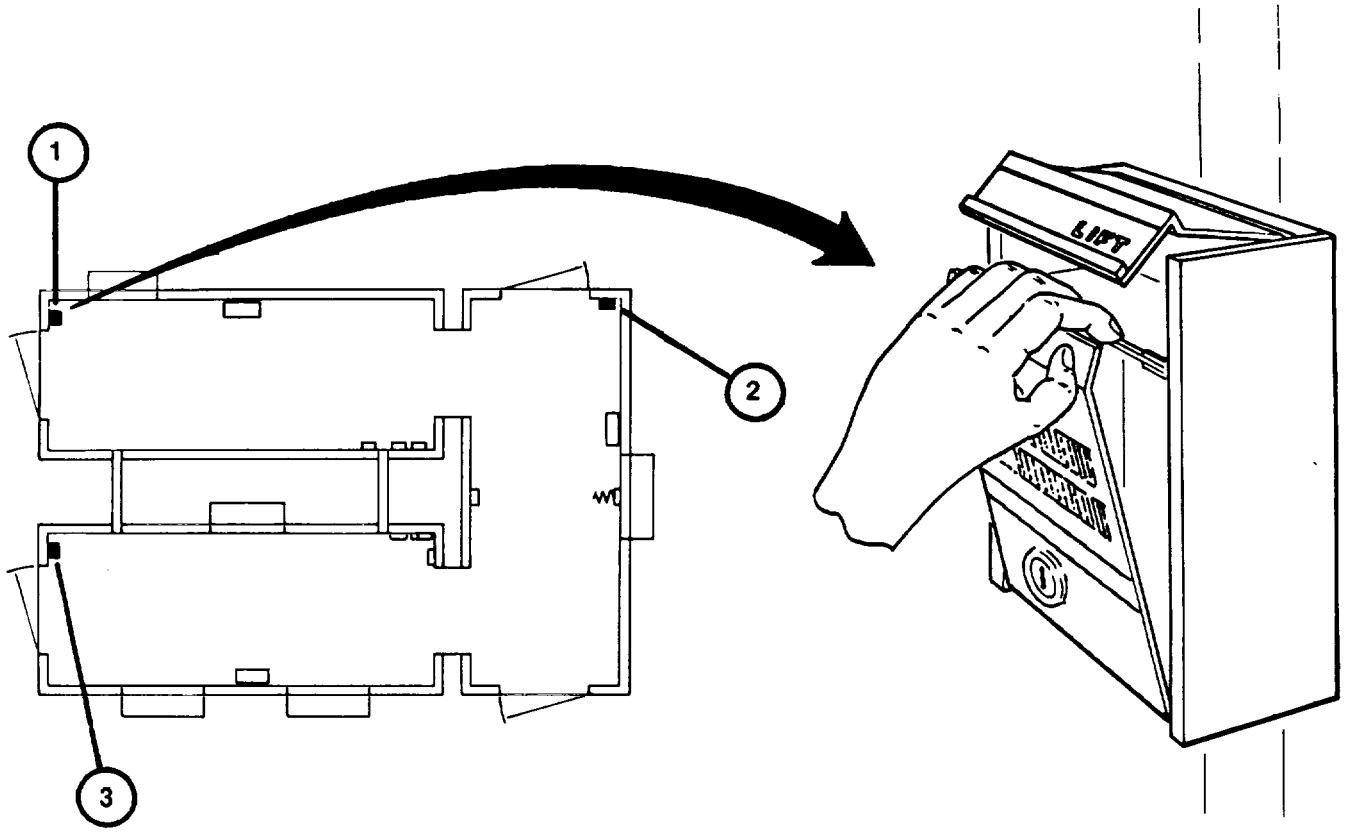
## Section I. DESCRIPTION AND USE OF CONTROLS AND INDICATORS

### SHELTER EMERGENCY SHUTDOWN SWITCHES




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | EMERGENCY POWER OFF pushbutton switch | When pressed, trips Main circuit breakers in Shelter Power Distribution Panels and turns off all ac power in Shelters. |
| 2 | EMERGENCY POWER OFF pushbutton switch | Same as (l) |
| 3 | EMERGENCY POWER OFF pushbutton switch | Same as (1) |

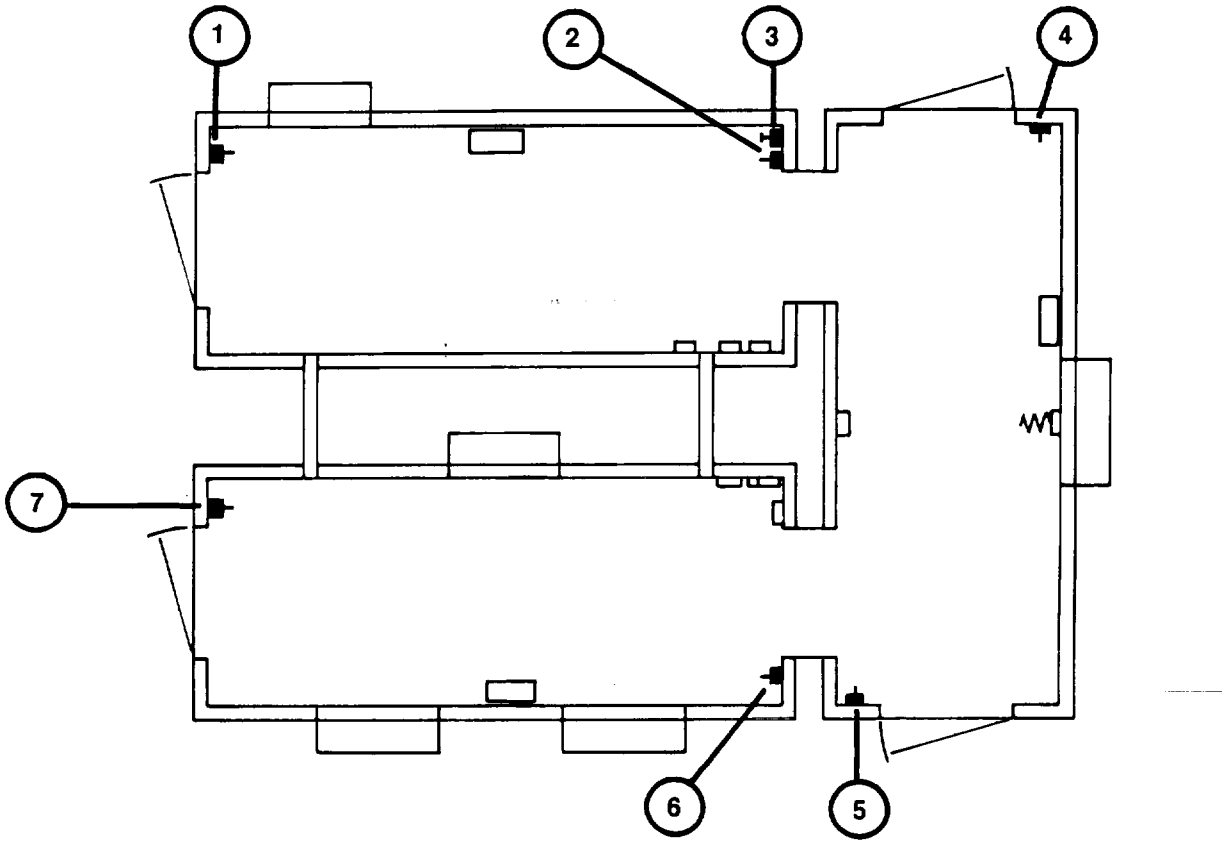
**SHELTER MANUAL FIRE ALARMS**




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | LIFT-HALON RELEASE Manual Pull Station | When cover is lifted and front door pulled forward, fire alarm horn sounds, Shelter ac power is turned off and after 20-second delay Halon fire suppressant is released. |
| 2 | LIFT-HALON RELEASE Manual Pull Station | Same as (I) |
| 3 | LIFT-HALON RELEASE Manual Pull Station | Same as (**1)** |

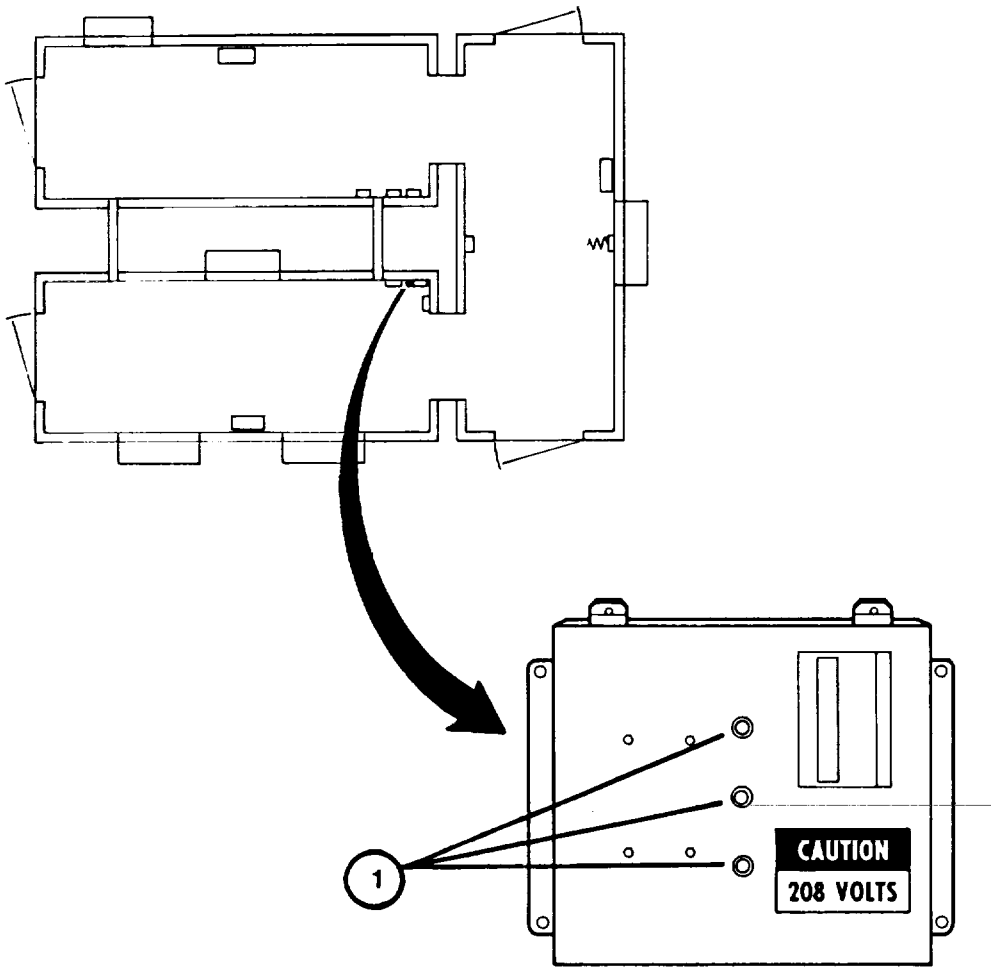
## SHELTER LIGHTING SWITCHES

### SHELTER LIGHTING SWITCHES



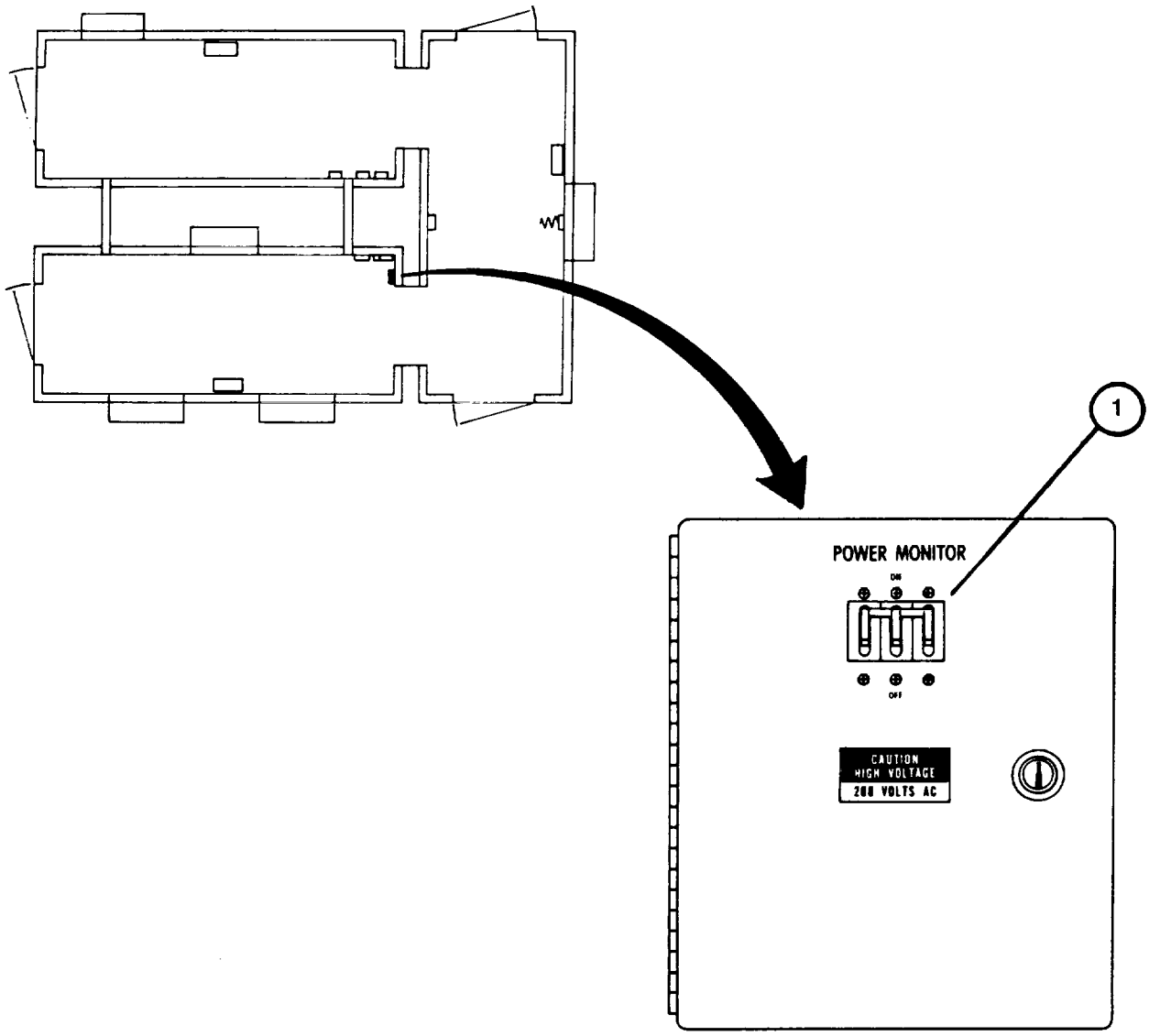

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Wall Switch | On/off control for Trainer Shelter fluorescent lights. |
| 2 | Wall Switch | Same as (1 ) |
| 3 | Wall Dimmer Switch | Press for on/off control of track lights, turn clockwise to increase brightness. |
| 4 | Wall Switch | On/off control for Integration Shelter briefing area fluorescent lights. |
| 5 | Wall Switch | On/off control for Integration Shelter maintenance area fluorescent lights. |
| 6 | Wall Switch | On/off control for Computer Shelter fluorescent lights. |
| 7 | Wall Switch | Same as (6) |

**COMPUTER SHELTER AC POWER LINE PROTECTION PANEL**



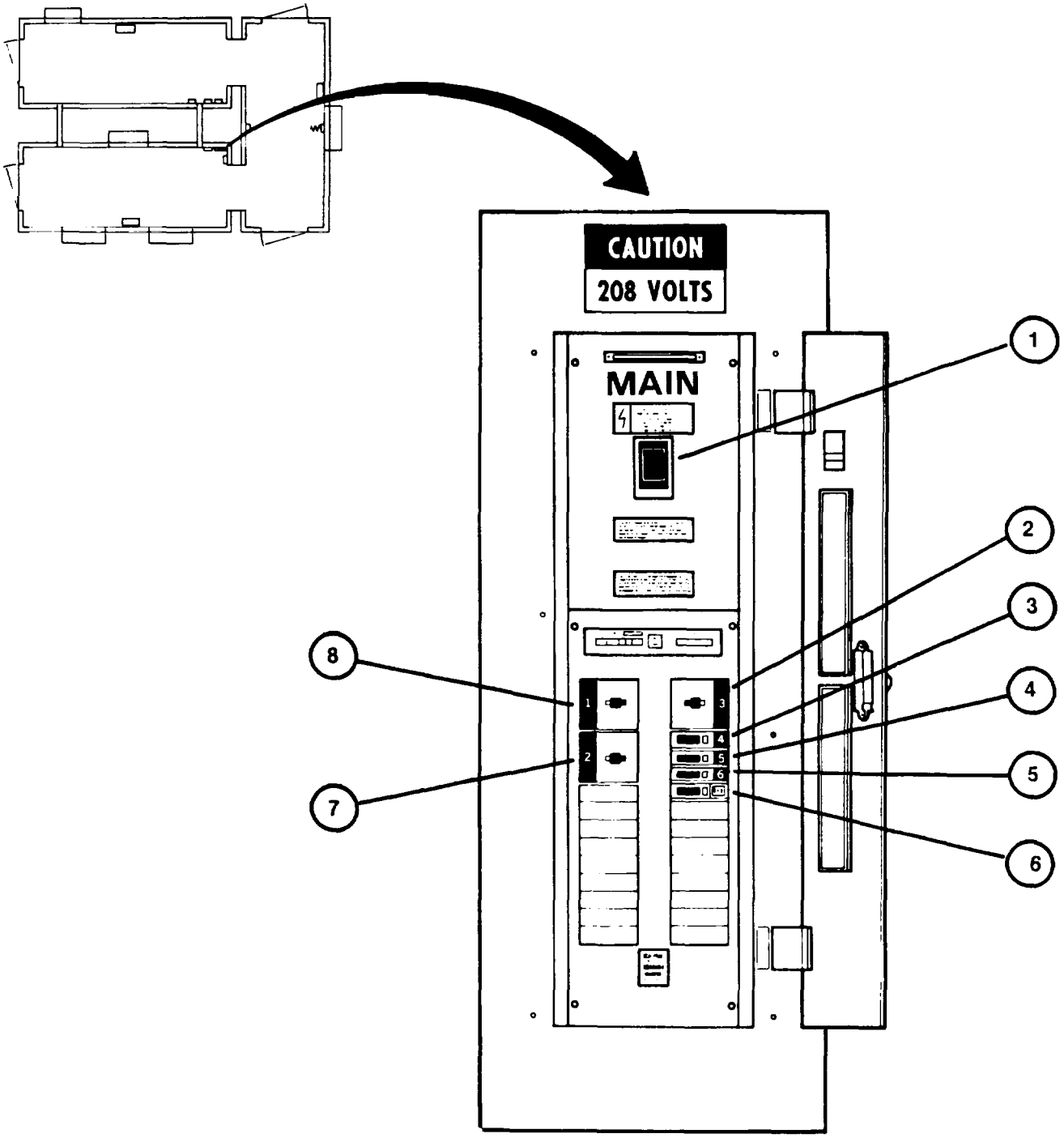

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | 3-Phase Main Power Indicators | Three indicators light green when 208 volt ac, 3-phase power is available to Computer Shelter. |

**COMPUTER SHELTER POWER** MONITOR PANEL




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | ON/OFF Circuit Breaker CBI | On/off control and overload protection for 208 volt ac, 3-phase power input to Power Monitor Panel. |

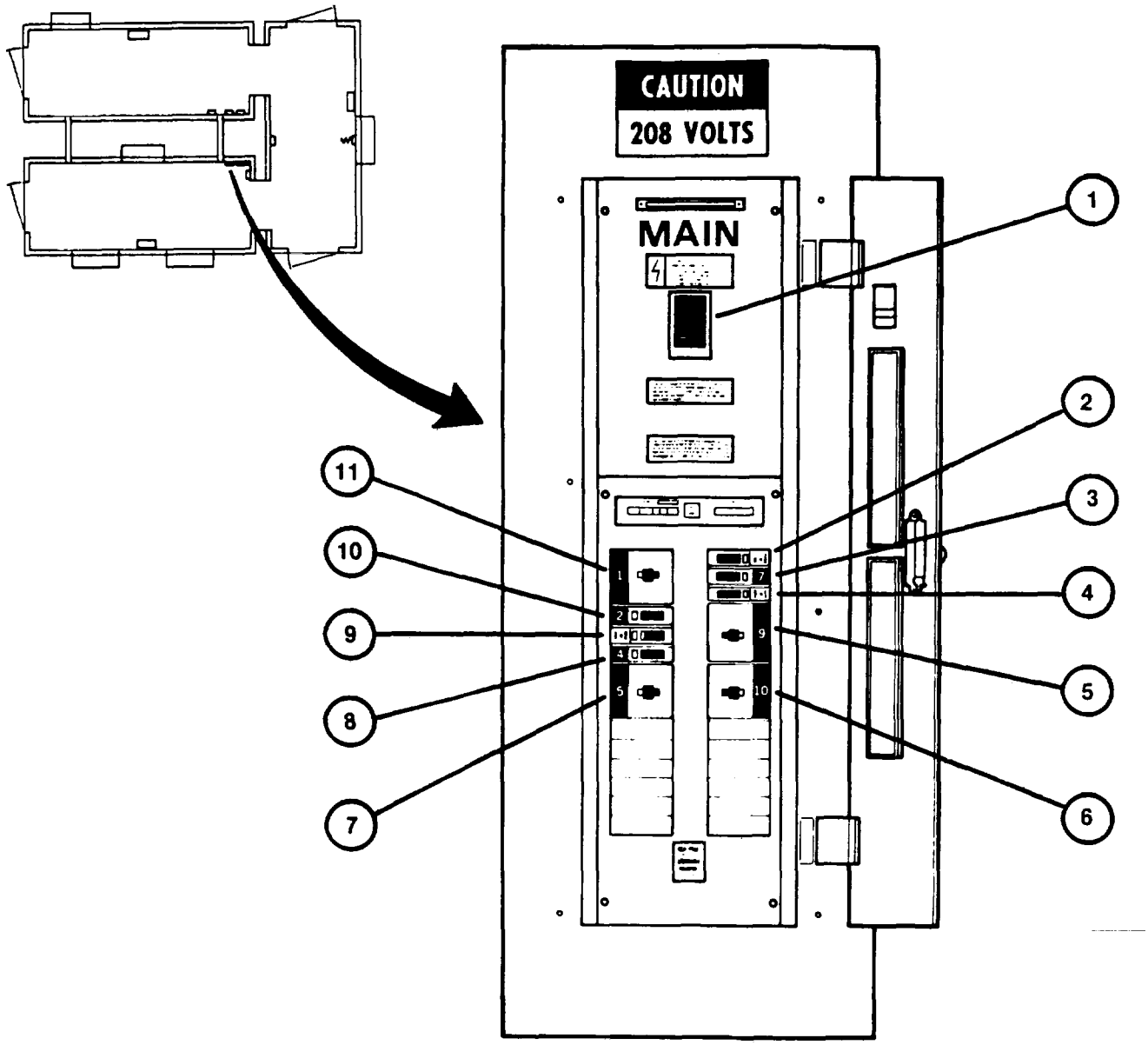
**COMPTER SHELTER ELECTRONIC POWER DISTRIBUTION PANEL**



**COMPUTER SHELTER ELECTRONIC POWER DISTRIBUTION PANEL (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | MAIN Circuit Breaker | On/off control and overload protection for main 208 volt ac, 3-phase power to electronic circuits in the Computer and Trainer Shelters. |
| 2 | Circuit Breaker CB3 | On/off control and overload protection for 208 volt ac, 3-phase power to General Purpose Computer Main Cabinet. |
| 3 | Circuit Breaker CB4 | On/off control and overload protection for 120 volt ac power to General Purpose Computer Expansion Cabinet. |
| 4 | Circuit Breaker CB5 | On/off control and overload protection for 120 volt ac power to Disk Drive Unit. |
| 5 | Circuit Breaker CB6 | On/off control and overload protection for 120 volt ac power to Terminal Printer and Remote Monitor Station. |
| 6 | Circuit Breaker CB7 | On/off control and overload protection for 120 volt ac power to base receptacles in Special Purpose Computer. Contains Ground Fault Interrupter and Push-To-Test button. |
| 7 | Circuit Breaker CB2 | On/off control and overload protection for 208 volt ac, 3-phase power to Instructor Operator Station and Crew Station. |
| 8 | Circuit Breaker CB1 | On/off control and overload protection for 208 volt ac, 3-phase power to Special Purpose Computer. |

**COMPUTER SHELTER UTILITY POWER DISTRIBUTION PANEL**

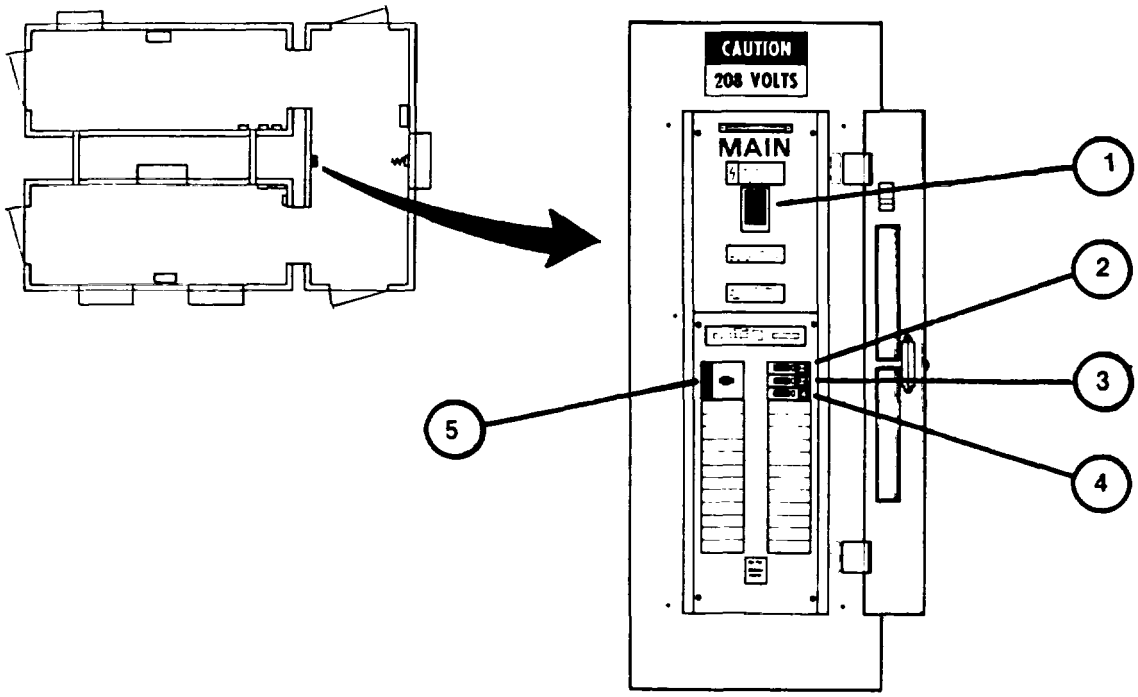



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Main Circuit Breaker | On/off control and overload protection for main 208 volt ac power to utility circuits in the Computer and Trainer Shelters. |

**COMPUTER SHELTER UTILITY POWER DISTIRBUTION PANEL (Continued)**

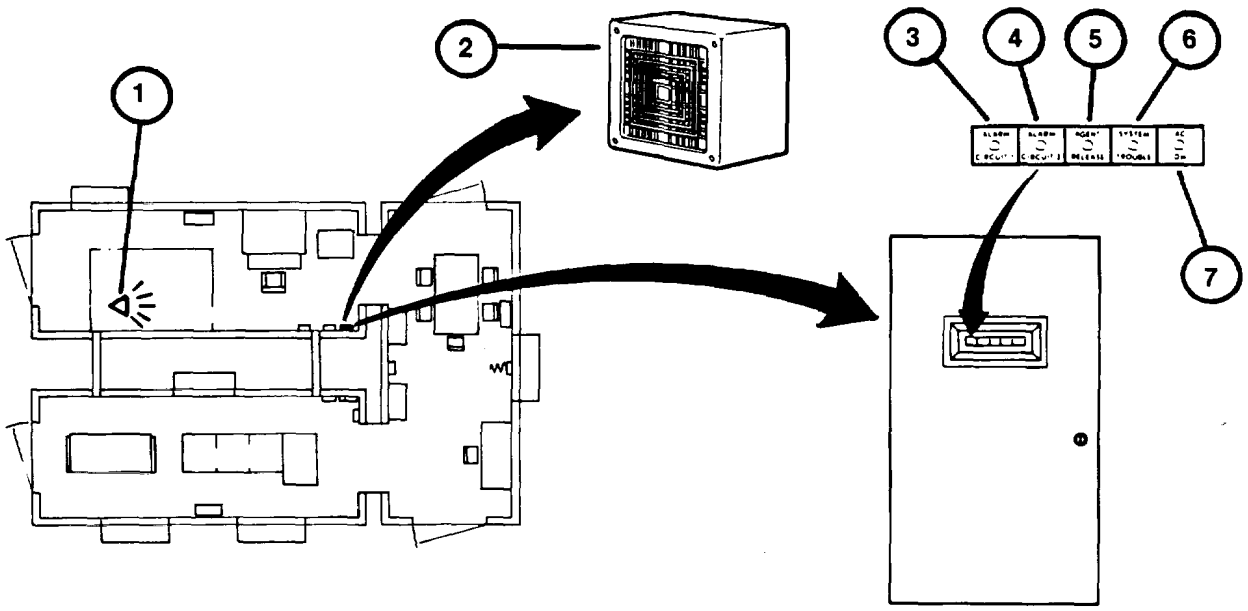
| Key | Control or Indicator | Function |
|---|---|---|
| 2 | Circuit Breaker CB6 | On/off control and overload protection for 120 volt ac power to exterior duplex outlets on Computer and Trainer Shelters. Contains Ground Fault Interrupter and Push-To-Test button. |
| 3 | Circuit Breaker CB7 | On/off control and overload protection for 120 volt ac power to lighting circuits in Computer Shelter. |
| 4 | Circuit Breaker CB8 | On/off control and overload protection for 120 volt ac power to duplex outlets inside Computer Shelter. Contains Ground Fault Interrupter and Push-To-Test button. |
| 5 | Circuit Breaker CB9 | On/off control and overload protection for 208 volt ac power to Computer Shelter Air Conditioner 51-A/C-2. |
| 6 | Circuit Breaker CB10 | On/off control and overload protection for 208 volt ac power to Computer Shelter Air Conditioner 51-A/C-3. |
| 7 | Circuit Breaker CB5 | On/off control and overload protection for 208 volt ac power to Computer Shelter Air Conditioner 51 -A/C- 1. |
| 8 | Circuit Breaker CB4 | On/off control and overload protection for 120 volt ac power to Trainer Shelter Fire Protection Panel. |
| 9 | Circuit Breaker CB3 | On/off control and overload protection for 120 volt ac power to duplex outlets in Trainer Shelter. Contains Ground Fault Interrupter and Push-To-Test button. |
| 10 | Circuit Breaker CB2 | On/off control and overload protection for 120 volt ac power to Trainer Shelter lighting circuits. |
| 11 | Circuit Breaker CBI | On/off control and overload protection for 208 volt ac power to Trainer Shelter Air Conditioner 52-A/C-1. |

INTEGRATION SHELTER **UTILITY POWER DISTRIBUTION PANEL (Continued)**



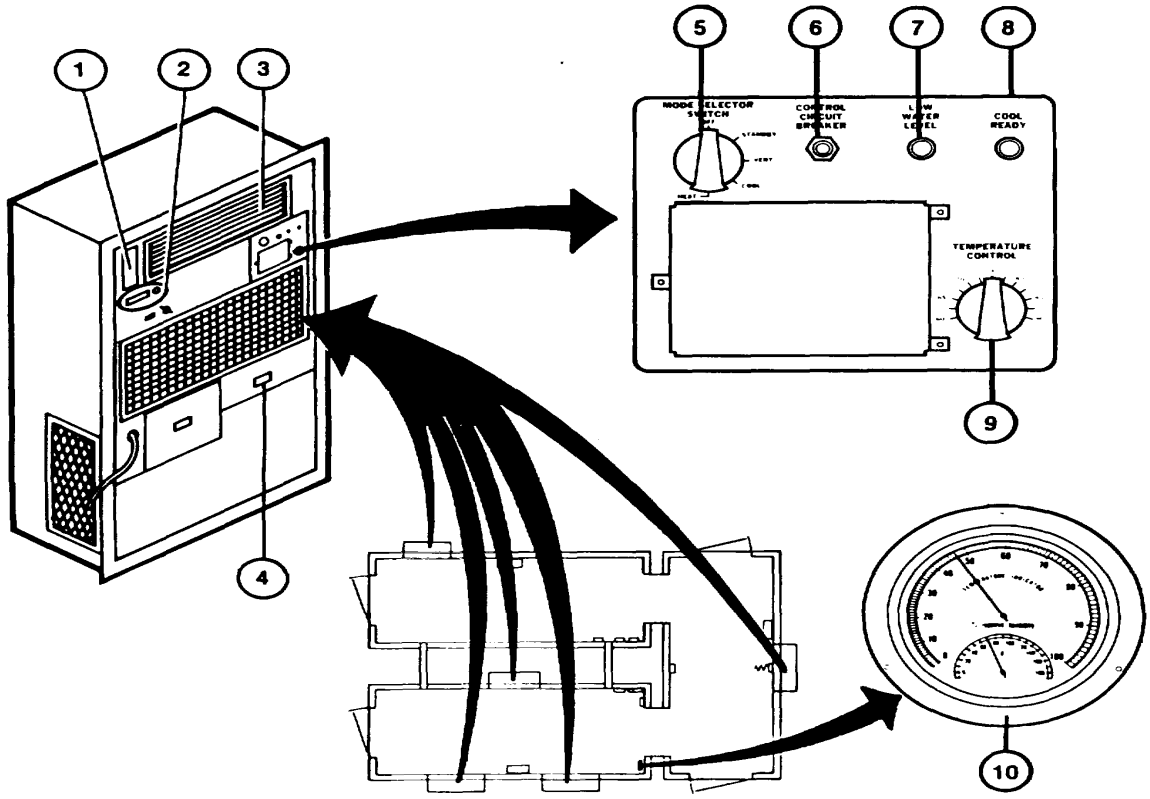

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Main Circuit Breaker | On/off control and overload protection for main 208 volt ac, 3-phase power to utility circuits in the Integration Shelter. |
| 2 | Circuit Breaker CB2 | On/off control and overload protection for 120 volt ac power to exterior duplex outlets on Integration Shelter. Contains Ground Fault Interrupter and Push-To-Test button. |
| 3 | Circuit Breaker CB3 | On/off control and overload protection for 120 volt ac power to Integration Shelter interior duplex outlets. Contains Ground Fault Interrupter protection and Push-To-Test button. |
| 4 | Circuit Breaker CB4 | On/off control and overload protection for 120 volt ac power to Integration Shelter lighting circuits. |
| 5 | Circuit Breaker CB1 | On/off control and overload protection for 208 volt ac, 3-phase power to Integration Shelter Air Conditioner 53-A/C-1. |

## TRAINER SHELTER FIRE CONTROL PANEL AND ALARMS




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Strobe Light | Continuously flashes bright white light in Crew Station when a smoke or fire alarm has been initiated. |
| 2 | Alarm Horn | Sounds a loud, steadily blaring alarm when a smoke or fire alarm has been initiated. |
| 3 | ALARM-CIRCUIT 1 LED indicator | Glows red when a smoke alarm has been initiated. |
| 4 | ALARM-CIRCUIT 2 LED indicator | Glows red when a high temperature or manual alarm has been initiated. |
| 5 | AGENT RELEASE LED indicator | Glows red when the Halon fire suppressant agent has been released(20-seconds after item 4 lights). |
| 6 | SYSTEM TROUBLE LED indicator | Glows amber when trouble exists in the circuitry of item 3 or 4. Buzzer also sounds behind panel door to notify Instructor/Operator. |
| 7 | AC ON LED indicator | Glows green when 120 volts ac power is applied to Fire Control Panel and system is working normally. |

**SHELTER AIR CONDITIONER**

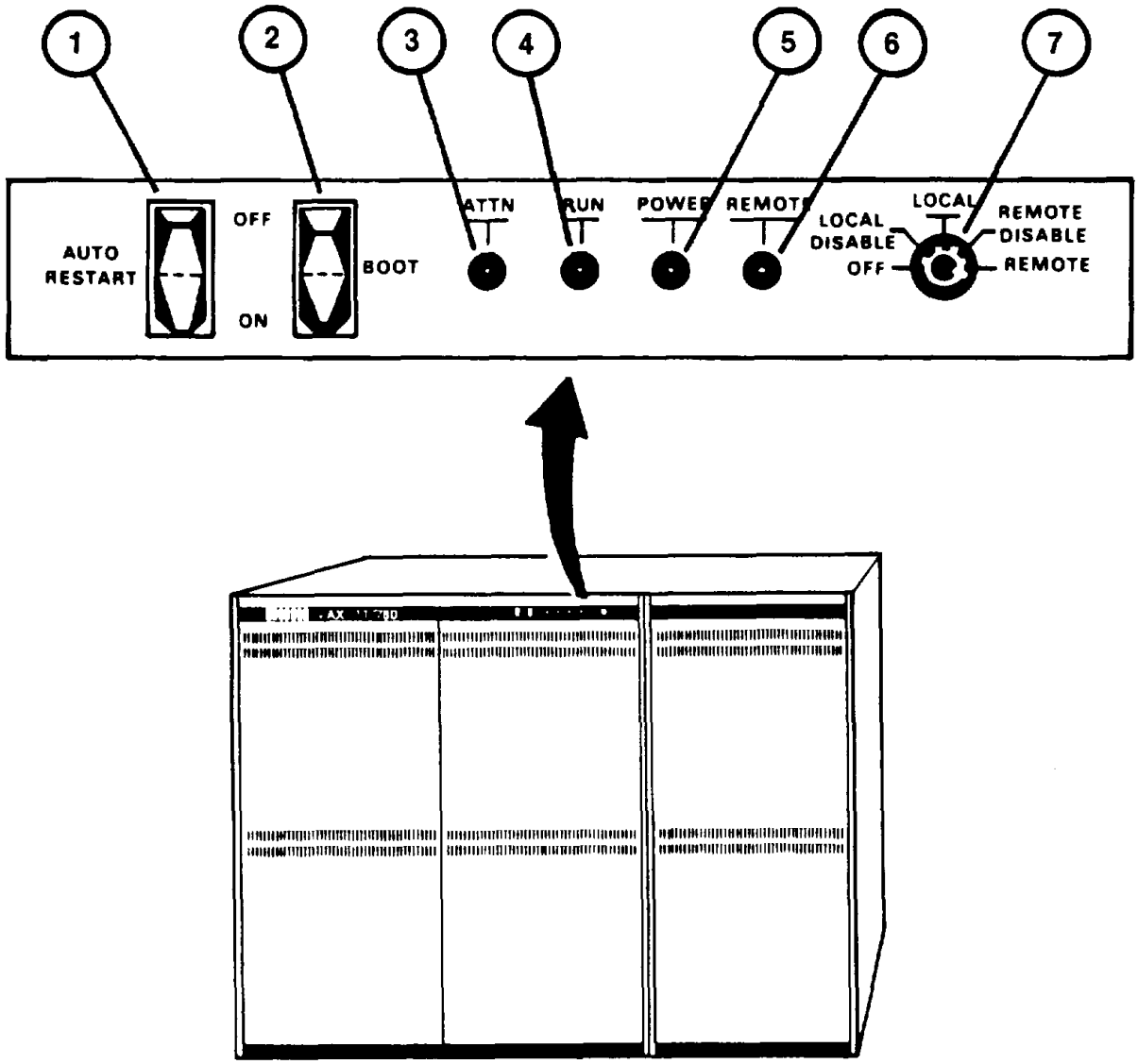



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Humidifier Water Filler Cap | Provides access to fill humidifier water tank. |
| 2 | HUMIDIFIER TANK WATER LEVEL→ FULL view window | Provides a viewing window to show "FULL" level when filling humidifier water tank. |
| 3 | Supply Air Grille | Adjustable louvers for directing the flow of conditioned air within the shelter. |

**SHELTER AIR CONDITIONER (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 4 | LOW PRESSURE AND HIGH PRESSURE CUT-OUT PUSH TO RESET | Turns on cooling compressor after automatically shut down by a low or high pressure pushbutton condition in the freon system. |
| 5 | Five Position MODE SELECTOR SWITCH: | |
| | - OFF | Turns off power to all components of air conditioner. |
| | - STANDBY | Enables heaters of compressor and humidifier tank only. |
| | - VENT | Turns on circulating air fan and enables heaters of compressor and humidifier tank only. |
| | - COOL | Turns on cooling function dependent upon setting of TEMPERATURE CONTROL (10) and inside air temperature. |
| | - HEAT | Turns on heating function dependent upon setting of TEMPERATURE CONTROL (10) and inside air temperature. |
| 6 | CONTROL CIRCUIT BREAKER pushbutton switch | Allows resetting of internal circuit breaker when tripped as a result of overcurrent condition. |
| 7 | LOW WATER LEVEL indicator lamp | Lights red when water level in humidifier tank is low and Mode Selector (5) is not off. |
| 8 | COOL READY indicator lamp | Lights yellow when refrigerant compressor is adequately heated for operation. |
| 9 | TEMPERATURE CONTROL knob | Provides control for setting desired temperature of shelter. Automatically turns on and off |
| heat | | or cool mode depending upon setting of MODE SELECTOR SWITCH (5) and shelter temperature. |
| 10 | TEMPERATURE/HUMIDITY indicator | Provides indication of shelter temperature and humidity. |

**GENERAL PURPOSE COMPUTER**

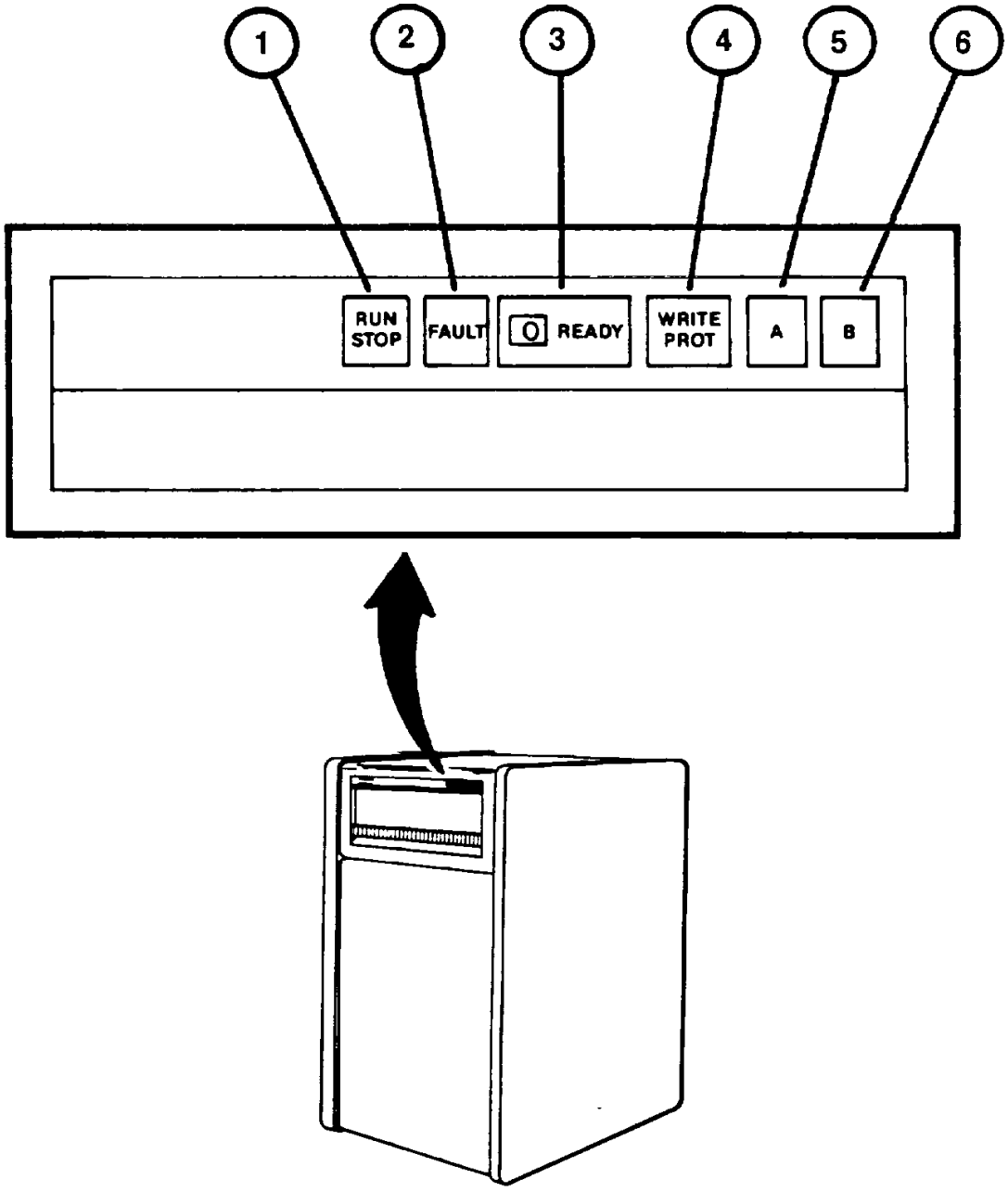



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | AUTO RESTART OFF/ON rocker switch | **NOTE**<br>This rocker switch must always be in ON (down) position when U-COFT is in operation.<br><br>Controls automatic restart capability of GPC. When in ON (down) position the GPC is restarted automatically after a power failure or error halt. When in OFF (up) position manual restart is required. |

**GENERAL PURPOSE COMPUTER (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 2 | BOOT OFF/ON rocker switch | Not used for U-COFT operation. |
| 3 | ATTN indicator | Lights red when system is first powered up, then goes out after system is ready for operation. If light comes on during operation, a system fault is present and must be corrected before operation can continue. |
| 4 | RUN indicator | Lights green when system is operating properly. |
| 5 | POWER indicator | Lights green when keyswitch (7) is not in OFF position and power is on. |
| 6 | REMOTE indicator | Not lit when GPC is operating and keyswitch (7) is in a LOCAL position. Lights red when keyswitch (7) is in REMOTE position. |
| 7 | | Five position keyswitch: |
| | OFF | GPC is powered down. |
| | LOCAL DISABLE | Disables inputs from the Terminal Printer keyboard to the GPC. Normal operating position for U-COFT after power-up is completed. |
| | LOCAL | Allows terminal printer to control GPC for power-up and power-down operation. |
| | REMOTE DISABLE | Not used for U-COFT operation. |
| | REMOTE | Not used for U-COFT operation. |

**DISK DRIVE**

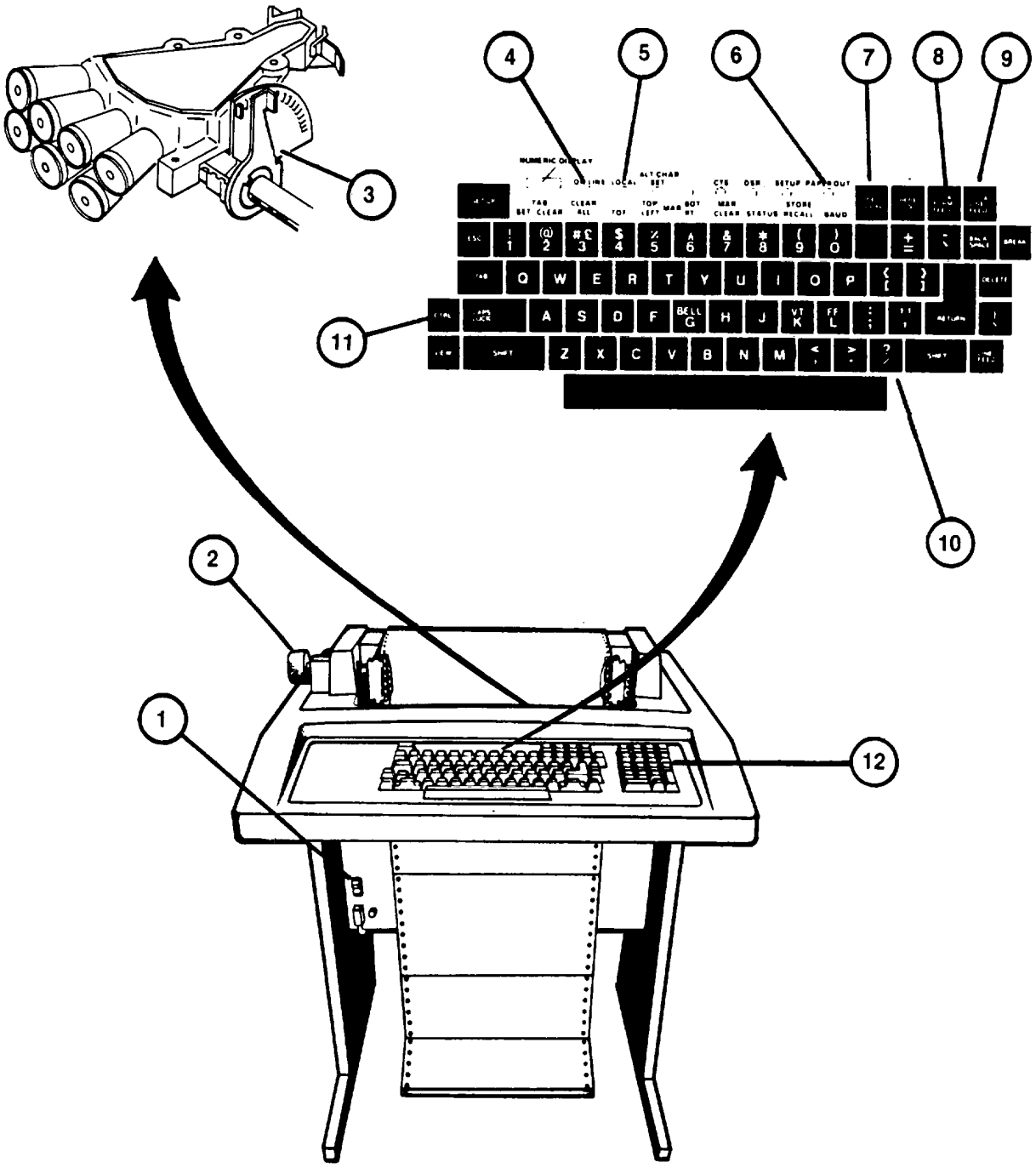



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | RUN/STOP Pushbutton Indicator | On/Off control for the Disk Drive. When pushed in, the disk begins turning and the indicator lights yellow. When pushed and released to the out position, the disk is turned off but the light will remain on (yellow) until the disk has stopped spinning. |

**DISK DRIVE (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 2 | FAULT pushbutton indicator (dual function) | Lights red when a fault condition exists in the disk drive. When not lit, the pushbutton may be depressed to perform a lamp test of the front panel indicators. |
| 3 | 0 READY indicator | Lights white when the disk is up to speed and ready to store or deliver data. The light will go off momentarily when the drive is seeking data during operation. |
| 4 | WRITE PROTECT pushbutton | **NOTE**<br><br>This pushbutton indicator must not be lit and the pushbutton must be in the "out" position for U-COFT operation. Otherwise, training records will not be stored on the disk.<br><br>When in the out (not depressed) position the indicator lamp will not be lit and the Disk Drive can "read" data from the disk or "write" (store) data on the disk.<br><br>When in the WRITE PROTECT (depressed) position, the indicator lamp lights yellow and the Disk Drive will not "write" (store) data on the disk. |
| 5 | A pushbutton indicator | Lights white when depressed and makes the Disk Drive available for commands from the GPC. The A pushbutton indicator must always be depressed and lit when the U-COFT is operating. |
| 6 | B pushbutton indicator | Lights white when depressed but is not used for U-COFT operation. |

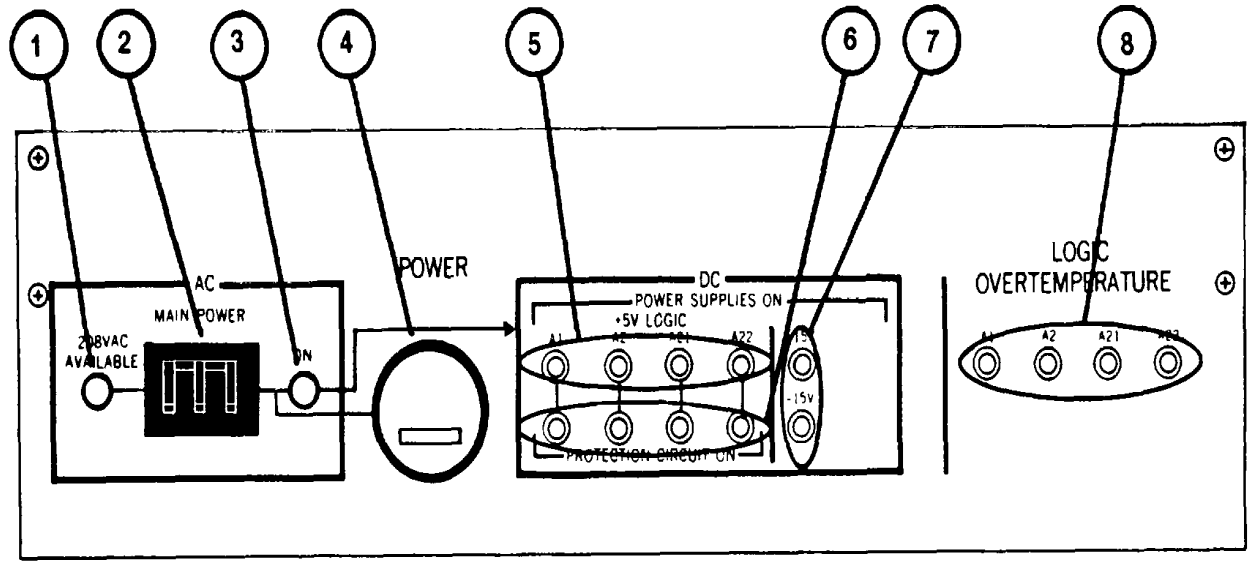
**TERMINAL PRINTER**



**TERMINAL PRINTER (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Power ON/OFF | Turns Terminal Printer power on and off. rocker switch |
| 2 | Paper Adjust Knob | When turned, advances paper 1/12 inch per click. When pushed in and turned, allows the paper to be rolled freely in either direction. |
| 3 | Carriage adjustment lever | Varies the spacing between carriage and print head to adjust for proper print impression. |
| 4 | ON-LINE indicator | Lights when terminal printer is ready to transmit data to or receive data from GPC. |
| 5 | LOCAL indicator | Lights when terminal printer is in local mode and cannot transmit data to or receive data from GPC. |
| 6 | PAPER OUT indicator | Flashes to indicate out-of-paper, open cover or print head jammed conditions. |
| 7 | LINE LOCAL Key | Changes Terminal Printer mode from ON LINE to LOCAL and vice versa as indicated by (4) and (5). |
| 8 | LOCAL FORM FEED Key | Advances paper one complete page. |
| 9 | LOCAL LINE FEED Key | Advances paper one line at a time. |
| 10 | Alphanumeric Keyboard Keys | Operate in same manner as keys on Instructor Operator Station Display Terminal Keyboard (see 2-34). |
| 11 | CTRL Key | Control key used only during power-down sequence of U-COFT. |
| | | **NOTE**<br>All other indicators and controls not listed above are for maintenance personnel use only. |
| 12 | Keypad Keys | Not used for operation. |

## SPECIAL PURPOSE COMPUTER POWER MANAGEMENT PANEL

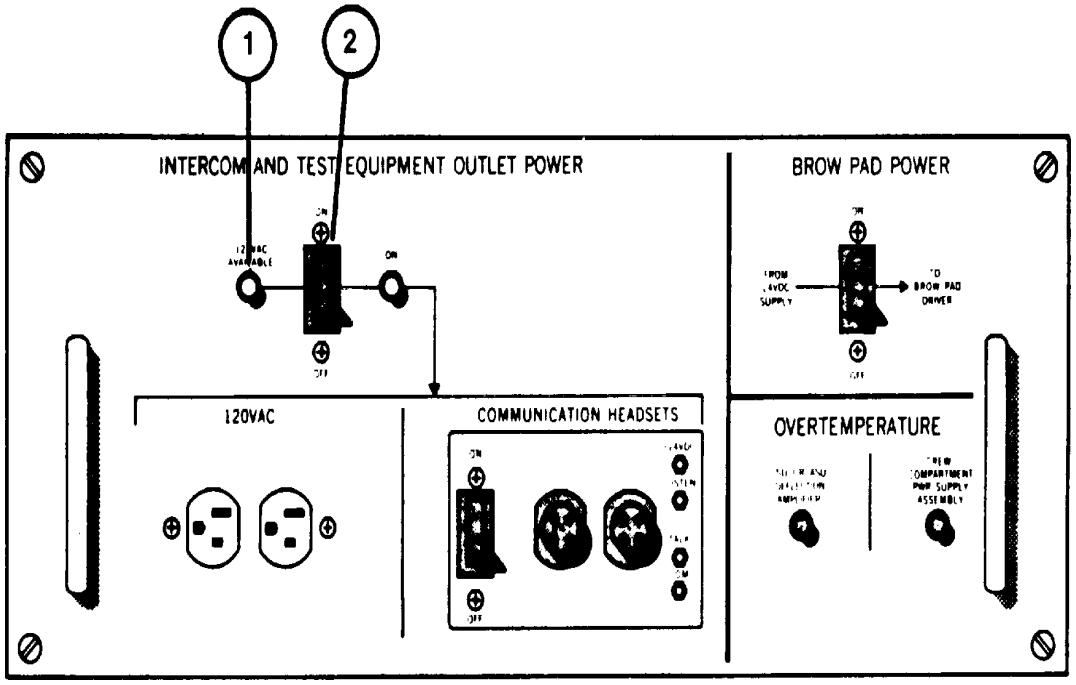



| Key | Control or Indicator | Function |
|---|---|---|
| | AC | |
| 1 | 208 VAC AVAILABLE indicator | Lights orange when 208 V ac main power is available to SPC. |
| 2 | MAIN POWER on/off circuit breaker | On/off control and overload protection for 208 V ac 3-phase power to SPC. |
| 3 | ON indicator | Lights orange when AC Main Power on/off circuit breaker is on to indicate that 208 V ac 3-phase power to the SPC is on. |
| 4 | POWER elapsed time indicator | Indicates total time that ac power is applied to SPC. |
| | DC | |
| 5 | POWER SUPPLIES ON +5 V LOGIC Al, A2, A21, A22 indicator | Light green when +5 V power supplies for Card File Assemblies Al, A2, A21 and A22 in SPC are on. |
| 6 | POWER SUPPLIES ON PROTECTION CIRCUIT ON Al, A2, A21, A22 indicators | Light green when +5 V power supply protection circuits for Card File Assemblies Al, A2, A21, and A22 are operating. |
| 7 | POWER SUPPLIES ON +15 V and -15 V indicators | Light green when +15 and -15 V power supplies in SPC are on. |
| 8 | LOGIC OVERTEMPERATURE Al, A2, A21, A22 indicators (Al, A2, A21 or A22). | Light red when an overtemperature condition exists in identified SPC Card File Assembly |

## CREW STATION GUNNER'S AND COMMANDER'S STATIONS

Refer to the Bradley Fighting Vehicle (Turret) Operator's Manual, TM 9-2350-252-10-2, for Gunner's Station and Commander's Station controls and indicators.

## CREW STATION UTILITY PANEL

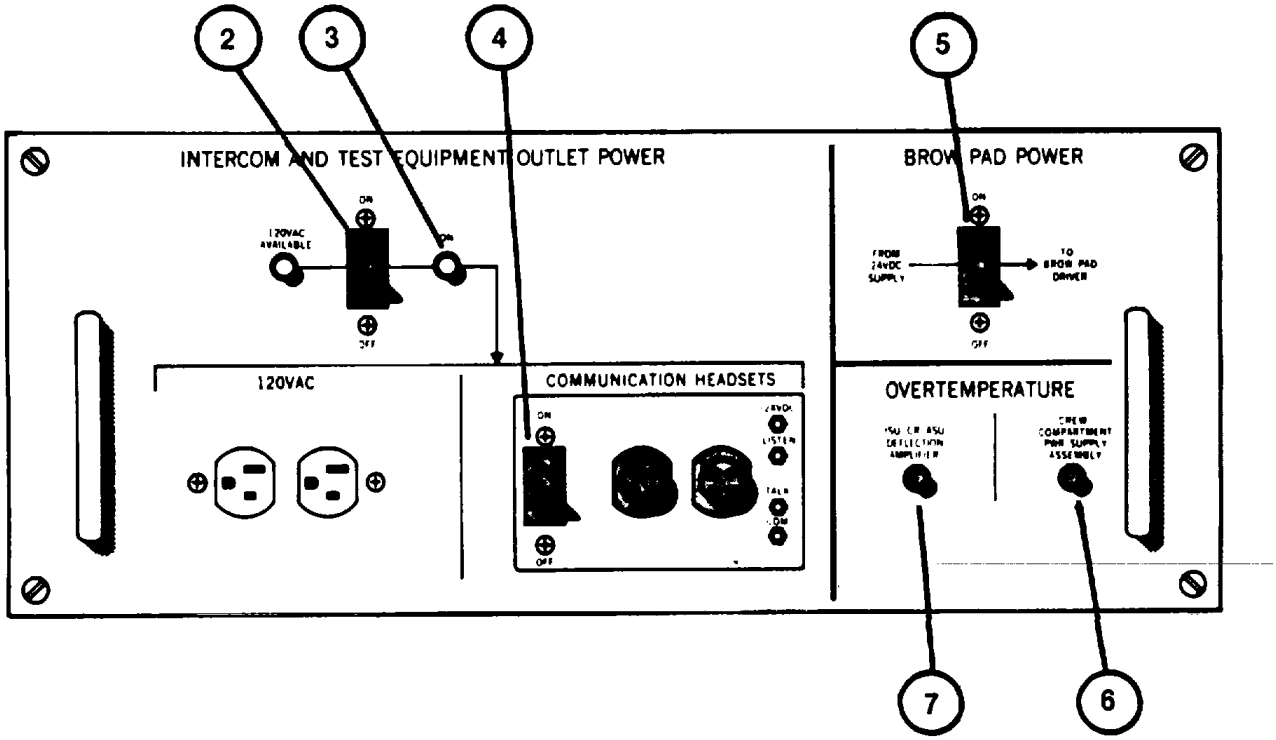



| Key | Control or Indicator | Function |
|---|---|---|
| | INTERCOM AND TEST EQUIPMENT OUTLET POWER | **WARNING** |

The 120 V ac power to this panel cannot be turned off from the IOS Power Panel. The power will be on until Circuit Breaker number 2 is set to OFF in the Computer Shelter Electronics Power Distribution Panel (see 2-7).

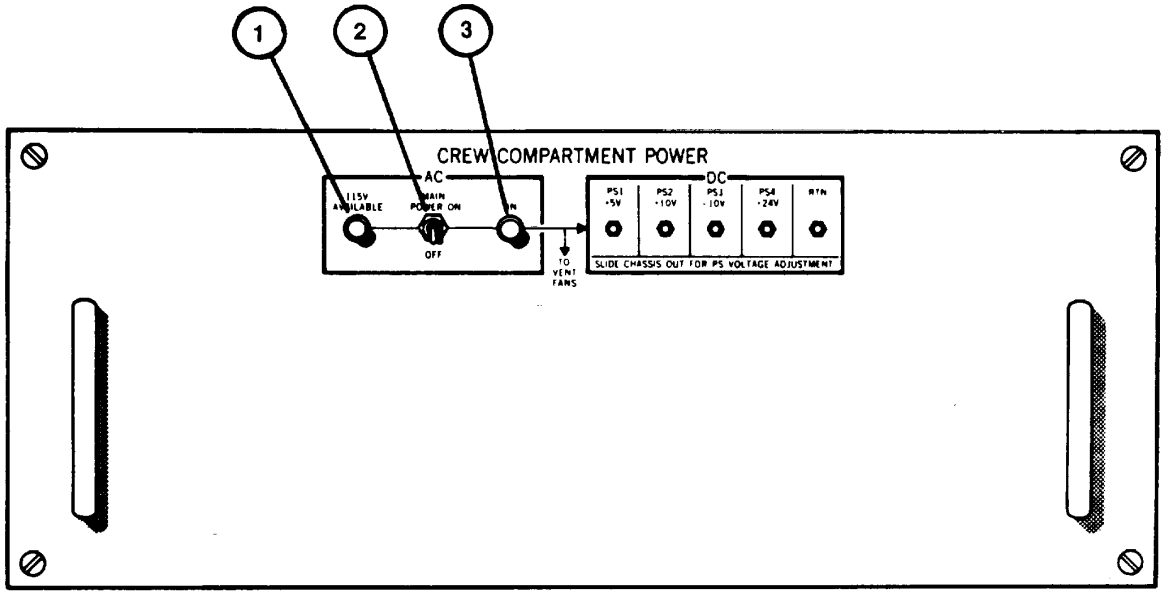
| | | |
|---|---|---|
| 1 | 120 VAC AVAILABLE indicator | Lights orange when 120V ac power is available to Crew Station from Electronics Power Distribution Panel Circuit Breaker 2 in Computer Shelter. |
| 2 | ON/OFF circuit breaker | On/off control and overload protection for 120V ac power to utility outlets and Communication Headsets. |

**CREW STATION UTILITY PANEL (Continued)**



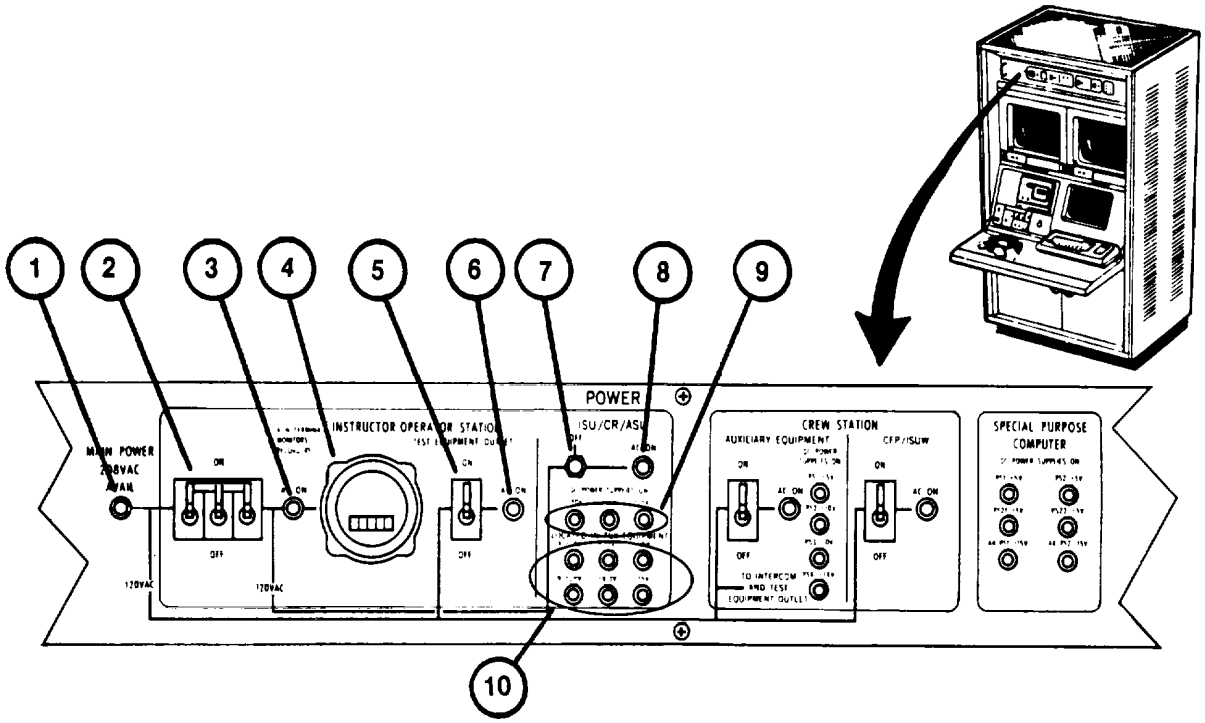

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | ON indicator | Lights orange to indicate circuit breaker (2) is on and ac power is applied to 120 V ac utility outlets and COMMUNICATION HEADSETS panel. |
| 4 | COMMUNICATION HEAD-SETS ON/OFF circuit breaker | On/off control and overload protection for 120 V ac power applied to Communication Headsets 24V dc power supply. |
| 5 | BROW PAD POWER ON/OFF circuit breaker | On/off control and overload protection for 24 V dc to Crew Station BROWPAD (Recoil) DRIVER from 24V dc supply. |
| | OVERTEMPERATURE | |
| 6 | CREW COMPARTMENT PWR SUPPLY ASSEMBLY | Lights red when an overtemperature condition exists in the Crew Station Power Supply assembly |
| 7 | ISU/CR/ASU DEFLECTION AMPLIFIER indicator | Lights red when an overtemperature condition exists in the 3-CRT Color Monitor Deflection Amplifier in the Crew Station. |

## CREW STATION POWER PANEL




| Key | Control or Indicator | Function |
|---|---|---|
| | CREW COMPARTMENT POWER - AC | |
| 1 | 115 V AVAILABLE indicator | Lights orange when 115V ac power is available from IOS CREW STATION circuit breaker (see 2-26). |
| 2 | MAIN POWER ON/OFF toggle switch | On/off control for 115V ac power to Crew Station dc power supplies and vent fans. |
| 3 | ON indicator | Lights orange when ac power is available and toggle switch (2) is ON. |

**IOS POWER PANEL**

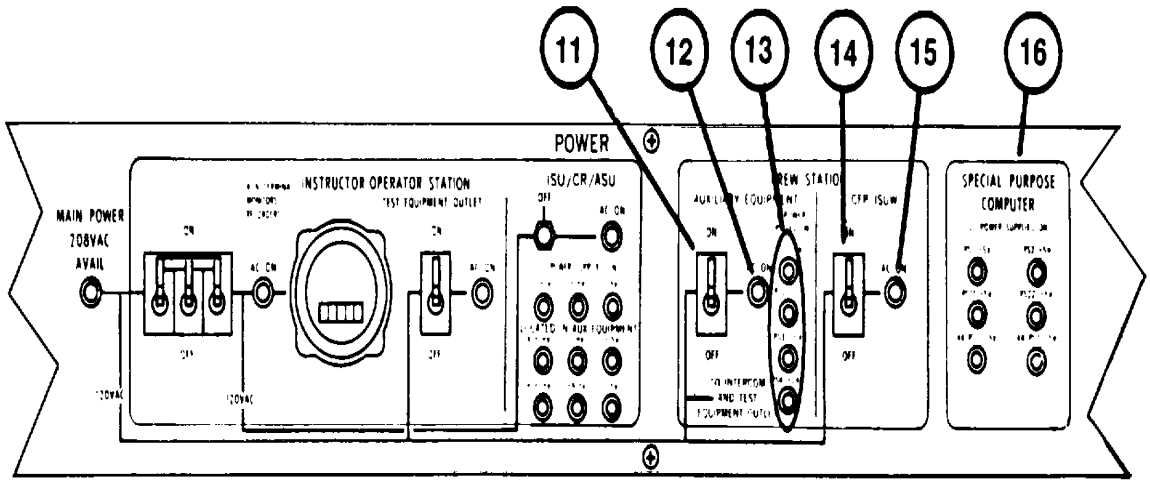



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | MAIN POWER 208 VAC AVAIL indicator | Lights orange when 208V ac main power is available to the IOS and Crew Station |
| | INSTRUCTOR OPERATOR STATION | |
| 2 | ON/OFF circuit breaker (main power) | ON/OFF control and overload protection for 120V ac power to IOS equipment and Crew Station sight display power supplies. |
| 3 | A/N terminal, monitors, recorder AC ON indicator | Lights orange when main power on/off circuit breaker is on to indicate that 120V ac power is available to the IOS equipment and key switches for the Crew Station sight display power supplies. |
| 4 | ELAPSED TIME hour meter | Indicates total time that ac power is applied to IOS. |
| 5 | TEST EQUIPMENT OUTLET ON/OFF circuit breaker | On/off control and electrical overload protection for IOS 120V ac test equipment outlet. |

**IOS POWER PANEL (Continued)**

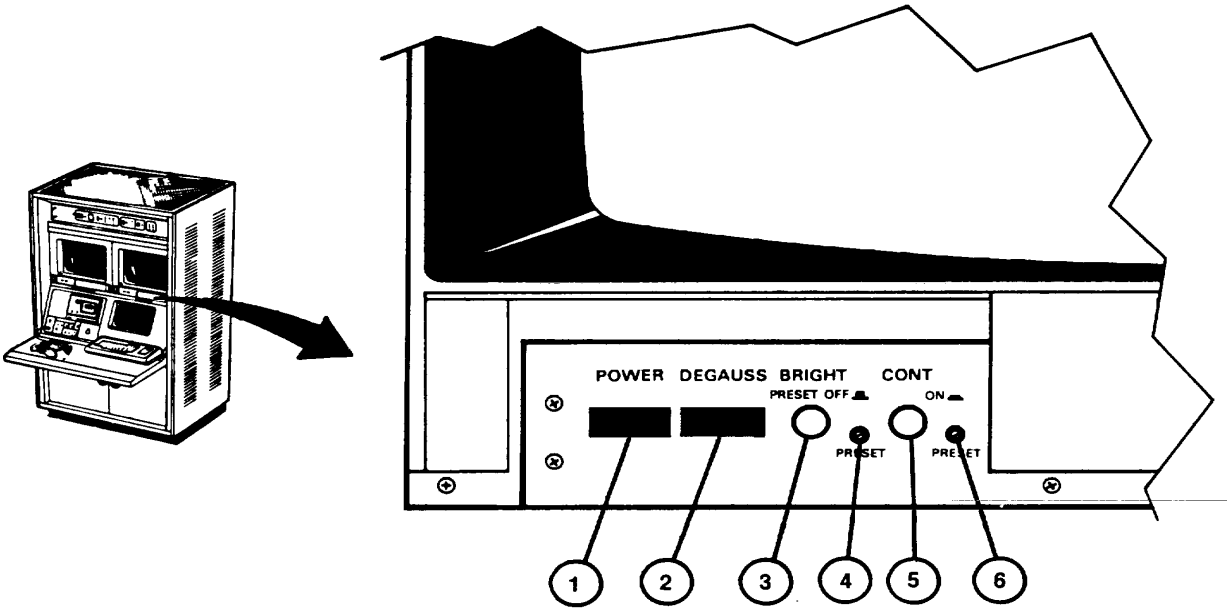
| Key | Control or Indicator | Function |
|---|---|---|
| 6 | TEST EQUIPMENT OUTLET AC ON indicator light | Lights orange when TEST EQUIPMENT OUTLET ON/OFF circuit breaker (5) is on to indicate ac power is available at Test Equipment Outlet. |
| | ISU/C R/ASU | |
| 7 | OFF/on keyswitch | Lock and key on/off control of ac power to 3-CRT dc power supplies in the IOS and Crew Station. |
| 8 | AC ON indicator | Lights orange when OFF/on keyswitch (7) is on to indicate ac power is available to 3-CRT dc power supplies. |
| 9 | DC POWER SUPPLIES ON<br>-30V<br>+15V<br>-15V<br>indicators | Light green when 3-CRT dc power supplies in IOS are on. |
| 10 | LOCATED IN AUX EQUIP<br>A + 28V, -28V, +15V<br>B +28V, +6.3V, -15V<br>indicators | Light green when 3-CRT dc power supplies in crew station are on. |

**IOS POWER PANEL (Continued)**

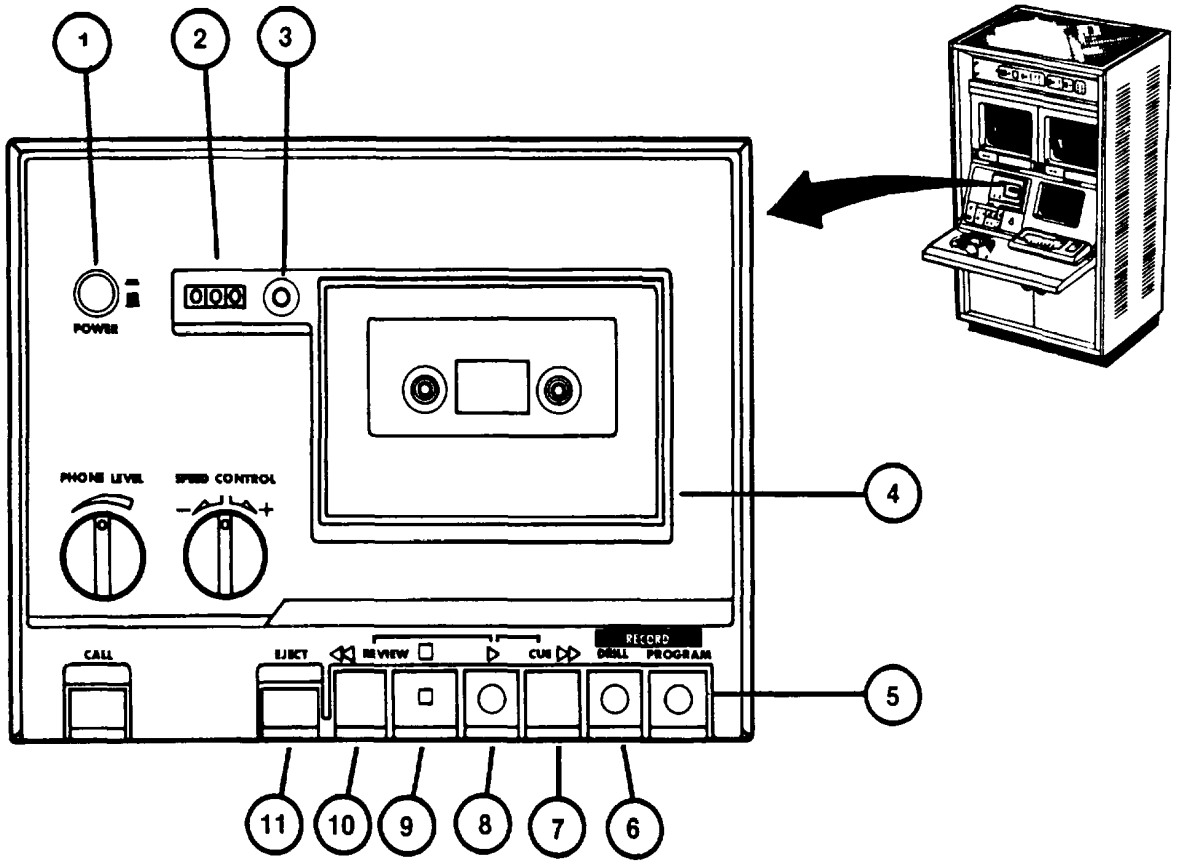



| Key | Control or Indicator | Function |
|---|---|---|
| | CREW STATION | |
| 11 | AUXILIARY EQUIPMENT ON/OFF circuit breaker | On/Off control and electrical overload protection for 120 volt ac power to Crew Station DC Power Supplies (+5V, +IOV, -IOV and +24V). |
| 12 | AC ON indicator | Lights orange when CREW STATION ON/OFF circuit breaker (11) is on. |
| 13 | DC POWER SUPPLIES ON<br>PS I +5V<br>PS2 +10V<br>PS3 -10V<br>PS4 +24V<br>indicators | Light green when +5V, +1OV, -10V, and +24V dc power supplies in Crew Station are on. |
| 14 | CFP/ISUW ON/OFF Circuit Breaker | On/off control and electrical overload protection for 120 volt ac power to Commander's Forward Periscope and Integrated Sight Unit Window. |
| 15 | AC ON indicator | Lights orange when CFP/ISUW ON/OFF circuit breaker (14) is on. |
| 16 | SPECIAL PURPOSE COMPUTER DC POWER SUPPLIES ON<br>PSI +5V, PS2 +5V<br>PS21 +5V, PS22 +5V<br>A4PSI +15V, A4PS2 -15V<br>Indicators | Light green when power supplies in Special Special Purpose Computer are on. |

## IOS 19-INCH COLOR MONITORS (COMMANDER'S & GUNNER'S)



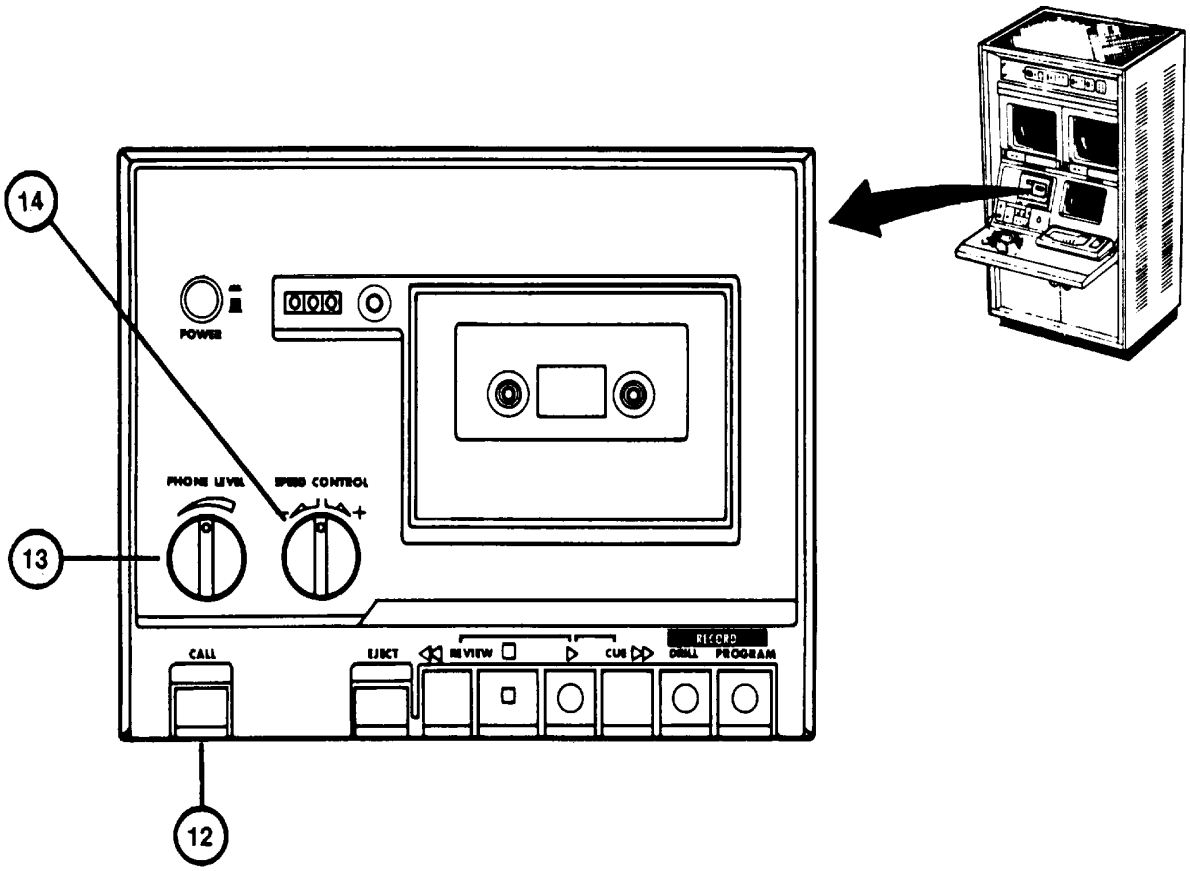

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Power on/off pushbutton switch | Press to turn monitor power on or off. |
| 2 | DEGAUSS pushbutton switch | Automatically degausses monitor (neutralizes magnetic field) when monitor is turned on and pushbutton is pressed and held for 7 to 10 seconds. |
| 3 | BRIGHT control PRESET OFF (control pulled out) PRESET ON (control pushed in) | Manual adjust for brightness of display when control is pulled out; PRESET brightness (4) is set when control is pushed in. |
| 4 | PRESET (brightness screwdriver adjust) | Presets brightness of display when BRIGHT control (3) is pushed in. |
| 5 | CONT control PRESET OFF (control pulled out) PRESET ON (control pushed in) | Manual adjust for contrast of display when control is pulled out; PRESET contrast (6) is set when control is pushed in. |
| 6 | PRESET (contrast screwdriver adjust) | Presets contrast of display when CONT control (5) is pushed in. |




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | POWER (On) (Off) | When pressed and locked in, power to tape recorder is turned on. When pressed again pushbutton is released and power is turned off. |
| 2 | Tape Counter | Numerical counter (000 to 999) used to index location of recorded information on tape. Increases directly as tape moves forward and decreases as tape is rewound. |
| 3 | Tape Counter Reset pushbutton | When pressed, resets tape counter to "000". |
| 4 | Tape Cassette Compartment | Lid opens for insertion or removal of tape cassette when EJECT pushbutton (II 1) is pressed. Push lid to snap shut for operation. |

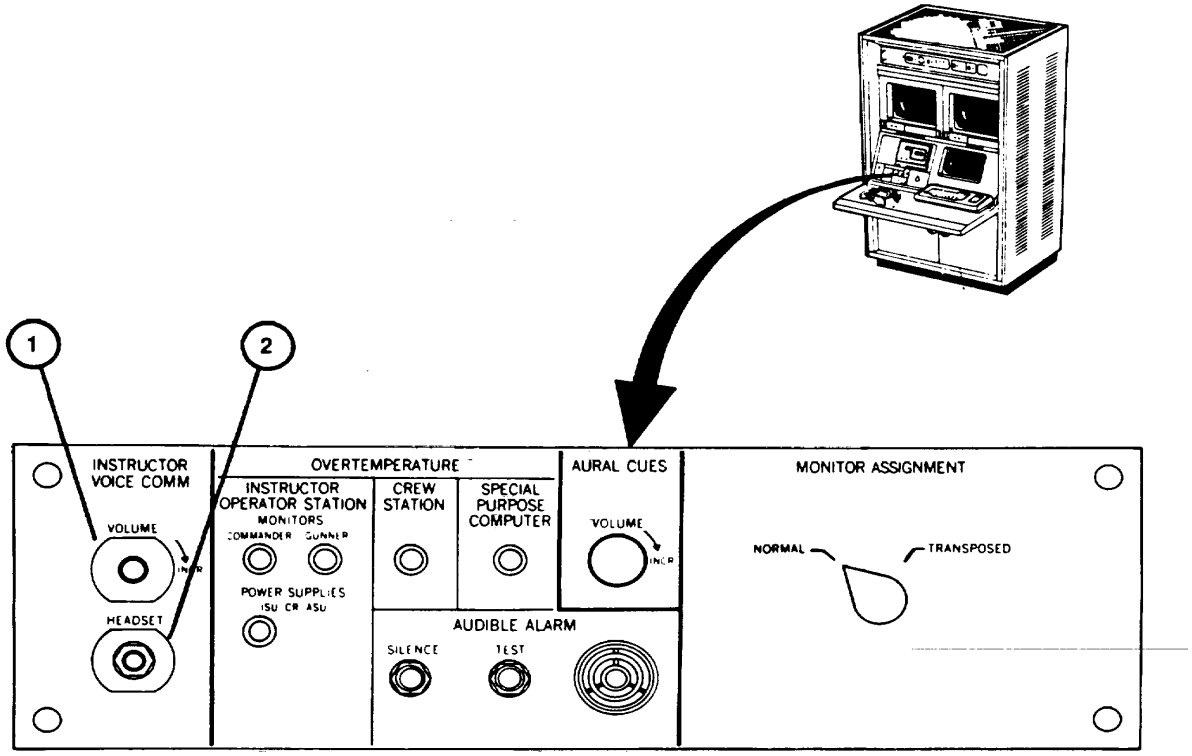
| Key | Control or Indicator | Function |
|---|---|---|
| | RECORD | |
| 5 | PROGRAM pushbutton | Locks down when depressed and automatically depresses and locks down the DRILL pushbutton (6). Depressing this pushbutton enables the record mode and recording can begin when the ➡ (Forward) pushbutton (8) is depressed.<br>**NOTE**<br>PROGRAM pushbutton is disabled when tabs are removed from tape cassette. |
| 6 | DRILL pushbutton | Not used as a separate function for U-COFT operation. Automatically depresses when PROGRAM pushbutton (5) is depressed. |
| 7 | Cue ➡ ➡ pushbutton | Advances tape rapidly forward when depressed. |
| 8 | ➡ (Forward) pushbutton | Locks down when depressed and advances tape forward for record and playback operation. When depressed alone, playback begins. When depressed with PROGRAM pushbutton (5) depressed, recording begins. |
| 9 | ■ (Stop) pushbutton | Stops tape movement when depressed and releases locked down Forward ➡ DRILL and PROGRAM pushbuttons. |
| 10 | ⬅ ⬅ REVIEW pushbutton | Rewinds cassette tape. |
| 11 | EJECT pushbutton | When depressed, opens tape cassette compartment (4) for installation and removal of tape cassette. |

**IOS TAPE RECORDER (Continued)**



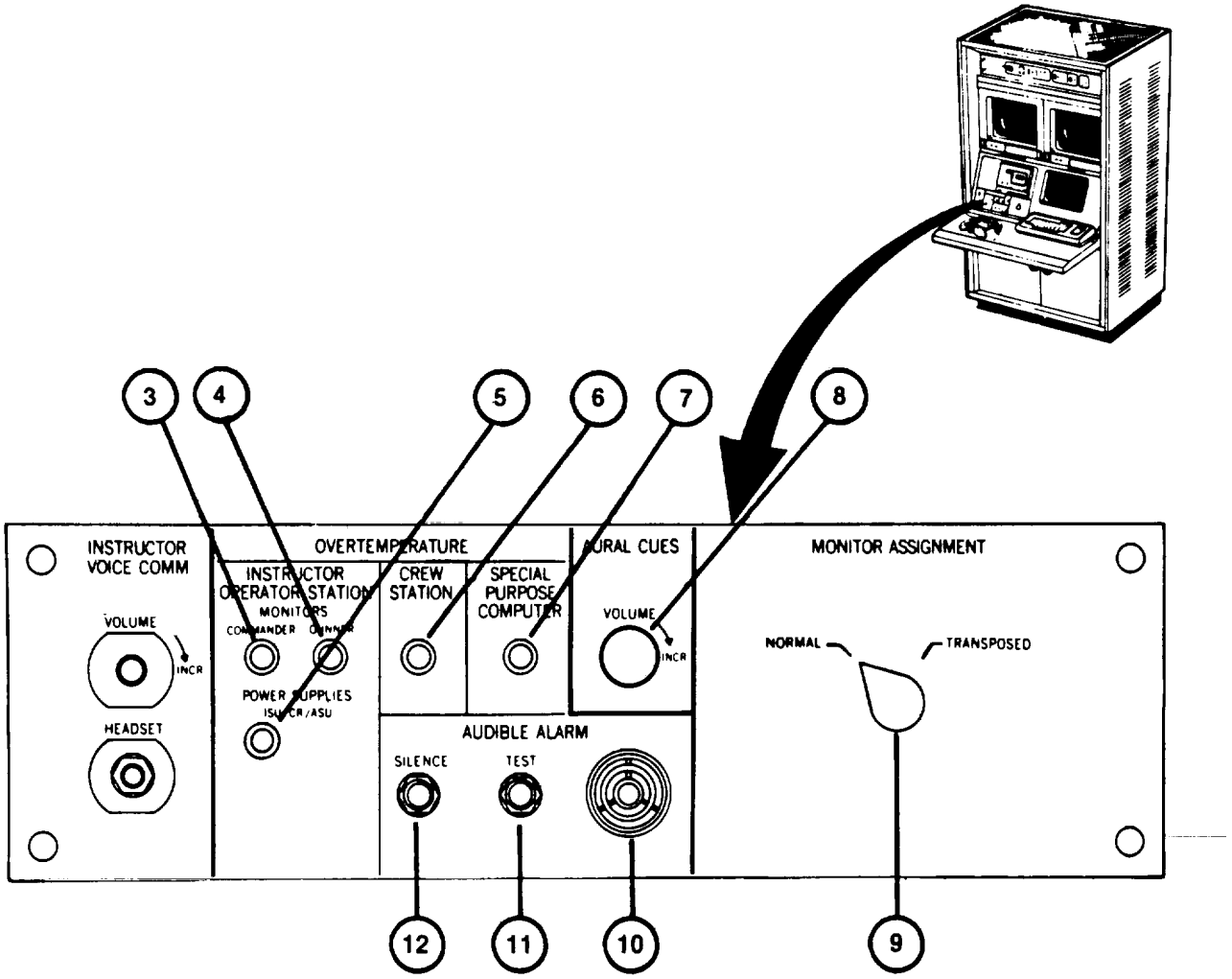

| Key | Control or Indicator | Function |
|---|---|---|
| 12 | CALL pushbutton | Not used for U-COFT operation. |
| 13 | PHONE LEVEL control | Adjusts output volume of Tape Recorder. Volume increases when turned to the right. |
| 14 | SPEED CONTROL | Adjusts playback speed of tape. Decreases speed when turned to the left (-). and increases speed when turned to the right (+). Operates at normal speed when control is in center (click) position. |

**IOS COMMUNICATION PANEL**




| Key | Control or Indicator | Function |
|---|---|---|
| | INSTRUCTOR VOICE COMM | |
| 1 | VOLUME → INCR-knob | Adjusts volume of Instructor/Operator headset. Connection jack for Instructor/ |
| 2 | HEADSET jack | Operator headset. |

**IOS COMMUNICATION PANEL (Continued)**

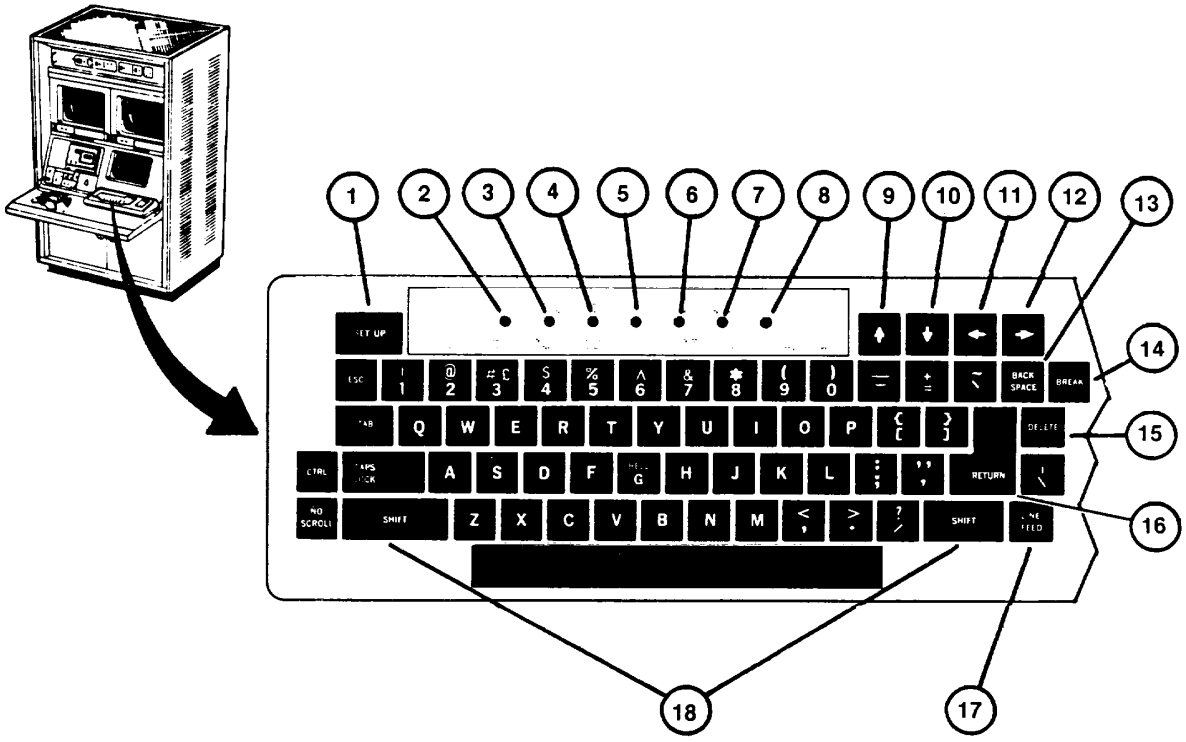



| Key | Control or Indicator | Function |
|---|---|---|
| | OVERTEMPERATURE<br>INSTRUCTOR OPERATOR<br>STATION MONITORS | |
| 3 | COMMANDER indicator | Lights red when an overtemperature condition exists in the Commander's Monitor. |
| 4 | GUNNER indicator | Lights red when an overtemperature condition exists in the Gunner's Monitor. |

**IOS COMMUNICATION PANEL (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| | POWER SUPPLIES | |
| 5 | ISU/CR/ASU indicator | Lights red when an overtemperature condition exists in the IOS, ISU/CR/ASU 3-CRT power supply. |
| 6 | CREW STATION indicator | Lights red when an equipment overtemperature condition exists in the Crew Station. |
| 7 | SPECIAL PURPOSE COMPUTER indicator | Lights red when an equipment overtemperature condition exists in the Special Purpose Computer. |
| 8 | AURAL CUES VOLUME → INCR control | Adjusts volume of aural cues heard in Instructor/Operator headset and Crew Station headsets. |
| 9 | MONITOR ASSIGNMENT NORMAL – TRANSPOSED rotary switch | Allows Instructor/Operator to interchange views on IOS Color Monitors. In NORMAL position, Commander's view is displayed on Commander's monitor and Gunner's view on Gunner's monitor. In TRANSPOSE position the views are interchanged. |
| | AUDIBLE ALARM | |
| 10 | Buzzer | Buzzes when an overtemperature condition exists in the location identified by the lighted indicator of (3) through (8) above. |
| 11 | TEST Pushbutton switch | When pressed, turns on AUDIBLE ALARM buzzer. |
| 12 | SILENCE pushbutton switch | When pressed, silences AUDIBLE ALARM buzzer but indicator remains on until overtemperature condition has been corrected. |

## IOS DISPLAY TERMINAL KEYBOARD

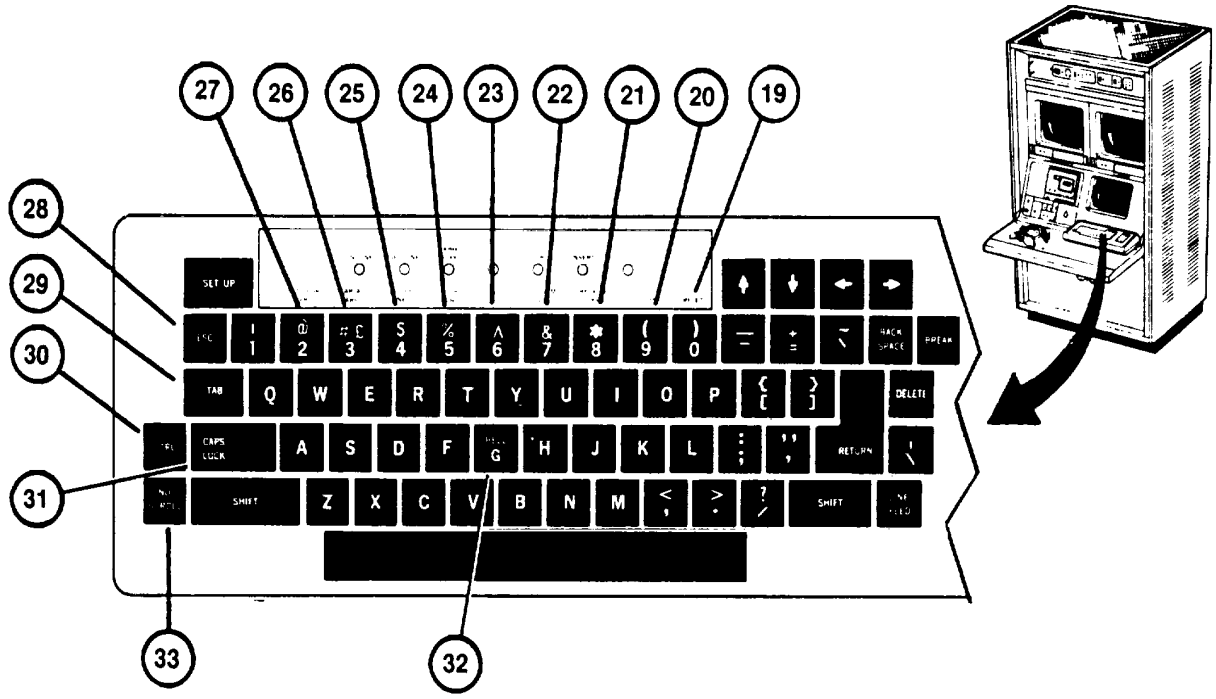



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | SETUP key | This key is an alternate function key (depress once to enter Setup mode, and once again to exit the mode). The key is not normally used for operation; however, if the keyboard locks up (see item 4 below) the Setup key may be depressed twice to clear the lockup. |
| 2 | ON LINE indicator | Lights red to show that the Display Terminal is on-line and ready to transmit or receive messages to or from the GPC. |
| 3 | OFF-LINE indicator | Lights red to show that the Display Terminal is off-line and cannot communicate with the GPC, but the keyboard remains active and all characters typed are placed on the Display Terminal. |

**IOS DISPLAY TERMINAL KEYBOARD (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 4 | KBD LOCKED indicator | Lights red to show that the keyboard has been turned off. The Display Terminal is still able to receive messages from the General Purpose Computer. This condition can be cleared by pressing the SETUP key (1) twice. |
| 5 | CTS indicator | Not used for operation. |
| 6 | DSR indicator | Not used for operation. |
| 7 | INSERT indicator | Not used for operation. |
| 8 | L1 indicator | Not used for operation. |
| 9 | ↑ key (up arrow) | Not used for operation. |
| 10 | ↓ key (down arrow) | Not used for operation. |
| 11 | ← key (left arrow) | Not used for operation. |
| 12 | → key (right arrow) | Used during performance of Daily Readiness Check. |
| 13 | BACKSPACE key | Moves the cursor to the left one character space at a time (not to be used as delete function). |
| 14 | BREAK key | Not used for operation. |
| 15 | DELETE key | Sends a delete character code to the GPC and used to delete previously entered character. |
| 16 | RETURN key | Used to activate command just typed on keyboard. Sends Instructor/Operator keyboard entries to the GPC. |
| 17 | LINE FEED key | Not used for operation. |
| 18 | SHIFT key | Enables the uppercase function of all keys. If a key does not have an uppercase function, the SHIFT key is disregarded. |

**IOS DISPLAY TERMINAL KEYBOARD (Continued)**

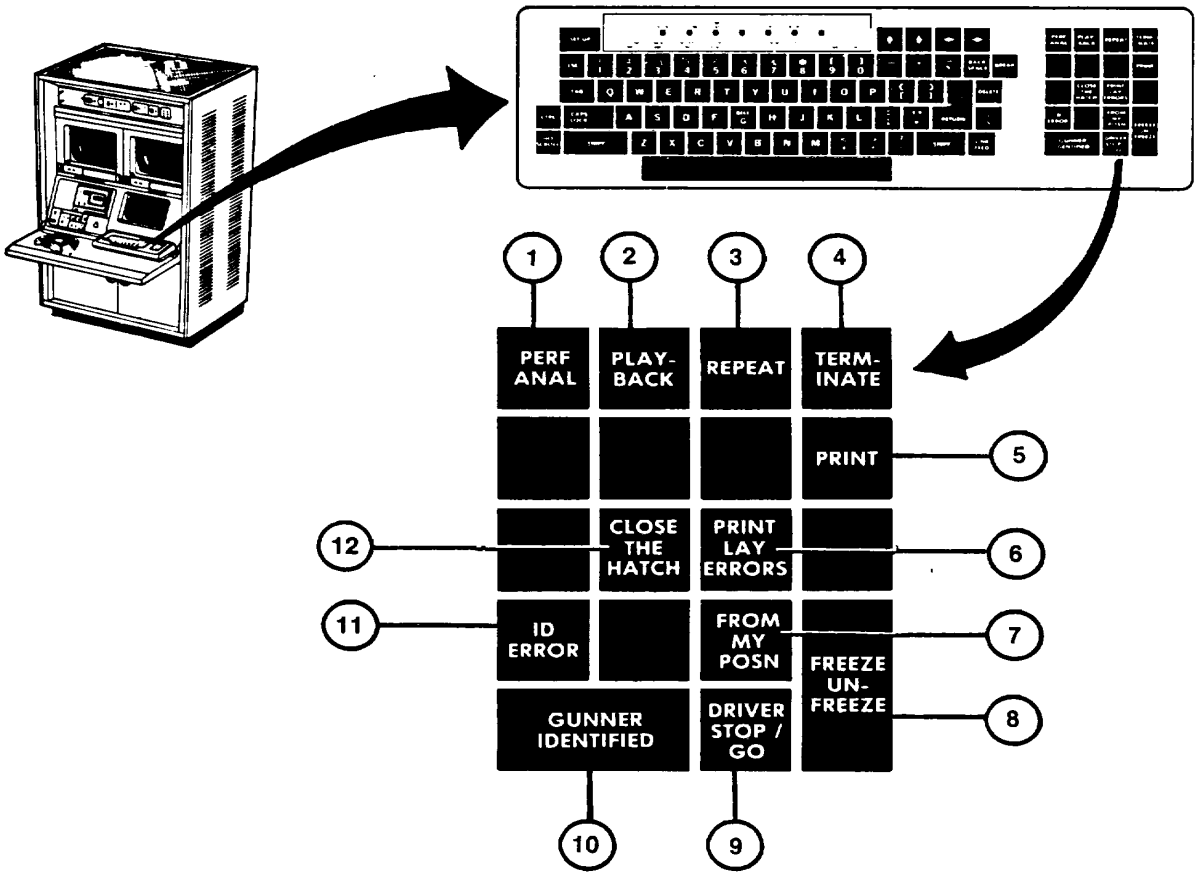



| Key | Control or Indcator | Function |
|---|---|---|
| 19 | RESET<br>) key<br>*0* | Reset not used for operation. Key used for upper-lower case functions only. |
| 20 | 80/132<br>COLUMNS<br>( key<br>9 | 80/132 Columns function not used for operation. Key used for upper-lower case only. |
| 21 | RECEIVE SPEED<br>* key<br>8 | Receive Speed function not used for operation. Key used for upper-lower case functions only. |
| 22 | TRANSMIT SPEED<br>& key<br>7 | Transmit Speed not used for operation. Key used for upper-lower case functions only. |
| 23 | TOGGLE I/O<br>A key<br>6 | Toggle I/O function not used for operation. Key used for upper-lower case functions only. |

**IOS DISPLAY TERMINAL KEYBOARD (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 24 | SETUP A/B<br>% key<br>5 | Setup A/B function not used for operation. Key used for upper-lower case functions only. |
| 25 | ON/OFF LINE<br>$ key<br>4 | On/off line function not used for operation. Key used for upper-lower case functions only. |
| 26 | CLEAR ALL TABS<br># key<br>3 | Clear All Tabs function not used for operation. Key used for upper-lower case functions only. |
| 27 | SET/CLEAR TAB<br>@ key<br>2 | Set/Clear Tab function not used for operation. Key used for upper-lower case functions only. |
| 28 | ESC key | Not used for operation. |
| 29 | TAB key | Not used for operation. |
| 30 | CTRL key | Not used for operation. |
| 31 | CAPS key<br>LOCK | Enables the transmission of upper case alphabetic characters only. All numeric and special symbol keys remain in lower case functions. |
| 32 | BELL key<br>G | Bell key not used for operation. Key used for upper-lower case alphabetic functions only. |
| 33 | NO key<br>SCROLL | Alternate function key used to stop/start the transmission of data from the GPC. It stops and starts output to GPC Display Terminal and is used to hold data on display terminal for a period of time when it normally would be scrolled or erased away. |

## IOS DISPLAY TERMINAL KEYPAD

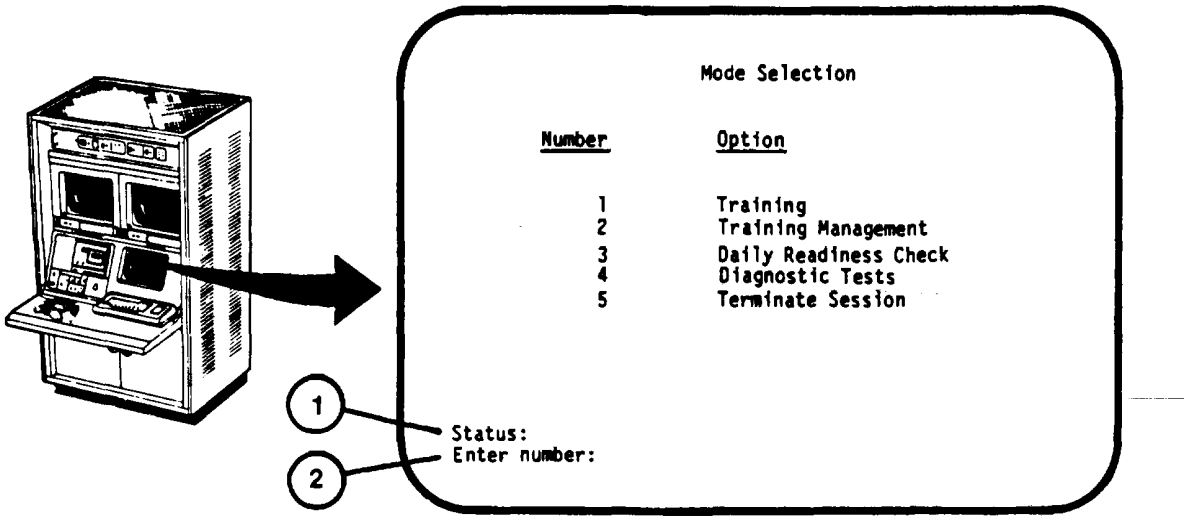



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | PERF ANALYSIS key (Blue) | Keypad option selected during a Freeze condition to call the Exercise Performance Analysis display page (see 2-66). |
| 2 | PLAYBACK key (Blue) | Keypad option selected during a Freeze condition to call the Exercise Playback start point display page (see 2-62). |
| 3 | REPEAT key (Blue) | Keypad option selected during a Freeze condition to reset the system for a repeat of the same exercise. |

**IOS DISPLAY TERMINAL KEYPAD (Continued)**

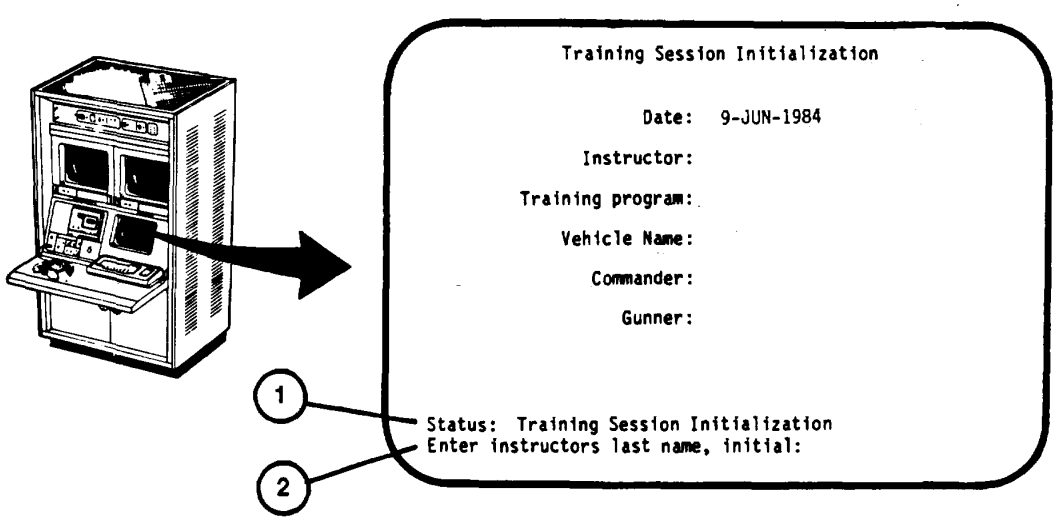
| Key | Control or Indicator | Function |
|---|---|---|
| 4 | TERMINATE key (Blue) | Keypad option selected during a Freeze condition to call the Exercise Select/Session Summary display page (see 2-46). |
| 5 | PRINT key (Yellow) | Keypad option selected during a Freeze condition to obtain a permanent hard copy of the situation monitor or performance analysis page, when displayed. |
| 6 | PRINT LAY ERRORS (White) | Depressed at completion of Acquisition and Manipulation exercises to obtain a permanent hard copy of the Crew's ability to lay on and track a moving target. |
| 7 | FROM MY POSN key (White) | Depressed to enter and log the Commander's "FROM MY POSITION" verbal command during real-time exercise operations. |
| 8 | FREEZE/UNFREEZE key (Red) | Causes all displays to remain in their position at the moment of FREEZE. Repeat, Playback, Print, Terminate and Performance Analysis can be selected from a Freeze condition. Pressing FREEZE/UNFREEZE a second time, will unfreeze the scenes to allow exercise continuation. |
| 9 | DRIVER STOP/GO key (White) | Depressed to enter and log the Crew Members "DRIVER STOP or DRIVER GO" verbal command during real-time exercise operations. This entry also causes the own-vehicle to halt, move or change between defilade and enfilade positions. |
| 10 | GUNNER IDENTIFIED key (White) | Depressed to enter and log the Gunner "IDENTIFIED" verbal command during real-time exercise operations. |
| 11 | ID ERROR key (White) | Depressed to enter and log verbal identification errors made by the commander during real-time exercise operations. |
| 12 | CLOSE THE HATCH key (White) | Depressed to enter and log verbal command by commander during real-time exercise operation. |

## IOS DISPLAY TERMINAL PAGES (MODE SELECT)



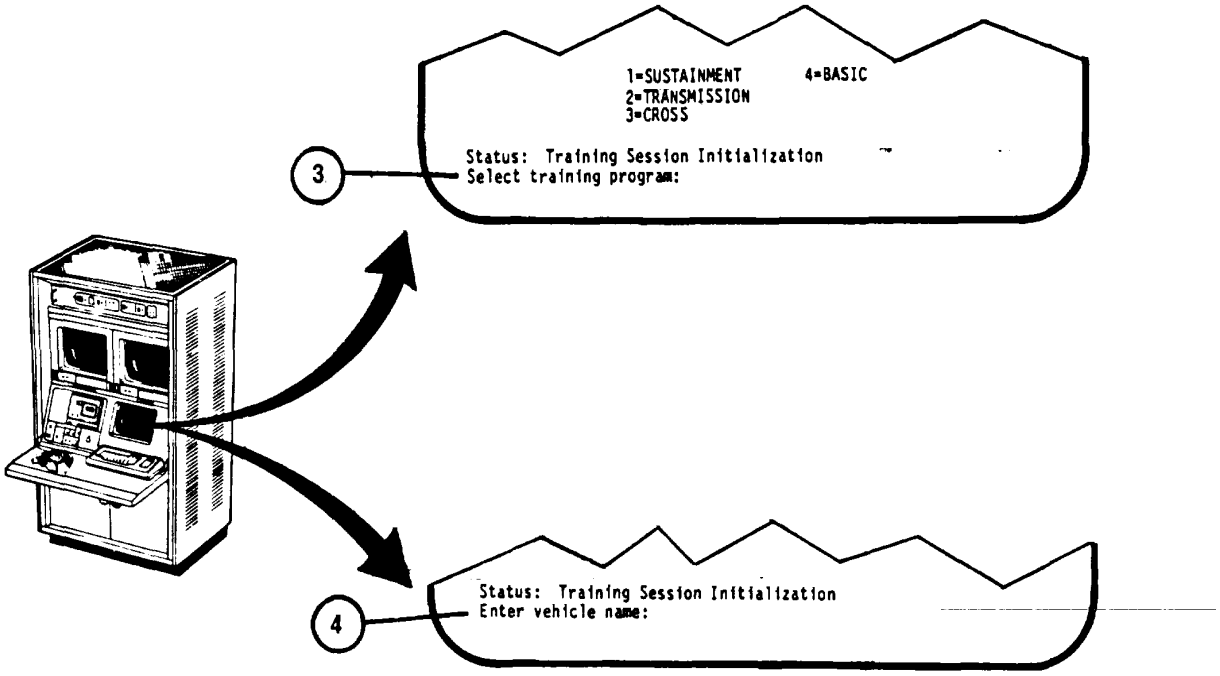

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Mode Select | Identifies the modes of operation available to the Instructor/Operator upon completion of System Log-on. Five options are available: Training, Training Management, Daily Readiness Check, Diagnostic Tests, orTerminate Session. |
| 2 | Enter Number: Prompt | Requests Instructor/Operator to select option by pressing the number key that corresponds to the choice, then pressing the RETURN key on the keyboard. The pages called from this entry are:<br><br>a. I-Training Session Initialization page (see 2-41).<br><br>b. 2-Training Management page (see 2-100).<br><br>c. 3-Daily Readiness check (see 2-128).<br><br>d. 4-Diagnostic Tests (see 3-33).<br><br>e. 5-Terminate Session halts the entire program, and logs-off the Instructor/Operator (see 2-194). |

## IOS DISPLAY TERMINAL PAGES (TRAINING SESSION INITIALIZATION)



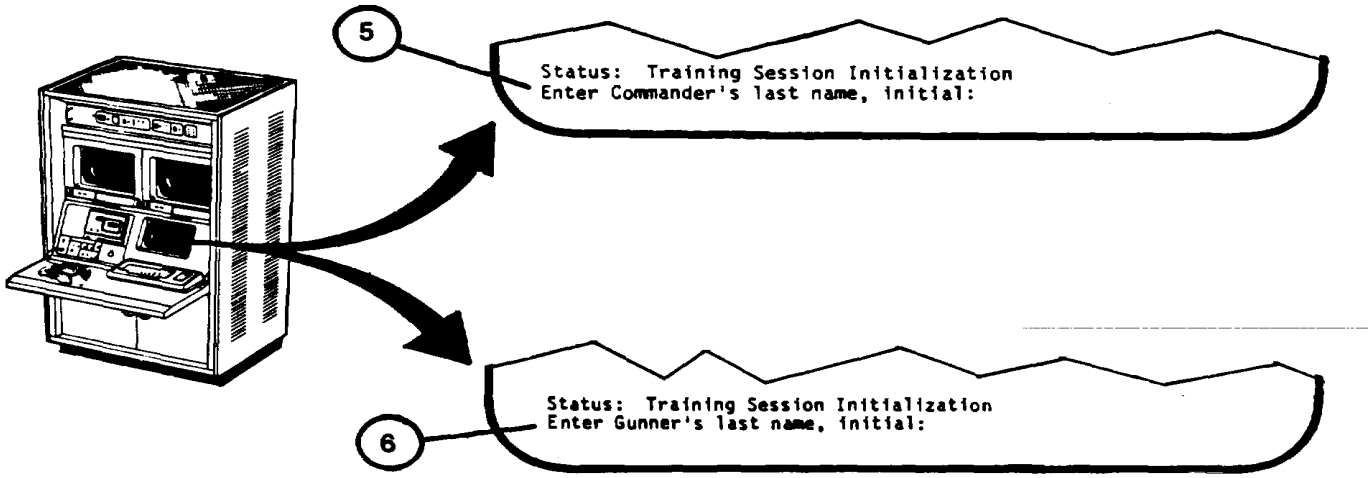

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Training Session Initialization | Training Session Initialization display page is presented when the "Training" Mode has been selected (see 2-40). The data entered identifies the crew to be trained. |
| 2 | Enter Instructor's last name, initial: Prompt | Request to type in your last name and first initial. |

**IOS DISPLAY TERMINAL PAGES (TRAINING SESSION INITIALIZATION) (Continued)**



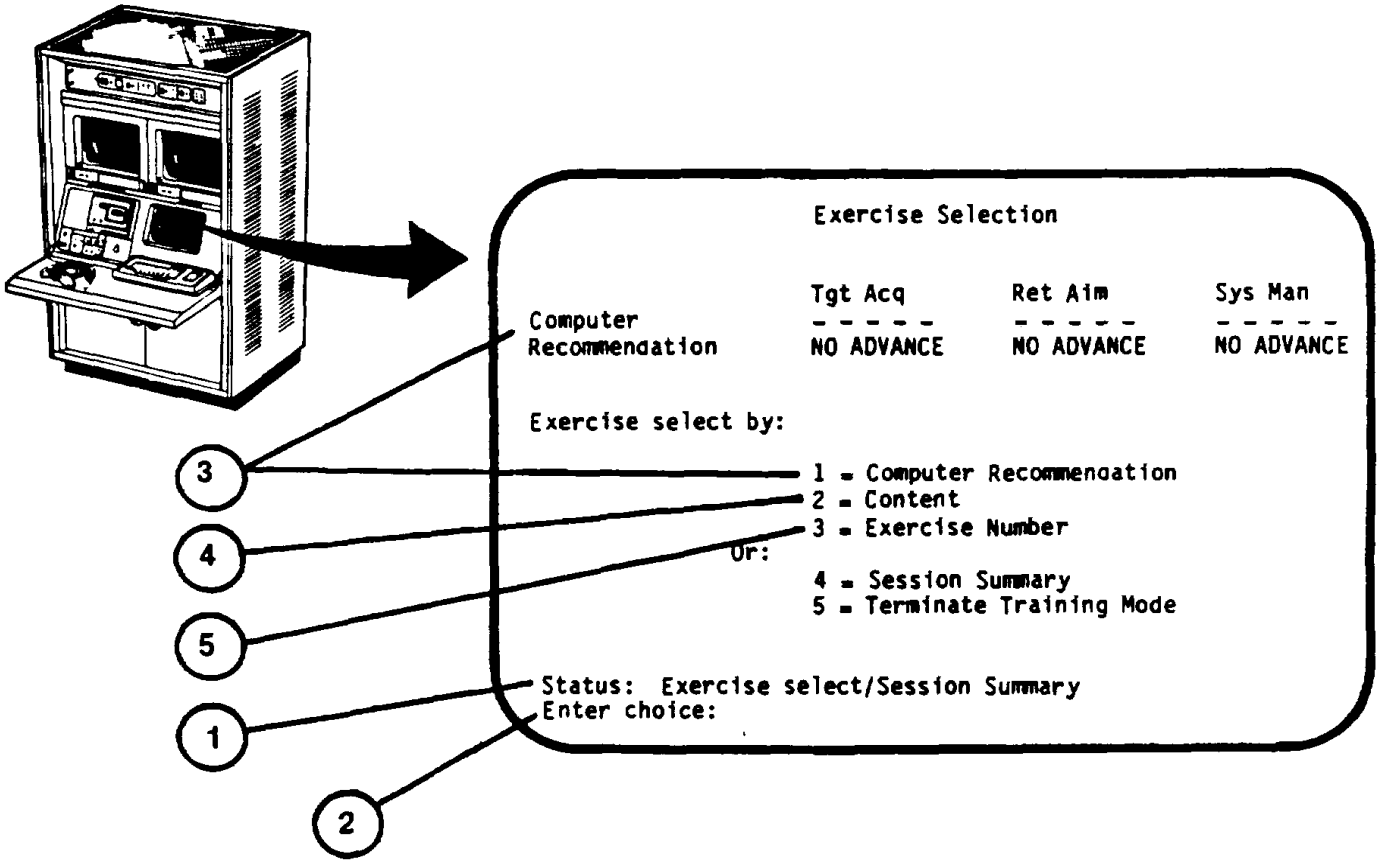

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | Select Training Program Prompt | Request to type in the number corresponding to the training program desired. There are four training programs available: 1 = SUSTAINMENT, 2 = TRANSITION, 3 = CROSS AND 4 = BASIC. |
| 4 | Enter vehicle name: Prompt | Request to type in vehicle name as Battalion/Regimental Designation Company, and Vehicle No. (Example: 1/01 A01) associated with the crew members to be trained. |

**IOS DISPLAY TERMINAL PAGES (TRAINING SESSION INITIALIZATION) (Continued)**




| Key | Control or Indicator | Function |
|---|---|---|
| | | **NOTE**<br><br>If a crew record identified by the vehicle name already exists, the entire Training Session Initialization page will be presented. The Commander and Gunner names associated with the vehicle name will be displayed and will not have to be entered again. If no record update is desired, a vehicle name of XXX is entered. This type of entry results in scratch records to be discarded at the end of the training session. |
| 5 | Enter Commander's last name, initial: Prompt | Request to type in the Commander's last name and first initial. |
| 6 | Enter Gunner's last name, initial: Prompt | Request to type in the Gunner's last name and first initial. The complete Training Session Initialization page is momentarily presented for review and then automatically replaced by the Exercise Select/Session Summary page (see 2-44). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTISESSION SUMMARY)

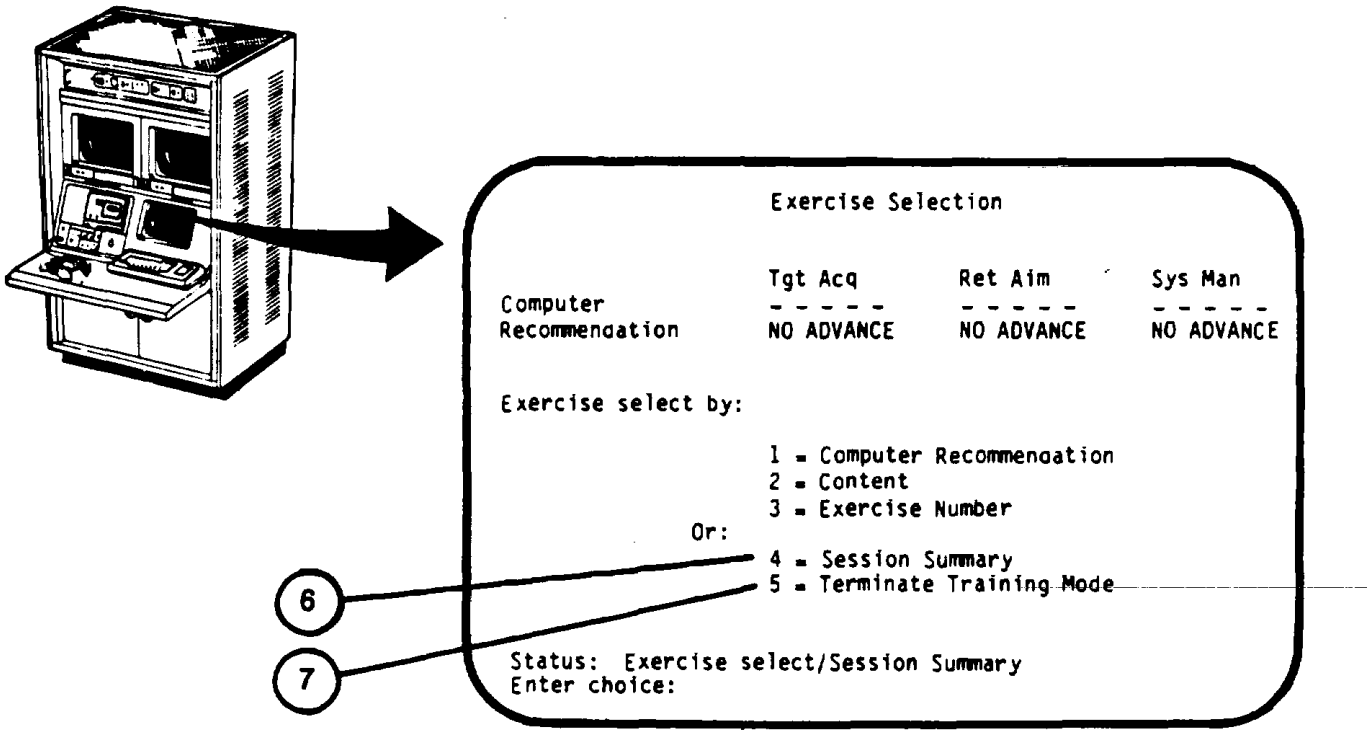



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select/ Session Summary | The Exercise Select/Session Summary display page is automatically presented to the Instructor/Operator upon completion of the Training Session Initialization (see 2-43). |
| 2 | Enter Choice: Prompt | Five selective options are available to the Instructor/Operator - three exercise Select methods, Session Summary display page or Terminate the Training Mode. Selection is made by pressing the number key that corresponds to the choice, then pressing the RETURN key on the keyboard. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTISESSION SUMMARY) (Continued)**

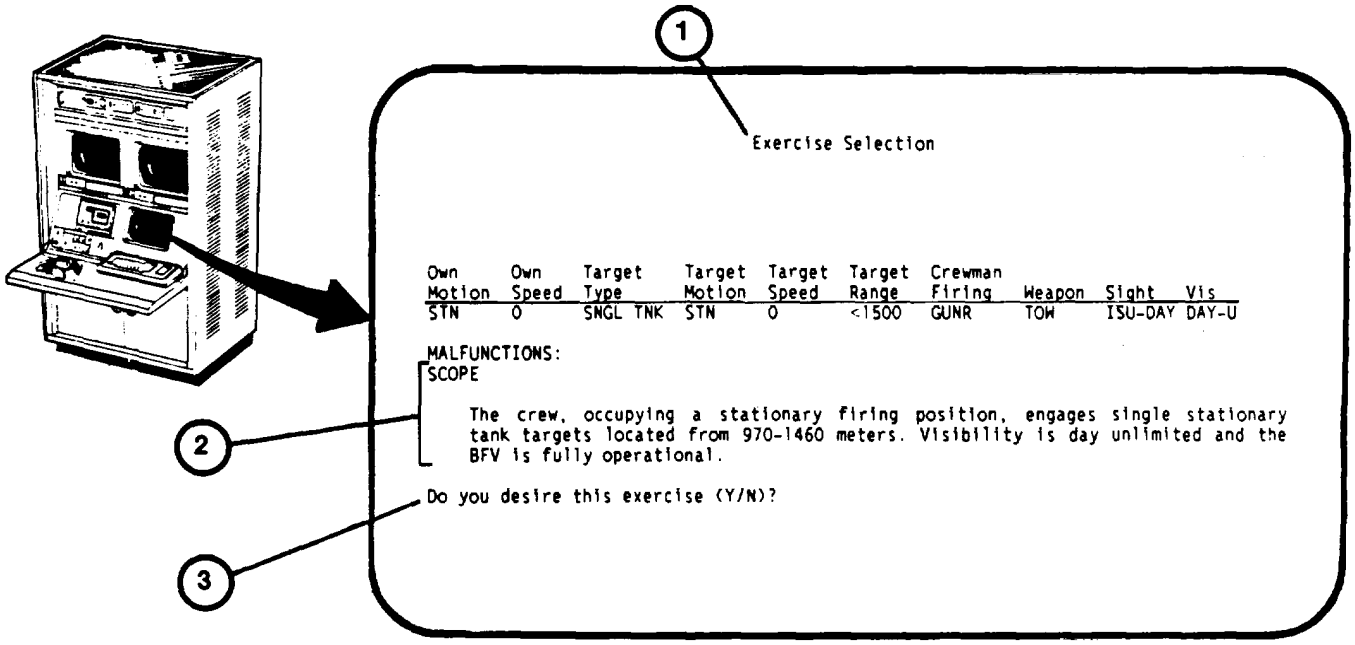
| Key | Control or Indicator | Function |
|---|---|---|
| 3 | 1 = Computer Recommendation | The Computer Recommendation for crew progress is shown at the top of the page and presented under three categories: target acquisition, reticle aim, and system management. Each category has one of four types of progress recommendations: rapid advancement, normal advancement, no advancement, or a reduction in advancement. This option calls up the Exercise Scope page (see 2-47) with the computer Recommended exercise number. |
| 4 | 2 = Content | This option is selected when it is desired to choose an exercise containing specific situations. The display page called from this entry is the Exercise Select-By-Content presentation (see 2-78) which provides a menu of exercise types to choose from. |
| 5 | 3 = Exercise Number | This option is selected when it is desired to<br><br>**NOTE**<br><br>An exercise replication provides the same degree of difficulty but changes the sequence of target situations to increase the difficulty of memorization by the crew.<br><br>The display page called from this entry is the Exercise Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT/SESSION SUMMARY) (Continued)



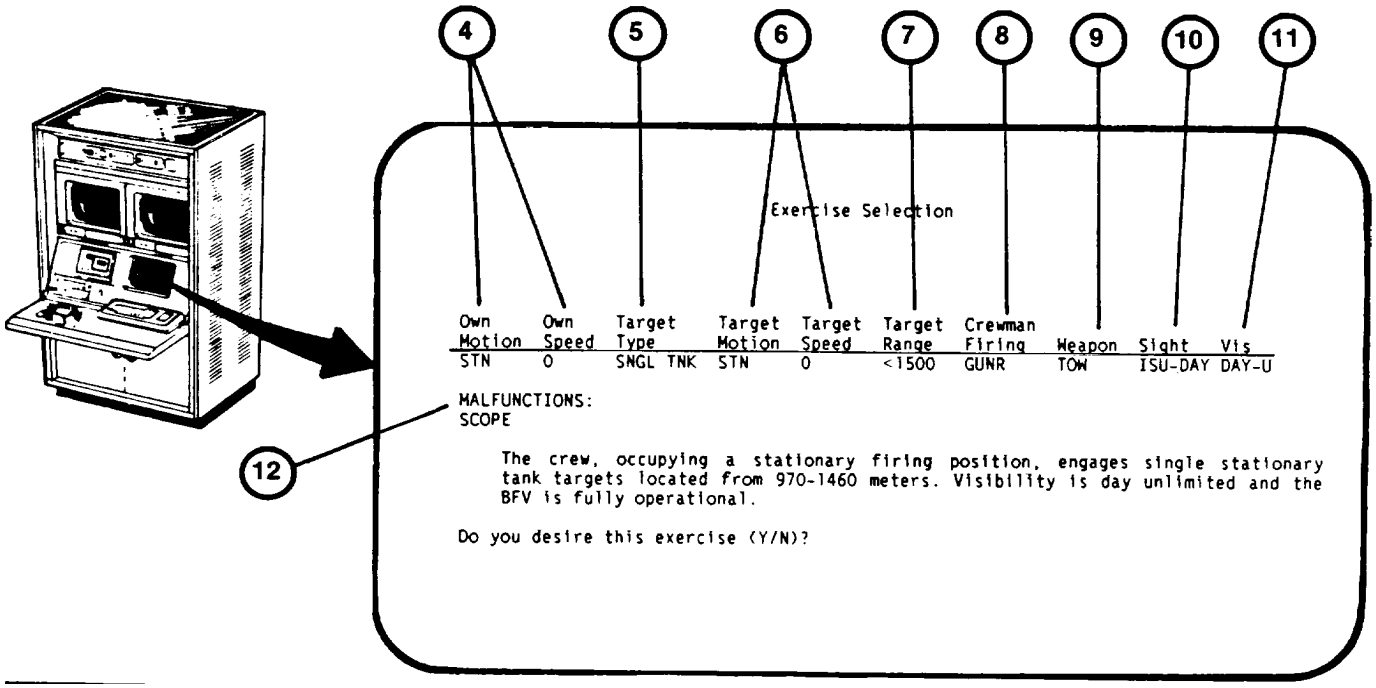

| Key | Control or Indicator | Function |
|---|---|---|
| 6 | 4 = Session Summary | This option is selected when it is desired to review the crew performance for the current training session. This performance evaluation is available after a scratch record is developed or after one or more exercises have been completed during the session. The Session Summary is automatically printed on the Terminal Printer (see 2-71). |
| 7 | 5 = Terminate Training Mode | This selection enables the Instructor/ Operator to return to the Mode Selection menu (see 2-40). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTION – SCOPE)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Exercise Selection-Scope | Exercise Selection-Scope display page describes the exercise selected and allows the Instructor/Operator to accept or reject it. |
| 2 | SCOPE | Brief description of the training exercise for Instructor/Operator information. |
| 3 | Do you desire this exercise (Y/N)? prompt | Based on the description, the Instructor/ Operator determines if this is the exercise he wants to run. If the answer is yes, the alphabetic Y key is pressed followed by pressing the RETURN key which calls the Exercise Selection-Instructions page (see 2-51). If the answer is no, the alphabetic N key is pressed followed by pressing the RETURN key which recalls the Exercise Select/Session Summary page (see 2-44). |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTION - SCOPE) (Continued)**

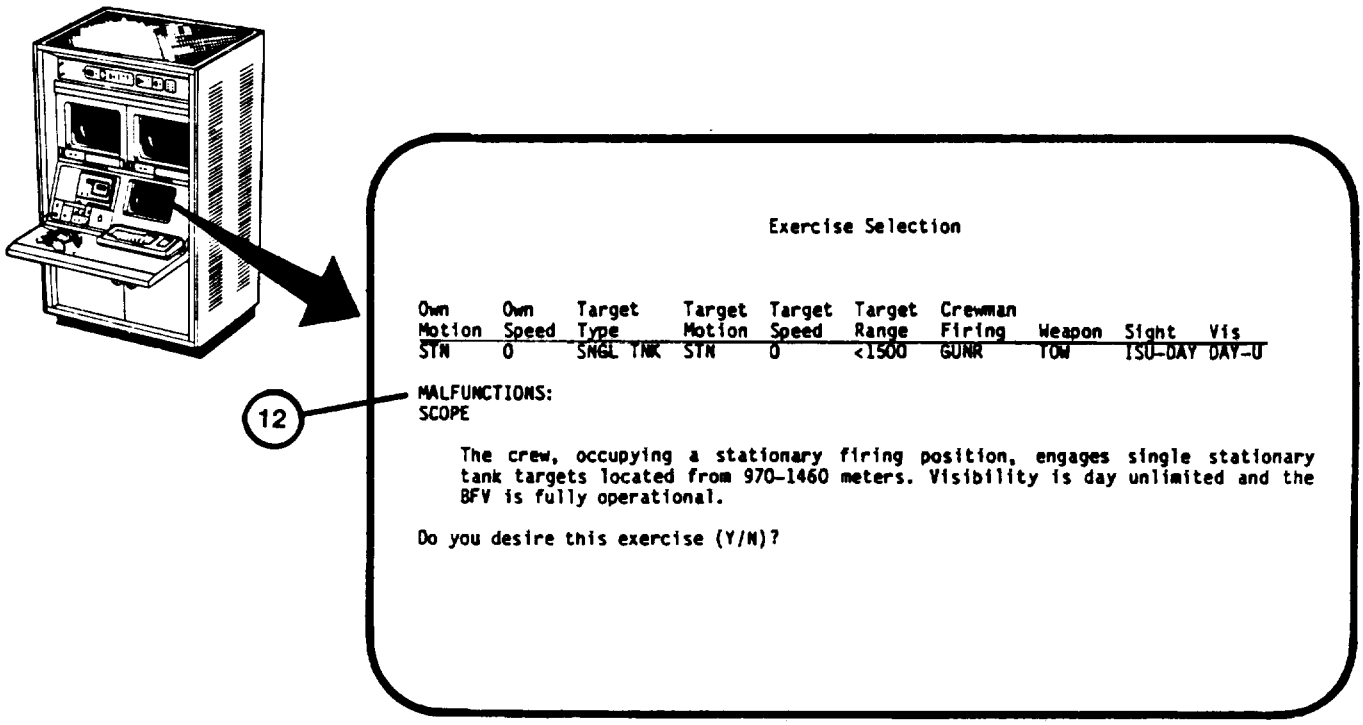



| Key | Control or Indicator | Function |
|---|---|---|
| 4 | Own Motion<br>Own Speed | Abbreviated description of own vehicle motion.<br>STN = stationary own tank.<br>MOV 0 - 15 = Moving 0 - 15 mph.<br>MOV 15 - 25 = Moving 15 - 25 mph. |
| 5 | Target Type | Abbreviated description of targets:<br>SNGL TANK = single tank<br>SNGL TGT = single target<br>MULT TGT = multiple targets |
| 6 | Target Motion<br>Target Speed | Abbreviated description of target motion and speed<br>STN = stationary target<br>MOV = moving 0 - 15 mph.<br>MOV 15 - 40 = moving 15 - 40 mph. |
| 7 | Target Range | Abbreviated description of target ranges are:<br>< 1500 = 500 to 1500 meters (short range).<br>> 1500 = 1500 to 3000 meters (long range). |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTION - SCOPE) (Continued)**

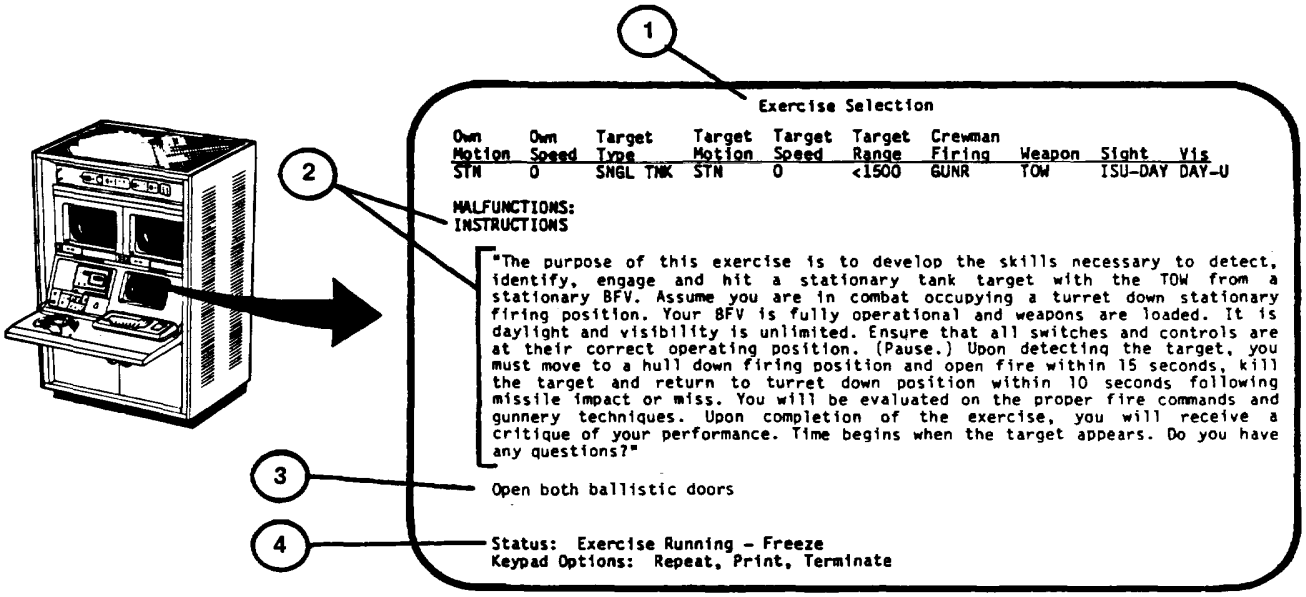
| Key | Control or Indicator | Function |
|---|---|---|
| 8 | Crewman Firing | Crew Member doing the firing:<br>GUNR = Gunner<br>CMDR = Tank Commander |
| 9 | Weapon | Weapon(s) used during exercise:<br>25mm = 25 millimeter automatic gun<br>COAX = 7.62mm coaxial machine gun<br>TOW = TOW missile<br>ALL = All weapons |
| 10 | Sight | Gunner's sight(s) used during exercise:<br>ISU - DAY = Integrated sight unit - daylight operation.<br>ISU - TIS = ISU night operation.<br>ASU = Auxiliary sight unit.<br>Commander's sight(s) used during exercise:<br>CR - DAY = Commander's relay-daylight operation.<br>CR - TIS = CR night operation.<br>ASU = Auxiliary sight unit. |
| 11 | Vis | Visibility conditions:<br>DAY-U = Daylight, unlimited visibility<br>DAY-L = Daylight, limited visibility<br>DAY-F = Daylight, (foggy)<br>NIGHT = Darkness<br>DUSK = Low Light<br>DAY LI = Daylight, less limited then Day-L |
| 12 | MALFUNCTIONS | Owntank operational malfunctions:<br>GPCH - Gunner's power control handle STAB<br>STAB - Stabilization system.<br>CPCH - Commander's power control handle.<br>TWMF1 - TOW Missile No. 1 misfire.<br>TWMF2 - TOW Missile No. 2 misfire.<br>TWTRK - TOW tracker system.<br>TWCGE - TOW command guidance electronics.<br>TWPWR - TOW power supply.<br>TWCIR - TOW electrical circuits. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTION - SCOPE) (Continued)



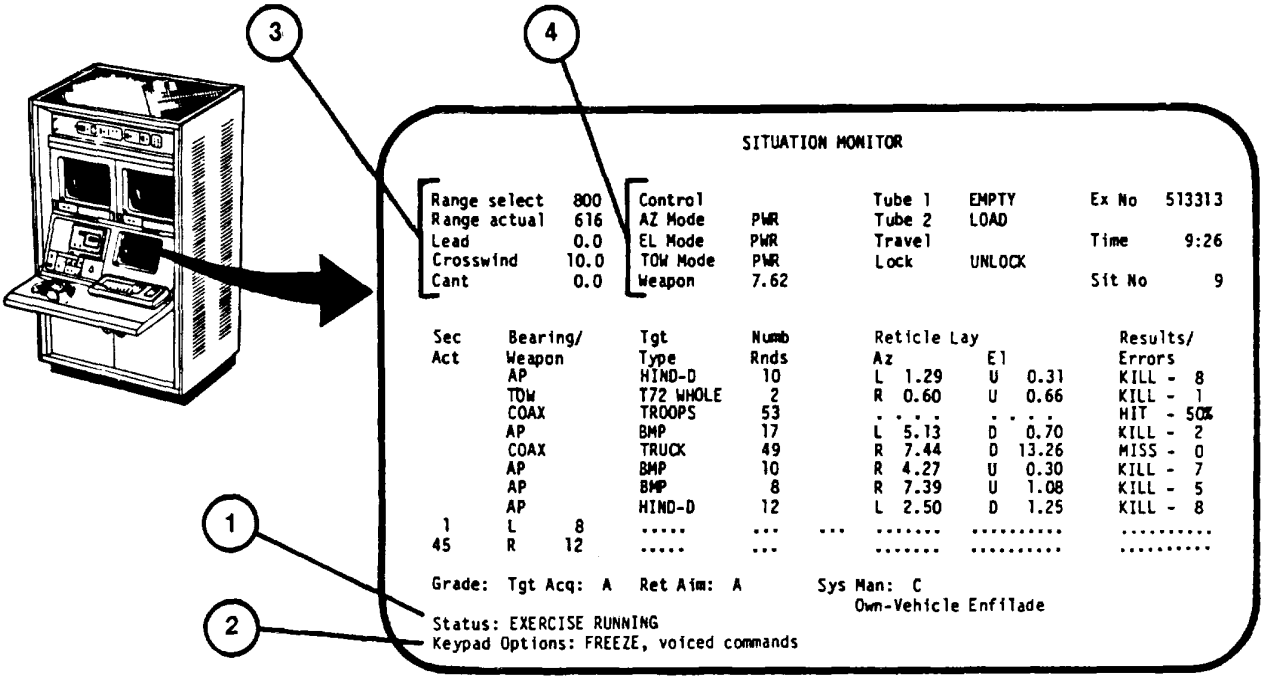

| Key | Control or Indicator | Function | | |
|---|---|---|---|---|
| 12 | MALFUNCTIONS (continued) | APFDR | - | AP ammo feeder. |
| | | HEFDR | - | HE ammo feeder. |
| | | ISU | - | Integrated sight unit. |
| | | PWMF | - | Primary weapon misfire. |
| | | OPNHC | | Open hatch. |
| | | TRPWR | | Turret power. |
| | | NBC | | Nuclear, biological, chemical protection. |
| | | UNANO | | Unannounced. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECTION - INSTRUCTIONS)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Exercise Selection - Instructions | Exercise Selection - Instructions display page presents the instructions for the crew and identifies Switch Setup Errors. After the Instructor/Operator reads the Instructions to the crew the Switch Setup Errors are presented as part of the page presentation. It is not possible to continue the exercise until all Switch Setup Errors have been corrected by the crew. |
| 2 | INSTRUCTIONS | Description of the exercise to be read to the crew by the Instructor/Operator. |
| 3 | Switch Setup Errors | Identifies the switch settings which are incorrectly set for the exercise. |
| 4 | Freeze | Status: Exercise Running - After switch settings are corrected this status line appears to notify Instructor/ Operator that exercise will start when UNFREEZE key is pressed on keypad. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING)

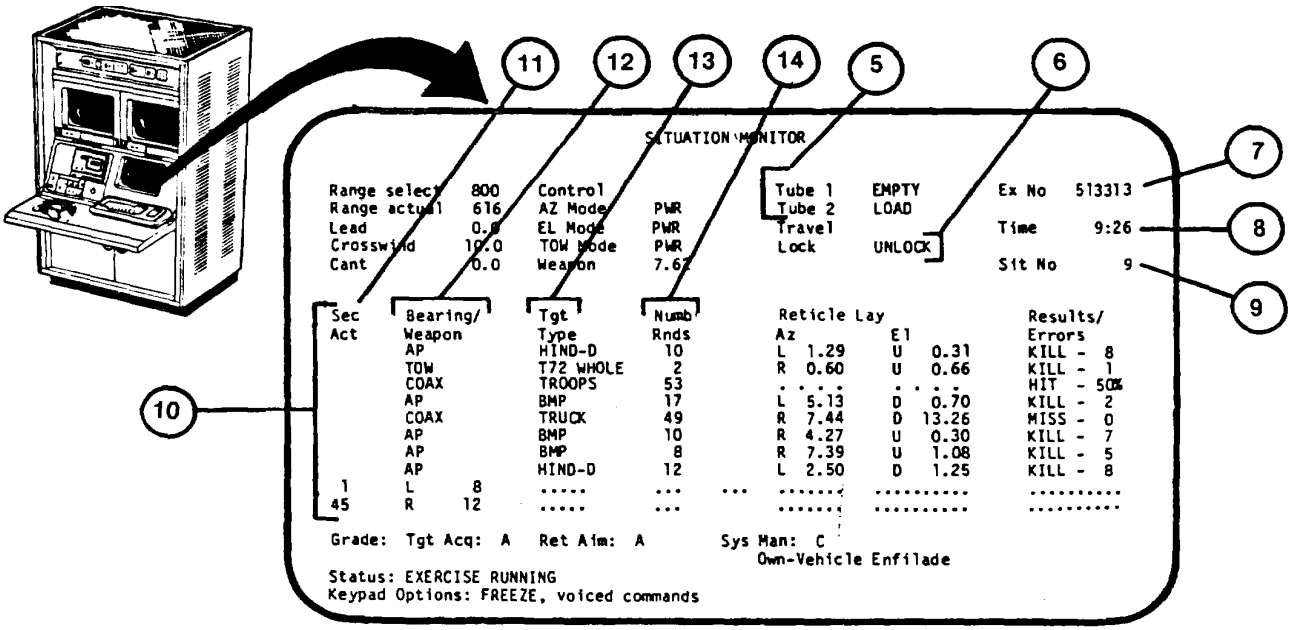



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: EXERCISE RUNNING | Exercise Running display page. This presentation enables the Instructor/Operator to observe the performance of the crew members as situations occur. If allowed to run to completion, this display automatically changes to Exercise Complete-Freeze (see 2-57) |
| 2. | Keypad Options: FREEZE, voiced commands | The Instructor/Operator has two options to voiced consider during an Exercise Running condtion; Freeze to stop the exercise or pressing the keypad keys to respond to the crew's verbal commands. The FREEZE/UNFREEZE key on the keypad is pressed to stop the exercise and call the Exercise Running - Freeze display page. (see 2-59). The keypad verbal command keys affect the scoring of the crew's performance (see 2-38). |

**IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING) (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | Range Select<br>Range Actual<br>Lead<br>Crosswind<br>Cant | Summary of reticle aiming data for each situation:<br><br>a. Range Select = Setting of Crew Station range switch.<br>b. Range Actual = Range of target for a given situation.<br>c. Lead = Aiming point in mils ahead of target.<br>d. Crosswind =Crosswind speed in mph.<br>e. Cant = Slope of vehicle in degrees left or right. |
| 4 | Control<br>AZ Mode<br>EL Mode<br>TOW Mode<br>Weapon<br>being squeezed). | Summary of the Crew Station switch setup:<br><br>a. Control - Identifies who is controlling the turret-Commander, Gunner or neither (dependent upon palm switch<br><br>b. AZ Mode- Identifies setting of turret traverse drive select lever - MAN or PWR.<br><br>c. EL Mode - Identifies setting of gun elevation drive select lever - MAN or PWR.<br><br>d. TOW Mode - Identifies setting of TOW elevation drive select lever - MAN or PWR.<br><br>e. Weapon - Identifies weapon selected:<br>(1) SAFE = ARM-SAFE-RESET switch in SAFE position.<br><br>(2) TOW = TOW button pressed.<br><br>(3) AP or HE = 25mm armor piercing or high explosive ammo selected:<br>HI = 200 rounds per minute.<br>LO = 100 rounds per minute. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING) (Continued)

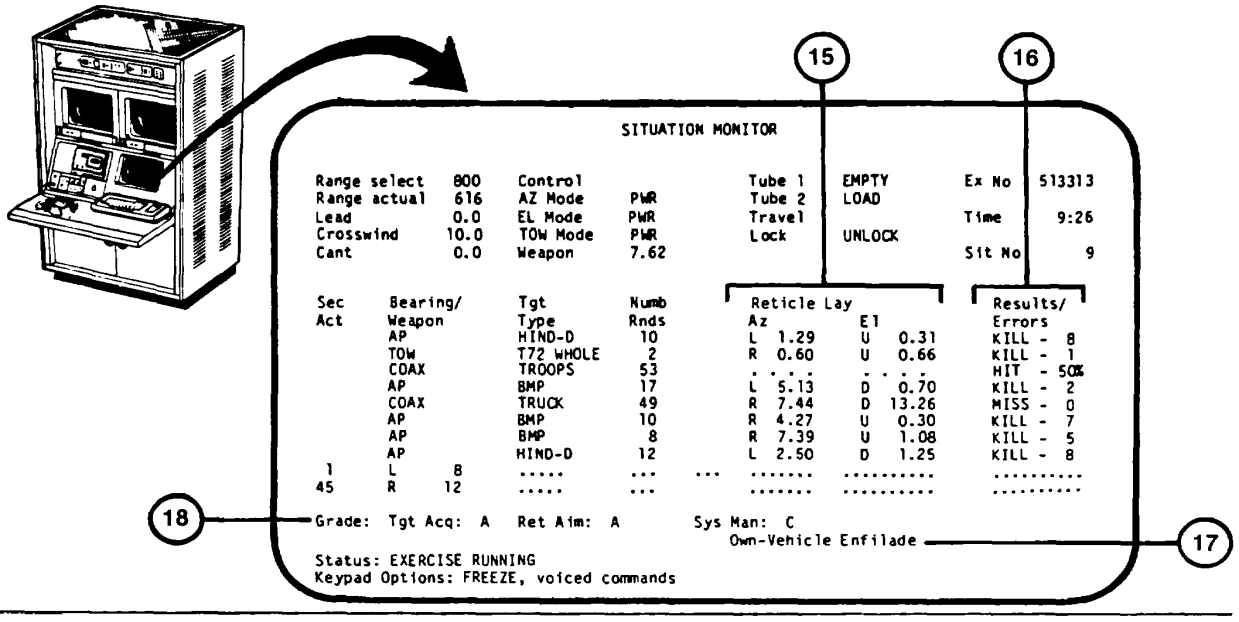



| Key | Control or Indicator | Function |
|---|---|---|
| 5 | Tube I<br>Tube 2 | Status of TOW Launcher Tubes - LOAD or EMPTY. |
| 6 | Travel Lock | Status of Turret travel lock - LOCKED or UNLOCK. |
| 7 | Ex No | Identification number of the exercise being run. |
| 8 | Time | Accumulated running time of the exercise in minutes and seconds. |
| 9 | Sit No | Current situation number of the exercise running (maximum situations per exercise is ten). |
| 10 | Situation Summary | Provides the Instructor/Operator with a running summary of each situation in the exercise and a running summary of crew performance as the situation is encountered. A maximum of four targets will be active at any given time. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING) (Continued)**

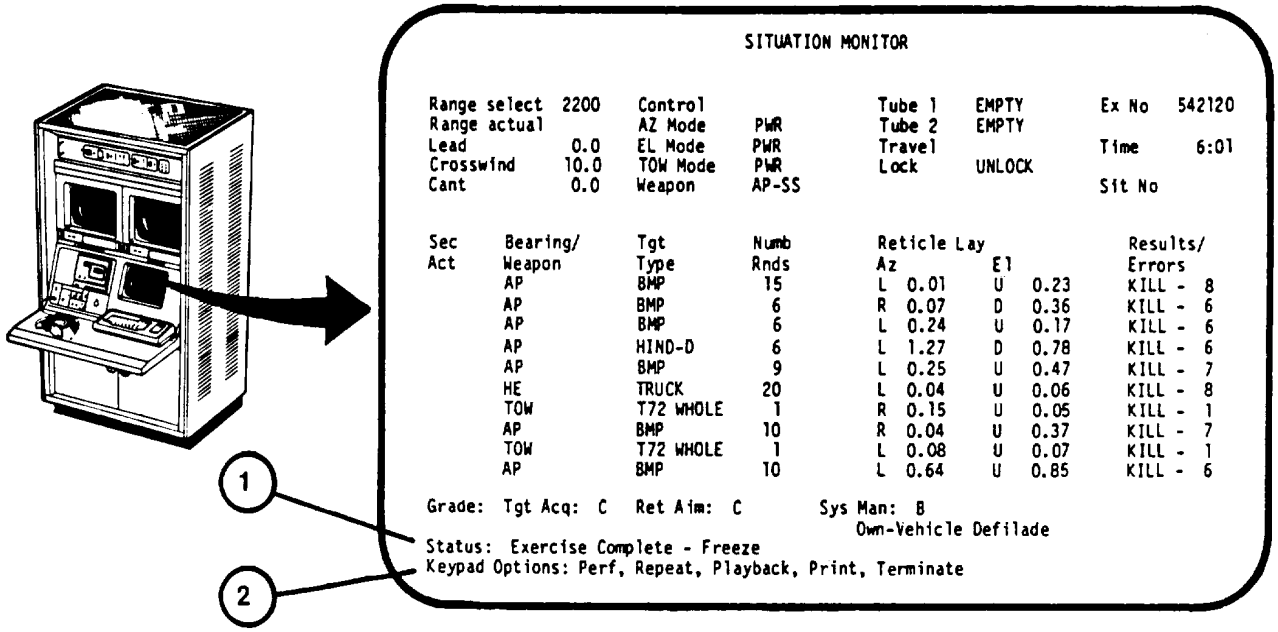
| Key | Control or Indicator | Function |
|---|---|---|
| 11 | Sec Act | The Sec Act (seconds to activation) column provides the time remaining in the exercise before the specified targets become active. |
| 12 | Bearing/Weapon | Prior to the situation becoming current, this column displays the Bearing (Left, Right and degrees) of the target in respect to the center of the field of view of the in-use sight. When a target deactivates, Bearing is replaced with the type of Weapon or ammo (for main gun) selected for use by the crew. Weapons used are 25mm gun (AP and HE ammo) 7.62mm COAX machine gun, and TOW missiles. |
| 13 | Tgt Type | Target Types are T-72 (whole or turret), BMP, TRUCK, TGT BOARD, TROOPS, M60A3, HIND-D, Ml or BFV (M2). When a target becomes active the target type is made brighter and returned to normal when the target is deactivated. |
| 14 | Numb Rnds | Round or Burst Count |

## IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING) (Continued)



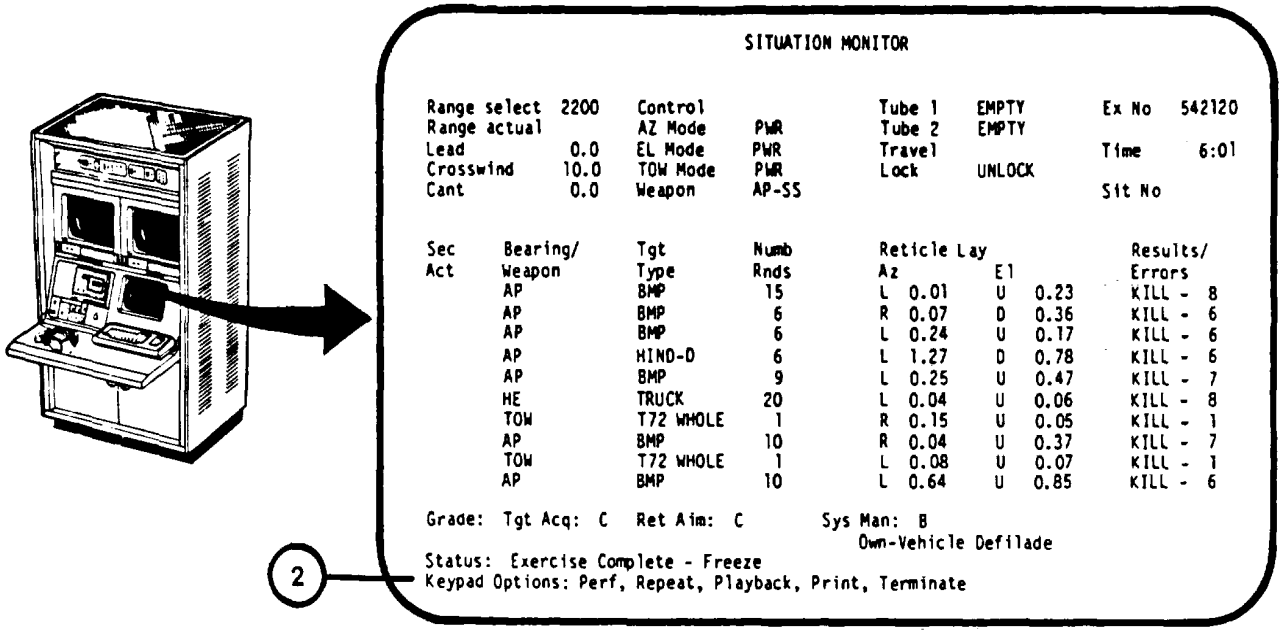

| Key | Control or Indicator | Function |
|---|---|---|
| 15 | Reticle Lay<br>Az El | Azimuth and Elevation error of weapon at time of fire.<br>AZ = L (left), R (right) and amount of error in mils.<br><br>EL = U (up), D (down) and amount of error in mils. |
| 16 | Results/Errors | Provides the general results of the situation as HIT, MISS, or KILL, and the number of errors. A (D) will also be displayed for main gun dispersion. |
| 17 | Own vehicle Status | Identifies the own vehicle status: Moving, Halted, Defilade, or Enfilade. |
| 18 | Grade: | Provides an average grade (as each situation is encountered) in three categories: Target Acquisition, Reticle Aim, and System Management. The grade is given as a result of computer evaluation in four levels: A, B, C and F (failure). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE COMPLETE - FREEZE



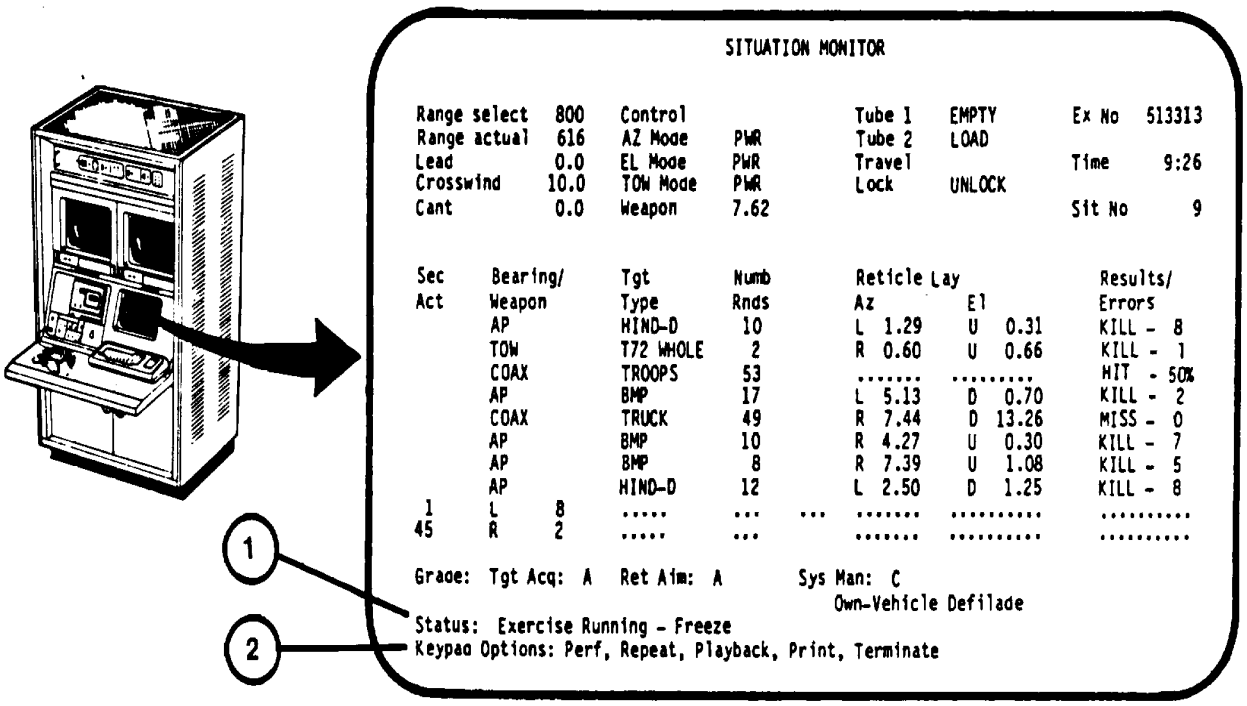

| Key | Control or Indicator | Function |
|---|---|---|
| 1. | Status: Exercise Complete - Freeze | Exercise Complete -- Freeze display page is presented to the Instructor/Operator when all situations within an exercise are complete. This is an automatic freeze with the same presentation as Exercise Running (see 2-52), except Status and Keypad Options. |
| 2 | Keypad Options: Perf, Repeat, Playback, Print, Terminate | Five keypad options are available to the Instructor/Operator during an Exercise Complete -- Freeze condition:<br><br>a. Pressing the PERF ANAL key on the keypad calls the Exercise Complete-Exercise Performance Analysis display page presentation for review (see 2-66). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE COMPLETE - FREEZE) (Continued)



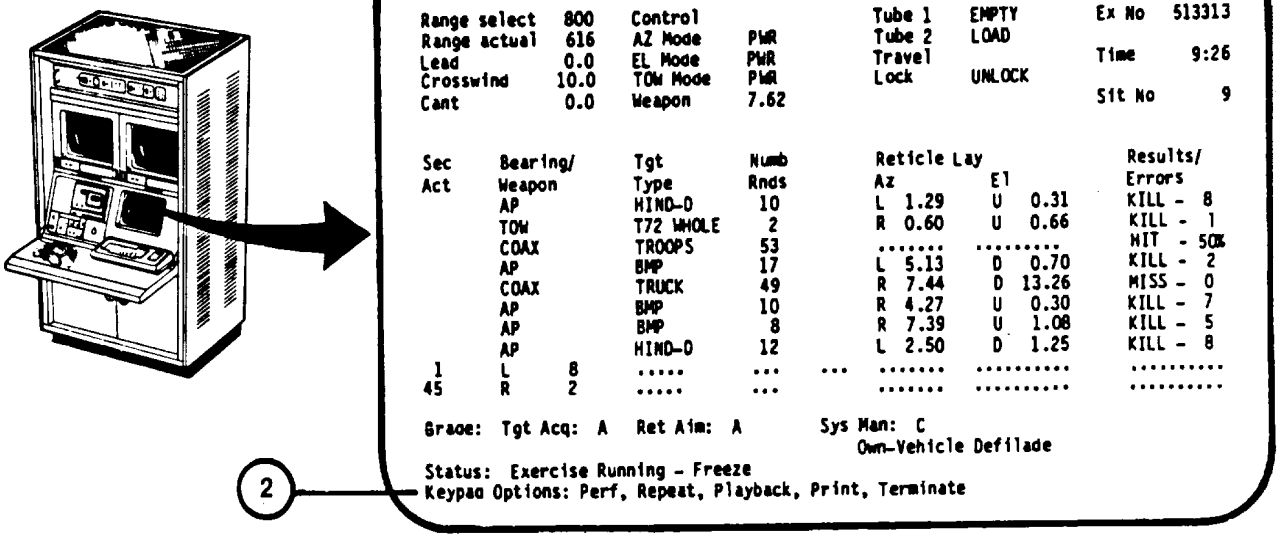

| Key | Control or Indicator | Function |
|---|---|---|
| 2 (Continued) | | b. Pressing the PLAYBACK key on the keypad calls the Exercise Playback display page for playback start point selection (see 2-62).<br><br>c. Pressing the REPEAT key then UNFREEZE key on the keypad recalls the Situation Monitor display page reset to the first situation.<br><br>d. Pressing the PRINT key on the keypad activates the Terminal Printer to provide a printout of the display page shown on the Display Terminal.<br><br>e. Pressing the TERMINATE key on the keypad recalls the Exercise Select/ Session Summary display page presentation (see 2-44). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING - FREEZE)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Running - Freeze | Exercise Running – Freeze display page is presented to the Instructor/Operator when the FREEZE/UNFREEZE key on the keypad is pressed during Exercise Running conditions. The exercise and stop presentation remains frozen on the display terminal at the time of initiation. |
| 2 | Keypad Options: Perf, Repeat, Playback, Print, Terminate | Six keypad options are available to the Instructor/Operator during an Exercise Running -- Freeze condition:<br><br>a. Pressing the PERF ANALYSIS key on the keypad calls the Exercise Performance Analysis display page (see 2-66) for review of the crew's performance up to the point of freeze. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING - FREEZE) (Continued)

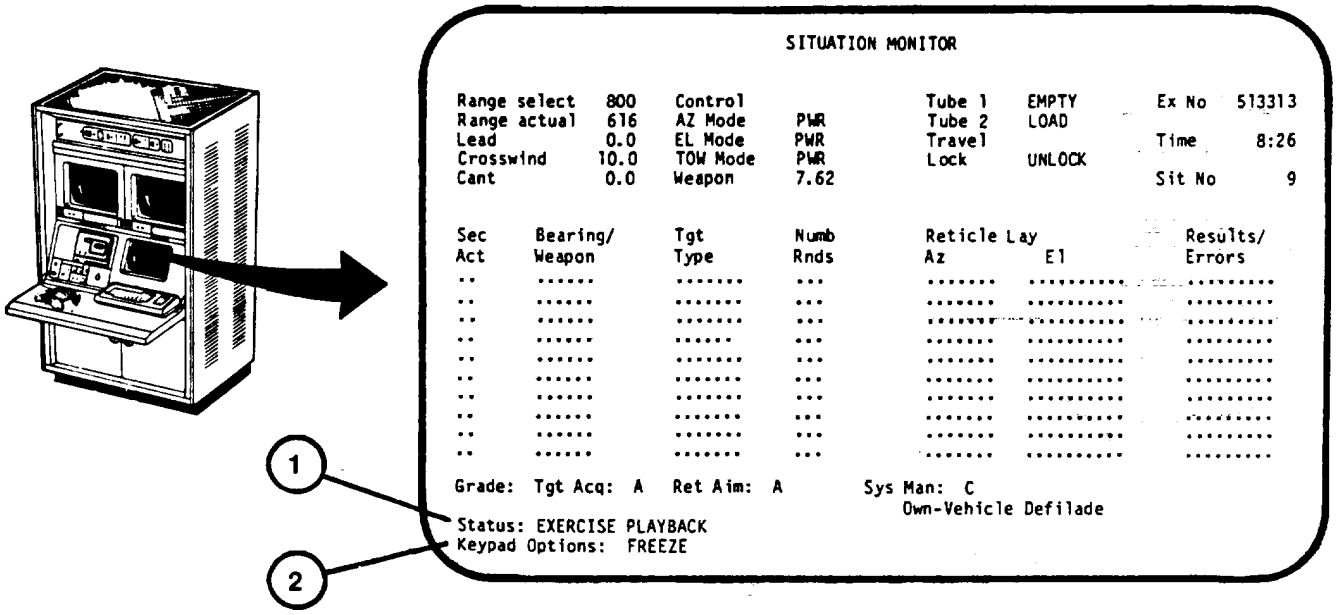



| Key | Control or Indicator | Function |
|---|---|---|
| 2 (Continued) | | b. Pressing the PLAYBACK key on the keypad the Exercise Playback display page presentation for playback start point selection (see 2-62).<br><br>c. Pressing the REPEAT key then UNFREEZE key on the keypad calls for switch settings (if necessary) and then recalls the Situation Monitor display page reset to the first situation (see 2-52).<br><br>d. Pressing the FREEZE/UNFREEZE key on the keypad Unfreezes the situation and restarts the Exercise Running display page (see 2-52) at the point where it was frozen.<br><br>e. Pressing the PRINT key on the keypad activates the Terminal Printer to provide a printout of the display page on the Display Terminal. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE RUNNING - FREEZE) (Continued)**

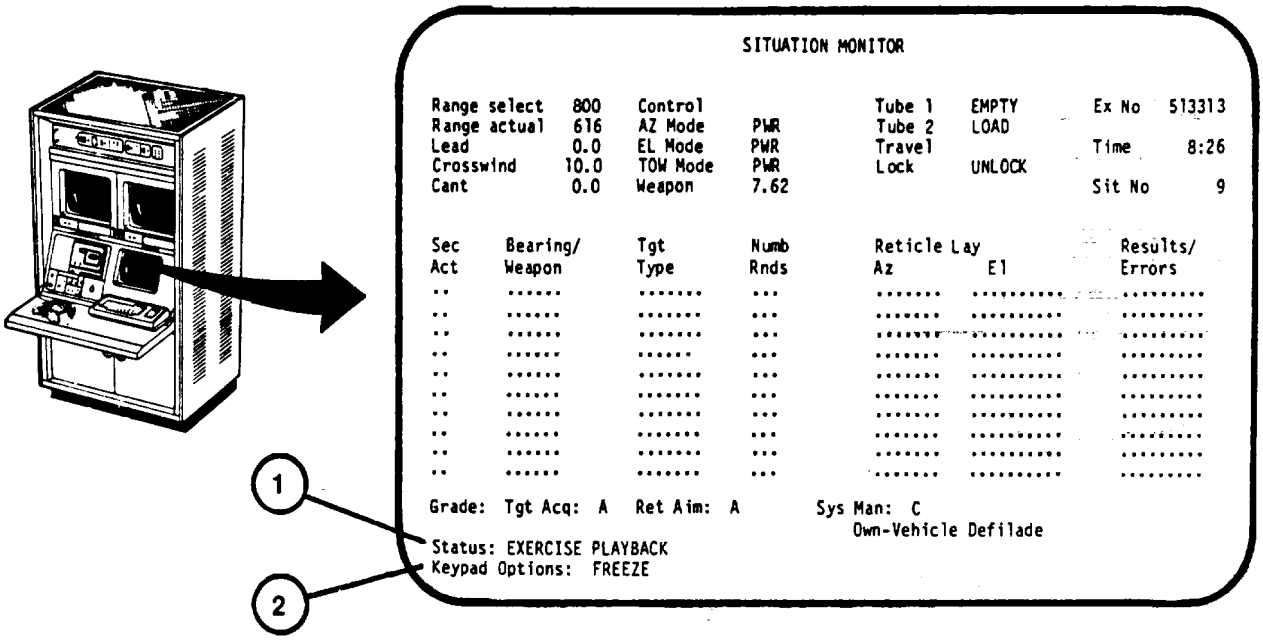
| Key | Control or Indicator | Function |
|---|---|---|
| 2.(Continued) | | f. Pressing the TERMINATE key on the keypad terminates the exercise and recalls the Exercise Select/Session Summary display page presentation (see 2-44). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE PLAYBACK)



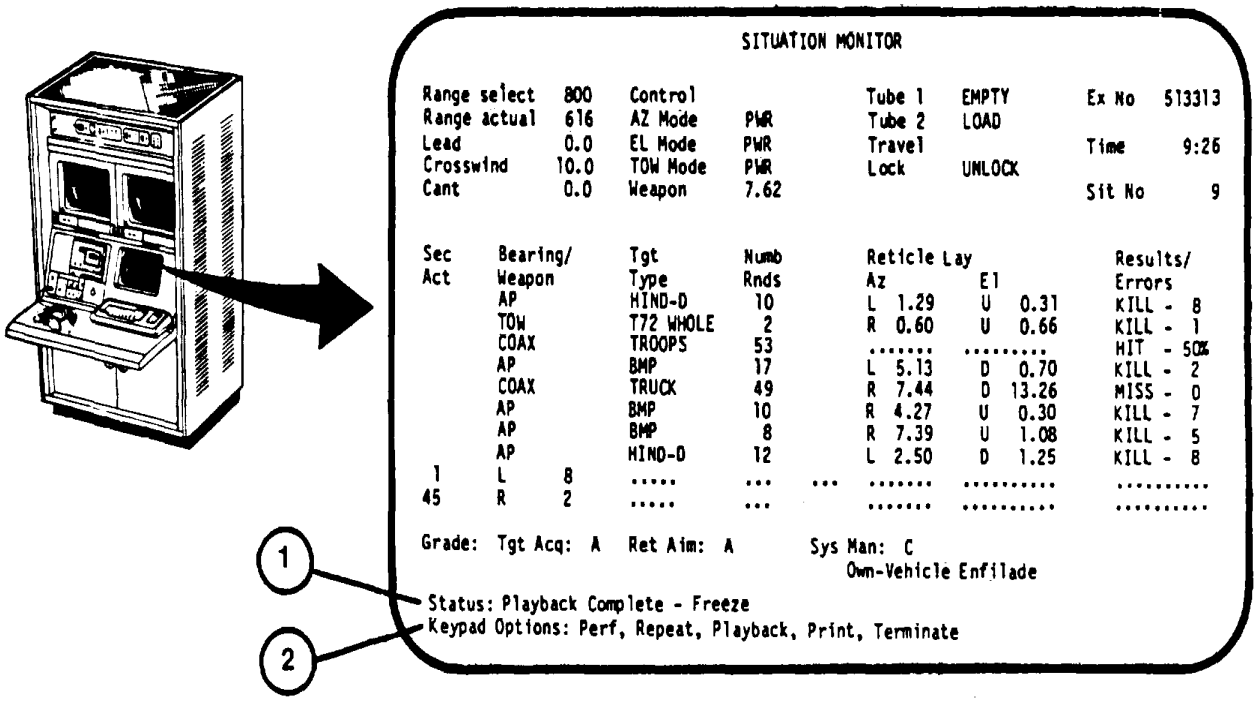

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Playback | Exercise Playback display page is presented to the Instructor/Operator for entry of a playback starting point. The presentation is the same as Exercise Running-Freeze (see 2-59), except Status and Prompt (2). |
| 2 | Enter situation # to start playback: Prompt | Playback will always start at the beginning of a situation. The number of the situation in which the current Freeze condition was initiated is shown in the upper right-hand corner of the display (Sit No). If the current or earlier situation is to be played back, the Sit No is entered by pressing associated keyboard number key and then pressing the RETURN key. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE PLAYBACK RUNNING)



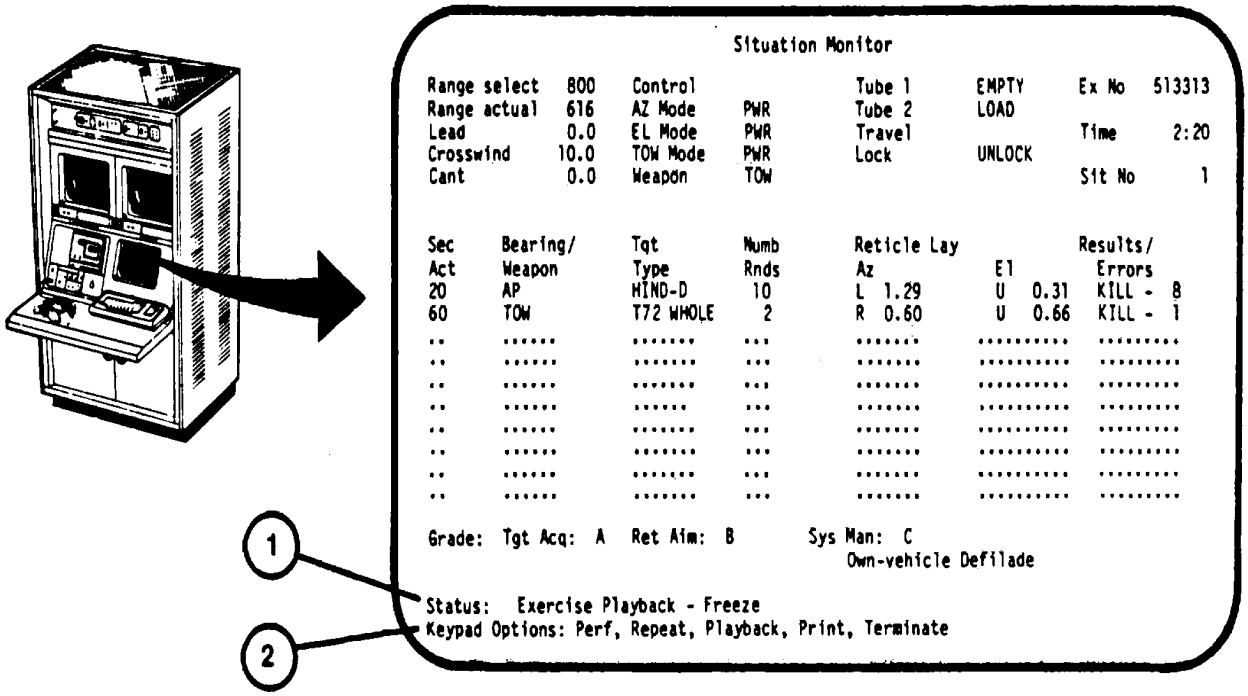

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: EXERCISE PLAYBACK (Running) | Exercise Playback (Running) display page is presented to the Instructor/Operator when unfrozen after Exercise Playback Start Point selection (see 2-62). The presentation is the same as Exercise Running (see 2-52).<br><br>**NOTE**<br><br>If the FREEZE option is not used, Exercise Playback Running continues to Exercise Playback Complete -- Freeze (see 2-64). |
| 2 | Keypad Options: FREEZE | The Instructor/Operator has one option to consider during an Exercise Playback Running condition: Freeze to stop the exercise. The FREEZE/UNFREEZE key on the keypad is pressed to stop the exercise playback and call the Exercise Playback -- Freeze display page (see 2-65). |

## IOS DISPLAY TERMINAL PAGES (PLAYBACK COMPLETE - FREEZE)



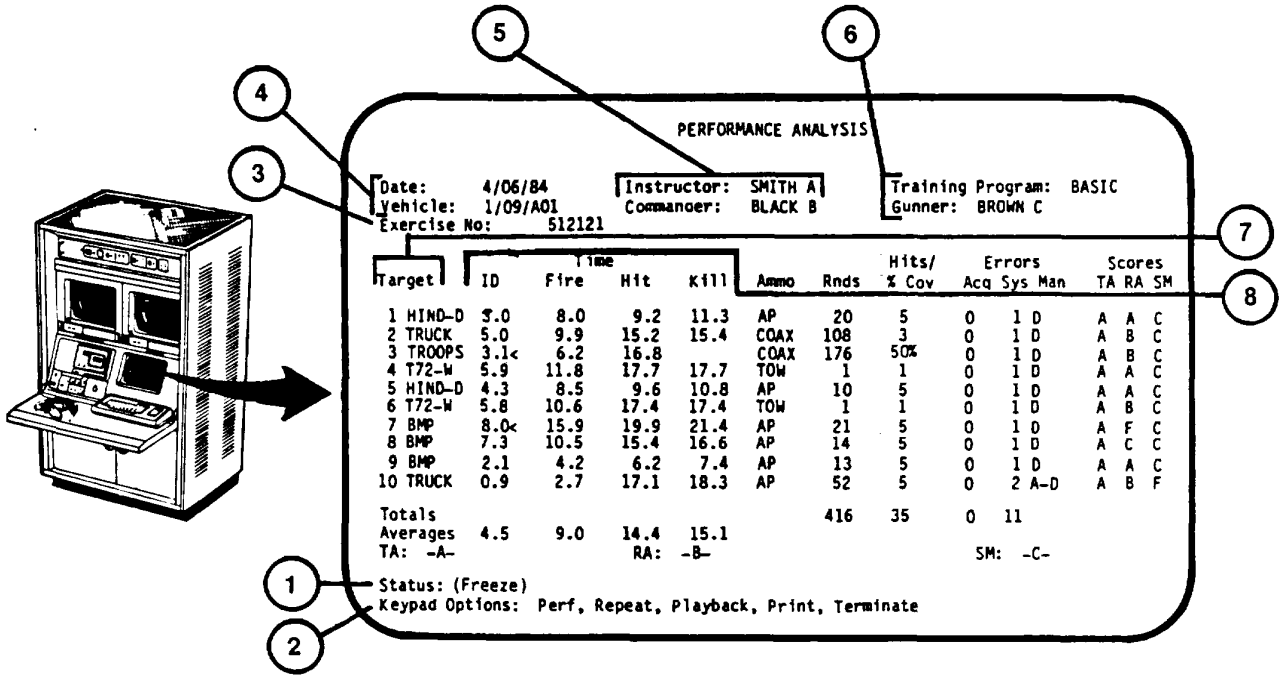

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Playback Complete -- Freeze | Exercise Playback Complete -- Freeze display page is presented to the Instructor/ Operator when the exercise playback is complete. The display is the same as Exercise Running -- Freeze (see 2-59) with different Status. |
| 2 | Keypad Options: Perf, Repeat, Playback, Print, (Unfreeze) Terminate | Six keypad options are the same as Exercise Complete - Freeze (see 2-57). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE PLAYBACK - FREEZE)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Playback -- Freeze | Exercise Playback -- Freeze display page is presented to the Instructor/Operator when the FREEZE/UNFREEZE key on the keypad is pressed during Exercise Playback Running conditions. The presentation is the same as Exercise Running -- Freeze (see 2-59). |
| 2 | Keypad Options: Perf, Repeat, Playback, Print, (Unfreeze) Terminate | Six keypad options are the same as Exercise Running - Freeze (see 2-59). |

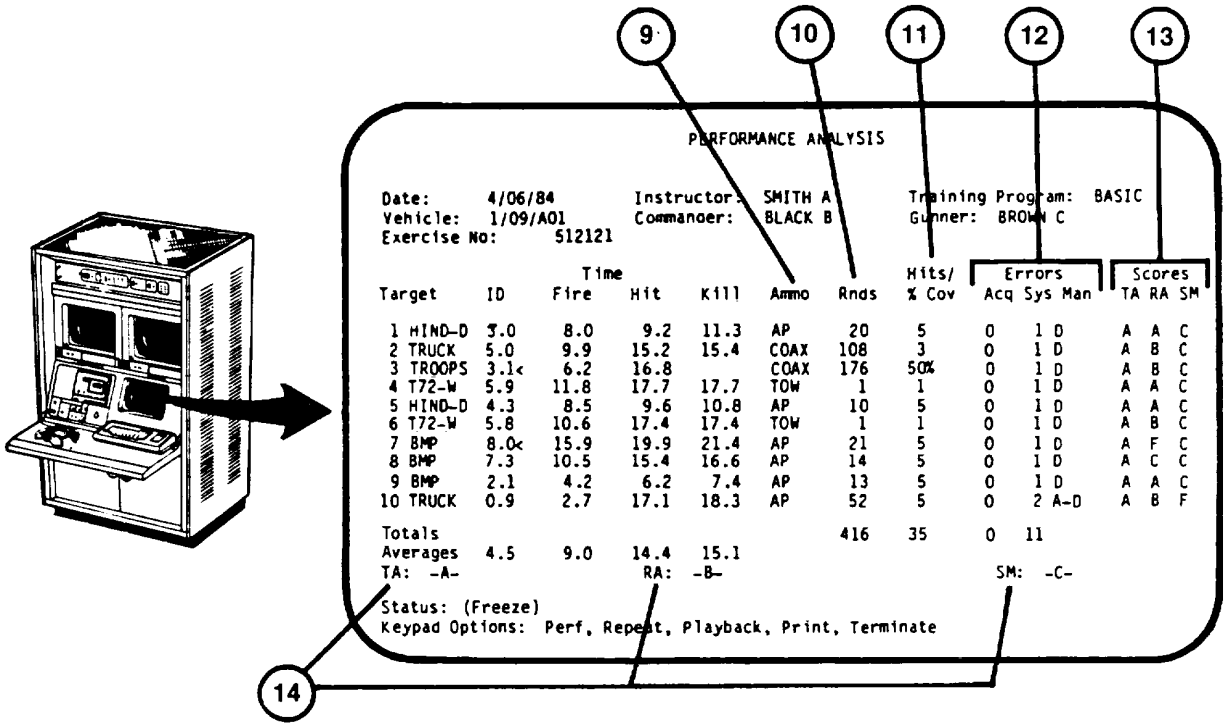
## IOS DISPLAY TERMINAL PAGES (PERFORMANCE ANALYSIS)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Freeze conditions | Exercise Performance Analysis display page is presented to the Instructor/Operator as a summary during Exercise Running -- Freeze (see 2-59), or Exercise Complete -- Freeze (see 2-57) or Exercise Playback -- Freeze (see 2-65) conditions after PERF ANALYSIS keypad option has been called. Provides a summary of the conditions the computer uses to develop the exercise grades and progress recommendations. |
| 2 | Keypad Options: Perf, Repeat, Playback, Print, Terminate | Five keypad options are the same as Exercise Complete - Freeze (see 2-57). |
| 3 | Exercise No: | Current exercise number associated with this performance analysis. |

**IOS DISPLAY TERMINAL PAGES (PERFORMANCE ANALYSIS) (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 4 | Date:<br>Vehicle: | Current date and Tank identification as entered on Training Session Initialization page (see 2-41). |
| 5 | Instructor:<br>Commander: | Instructor's name and Commander's name as entered on Training Session Initialization page (see 2-41). |
| 6 | Training Program:<br>Gunner: | Training Program and Gunner's name as entered on Training Session Initialization page (2-4 1). |
| 7 | Target | This column identifies the sequence number and the type of targets appearing for each situation. |
| 8 | Time:<br>ID | Time from full exposure of target to:<br>a. ID - Time when gunner says Identified or TC says "From My Position" or "Cal .50" (entered in terminal keypad by Instructor/ Operator). Symbol "8" signifies that keypad "GUNNER IDENTIFIED" was not pressed and ID time is calculated as one-half of Fire time (b. below). |
| | Fire | b. Fire - Time when first round was fired at target. |
| | Hit | c. Hit - Time when target was first hit. |
| | Kill | d. Kill - Time when killing round hit target. |

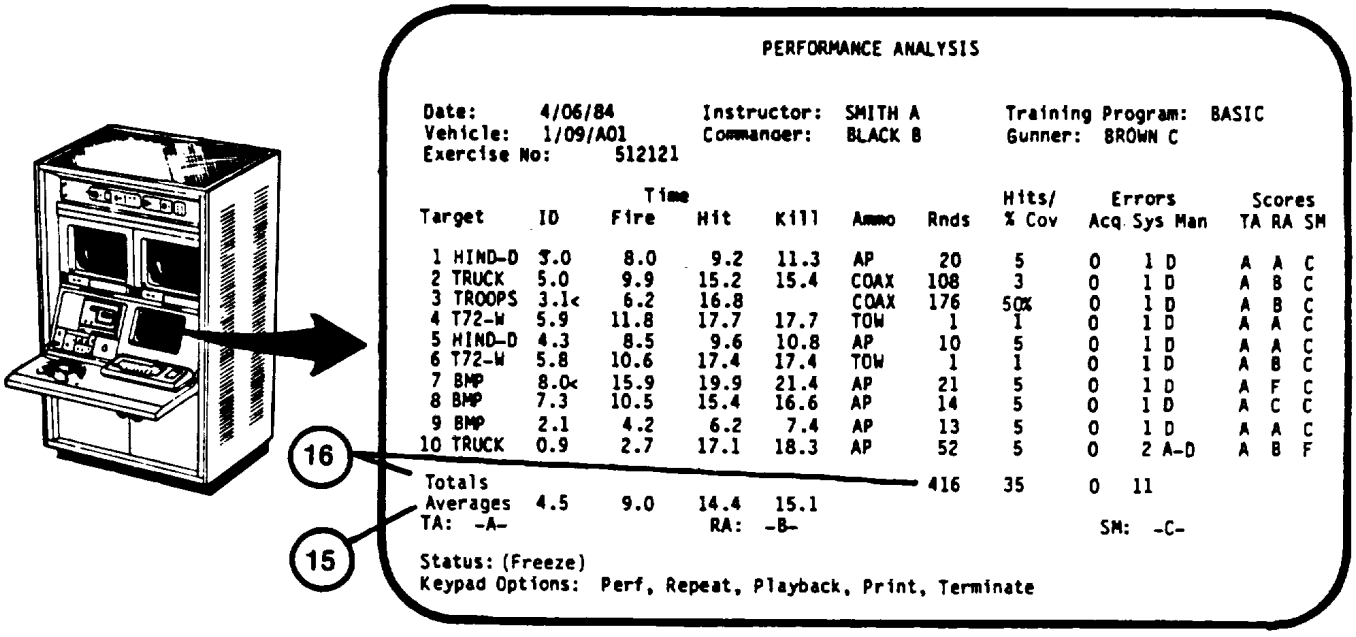



| Key | Control or Indicator | Function |
|---|---|---|
| 9 | Ammo | Ammo type used and scored on target.<br><br>AP = 25mm Armor Piercing<br>HE = 25mm High Explosive<br>COAX = 7.62mm Machine gun<br>TOW = Tube launched, Optically tracked, wire-guided missile |
| 10 | Rnds | Number of rounds fired at target. |
| 11 | Hits/% Cov | Number of hits made on target or percentage of area covered (area targets). |
| 12 | Errors:<br>Acq<br>Sys Man | Acq - Identifies the sum of acquisition errors for each situation and is presented after the last target is engaged during a situation. The following error symbols identify the type of errors: |

**IOS DISPLAY TERMINAL PAGES (PERFORMANCE ANALYSIS) (Continued)**

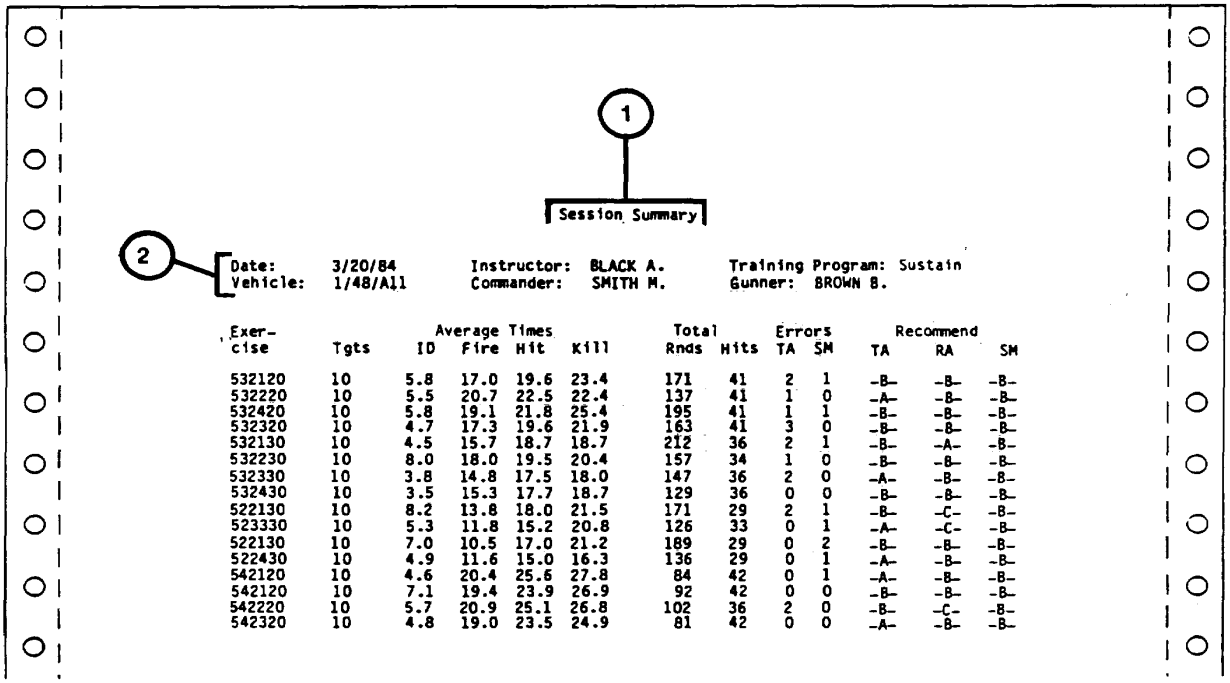
| Key | Control or Indicator | Function |
|---|---|---|
| 12 (Continued) | | C = Classification error<br>F = Fired on friendly vehicle<br>I =Identification error<br>A11 = All of the above errors.<br><br>SYS MAN - Identifies the sum of system management errors for each situation and is presented after the last target is engaged during a situation. The following error symbols identify the type of errors:<br><br>A = Improper ammo fired<br>D = Remained exposed too long<br>M = Improper sight magnification<br>R = Wrong auxiliary sight reticle<br>ALL = All of the above errors |
| 13 | SCORES<br>TA: RA: SM: | Target Acquisition, Reticle Aim, and System Management letter scores resulting from each situation performed. The letter scores correspond to advancement recommendation as follows:<br><br>A = Rapid Advancement<br>B = Normal Advancement<br>C = No Advancement<br>F = Reduced Advancement |
| 14 | Total TA: RA: SM: | Computer recommended progress or alphabetic score (if not a computer recommended exercise) based on the crew's total performance in Target Acquisition, Reticle Aim and Systems Management.<br>Rapid = A = Rapid Advancement<br>Normal = B = Normal Advancement<br>No Advance = C = No Advancement<br>Reduce = F = Reduced Advancement |

## IOS DISPLAY TERMINAL PAGES (PERFORMANCE ANALYSIS) (Continued)




| Key | Control or Indicator | Function |
|---|---|---|
| 15 | Averages | Provides the exercise averages for:<br><br>a. Target identification time<br>b. Time for first round fired at target<br>c. Time to hit target<br>d. Tim e to kill target |
| 16 | | Totals Provides the individual totals for:<br><br>a. Rounds fired<br>b. Hits/% coverage on targets<br>c. Target Acquisition errors<br>d. System Management errors |

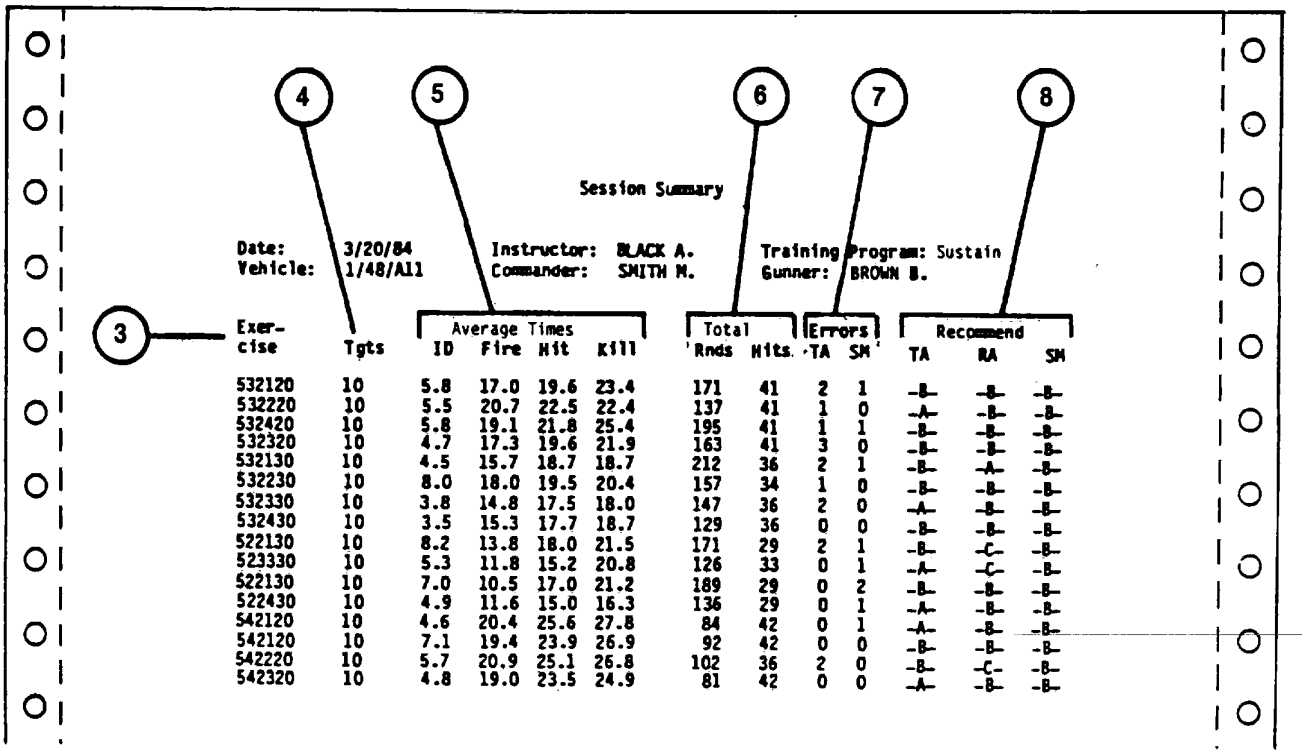
## TERMINAL PRINTER PAGES (SESSION SUMMARY)




| Exercise | Tgts | Average Times ID | Fire | Hit | Kill | Total Rnds | Hits | Errors TA | SM | Recommend TA | RA | SM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 532120 | 10 | 5.8 | 17.0 | 19.6 | 23.4 | 171 | 41 | 2 | 1 | -B- | -B- | -B- |
| 532220 | 10 | 5.5 | 20.7 | 22.5 | 22.4 | 137 | 41 | 1 | 0 | -A- | -B- | -B- |
| 532420 | 10 | 5.8 | 19.1 | 21.8 | 25.4 | 195 | 41 | 1 | 1 | -B- | -B- | -B- |
| 532320 | 10 | 4.7 | 17.3 | 19.6 | 21.9 | 163 | 41 | 3 | 0 | -B- | -B- | -B- |
| 532130 | 10 | 4.5 | 15.7 | 18.7 | 18.7 | 212 | 36 | 2 | 1 | -B- | -A- | -B- |
| 532230 | 10 | 8.0 | 18.0 | 19.5 | 20.4 | 157 | 34 | 1 | 0 | -B- | -B- | -B- |
| 532330 | 10 | 3.8 | 14.8 | 17.5 | 18.0 | 147 | 36 | 2 | 0 | -A- | -B- | -B- |
| 532430 | 10 | 3.5 | 15.3 | 17.7 | 18.7 | 129 | 36 | 0 | 0 | -B- | -B- | -B- |
| 522130 | 10 | 8.2 | 13.8 | 18.0 | 21.5 | 171 | 29 | 2 | 1 | -B- | -C- | -B- |
| 523330 | 10 | 5.3 | 11.8 | 15.2 | 20.8 | 126 | 33 | 0 | 1 | -A- | -C- | -B- |
| 522130 | 10 | 7.0 | 10.5 | 17.0 | 21.2 | 189 | 29 | 0 | 2 | -B- | -B- | -B- |
| 522430 | 10 | 4.9 | 11.6 | 15.0 | 16.3 | 136 | 29 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 4.6 | 20.4 | 25.6 | 27.8 | 84 | 42 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 7.1 | 19.4 | 23.9 | 26.9 | 92 | 42 | 0 | 0 | -B- | -B- | -B- |
| 542220 | 10 | 5.7 | 20.9 | 25.1 | 26.8 | 102 | 36 | 2 | 0 | -B- | -C- | -B- |
| 542320 | 10 | 4.8 | 19.0 | 23.5 | 24.9 | 81 | 42 | 0 | 0 | -A- | -B- | -B- |

| Key | Control or Indicator | Function |
|---|---|---|
| 1. | Session Summary Printout | The Session Summary is a summary of all exercises performed during a current training session. When selected by the Instructor/Operator (see 2-44) the Session Summary is printed on the Terminal Printer and not shown on the Display Terminal. |
| 2 | Date:<br>Vehicle:<br>Instructor:<br>Commander:<br>Training Program:<br>Gunner: | Training Session identification data at the the top of the printout. This data is the same data entered during initialization of the training session (see 2-41). |

## TERMINAL PRINTER PAGES (SESSION SUMMARY) (Continued)



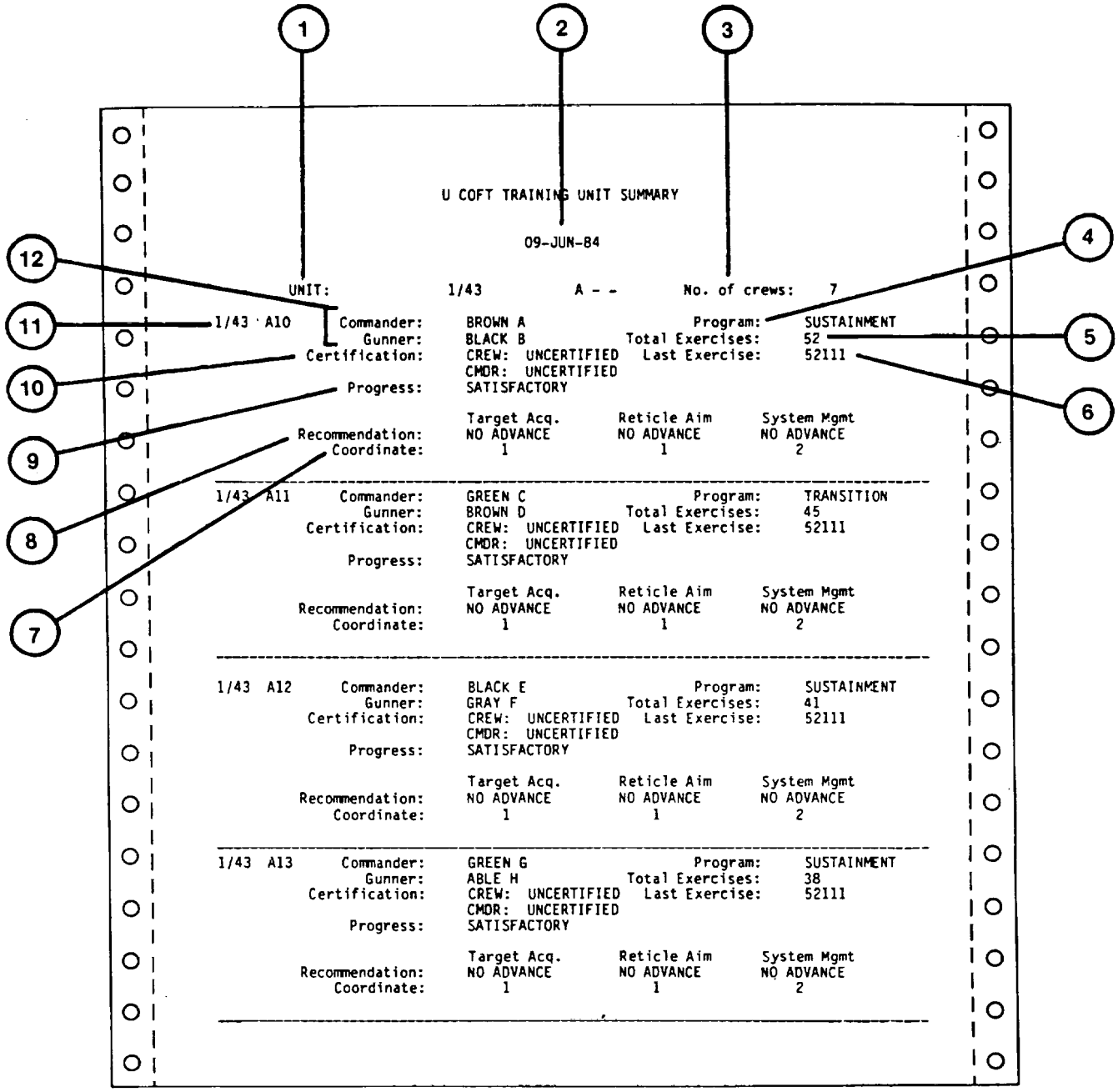

| Exercise | Tgts | Average Times ID | Fire | Hit | Kill | Total Rnds | Hits | Errors TA | SM | Recommend TA | RA | SM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 532120 | 10 | 5.8 | 17.0 | 19.6 | 23.4 | 171 | 41 | 2 | 1 | -B- | -B- | -B- |
| 532220 | 10 | 5.5 | 20.7 | 22.5 | 22.4 | 137 | 41 | 1 | 0 | -A- | -B- | -B- |
| 532420 | 10 | 5.8 | 19.1 | 21.8 | 25.4 | 195 | 41 | 1 | 1 | -B- | -B- | -B- |
| 532320 | 10 | 4.7 | 17.3 | 19.6 | 21.9 | 163 | 41 | 3 | 0 | -B- | -B- | -B- |
| 532130 | 10 | 4.5 | 15.7 | 18.7 | 18.7 | 212 | 36 | 2 | 1 | -B- | -A- | -B- |
| 532230 | 10 | 8.0 | 18.0 | 19.5 | 20.4 | 157 | 34 | 1 | 0 | -B- | -B- | -B- |
| 532330 | 10 | 3.8 | 14.8 | 17.5 | 18.0 | 147 | 36 | 2 | 0 | -A- | -B- | -B- |
| 532430 | 10 | 3.5 | 15.3 | 17.7 | 18.7 | 129 | 36 | 0 | 0 | -B- | -B- | -B- |
| 522130 | 10 | 8.2 | 13.8 | 18.0 | 21.5 | 171 | 29 | 2 | 1 | -B- | -C- | -B- |
| 523330 | 10 | 5.3 | 11.8 | 15.2 | 20.8 | 126 | 33 | 0 | 1 | -A- | -C- | -B- |
| 522130 | 10 | 7.0 | 10.5 | 17.0 | 21.2 | 189 | 29 | 0 | 2 | -B- | -B- | -B- |
| 522430 | 10 | 4.9 | 11.6 | 15.0 | 16.3 | 136 | 29 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 4.6 | 20.4 | 25.6 | 27.8 | 84 | 42 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 7.1 | 19.4 | 23.9 | 26.9 | 92 | 42 | 0 | 0 | -B- | -B- | -B- |
| 542220 | 10 | 5.7 | 20.9 | 25.1 | 26.8 | 102 | 36 | 2 | 0 | -B- | -C- | -B- |
| 542320 | 10 | 4.8 | 19.0 | 23.5 | 24.9 | 81 | 42 | 0 | 0 | -A- | -B- | -B- |

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | Exercise: | Identification numbers of exercises conducted during the training session. |
| 4 | Tgts: | Number of targets associated with each exercise. |
| 5 | Average Times | Average times recorded for each exercise to:<br><br>a. ID - Identify targets<br><br>b. Fire- Fire first round at each target<br><br>c. Hit - Accomplish first hit on each target<br><br>d. Kill - Fire killing round at each target |

**TERMINAL PRINTER PAGES (SESSION SUMMARY) (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 6 | Total | For each exercise, total number of:<br><br>a. Rnds - Rounds fired<br>b. Hits - Hits made on targets |
| 7 | Errors | For each exercise, total number of errors for:<br><br>a. TA - Target Acquisition<br>b. SM - System Management |
| | | S Recommend Identifies the computer recommended progress or alphabetic score (if not a computer recommended exercise) for the categories of TA (Target Acquisition), RA (Reticle Aim), and SM (System Management).<br><br>A = RAPID = Rapid Advancement<br>B = NORM = Normal Advancement<br>C = NO ADV = No Advancement<br>F = REDU = Reduced Advancement |

## TERMINAL PRINTER PAGES (UNIT SUMMARY PRINTOUT)




U COFT TRAINING UNIT SUMMARY

09-JUN-84

UNIT: 1/43 A - - No. of crews: 7

1/43 A10
Commander: BROWN A Program: SUSTAINMENT
Gunner: BLACK B Total Exercises: 52
Certification: CREW: UNCERTIFIED Last Exercise: 52111
CMDR: UNCERTIFIED
Progress: SATISFACTORY

| | Target Acq. | Reticle Aim | System Mgmt |
|---|---|---|---|
| Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE |
| Coordinate: | 1 | 1 | 2 |

---

1/43 A11
Commander: GREEN C Program: TRANSITION
Gunner: BROWN D Total Exercises: 45
Certification: CREW: UNCERTIFIED Last Exercise: 52111
CMDR: UNCERTIFIED
Progress: SATISFACTORY

| | Target Acq. | Reticle Aim | System Mgmt |
|---|---|---|---|
| Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE |
| Coordinate: | 1 | 1 | 2 |

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1/43 A12
Commander: BLACK E Program: SUSTAINMENT
Gunner: GRAY F Total Exercises: 41
Certification: CREW: UNCERTIFIED Last Exercise: 52111
CMDR: UNCERTIFIED
Progress: SATISFACTORY

| | Target Acq. | Reticle Aim | System Mgmt |
|---|---|---|---|
| Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE |
| Coordinate: | 1 | 1 | 2 |

---

1/43 A13
Commander: GREEN G Program: SUSTAINMENT
Gunner: ABLE H Total Exercises: 38
Certification: CREW: UNCERTIFIED Last Exercise: 52111
CMDR: UNCERTIFIED
Progress: SATISFACTORY

| | Target Acq. | Reticle Aim | System Mgmt |
|---|---|---|---|
| Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE |
| Coordinate: | 1 | 1 | 2 |

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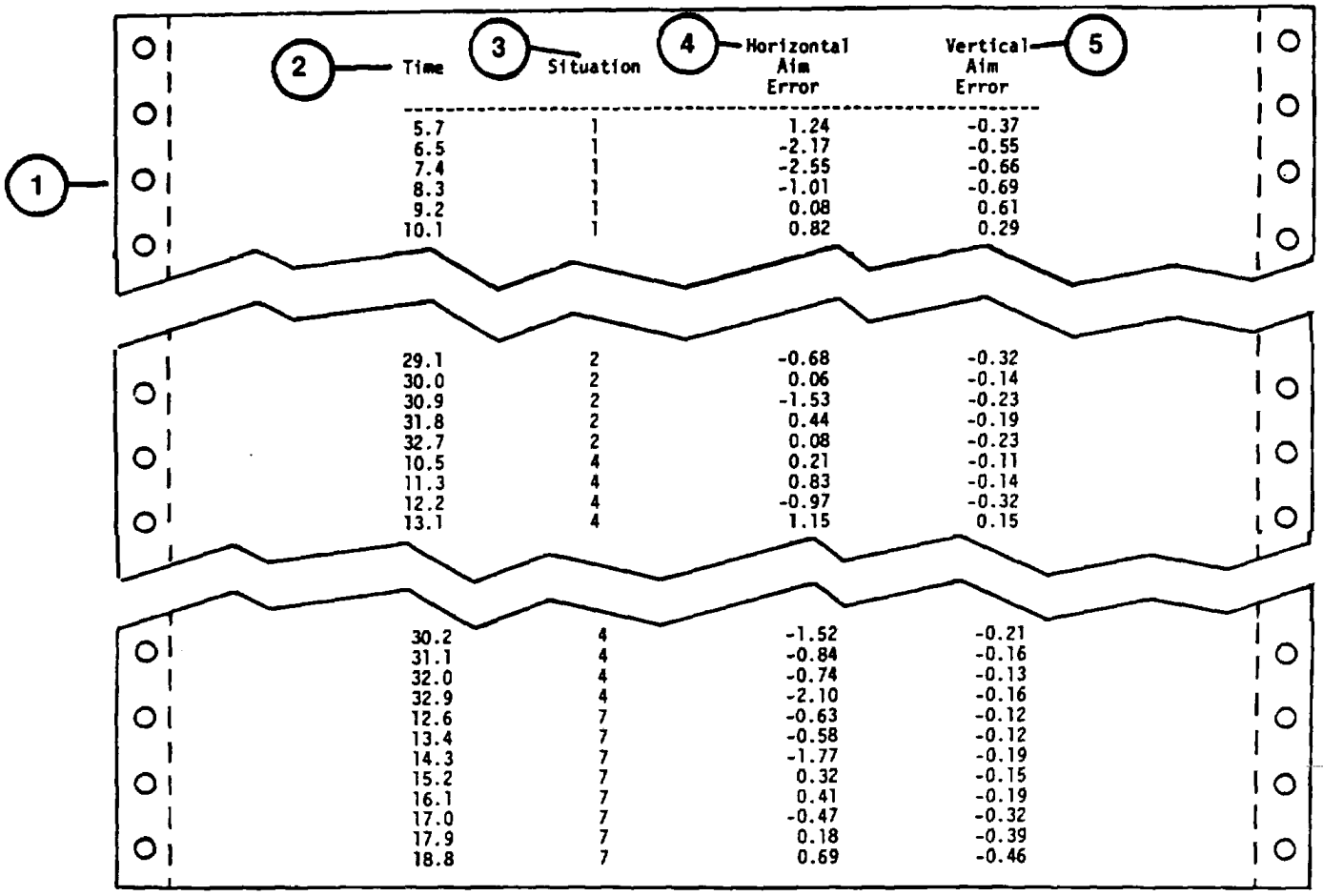
**TERMINAL PRINTER PAGES (UNIT SUMMARY PRINTOUT) (Continued)**

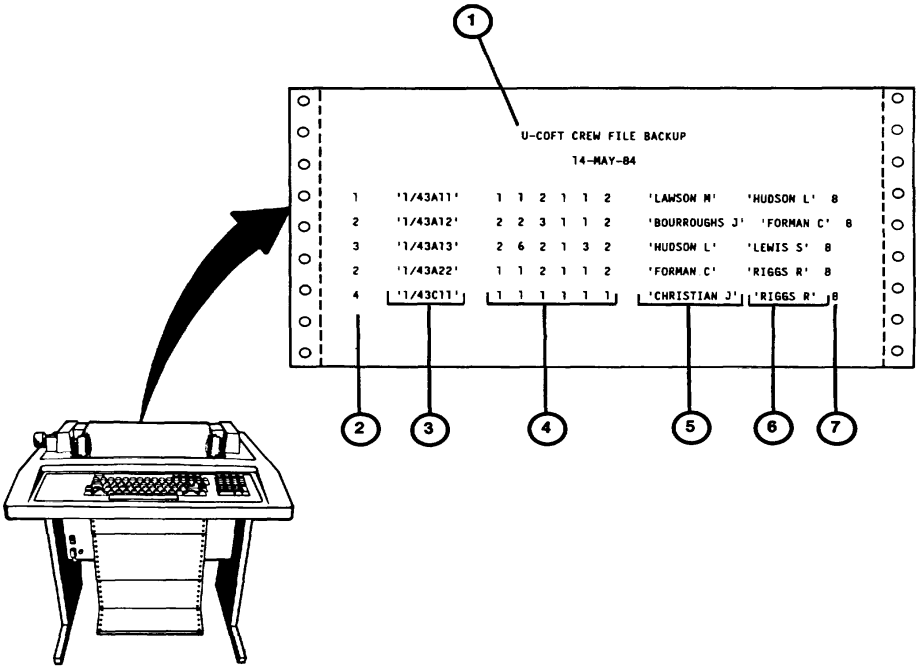
| Key | Control or Indicator | Function |
|---|---|---|
| 1 | UNIT: | Identifies unit (by Battalion, Regimental designation and Company) included in Unit Summary printout. |
| 2 | (Date) | Date unit summary was printed. |
| 3 | No, of Crews: | Number of crews listed on Unit Summary. |
| 4 | Program: | Program (BASIC, CROSS, SUSTAINMENT, TRANSITION) under which training was conducted. |
| 5 | Total Exercises: | Total number of exercises conducted for the vehicle identified. |
| 6 | Last Exercise: | Last exercise number evaluated for the vehicle and crew identified. |
| 7 | Coordinate: | Cube position of crew after last exercise was conducted (see Instruction Utilization 5). |
| 8 | Recommendation: | Progress of crew recommended by computer in terms of Target Acquisition, Reticle Aim and System Management. |
| 9 | Progress: | Crew's progress based on computer recommended exercise performance. |
| 10 and/or | Certification: | Shows whether or not the crew commander are certified based on their position in cube coordinate matrix. |
| 11 | Unit and Vehicle Name | Unit and vehicle number for the crew identified. |
| 12 | Commander:<br>Gunner: | Identifies Commander's and Gunner's last names and initials for the Unit and vehicle listed. |

**TERMINAL PRINTER PAGES (LAY ERROR PRINTOUT)**



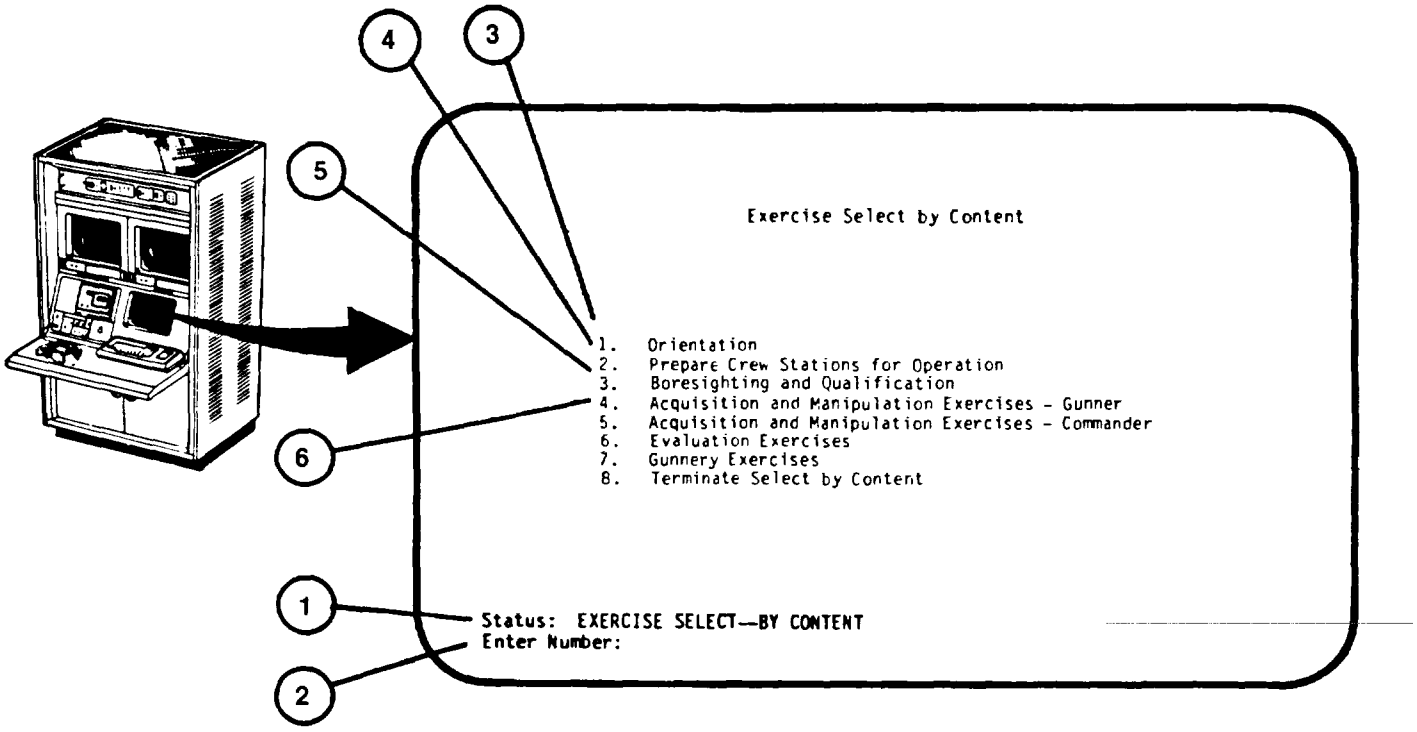

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Lay Error Printout | Terminal Printer printout obtained after Completion of an Acquisition and Manipulation Exercise when the PRINT LAY ERRORS key (see 2-3 9, item 6) has been pressed. |
| 2 | Time | Elapsed time in seconds after each moving target has been activated during a situation. |
| 3 | Situation | Number of target situation during the exercise. |
| 4 | Horizontal Aim Error | Error in mils to the left (-) or right (+) of the aimpoint of the target being tracked. |
| 5 | Vertical Aim Error | Error in mils up (+) or down (-) from the aimpoint of the target being tracked. |

## TERMINAL PRINTER PAGES (UNIT BACK-UP PRINTOUT)



**TERMINAL PRINTER PAGES (UNIT BACK-UP PRINTOUT) (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | U-COFT CREW FILE BACKUP | Terminal Printer printout obtained when Unit Backup has been selected from Training Management System - Function Menu (see 2-104). |
| 2 | Numbers 1, 2, 3, or 4 | Type of training program in which the crew is entered:<br>1 = Sustainment<br>2 = Transition<br>3 = Cross<br>4 = Basic |
| 3 | Vehicle Identification | Crew member's Regiment/Brigade, Battalion/Squadron, Company and vehicle number or segment thereof. |
| 4 | Training Coordinates | Crew member's training matrix coordinates established on date of printout.<br>Column 1 = TA, full crew<br>Column 2 = RA, full crew<br>Column 3 = SM, full crew<br>Column 4 = TA, commander<br>Column 5 = RA, commander<br>Column 6 = SM, commander |
| 5 | Name | Commander's name |
| 6 | Name | Gunner's name |
| 7 | Code Number | Identifies student certifications and progress as of last computer recommended exercise performed.<br>0 = No firing activity<br>1 = Commander certified<br>4 = Crew and commander uncertified, crew progress unsatisfactory<br>8 = Crew and commander uncertified, crew progress satisfactory<br>16 = Crew and commander uncertified, crew progress superior |



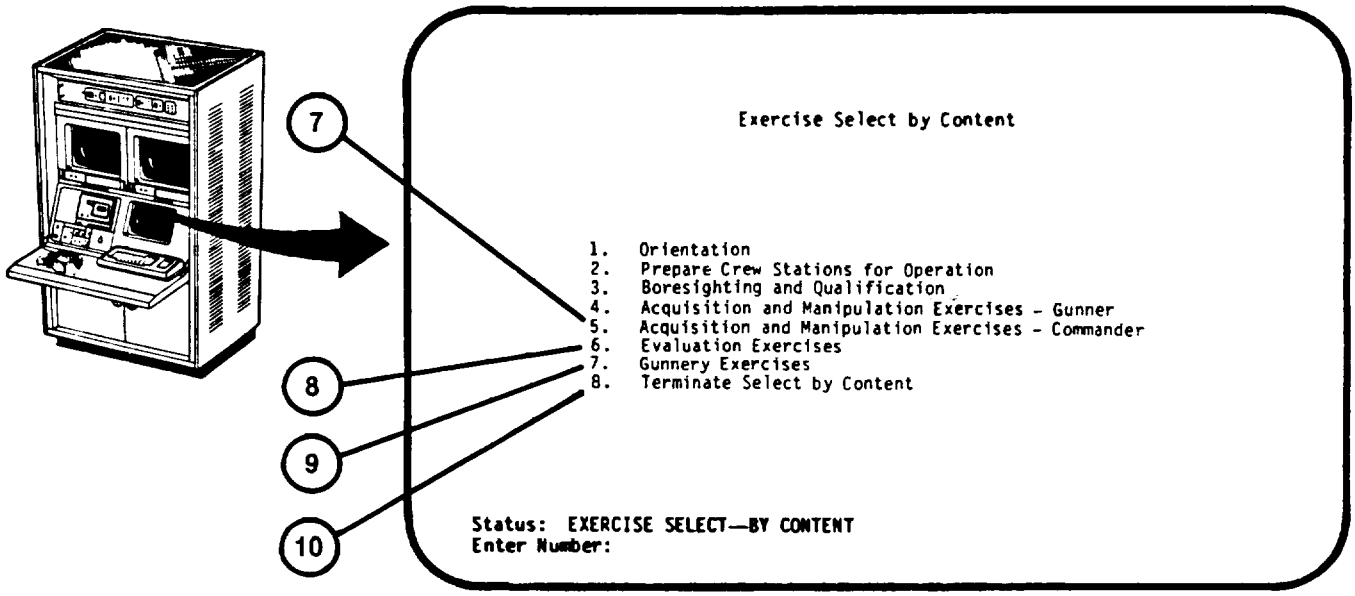

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT BY CONTENT)**

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select -- by Content | Exercise Select - By Content display page shows a menu of exercise content data available to the Instructor/Operator. The menu provides seven exercise types plus a termination option. |
| 2 | Enter Number: prompt | Request for Instructor/Operator to select one of the seven listed exercise types or to terminate the Exercise Select by Content display. Selection is made by pressing the number key that corresponds to the choice, then pressing the RETURN key on the Display Terminal keyboard. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT BY CONTENT) (Continued)**

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | 1 Orientation | The Instructor/Operator selects these exercises when a new crew is to be introduced to characteristics, capabilities and peculiarities of the U-COFT. The display page called from this entry is the Exercise Select - Orientation presentation (see 2-82). |
| 4 | 2 Prepare Crew Stations for Operation | The Instructor/Operator selects these exercises to train the crew in preparing the crew station for operation. The display page called from this entry is the Exercise Select - Prepare Crew Stations for operation presentation (see 2-83). |
| 5 | 3 Boresighting and Qualification | The Instructor/Operator selects these exercises when the crew requires additional skill in boresighting and zeroing the weapons. The display page called from this entry is the Exercise Select - Boresight and Zeroing presentation (see 2-84). |
| 6 | 4 Acquisition and Manipulation Exercises - Gunner | The Instructor/Operator selects these exercises to familiarize the Gunner with basic target acquisition and gunnery manipulation skills prior to entering scored training sessions. Training records are not automatically stored for this exercise. The display page called from this entry is the Exercise Select - Acquisition and Manipulation - Gunner presentation (see 2-85). |

## IOS DISPLAY TERMINAL (EXERCISES SELECT BY CONTENT) (Continued)

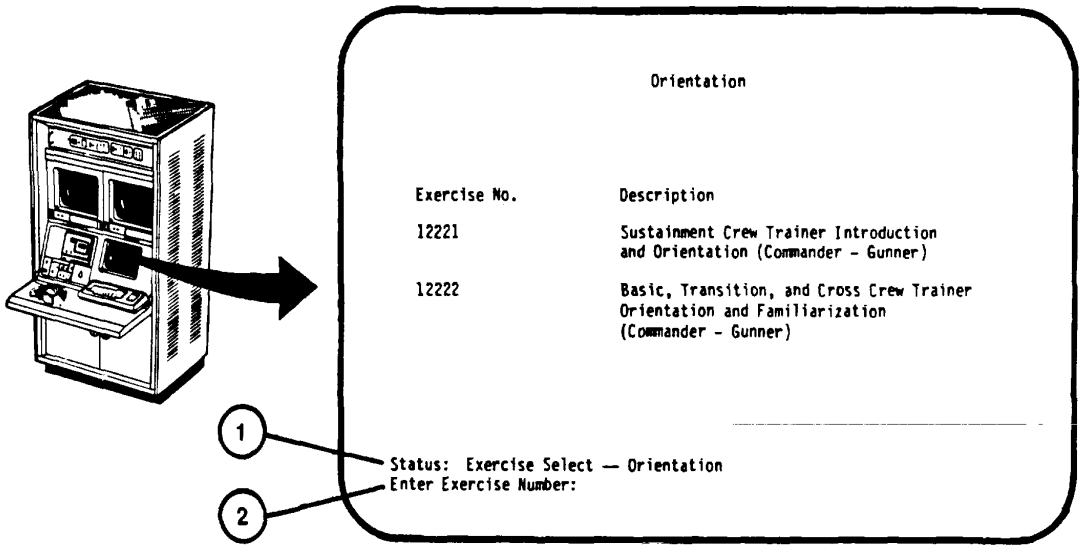



| Key | | Control or Indicator | Function |
|---|---|---|---|
| 7 | 5 | Acquisition and Manipulation - Exercises Commander | The Instructor/Operator selects these exercises to familiarize the Tank Commander with basic acquisition and gunnery manipulation skills prior to entering scored training sessions. Training records are not automatically stored for this option. The display page called from this entry is the Exercise Select - Acquisition and Manipulation - Commander presentation (see 2-86). |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT BY CONTENT) (Continued)**

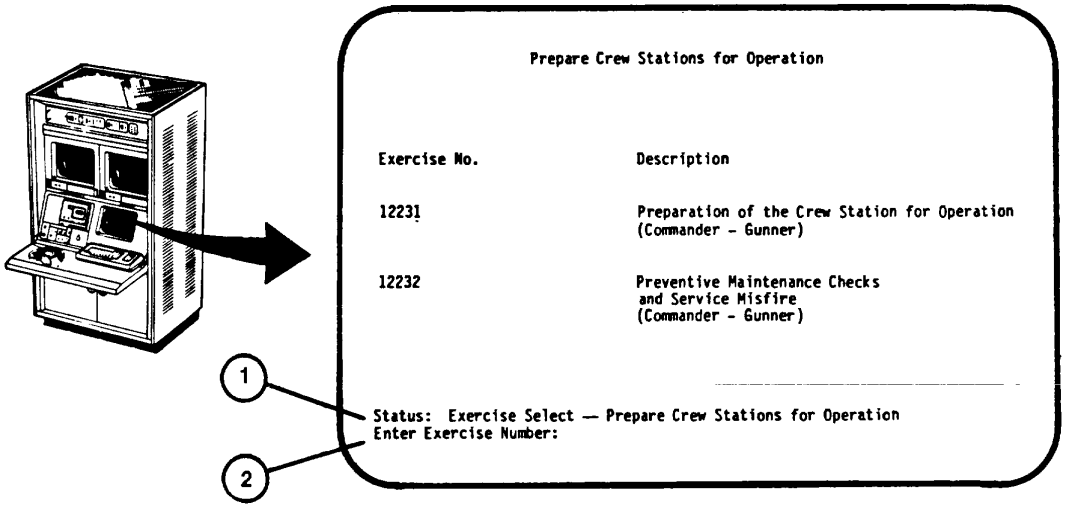
| Key | Control or Indicator | Function |
|---|---|---|
| 8 | 6 Evaluation | The Instructor/Operator select these exercises when the crew has gained a high level of proficiency in gunnery skills and it is desired to determine if the desired level has been reached. The display page called from this entry is the Exercise Select - Evaluation presentation (see 2-87). |
| 9 | 7Gunnery Exercises | The Instructor/Operator uses this option to select exercises with specific content when a crew needs additional training in certain gunnery skills. This option presents a series of selections with a final listing of exercises containing the selected requirements (see 2-99). |
| 10 | 8 Terminate Select by Content | This selection allows the Instructor/Operator to exit the Exercise Select by Content and return to the Exercise Select-Session Summary display page (see 2-44). |

**IOS DISPLAY TERMINAL (EXERCISE SELECT ORIENTATION)**



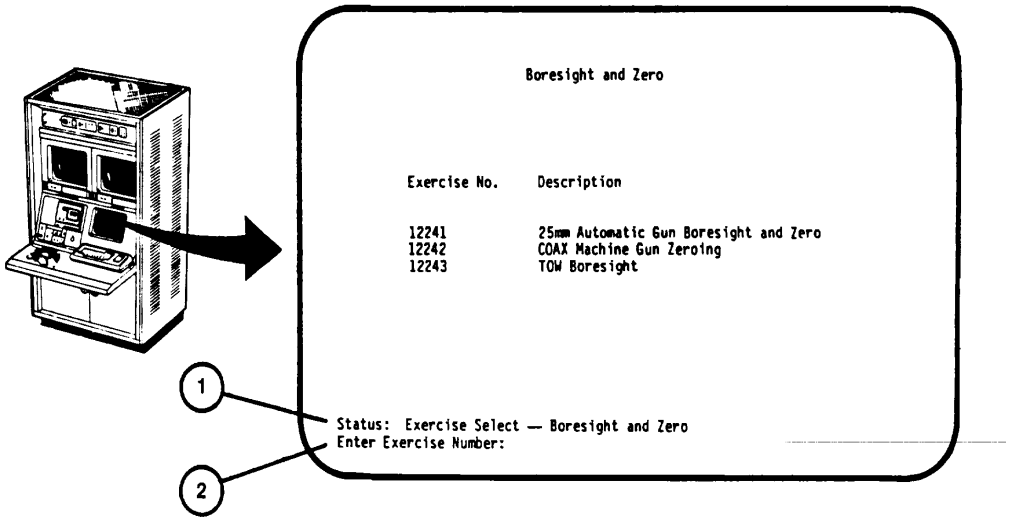

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select - Orientation | Exercise Select - Orientation display pages describes the two exercises used for crew orientation: one for the Sustainment crews and one for Basic, Cross, and Transition crews. Pre-recorded audio tapes are provided for both exercises. |
| 2 | Enter Exercise Number: prompt | Request for the Instructor/Operator to type the exercise number corresponding to the desired exercise. After the exercise number has been entered the RETURN key is pressed. The display page Selection-Scope page (see2-47) |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT-CREW STATION PREPARATION)



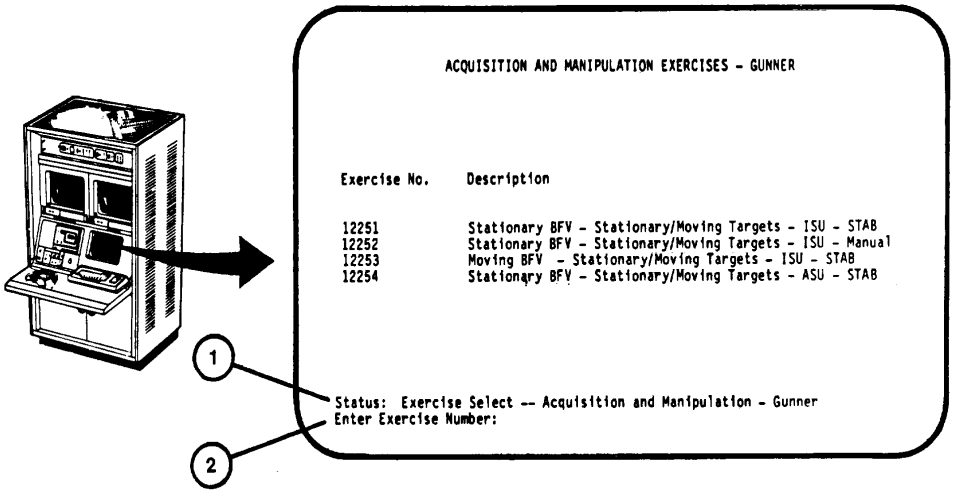

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select -Prepare Crew Stations for Operation | Exercise Select - Prepare Crew Stations for Operation display page describes the exercise used for crew station preparation training and pre-fire checks. |
| 2 | Enter Exercise Number: prompt | Request for the Instructor/Operator to type in the exercise number. After the exercise number has been entered the RETURN key is pressed. The display page called from this entry is the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT-BORESIGHT AND ZERO)



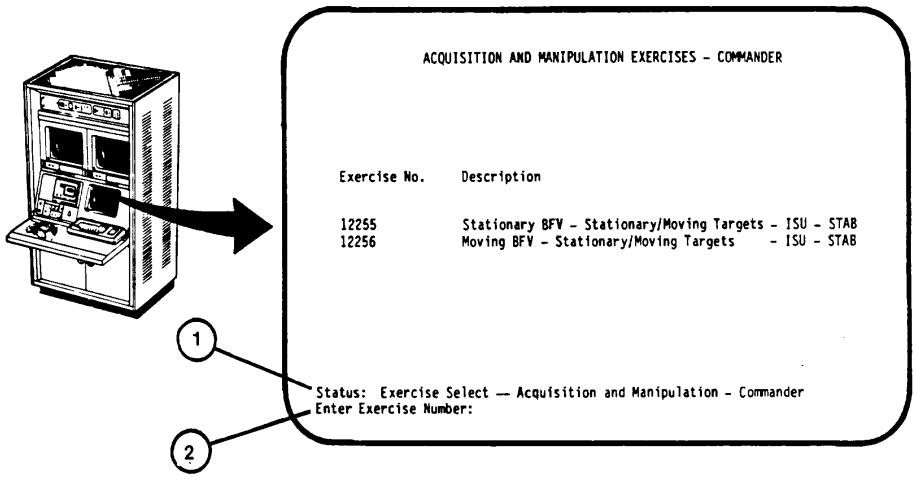

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select -Boresight and Zero | Exercise Select - Boresight and Zero display page identifies the three exercises used for boresighting and zeroing weapons training one exercise for each weapon. |
| 2 | Enter Exercise Number: prompt | Request for the Instructor/Operator to type in the exercise number for the selected exercise. After the exercise number has been entered the RETURN key is pressed. The display page called from this entry is the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT-ACQUISITION AND MANIPULATION - GUNNER)



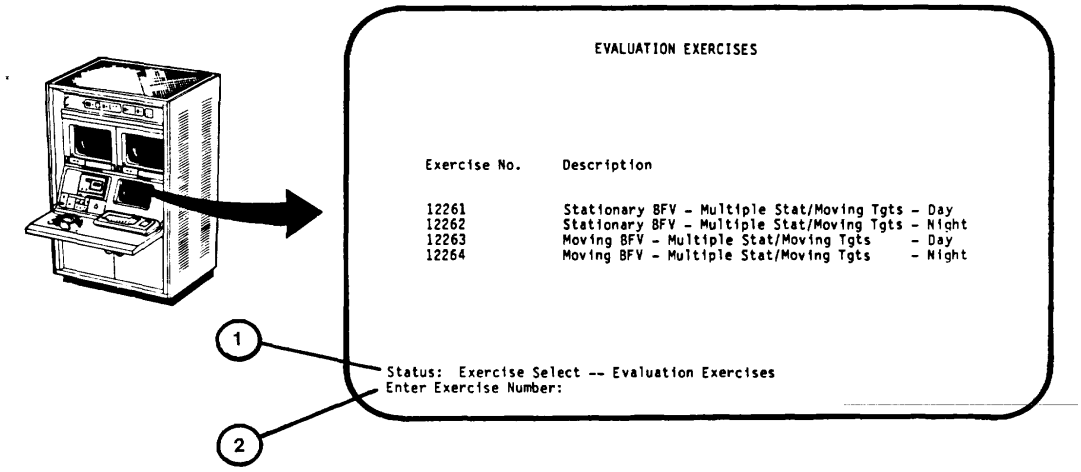

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select - Acquisition and Manipulation - Commander | This display page shows a descriptive menu of four exercises for Gunner training in control manipulation and target acquisition. |
| 2 | Enter Exercise Number: prompt | Request for the Instructor/Operator to type in the exercise number corresponding to the desired exercise content. After the exercise number has been entered the RETURN key is pressed. The display page called from this entry is the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT-ACQUISITION AND MANIPULATION - COMMANDER)



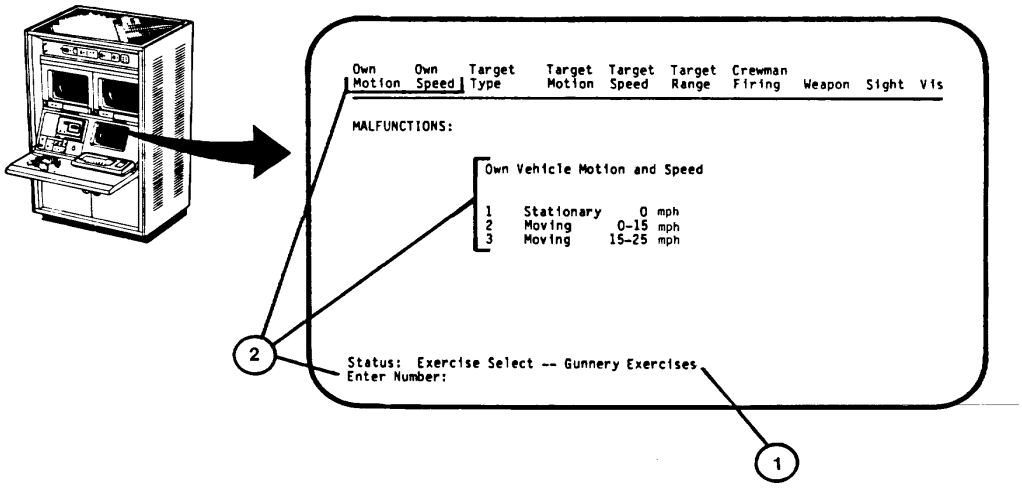

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select -- Acquisition and Manipulation - Commander | This display page shows a descriptive menu of two exercises for Commander training in control manipulation and target acquisition. |
| 2 | Enter Exercise Number: prompt | Request for the Instructor/Operator to choose and type in the number of the desired exercise. After the exercise number has been entered the RETURN key is pressed. The display page called from this entry is the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT-EVALUATION)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select - Evaluation Exercises | Exercise Select - Evaluation display page shows a descriptive menu of four evaluations exercises (two daytime and two nighttime exercises). The evaluation exercises are used to determine if the crew has achieved the desired level of proficiency required by the training program. |
| 2 | Enter Exercise Number: prompt | Request for Instructor/Operator to choose and type in the number desired followed by pressing the RETURN key. This entry calls the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY)

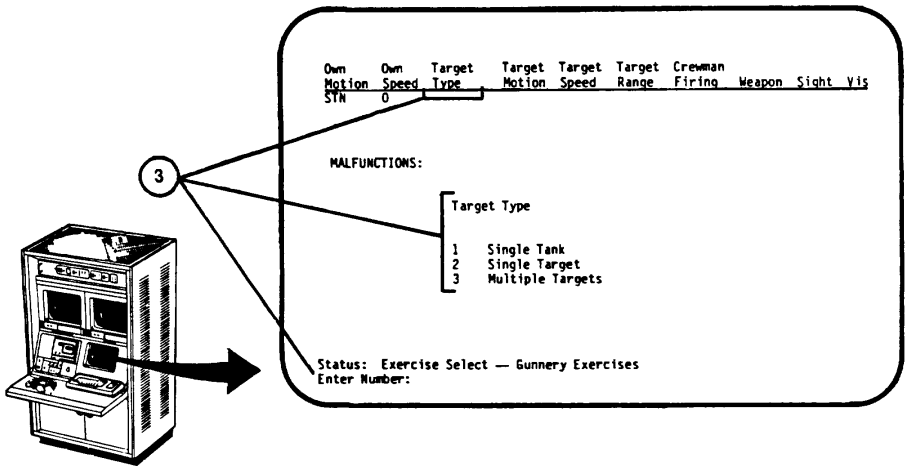



| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Status: Exercise Select - Gunnery Exercises | This display page enables the Instructor/ Operator to select a gunnery exercise containing specific content. The specific contents are described in selective entries presented to the Instructor/Operator in the center of the page. As each entry is made, a new selection is presented in the center of the page and previous entries are shown at the top of the page. When the number of available exercises matching the Instructor/ Operator's selections is less than 15, the exercise descriptions will be listed on the screen (see 2-99). The categories available for selection are:<br><br>a. Own vehicle Motion and Speed<br>b. Target Type<br>c. Target Motion and Speed<br>d. Target Range<br>e. Crew Member Firing |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)**

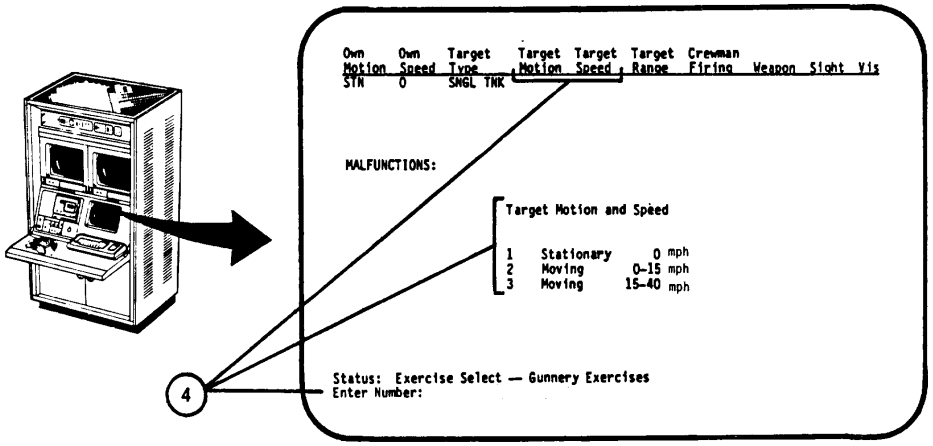
| Key | Control or Indicator | Function |
|---|---|---|
| 1 | (Continued) | f. Weapons used<br>g. Gunner's Sight<br>h. Commander's Sight<br>i. Visibility<br>j. Malfunctions |
| 2 | Enter Number: prompt<br>(Own vehicle Motion and Speed) | Request for the Instructor/Operator to press the number key (1, 2, or 3) corresponding to the desired Own vehicle Motion and Speed. If the Instructor/Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing the RETURN key. The entered own tank motion and speed appears on the top of a new page with three target type selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



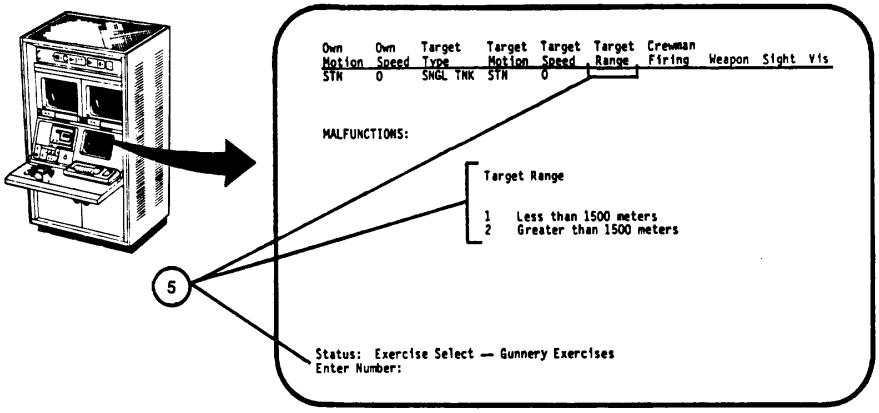

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | Enter Number: prompt. (Target Type) | Request for the Instructor/Operator to press the number key (1, 2, or 3) corresponding to the desired target type. If the Instructor/ Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing the RETURN key. The entered target type appears on the top of a new page with three target motion and speed selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



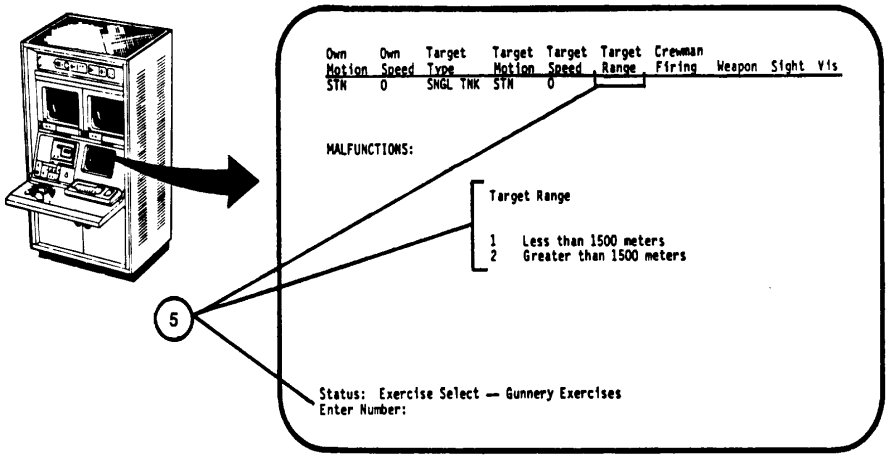

| Key | Control or Indicator | Function |
|---|---|---|
| 4 | Enter Number: prompt (Target Motion and Speed) | Request for the Instructor/Operator to press the number key (1, 2, or 3) corresponding to the desired target motion and speed. If the Instructor/Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered target motion and speed appears on the top of a new page with two target range selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



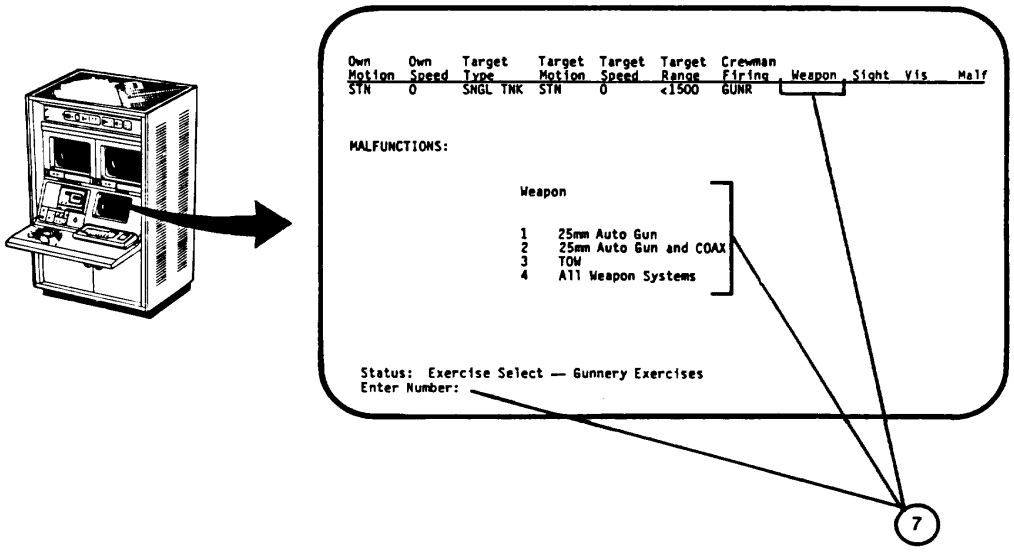

| Key | Control or Indicator | Function |
|---|---|---|
| 5 | Enter Number: prompt (Target Range) | Request for the Instructor/Operator to press the number key (I or 2) corresponding to the desired target range. If the Instructor/ Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered target range appears on the top of a new page with two crewmember firing selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



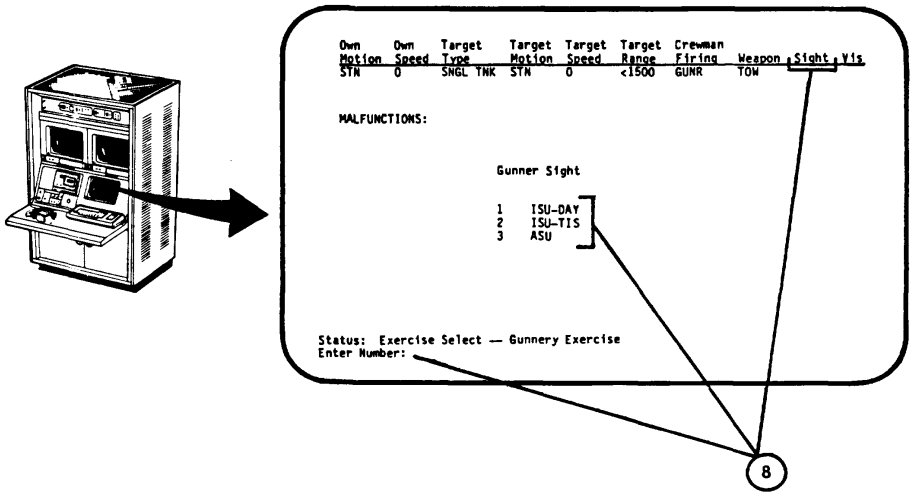

| Key | Control or Indicator | Function |
|---|---|---|
| 6 | Enter Number: prompt (Crewman Firing) | Request for the Instructor/Operator press the number key (I or 2) corresponding to the desired crewmember(s) firing. If the Instructor/Operator does not desire to make this selection, only the RETURN key is pressed to display next option selection. If is desired, the number key is pressed followed by pressing RETURN key. The entered crewmember or members appear on the top of a new page with two gunner weapon selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



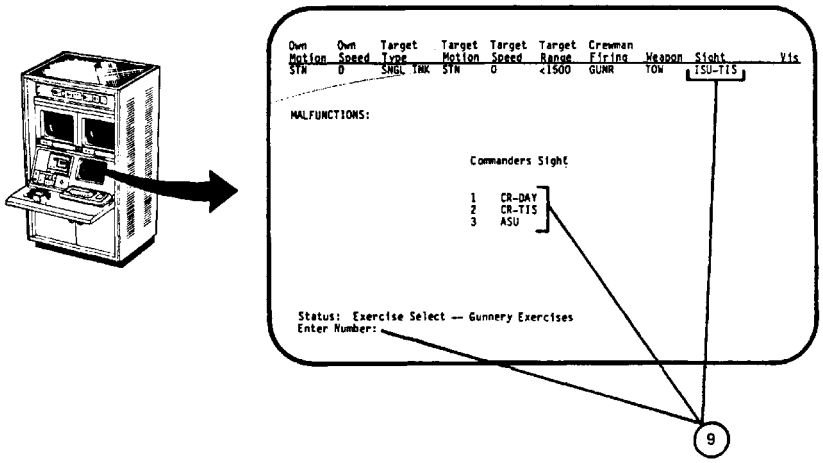

| Key | Control or Indicator | Function |
|---|---|---|
| 7 | Enter Number: prompt ( Weapon) | Request for the Instructor/Operator to press the number key (1, 2, 3, or 4) corresponding to the desired weapon. If the Instructor/ Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered weapon description appears on the top of a new page with three selective gunner sights and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



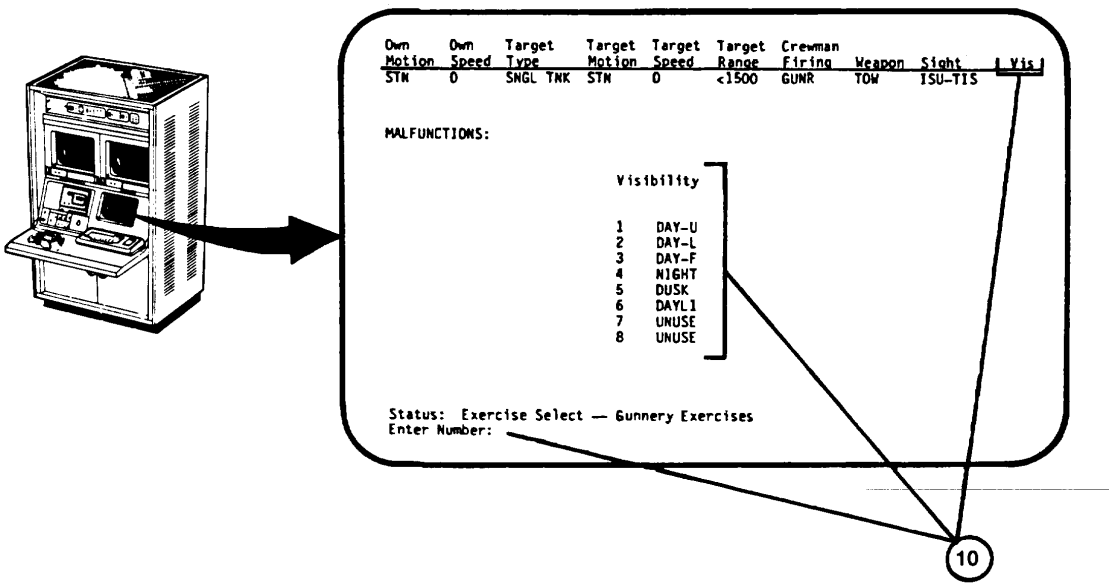

| Key | Control or Indicator | Function |
|---|---|---|
| 8 | Enter Number: prompt (Gunner's Sight) | Request for the Instructor/Operator to press the number key (1, 2, or 3) corresponding to the desired gunner sight. If the Instructor/ Operator does not desire to make this selection, only the RETURN key is pressed to display next selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered gunner sight appears on the top of a new page with three commander sight selections and a new prompt. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)**



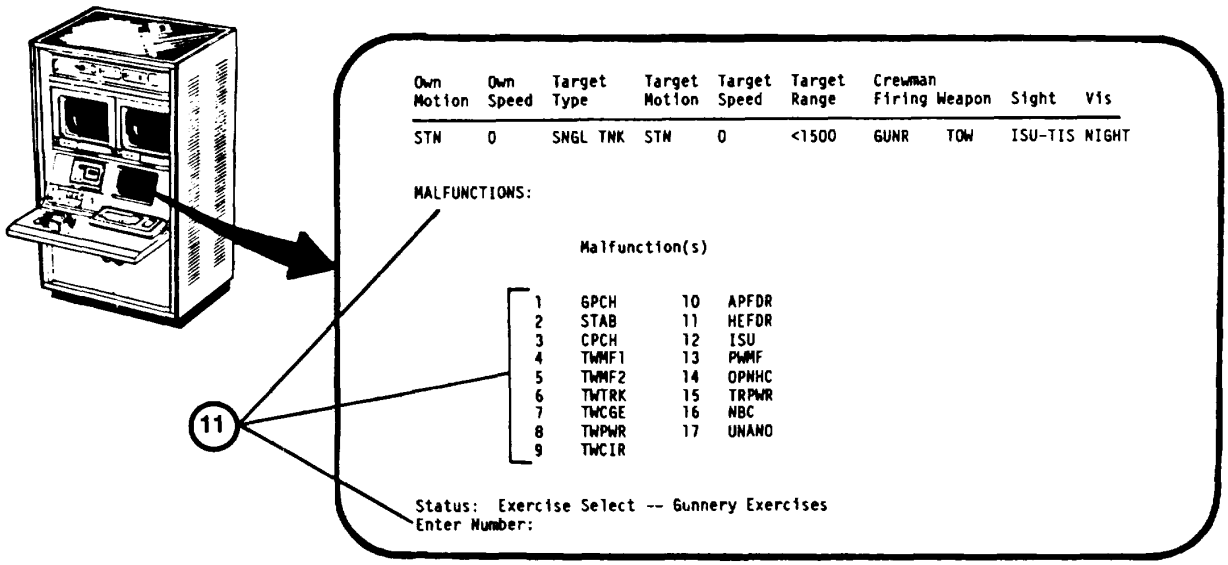

| Key | Control or Indicator | Function |
|---|---|---|
| 9 | Enter Number: prompt (Commander's Sight) | Request for the Instructor/Operator to press the number key (1, 2, or 3) corresponding to the desired commander sight. If the Instructor/Operator does not desire to make this selection, only the RETURN key is pressed to display next option selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered commander sight appears on the top of a new page with six visibility selections and a new prompt. |

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)




| Key | Control or Indicator | Function |
|---|---|---|
| 10 | Enter Number: prompt (Visibility) | Request for the Instructor/Operator to press the number key (1, 2, 3, , 5 or 6) corresponding to the desired visibility. If the Instructor/Operator does not desire to make this selection, only the RETURN key is pressed to display next option selection. If selection is desired, the number key is pressed followed by pressing RETURN. The entered visibility selection appears on the top of a new page with 17 malfunctions to choose from and a new prompt. |

**IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)**

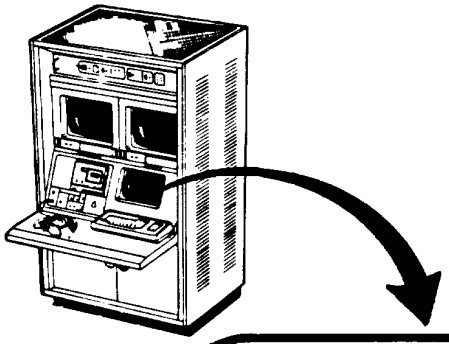



| Key | Control or Indicator | Function |
|---|---|---|
| 11 | Enter Number: prompt<br><br>MALFUNCTIONS | Request for the Instructor/Operator to press the number keys (I through 17) corresponding to the desired malfunction. |

**NOTE**

This is the last selection for Gunnery Exercise content. The next display will show a listing of exercises containing the selected entries.

## IOS DISPLAY TERMINAL PAGES (EXERCISE SELECT - GUNNERY) (Continued)



| Exercise Number | Own Motion | Own Speed | Target Type | Target Motion | Target Speed | Target Range | Crewman Firing | Weapon | Sight | Vis | Malf |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51121 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 51122 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 51123 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 52121 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF1 |
| 52122 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF2 |
| 52123 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF? |
| 53121 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 53122 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 53123 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54121 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54122 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54123 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |

12

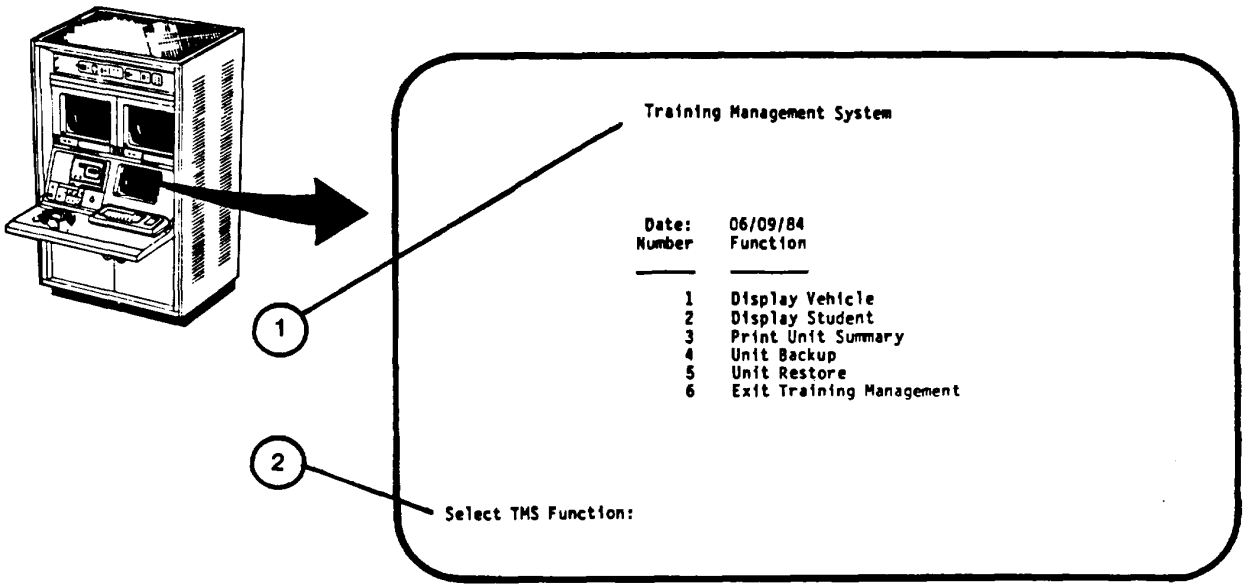
Status: EXERCISE SELECT -- Gunnery Exercises

13

Enter Number:

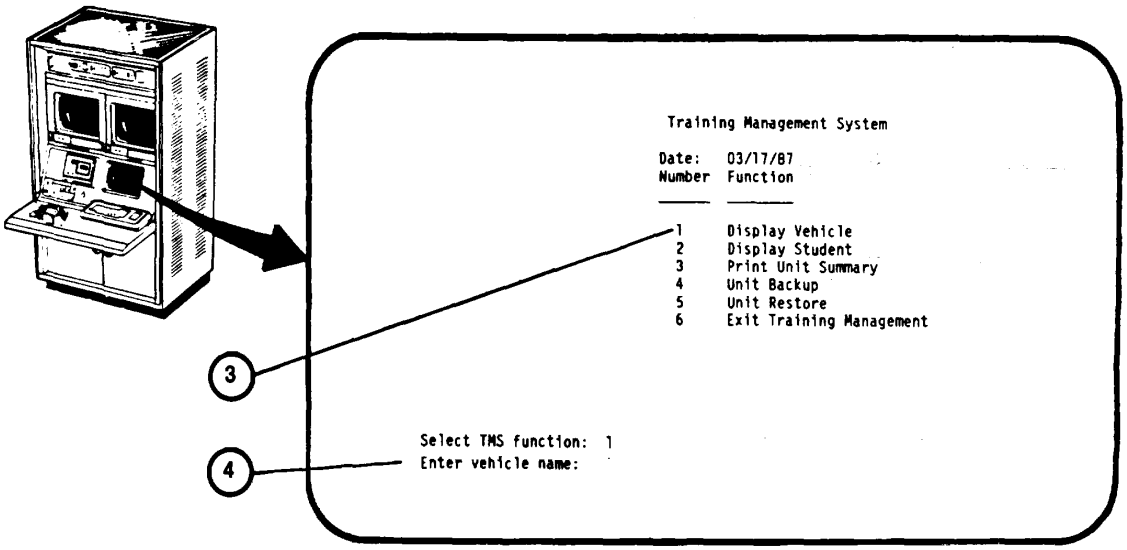
| Key | Control or Indicator | Function |
|---|---|---|
| 12 | Status: Exercise Select - Gunnery Exercises | This display lists the exercises, which match the gunnery exercise content selections entered above. |
| 13 | Enter Number: prompt | Request for the Instructor/Operator to type the desired exercise number. After the exercise number is entered, the RETURN key is pressed. The display page called from this entry is the Exercise Selection-Scope page (see 2-47). |

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU)



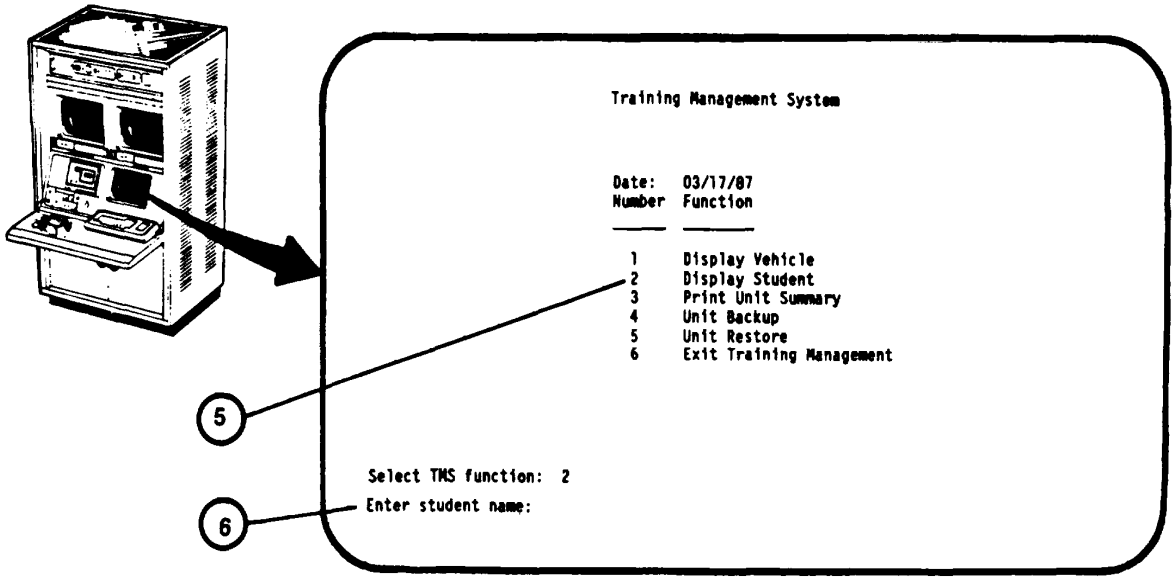

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Training Management System (Function Menu) | Training Management System - (function menu) display page shows a menu of six management functions available for selection. The selections are Display Vehicle, Display Student, Print Unit Summary, Unit Backup, Unit Restore, and Exit Training Management. |
| 2 | Select TMS function: prompt: | Request for Instructor/Operator to select one of the six listed management functions by number. |

**IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU) (Continued)**



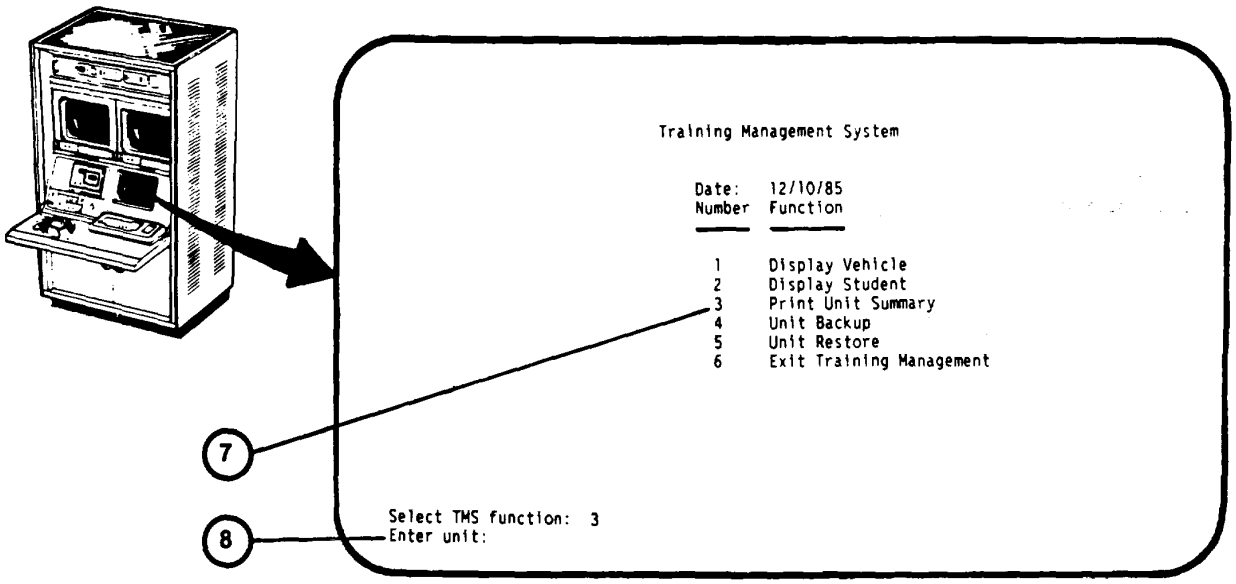

| Key | Control or Indicator | Function |
|---|---|---|
| 3 | 1 Display Vehicle | The Instructor/Operator selects this function when it is desired to call crew records associated with an identified vehicle name. This function is selected by pressing the number I key followed by pressing the RETURN key. The same display page is presented with a new prompt - "Enter Vehicle Name:" |
| 4 | Enter vehicle name: prompt | Request to type in either a partial or complete vehicle identifier (Regiment, Battalion, Company, vehicle number; e.g., 1/01 All). Pressing the RETURN key will then call up an index of associated vehicle(s). Pressing the RETURN key with out first entering a vehicle identifier will call up the complete index of vehicles (see 2-106). |

**IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU) (Continued)**



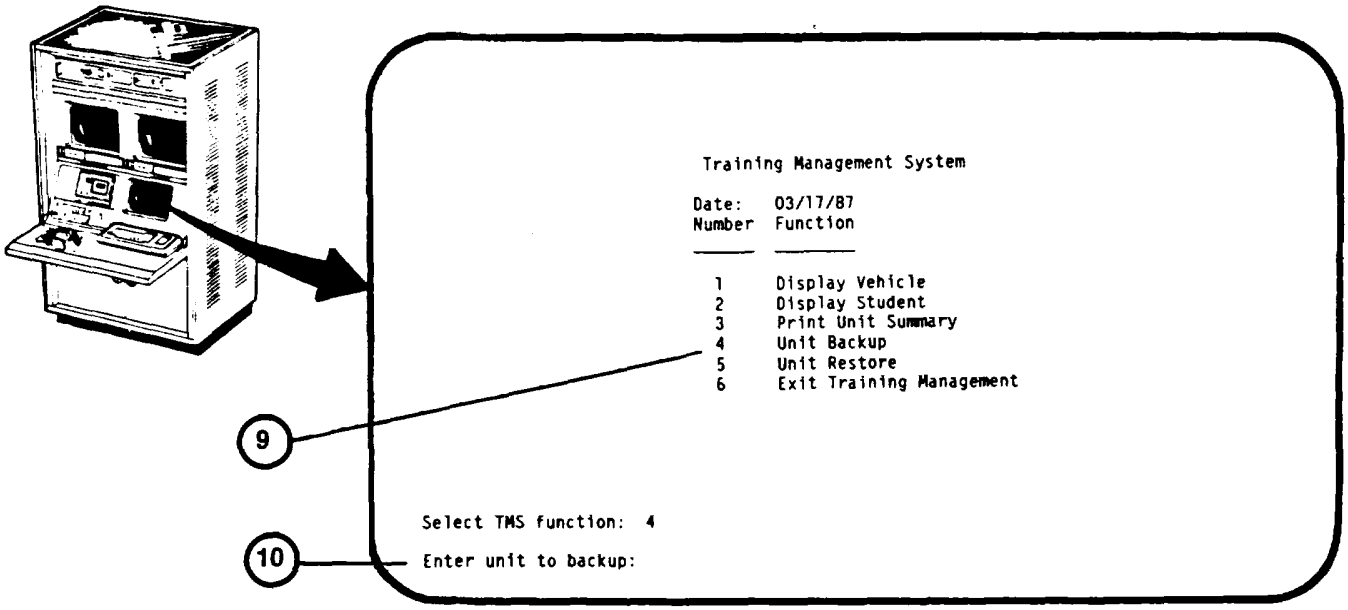

| Key | Control or Indicator | Function |
|---|---|---|
| 5 | 2 Display Student | The Instructor/Operator selects this function when it is desired to call crew records associated with a specific student. This option is selected by pressing the number 2 key followed by pressing the RETURN key on the display terminal keyboard. The same display page is presented with a new prompt - "Enter student name:" |
| 6 | Enter student name: prompt | Request to type in student's name whose records are desired for review. Pressing the RETURN key will then call up an index of students having that name. Pressing the RETURN key without first entering a student name will call up the complete index of students (see 2-107). |

**IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU) (Continued)**



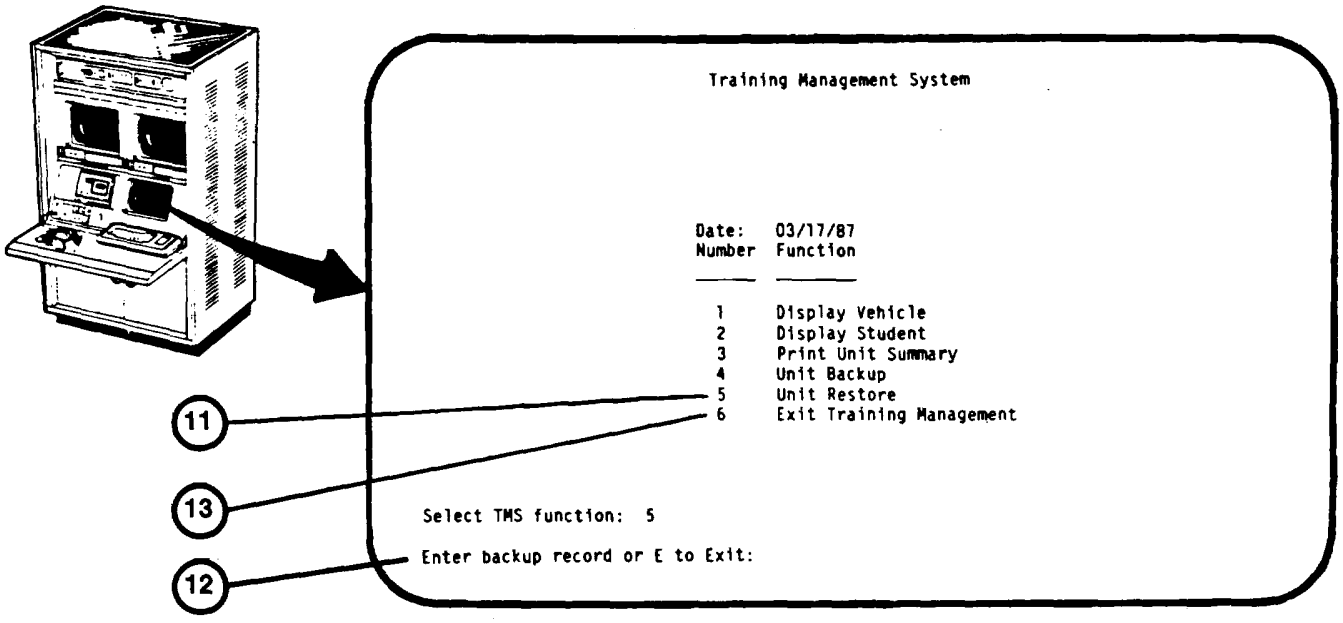

| Key | Control or Indicator | Function |
|---|---|---|
| 7 | 3 Print Unit Summary | The Instructor/Operator selects this function when it is desired to obtain a hard copy of the progress of all students in the system (see 2-74). This option is selected by pressing the number 3 key followed by pressing the RETURN key on the display terminal. The same display page is presented with a new prompt. |
| 8 | Enter Unit: prompt | Request to type in the unit number (by Battalion and Regimental designation; e.g. 1/01) for which a summary is desired. After unit number is entered, pressing the RETURN key will call the printout on the Terminal Printer. If the RETURN key is pressed before entering a unit number, a prompt: "All units will be printed. Confirm [Y/N]:" will appear at the bottom of the display. Pressing the "Y" key will initiate a printout of all unit summaries. Pressing the "N" key will call the original prompt to request entry of a specific unit number. |

**IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU) (Continued)**



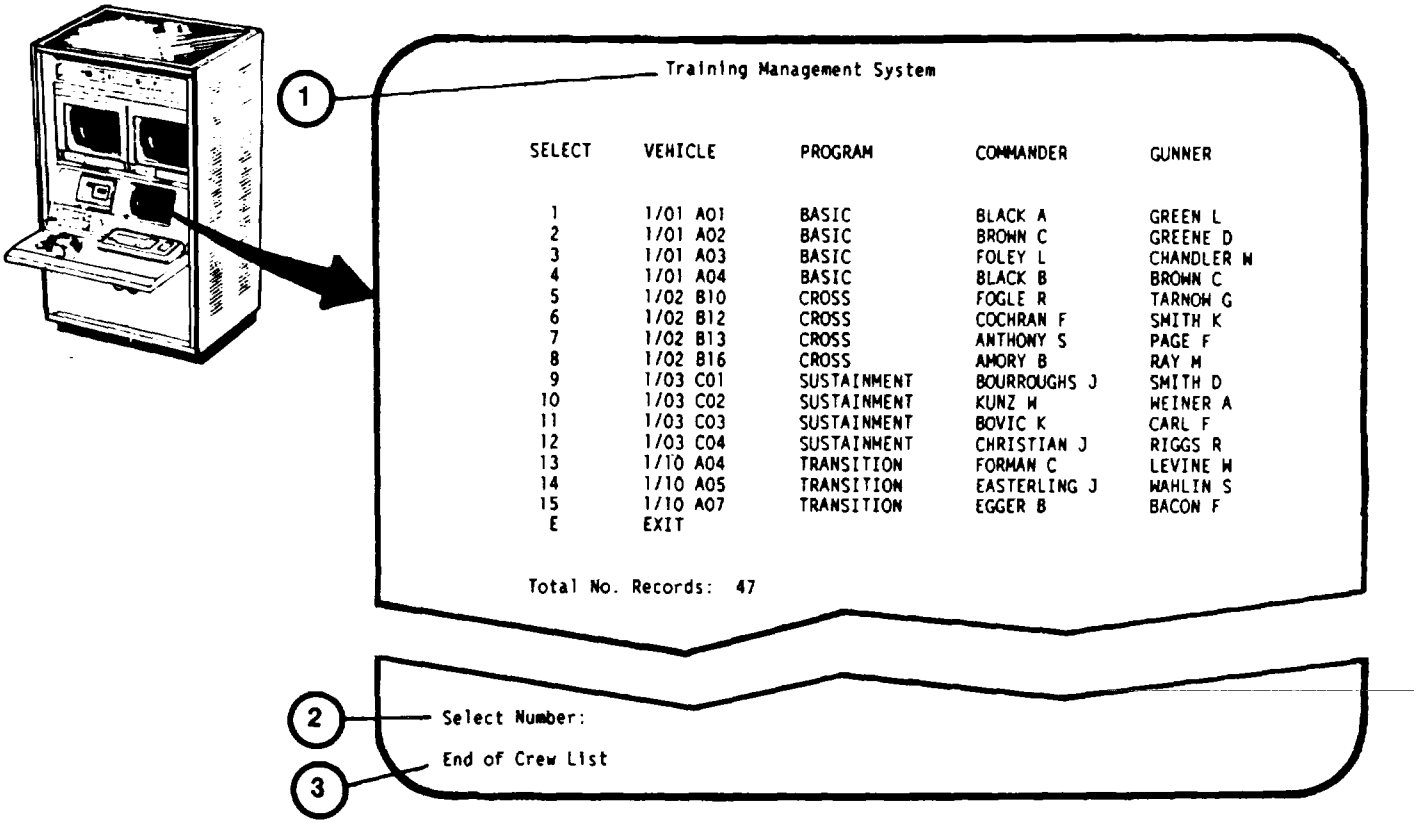

| Key | Control or Indicator | Function |
|---|---|---|
| 9 | 4 Unit Backup | The Instructor/Operator selects this function when it is desired to obtain a printout of a selected unit's program and training coordinates for backup records. |
| 10 | Enter unit to backup: prompt | Request for Instructor/Operator to type in the desired unit number by Regiment/Brigade, Battalion/Squadron, Company/Troop and vehicle number (or segment thereof) (1/01 A01). After typing in the number(s), pressing the RETURN key will call the Crew File Backup printout on the Terminal Printer. |

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT - FUNCTION MENU) (Continued)



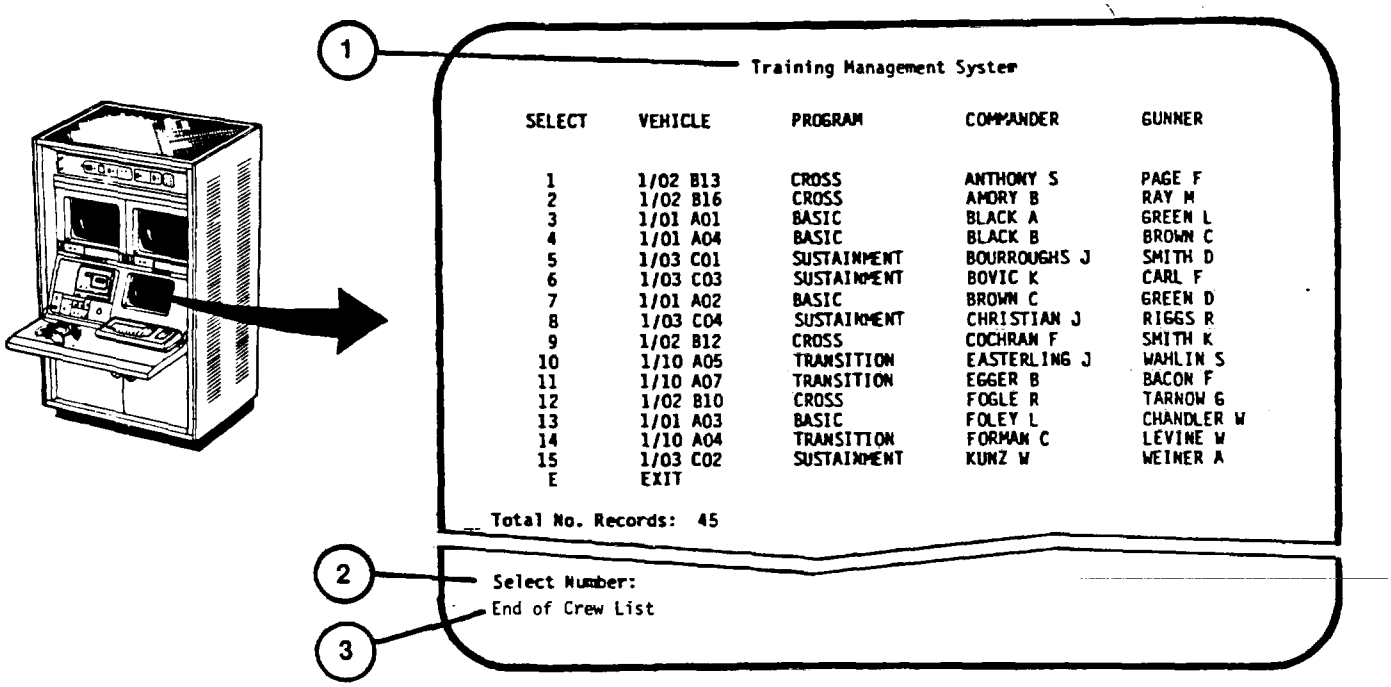

| Key | Control or Indicator | Function |
|---|---|---|
| 11 | 5 Unit Restore | The Training Manager selects this function when it is desired to rapidly restore crew coordinate positions based on Crew File Backup printout records (see 2-76.2). |
| 12 | Enter backup record or E to Exit: prompt | Request for Training Manager to type in data exactly as it appears on Crew File Backup printout records. |
| 13 | 6 Exit Training Management | The Instructor/Operator selects this function when it is desired to exit the Training Management program. This option is selected by pressing the number 6 key followed by pressing the RETURN key on the display terminal. This recalls the Mode Select display page for presentation (see 2-40). |

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT SYSTEM- VEHICLE INDEX)



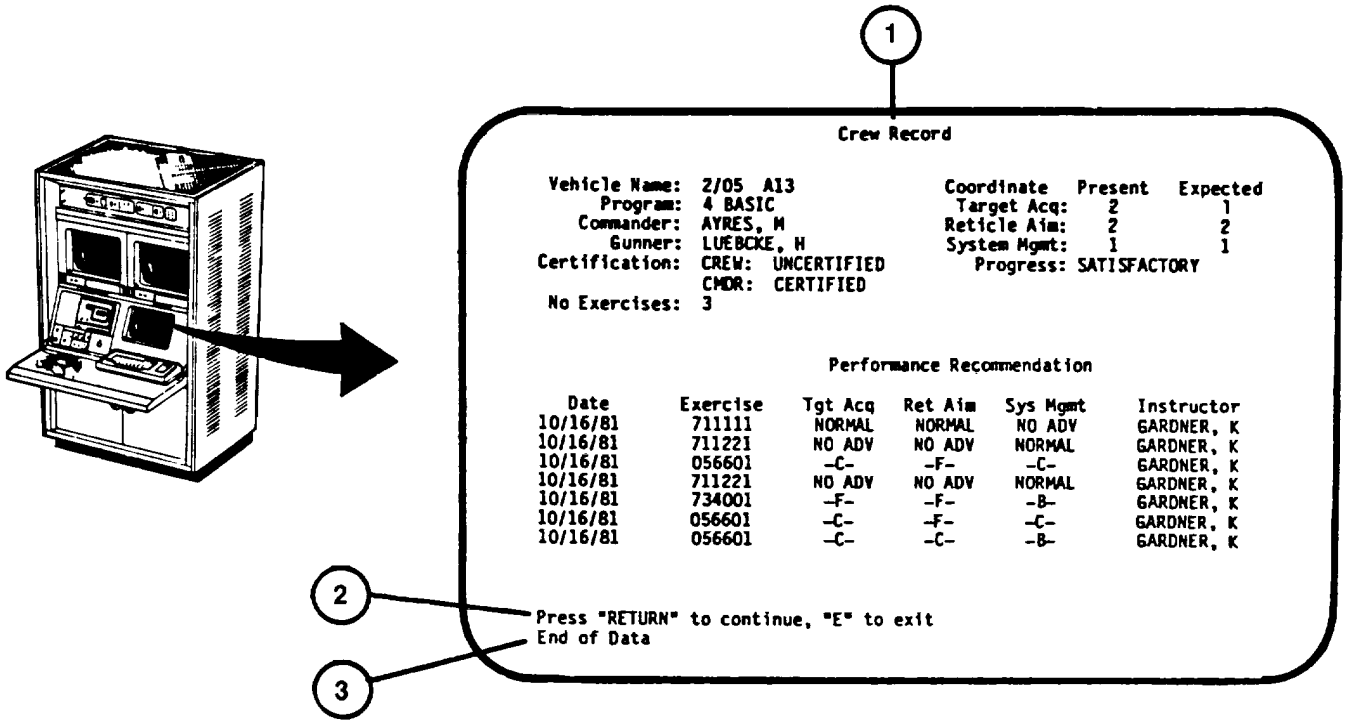

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Training Management System (vehicle index) | Training Management System vehicle index display page provides a list of all vehicle names in numerical order. The list is displayed when Display Vehicle is selected without specifying a vehicle name. |
| 2 one | Select Number: prompt | Request for Instructor/Operator to select the records for of the crews listed by typing in the appropriate SELECT number, then RETURN. If the desired vehicle is not listed on the first page, press RETURN to display the next page. To exit, press E then RETURN to recall the Training Management System function menu. |
| 3 | End of Crew List | Lets the Instructor/Operator know that the display is the end of the vehicle index list. |

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGEMENT SYSTEM - STUDENT INDEX)



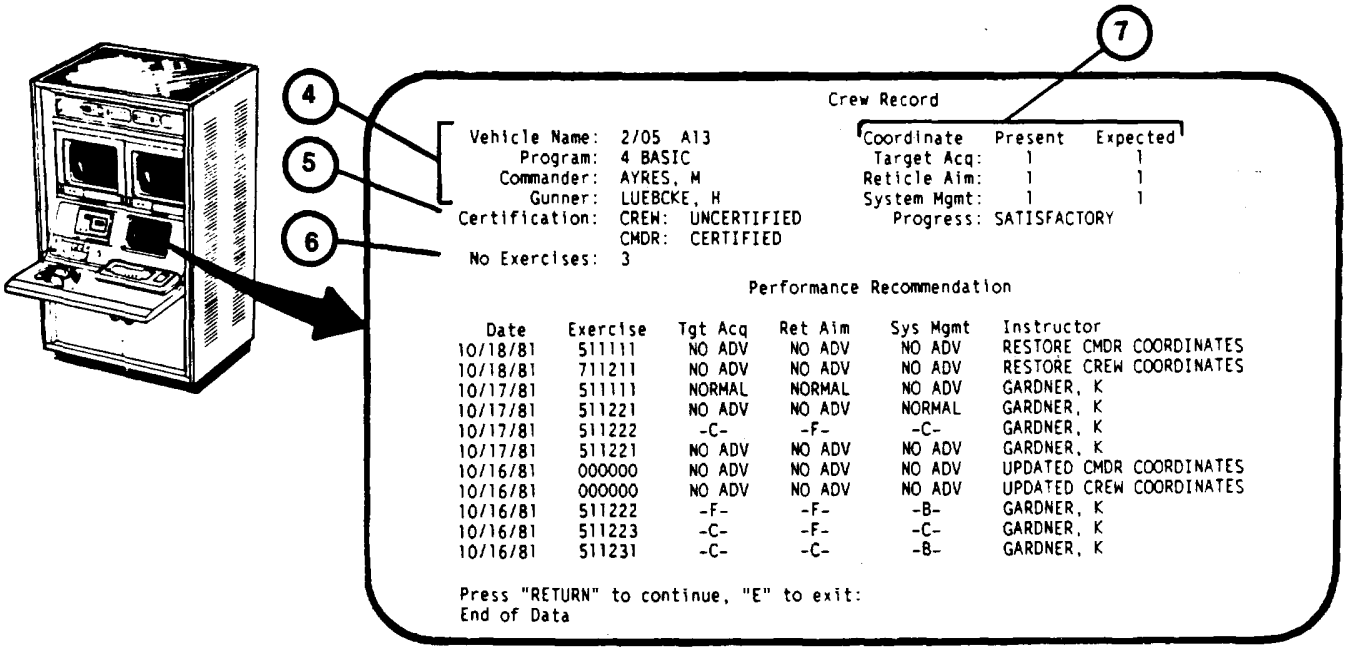

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Training Management System (student index) | Training Management System student index display page provides a list of all the students, sorted alphabetically by commander's name, then gunner's name. The list is displayed when Display Student (see 2-107) is requested without specifying a student's name. |
| 2 | Select Number: prompt | Request for Instructor/Operator to select one of the records listed by typing in a SELECT number then RETURN. If the student's name is not listed on the first page, press RETURN to display the next 15 students on the list. To exit, press E then RETURN to recall the Training Management System function menu (see 2-100). |
| 3 | End of Crew List | Lets the Instructor/Operator know that the display is the end of the student index list. |

## IOS DISPLAY TERMINAL PAGES (INSTRUCTOR CREW RECORD CHECK)



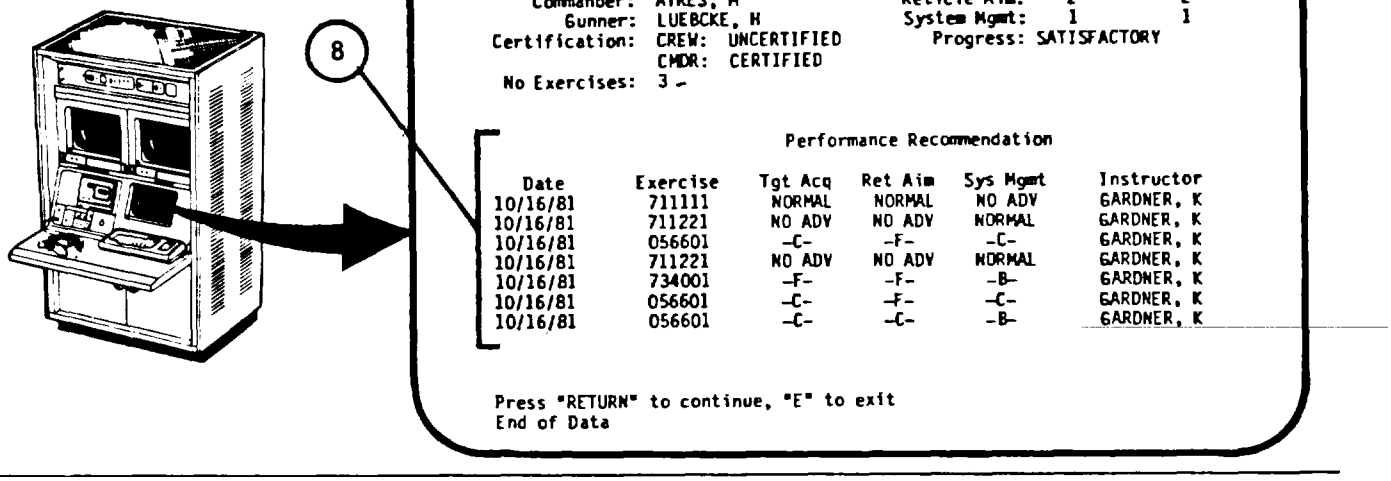

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Crew Record | Training Management System - Crew Record display page provides a listing of exercises and performance records for the records of a selected student file. |
| 2 | Press "RETURN" to Continue, “E” to Exit | Pressing the RETURN key on the keyboard will change the display to the previous 10 records of the selected student file. Pressing the E key then RETURN on the keyboard will recall the Training Management System vehicle index or student index (see 2-106/2-107). |
| 3 | End of Data | This prompt appears when the last group of records for the student file selected is displayed. |

## IOS DISPLAY TERMINAL LPAGES (INSTRUCTOR CREW RECORD CHECK) (Continued)



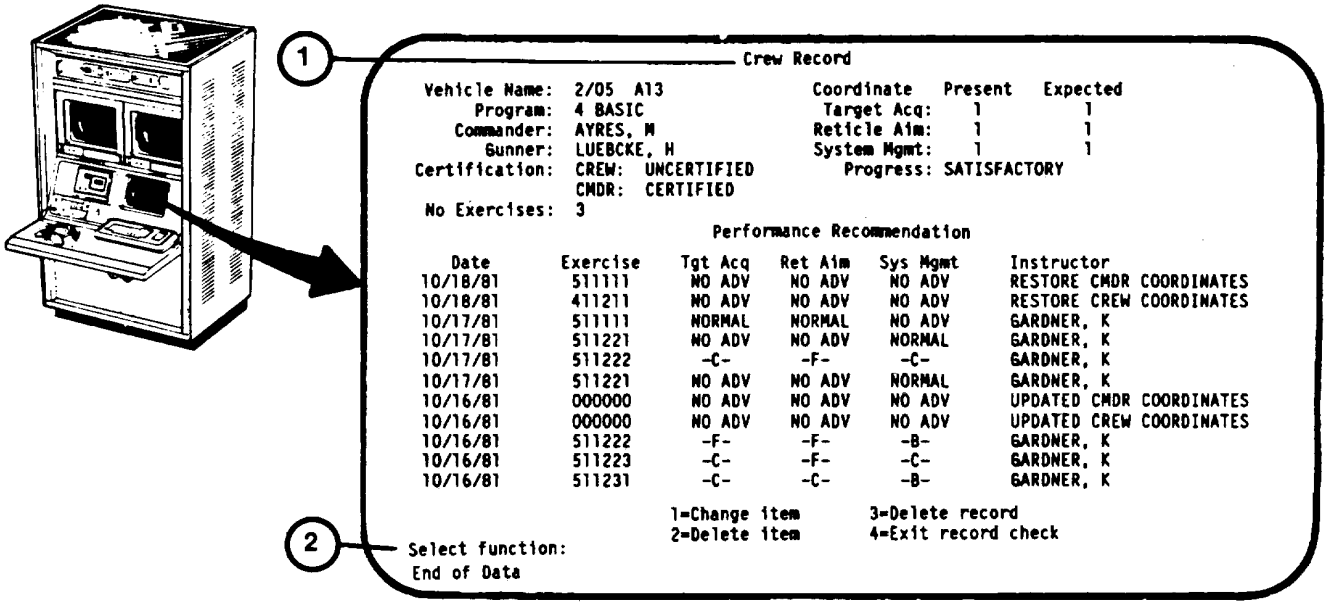

| Key | Control or Indicator | Function |
|---|---|---|
| 4 | Vehicle Name:<br>Program:<br>Commander:<br>Gunner: | Identifies the vehicle, the training program type, and the Commander's and Gunner's last names and initials for the student file selected. |
| 5 | Certification: | Indicates whether or not the Gunner or Commander are certified. |
| 6 | No. Exercises: | Identifies the number of exercises performed by computer selection for establishing scoring criteria and coordinates within the exercise matrix. |
| 7 | Coordinate<br>Target Acq:<br>Reticle Aim:<br>System Mgmt:<br>Progress: | Lists the Present and Expected coordinate locations of Target Acquisition, Reticle Aim and System Management and shows the crew's progress within the exercise matrix. |

## IOS DISPLAY TERMINAL PAGES (INSTRUCTOR CREW RECORD CHECK) (Continued)




| Key | Control or Indicator | Function |
|---|---|---|
| 8 | Performance Recommendation | Provides the list of the last 10 exercises performed by the crew<br>Date = Date exercise was performed<br>Exercise = Identifying numbers of exercises performed<br>Tgt Acq = Target Acquisition grade<br>Ret Aim = Reticle Aim grade<br>Sys Mgmt = System Management grade<br>Instructor = Last name and initial of Instructor/Operator for each exercise. Also shows when a record is restored or coordinates updated.<br><br>**NOTE**<br>The letter grades below Target Acquisition, Reticle Aim, System Management show that the exercises were selected by the Instructor/Operator. Worded grades show that the exercise was computer recommended and correlate as follows:<br><br>A = RAPID Advancement<br>B = NORMAL Advancement<br>C = NO ADVancement<br>F = REDUCED Advancement |

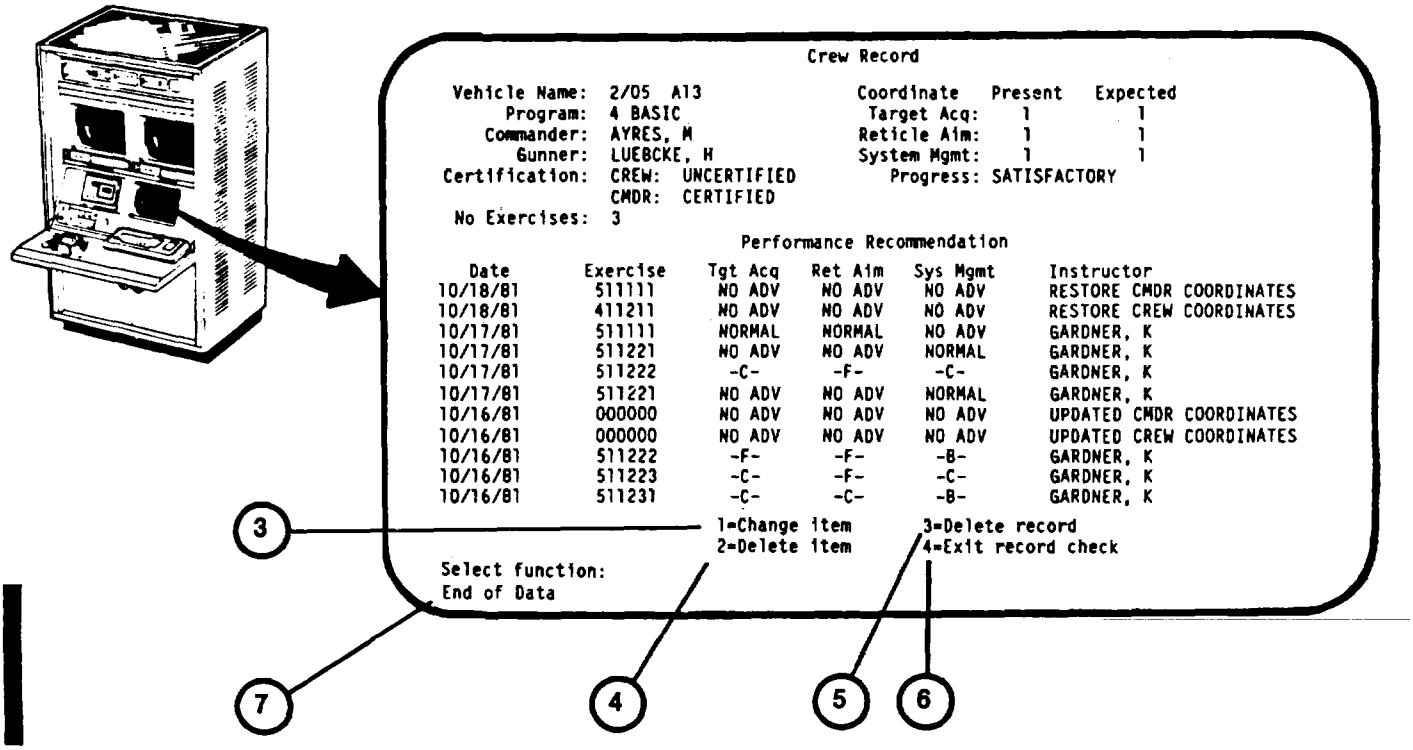
## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGER CREW RECORD CHECK)




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Crew Record | The Training Management System Crew Record displayed when a Training Manager has logged in is identical to the Instructor's Crew Record display (see 2-108) except that the training manager is provided with keyboard options to allow modification of the crew records. |
| 2 | Select Function: prompt | Request for the Training Manager to select one of the three types of record modifications, or exit the crew record check and recall the Training Management System vehicle or student index (see 2-106 or 2-107). Selection is made by pressing the number key that corresponds to the choice, then pressing the RETURN key. The choices are:<br>1 = Change Item<br>2 = Delete Item<br>3 = Delete Record<br>4 = Exit Record Check |

Change 2

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGER CREW RECORD CHECK) (Continued)

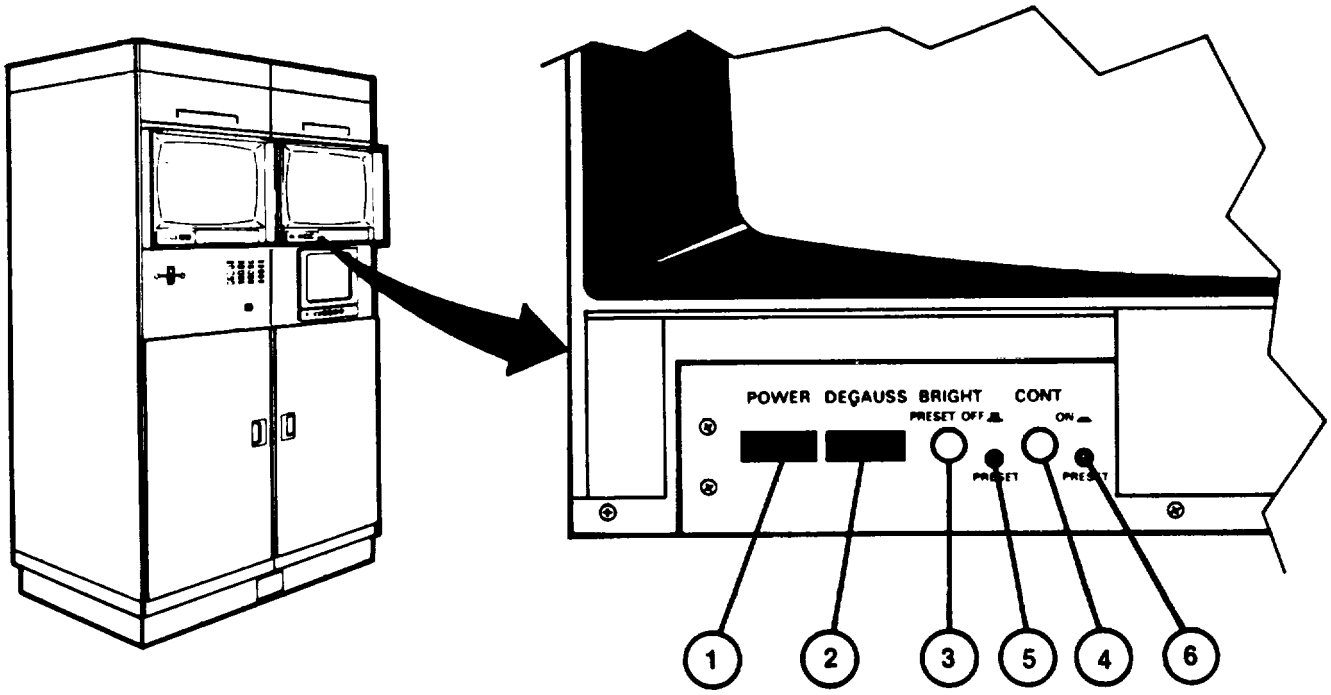



| Key | Control or Indicator | Function |
|---|---|---|
| 3 change on keyboard | 1 = Change Item | Selecting this option allows the Training Manager to Vehicle Name, Commander, Gunner and Coordinates the Crew Record page. Pressing number I on the and then RETURN will call up a series of prompts:<br>a. New vehicle name<br>b. New commander's last name, initial<br>c. New gunner's last name, initial<br>d. New TAE coordinates, full crew cube<br>e. New RAE coordinates, full crew cube<br>f. New SME coordinates, full crew cube<br>g. New TAE coordinates, commander's cube<br>h. New RAE coordinates, commander's cube<br>i. New SME coordinates, commander's cube |

## IOS DISPLAY TERMINAL PAGES (TRAINING MANAGER CREW RECORD CHECK (Continued)

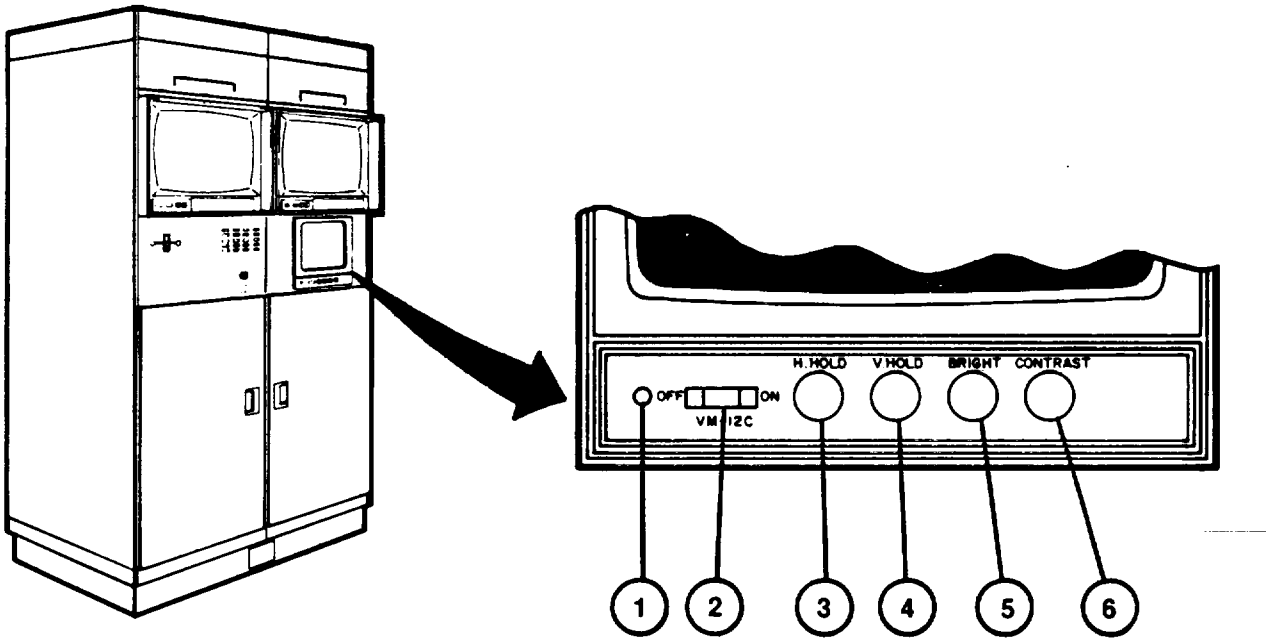
| Key | Control or Indicator | Function |
|---|---|---|
| 3 | (Continued) | Change is made after each prompt by entering new data and pressing RETURN key. If an item does not require a change, pressing the RETURN key alone calls up the next prompt. Pressing the RETURN key after last prompt returns display to the corrected crew record with "Select Function" prompt. The Performance Recommendation "Instructor" column will show when a crew or commander training coordinate has been changed. |
| 4 | 2 = Delete Item | Selecting this option allows the training manager to delete the Performance Recommendations, one line at a time. Pressing the number 2 key then RETURN will repeat the display with the first line of Performance Recommendation repeated at the bottom of the display with a new prompt "Delete this line (Y/N)." If the answer is yes, depressing the Y key then the RETURN key will delete the first line of Performance Recommendations and access the next line. If the line is not to be deleted, pressing the RETURN key alone will not delete the line but will access the next line with the same prompt "Delete this line (Y/N)." This process is repeated until all Performance Recommendation lines have been accessed and the Select Function prompt is recalled. |
| 5 | 3 = Delete record | Selecting this option allows the Training Manager to delete the entire file of commander and crew records displayed. Pressing the number 3 key, then RETURN will call up a prompt: "Confirm delete (Y/N)". If the Commander and Gunner are to discontinue training on the trainer, the answer is Y (yes). Pressing "N" key will return the display to "Select Function: prompt. |
| 6 | 4 = Exit record check | Selecting this option recalls the previous vehicle or student index (see 2-106 or 2-107). |
| 7 | End of Data | This prompt appears when the last group of records for the student file selected is displayed. |

## REMOTE MONITOR STATION - 19-INCH COLOR MONITORS



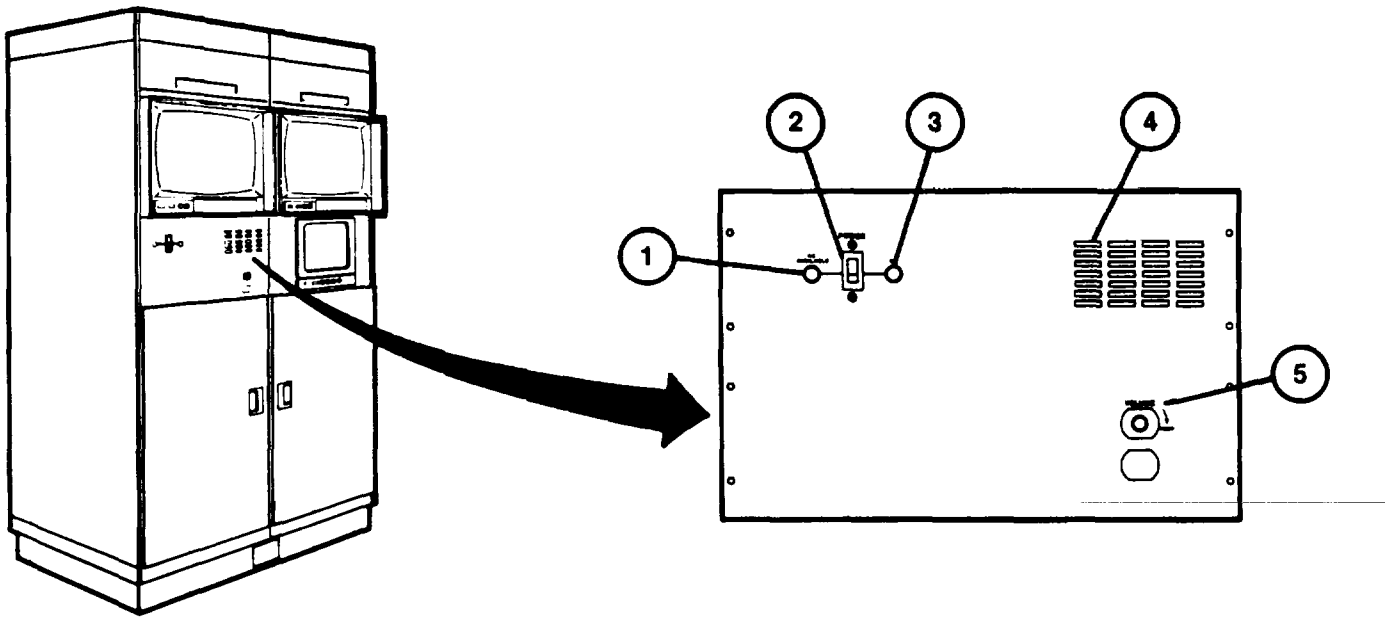

| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Power on/off pushbutton switch | Press to turn monitor power on or off. |
| 2 | DEGAUSS pushbutton switch | Automatically degausses monitor (neutralizes magnetic field) when monitor is turned on and pushbutton is pressed and held for 7 to 10 seconds. |
| 3 | BRIGHTness control PRESET OFF (control pulled out) PRESET ON (control pushed in) | Manual adjust for brightness of display when control is pulled out; PRESET brightness (5) set when control is pushed in. |
| 4 | CONTrast control PRESET OFF (control pulled out) PRESET ON (control pushed in) | Manual adjust for contrast display when control is pulled out; preset contrast (6) is set when control is pushed in. |
| 5 | PRESET (brightness screwdriver adjust) | Presets brightness of display when BRIGHTness control (3) is pushed in. |
| 6 | PRESET (contrast screwdriver adjust) | Presets contrast of display when CONTrast control (4) is pushed in. |

## REMOTE MONITOR STATION - 12-INCH MONOCHROME MONITOR




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | Power on indicator | Lights red to indicate power on. |
| 2 | Power ON-OFF rocker switch | Press to turn monitor on or off. |
| 3 | H HOLD control | Manual adjustment to "lock-in" monitor circuits with video input horizontal synchronization. |
| 4 | V HOLD control | Manual adjustment to "lock-in" monitor circuits with video input vertical synchronization. |
| 5 | BRIGHTness control | Manual control for increasing or decreasing display brightness |
| 6 | CONTRAST control | Manual control for adjusting display contrast. |

## REMOTE MONITOR STATION - AUDIO AMPIPOWR PANEL




| Key | Control or Indicator | Function |
|---|---|---|
| 1 | POWER-AC AVAILABLE indicator | Lights to indicate that primary power is available. |
| 2 | POWER Circuit Breaker | On/off control and overload protection for120 V ac power to RMS. CRT's and Audio Amplifier. |
| 3 | POWER-ON Indicator | Lights orange to indicate POWER Circuit Breaker (2) is on and power is applied to CRT's and Audio Amplifier. |
| 4 | Speaker | Provides audio output for exercise aural cues and Instructor/Crew communication. |
| 5 | VOLUME + INCR control | Adjusts volume of speaker (4) output. |

## Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Operator Preventive Maintenance Checks and Services are not identified for the M2/M31 U-C OFT.

## Section III. OPERATION UNDER USUAL CONDITIONS

SECTION INDEX


| Procedure | Page |
|---|---|
| Shelter Preconditioning Procedure | 2-118\| |
| Electronic Equipment Power-Up Procedure | 2-124 |
| Remote Monitor Station Power-Up Procedure | 2-130.41 |
| User Log-On Procedure | 2-131 |
| Daily Readiness Check Procedure | 2-133 |
| Training Session Initialization Procedure | 2-137 |
| Exercise Selection By Computer Recommendation Procedure | 2-141 |
| Exercise Select By Content Menu Call Procedure | 2-144 |
| Exercise Select By Content - Orientation Procedure | 2-146 |
| Exercise Select By Content - Prepare Crew Station Procedure | 2-148 |
| Exercise Select By Content - Boresight and Zero | 2-150 |
| Exercise Select By Content - Acquisition and Manipulation - Gunner Procedure | 2-152 |
| Exercise Select By Content - Acquisition and Manipulation - Commander Procedure | 2-154 |
| Exercise Select By Content - Evaluation Procedure | 2-156 |
| Exercise Select By Content - Gunnery Procedure | 2-158 |
| Exercise Selection By Exercise Number Procedure | 2-162 |
| Run Exercise to Completion Procedure | 2-164 |
| Exercise Running - Freeze Procedure | 2-168 |
| Run Exercise Playback Procedure | 2-170 |
| Session Summary Call-Up Procedure | 2-174 |
| Training Management System Call-Up Procedure | 2-176 |
| Training Management Crew Record By Vehicle Search Procedure | 2-178 |
| Training Management Crew Record By Student Search Procedure | 2-182 |
| Training Management Crew Record Change Item Procedure | 2-186 |
| Training Management Crew Record Delete Item Procedure | -188 |
| Training Management Crew Record Delete Record Procedure | 2-190 |
| Training Management Unit Summary Printout | 2-192 |
| Training Management Unit Backup Record Printout Procedure | 2-194 |
| Training Management Unit Restore Procedure | 2-196 |
| User Log-Off Procedure | 2-198 |
| Electronic Equipment Power-Down Procedure | 2-199 |
| Remote Monitor Station Power-Down Procedure | 2-2041 |
| Overnight and Weekend Shutdown Procedure | 2-205 |
| System (Long-Term) Power-Down Procedure | 2-2071 |

## SHELTER PRECONDITIONING PROCEDURE

This procedure describes how to precondition the shelters prior to electronic equipment power-up.

**WARNING**

Do not remain in shelters with all doors closed unless at least one air conditioner blower is operating. Suffocation may result from lack of fresh air.

1. Check all shelter doors to make sure they are not locked from the outside. Unlock as necessary.

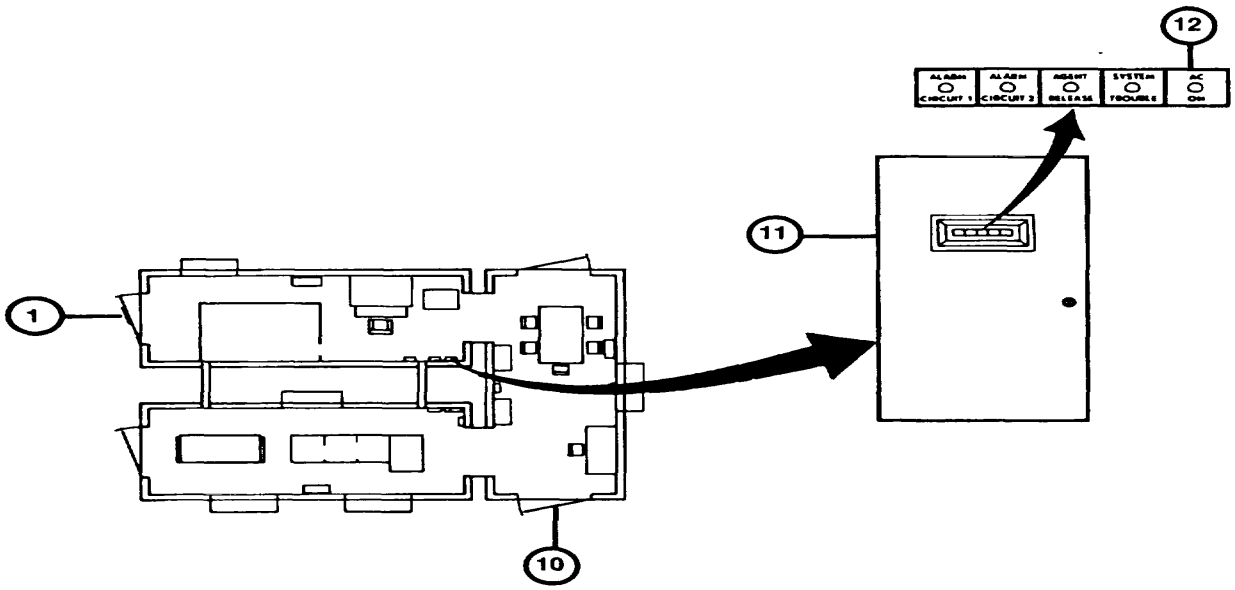
2. Open trainer shelter door vent (1) and check that all other shelter door vents are closed. Close and secure as necessary.

3. thru 7. (deleted)

NOTE

When outside temperature is O° F and below, all personnel should enter and leave the Integration Shelter through the maintenance entrance (10) to prevent undue chilling of personnel in Trainer Shelter.

8. In Trainer Shelter, locate Fire Protection Panel (II 1) and make sure that AC ON indicator (12) is lit green and remaining four indicators are off. If AC ON indicator (12) is not lit, or if any of the other indicators are on, leave the shelters and notify organizational maintenance.




Change 1

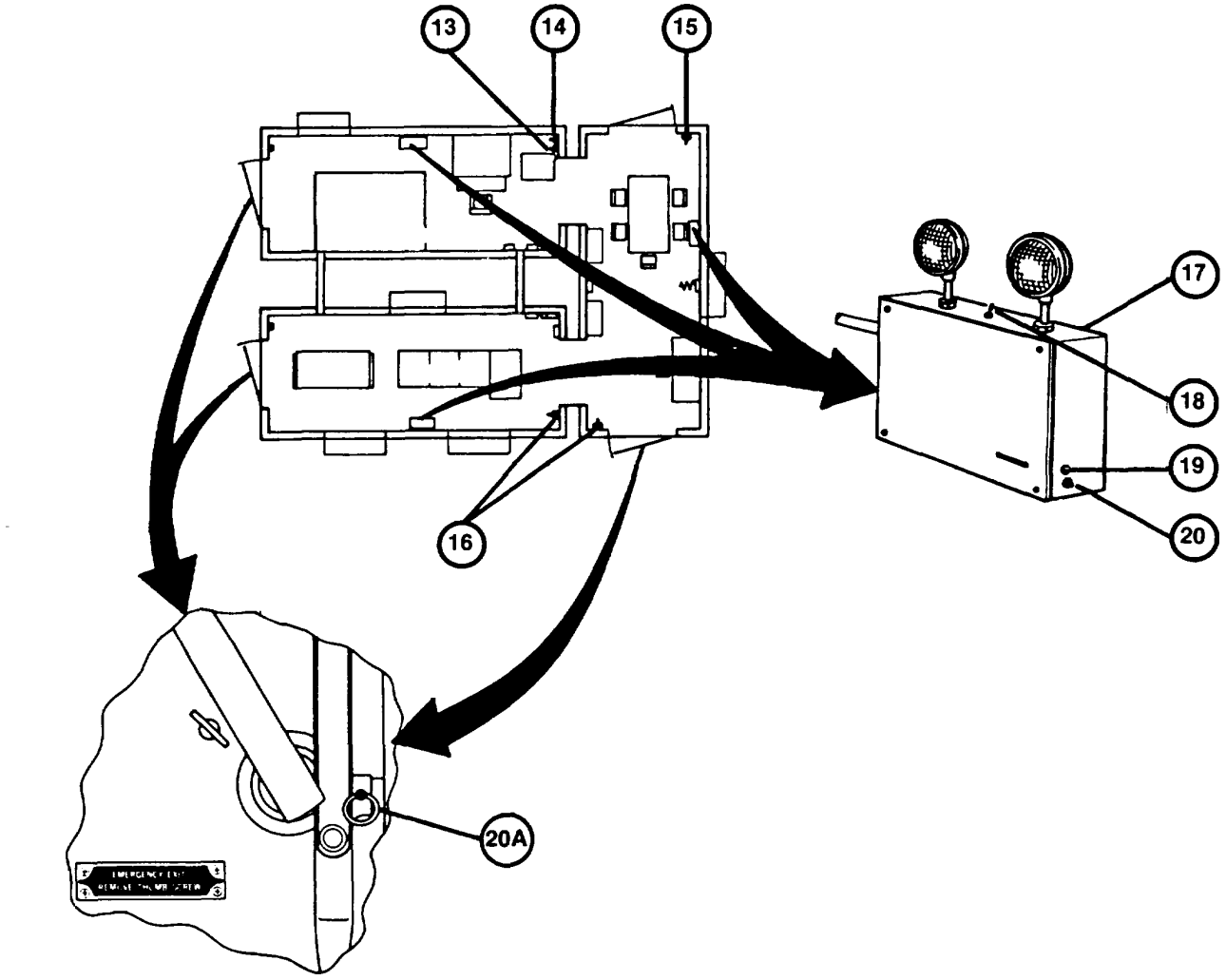
**SHELTER PRECONDITIONING PROCEDURE (Continued)**

9. Turn on shelter lighting at wall switches (13, 14, 15, and 16). If lights do not light (indicating a power outage), leave the shelters and notify organizational maintenance.

10. Locate the three emergency lights (17) (one in each shelter) and make sure the toggle switch (18) above each light is in the ON position and the red indicator lamp (19) is on. If the red indicator is not on, notify organizational maintenance.

11. Press the "Push to Test" pushbutton (20) on each light and check that the emergency lights go on while the pushbutton is held. If a light does not turn on, notify organizational maintenance.

11.1 Unlock each shelter door from the inside by pulling locking pin (20A).



**SHELTER PRECONDITIONING PROCEDURE (Continued)**

12. Locate the five air conditioners (21, 22, 23, 24, and 25) and hygrometer/thermometer (26).

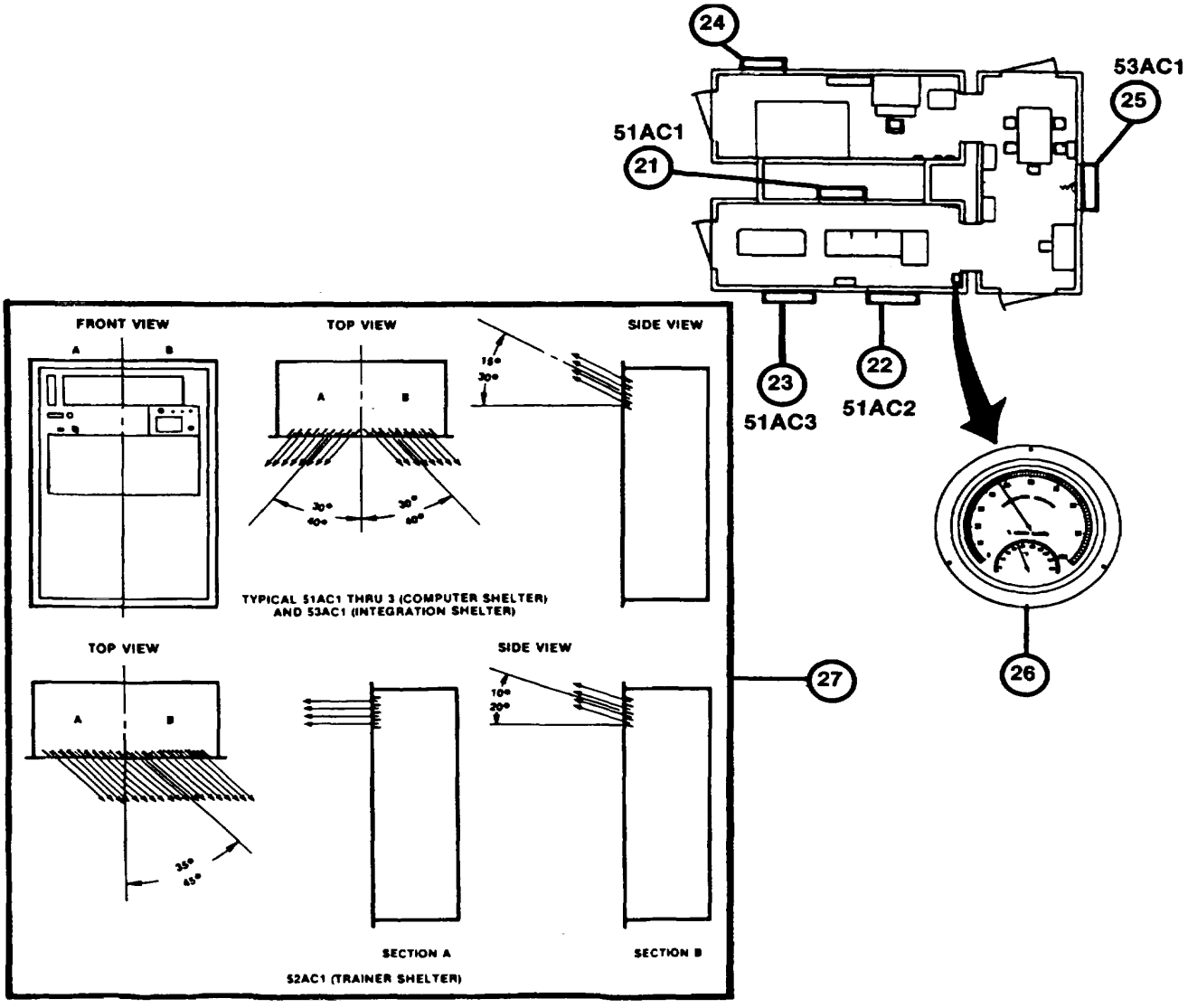
NOTE

When outside temperature is between -10° F and -40° F (-23.3° C and -40° C) refer to Chart (27) but point all vertical louvers of air conditioner 53AC1 (25) towards Trainer Shelter and all vertical louvers of 51AC2 (22) towards Integration Shelter.

13. If outside temperature is between -10° F and 125° F (-23.3° C and 51.7° C), set air conditioner (A/C) louvers as shown in Chart (27).

CAUTION

Never set A/C MODE SELECTOR (28) to OFF unless there is a malfunction. Internal A/C protection heaters will be off when MODE SELECTOR (28) is OFF.



**SHELTER PRECONDITIONING PROCEDURE (Continued)**

14. Set MODE SELECTOR (28) on each A/C control panel in accordance with Chart (29).

15. Set TEMPERATURE CONTROL (30) on each A/C control panel to 72° F.

NOTE

Chart (29) is to be used as a guide for setting the air conditioners at the start of a training day. Instructor/Operator should monitor the wall thermometer (26) and adjust the controls as required to ensure the temperature remains between 59°F and 860F (15SC and 300C). Adjust TEMPERATURE CONTROL (30) at A/C (25) for personnel comfort. During extreme cold temperatures, the TEMPERATURE CONTROL (30) on A/C (25) may be set higher than 72°F.

16. Feel to make sure air is blowing from upper louvers on the air conditioners. If an air conditioner is not operating, notify organizational maintenance.

29

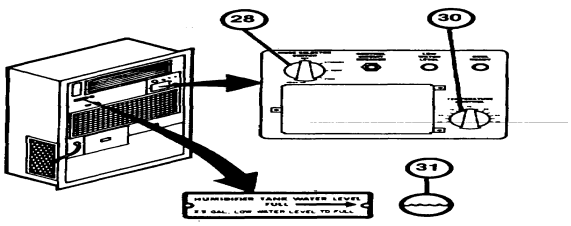
SHELTER A/C MODE SELECTOR SWITCH (28) SETTINGS

| OUTSIDE TEMPERATURE RANGES | COMPUTER SHELTER | | | TRAINER SHELTER | INTEG. SHELTER |
|---|---|---|---|---|---|
| | (21) 51AC1 | (22) 51AC2 | (23) 51AC3 | (24) 52AC1 | (25) 53AC1 |
| -40°F TO -5°F (-40°C TO -20.6°C) | VENT | HEAT | COOL | HEAT | HEAT |
| -5°F TO 20°F (-20.6°C TO -6.7°C) | VENT | HEAT | COOL | COOL | HEAT |
| 20°F TO 68°F (-6.7°C TO 20°C) | COOL | VENT | COOL | COOL | HEAT |
| 68°F TO 80°F (20°C TO 26.7°C) | COOL | VENT | COOL | COOL | COOL |
| 80°F TO 125°F (26.7°C TO 51.7°C) | COOL | COOL | COOL | COOL | COOL |

**WARNING**

Use care to prevent spillage when filling humidifier water tank. Water spilled on electrical items or the shelter floor can create a hazard to personnel.

17. Check HUMIDIFIER TANK WATER LEVEL windows (31) to make sure humidifier tanks are filled.




18. thru 23. (deleted)

Change 1

## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE

This procedure describes turn-on of the electronic equipment and assumes that the shelters have been temperature and humidity conditioned. Upon completion of this procedure, the electronic equipment will be energized and the system ready for user log-on and operation.

1. Make sure that Shelter Preconditioning Procedure has been performed (see 2-118).

2. Observe the hygrometer/thermometer (I) in the Computer Shelter. If temperature reading is between 59°F and 86°F (150C and 30°C) and relative humidity between 20 and 70 percent, proceed to step 3; otherwise, refer to Unusual Electronic Equipment Power-Up Procedure (see 2-212).

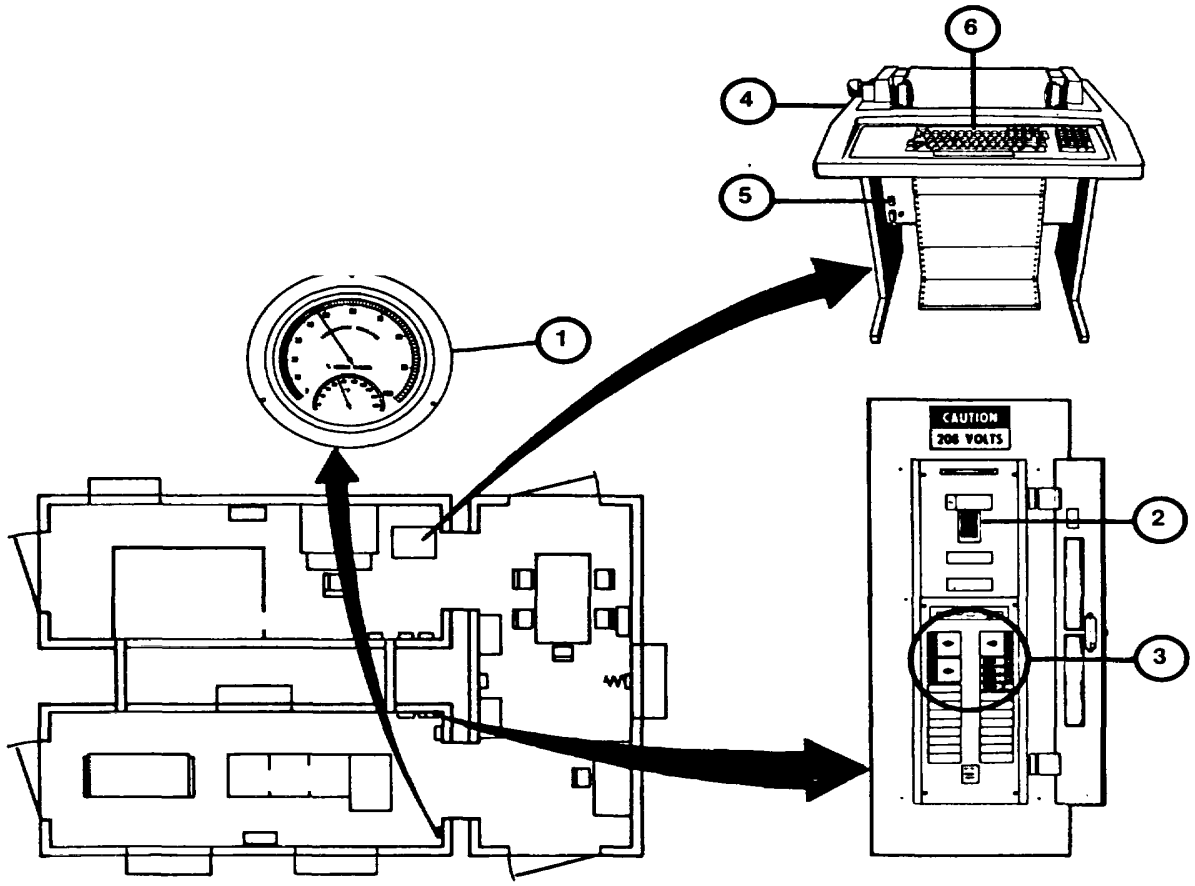
3. In Computer Shelter, open the door of Electronic Power Distribution Panel and make sure main circuit breaker (2) and seven circuit breakers (3) are set to ON position. Close panel door.

4. (deleted)

NOTE

Check that paper is loaded in Terminal Printer (4). If not, refer to Terminal Printer Paper Reloading (see 3-10).

5. In Trainer Shelter, at Terminal Printer (4) set ON/OFF rocker switch (5) to ON and observe that ON-LINE indicator lamp (6) lights above keyboard. If lamp does not light, press LINE LOCAL key.



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

5.1 In Computer Shelter, at SPC Power Management Panel (7), make sure that 208 VAC AVAILABLE indicator lamp (8) is lit.

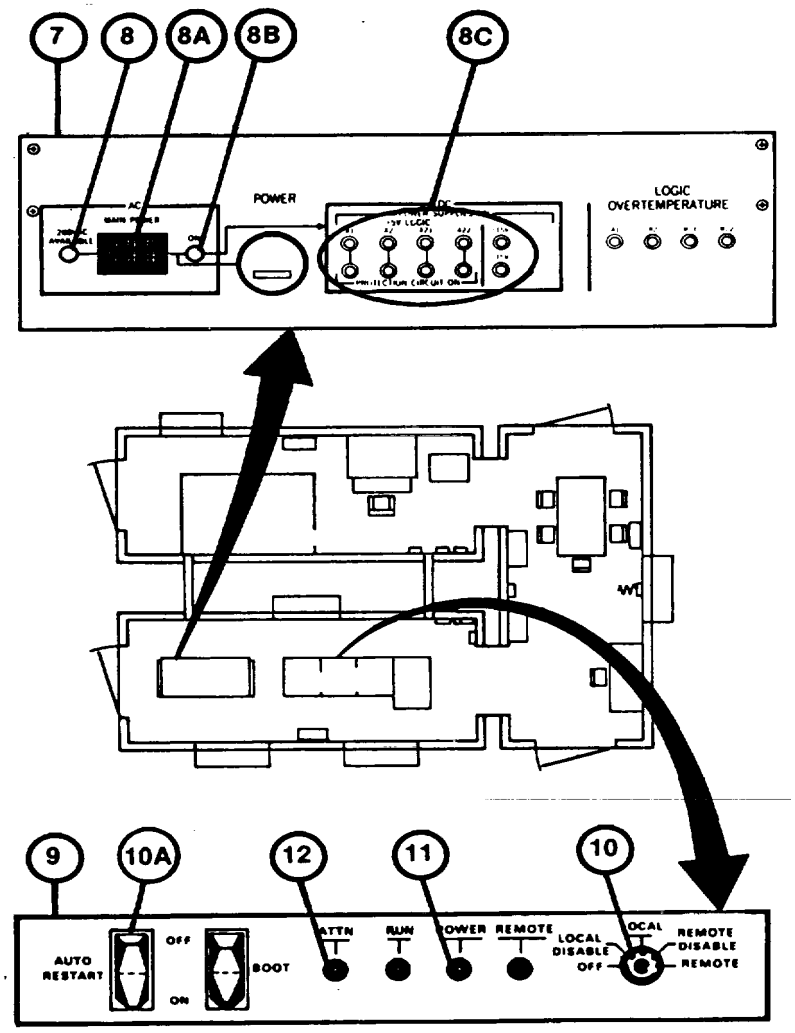
5.2 Set AC MAIN POWER circuit breaker (A) to ON and observe AC MAIN POWER indicator lamp (8B) lights.

5.3 Make sure that ten DC POWER SUPPLIES ON indicator lamps (8C) light.

6. In Computer Shelter, at GPC Main Cabinet Control Panel (9) set keyswitch (10) to LOCAL position, and make sure AUTO RESTART (10A) is set to OFF.

7. Observe POWER indicator lamp (11) lights green and ATTN indicator lamp (12) lights red.

8. thru 13. (deleted)



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

14. (deleted)

NOTE

Make sure RUN/STOP pushbutton indicator (20) and READY indicator (21) are off before performing next step. If not off, press RUN/STOP pushbutton indicator and wait for indicators to go off.

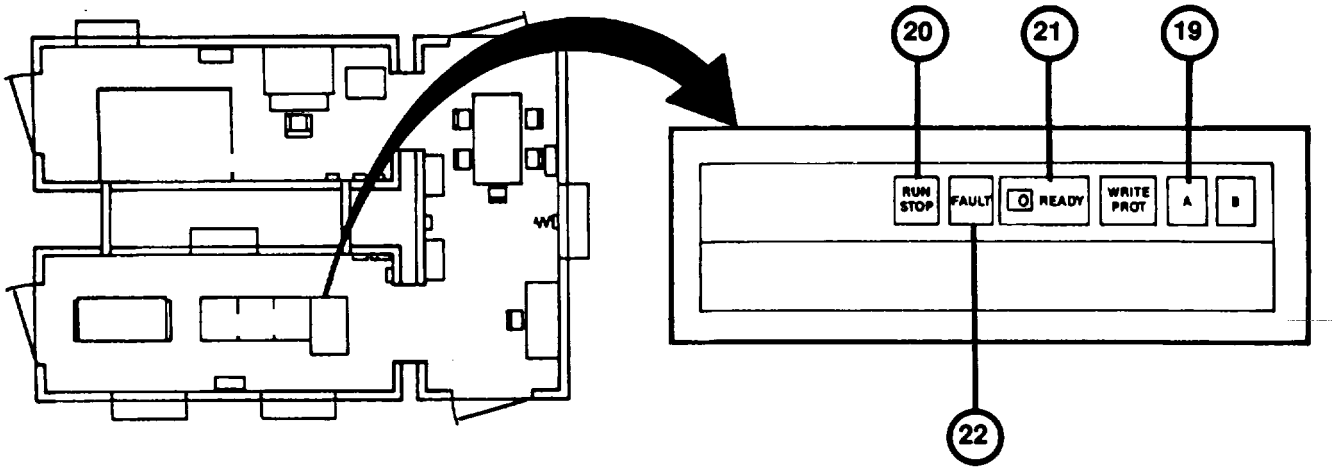
15. In Computer Shelter, at Disk Drive control panel, make sure that only the “A” pushbutton indicator (19) is depressed, then press and release RUN/STOP pushbutton indicator (20).

16. Observe that RUN/STOP pushbutton indicator (20) lights and after a short delay (about 1 minute) READY indicator lamp (21) lights. If lamps do not light, notify organizational maintenance.

NOTE

If the FAULT pushbutton indicator (22) lights, notify organizational maintenance.

17. thru 18. (deleted)



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

19. thru 23. (deleted)

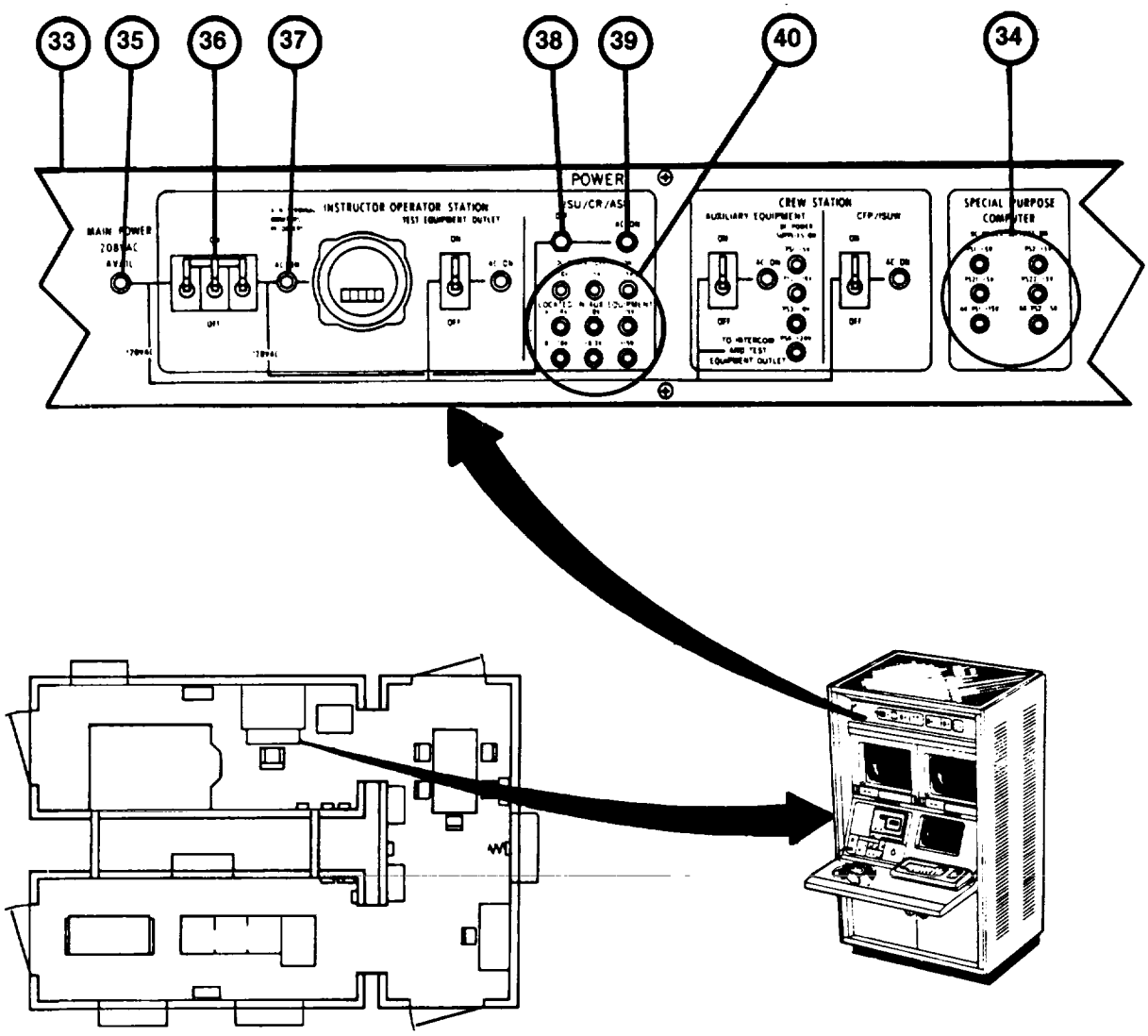
## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

24. In the Trainer Shelter, at IOS Power panel (33) make sure that the six SPECIAL PURPOSE COMPUTER DC POWER SUPPLIES ON indicator lamps (34) light.

25. Make sure that MAIN POWER 208 VAC AVAIL indicator lamp (35) lights.

26. Set MAIN POWER circuit breaker (36) to ON and make sure that AC ON indicator lamp (37) lights.

27. Turn on ISU/CR/ASU keyswitch (38) and make sure that AC ON indicator lamp (39) and nine DC POWER SUPPLIES ON indicator lamps (40) light.



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

28. Set CREW STATION circuit breakers (41) and (42) to ON and make sure that AC ON indicator lamp (43) and (44) light.

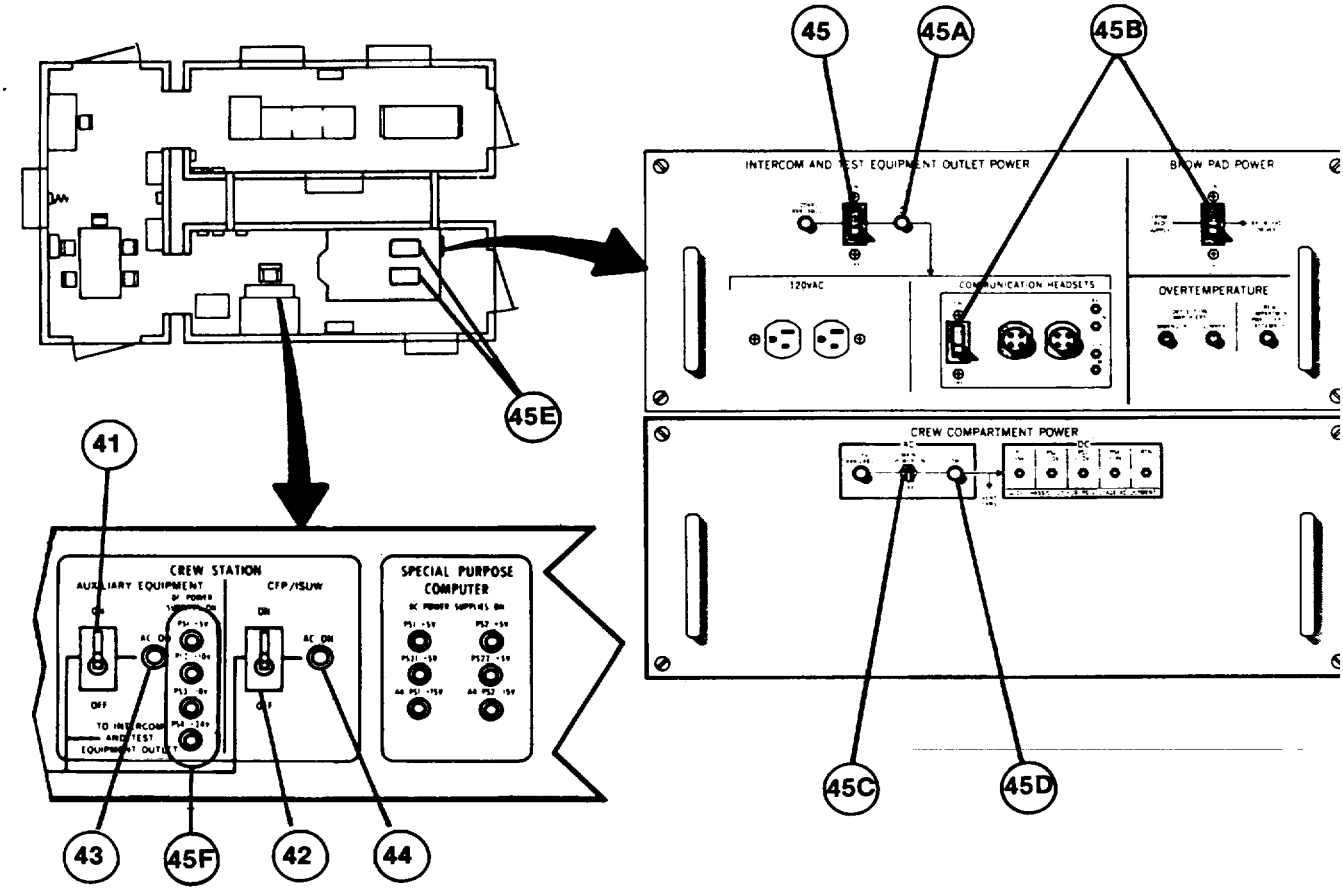
29. At the bottom front of the Crew Station, make sure the INTERCOM AND TEST EQUIPMENT OUTLET POWER circuit breaker (45) is set to ON and ON indicator lamp (45A) is lit.

29.1 Make sure BROW PAD POWER and COMMUNICATION HEADSETS circuit breakers (45B) are set to ON.

29.2 Make sure CREW COMPARTMENT POWER-AC MAIN POWER ON toggle switch(45C) is set to on and indicator lamp (45D) is lit.

29.3 At the top front of the CREW station, locate the PULL TO DEGAUSS levers (45E) on back of the monitors; pull and hold levers for 7 to 10 seconds.

29.4 At IOS Power Panel, make sure that four DC POWER SUPPLIES ON indicator lamps (45F) are lit.



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

NOTE

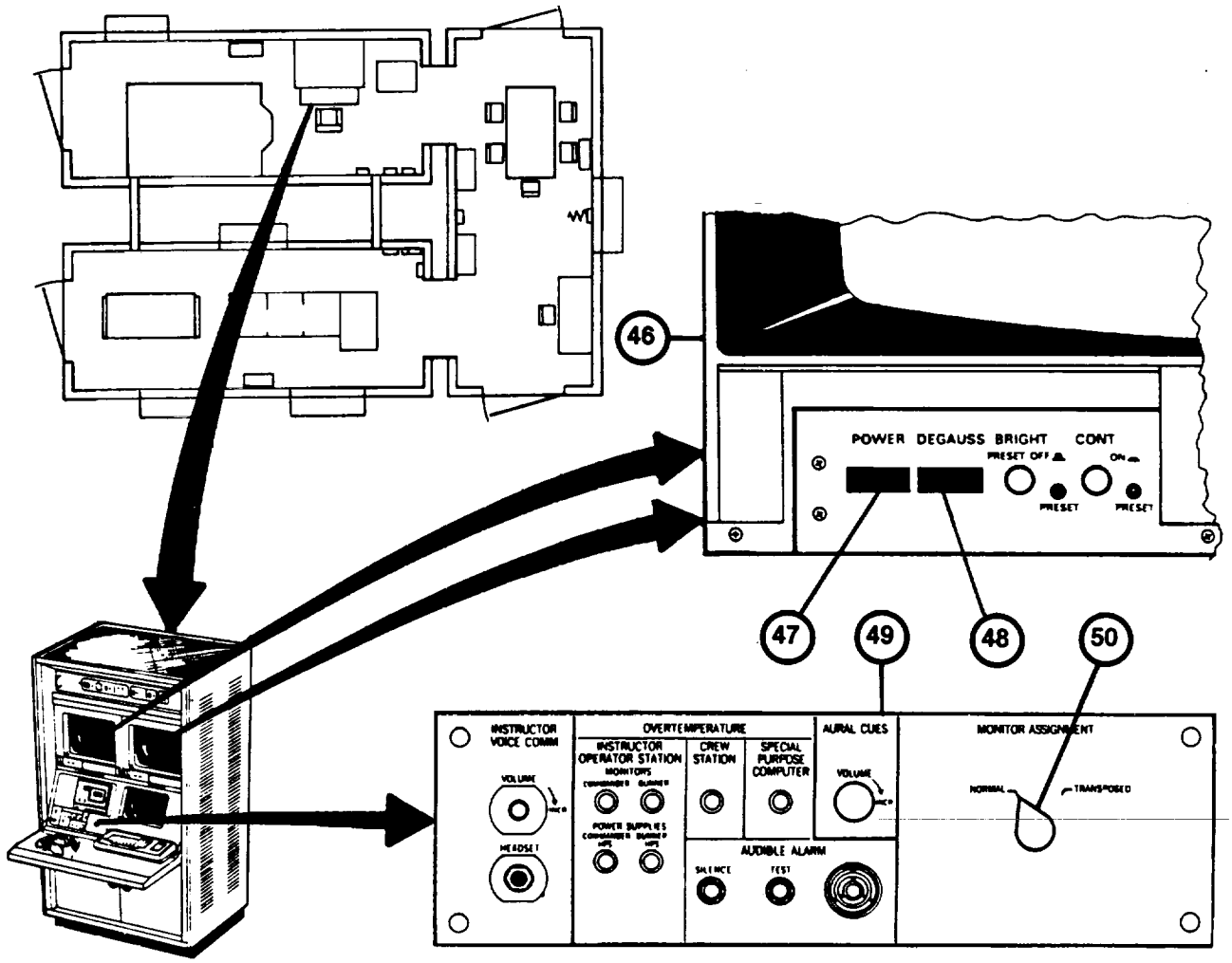
If monitor or Display Terminal screens appear dusty, smudged, or greasy perform Display Screen Cleaning Procedure (see 3-8).

30. At Commander and Gunner 19-inch Color Monitors (46) press both POWER pushbutton switches (47) and observe background color on the screens after a brief warm up. If the screens do not light up, notify organizational maintenance.

31. At Commander and Gunner Color Monitors (46), press in each DEGAUSS pushbutton (48) and hold for 7 to 10 seconds.

32. At Communication Panel (49) make sure that MONITOR ASSIGNMENT switch (50) is set to NORMAL position.

33. thru 36. (deleted)



## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

37. In Trainer Shelter, at Terminal Printer, observe printed message (58) ending with prompt ">>>" (59).

NOTE

If Terminal Printer print is too light, check print impression adjustment (see 3-11) or replace ribbon if necessary (see 3-12).

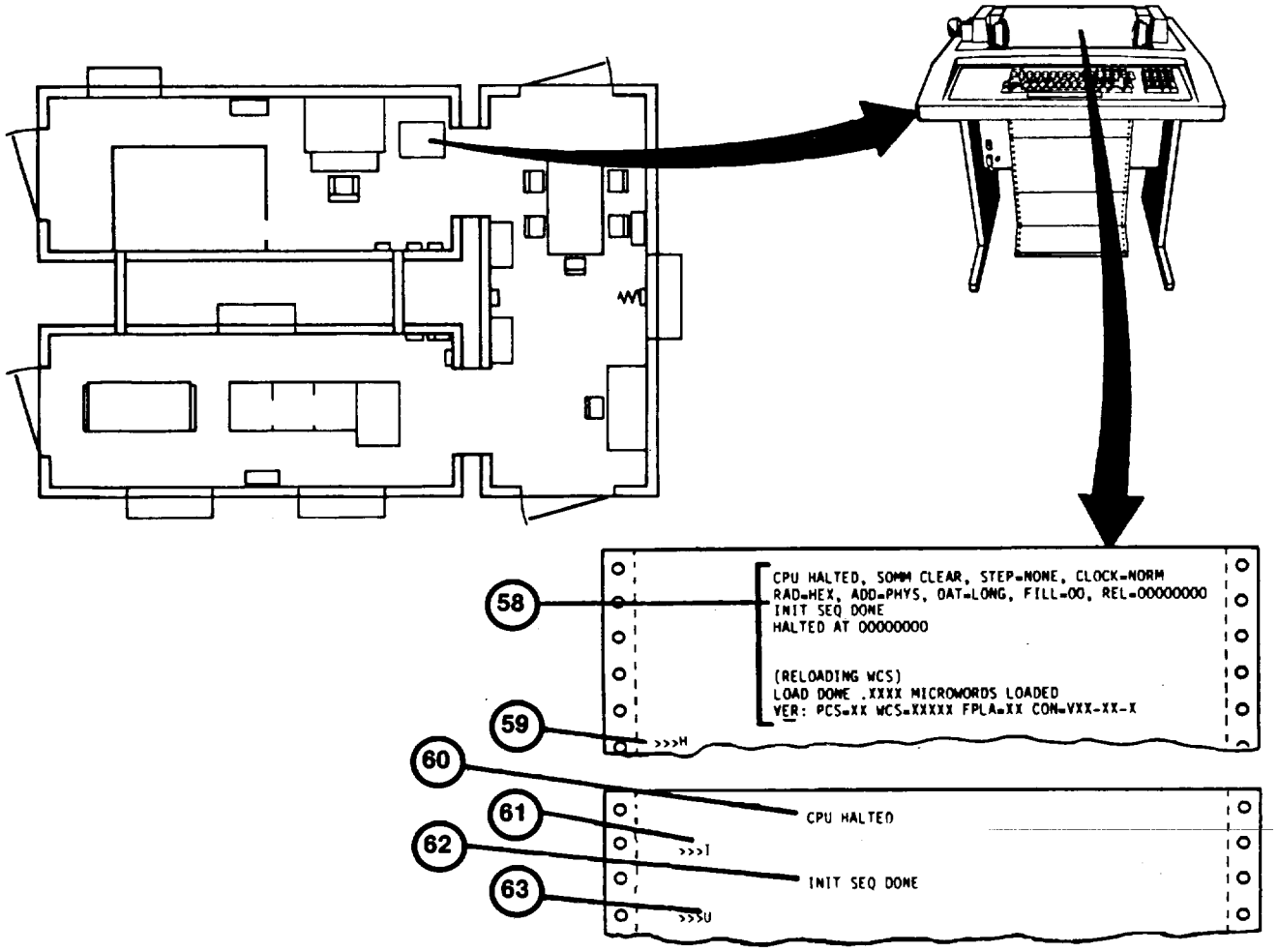
38. Press "H" key on keyboard and observe that H appears after prompt (59).

39. Press the RETURN key on keyboard and observe printed message (60).

40. Press "I" key and observe that I is printed (61).

41. Press RETURN key and observe printed message (62).

42. Press "U" key and observer that U is printed (63).




Change 1

## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

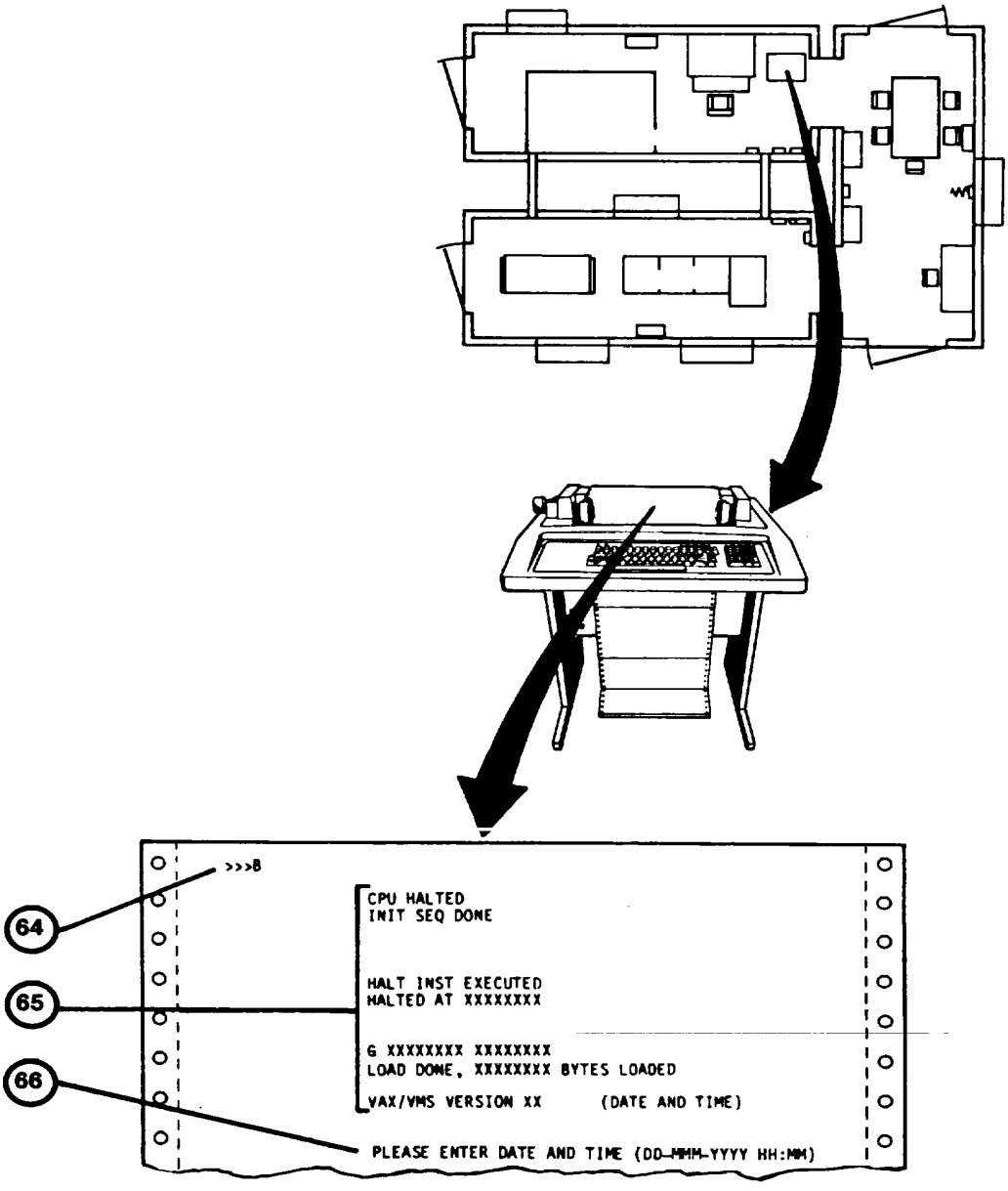
43. Press RETURN key an observe no new printed message.

44. Press “B” key and observe that B (64) is printed.

45. Press the RETURN key and observe printed message (65) begins.

NOTE

If the “PLEASE ENTER DATE AND TIME” message (66) appears, type the current date and time in exactly the format indicated and press the RETURN key to continue. (Input hours 1 to 24) (Example: 19-NOV-1984 19:35). Notify organizational maintenance that GPC Date/Time clock battery is discharged or inoperative.




2-130.2

## ELECTRONIC EQUIPMENT POWER-UP PROCEDURE (Continued)

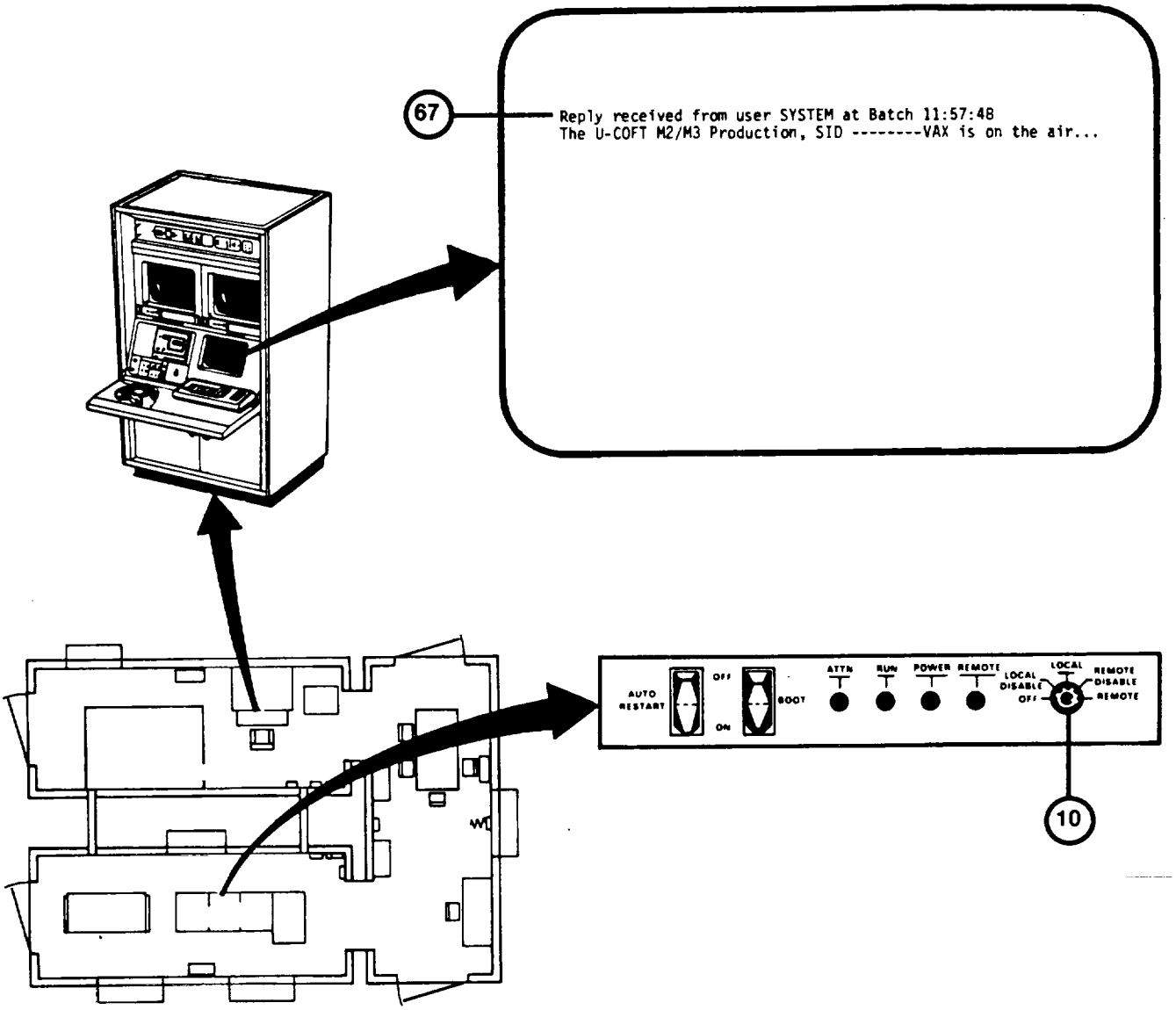
46. At IOS Display Terminal, observe message (67) appears approximately two minutes after RETURN is pressed in step 45.

47. In Computer Shelter, at GPC Main Cabinet Control Console, set keyswitch (10) to LOCAL DISABLE position.

NOTE

For power-up of the Remote Monitor Station (RMS) see 2-130.4.

48. To continue operation, perform User Log-On Procedure (see 2-131).




Change 1

## REMOTE MONITOR STATION POWER-UP PROCEDURE

This procedure describes power-up of the Remote Monitor Station (RMS) in the Integration Shelter.

1. In Integration Shelter at Remote Monitor Station (RMS) cabinet (1) note that the POWER AC AVAILABLE indicator (2) is lit.

2. Set the POWER ON-OFF circuit breaker (3) to the ON position and observe that the POWER ON indicator (4) lights.

3. At the COMMANDER'S VIEW and GUNNER'S VIEW 19-inch color monitors (5), press the POWER switches (6) and observe that background color appears following a brief warm-up.

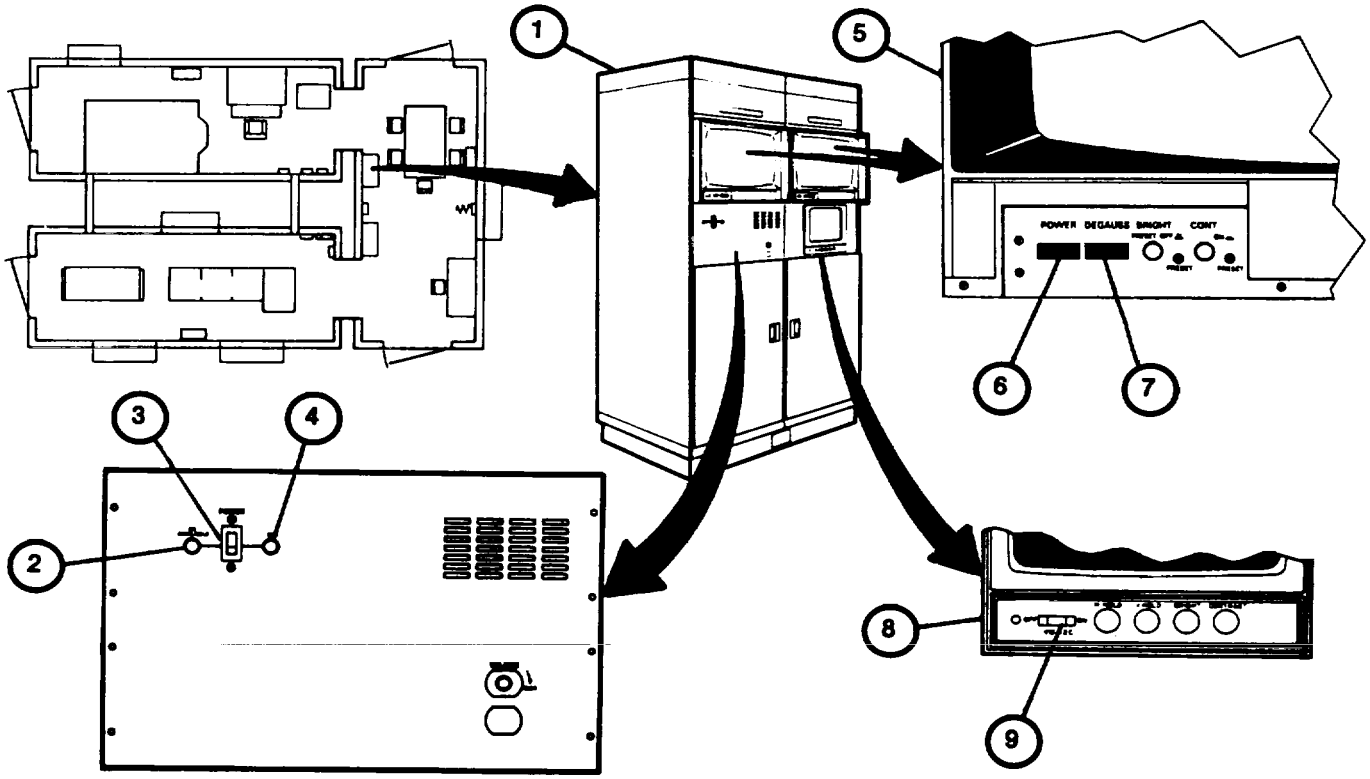
4. At the COMMANDER'S VIEW and GUNNER'S VIEW 19-inch color monitors (5), press in each DEGAUSS switch (7) and hold for 7 to 10 seconds.

5. At the 12-inch monochrome monitor (8) set the ON and observe that screen brightness following a brief warm-up.

NOTE

If monitor screens appear dirty, perform Display Screen Cleaning Procedure (see 3-8).

6. To continue operation, perform User Log-On Procedure (see 2-131).



## USER LOG-ON PROCEDURE

This procedure assumes that the U-COFT has been powered-up. It is performed each time that a user initiates operation of the trainer. Operating access is permitted only to those personnel having authorized passwords. When completed it calls the Mode Selection page for selection of the desired operating program.

1. Assure that Electronic Equipment Power-Up Procedure has been performed (see 2-124).

2. Press RETURN key on keyboard (1).

NOTE

If "Username", prompt (2) times out before username is entered (about 15 seconds) press RETURN key again to recycle.

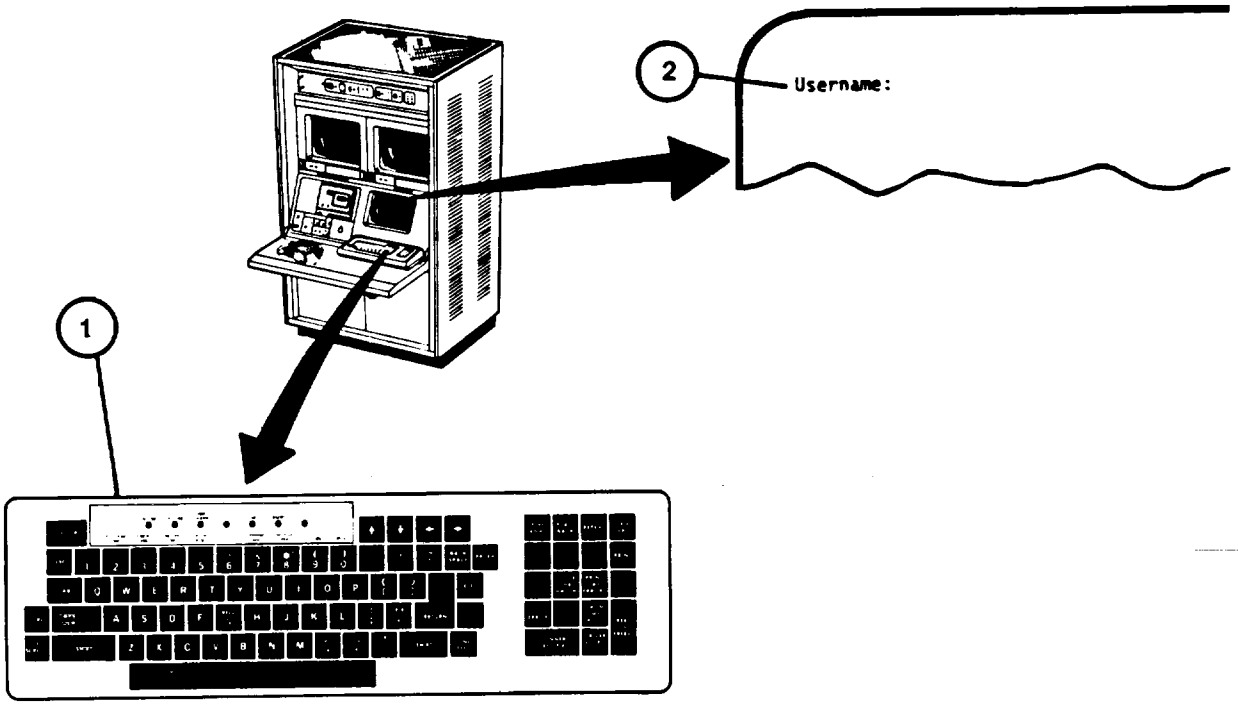
3. Observe "Username:" log-on prompt (2) appears on display.

4. Type in the word "INSTRUCTOR" or "MANAGER" on keyboard (1).

5. Observe that "Instructor" or "Manager" appears correctly after "Username:" prompt.

NOTE

Typing corrections may be made prior to pressing the RETURN key. Simply press DELETE key and type over.



## USER LOG-ON PROCEDURE (Continued)

6. Press RETURN key on keyboard (1).

7. Observe that entry appears after “Username:” and that “Password:” prompt (3) appears on display.

NOTE

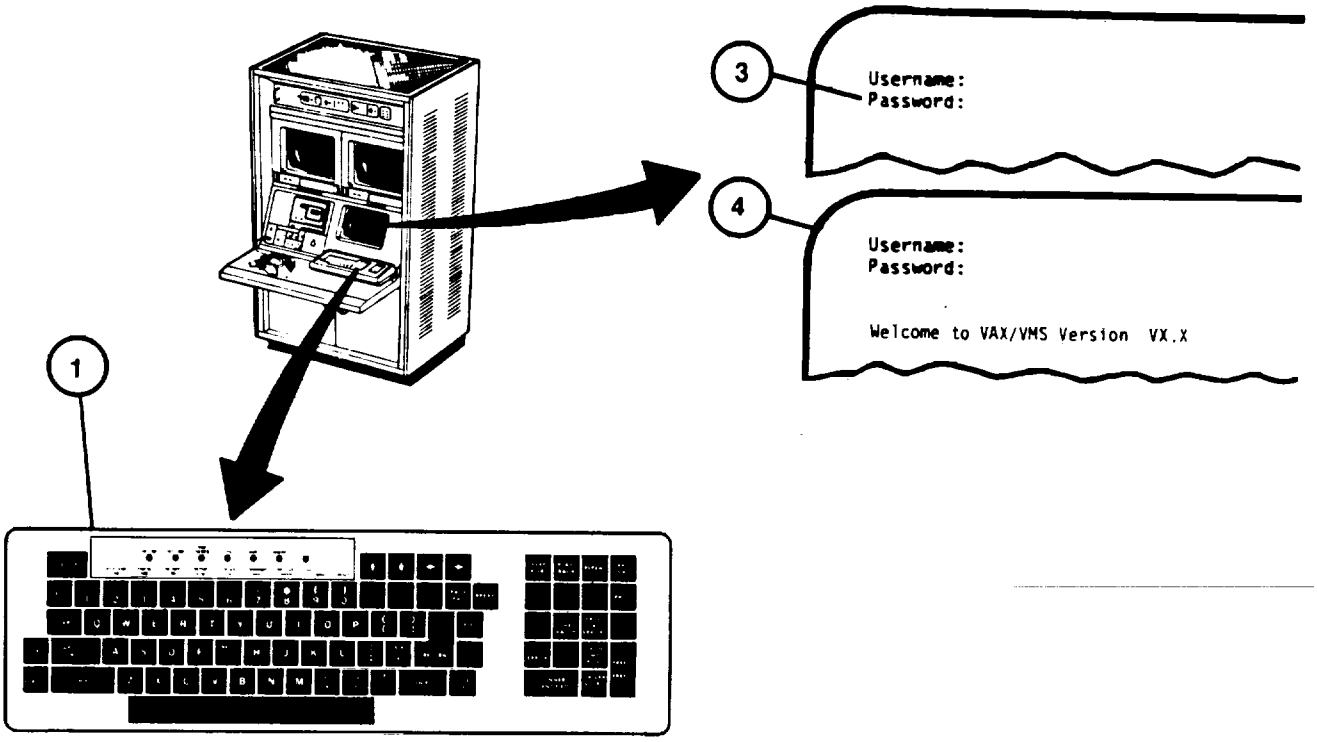
Your password entered in the next step will not be displayed.

8. Enter you password on keyboard (1).

9. Press RETURN key keyboard (1).

10. Observe momentary display (4) of “Username:” as entered above, “Password:” not displayed, and “Welcome to VAX/VMS Version VX.X.

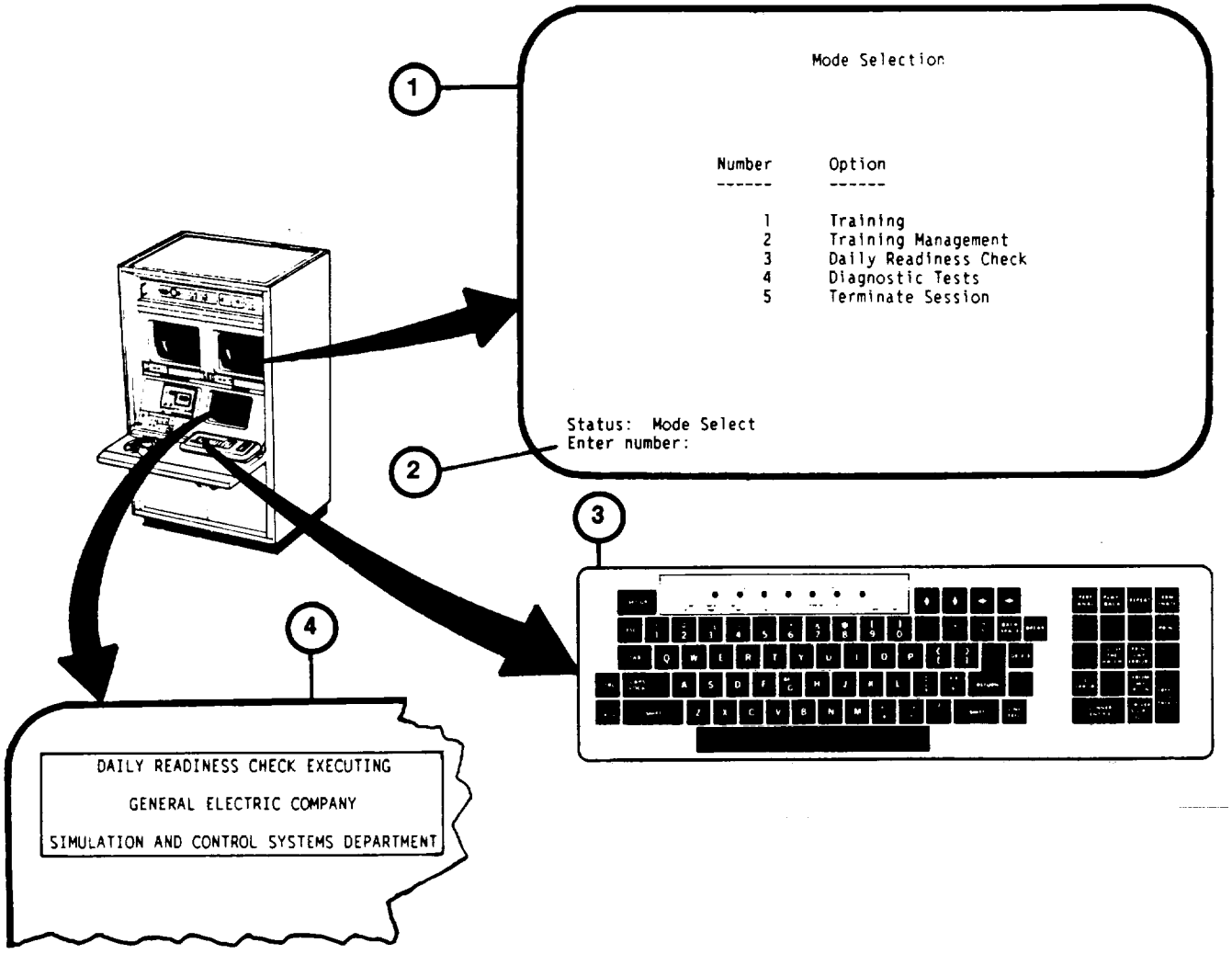
11. Observe that the Mode Select menu page automatically appears with the following selections:
    a. Training (see 2-137)
    b. Training Management (see 2-176)
    c. Daily Readiness Check (see 2-133)
    d. Diagnostic Tests (see 3-33)
    e. Terminate Session (see 2-198)



## DAILY READINESS CHECK PROCEDURE

This procedure describes how to check the system to determine its readiness for training. The procedure should be performed after power-up, each day of operation.

1. Perform Log-On Procedure (see 2-131).
2. Observe Mode Selection display page (1) with “Enter number:” prompt (2).
3. Press number 3 key on Display Terminal keyboard (3).
4. Observe that the number 3 appears correctly after “Enter number:” prompt. (2).
5. Press RETURN key on Display Terminal keyboard (3).
6. Observe that DAILY READINESS CHECK EXECUTING (4) is presented on the Display Terminal for a short time after data base is loaded.



## DAILY READINESS CHECK PROCEDURE (Continued)

7. Observe that the Daily Readiness display page (5) appears with instructions for the Instructor/Operator to follow.

**WARNING**

CVC Helmet must be worn when entering, leaving or working in the Crew Station to prevent head injuries.

8. Correct switch setting errors (6) in Crew Station and observe “Status” and “Keypad Options” appear at the bottom of the IOS display.

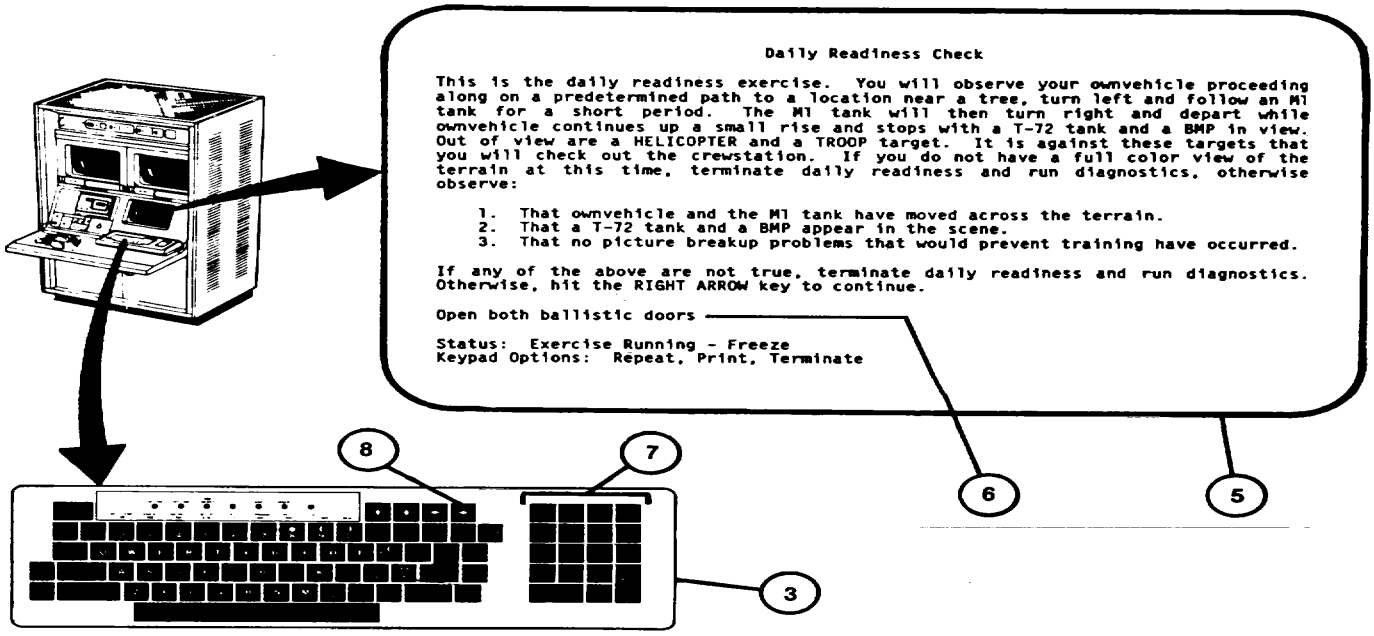
9. Press FREEZE/UNFREEZE key on keypad (7) to continue.

NOTE

If any of the functions fail to operate properly during this procedure, press the FREEZE/UNFREEZE key then TERMINATE key on keypad (7) to recall the MOSE SELECT display page (2) for the performance of Diagnostic Tests (see 3-31).

10. Read and perform all instructions on the Daily Readiness display page (5) in the sequence presented.

11. If all functions operate properly press right arrow key (8) on keyboard (3) to present next page of instructions.

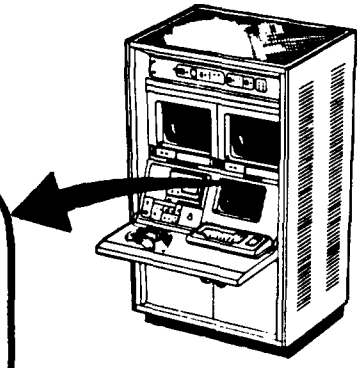


**DAILY READINESS CHECK PROCEDURE (Continued)**

12. Perform all functions listed on the Daily Readiness display page (9) in the sequence presented.

13. If all functions operate properly, press the right arrow key on the keyboard to presentnext page of instructions (10).

14. Perform all functions listed on the Daily Readiness display page (10) in the sequence presented.



Daily Readiness

Enter the crew station and perform the following actions at the commander's position:

1. Turn on turret power, turret drive and STAB mode switches.
2. Select AP-SS and move the ARM/SAFE/RESET switch to ARM. Use the ISU in high MAG and the power handle to null drift, slew and engage the BMP.
3. Observe the slewing motion, reticle, tracers, and explosion on the BMP.
4. Repeat the engagement using AP-LO, AP-HI, HE-SS, HE-LO and then HE-HI against the BMP.
5. Set Grenade Launcher switch to ON, press trigger and observe smoke simulation.

If any of the above items are not satisfactory for training, terminate daily readiness and run diagnostics. Otherwise, hit RIGHT ARROW key to continue.

Status: Exercise Running
Keypad Options: Right Arrow, Freeze

9

Daily Readiness

Move to the Gunner's station, observe the smoke clear and then perform the following checks:

1. Select COAX and engage the TROOP target observing the slewing motion, reticle, tracers and impact of the rounds.
2. Set the Night Vision Power to ON, Sensor Select switch to NIGHT, adjust and observe thermal images.
3. Set the Turret Traverse and Gun Elevation levers to manual, arm the AP-HI and manually slew to engage the HELICOPTER.
4. Observe the manual slewing, reticle, tracers, and hits on the HELICOPTER.

If any of the above are not true, terminate daily readiness and run diagnostics. Otherwise, hit the RIGHT ARROW key to continue.

Status: Exercise Running
Keypad Options: Right Arrow, Freeze

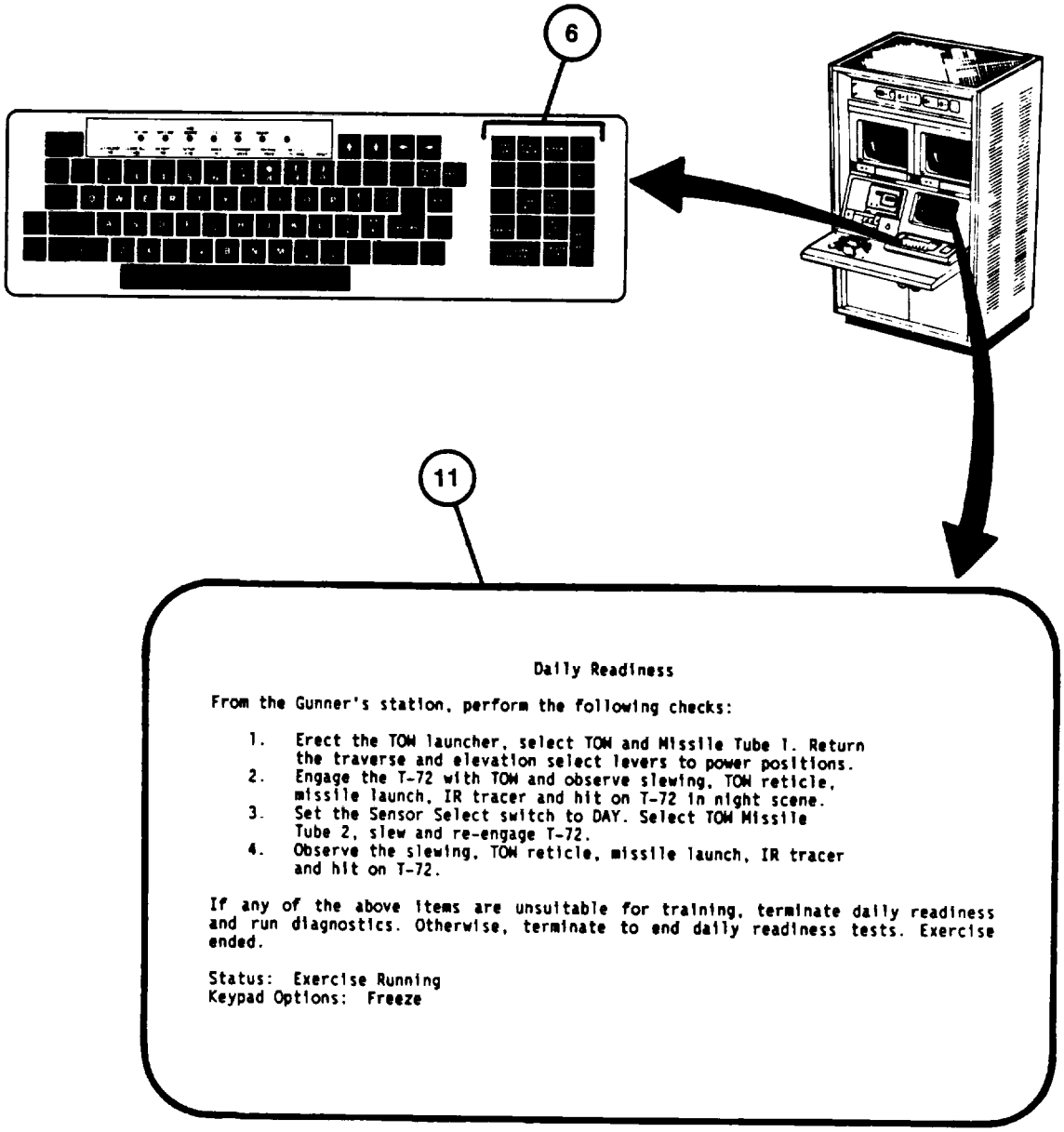
10

**DAILY READINESS CHECK PROCEDURE (Continued)**

15. If all functions operate properly, press the right arrow key on the keyboard to present next page of instructions (11).

16. Perform all functions listed on the Daily Readiness display page (11) in the sequence presented.

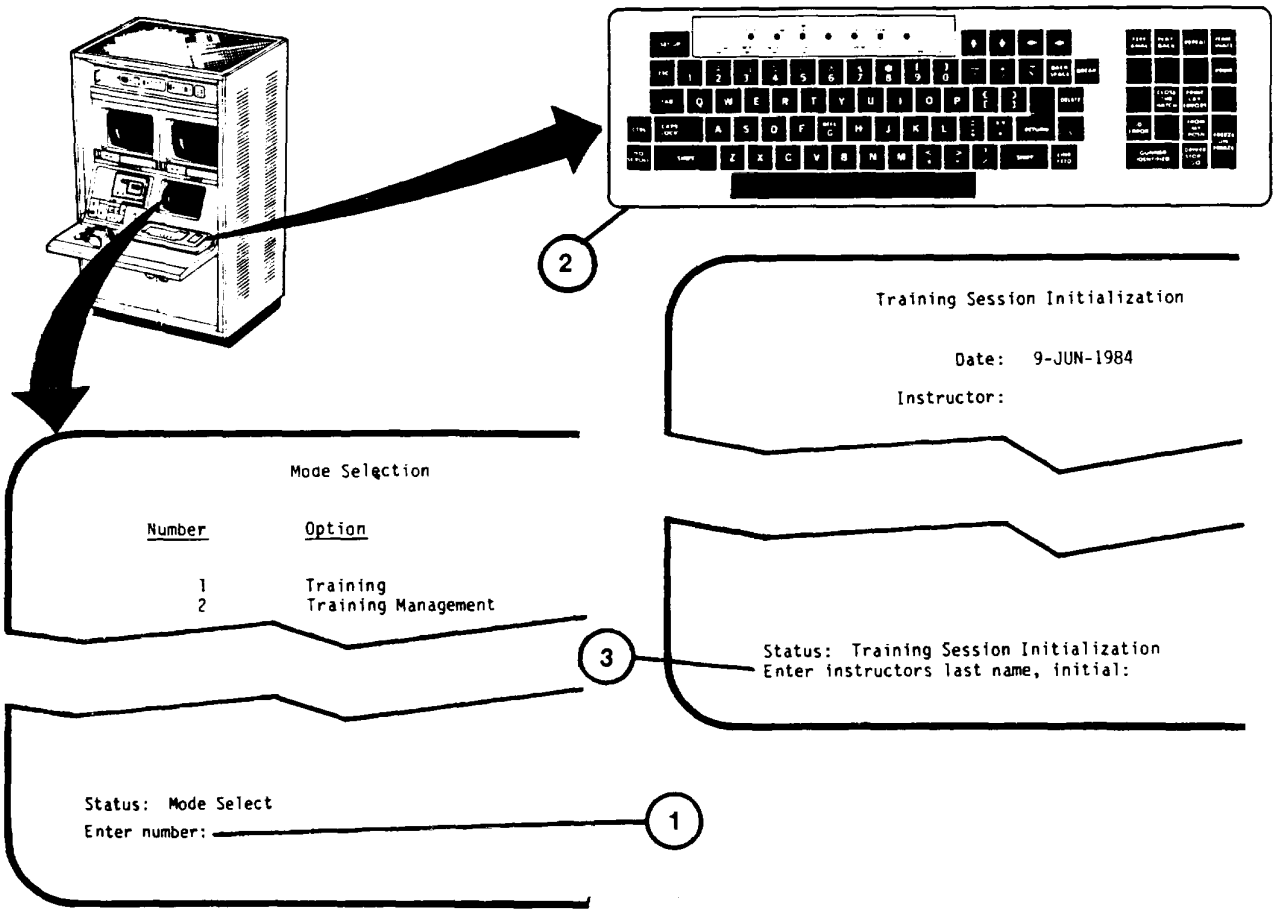
17. Press FREEZE/UNFREEZE key on Terminal Keypad (6), then press TERMINATE key to recall the MODE SELECT display page (see 2-131, step 11).



## TRAINING SESSION INITIALIZATION PROCEDURE

This procedure describes how to enter the training mode of operation in order to conduct training exercises. When performed, it records the date, identifications of Instructor, Vehicle and Crew and allows selection of the training program for the type of crew to be trained. When completed, it calls the Exercise Select/Session Summary page.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.
2. Observe "Enter number:" prompt (1) appears on MODE SELECT display page.
3. Press number I key on keyboard (2).
4. Observe that the number1 appears correctly after "Enternumber:" prompt (I).
5. Press RETURN key on keyboard (2).
6. Observe "Enter instructors last name, initial:" prompt (3) appears on Training Session Initialization display page.
7. Enter your last name and initial of your first name on keyboard (2).
8. Observe that your name appears correctly after prompt (3).
9. Press RETURN key on keyboard (2).



**TRAINING SESSION INITIALIZATION PROCEDURE (Continued)**

10. Observe that your name appears near top of page after "Instructor:" and "Select training program:" prompt (4) appears at the bottom of display page.

**NOTE**

Instructor/Operator may select any one of the four training programs shown by number. The illustrations show a selection of number 4 (BASIC).

11. Enter your choice of training program (I=SUSTAINMENT, 2=TRANSITION, 3=CROSS, 4=BASIC) on keyboard (2),

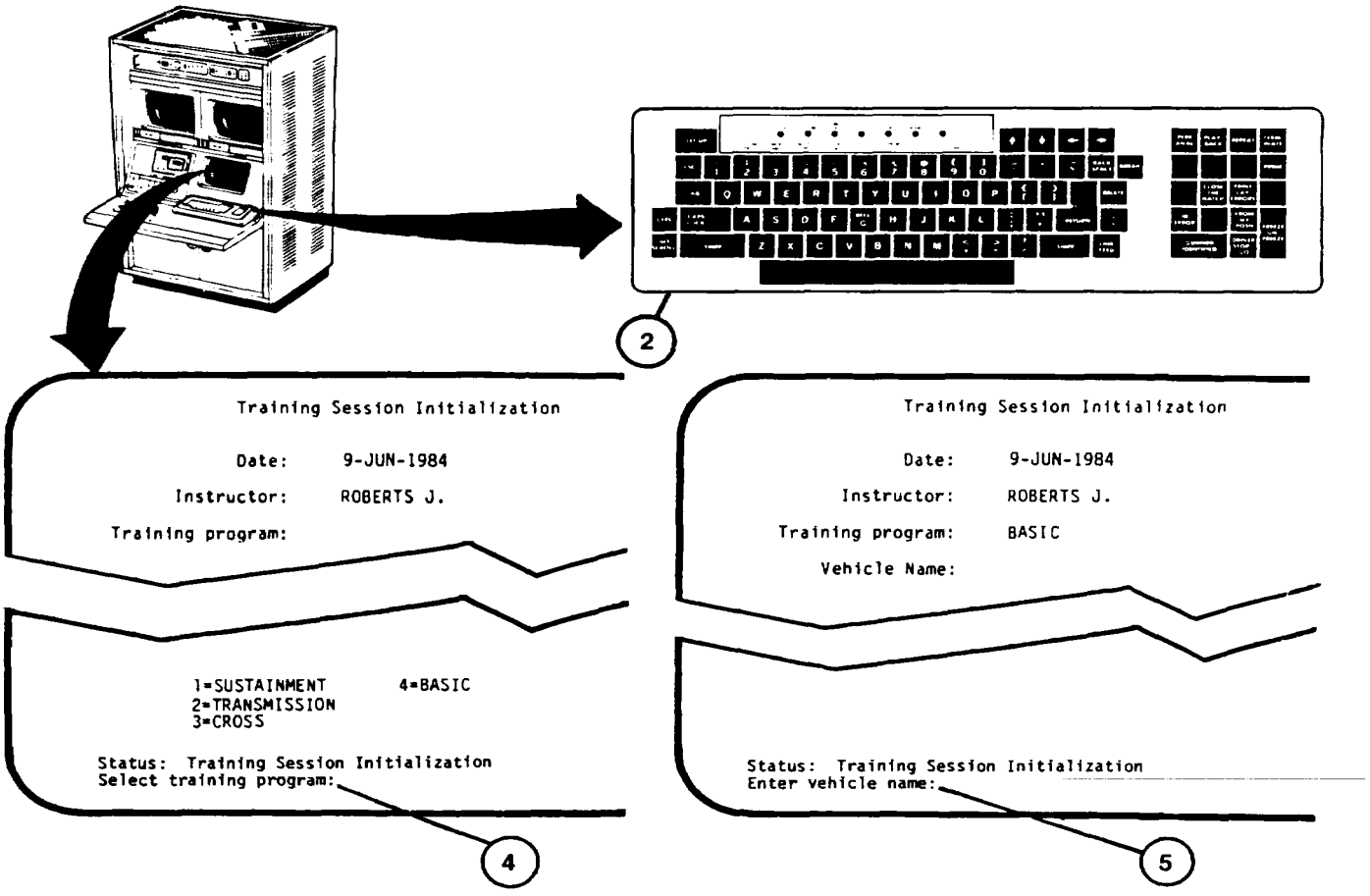
12. Press RETURN key on keyboard (2).

13. Observe that the program selected appears near top of page after "Training program:" and "Enter vehicle name:" prompt (5) appears at the bottom of display page.

**NOTE**

Entering an unidentified vehicle name of XXX results in scratch records which are discarded at end of training sessions and will not allow exercise selection by computer recommendation.

14. Enter vehicle name as Regiment/Brigade, Battalion/Squadron, Company/Troop and vehicle number on keyboard (2). Example: First Regiment, First Squadron, Company A, vehicle 11 is entered as 1/01 A11.



**TRAINING SESSION INITIALIZATION PROCEDURE (Continued)**

15. Observe that vehicle name appears correctly after prompt (5).

16. Press RETURN key on keyboard (2).

**NOTE**

If the vehicle name identifies a vehicle crew record that already exists, the Commander's and Gunner's names associated with the vehicle name will be automatically displayed. Then press RETURN key twice to bypass steps 17 through 24.

17. Observe that vehicle name entered appears near top of page and "Enter Commanders last name, initial:" prompt (6) appears at the bottom.

18. Enter Commander's last name and initial on keyboard (2).

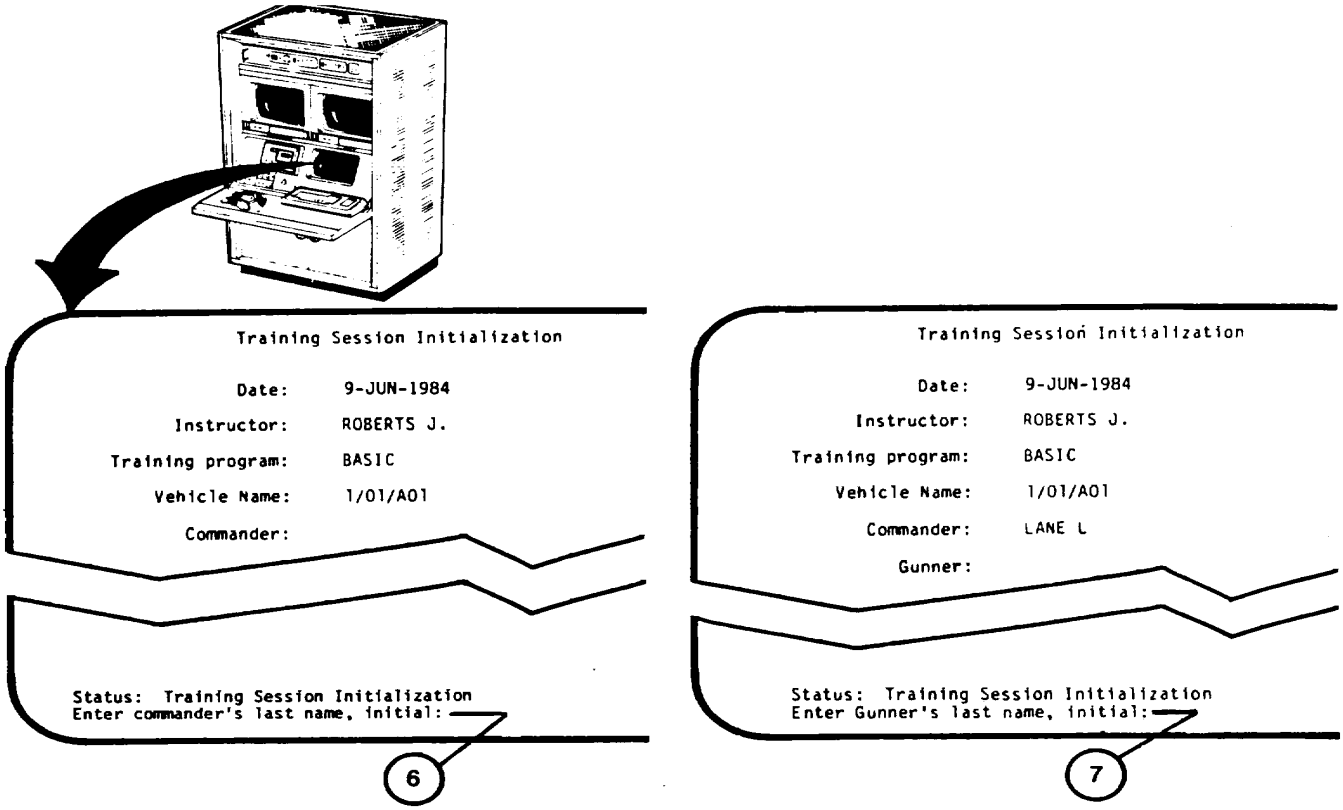
19. Observe that Commander's name appears correctly after the prompt (6).

20. Press RETURN key on keyboard (2).

21. Observe that Commander's name entered appears near top of page and "Enter Gunners last name, initial:" prompt (7) appears at the bottom.

22. Enter Gunner's last name and initial on keyboard (2).

23. Observe that Gunner's name appears correctly after prompt (7).



**TRAINING SESSION INITIALIZATION PROCEDURE (Continued)**

24. Press RETURN key on keyboard (2).

**NOTE**

The complete Training Session Initialization display pageis only momentarily shown after the gunner's name is entered in step 24. The Exercise select/Session Summary display page will automatically appear.

25. Observe momentary display of completed Training Session Initialization page.

26. Observe the Exercise select/Session Summary display page (8) automatically appears with the following choices available:

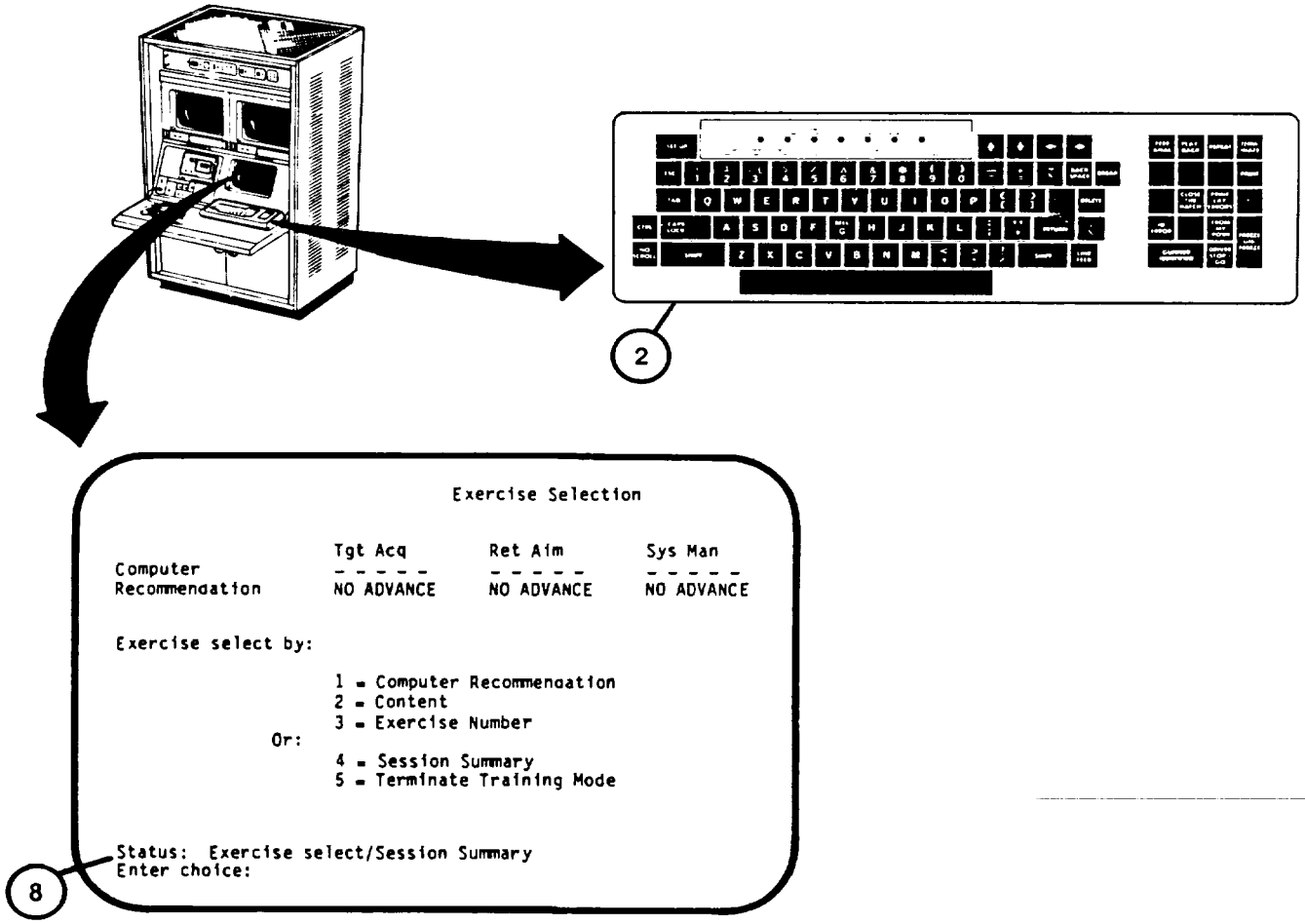
    a. Computer Recommendation (see 2-141)

    b. Content (see 2-144)

    c. Exercise Number (see 2-162)

    d. Session Summary (see 2-174)

    e. Terminate Training Mode (This selection returns the Instructor/Operator to the Mode Selection display) (see 2-131, step 11).



## EXERCISE SELECTION BY COMPUTER RECOMMENDATION PROCEDURE

This procedure is used during the Training Mode and describes how to select computer recommended exercises.

**NOTE**

Computer Recommendation selection is not available if an unidentified vehicle (XXX) was entered during Training Initialization (see 2-137).

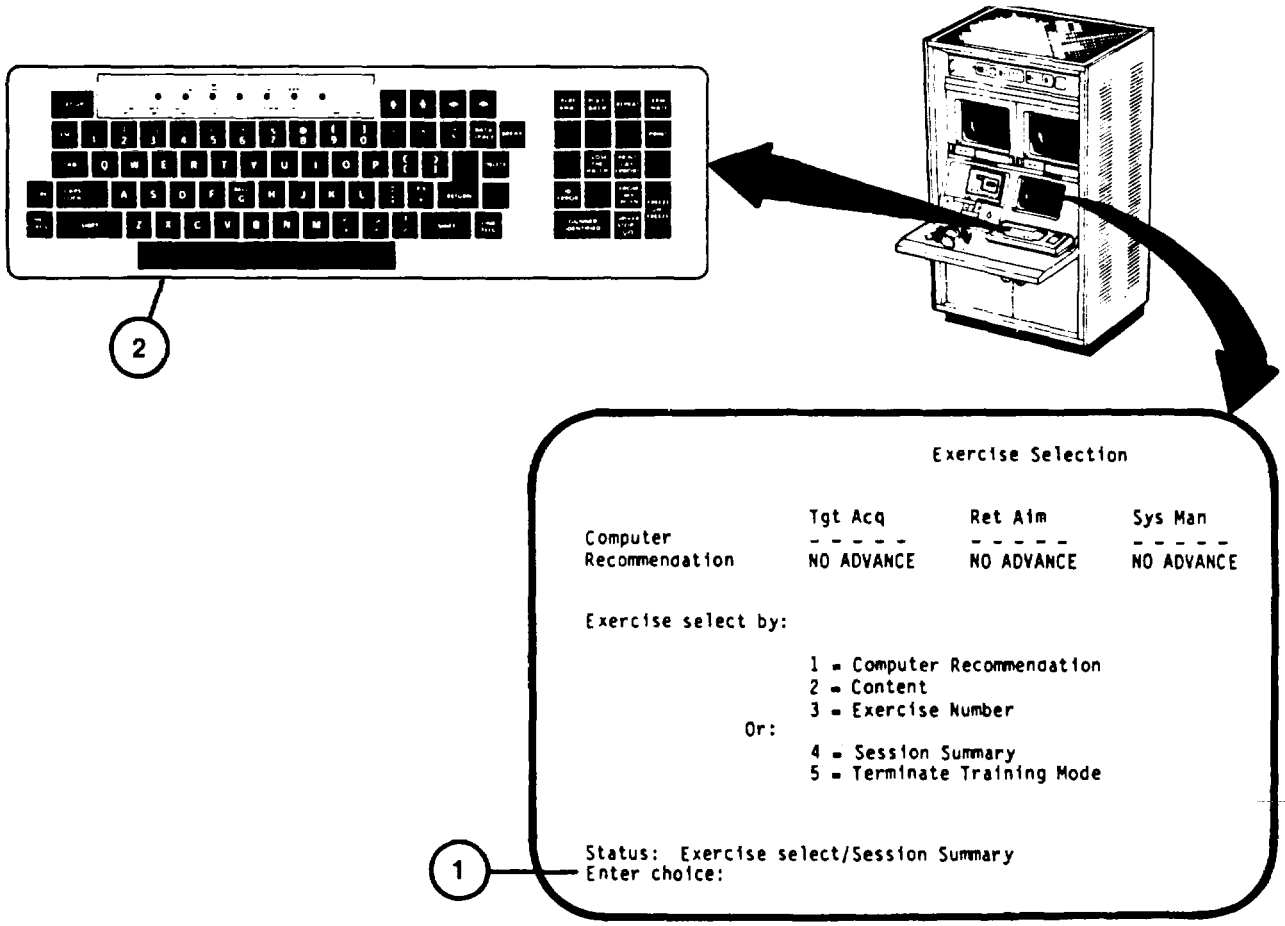
1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

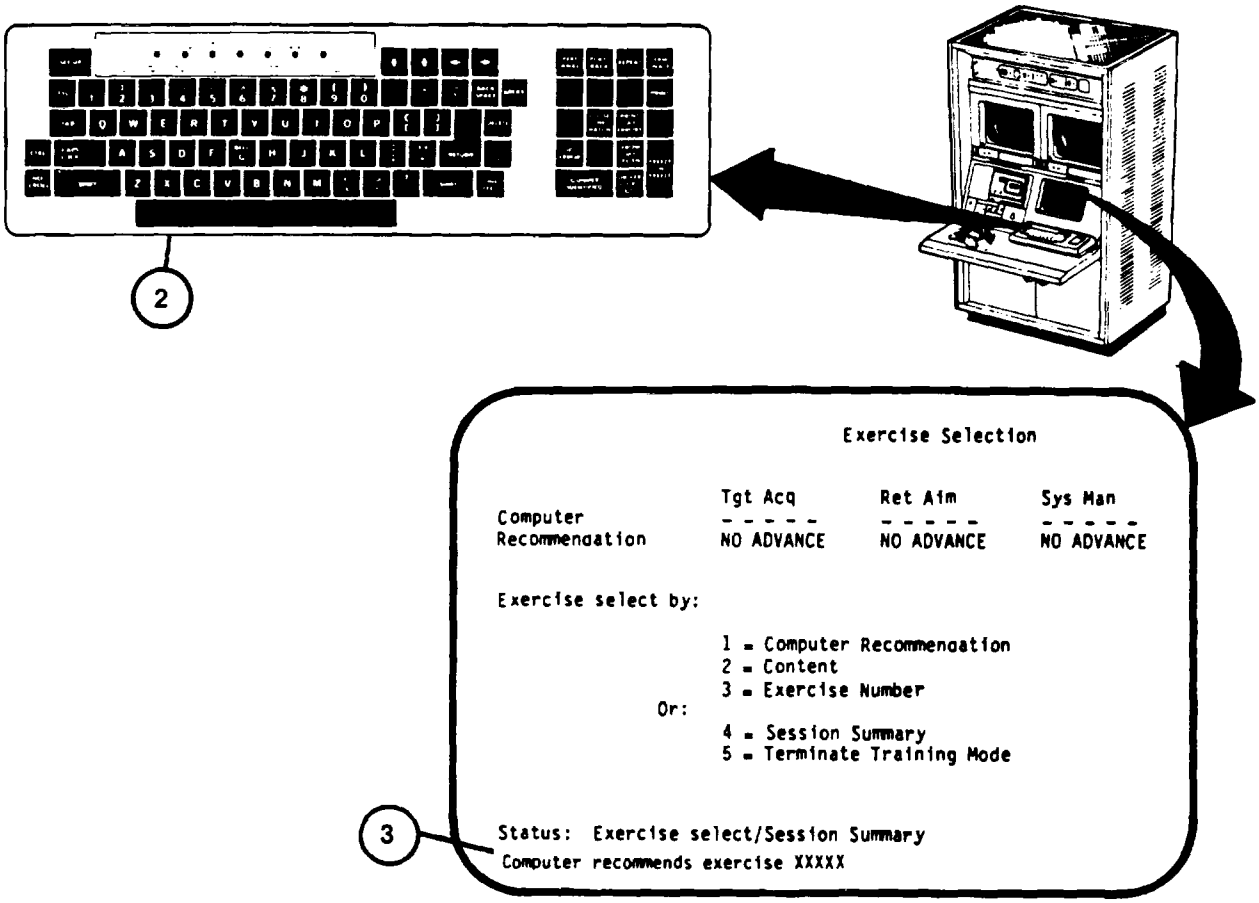
3. Observe "Enter choice:" prompt (1) on Exercise select/Session Summary display page.

**NOTE**

The training mode may be terminated from this page. Enter number 5 on keyboard (2) then press the RETURN key to recall Mode Select display page (see 2-131, step 11).



**EXERCISE SELECTION BY COMPUTER RECOMMENDATION PROCEDURE (Continued)**



**EXERCISE SELECTION BY COMPUTER RECOMMENDATION PROCEDURE (Continued)**

4. If Computer Recommendation is desired, press number 1 key on keyboard.

5. Observe that the number 1 appears correctly after the "Enter choice:" prompt.

6. Press RETURN key on keyboard (2) and observe "Computer recommends exercise XXXXX" prompt (3) appears at the bottom of the display.

7. thru 9. (deleted)

10. Observe that the Exercise Selection -- SCOPE display page (5) appears with computer recommended exercise number and "Do you desire this exercise (Y/N)?" prompt (6) at the bottom of display.

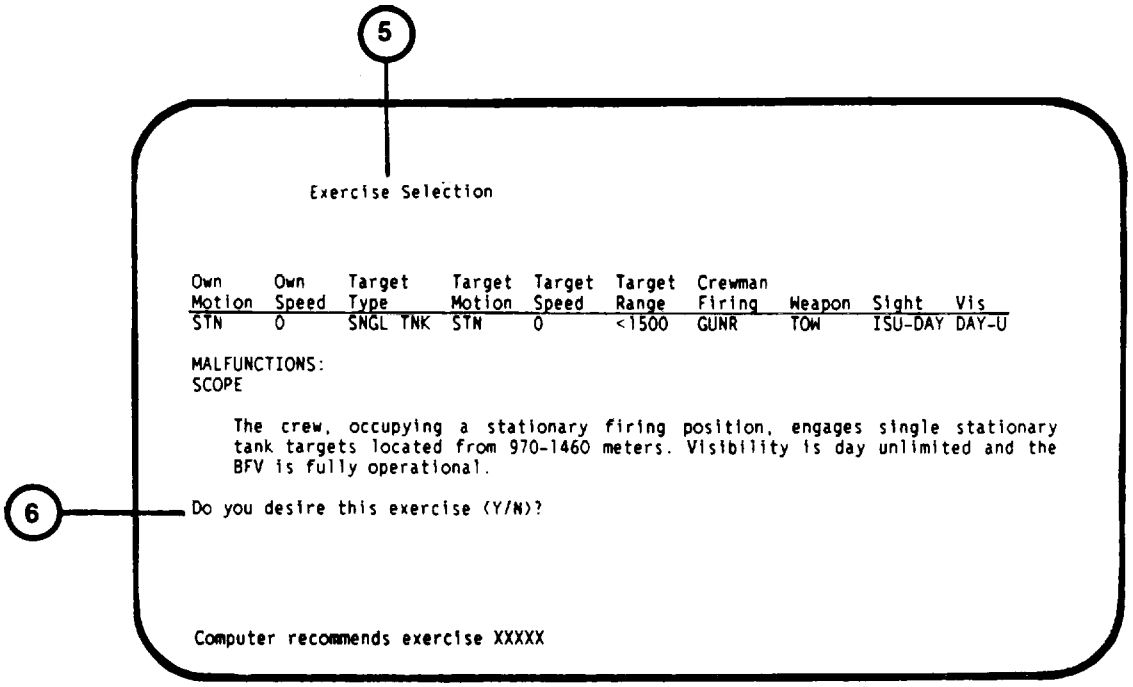
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N and RETURN is entered on the keyboard to recall Exercise Select/Session Summary page for another method of selection (see 2-140, step 26).

11. Press letter Y key on keyboard (2) if the exercise is desired.

12. Observe that the letter "Y" appears correctly after question prompt (6).

13. Press RETURN key on keyboard (2) to call the Exercise Selection - INSTRUCTION display with instructions to read to the crew (see 2-164).



## EXERCISE SELECT BY CONTENT MENU CALL PROCEDURE

This procedure is used during the Training Mode and describes how the Instructor/ Operator selects one of seven training exercise options based on exercise types.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Observe "Enter choice:" prompt (1) appears on Exercise select/Session Summary display page.

**NOTE**

The training mode can be terminated from this page. To terminate, enter number 5 on keyboard (2) then press RETURN key to recall Mode Select display page (see 2-131, step 11).

4. Press number 2 key on keyboard (2).

5. Observe that the number 2 appears correctly after "Enter choice:" prompt (1).

6. Press RETURN key on the keyboard (2).

7. Observe that the "Enter Number:" prompt (3) appears on EXERCISE SELECT--BY CONTENT display page.

**NOTE**

If the Instructor/Operator does not want to select the exercise by content, enter number 8 on keyboard (2) and press RETURN to recall the Exercise Select/Session Summary page display presentation for another selection, call Session Summary for review, or to Terminate Training Mode. (See 2-140, step 26).

8. The seven Exercise Select by Content methods are:

   a. Orientation (see 2-1 46)

   b. Prepare Crew Stations for Operation (see 2-1 48)

   c. Boresight and Zero (see 2-150)

   d. Acquisition and Manipulation Exercises - Gunner (see 2-1 52)

   e. Acquisition and Manipulating Exercises - Commander (see 2-154)

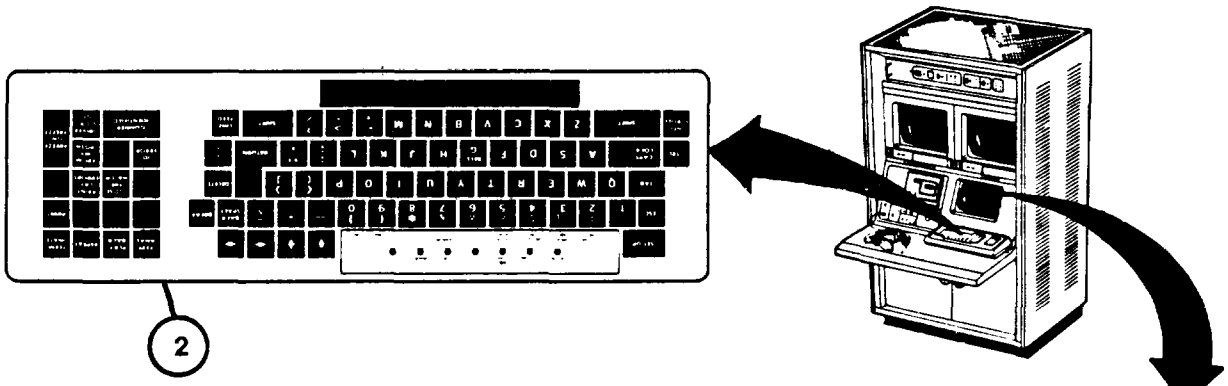
   f. Evaluation Exercises (see 2-156)

   g. Gunnery Exercises (see 2-158)

   h. Terminate Select by Content (returns user to Exercise select/Session Summary).

9. Selection is made by pressing the number key corresponding to the selection and then press RETURN key on keyboard (2).

## EXERCISE SELECT BY CONTENT MENU CALL PROCEDURE (Continued)




```
                                Exercise Selection

                        Tgt Acq         Ret Aim         Sys Man
Computer                - - - - -       - - - - -       - - - - -
Recommendation          NO ADVANCE      NO ADVANCE      NO ADVANCE

Exercise select by:

                        1 = Computer Recommendation
                        2 = Content
                        3 = Exercise Number
                    Or:
                        4 = Session Summary
                        5 = Terminate Training Mode


Status:  Exercise select/Session Summary
Enter choice:
```

1

```
                    Exercise Select by Content

          1.    Orientation
          2.    Prepare Crew Stations for Operation
          3.    Boresighting and Qualification
          4.    Acquisition and Manipulation Exercises - Gunner
          5.    Acquisition and Manipulation Exercises - Commander
          6.    Evaluation Exercises
          7.    Gunnery Exercises
          8.    Terminate Select by Content

Status:  EXERCISE SELECT--BY CONTENT
Enter Number:
```

3

## EXERCISE SELECT BY CONTENT – ORIENTATION PROCEDURE

This procedure describes how to select one of two Orientation exercises based on the experience level of the crew to be trained.

**NOTE**

This procedure requires the use of the IOS Tape Recorder and the proper prerecorded orientation tape cassette.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call Procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page for another selection, press number 8 and then RETURN on the keyboard (see 2-140, step 26).

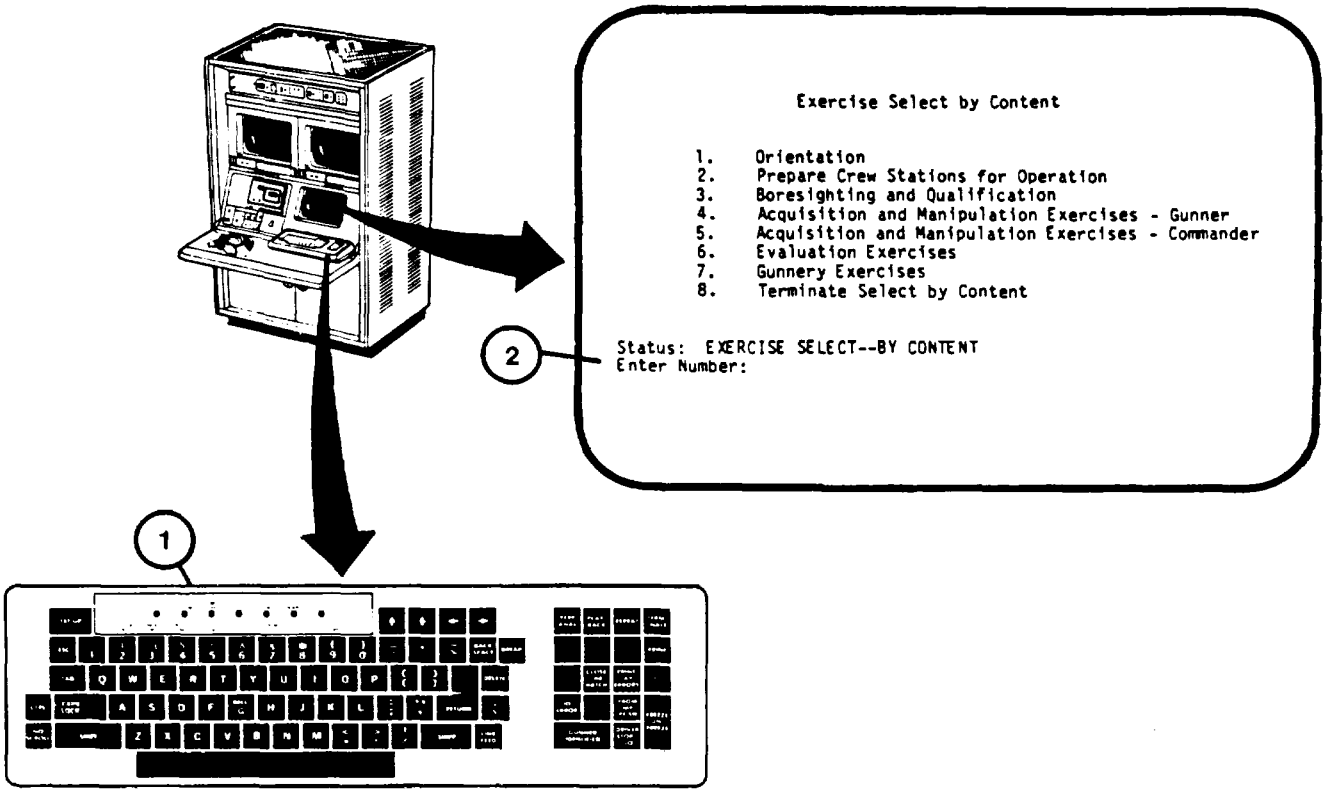
4. Press number I key on keyboard (I).

5. Observe that the number 1 appears correctly after "Enter Number:" prompt (2).

6. Press RETURN key on keyboard (1).

7. Observe that the Exercise Select -- Orientation display page with "Enter Exercise Number:" prompt (3) appears.

8. Review the Exercise Descriptions and determine which is desired.



**EXERCISE SELECT BY CONTENT – ORIENTATION PROCEDURE (Continued)**

9. Enter the desired exercise number on keyboard (1).

10. Observe that exercise number appears correctly after prompt (3).

11. Press RETURN key on the keyboard (1).

12. Observe that the Exercise Selection - SCOPE page and question prompt "Do you desire this exercise (Y/N)?:" (4) appears.

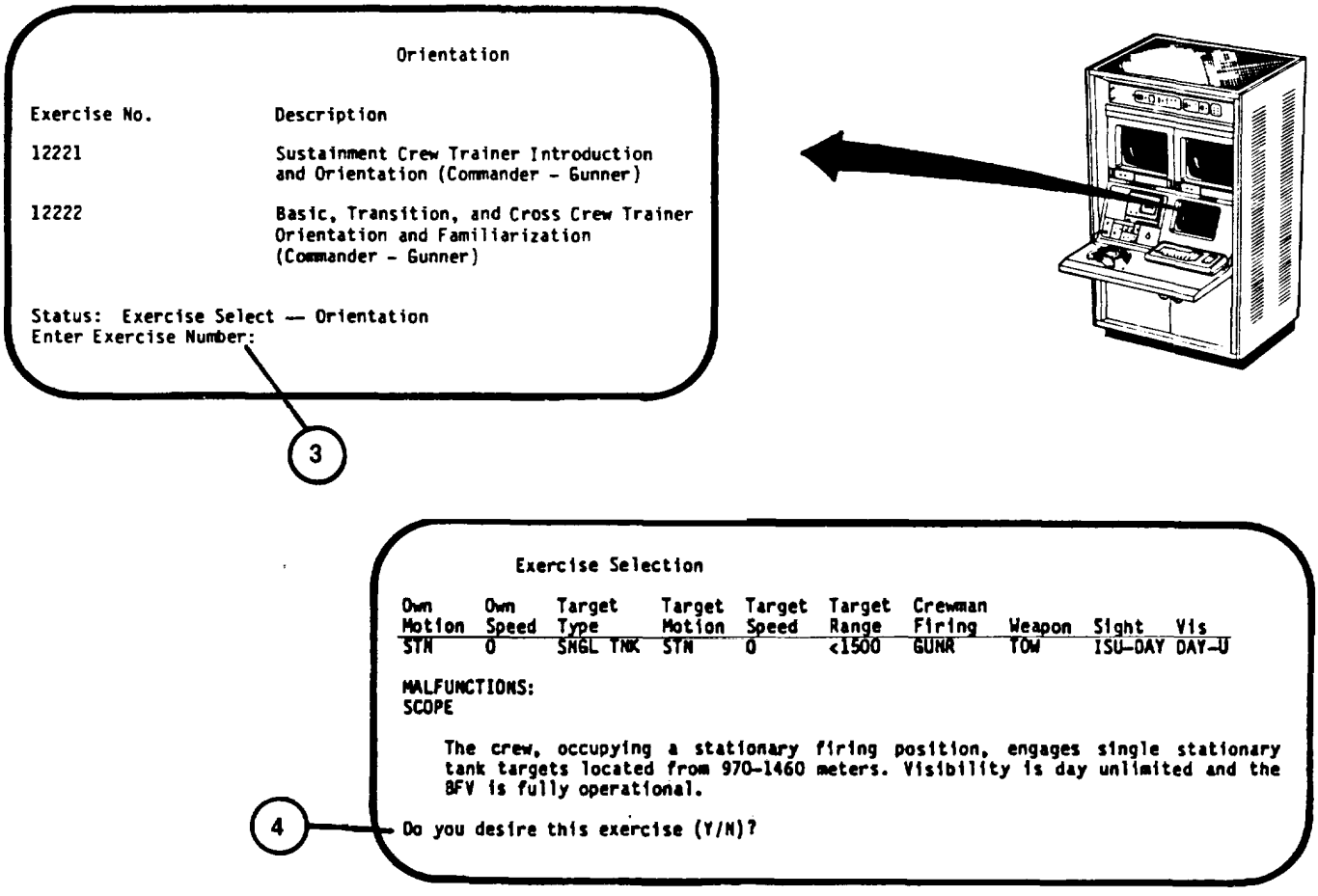
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT--BY CONTENT page (see 2-144) for another selection.

13. Insert the appropriate recorder tape. Press letter Y key on keyboard (1).

14. Observe that the letter "Y" appears correctly after question prompt (4).

15. Press RETURN key on keyboard (1) to call the Exercise Selection - INSTRUCTION page (see 2-164).



## EXERCISE SELECT BY CONTENT – PREPARE CREW STATION PROCEDURE

This procedure describes how to call up the exercise for training a crew on preparation of the Crew Station for operation and prefire checks.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call Procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page for another selection press number 8 and then the RETURN key on the keyboard (see 2-140, step 26).

4. Press number 2 key on keyboard (1).

5. Observe that the number 2 appears correctly after "Enter Number:" prompt (2).

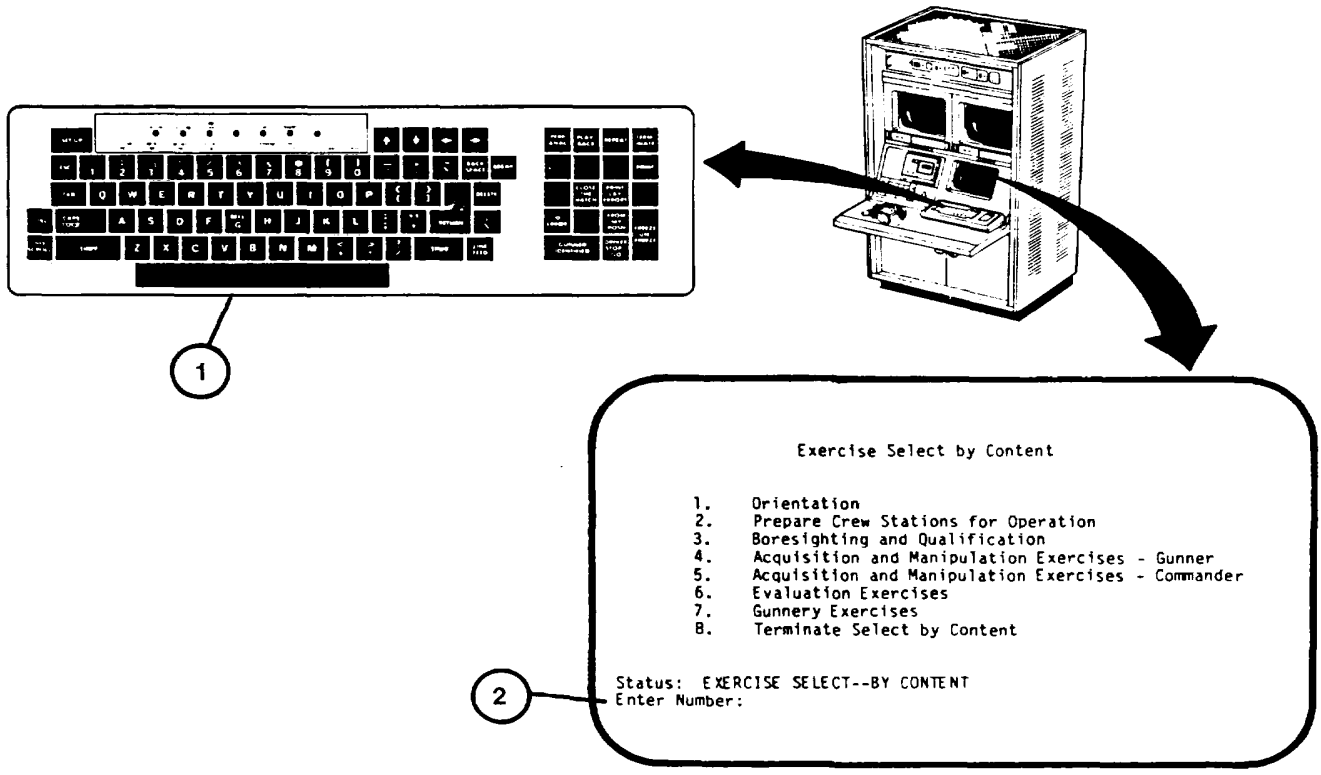
6. Press RETURN key on keyboard (1).

7. Observe that the Exercise Select -- Prepare Crew Stations for Operation display page with "Enter Exercise Number:" (3) appears on the display.

8. The only exercises which train for Crew Station Preparation are 12231 and 12232.

9. Enter exercise number on keyboard (1).

10. Observe that exercise number appears correctly after prompt (3).



**EXERCISE SELECT BY CONTENT – PREPARE CREW STATION PROCEDURE (Continued)**

11. Press RETURN key on keyboard (1).

12. Observe that the Exercise Selection - SCOPE display page with question prompt "Do you desire this exercise? (Y/N):" (4) appears on display.

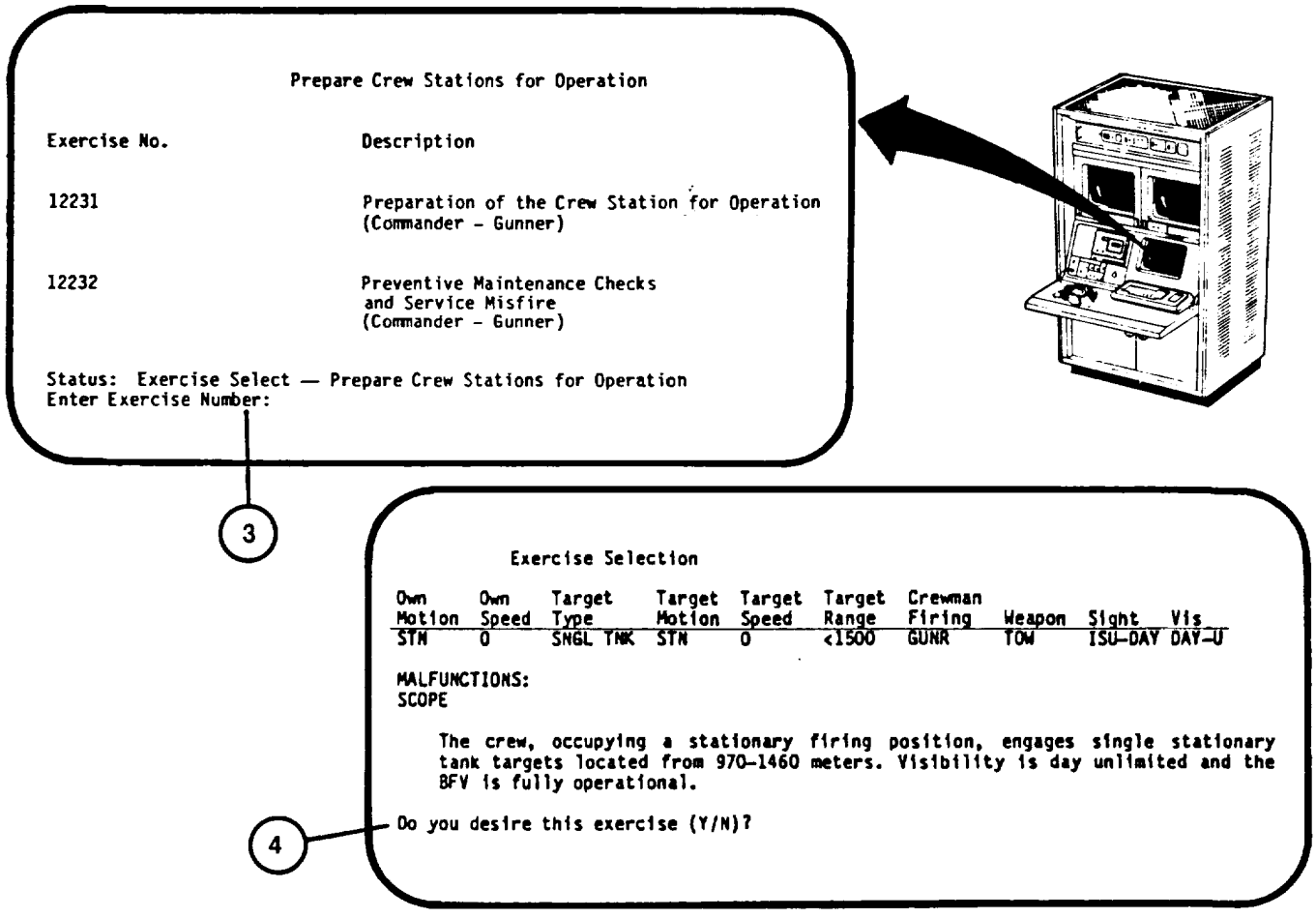
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT--BY CONTENT page (see 2-142) for another selection.

13. Press letter Y key on keyboard (1).

14. Observe that the letter "Y" appears correctly after question prompt (4).

15. Press RETURN key on keyboard(1) to call the Exercise Selection - INSTRUCTION page. (see 2-164).



## EXERCISE SELECT BY CONTENT -BORESIGHT AND ZERO

This procedure describes how to call up the training exercise for boresighting and zeroing the weapon sights.

1. Assure that User Log-On Procedure (see 2-1 31) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call Procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page for another selection press the number 8 key and then the RETURN key on the keyboard (see 2-140, step 26).

4. Press number 3 key on keyboard (1).

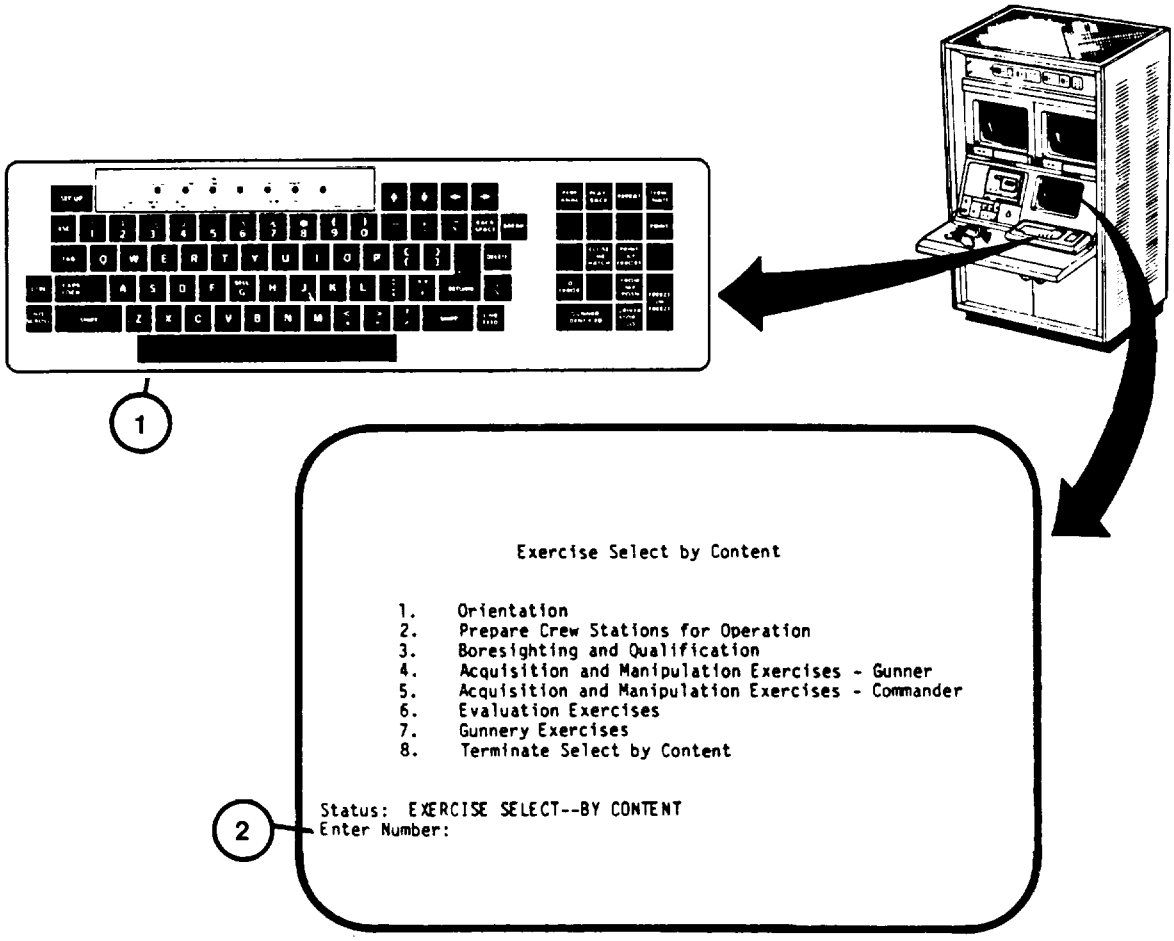
5. Observe that the number 3 appears correctly after "Enter Number:" prompt (2).

6. Press RETURN key on keyboard (1).

7. Observe that the "Enter Exercise Number:" prompt (3) appears on Exercise Select-Boresight and Zero display page.

8. Review the exercise descriptions and determine which is desired.

9. Enter desired exercise number on keyboard (1).



**EXERCISE SELECT BY CONTENT -BORESIGHT AND ZERO (Continued)**

10. Observe that exercise number appears correctly after prompt (3).

11. Press RETURN key on keyboard (1).

12. Observe that question prompt "Do you desire this exercise (Y/N)?:" (4) appears on Exercise Selection - SCOPE display page.

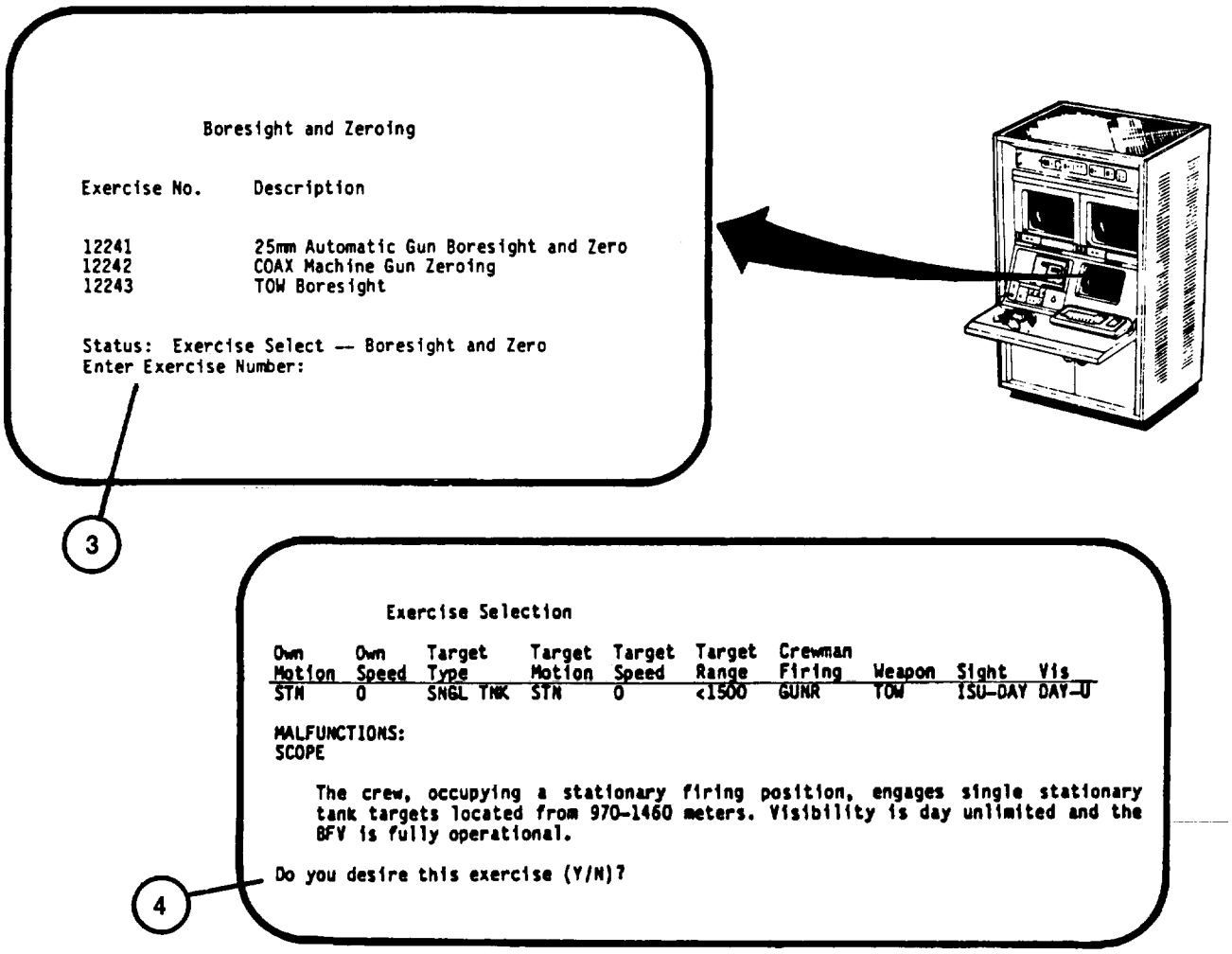
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT--BY CONTENT page (see 2-144) for another selection.

13. Press letter Y key on keyboard (1).

14. Observe that the letter "Y" appears correctly after question prompt (4).

15. Press RETURN key on keyboard (1) to call the Exercise Selection - INSTRUCTIONS page (see 2-164).



## EXERCISE SELECT BY CONTENT – ACQUISITION AND MANIPULATION – GUNNER PROCEDURE

This procedure describes how to call up Acquisition and Manipulation exercises for Gunner training. One of five exercises may be selected with different combinations of owntank movement, sight use, and normal manual or emergency conditions.

**NOTE**

If Instructor/Operator desires a hard copy record of the Gunner'sreticle aim and tracking performance, press the PRINT LAY ERROR key on keypad (1) during a FREEZE mode or at the completion of the exercise.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call Procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page for another selection, press the number 8 key and then the RETURN key on keyboard (1), (see 2-140, step 26).

4. Press number 4 key on keyboard (1).

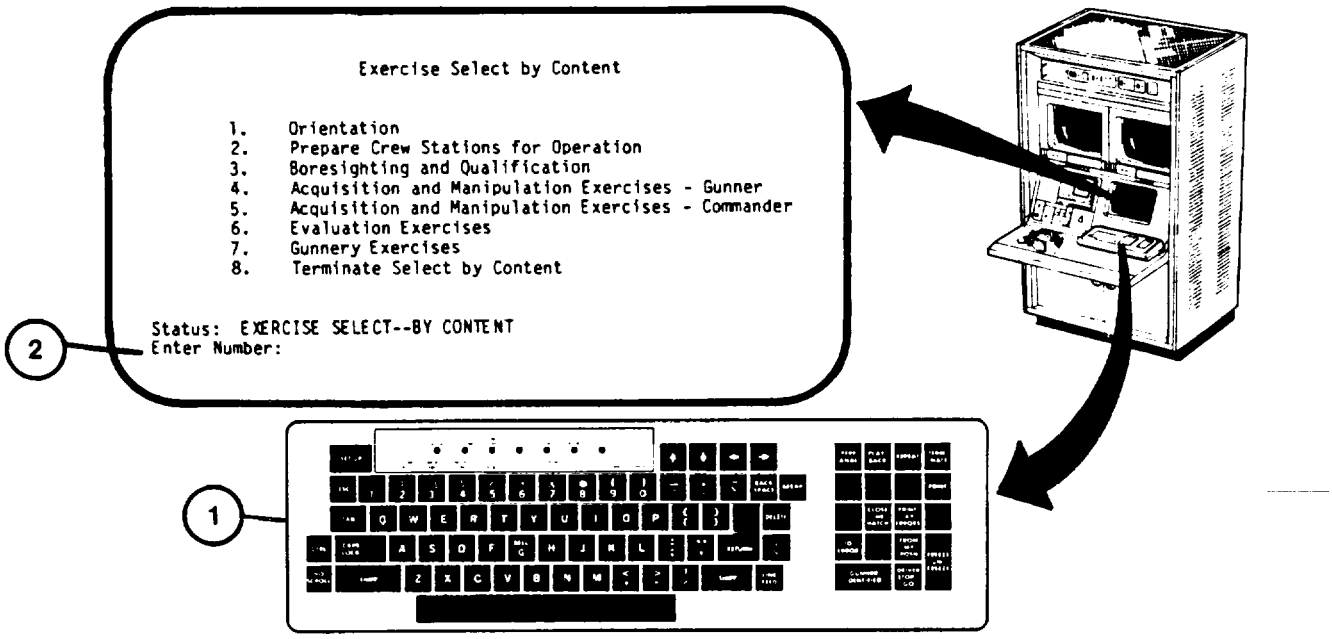
5. Observe that the number 4 appears correctly after "Enter Number:" prompt (2).

6. Press RETURN key on keyboard (1).

7. Observe that the "Enter Exercise Number:" (3) appears on Exercise Select -- Acquisition and Manipulation - Gunner display page.

8. Review the four exercise descriptions presented, determine which is desired and enter exercise number on keyboard (1).

9. Observe that exercise number appears correctly after prompt (3).



**EXERCISE SELECT BY CONTENT – ACQUISITION AND MANIPULATION – GUNNER PROCEDURE (Continued)**

10. Press RETURN key on keyboard (1).

11. Observe that question prompt "Do you desire this exercise (Y/N)?" (4) appears on Exercise Selection SCOPE display page.

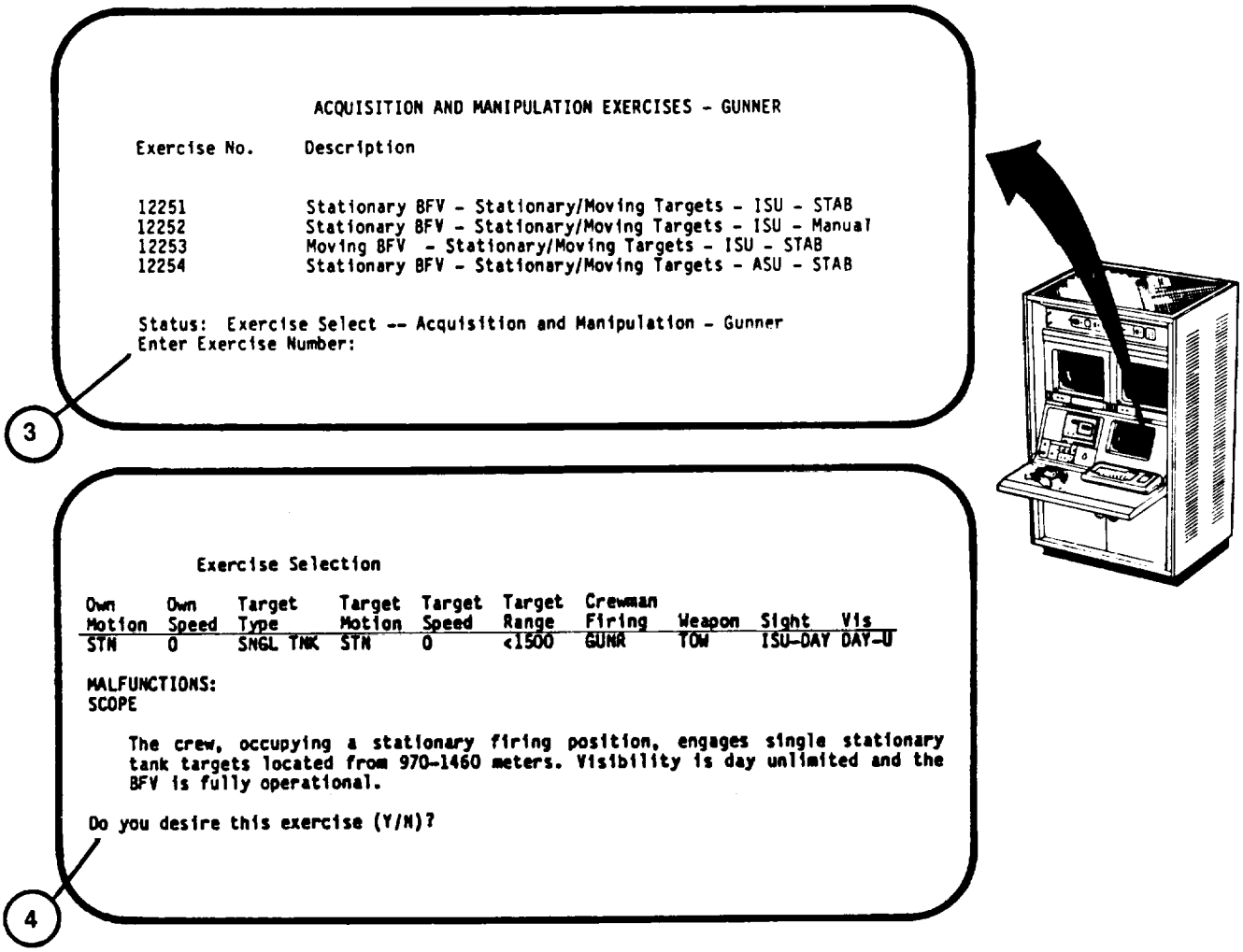
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT--BY CONTENT page display (see 2-144) for another selection.

12. Press letter Y key on keyboard (1).

13. Observe that the letter "Y" appears correctly after question prompt (4).

14. Press RETURN key on keyboard (1) to call the Exercise Selection - INSTRUCTIONS page (see 2-164).



## EXERCISE SELECT BY CONTENT – ACQUISITION AND MANIPULATION – COMMANDER PROCEDURE

This procedure describes how to call up Acquisition and Manipulation exercises for Commander training. One of two exercises may be selected with different combinations of owntank movement, sight use, and normal, manual and power conditions.

**NOTE**

If Instructor/Operator desires a hard copy record of the Commander'sreticle aim and tracking performance press the PRINT LAY ERROR key on keypad (1) during a FREEZE mode or at the completion of the exercise.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call Procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page (see 2-140, step 26) for another selection, press the number 8 key and then the RETURN key on keyboard (1).

4. Press number 5 key on keyboard (1).

5. Observe that the number 5 appears correctly after "Enter Number:" prompt (2).

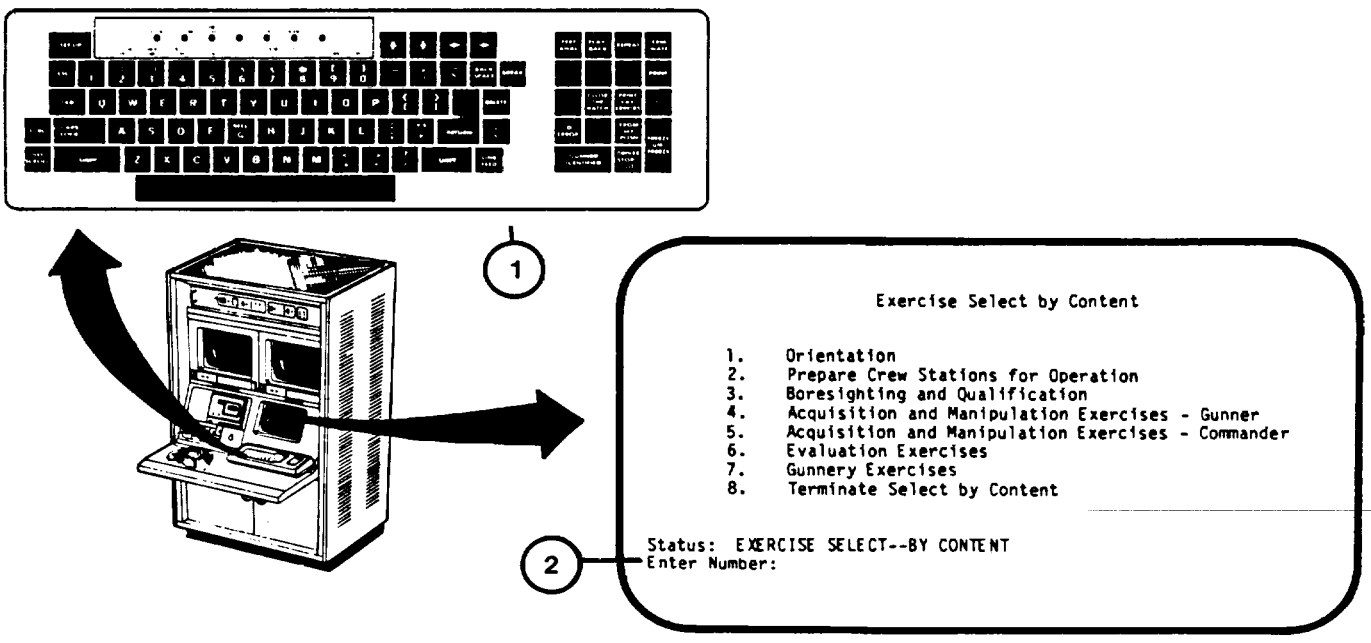
6. Press RETURN key on keyboard (1).

7. Observe that the "EnterExercise Number:" (3) appears on Exercise Select -- Acquisition and Manipulation-Commander display page.

8. Review the two exercise descriptions presented and determine which is desired.

9. Enter exercise number on keyboard (1) corresponding to exercise desired.

10. Observe that exercise number appears correctly after prompt (3).



**EXERCISE SELECT BY CONTENT – ACQUISITION AND MANIPULATION – COMMANDER PROCEDURE (Continued)**

11. Press RETURN key on keyboard (1).

12. Observe that question prompt "Do you desire this exercise (Y/N)?" (4) appears on Exercise Selection - SCOPE display page.

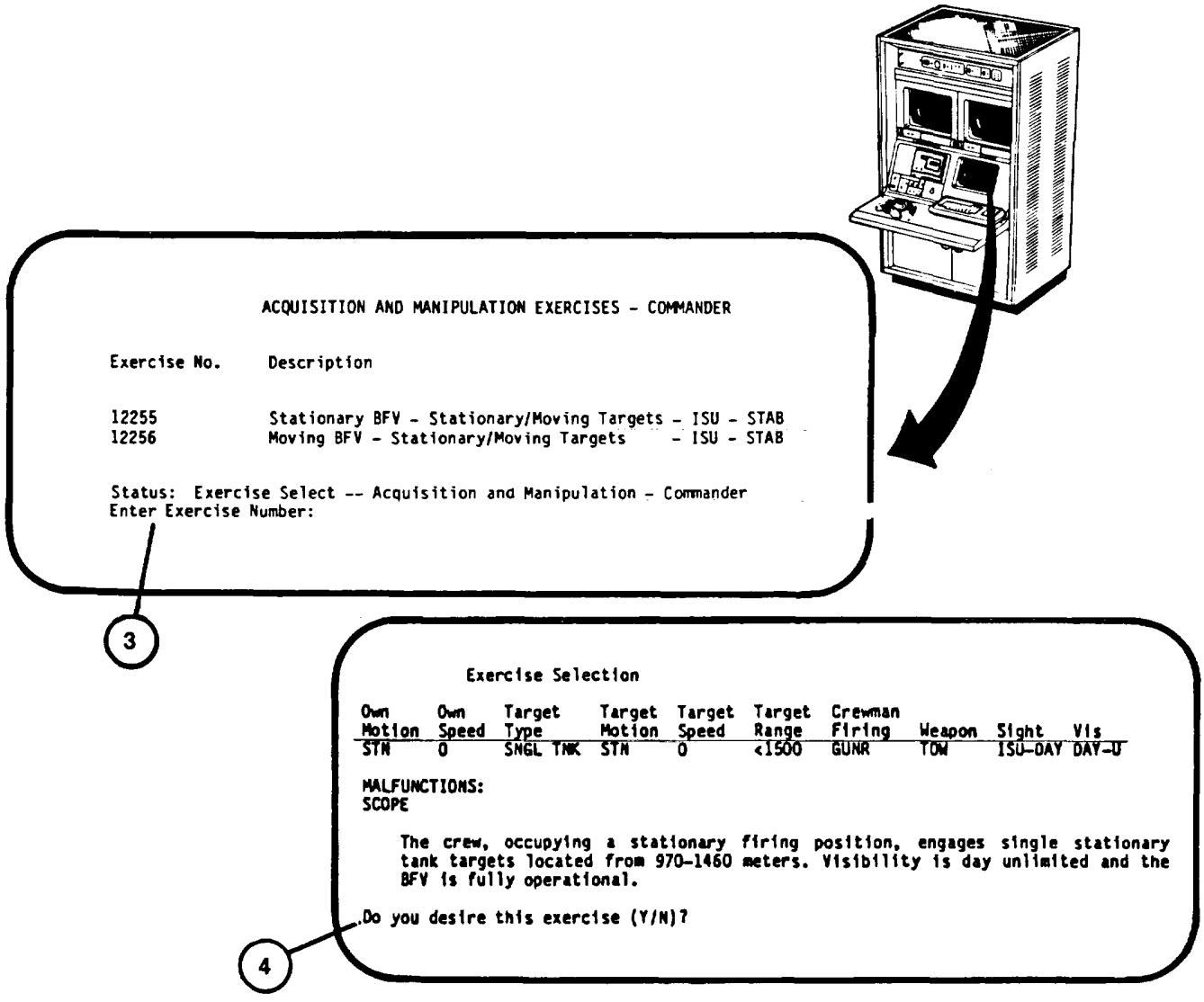
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT-BY CONTENT display page (see 2-144) for another selection.

13. Press letter Y key on keyboard (1).

14. Observe that the letter "Y" appears correctly after question prompt (4).

15. Press RETURN key on keyboard (1) to call the Exercise Selection - INSTRUCTION display page (see 2-164).



## EXERCISE SELECT BY CONTENT – EVALUATION PROCEDURE

This procedure describes how to call up an exercise for evaluating crew performance. One of four exercises may be selected with different combinations of owntank movement, and day or night conditions.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call procedures (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page (see 2-138, step 26) for another selection press the number 8 key and then the RETURN key on keyboard (1).

4. Press number 6 key on keyboard (1).

5. Observe that the number 6 appears correctly after "Enter Number:" prompt (2).

6. Press RETURN key on keyboard (1).

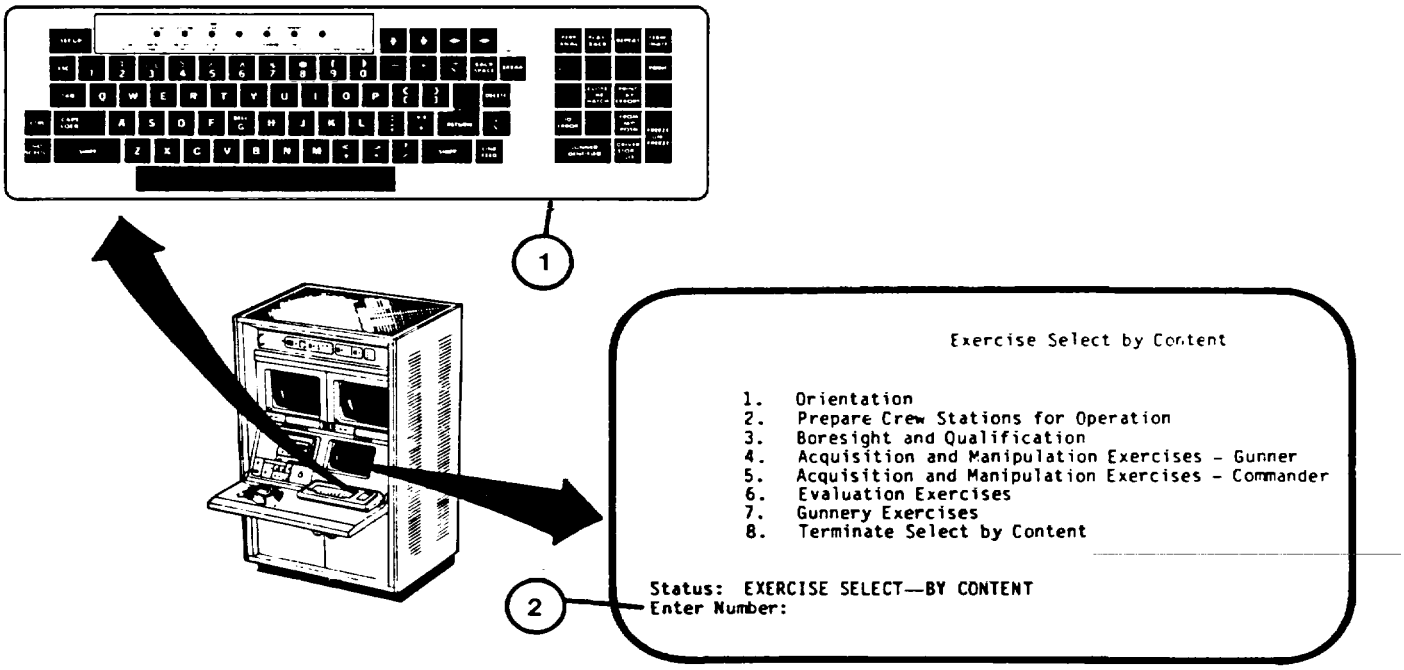
7. Observe that the "Enter Exercise Number:" prompt (3) appears on Exercise Select-- Evaluation Exercises display page.

8. Using keyboard (1) enter exercise number corresponding to exercise desired.

9. Observe that exercise number appears correctly after prompt (3).

10. Press RETURN key on keyboard (1).

11. Observe that question prompt "Do you desire this exercise (Y/N)?" (4) appears on Exercise Selection - SCOPE display page.



**EXERCISE SELECT BY CONTENT – EVALUATION PROCEDURE (Continued)**

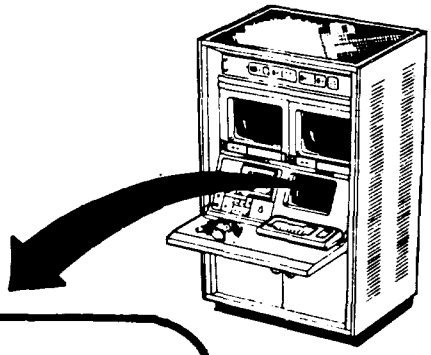
**NOTE**

If Instructor/Operator does not want the described exercise, the letter N is entered to recall EXERCISE SELECT--BY CONTENT display page (see 2-144) for another method of selection.

12. Press letter Y key on keyboard (1).

13. Observe that the letter "Y" appears correctly after question prompt (4).

14. Press RETURN key on keyboard (1) to call the Exercise Selection - INSTRUCTION display page (see 2-164).



```
                        EVALUATION EXERCISES

Exercise No.     Description

12261            Stationary BFV - Multiple Stat/Moving Tgts - Day
12262            Stationary BFV - Multiple Stat/Moving Tgts - Night
12263            Moving BFV - Multiple Stat/Moving Tgts     - Day
12264            Moving BFV - Multiple Stat/Moving Tgts     - Night

Status:  Exercise Select -- Evaluation Exercises
Enter Exercise Number:
```

3

```
                    Exercise Selection

Own      Own    Target     Target  Target  Target  Crewman
Motion   Speed  Type       Motion  Speed   Range   Firing   Weapon  Sight    Vis
STN      0      SNGL TNK   STN     0       <1500   GUNR     TOW     ISU-DAY  DAY-U

MALFUNCTIONS:
SCOPE

    The crew, occupying a stationary firing position, engages single stationary
    tank targets located from 970-1460 meters. Visibility is day unlimited and the
    BFV is fully operational.

Do you desire this exercise (Y/N)?
```

4

## EXERCISE SELECT BY CONTENT – GUNNERY PROCEDURE

This procedure describes how to call up training exercises by specific content. Options are provided for selecting ownvehicle motion and speed, target type, target motion and speed, target range, crewman to fire, weapon used, sight used, visibility conditions, and ownvehicle malfunctions.

When 15 or less exercises meet the requirements entered by the Instructor/Operator, the computer will automatically display the list on the Display Terminal for Instructor/Operator selection.

1. Assure that User Log-On Procedure (see 2-131) has been accomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Assure that Exercise Select By Content Menu Call procedure (see 2-144) has been accomplished.

**NOTE**

If the Instructor/Operator desires to go back to the Exercise select/Session Summary page (see 2-140, step 26) for another selection, press the number 8 key and then the RETURN key on keyboard (1).

4. Press number 7 key on keyboard (1).

5. Observe that the number 7 appears correctly after "Enter Number:" prompt (2).

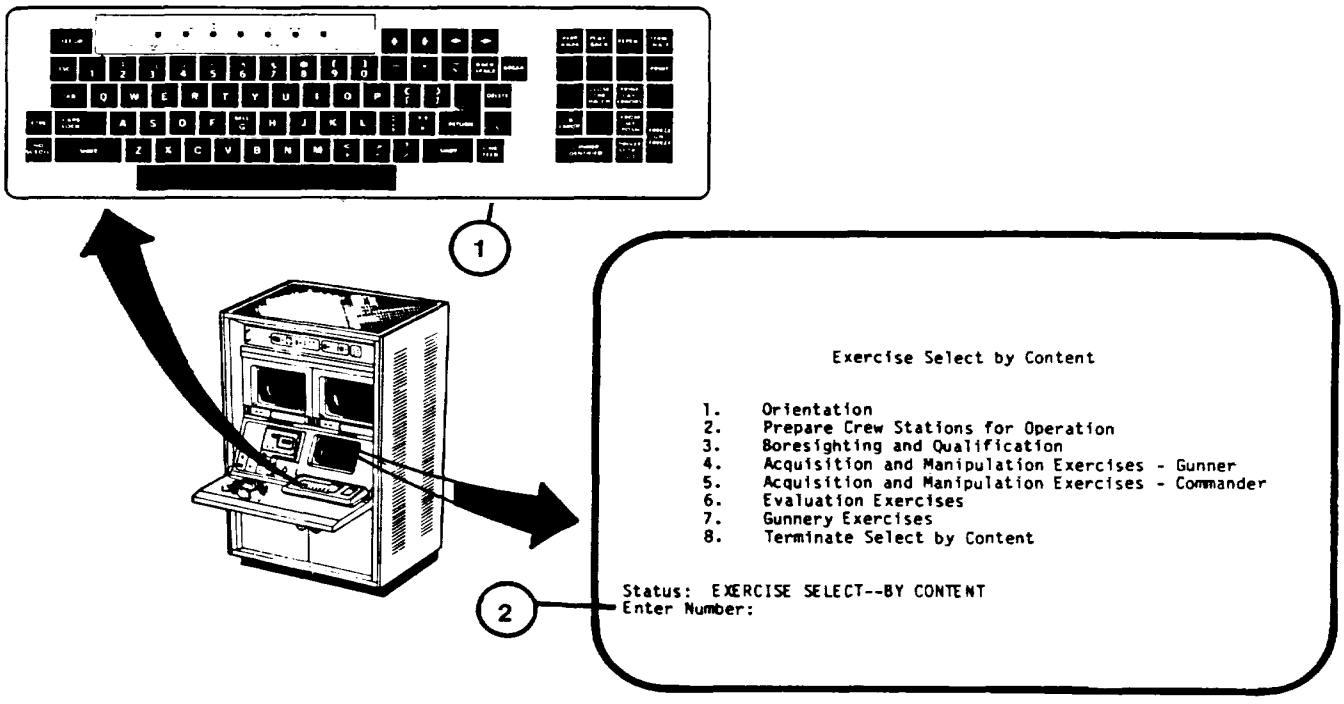
6. Press RETURN key on keybœard (1).

7. Observe that Ownvehicle Motion and Speed selection with "Enter Number:" prompt (3) appears.

8. Review the three motion and speed selections available.

**NOTE**

If the Instructor/Operator does not desire to selectowntank Motion and Speed, press RETURN key to call the next selection by content page.



**EXERCISE SELECT BY CONTENT – GUNNERY PROCEDURE (Continued)**

9. Using keyboard (1) enter number corresponding to motion and speeddesired.

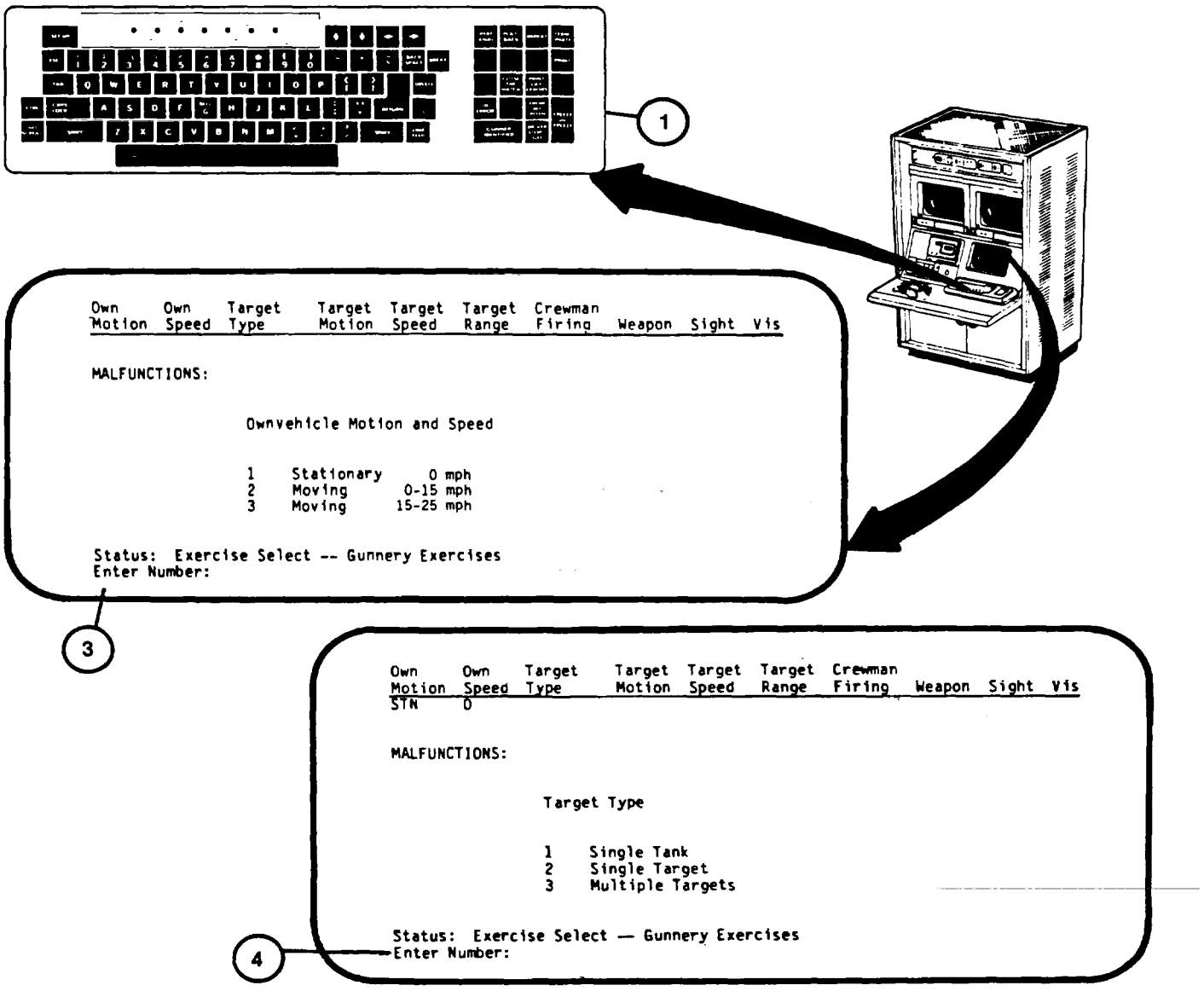
10. Observe that the number selected appears correctly after prompt (3).

11. Press RETURN key on keyboard (1).

12. Observe that Target type selection with "Enter Number:" prompt (4) appears on display page and the previously entered motion and speed appears at top of page.

**NOTE**

"Greater than 15 exercises – continue selection" prompt will appear below the "Enter Number:" prompt (4) until 15 or less exercises match the selected requirements.



**EXERCISE SELECT BY CONTENT – GUNNERY PROCEDURE (Continued)**

13. Repeat steps 7 through 12 for each of the new Gunnery selections appearing on the display until a listing of exercise numbers appears on the display with "Enter Number:" prompt (5).

14. Review the descriptions of the exercises listed.

15. Using keyboard (I), enter number of the exercise desired and observe that number appears correctly after prompt (5).

16. Press RETURN key on keyboard (1).

17. Observe that question prompt "Do you desire this exercise (Y/N)?" (6) appears on Exercise Selection - SCOPE display page.

**NOTE**

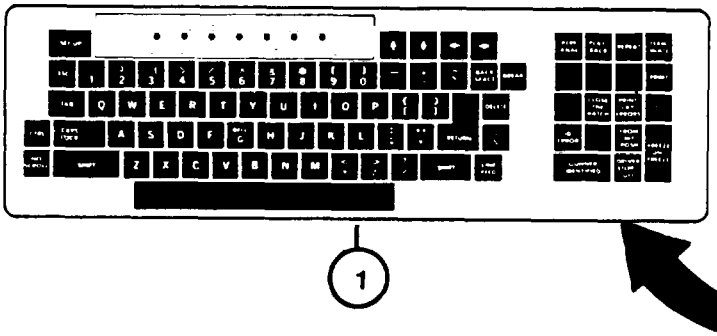
If Instructor/Operator does not want the described exercise, enter the letter N to recall Exercise select/Session Summary display page for another method of selection (see 2-140, step 26).

18. Press letter Y key on keyboard (1).

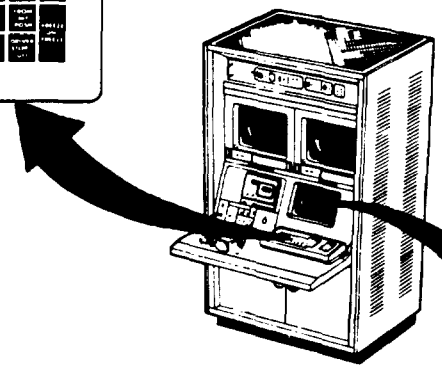
19. Observe that letter "Y" appears correctly after question prompt (6).

20. Press RETURN key on keyboard (1) to call the Exercise Selection INSTRUCTION display page(see 2-164).

## EXERCISE SELECT BY CONTENT - GUNNERY PROCEDURE (Continued)



1



| Exercise Number | Own Motion | Own Speed | Target Type | Target Motion | Target Speed | Target Range | Crewman Firing | Weapon | Sight | Vis | Malf |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51121 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 51122 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 51123 | STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 52121 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF1 |
| 52122 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF2 |
| 52123 | STN | 0 | SNGL TNK | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | TWMF2 |
| 53121 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 53122 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 53123 | STN | 0 | MULT TGT | STN | 0 | <1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54121 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54122 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |
| 54123 | STN | 0 | MULT TGT | STN | 0 | >1500 | GUNR | TOW | ISU-TIS | NIGHT | |

Status: EXERCISE SELECT -- Gunnery Exercises
Enter Number:

5

Exercise Selection

| Own Motion | Own Speed | Target Type | Target Motion | Target Speed | Target Range | Crewman Firing | Weapon | Sight | Vis |
|---|---|---|---|---|---|---|---|---|---|
| STN | 0 | SNGL TNK | STN | 0 | <1500 | GUNR | TOW | ISU-DAY | DAY-U |

MALFUNCTIONS:
SCOPE

The crew, occupying a stationary firing position, engages single stationary tank targets located from 970-1460 meters. Visibility is day unlimited and the BFV is fully operational.

6 Do you desire this exercise (Y/N)?

## EXERCISE SELECTION BY EXERCISE NUMBER PROCEDURE

This procedure describes how to call up exercises by the exercise number.

Exercise numbers with the exercise descriptions for each are contained in the Instructor's Utilization Handbook, HB 23-1-BFVS U-COFT- 1 through 5.

1. Assure that User Log-On Procedure (see 2-131) has beenaccomplished.

2. Assure that Training Session Initialization Procedure (see 2-137) has been accomplished.

3. Observe "Enter choice:" prompt (1) appears on Exercise select/Session Summary display page.

**NOTE**

The training session may be terminated from this page. Enter number 5 on keyboard, then press RETURN to recall Mode Select display page (see 2-131, step 11).

4. Press number 3 key on keyboard (2).

5. Observe that the number 3 appears correctly after "Enter choice:" prompt (1).

6. Press RETURN key on keyboard (2).

7. Observe that "Enter exercise number:" prompt (3) replaces "Enter choice" prompt (1).

8. Refer to Instructor's Utilization Handbook, HB 23-1-BFVS U-COFT- 1 through-5 for exercise numbers and descriptions.

9. Using keyboard (2) enter exercise number corresponding to exercise desired.

10. Observe that exercise number appears correctly after prompt (3).

11. Press RETURN key on keyboard (2).

12. thru 14. (deleted)

15. Observe that "Enter replication:" prompt (5) appears on the bottom of the same page.

16. Using keyboard (2) enter exercise replication number (0,1,2 or 3) desired.

17. Observe that replication number appears correctly after prompt (5).

18. Press RETURN key on keyboard (2).

19. Observe that question prompt "Do you desire this exercise (Y/N)?" (6) appears on Exercise Selection - SCOPE display page.

**NOTE**

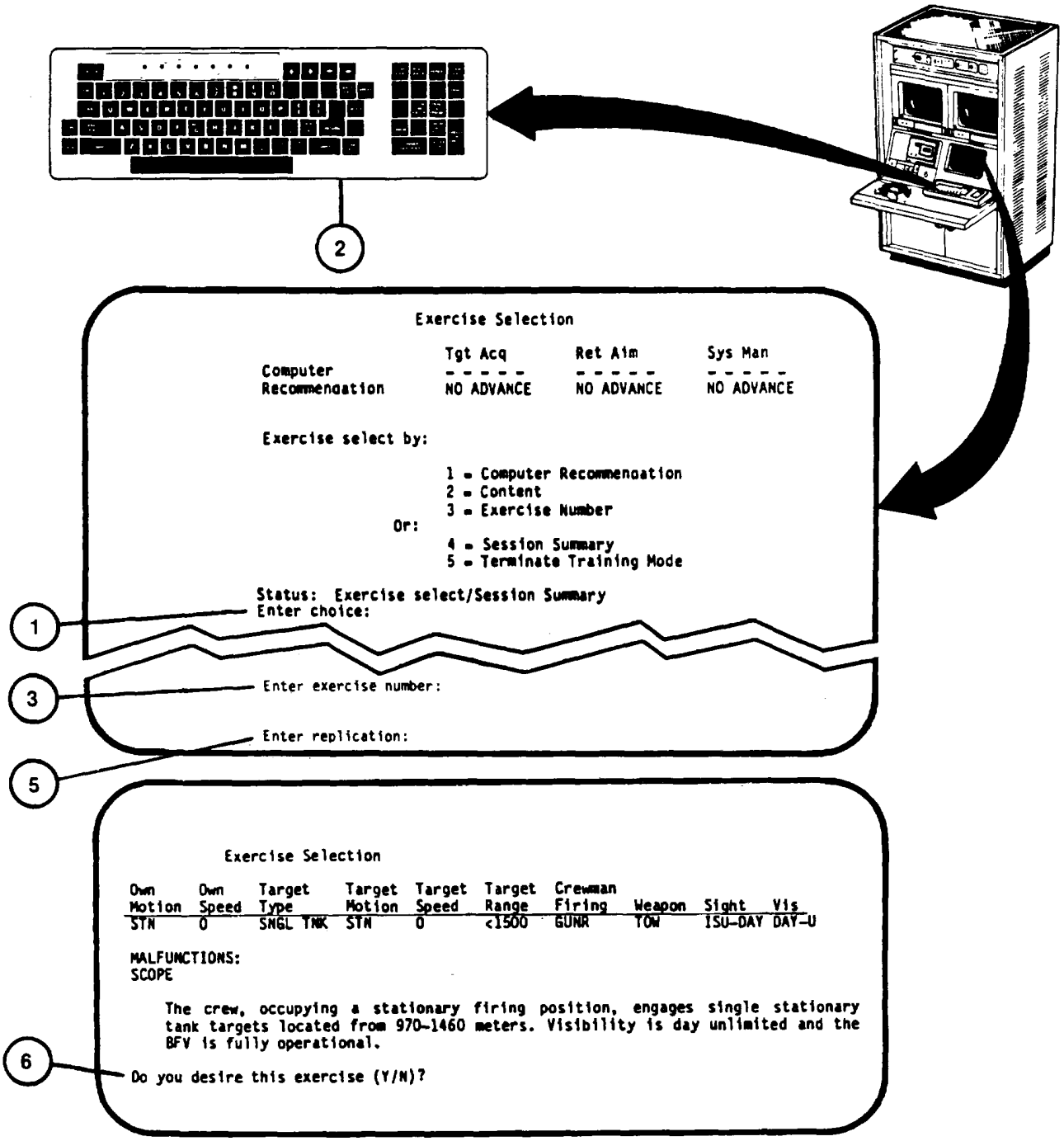
If Instructor/Operator does not want the described exercise, the letter N is entered to recall Exercise Select/Session Summary display page (see 2-140, step 26) for another selection.

**EXERCISE SELECTION BY EXERCISE NUMBER PROCEDURE (Continued)**

20. Press letter Y key on keyboard (2).

21. Observe that the letter "Y" appears correctly after question prompt (6).

22. Press RETURN key on keyboard (2) to call the Exercise Selection--INSTRUCTIONS display page (see 2-164).



## RUN EXERCISE TO COMPLETION PROCEDURE

This procedure describes how to start and run an exercise to completion after the Exercise Selection - INSTRUCTIONS display page is presented on the Display Terminal. The procedure also describes how to stop the exercise prior to completion.

1. Observe that the Exercise Selection - INSTRUCTIONS display page (1) appears with "Instructions" (2).

2. Read the Instructions to the crew.

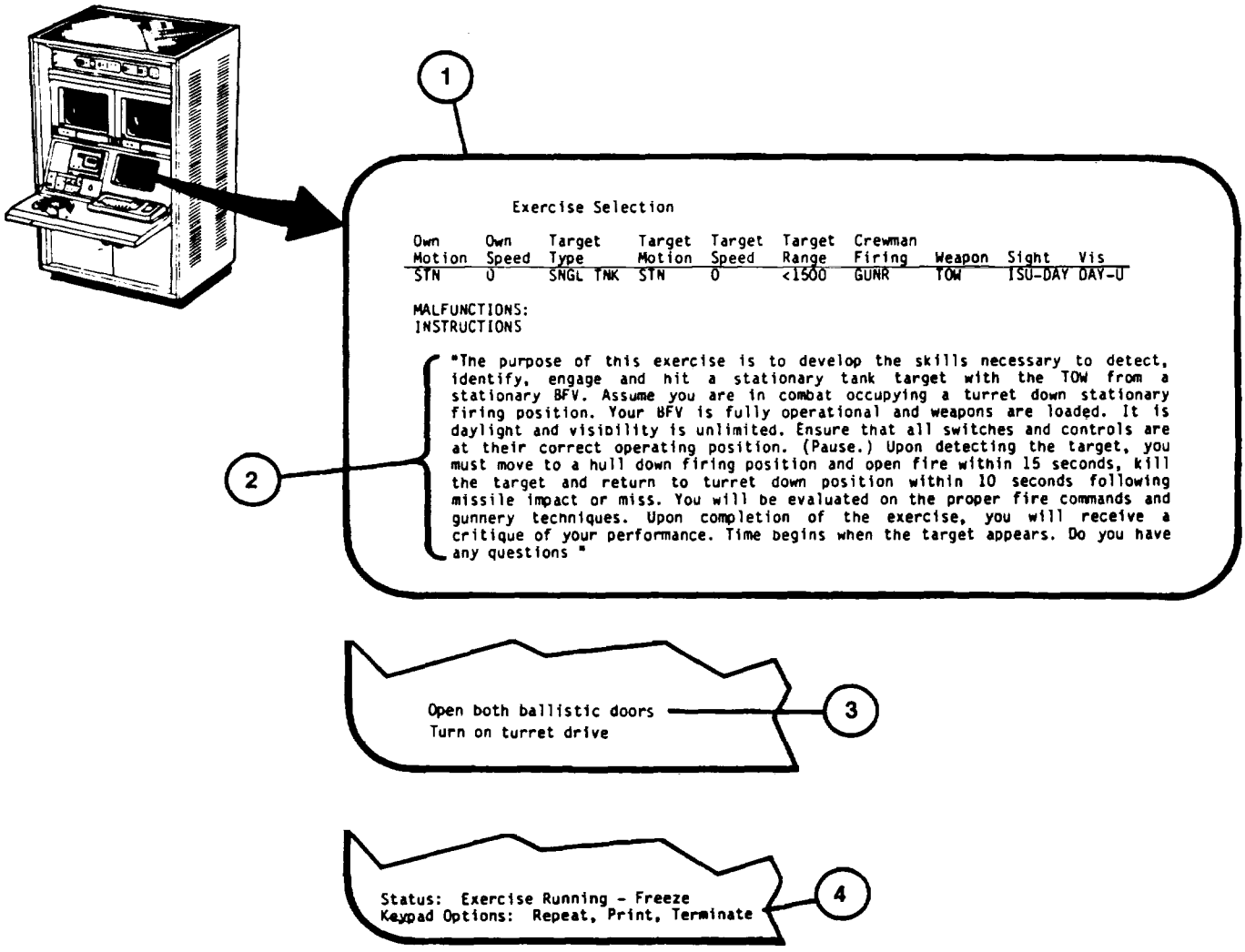
**NOTE**

Switch Setting Errors (3) will appear below Instructions (2). The exercise cannot be started until the switch settings are correct.

3. Wait for the crew to complete their switch settings. Help them on switch settings as necessary.

4. When switch settings are correct, observe "Status: Exercise Running-Freeze" (4) appears at the bottom of the Exercise Selection - INSTRUCTIONS display page.

5. Press the FREEZE/UNFREEZE key on Keypad (5) to start the exercise.



**RUN EXERCISE TO COMPLETION PROCEDURE (Continued)**

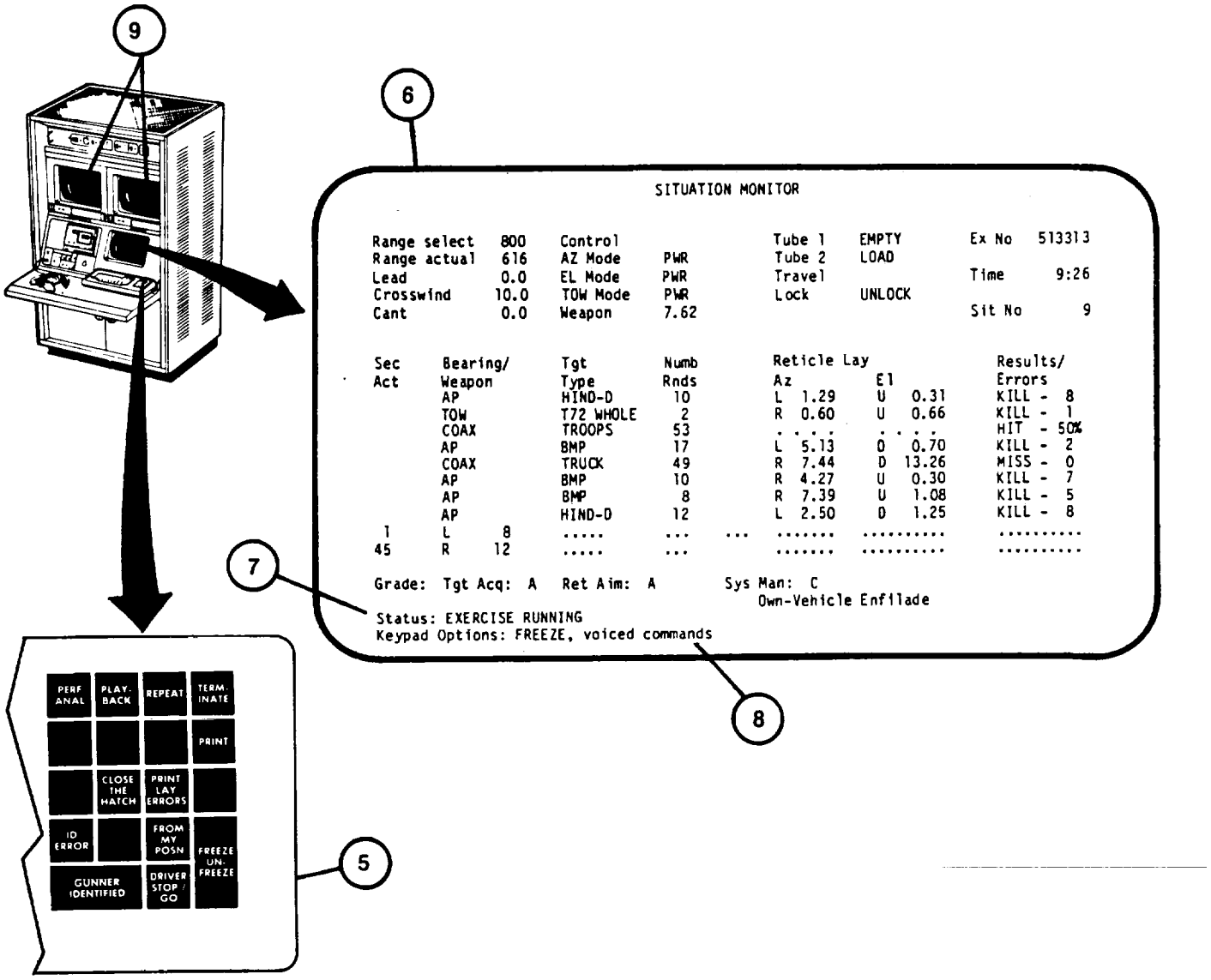
6. Observe that the Situation Monitor display page (6) appears with "Status: EXERCISE RUNNING" (7) and "Keypad Options: FREEZE, voice commands" (8) at the bottom of the display page.

7. Observe the sight scenes on the 19-Inch Color Monitors (9). Adjust the Monitor's brightness and contrast controls for personal preference (see 2-27).

8. Observe the crew's performance as each situation occurs on the Situation Monitor display page and enter the crew's verbal commands on keypad (5).

**NOTE**

To stop the exercise prior to completion, press the FREEZE/UNFREEZE key on keypad (5) and refer to the Exercise Running – Freeze Procedure (see 2-1 68).



**RUN EXERCISE TO COMPLETION PROCEDURE (Continued)**

9. Observe that the exercise continues to completion and the "Status: Exercise Complete - Freeze" (10) is presented with "Keypad Options: Perf, Repeat, Playback, Print, Terminate" (11).

10. Select the desired keypad option and press the associated key on keypad (5):

a. REPEAT - This key resets the Situation Monitor back to the firstsituation. To restart, press the Station switch settings may need resetting before the exercise can be restarted.

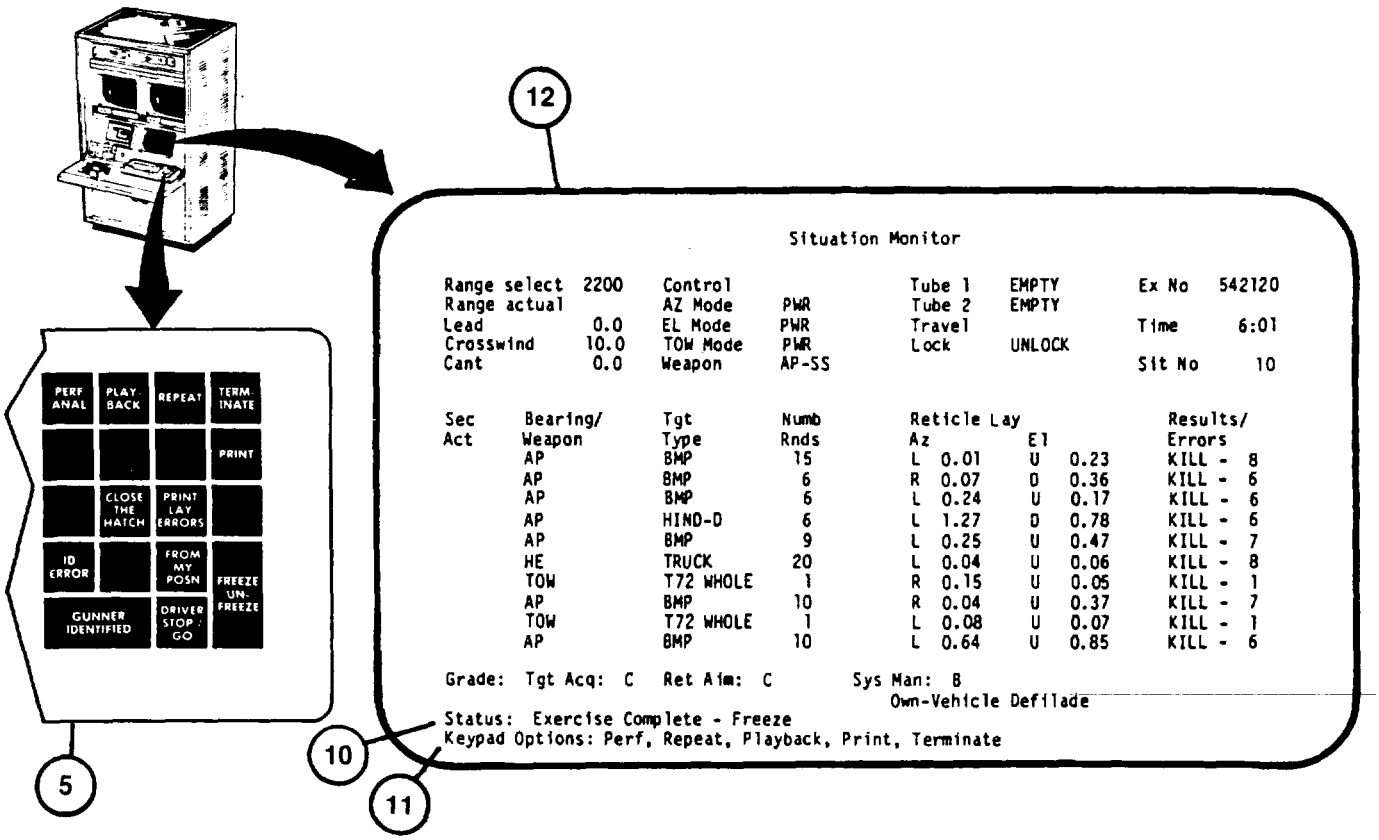
b. PLAYBACK - This key calls up the Exercise Playback Situation Monitor to play back and watch the crew's performance. To run Playback, see 2-170.

c. PRINT - This key prints Situation Monitor page (12) or Performance Analysis page (13) on Terminal Printer (14).

d. PERF ANAL - This key calls up the Performance Analysis display page (13) for an analysis of the crew's performance. To print the Performance Analysis display page on Terminal Printer (14), press the PRINT key on keypad (5) when the Performance Analysis display page has been called up.

e. TERMINATE - This key terminates the exercise (see step 11).

11. Press the TERMINATE key on keypad (5) when ready to terminate the exercise and return to the Exercise select/Session Summary display page (see 2-140, step 26) to select another exercise or terminate the training session.



## RUN EXERCISE TO COMPLETION PROCEDURE (Continued)

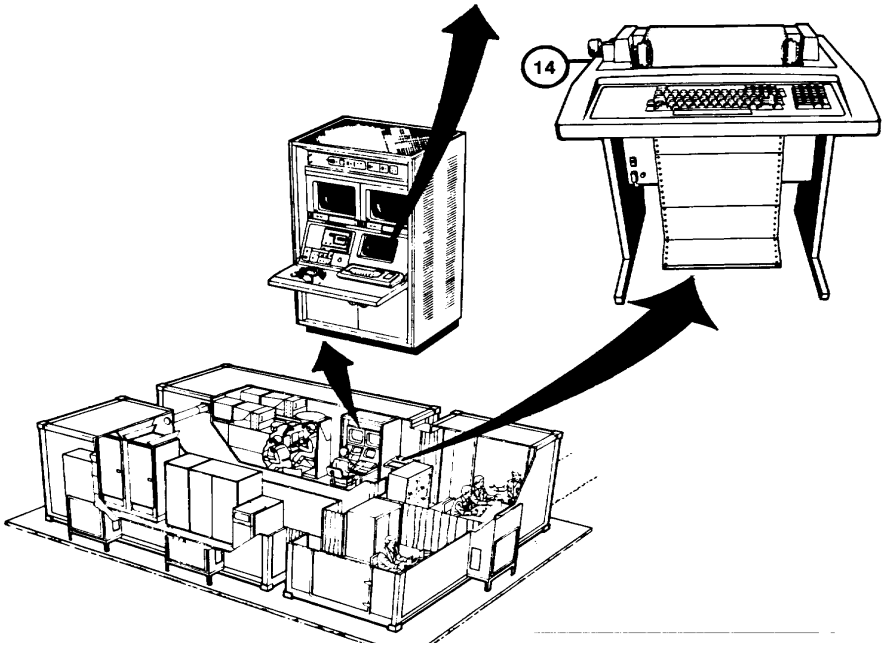
13

Performance Analysis

Date: 4/06/84 Instructor: SMITH A Training Program: BASIC
Vehicle: 1/09/A01 Commander: BLACK B Gunner: BROWN C
Exercise No: 512121

| Target | ID | Time Fire | Hit | Kill | Ammo | Rnds | Hits/ % Cov | Errors Acq | Sys | Man | Scores TA | RA | SM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 HIND-D | 3.0 | 8.0 | 9.2 | 11.3 | AP | 20 | 5 | 0 | 1 | D | A | A | C |
| 2 TRUCK | 5.0 | 9.9 | 15.2 | 15.4 | COAX | 108 | 3 | 0 | 1 | D | A | B | C |
| 3 TROOPS | 3.1> | 6.2 | 16.8 | | COAX | 176 | 50% | 0 | 1 | D | A | B | C |
| 4 T72-W | 5.9 | 11.8 | 17.7 | 17.7 | TOW | 1 | 1 | 0 | 1 | D | A | A | C |
| 5 HIND-D | 4.3 | 8.5 | 9.6 | 10.8 | AP | 10 | 5 | 0 | 1 | D | A | A | C |
| 6 T72-W | 5.8 | 10.6 | 17.4 | 17.4 | TOW | 1 | 1 | 0 | 1 | D | A | B | C |
| 7 BMP | 8.0> | 15.9 | 19.9 | 21.4 | AP | 21 | 5 | 0 | 1 | D | A | F | C |
| 8 BMP | 7.3 | 10.5 | 15.4 | 16.6 | AP | 14 | 5 | 0 | 1 | D | A | C | C |
| 9 BMP | 2.1 | 4.2 | 6.2 | 7.4 | AP | 13 | 5 | 0 | 1 | D | A | A | C |
| 10 TRUCK | 0.9 | 2.7 | 17.1 | 18.3 | AP | 52 | 5 | 0 | 2 | A-D | A | B | F |
| Totals: | | | | | | 416 | 35 | 0 | 11 | | | | |
| Averages: | 4.5 | 9.0 | 14.4 | 15.1 | | | | | | | | | |
| TA: -A- | | | RA: -B- | | | | | | | SM: -C- | | | |

Status: (Freeze)
Keypad Options: Perf, Repeat, Playback, Print, Terminate




2-

## EXERCISE RUNNING - FREEZE PROCEDURE

This procedure describes what options are available and how to select them when an exercise has been stopped(FREEZE) prior to completion.

**NOTE**

All five keypad options will not be available until at least one situation on Situation Monitor display is completed.

1. Observe the Situation Monitor "Status:
   Exercise Running - Freeze" (1) with "Keypad Options: Perf, Repeat, Playback, Print, Terminate" (2).

2. Determine which keypad option is desired and press the associated key on keypad (3):

   a. PERF ANAL - This key calls up the Performance Analysis display page for an analysis of the crew's performance to the point where the exercise was frozen. To print the Performance Analysis display page on the Terminal Printer, press the PRINT key on keypad (3) after the Performance Analysis display page has been called up.

   b. REPEAT - This key resets the Situation Monitor back to the first situation. To restart, press the FREEZE/UNFREEZE key on keypad (3). Switch settings in the Crew Station may need resetting before the exercise can be re started.

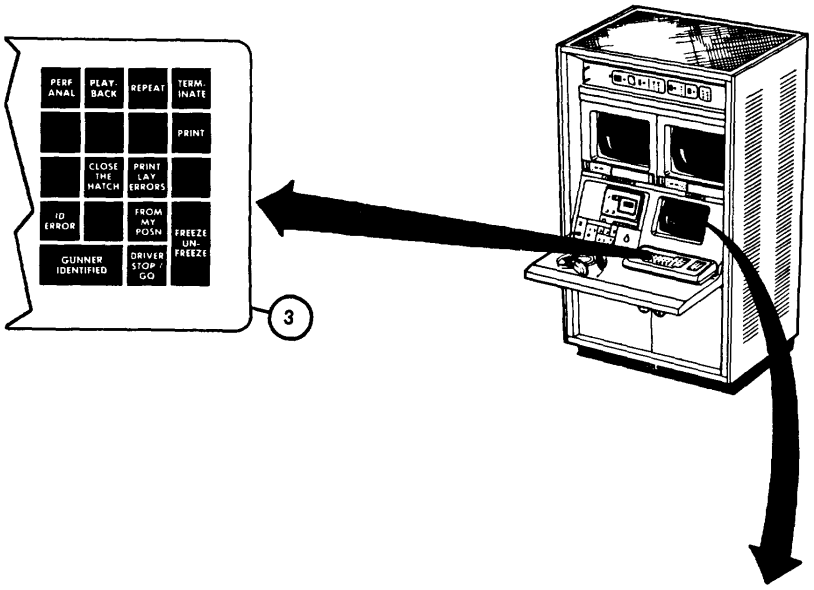
   c. PLAYBACK - This key calls the Exercise Playback Situation Monitor to play back the exercise and watch the crew's performance. To run Playback, (see 2-170).

   d. PRINT - This key prints the Situation Monitor or Performance Analysis display as shown on the Display Terminal.

   e. TERMINATE - This key returns the Display Terminal to the Exercise select/Session Summary display page for another exercise selection or termination of the training session.

3. To restart the exercise at the point where it was frozen, press the FREEZE/UNFREEZE key on the keypad. The exercise may be run to completion (see 2-164) or the Exercise Running-Freeze procedure repeated at a later point in the exercise.

## EXERCISE RUNNING-FREEZE PROCEDURE (Continued)




Situation Monitor

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Range select | 800 | Control | | Tube 1 | EMPTY | Ex No | 513313 |
| Range actual | 616 | AZ Mode | PWR | Tube 2 | LOAD | | |
| Lead | 0.0 | EL Mode | PWR | Travel | | Time | 8:26 |
| Crosswind | 10.0 | TOW Mode | PWR | Lock | UNLOCK | | |
| Cant | 0.0 | Weapon | 7.62 | | | Sit No | 9 |

| Sec Act | Bearing/ Weapon | Tgt Type | Numb Rnds | Reticle Lay Az | El | Errors |
|---|---|---|---|---|---|---|
| | AP | HIND-D | 10 | L 1.29 | U 1.29 | KILL - 8 |
| | TOW | T72 WHOLE | 2 | R 0.60 | U 0.66 | KILL - 1 |
| | COAX | TROOPS | 53 | ..... | ..... | HIT - 50% |
| | AP | BMP | 17 | L 5.13 | D 0.70 | KILL - 8 |
| | COAX | TRUCK | 49 | R 7.44 | D 13.26 | MISS - 0 |
| | AP | BMP | 10 | R 4.27 | U 0.30 | KILL - 7 |
| | AP | BMP | 8 | R 7.39 | U 1.08 | KILL - 5 |
| | AP | HIND-D | 12 | L 2.50 | D 1.25 | KILL - 8 |
| 1 | L 8 | ..... | ... | ..... | ..... | ..... |
| 45 | R 2 | ..... | ... | ..... | ..... | ..... |

Grade: Tgt Acq: A Ret Aim: A Sys Man: C
Own-vehicle Defilade

1 Status: Exercise Running - Freeze

2 Keypad Options: Perf, Repeat, Playback, Print, Terminate

## RUN EXERCISE PLAYBACK PROCEDURE

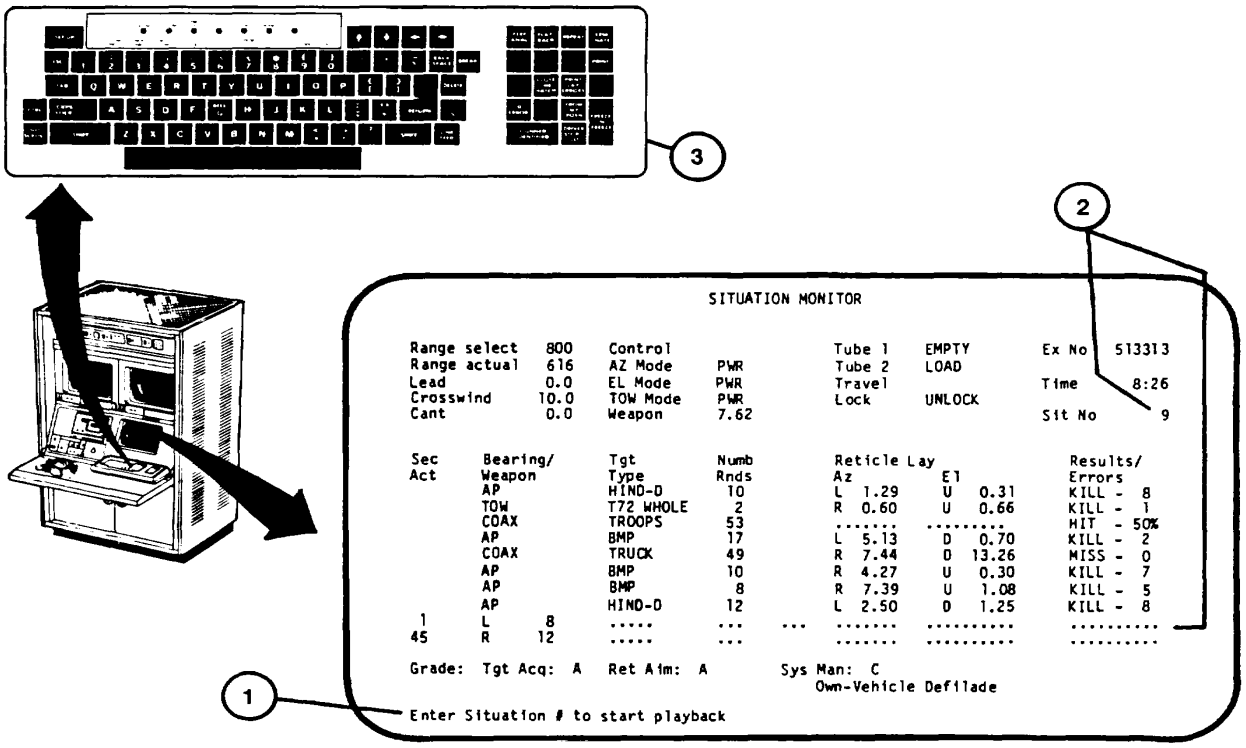
This procedure describes how to select the point of desired playback and to run the playback. Playback repeats the crews performance of the exercise from the situation number selected to the point where it was frozen and playback selected.

1. Observe that “Enter Situation # to start playback” prompt (1) appears on Situation Monitor display page.

2. Note the situation number (2) that the exercise was on at time of FREEZE and determine the number of the situation at which you wish to start playback.

3. Enter the desired situation number on keyboard (3).

4. Observe that the desired situation number appears correctly after prompt (1).



**RUN EXERCISE PLAYBACK PROCEDURE (Continued)**

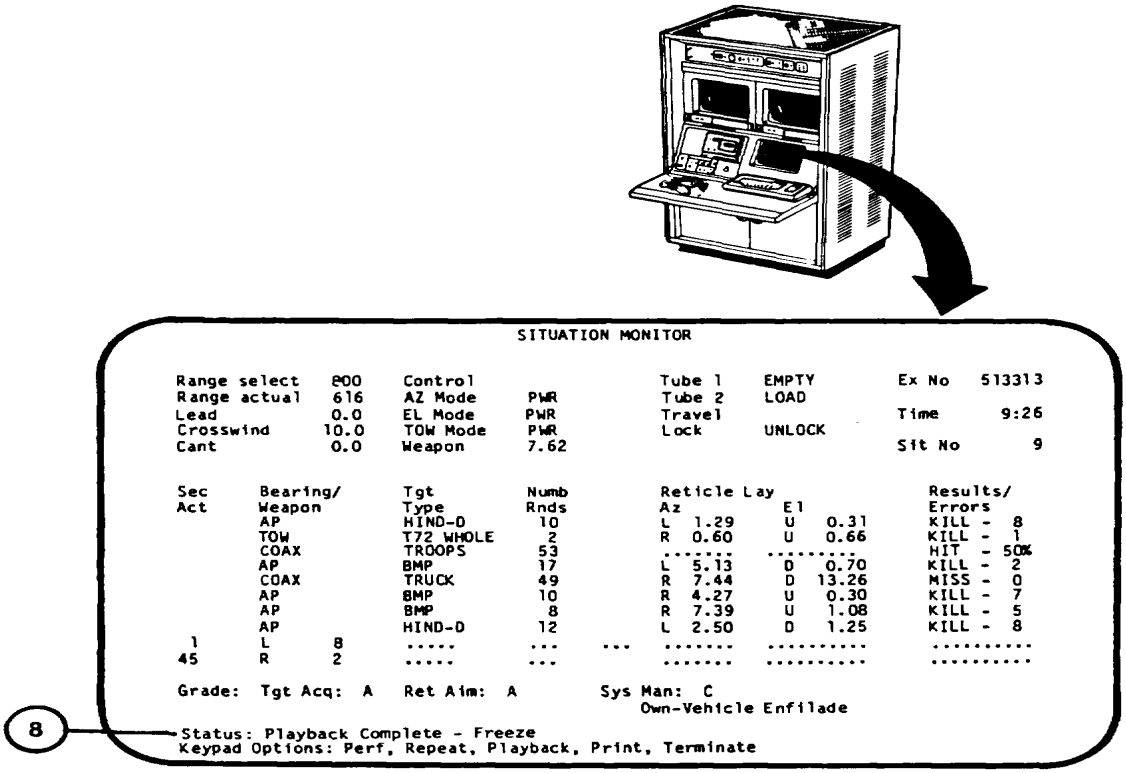
5. Press RETURN key on keyboard (3).

**NOTE**

Instruct the crew to observe the playback on their sights.

6. Observe that the EXERCISE PLAYBACK running display page (4) appears with one keypad option (FREEZE).

7. Observe the playback on the sight scene monitors (5).



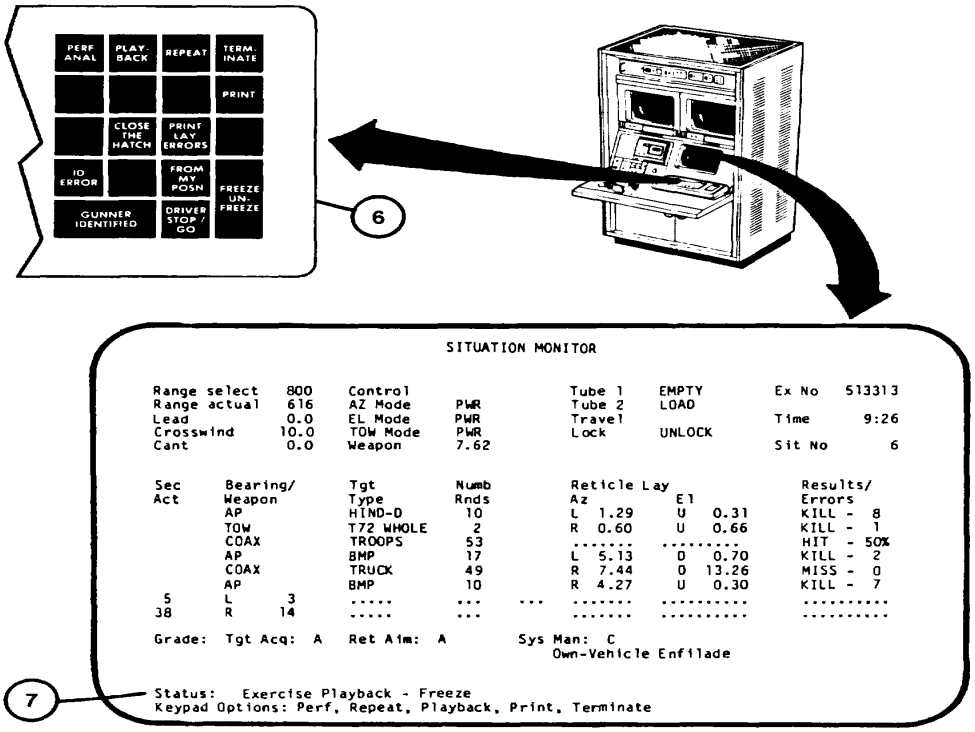
**RUN EXERCISE PLAYBACK PROCEDURE (CONTINUED)**

**NOTE**

The keypad FREEZE/UNFREEZE function may be used to stop/start the playback and brief the crew. If FREEZE option is not used, continue with Step 11.

8. If you desire to stop the playback and brief the crew, press FREEZE/UNFREEZE key on keypad (6).

9. Observe that the Exercise Playback-Freeze display page (7) appears with the same keypad options as Exercise Running- Freeze (see 2-168).

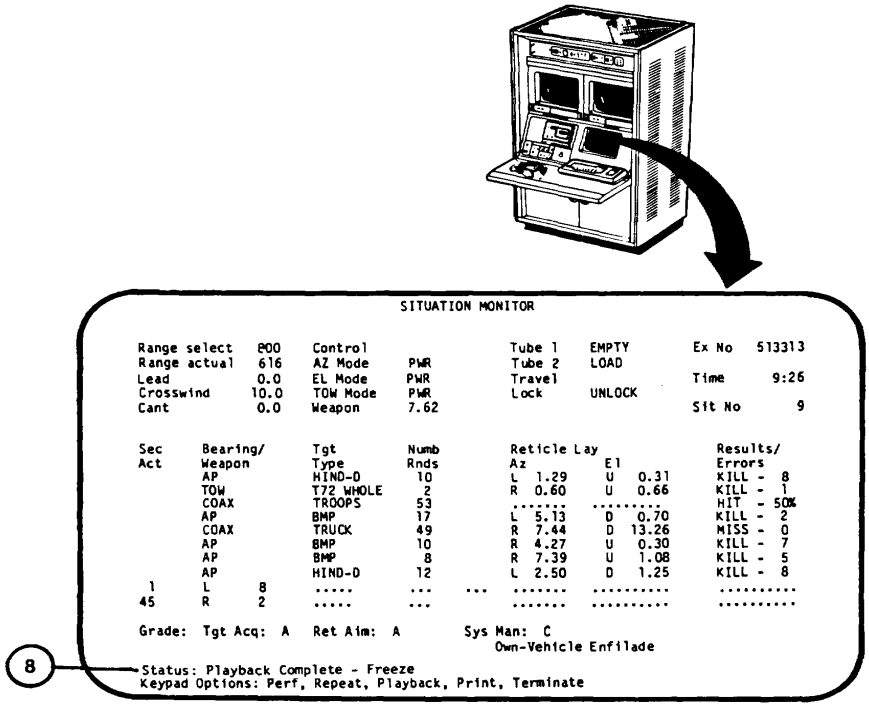


**RUN EXERCISE PLAYBACK PROCEDURE (CONTINUED)**

10. If you desire to continue the playback, press FREEZE/UNFREEZE key (6) to restart the playback and recall the EXERCISE PLAYBACK running display page (step 6 above).

11. Observe that playback continues to the point where it was frozen duringEXERCISE RUNNING.

12. Observe “Status: Exercise Playback Complete-Freeze” (8) appears at the bottom of display with the same keypad options as EXERCISE COMPLETE-FREEZE display page (see 2-164, step 9).



## SESSION SUMMARY CALL-PROCEDURE

This procedure is performed at the completion of a training session. It describes how to obtain a summary printout of the crew's performance on exercises conducted during the session.

1. Assure that the User Log-On Procedure (see 2-131) has been completed.

2. Assure that Training Session Initialization Procedure (see 2-137) has been completed.

3. Observe "Enter choice:" prompt (1) appears on Exercise select/Session Summary display page.

**NOTE**

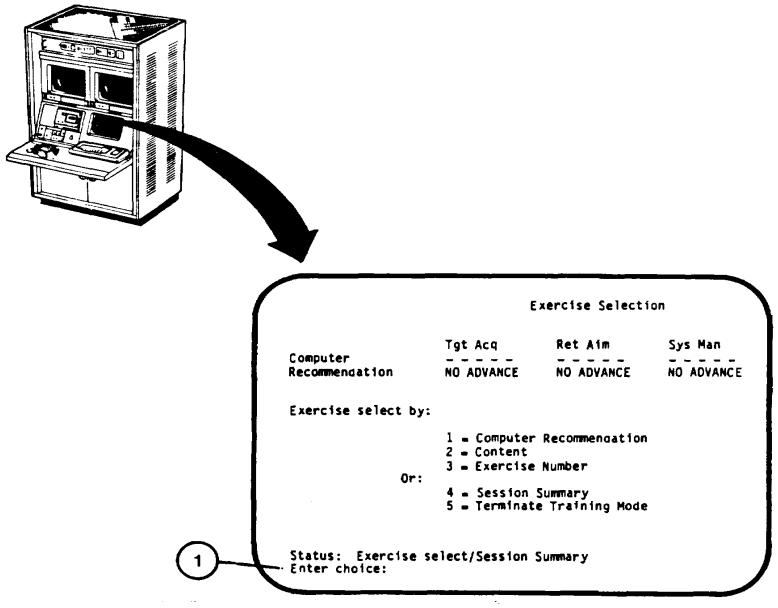
The training session may be terminated from this page. Enter number 5 on keyboard (2) and press RETURN to recall Mode Select display page (see 2-131,step 11).

4. Press number 4 key on keyboard (2).

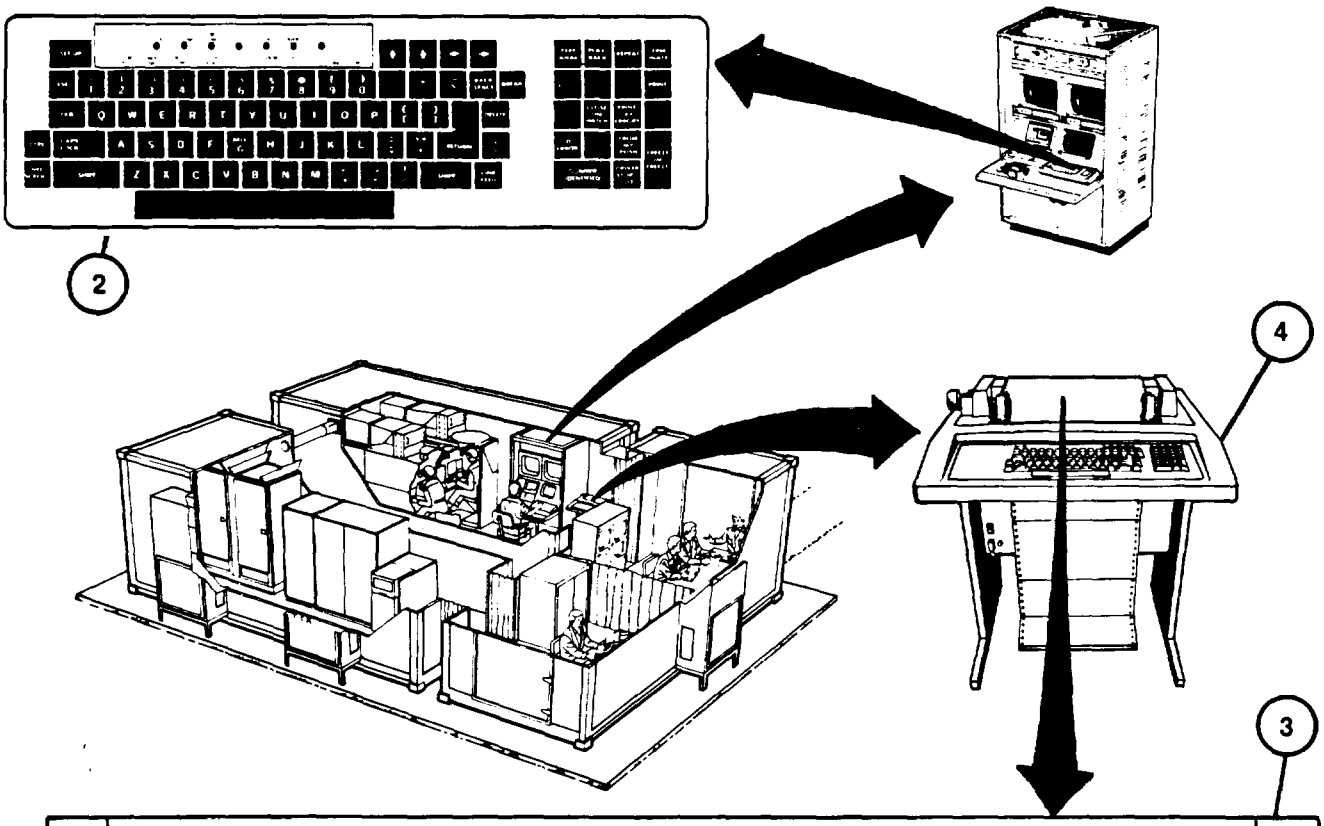
5. Observe that the number 4 appears correctly after "Enter Choice:" prompt (1).

6. Press RETURN key on keyboard (2).

7. Observe that the Session Summary (3) is printed on Terminal Printer (4).



## SESSION SUMMARY CALL-UP PROCEDURE




Session Summary

Date: 3/20/84 Instructor: BLACK A. Training Program: Sustain
Vehicle: 1/48/All Commander: SMITH M. Gunner: BROWN B.

| Exercise | Tgts | Average Times ID | Fire | Hit | Kill | Total Rnds | Hits | Errors TA | SM | Recommend TA | RA | SM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 532120 | 10 | 5.8 | 17.0 | 19.6 | 23.4 | 171 | 41 | 2 | 1 | -B- | -B- | -B- |
| 532220 | 10 | 5.5 | 20.7 | 22.5 | 22.4 | 137 | 41 | 1 | 0 | -A- | -B- | -B- |
| 532420 | 10 | 5.8 | 19.1 | 21.8 | 25.4 | 195 | 41 | 1 | 1 | -B- | -B- | -B- |
| 532320 | 10 | 4.7 | 17.3 | 19.6 | 21.9 | 163 | 41 | 3 | 0 | -B- | -B- | -B- |
| 532130 | 10 | 4.5 | 15.7 | 18.7 | 18.7 | 212 | 36 | 2 | 1 | -B- | -A- | -B- |
| 532230 | 10 | 8.0 | 18.0 | 19.5 | 20.4 | 157 | 34 | 1 | 0 | -B- | -B- | -B- |
| 532330 | 10 | 3.8 | 14.8 | 17.5 | 18.0 | 147 | 36 | 2 | 0 | -A- | -B- | -B- |
| 532430 | 10 | 3.5 | 15.3 | 17.7 | 18.7 | 129 | 36 | 0 | 0 | -B- | -B- | -B- |
| 522130 | 10 | 8.2 | 13.8 | 18.0 | 21.5 | 171 | 29 | 2 | 1 | -B- | -C- | -B- |
| 523330 | 10 | 5.3 | 11.8 | 15.2 | 20.8 | 126 | 33 | 0 | 1 | -A- | -C- | -B- |
| 522130 | 10 | 7.0 | 10.5 | 17.0 | 21.2 | 189 | 29 | 0 | 2 | -B- | -B- | -B- |
| 522430 | 10 | 4.9 | 11.6 | 15.0 | 16.3 | 136 | 29 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 4.6 | 20.4 | 25.6 | 27.8 | 84 | 42 | 0 | 1 | -A- | -B- | -B- |
| 542120 | 10 | 7.1 | 19.4 | 23.9 | 26.9 | 92 | 42 | 0 | 0 | -B- | -B- | -B- |
| 542220 | 10 | 5.7 | 20.9 | 25.1 | 26.8 | 102 | 36 | 2 | 0 | -B- | -C- | -B- |
| 542320 | 10 | 4.8 | 19.0 | 23.5 | 24.9 | 81 | 42 | 0 | 0 | -A- | -B- | -B- |

## TRAINING MANAGEMENT SYSTEM CALL-UP PROCEDURE

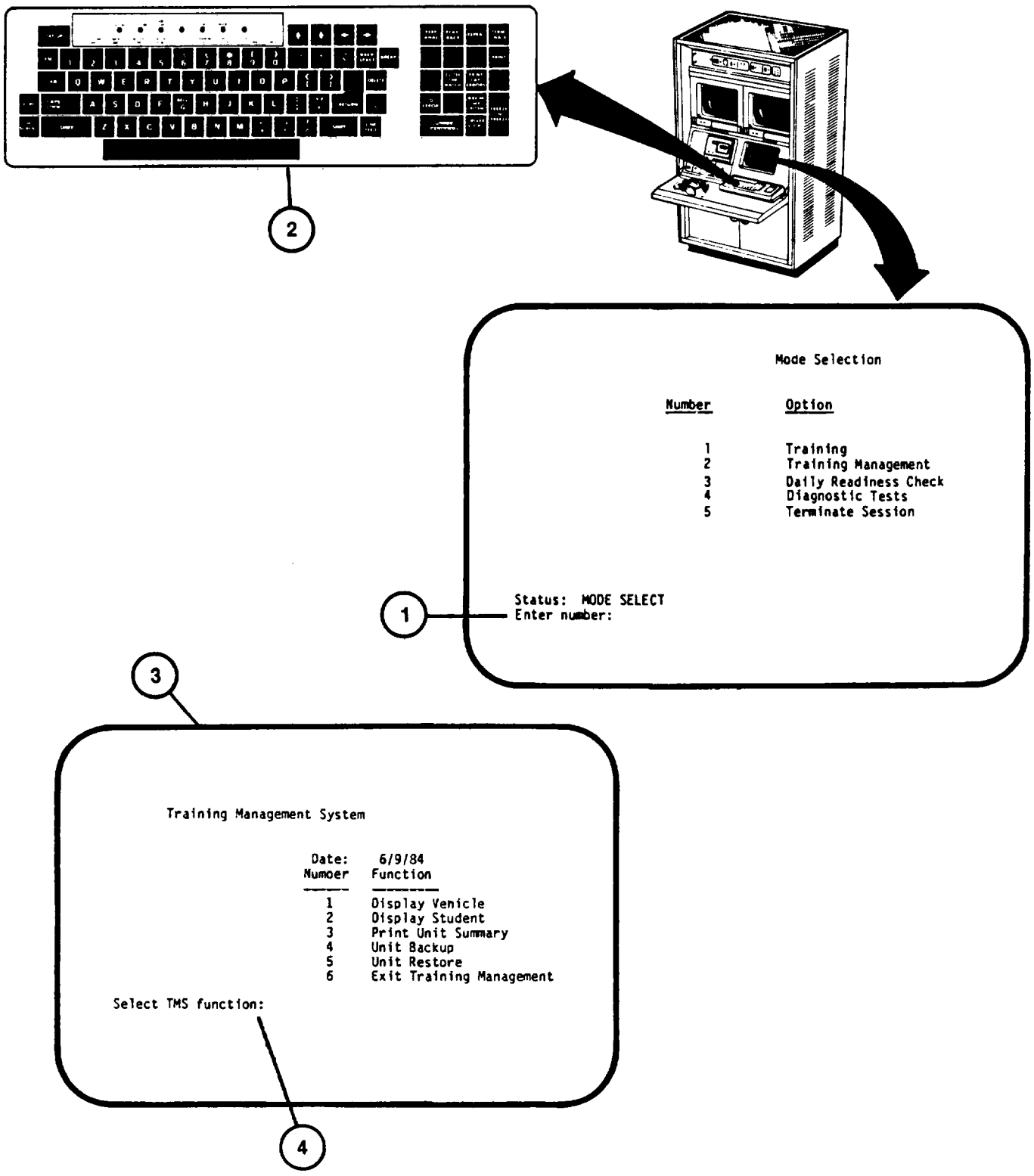
This procedure describes how to call up the Training Management Mode of operation for the review of crew records.

1. Assure that User Log-On Procedure (see 2-131) has been completed.
2. Observe “Enter number:” prompt (1) appears on MODE SELECT display page.
3. Press Number 2 key on keyboard (2).
4. Observe that number 2 appears correctly after “Enter number:” prompt (1).
5. Press RETURN key on keyboard (2).
6. Observe that Training Management System function menu display page (3) appears with “Select TMS function:” prompt (4).
7. The six Training Management System Functions are:
   a. Display Vehicle (see 2-178).
   b. Display Student (see 2-182).
   c. Print Unit Summary (see 2-192).
   d. Unit Backup (see 2-194).
   e. Unit Restore (see 2-196).
   f. Exit Training Management (see NOTE below).

**NOTE**

The user may exit the training management mode by pressing number 6 and then RETURN keys on keyboard (2). This returns the user to the MODE SELECT display page (see 2-131, step 11).

## TRAINING MANAGEMENT SYSTEM CALL-UP PROCEDURE (Continued)



## TRAINING MANAGEMENT CREW RECORD BY VEHCLE SEARCH PROCEDURE

This procedure describes how to call up a crew's records by vehicle name. The procedure also describes how to search the files to find the vehicle name when unknown.

1. Assure that Training Management System Call-Up Procedure (see 2-176) has been accomplished.

2. Observe that the "Select TMS function:" prompt (1) appears on Training Management System function menu display page.

3. Press number I key on keyboard (2).

4. Observe that the number 1 appears correctly after "Select TMS function:" prompt (1).

5. Press RETURN key on keyboard (2).

6. Observe "Enter vehicle name:" prompt (3) appears at the bottom of display.

**NOTE**

If the vehicle name is known, perform steps 7 through 9. If the vehicle name is unknown, press the RETURN key on keyboard (2) and go to step 10.

7. Using keyboard (2) type in the desired vehicle name.

8. Observe that the vehicle name appears correctly after "Enter vehicle name:" prompt (3).

9. Press RETURN key on keyboard (2).

**NOTE**

If vehicle name was entered in step 7, the vehicle listing (4) described in step 10 will identify only those crews associated with the entered vehicle number; otherwise the complete list of vehicles will be accessed.

10. Observe Training Management System vehicle listing display page (4) appears with "Select Number:" prompt (5).

11. Review list of vehicle names and associated crews. If "Total No. Records:" (6) shows a larger number than last SELECT number (7), the next list is displayed by pressing RETURN key on keyboard (2). When all record listings have been called, "End of Crew List" (8) will appear at bottom of display page.

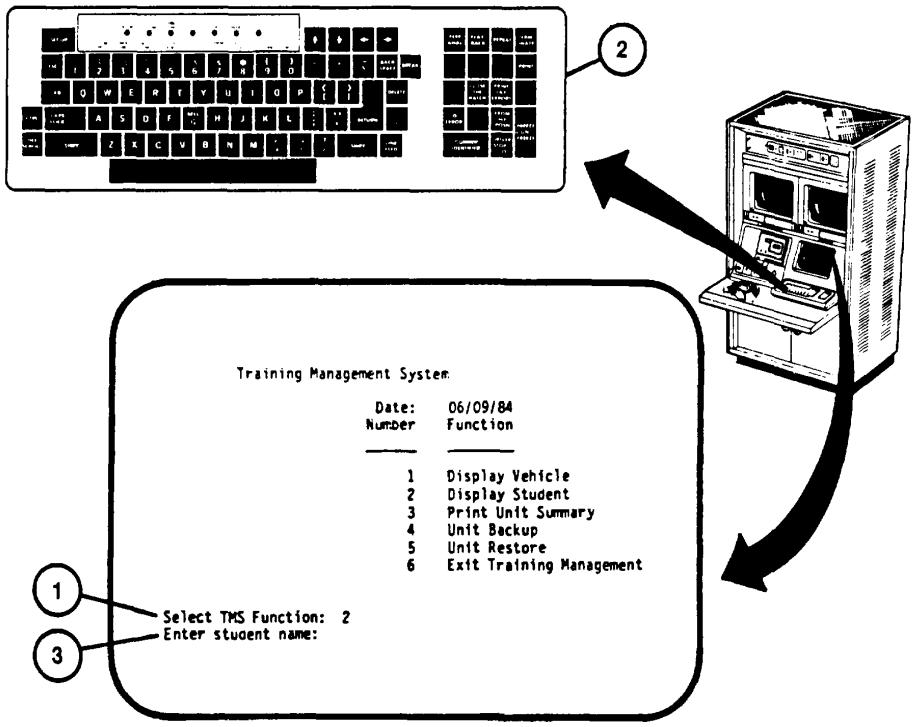
**NOTE**

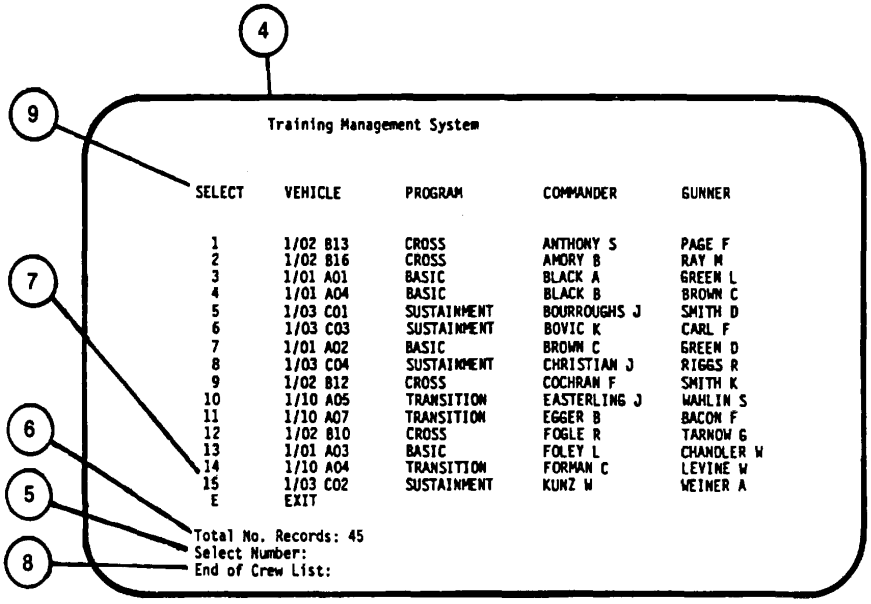
To return to Training Management System function menu (see 2-176) press "E" then RETURN on keyboard (2).

12. Using keyboard (2), enter the SELECT number (9) corresponding to the crew's records you desire to review.

13. Observe that the number selected appears correctly after "Select Number:" prompt (5).

## TRAINING MANAGEMENT CREW RECORDS BY VEHICLE PROCEDURE (Continued)



**TRAINING MANAGEMENT CREW RECORD BY VEHICLE SEARCH PROCEDURE (Continued)**

14. Press RETURN on keyboard (2) to call desired Crew Record display (10).

**NOTE**

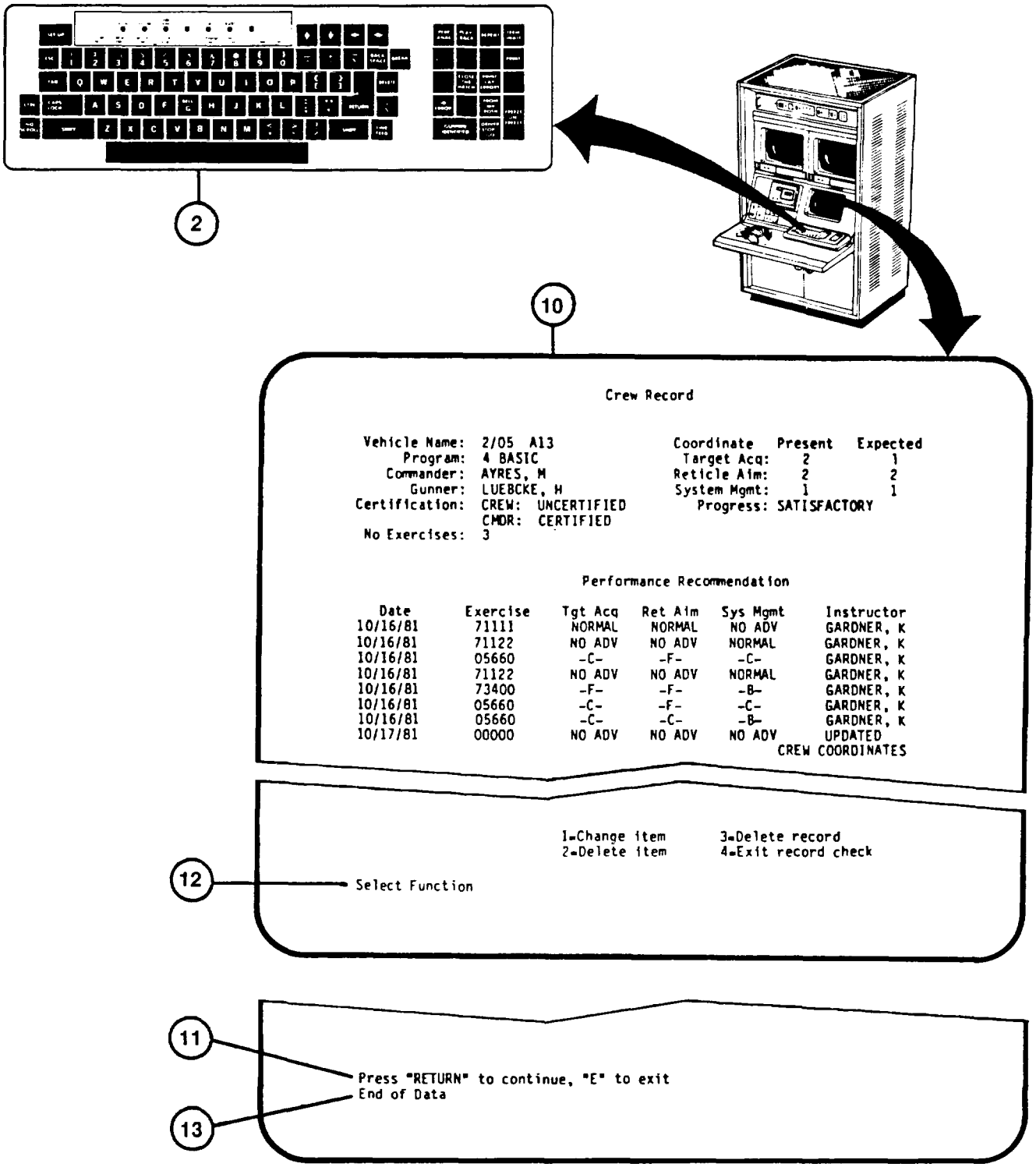
If record search was made by Instructor, “Press RETURN to continue, ‘E’ to exit” prompt (II1) will appear on display. If record search was entered by Manager, four functions for record modifications and “Select function:” prompt (12) will appear on display (10).

15. If more than 10 exercises are listed for crew selected, press RETURN on keyboard (2) o call next listing. When all listings have been selected, “End of data” prompt (13) will appear at bottom of display.

16. To exit Crew Record display and return to previous listing of crews, the Instructor presses “E” then RETURN key on keyboard (2). Manager selects number “4” and then presses RETURN on keyboard (2).

17. To return to Training Management System Function Menu (see 2-174) press “E” then RETURN on keyboard (2).

## TRAINING MANAGEMENT CREW RECORD BY VEHICLE SEARCH PROCEDURE (Continued)



## TRAINING MANAGEMENT CREW RECORD BY STUDENT SEARCH PROCEDURE

This procedure describes how to call up a crew's records by student name. The procedure also describes how to search the files to find a student record when two or more students have the same name.

1. Assure that Training Management System Call-Up Procedure (see 2-176) has been accomplished.

2. Observe that the "Select TMS function:" prompt (I) appears on Training Management System function menu display page.

3 Press Number 2 key on keyboard (2).

4. Observe that the number 2 appear correctly after "Select TMS function:" prompt (1).

5. Press RETURN key on keyboard (2).

6. Observe "Enter student name:" prompt (3) appears at the bottom of display.

**NOTE**

If the student's name is known, perform steps 7 through 9. If the Student's name is unknown, press the RETURN key on keyboard (2) and go to step 10.

7. Using keyboard (2), type in the student's last name and first initial.

8. Observe that student's name appears correctly after "Enter student name:" prompt (3).

9. Press RETURN key on keyboard (2).

**NOTE**

If student name was entered in step 7,the listing (4) described in step 10 will identify only those crews having a member with the same name entered; otherwise, a complete list of students will be provided.

10. Observe Training Management System student listing display page (4) appears with Select number:" prompt (5).

11. Review list of student's (by Commander name, then Gunner name). If "Total No. Records:" (6) shows a larger number than last SELECT number (7), call next list by pressing RETURN key on keyboard (2). When all recorded listings have been called, "End of Crew List" (8) will appear at the bottom of the display page.

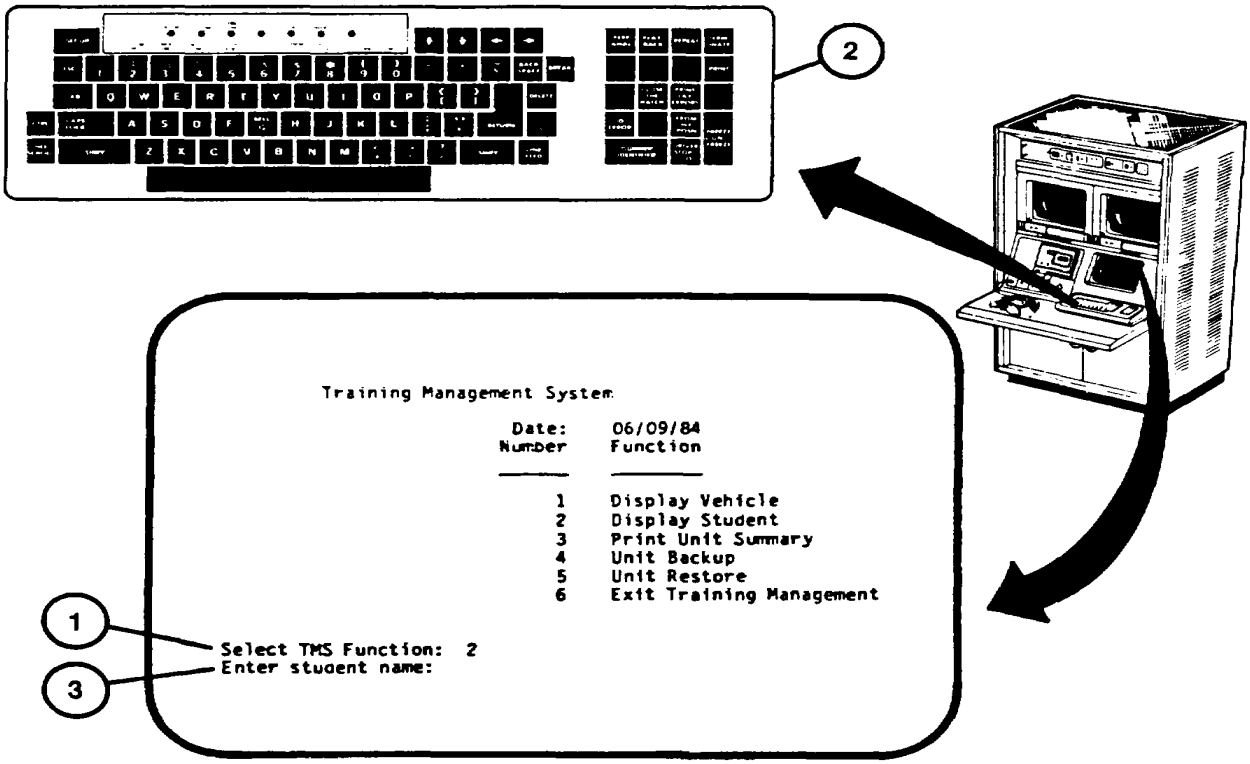
**NOTE**

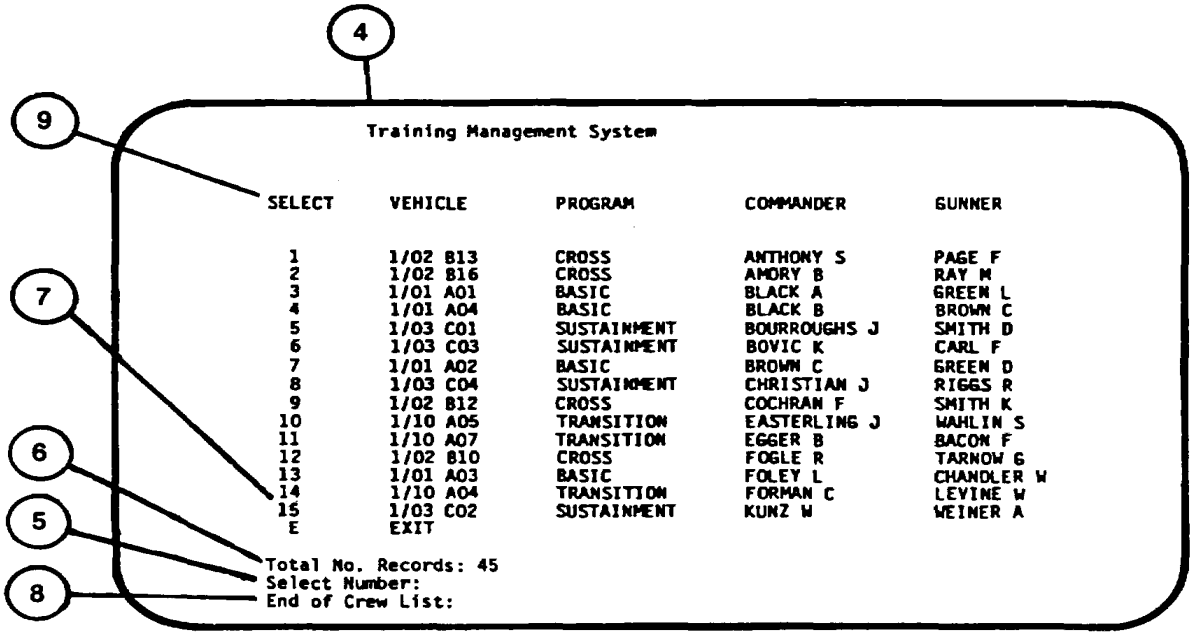
To return to Training Management System function menu (see 2-174) press "E" then RETURN on keyboard (2).

12. Using keyboard (2), enter SELECT number (9) corresponding to the crew's record you desire to review.

13. Observe that the number selected appears correctly after "Select number:" prompt (5).

## TRAINING MANAGEMENT CREW RECORD BY STUDENT SEARCH PROCEDURE (Continued)



**TRAINING MANAGEMENT CREW RECORD BY STUDENT SEARCH PROCEDURE (Continued)**

14. Press RETURN on keyboard (2) to call desired Crew Record display (10).

**NOTE**

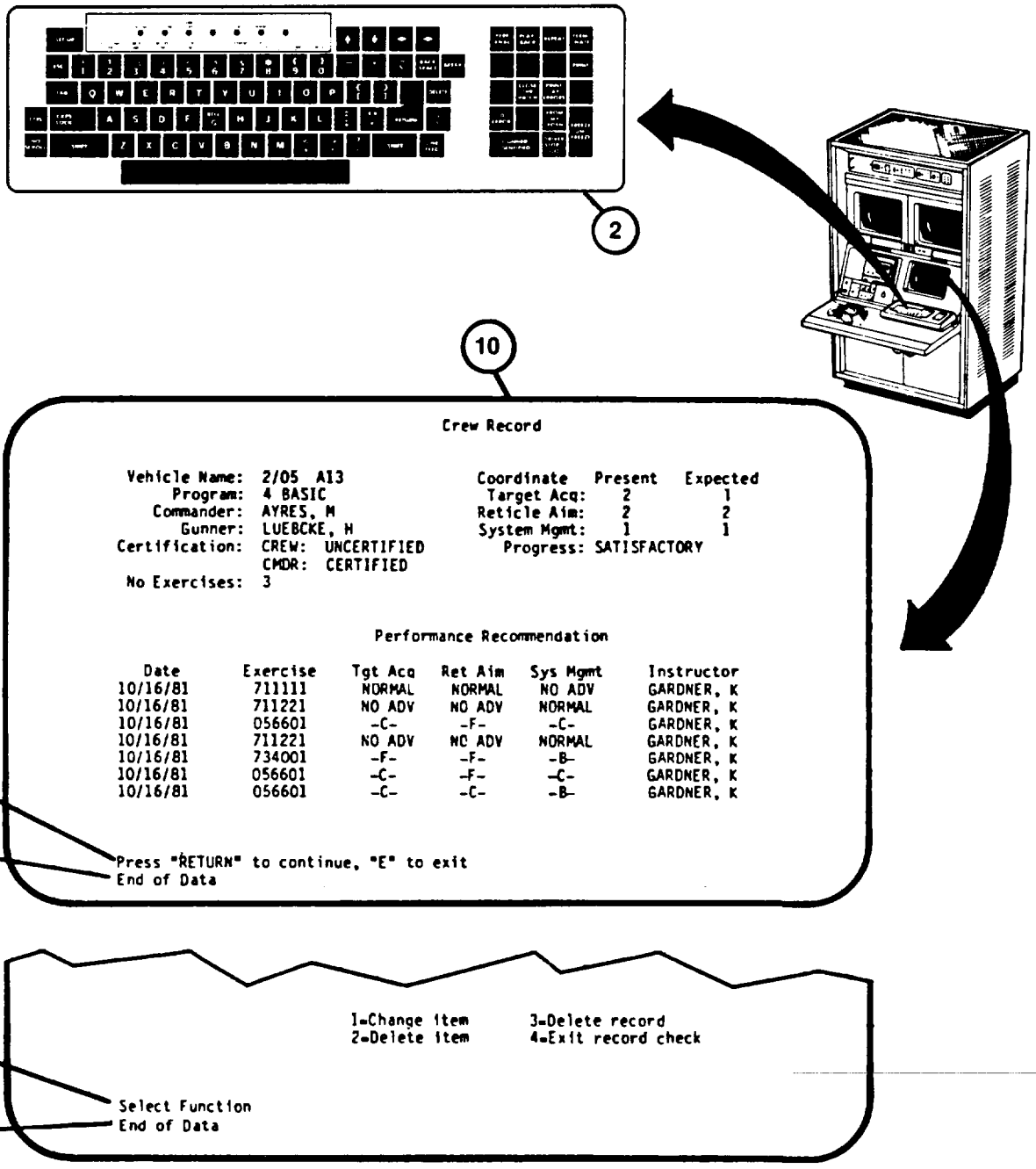
If record search was made by Instructor, "Press RETURN to continue, 'E' to exit" prompt (11) will appear on display. If record search was entered by MANAGER, four functions for record modifications and "Select function:" prompt (12) will appear on display (10).

15. If more than 10 exercises are listed for selection, press RETURN on keyboard (2) to call next listing. When all listings have been selected, "End of data" prompt (13) will appear at bottom of display.

16. To exit Crew Record display and return to previous listing of crews, the Instructor presses "E" then RETURN on keyboard (2).Manager selects number "4" and then presses RETURN on keyboard (2).

17. To return to Training Management System Function menu (see 2-176) press "E" then RETURN on keyboard (2).

## TRAINING MANAGEMENT CREW RECORD BY STUDENTS SEARCH PROCEDURE (Continued)



## TRAINING MANAGEMENT CREW RECORD CHANGE ITEM PROCEDURE

This Procedure describes how the Training Manager can change a crew's names, vehicle name, and cube coordinates.

**NOTE**

This procedure can be performed only after a Training Manager's password has been entered during log-on procedure performance (see 2-131).

1. Assure that a Training Manager's password has been entered during User Log-On Procedure (see 2-131).

2. Assure that Training Management System Call-up Procedure (see 2-176)has been accomplished.

3. Perform Training Management Crew Record by Vehicle or by Student Search Procedure (see 2-178 or 2-182) to display CREW RECORD.

4. Observe "Select function:" prompt (1) on Crew Record display page.

5 To change an item at the top of the Crew Record page, select I = Change item.

6. Press number I key on keyboard (2).

7. Observe that the number (1) appears correctly after "Select function: "prompt (1).

8. Press RETURN key on keyboard (2).

9. Observe "New vehicle name" prompt (3) replaces the previous prompt.

**NOTE**

To skip this change item, press RETURN key to call up next change prompt.

10. Using keyboard (2), enter new vehicle name.

11. Observe that new vehicle name appears correctly after prompt (3).

12. Press RETURN key on keyboard (2).

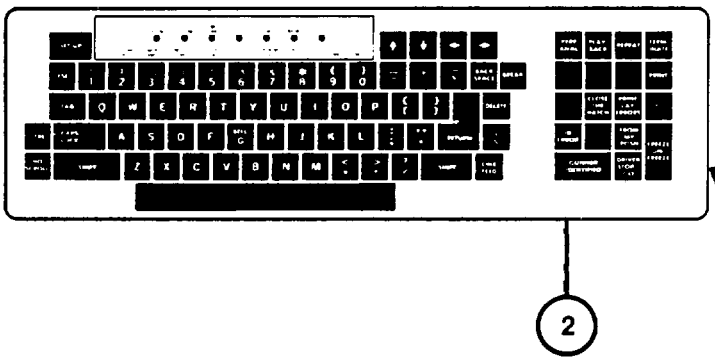
13. Repeat steps 9 through 12 for the following change prompts

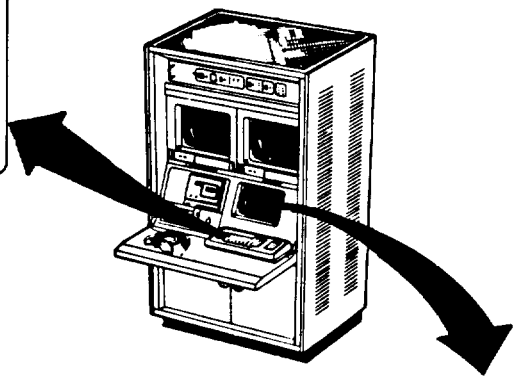
    a. New commander's Last name, initial.
    b. New gunner's Last name, initial.
    c. New TAE coordinates, full crew cube.
    d. New RAE coordinates, full crew cube.
    e. New SME coordinates, full crew cube.
    f. New TAE coordinates, commander's cube.
    g. New RAE coordinates, commander's cube.
    h. New SME coordinates, commander's cube.

14. Observe that changed data appears at top of display page after last change prompt has been completed.

15. To exit, press Number 4 key, then RETURN on keyboard (2) to return to previous display of Crew Record listings.

16. To return to Training Management System Function menu (see 2-176) press "E" then RETURN on keyboard (2).





2

Crew Record

| | | | | | |
|---|---|---|---|---|---|
| Vehicle Name: | 2/05 A13 | | Coordinate | Present | Expected |
| Program: | 4 BASIC | | Target Acq: | 2 | 1 |
| Commander: | AYRES, M | | Reticle Aim: | 2 | 2 |
| Gunner: | LUEBCKE, H | | System Mgmt: | 1 | 1 |
| Certification: | CREW: UNCERTIFIED | | Progress: SATISFACTORY | | |
| | CMDR: CERTIFIED | | | | |
| No Exercises: | 3 | | | | |

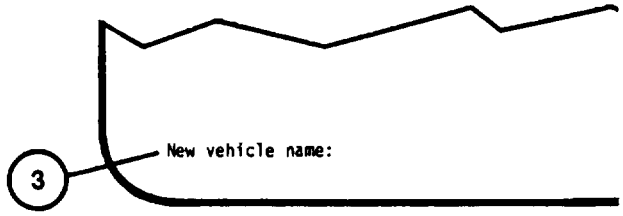
Performance Recommendation

| Date | Exercise | Tgt Acq | Ret Aim | Sys Mgmt | Instructor |
|---|---|---|---|---|---|
| 10/16/81 | 71111 | NORMAL | NORMAL | NO ADV | GARDNER, K |
| 10/16/81 | 71122 | NO ADV | NO ADV | NORMAL | GARDNER, K |
| 10/16/81 | 05660 | -C- | -F- | -C- | GARDNER, K |
| 10/16/81 | 71122 | NO ADV | NO ADV | NORMAL | GARDNER, K |
| 10/16/81 | 73400 | -F- | -F- | -B- | GARDNER, K |
| 10/16/81 | 05660 | -C- | -F- | -C- | GARDNER, K |
| 10/16/81 | 05660 | -C- | -C- | -B- | GARDNER, K |
| 10/17/81 | 00000 | NO ADV | NO ADV | NO ADV | UPDATED CREW COORDINATES |

1=Change item 3=Delete record
2=Delete item 4=Exit record check

1

Select Function



3

New vehicle name:

## TRAINING MANAGEMENT CREW RECORD DELETE ITEM PROCEDURE

This Procedure describes how the Training Manager can delete lines from a crew's records.

**NOTE**

This procedure can be performed only after a Training Manager's password has been entered during logon procedure performance (see 2-131).

1. Assure that a Training Manager's password has been entered during User Log-On Procedure (see 2-131).

2. Assure that Training Management System Call-up Procedure (see 2-174) has been accomplished.

3. Perform Training Management Crew Record By Vehicle or By Student Search Procedure (see 2-178 or 2-182) to display Crew Record.

4. Observe "Select function:" prompt (1) on Crew Record display page.

5. To delete one or more lines of the Crew Record, select 2 = Delete item by pressing number 2 key on keyboard (2).

6. Observe that the number 2 appears correctly after "Select function" prompt (1).

7. Press RETURN key on keyboard (2).

8. Observe that first line of records is repeated at bottom of display with "Delete this line [Y/N]:" prompt 3).

9. If line is not to be deleted, press "N" key, then RETURN on keyboard and observe next line of records replaces previous line at bottom of display.

10. If line is to be deleted, press "Y" key, then RETURN on keyboard.

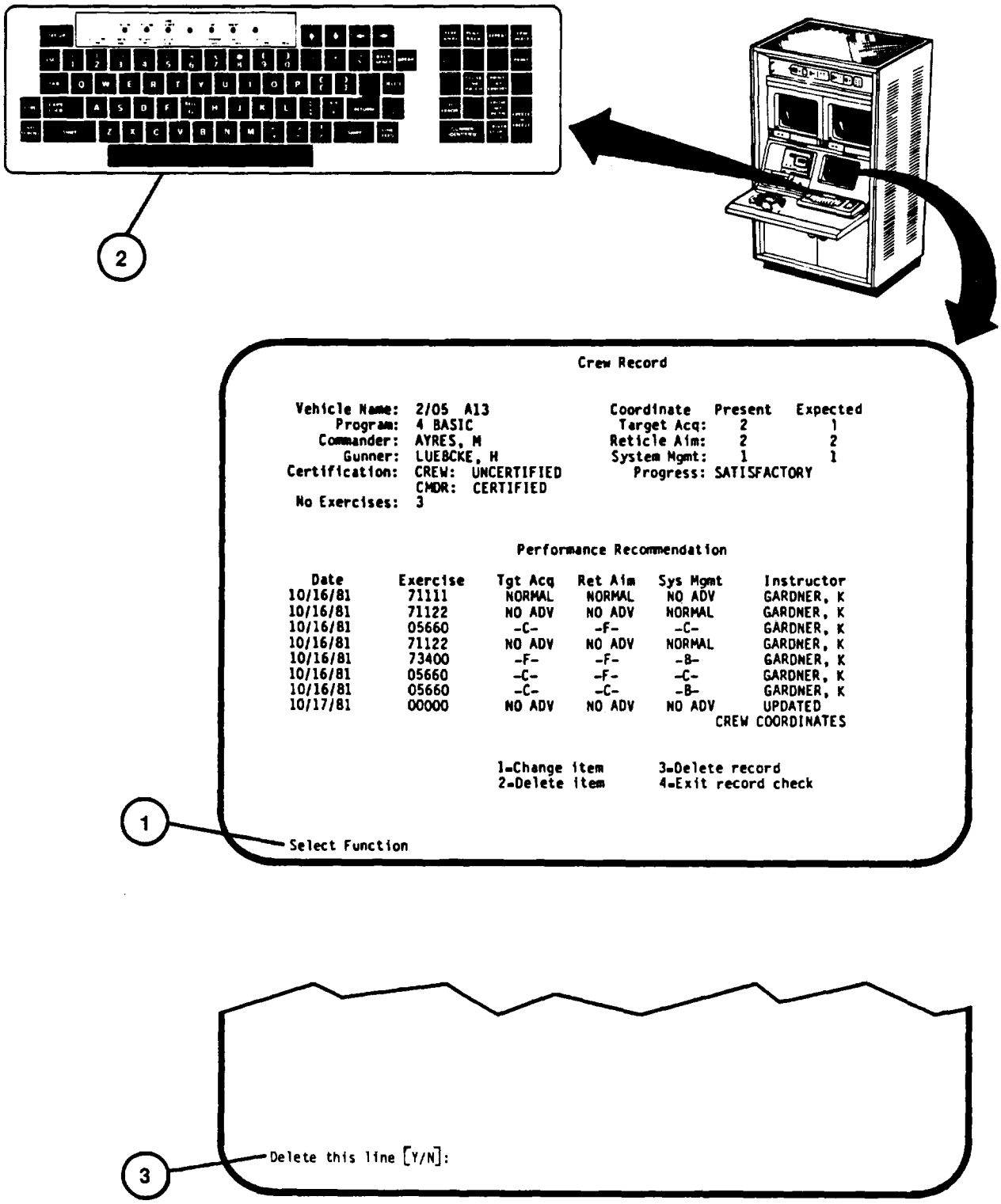
11. Observe that line is deleted and next line is repeated at bottom of display with prompt (3).

12. Repeat steps 9 through 12 until all lines have been accessed and "Select function:" prompt (1) appears at bottom of display.

13. To exit, press number 4 key, then RETURN on keyboard (2) to return to previous display of Crew Record listings.

14. To return to Training Management System function menu (see 2-174) press "E" then RETURN on keyboard (2).

## TRAINING MANAGEMENT CREW RECORD DELETE ITEM PROCEDURE (Continued)



## TRAINING MANAGEMENT CREW RECORD DELTE RECORD PROCEDURE

This procedure describes how the Training Manager can delete crew's entire records.

**NOTE**

This procedure can be performed only after a Training Manager's password has been entered during log-on procedure performance (see 2-131).

1. Assure that a Training Manager's password has been entered during User Log-on Procedure (see 2-131).

2. Assure that Training Management System Call-up Procedure (see 2-176) has been accomplished.

3. Perform Training Management Crew Record By Vehicle or By Student Search Procedures (see 2-178 or 2-182) to display Crew Record.

4. Observe "Select function:" prompt (1) on Crew Record display page.

5. If an entire crew's records are to be deleted, select 3 = Delete record.

6. Press number 3 key on keyboard (2).

7. Observe that the number 3 appears correctly after "Select function:" prompt (1)
.

8. Press RETURN key on keyboard (2).

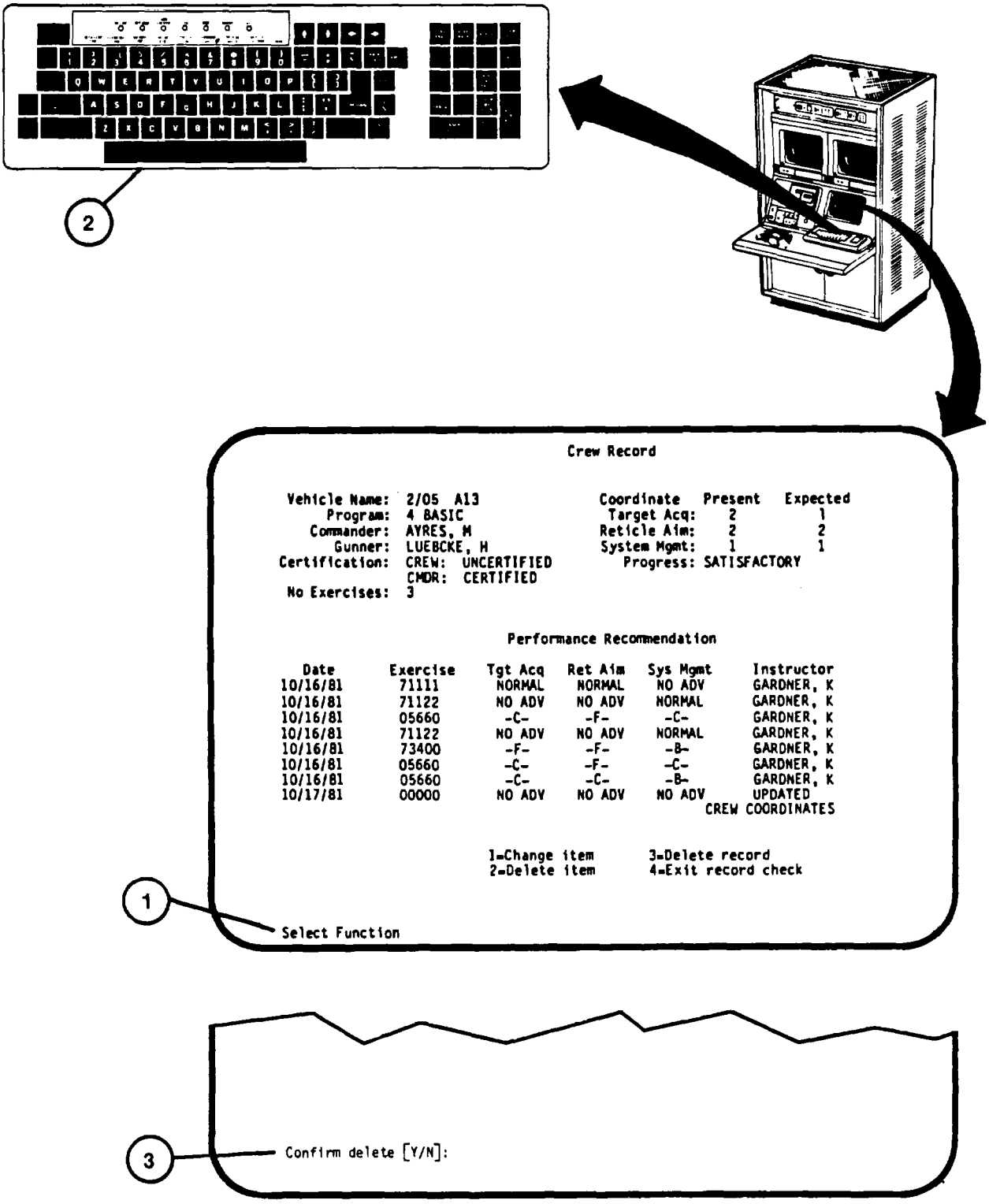
9. Observe "Confirm delete [Y/N:" prompt (3) at bottom of display.

10. If entire record for the crew is to be deleted, press "Y" key then RETURN on keyboard (2).

11. Observe previous listing of crew's records showing record deleted.

12. To return to Training Management System function menu (see 2-176), press "E" then RETURN on keyboard (2).

## TRAINING MANAGEMENT CREW RECORD DELETE RECORD PROCEDURE (Continued)



## TRAINING MANAGEMENT UNIT SUMMARY PRINTOUT

This procedure describes how to obtain a Unit Summary printout. The Unit Summary provides a summary of an entire Unit's performance on the U-COFT.

1. Assure that Training Management Call-Up Procedure has been performed.

2. Observe "Select TMS function:" prompt (1) appears on the Training Management System function menu display page.

3. Press Number 3 key on keyboard (2).

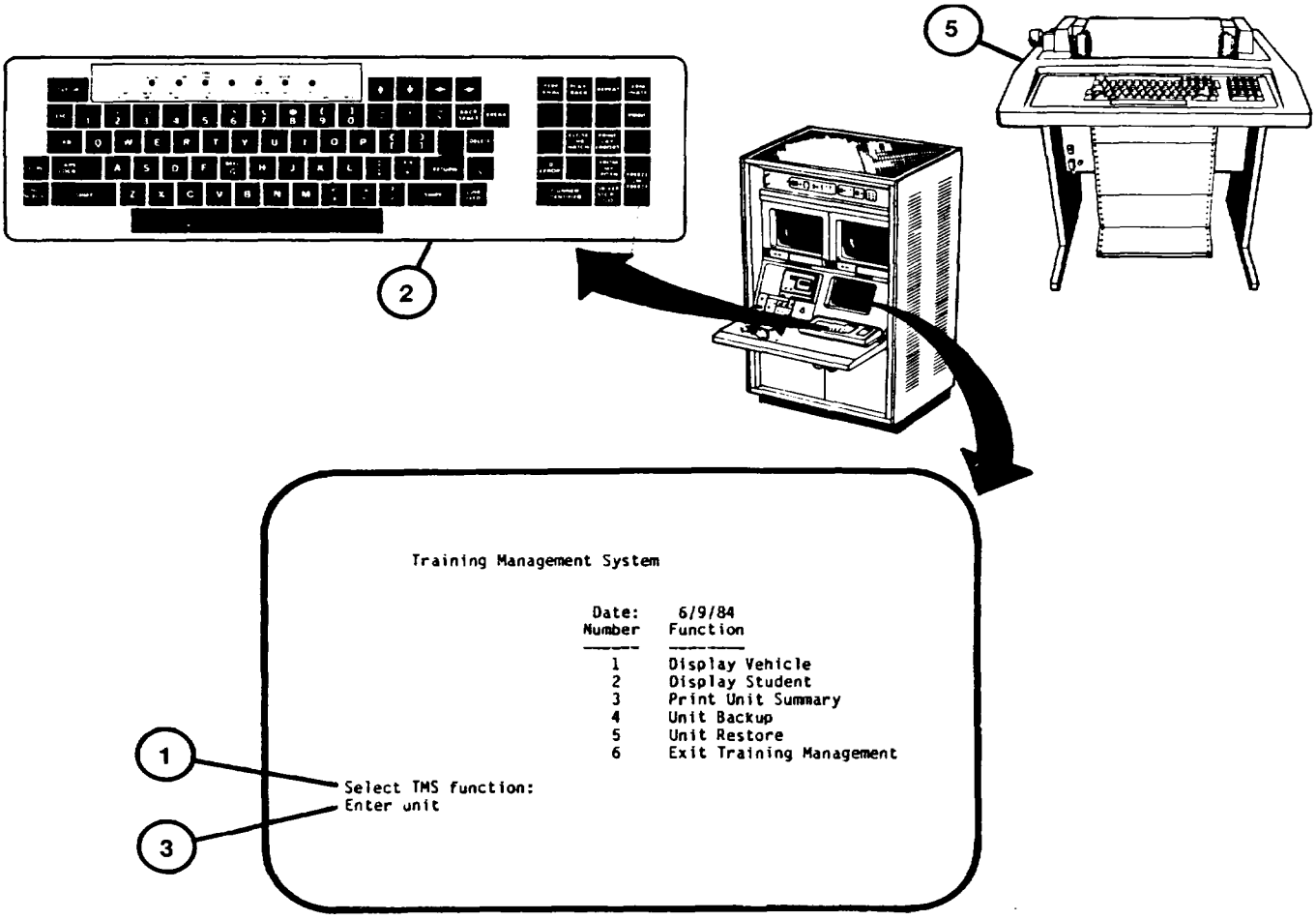
4. Observe that number 3 appears correctly after prompt (1).

5. Press RETURN key on keyboard (2) and observe "Enter unit:" prompt (3) appears at bottom of display.

6. Enter unit number (Battalion and Regimental designation) on keyboard (2).

7. Press RETURN on keyboard (2) and observe printout (4) on Terminal.

8. To exit Training Management System and return to Mode Select display page (see 2-131, step 11) press number 6 then RETURN on keyboard (2).



## TRAINING MANAGEMENT UNIT SUMMARY PRINTOUT (Continued)

U-COFT TRAINING UNIT SUMMARY

09-JUN-84

UNIT: 1/43 A - - No. of crews: 7

| | | | | | |
|---|---|---|---|---|---|
| 1/43 A10 | Commander: | BROWN A | | Program: | SUSTAINMENT |
| | Gunner: | BLACK B | Total Exercises: | | 52 |
| | Certification: | CREW: UNCERTIFIED | Last Exercise: | | 52111 |
| | | CMDR: UNCERTIFIED | | | |
| | Progress: | SATISFACTORY | | | |
| | | Target Acq. | Reticle Aim | System Mgmt | |
| | Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE | |
| | Coordinate: | 1 | 1 | 2 | |
| 1/43 A11 | Commander: | GREEN C | | Program: | TRANSITION |
| | Gunner: | BROWN D | Total Exercises: | | 45 |
| | Certification: | CREW: UNCERTIFIED | Last Exercise: | | 52111 |
| | | CMDR: UNCERTIFIED | | | |
| | Progress: | SATISFACTORY | | | |
| | | Target Acq. | Reticle Aim | System Mgmt | |
| | Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE | |
| | Coordinate: | 1 | 1 | 2 | |
| 1/43 A12 | Commander: | BLACK E | | Program: | SUSTAINMENT |
| | Gunner: | GRAY F | Total Exercises: | | 41 |
| | Certification: | CREW: UNCERTIFIED | Last Exercise: | | 52111 |
| | | CMDR: UNCERTIFIED | | | |
| | Progress: | SATISFACTORY | | | |
| | | Target Acq. | Reticle Aim | System Mgmt | |
| | Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE | |
| | Coordinate: | 1 | 1 | 2 | |
| 1/43 A13 | Commander: | GREEN G | | Program: | SUSTAINMENT |
| | Gunner: | ABLE H | Total Exercises: | | 38 |
| | Certification: | CREW: UNCERTIFIED | Last Exercise: | | 52111 |
| | | CMDR: UNCERTIFIED | | | |
| | Progress: | SATISFACTORY | | | |
| | | Target Acq. | Reticle Aim | System Mgmt | |
| | Recommendation: | NO ADVANCE | NO ADVANCE | NO ADVANCE | |
| | Coordinate: | 1 | 1 | 2 | |

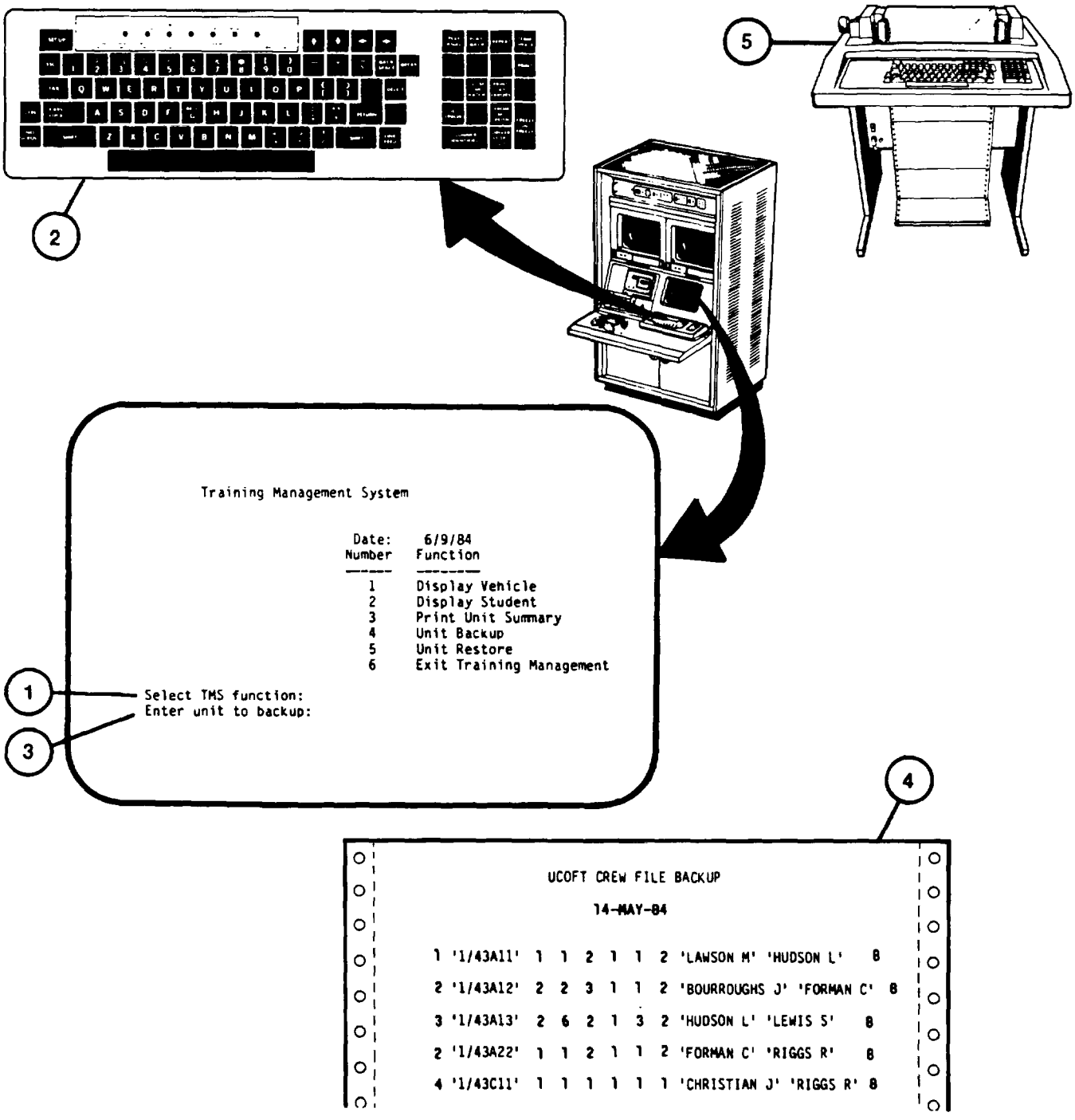
4

## TRAINING MANAGEMENT UNIT BACK-UP RECORD PRINTOUT

This procedure describes how to obtain a Terminal Printer printout of full crew and commander training coordinates for System Management, Reticle Aim and Target Acquisition. The printout provides a hard-copy backup of record data in the event of Disk Drive record losses. The printout can be obtained for entire units, battalions, companies or a single vehicle.

1. Assure that Training Management Call-Up Procedure has been performed (see 2-176).
2. Observe “Select TMS function:” prompt (1) appears on the Training Management System display page.
3. Press Number 4 key on keyboard (2).
4. Observe that number 4 appear after prompt (1).
5. Press RETURN key on keyboard (2) and observe “Enter unit to backup” prompt (3) appears on the display.
6. Enter unit number (vehicle description) on keyboard (2).
7. Press RETURN on keyboard (2) and observe printout (4) on Terminal Printer (5).
8. Observe display returns to Training Management System function menu display page (see 2-176).

## TRAINING MANAGEMENT UNIT BACK-UP RECORD PRINTOUT (Continued)



## TRAINING MANAGEMENT UNIT RESTORE PROCEDURE

This procedure describes how to re-enter crew and commander coordinates in the computer record system in the event of computer record losses. The records are obtained from data retained on Unit Backup record printouts (see 2-194).

**NOTE**

This procedure can be performed only after a Training Manager's Password has been entered during Log-on (see 2-131).

1. Assure that a Training Manger's password has been entered during User Log-On Procedure (see 2-131).

2. Assure that Training Management System Call-Up Procedure (see 2-176) has been performed.

3. Observe "Select TMS function:" prompt (1) appears on the Training Management System function menu display page.

4 Press Number 5 key on keyboard (2).

5. Observe that number 5 appears after prompt (1).

6. Press RETURN key on keyboard (2) and observe "Enter backup record or E to exit:" prompt (3) appears on Training Management Restore display (4).

**NOTE**

Data entered on keyboard during step 7. must be exactly as it appears on Unit Backup printouts.

7. Enter data from first line of backup record printout on keyboard (2) and observe that he data appearscorrectly below prompt (3).

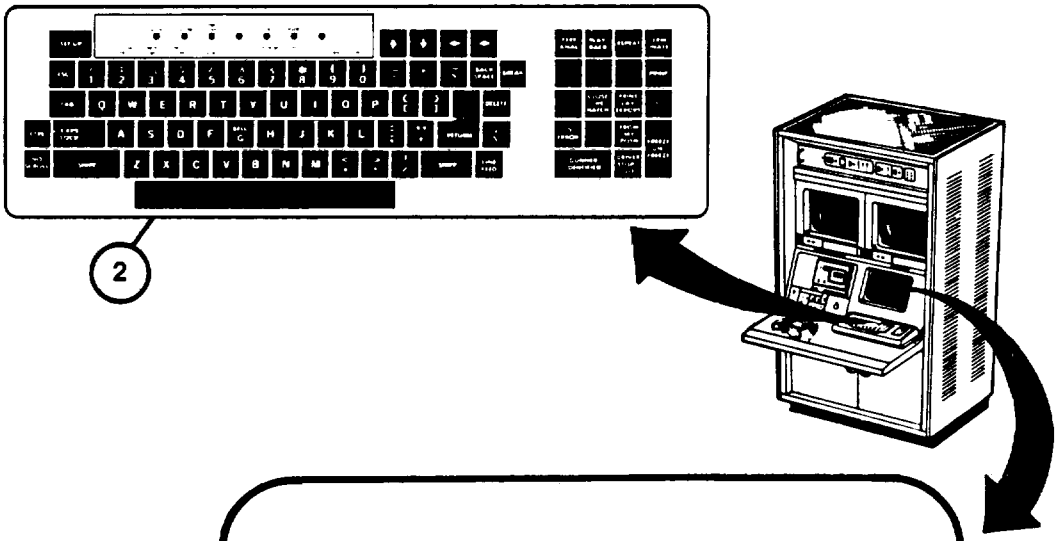
8. Press RETURN key on keyboard (2) and observe that record data appears as a line on Training Management Restore display (4).

9. Repeat steps 7. and 8. for each crew coordinate records to be entered from the 'Unit Backup record printouts.

10. When all Unit Backup records have been entered properly, press E, RETURN on keyboard (2).

11. Observe display returns to Training Management System function menu (see 2-176).

## TRAINING MANAGEMENT UNIT RESTORE PROCEDURE (Continued)




```
Training Management System

                          Date:    6/9/84
                        Number   Function
                        ------   --------
                           1     Display Venicle
                           2     Display Student
                           3     Print Unit Summary
                           4     Unit Backup
                           5     Unit Restore
                           6     Exit Training Management

Select TMS function: 5
Enter backup record or E to exit:
```

1

```
                    TRAINING MANAGEMENT RESTORE

REC #     VEHICLE       PROGRAM       COMMANDER       GUNNER

 1        1/01 A10       BASIC        MASTERS E       LANCE D
 2        1/01 B11       BASIC        ABLE D          BAKER A
 3        1/01 B14       BASIC        CHANCE B        DARBY C
 4        1/01 C11       BASIC        ELLIS A         FOSTER L

Total No. Records Restored:  4

Enter backup record or E to exit:
```

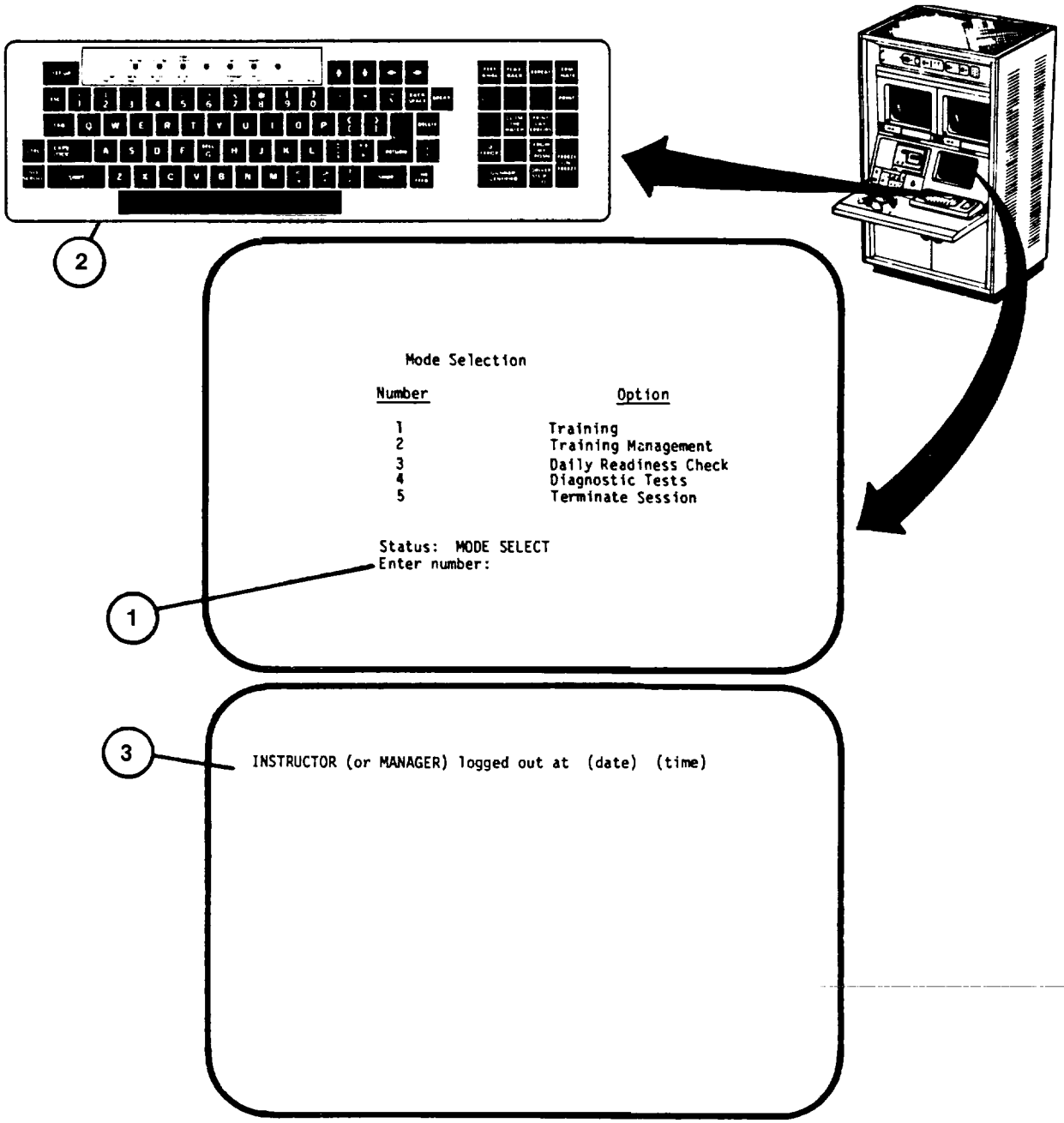
3

4

## USER LOG OFF PROCEDURE

This procedure describes how a user logs off after completing operation of the U-COFT.

1. Observe “Enter Number:” prompt (1) appears on MODE SELECT display page.
2. Press Number 5 key on keyboard (2).
3. Observe that the number 5 appear correctly after “Enter number:” prompt (1).
4. Press RETURN key on keyboard (2).
5. Observe that the log-off display page (3) Appears on the display.



## ELECTRONIC EQUIPMENT POWER-DOWN PROCEDURE

This procedure describes the steps necessary for turning off the U-COFT electronic equipment. The procedure must be completed prior to performing an overnight or weekend shutdown (see 2-205) or a system (long-term) shutdown (see 2-207).

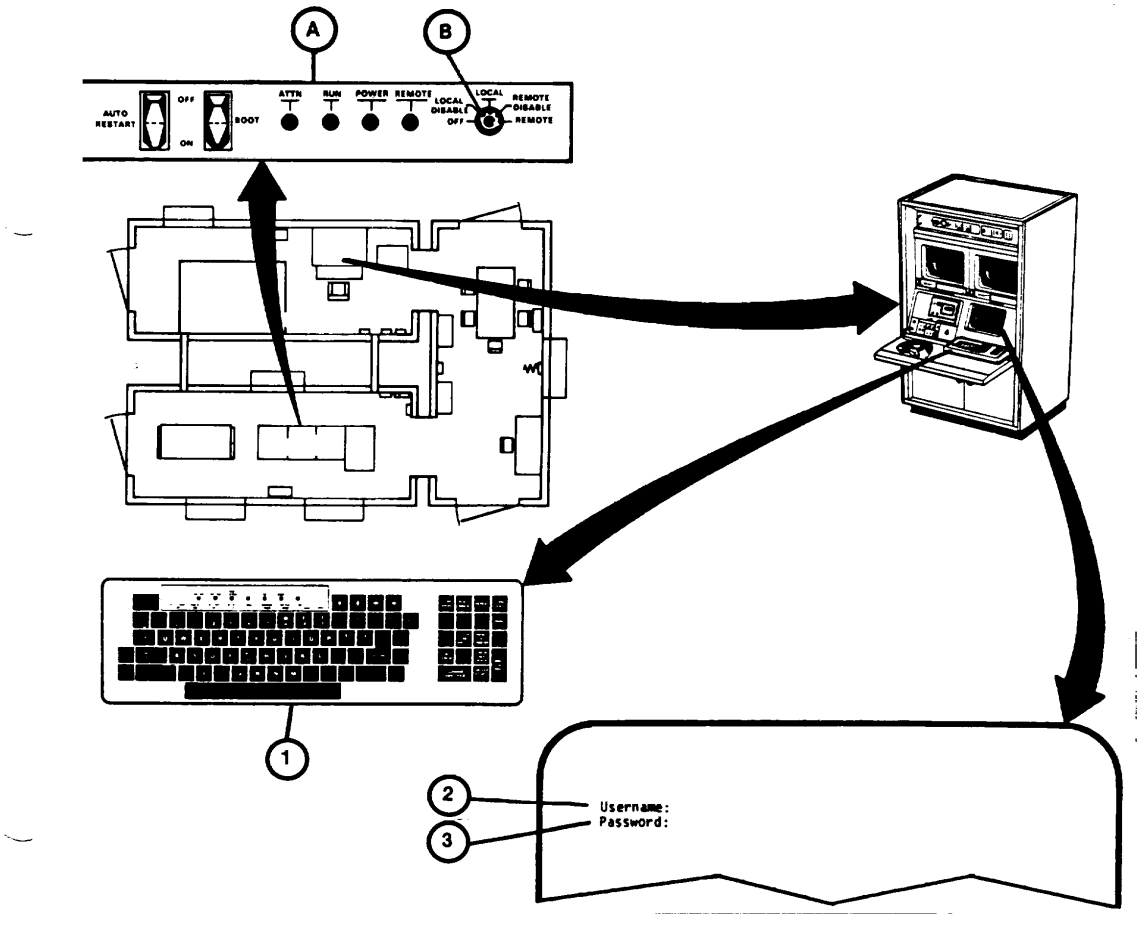
1. Make sure User Log-Off Procedure has been performed (see 2-198).

1.1 In Computer Shelter, at GPC Control Panel (A), set keyswitch (B) to LOCAL position.

2. In Trainer Shelter, at IOS Display Terminal keyboard (1) press RETURN key and observe "Username" prompt (2) appears on the display.

3. Using keyboard (1), type SHUTDOWN and observe that it appears on the display after "Username" prompt (2).

4. Press RETURN key on keyboard and observe "Password" prompt (3) appears on the display.



**NOTE**

The password entered in step 5 will not appear on the display.

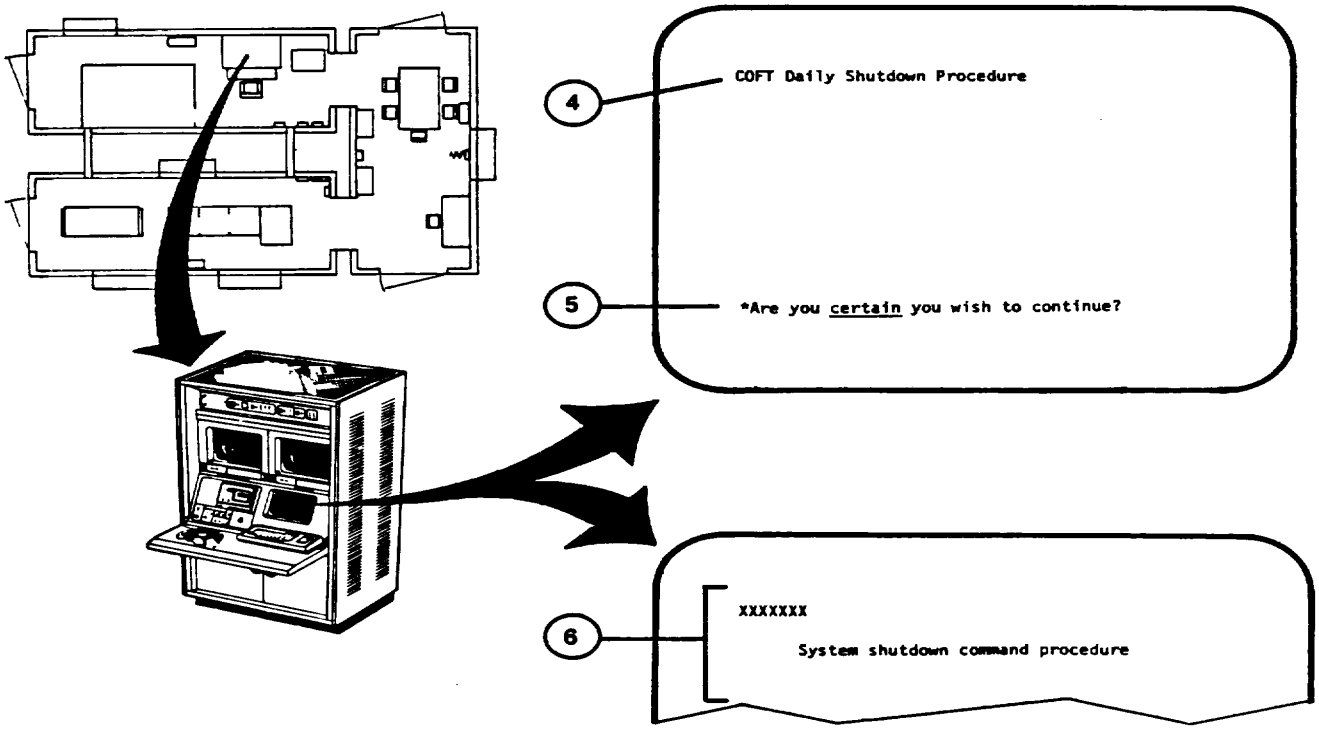
5. Type in your password, press the RETURN key and observe message (4) on the display ending with "*Are you certain you wish to continue?" prompt (5).

**NOTE**

If you decide not to power-down, press "N" then RETURN key on keyboard. This logs you out and no further action is required.

6. Press "Y" key on keyboard and observe that Y appears after prompt (5).

7. Press RETURN key and observe message (6) on display.



**ELECTRONIC EQUIPMENT POWER-DOWN PROCEDURE (Continued)**

8. At Terminal Printer (7) observe printed message (8).

9. (deleted)

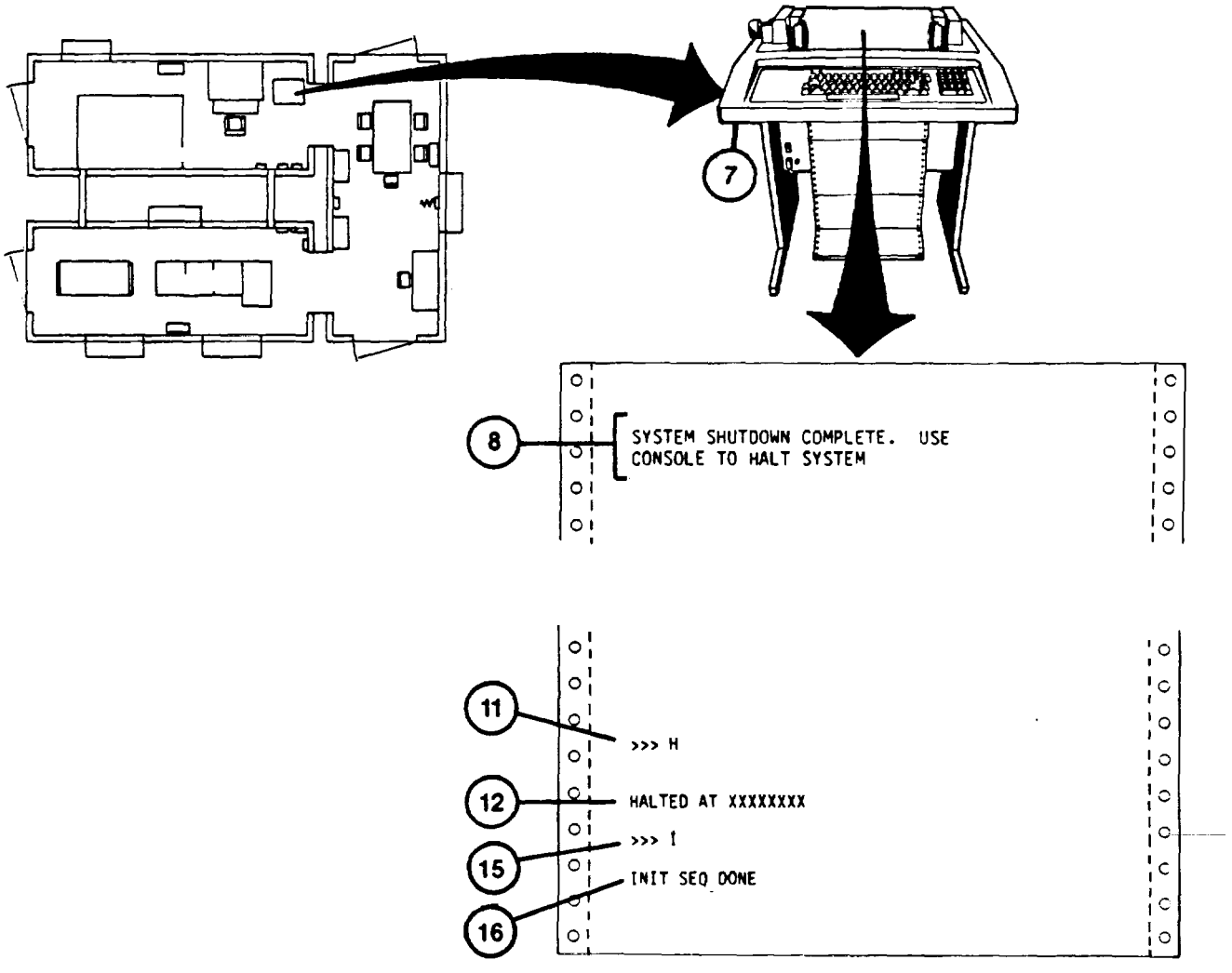
10. At Terminal Printer (7) while pressing and holding CTRL key, press "P" key; then release both keys and observe prompt "> > > " (I 1) is printed.

11. Press "H" key, then RETURN key and observe printed message (12).

12. (deleted)

13. Press "I" key and observe that I is printed (15).

14. Press RETURN key and observe printed message (16).



**ELECTRONIC EQUIPMENT POWER.DOWN PROCEDURE (Continued)**

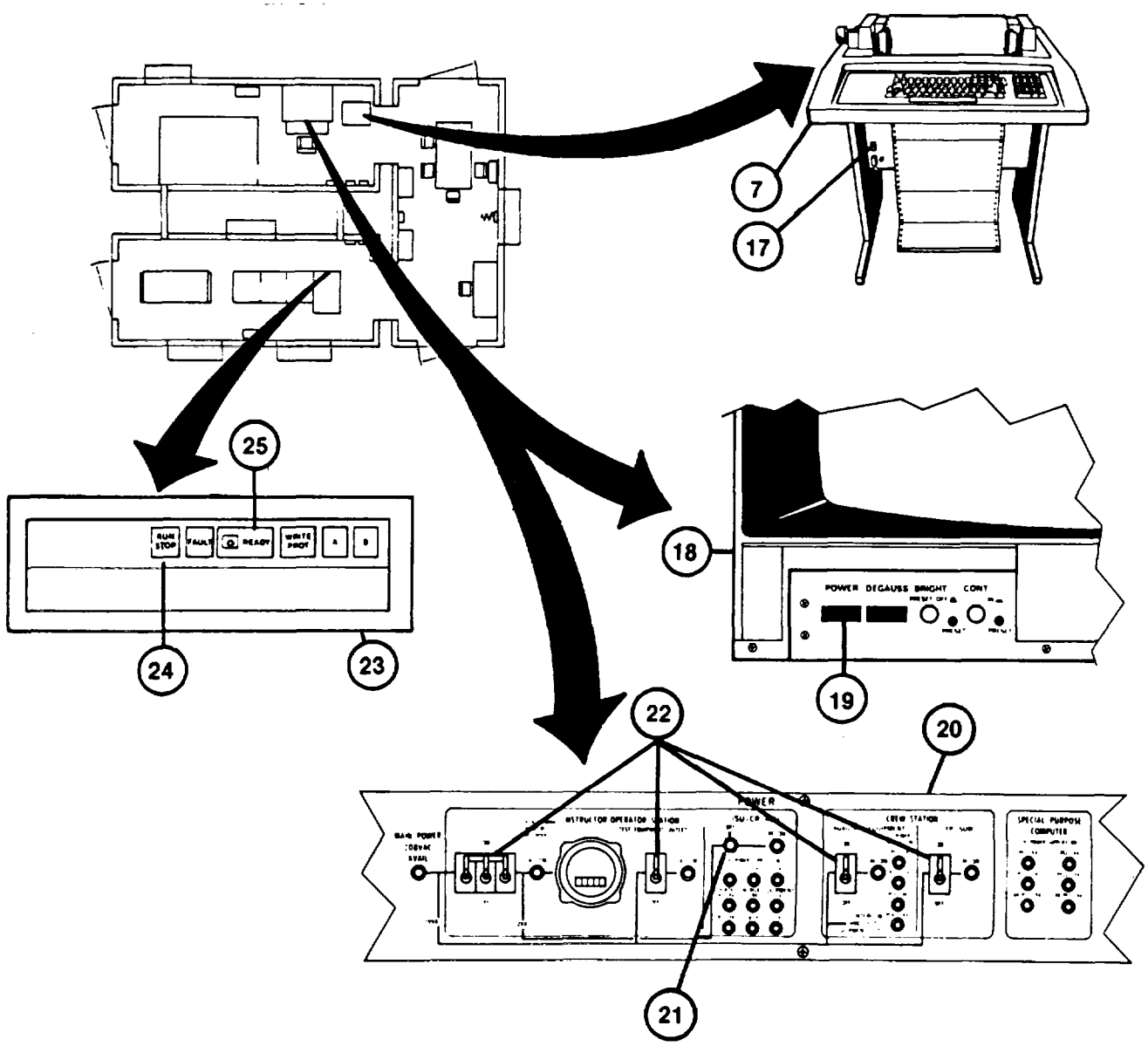
15. In the Trainer Shelter at Terminal Printer (7) set ON/OFF rocker switch (17) to OFF.

16. At IOS Commander and Gunner Color Monitors (18), press and release the POWER pushbutton switches (19).

17. At IOS Power Panel (20) turn key switches (21) to OFF and set circuit breakers (22) to OFF.

18. In Computer Shelter, at Disk Drive Control Panel (23) press and release RUN/STOP pushbutton indicator (24) and observe READY indicator lamp (25) goes off.

19. Observe the RUN/STOP pushbutton Indicator lamp (24) goes out after about 30 seconds.



**ELECTRONIC EQUIPMENT POWER-DOWN PROCEDURE (Continued)**

20. At the GPC Control Panel (A) turn keyswitch (B) to OFF position (fully counterclockwise) and observe that the panel lights go off.

21. Make sure AUTO RESTART rocker switch (28) is set to OFF position.

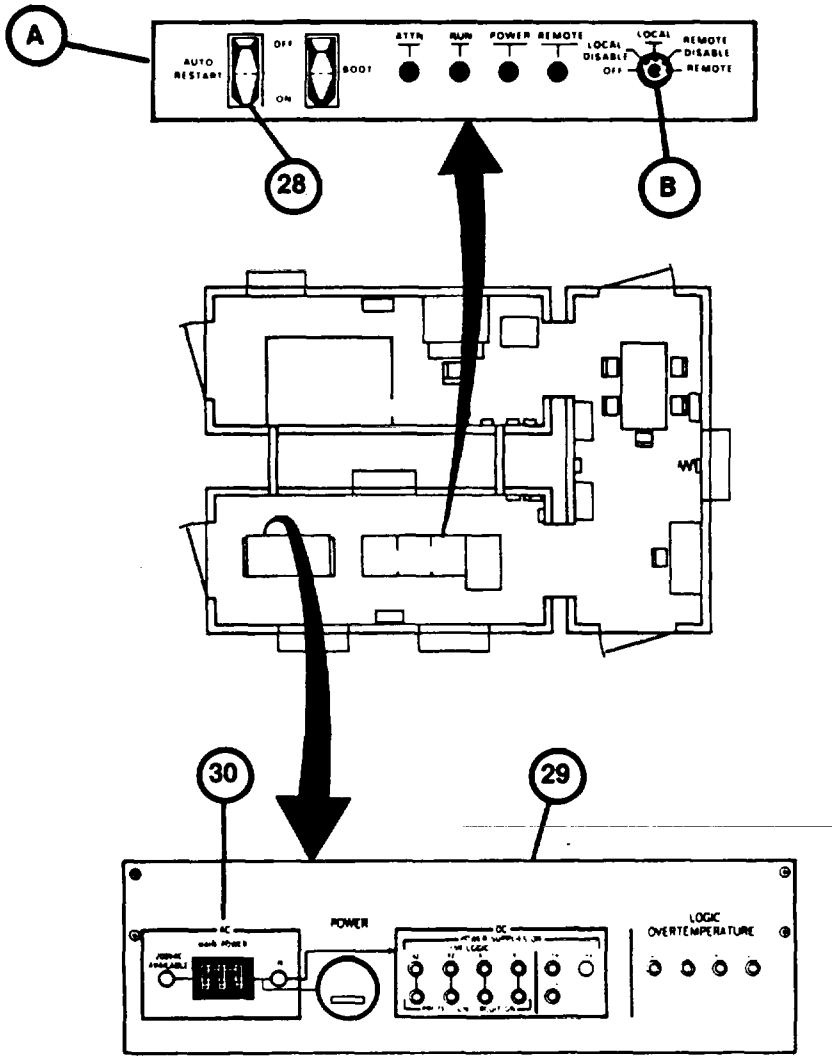
22. At SPC Power Management Panel (29) set AC MAIN POWER circuit breaker (30) to OFF.

**NOTE**

If RMS has been powered-up, perform RMS Power-Down Procedure (see 2-204).

To place system in overnight or weekend shutdown, see 2-205. For complete system (long-term) power-down, see 2-207.

23. thru 26. (deleted)



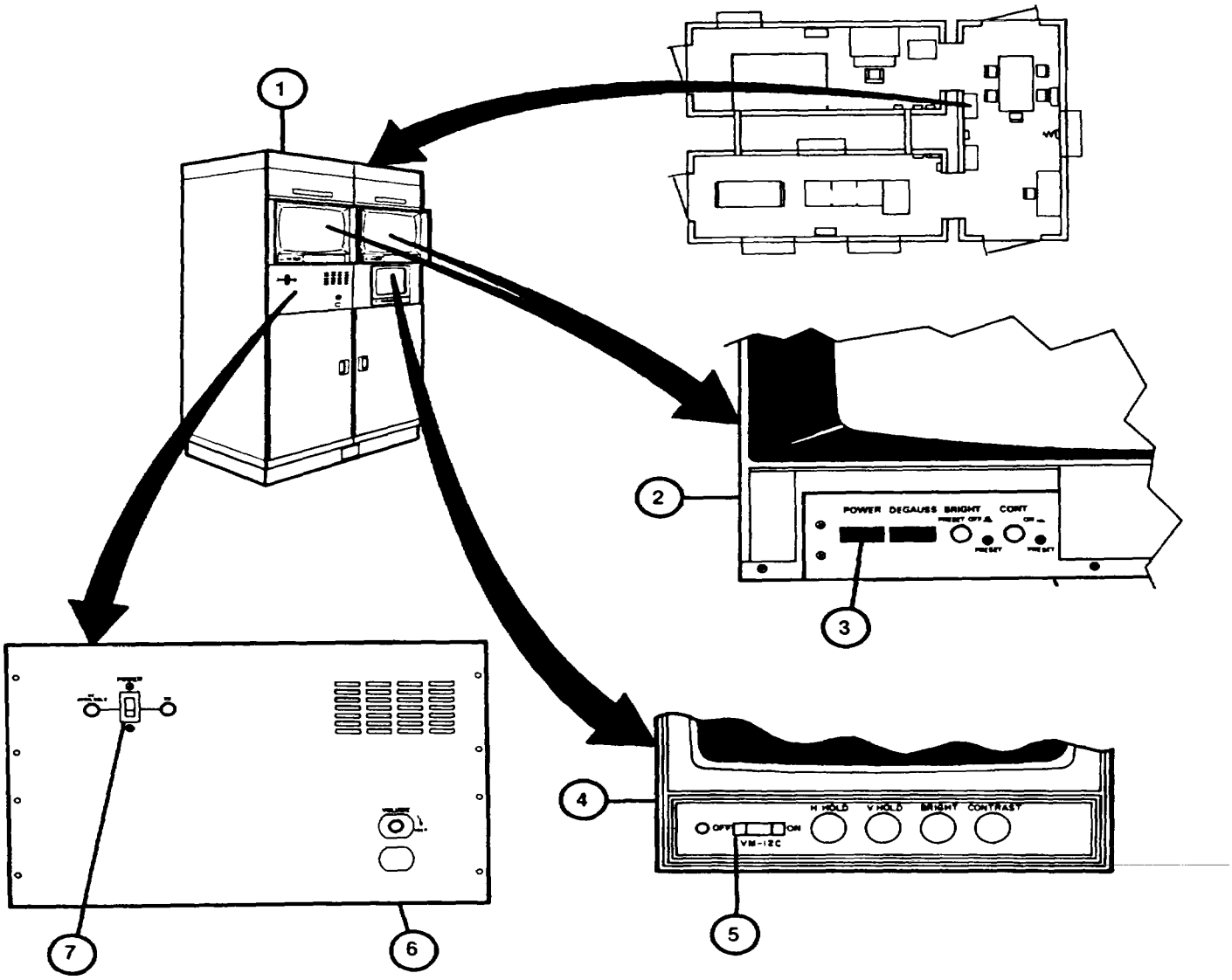
## REMOTE MONITOR STATION POWER-DOWN PROCEDURE

This procedure describes how to power-down the Remote Monitor Station (RMS).

1. In the Integration Shelter at the RMS cabinet (1) locate the COMMANDER'S and GUNNER'S 19-inch Monitors (2) and press and release the POWER pushbutton switches (3).

2. At RMS 12-inch monitor (4) set ON-OFF rocker switch (5) to OFF.

3. At RMS Audio Amp/Power Panel (6) set POWER circuit breaker (7) to OFF.



## OVERNIGHT AND WEEKEND SHUTDOWN PROCEDURE

This procedure describes shutdown of the Shelter utility power to maintain emergency battery charging and limited air conditioning for overnight and weekend periods.

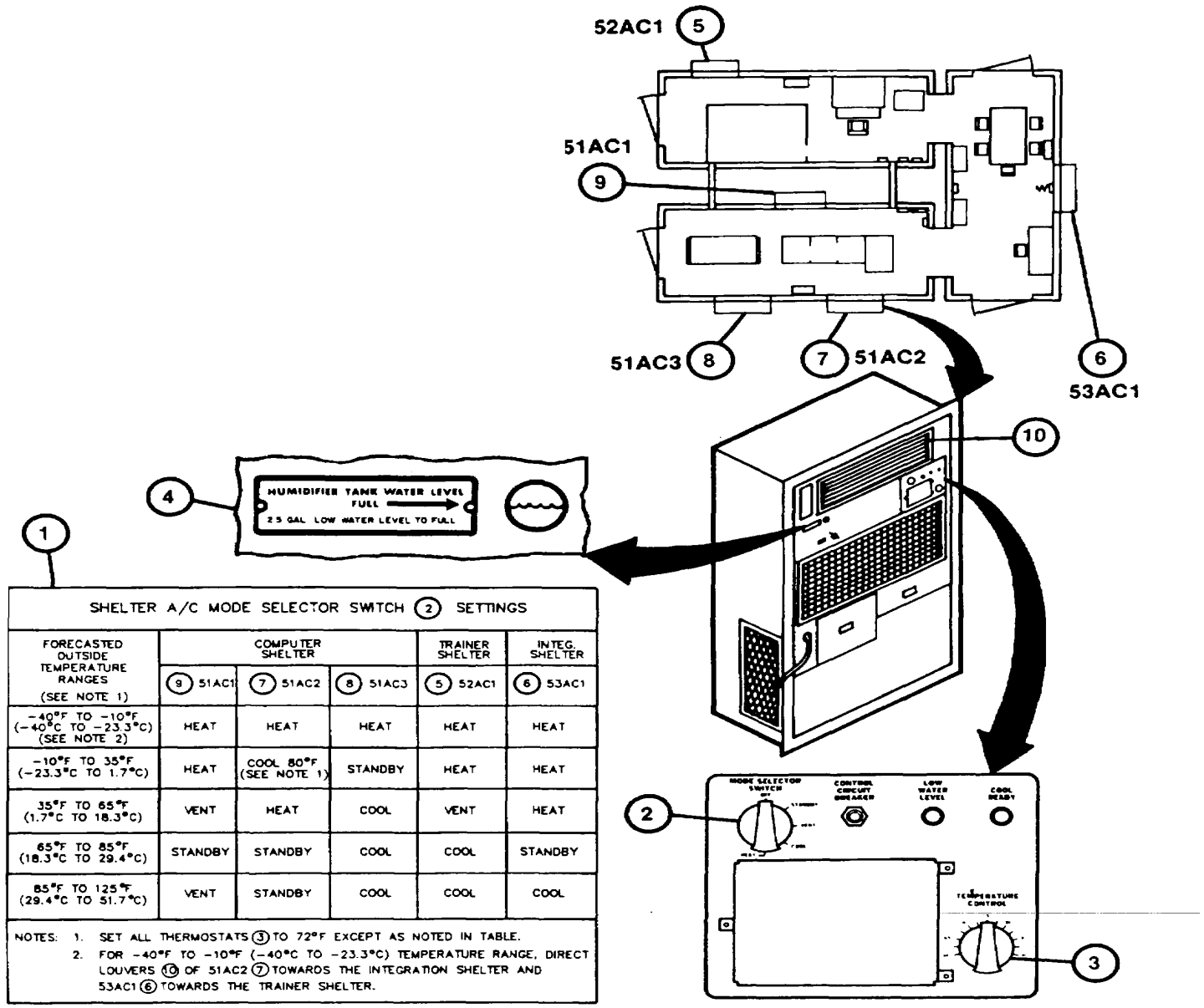
1. Make sure Electronic Equipment Power-Down Procedure has been performed (see 2-199).

**CAUTION**

Never turn A/C MODE SELECTOR (2) to OFF unless there is a malfunction. Internal A/C protection heaters will be off when MODE SELECTOR (2) is off.

2. Obtain forecast of temperature ranges for the shutdown period. Review Chart (I) and set air conditioner controls (2)and (3) for the average forecasted temperature range.

3. Check HUMIDIFIER TANK WATER LEVEL windows (4) at each air conditioner to make sure they are filled.




SHELTER A/C MODE SELECTOR SWITCH (2) SETTINGS

| FORECASTED OUTSIDE TEMPERATURE RANGES (SEE NOTE 1) | COMPUTER SHELTER | | | TRAINER SHELTER | INTEG. SHELTER |
|---|---|---|---|---|---|
| | (9) 51AC1 | (7) 51AC2 | (8) 51AC3 | (5) 52AC1 | (6) 53AC1 |
| -40°F TO -10°F (-40°C TO -23.3°C) (SEE NOTE 2) | HEAT | HEAT | HEAT | HEAT | HEAT |
| -10°F TO 35°F (-23.3°C TO 1.7°C) | HEAT | COOL 80°F (SEE NOTE 1) | STANDBY | HEAT | HEAT |
| 35°F TO 65°F (1.7°C TO 18.3°C) | VENT | HEAT | COOL | VENT | HEAT |
| 65°F TO 85°F (18.3°C TO 29.4°C) | STANDBY | STANDBY | COOL | COOL | STANDBY |
| 85°F TO 125°F (29.4°C TO 51.7°C) | VENT | STANDBY | COOL | COOL | COOL |

NOTES:
1. SET ALL THERMOSTATS (3) TO 72°F EXCEPT AS NOTED IN TABLE.
2. FOR -40°F TO -10°F (-40°C TO -23.3°C) TEMPERATURE RANGE, DIRECT LOUVERS (10) OF 51AC2 (7) TOWARDS THE INTEGRATION SHELTER AND 53AC1 (6) TOWARDS THE TRAINER SHELTER.

**OVERNIGHT AND WEEKEND SHUTDOWN PROCEDURE (Continued)**

4. Inspect Computer, Trainer and Integration Shelters to verify absence of fire hazards.

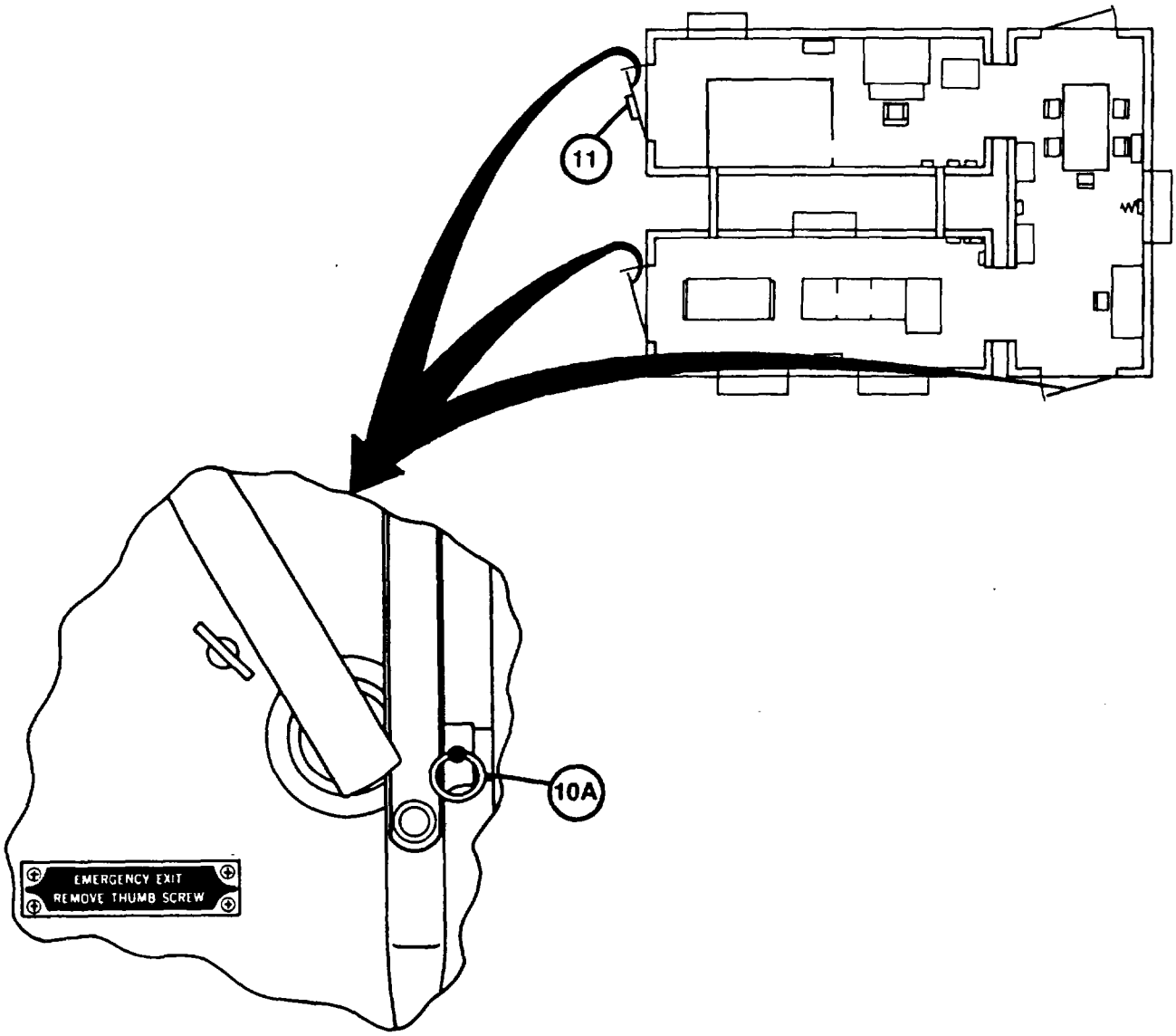
5. Make sure all equipment and power distribution panel doors are closed and latched.

6. Make sure locking pins (10A) are inserted in all shelter doors except Integration Shelter exit.

7. Turn off lighting using wall switches located in each shelter.

8. Exit Integration Shelter and lock the door.

9. Close Trainer Shelter door vent (II) and make sure all other door vents are closed and secured.



**SYSTEM (LONG-TERM POWER-DOWN PROCEDURE**

This procedure describes how to perform a complete power-down of the U-COFT.

**CAUTION**

Equipment damage from freezing or overheating may result during periods of extreme weather conditions if the U-COFT is completely powered-down without benefit of Administrative Storage precautions. Do not perform this procedure without approval from organizational maintenance.

.1 Notify organizational maintenance that the system is to be completely powered-down.

1. Make sure Electronic Equipment Power-Down Procedure has been performed (see 2-199).

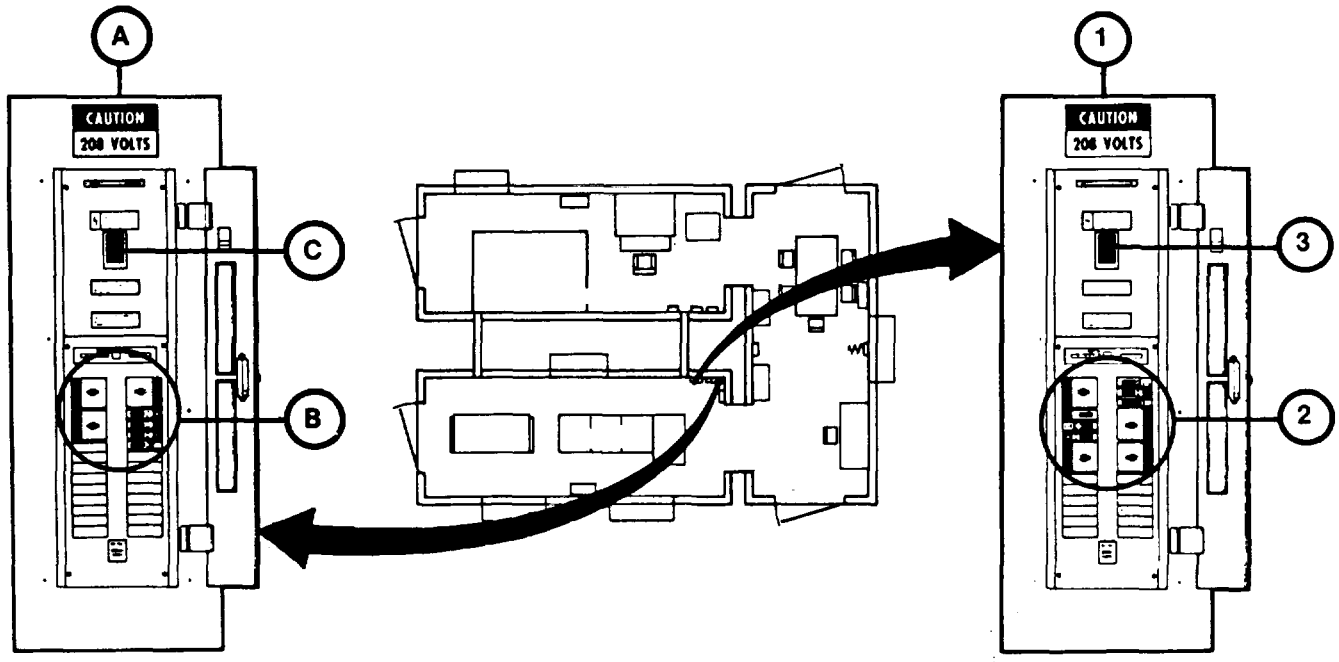
1.2 In Computer Shelter, open the door of the Electronic Power Distribution Panel (A) and set the seven circuit breakers (B) and main circuit breaker (C) to OFF.

**NOTE**

The Computer Shelter and Trainer Shelter Air Conditioners and overhead lighting will go off and the emergency lights will light (battery operated) when step 2 is performed.

2. Open the door of Utility Power Distribution Panel (1) and set the ten circuit breakers (2) to OFF position.

3. Set main circuit breaker (3) to OFF position and close panel door.



**SYSTEM (LONG-TERM) POWER-DOWN PROCEDURE (Continued)**

4. At emergency light (4) set toggle switch (5) to OFF position and observe emergency lights go out.

5. In Trainer Shelter at emergency light (6) set toggle switch (5) to OFF position and observe emergency lights go out.

6. Open Integration Shelter door.

**NOTE**

Integration Shelter Air Conditioner and lighting will go off and emergency light will light when step 7 is performed.

7. Open Utility Power Distribution Panel door (7) and set the four circuit breakers (8) to OFF position.

8. Set main circuit breaker (9) to OFF position and close panel door.

**WARNING**

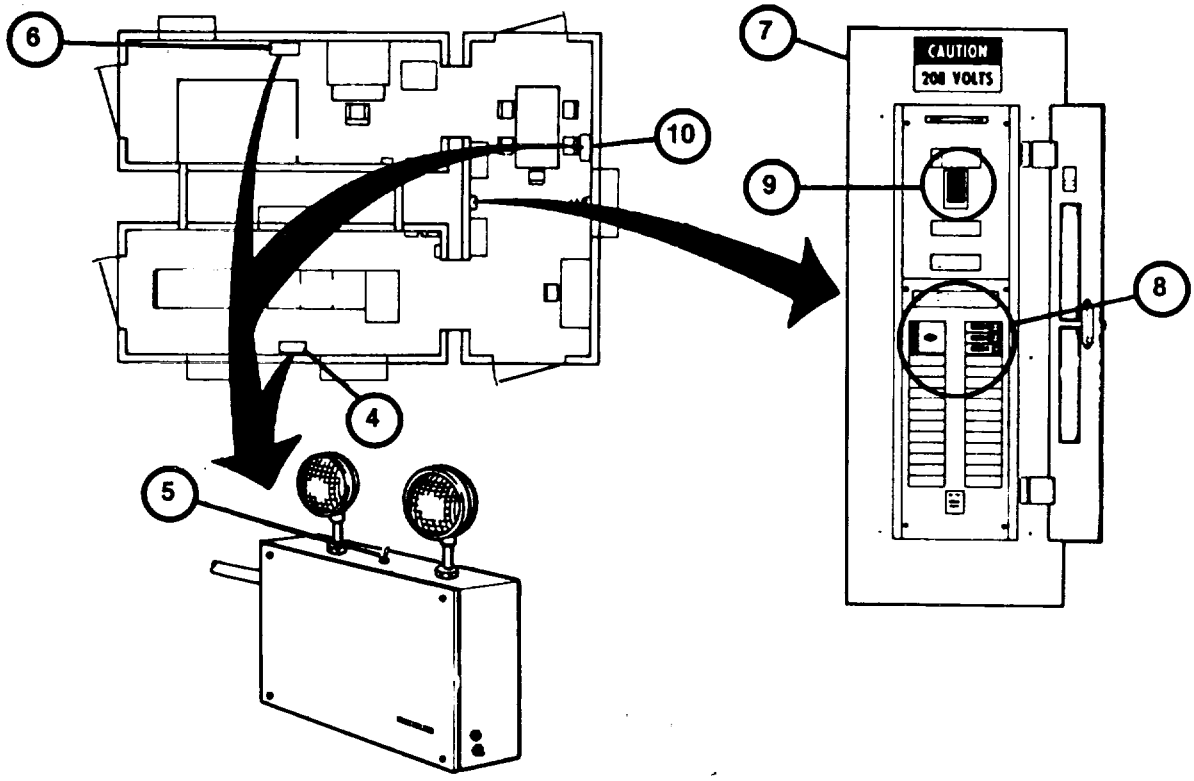
Use caution when leaving the shelter to avoid personal injury. All shelter lighting will be off after step 9 is performed.

9. Locate emergency light (10) and set toggle switch (5) to OFF position.

10. Leave Integration Shelter and lock the door.

11. Make sure remaining shelter doors are locked.

12. Make sure that organizational maintenance is notified that the U-COFT System is completely powered-down.



## Section IV. OPERATION UNDER UNUSUAL CONDITIONS

### OPERATION WITH FAILURE OF ONE 19-INCH COLOR MONITOR

This procedure describes how the Instructor/Operator can continue training if one of the9-Inch Color Monitors in the Instructor operator Station should fail during a training session.

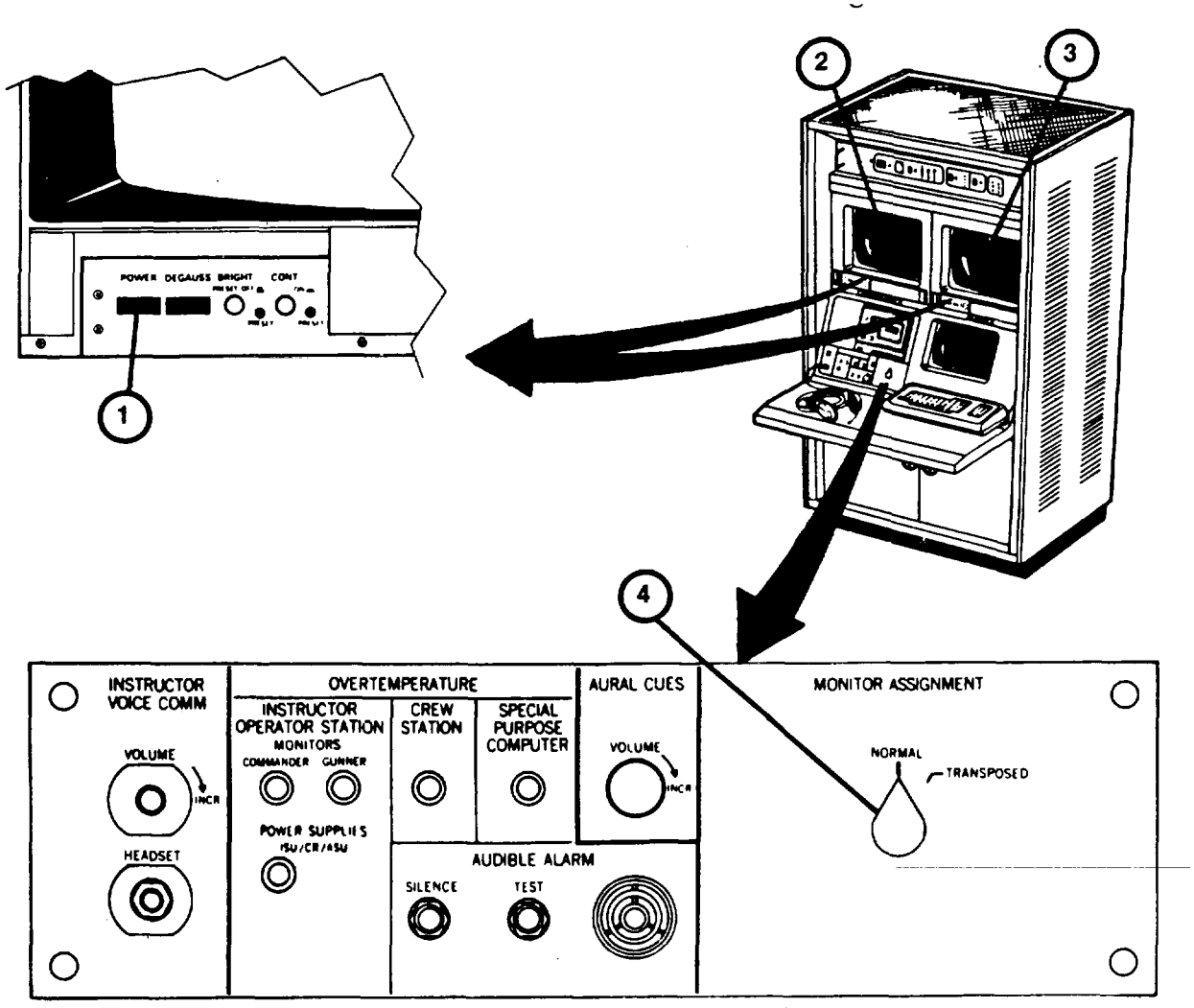
1. Press and release POWER on/off push-button switch (1) on the failed l9-Inch ColorMonitor.

2. Note that the Commander's view is on the left-hand monitor (2) and the Gunner's view on the right-hand monitor 3) during normal operation.

3. Set the MONITOR ASSIGNMENT NORMAL/TRANSPOSED selector switch (4) to the TRANSPOSED position when the view of the failed monitor is desired. Observe that the desired view appears on the operational monitor.

4. Return selector switch (4) to the NORMAL position when the normal view of the operational monitor is desired.

5. Notify organizational maintenance of the monitor failure upon completion of the training session.



## RECOVERY FROM CATASTROPHIC POWER FAILURE PROCEDURE

In the event of an external power failure or operator-initiated emergency electrical shut-down (see 2-214), the main circuit breakers in the Computer and Integration Shelters will trip automatically. The air conditioners, normal lighting, and electronic equipment will go off. Battery operated emergency lights will turn on automatically and the Fire *Control Panel system trouble alarm will sound. Operation cannot be resumed unless external power is restored and the main circuit breakers are manually reset. To restore operation after a catastrophic power failure, perform the following procedure.

**WARNING**

Do not remain in shelters with all doors and vents closed unless at least one air conditioner blower is operating. Suffocation can result from lack of fresh air. If external power is off for more than five minutes, clear the shelters of personnel until operation is restored.

**NOTE**

If external power is not restored within two hours, notify organizational maintenance. Emergency light batteries may totally discharge after two hours of operation and you may not be able to power up the system due to battery discharge within the Fire Control Panel.

1. In Computer Shelter at AC Power Line Protection Panel (1), make sure that three green indicator lamps (2) are on or come on when external power is restored.

**NOTE**

To reset circuit breaker after it has tripped, the toggle must be pulled firmly to the OFF position until it clicks, before resetting to ON.

2. (deleted)

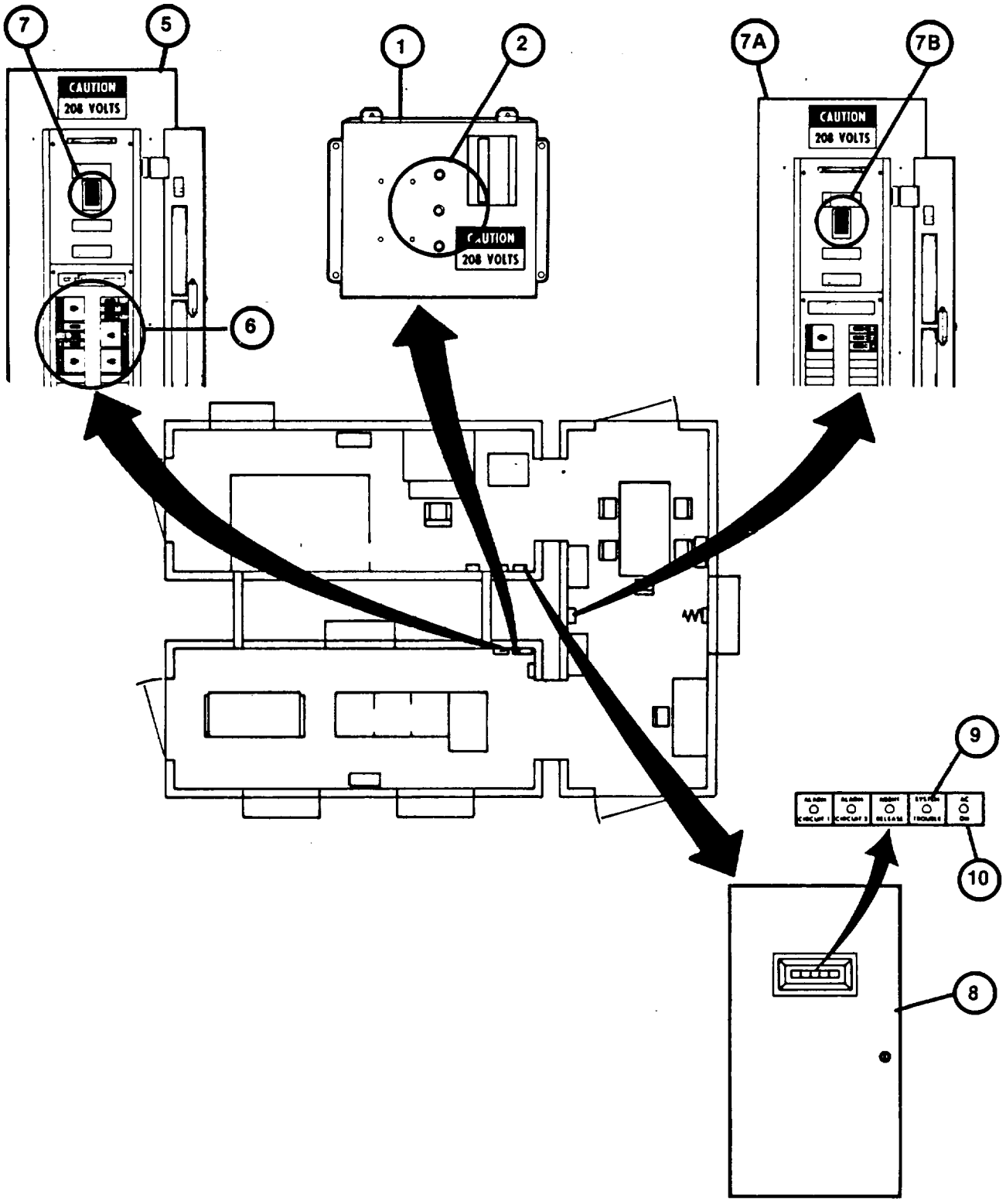
3. In Computer Shelter, at Utility Power Distribution Panel (5), set all ten circuit breakers (6) to OFF.

4. Reset main circuit breaker (7) to ON, and then set all ten circuit breakers (6) to ON, one at a time. Close panel door.

4.1 In Integration Shelter, at Utility Power Distribution Panel (7A), opens door and reset Main circuit breakers (7B) to ON. Close panel door.

5. In Trainer Shelter, at Fire Control Panel (8), make sure SYSTEM TROUBLE indicator (9) and audible alarm go off and only the AC ONE indicator (10) lights green. If AC ON indicator (10) does not light, or if any of the other panel indicators are on, leave the shelters and notify organizational maintenance.

RECOVERY FROM CATASTROPHIC POWER FAILURE PROCEDURE (Continued)



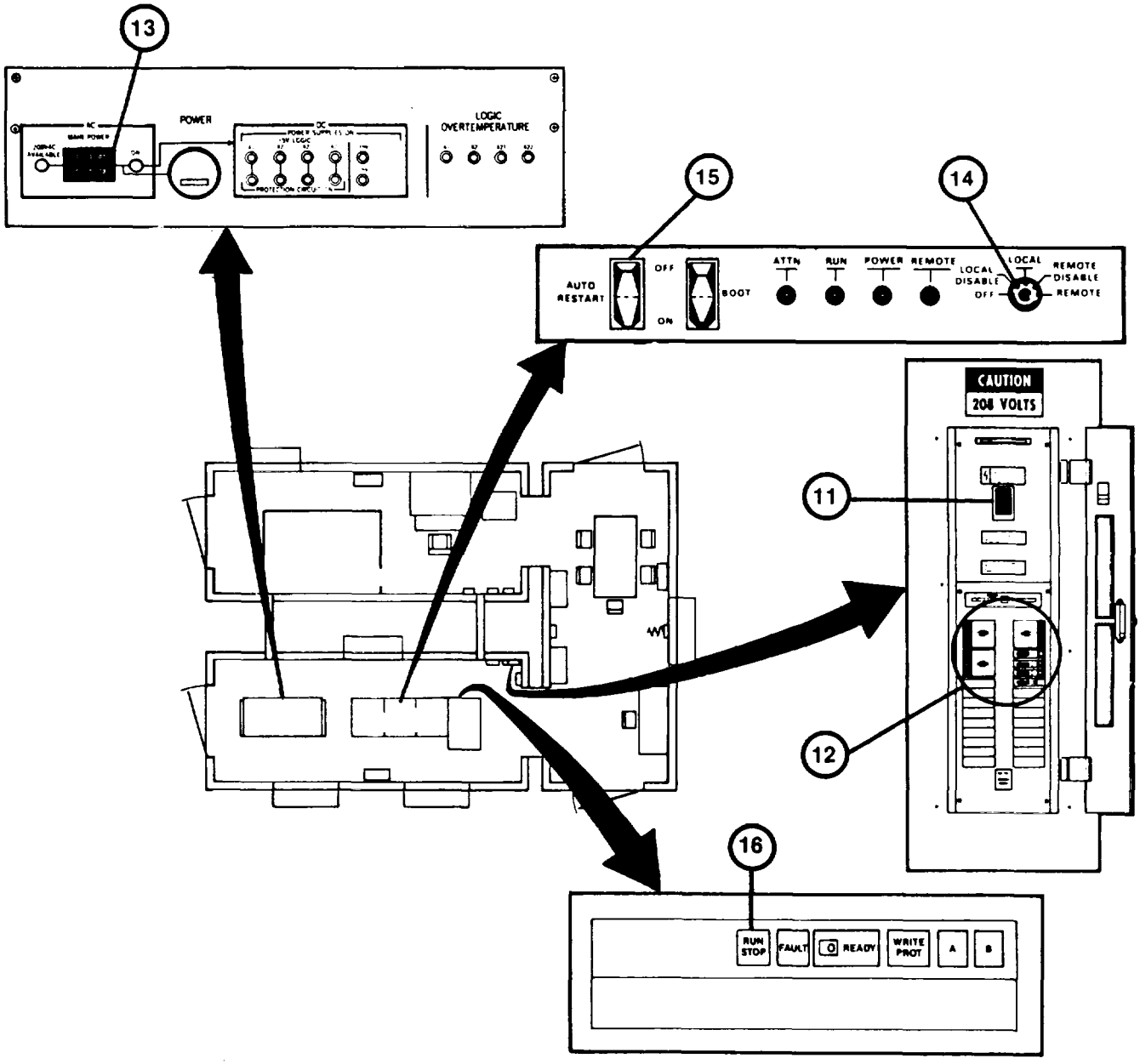
**RECOVERY FROM CATASTROPHIC POWER FAILURE PROCEDURE (Continued)**

6. (11) In Computer Shelter, open the door of Electronic Power Distribution Panel and make sure main circuit breaker and seven circuit breakers (12) are set to OFF position.

7. At the SPC, make sure AC MAIN POWER circuit breaker (13) is set to OFF (down) position.

8. At the GPC, make sure front panel keyswitch (14) and AUTO RESTART rocker switch (15) are set to OFF positions.

9. At Disk Drive, make sure that RUN/STOP pushbutton switch (16) is preset to STOP (not depressed) position.



**RECOVERY FROM CATASTROPHIC POWER FAILURE PROCEDURE (Continued)**

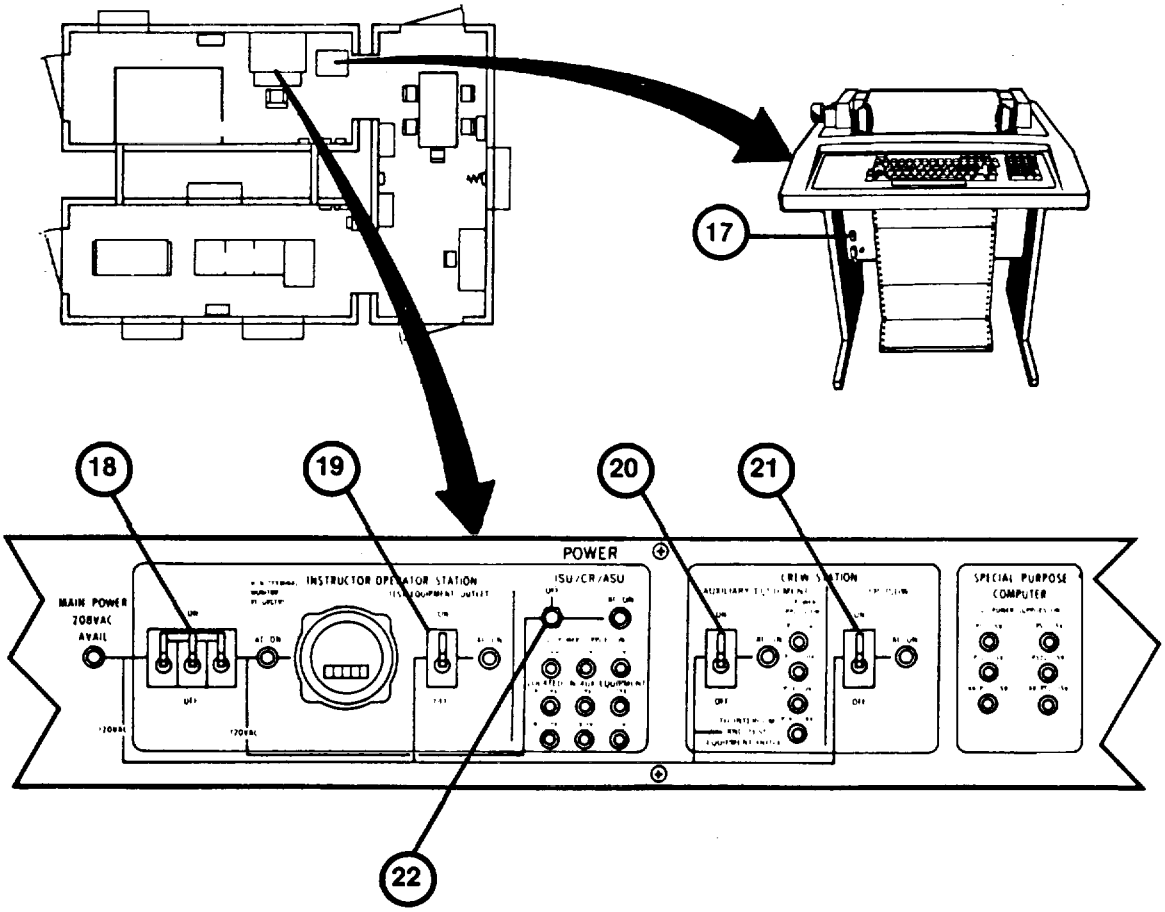
10. In the Trainer Shelter, make sure Terminal Printer ON/OFF rocker switch (17) is set to OFF position.

11. At the IOS Power Panel, make sure four circuit breakers (18, 19, 20, and 21) and keyswitch (22) are set to OFF position.

12. In Computer Shelter, at the Electronic Power Distribution Panel, reset main circuit breaker (11) to ON.

13. At Electronics Power Distribution Panel, set remaining seven circuit breakers (12) to ON, one at a time.

14. Perform Electronic Equipment Power-Up Procedure (see 2-124) to complete recovery.



## UNUSUAL ELECTRONIC EQUIPMENT POWER-UP PROCEDURE

This procedure describes differences in electronic equipment power-up when the shelters' internal temperatures are outside the normal 590F and 860F (150C and 300C) range.

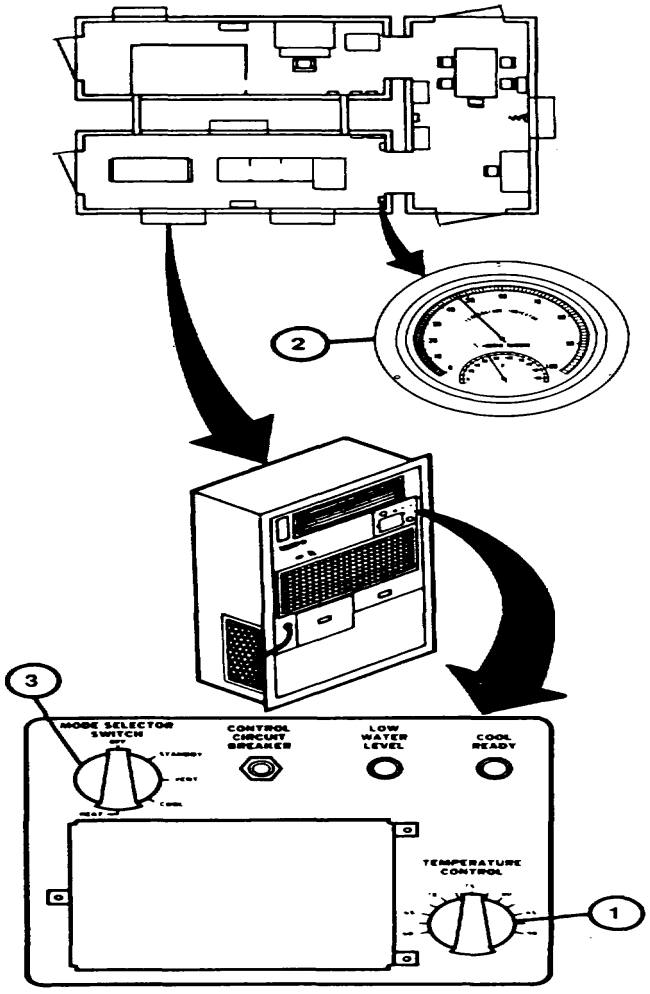
1. Ensure that all temperature controls (1) are set to 720F.

2. If internal shelter temperature as read on thermometer (2) is below 59°F (150C), set MODE SELECTOR control (2) on all air conditioners to HEAT.

3. When thermometer (2) raises to 61°F(16°C), wait for one-half hour, then proceed to step 3 of Electronic Equipment Power-Up Procedure (see 2-124).When shelter temperature reaches 65°F (18.3°C), reset air conditioner MODE SELECTOR controls (3) as described in Chart (29) of Shelter Preconditioning Procedure (see 2-118).

4. If internal shelter temperature as read on thermometer (2) is above 86°F (300C), set MODE SELECTOR control (3) on all air conditioners to COOL.

5. When thermometer (2) drops to 86°F (30°C), wait for one-half hour, then proceed to step 3 of Electronic Equipment Power-Up Procedure (see 2-124). When shelter temperature drops to 720F (22.20C), reset air conditioner MODE SELECTOR controls (3) as described in Chart (29) of Shelter Preconditioning Procedure (see 2-118).



## EMERGENCY PROCEDURES

**WARNING**

Proper and timely response to emergencies is vital to the safety of personnel. Failure to read, understand and follow established procedures may result in injury to personnel or damage to equipment.

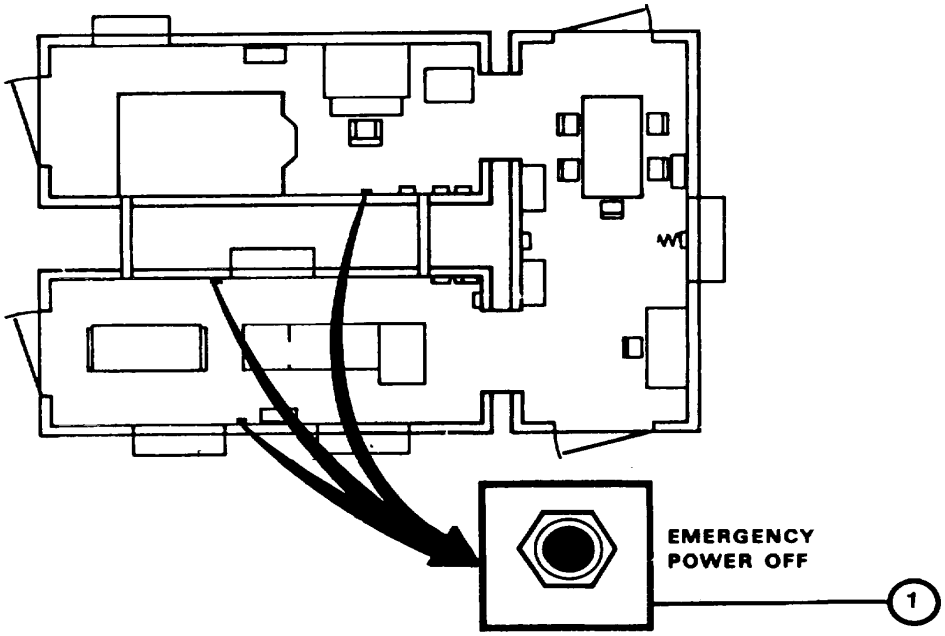
## EMERGENCY ELECTRICAL SHUTDOWN

In the event of personnel electrical shock or catastrophic equipment failure requiring electrical shutdown, the following procedure must be performed.

1. Locate the nearest EMERGENCY OFF pushbutton switch (1) on the Shelter wall and press it firmly.

2. Observe the immediate shutdown of all electrical power and the illumination of emergency lighting.

3. If anyone has been injured, tend to their immediate first aid needs and notify the medical personnel.



## EMERGENCY PROCEDURES (Continued)

### AUTOMATIC INITIATION OF FIRE ALARM

Two fire alarm devices are provided in the Trainer Shelter - a loud horn (4) on the wall capable of being heard throughout the shelters and a strobe (flashing) light (5) for crew member alert in the Crew Station. These alarms are automatically set off in the event of smoke or fire. Manual Pull Stations (6), (7), and (8) are also provided at the Shelter exits for manual initiation of a fire alarm. When an alarm is set off automatically or manually, power is cut off, normal lighting is turned off and emergency lights will light automatically. If a fire alarm occurs:

**WARNING**

Avoid halon dispensing nozzles when a fire alarm sounds. Halon is released at pressures great enough to cause damage to eyesight or cause injuries from sudden personnel reactions. The halon release is delayed for 20 seconds to allow time for personnel to leave the Shelters and close the doors.

**NOTE**

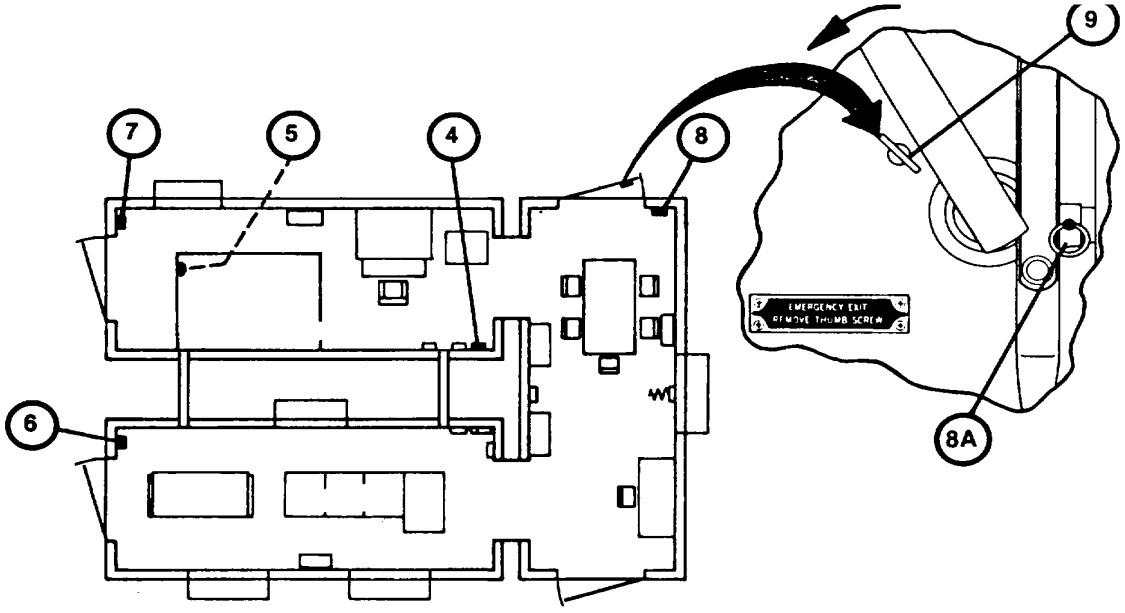
Any shelter door locked on the outside may be released from the inside in an emergency situation. First, make sure that locking pin (8A) is removed. Then unscrew the thumbscrew (9) and give the handle a sharp downward thrust to break the seal outside.

1. Make sure no personnel remain in the Crew Station or shelters, then leave the shelter by the nearest exit.

2. Close and secure the shelter door upon leaving and check the remaining doors to make sure they are closed and secured.

3. Notify the Fire Department.

4. Do not re-enter the Shelters or open the doors until permitted by authorized personnel.



**EMERGENCY PROCEDURES (Continued)**

**HAND HELD FIRE EXTINGUISHER OPERATION**

Hand held Halon fire extinguishers (10), (11), (12) and (13) are available at each Shelter exit. If the fire alarm has not been automatically initiated, and a detected fire is locally contained (waste containers, storage cabinet, etc.), personnel may attempt to extinguish the fire with the fire extinguishers. However, electrically caused fires or fires emitting large amounts of smoke should not be extinguished manually INITIATE THE FIRE ALARM'

To operate a hand held fire extinguisher:

1. Remove fire extinguisher from wall by releasing dip on supporting strap.

2. Pull the pin via the ring and hold extinguisher upright.

3. Stand back 10 feet from fire source.

4. Aim nozzle at base of fire.

5. Squeeze handle and sweep nozzle back and forth across fire source.

**MANUAL INITIATION OF FIRE ALARM**

1. Locate the closest manual pull station (6), (7) or (8).

**CAUTION**

Do not try to reset a manual pull station once it has been activated. An internal switch could be broken if the unit is not unlocked first. The Fire Department will notify the proper authorities when it may be reset.

2. Lift the outer door (14) to expose the actuation door (15).

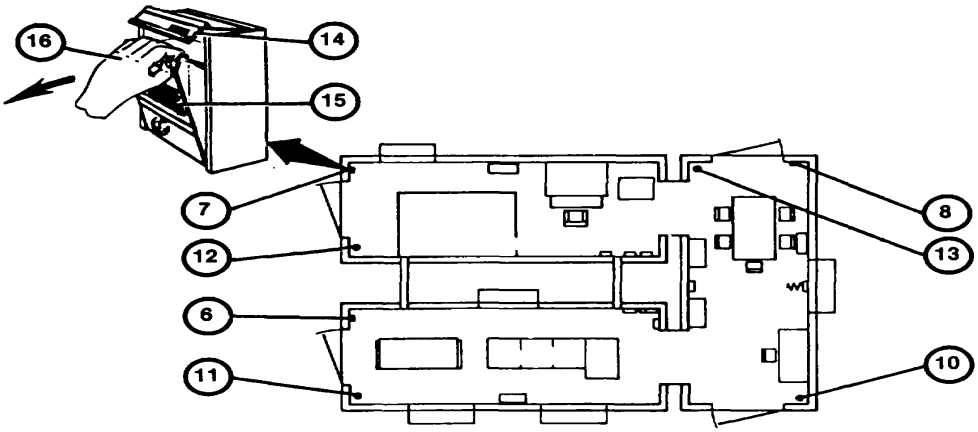
3. Pull the actuation door forward (16) until the alarm horn is activated.

4. Make sure no personnel remain in the Crew Station or shelters then leave the shelter by the nearest exit.

5. Close and secure the shelter door upon leaving and check the remaining doors to make sure they are closed and secured.

6. Notify the Fire Department.

7. Do not re-enter the shelters until permitted by authorized personnel.



**EMERGENCY PROCEDURES (Continued)**

**RESPONSE TO EQUIPMENT OVERTEMPERATURE ALARM**

If an overtemperature condition exists in the IOS, SPC or Crew Station, the IOS Communication Panel (1) Audible Alarm (2) will buzz to alert the Instructor/Operator. One or more of the overtemperature indicator lamps(3) will light to show him the location of the overtemperature equipment. If an overtemperature condition occurs:

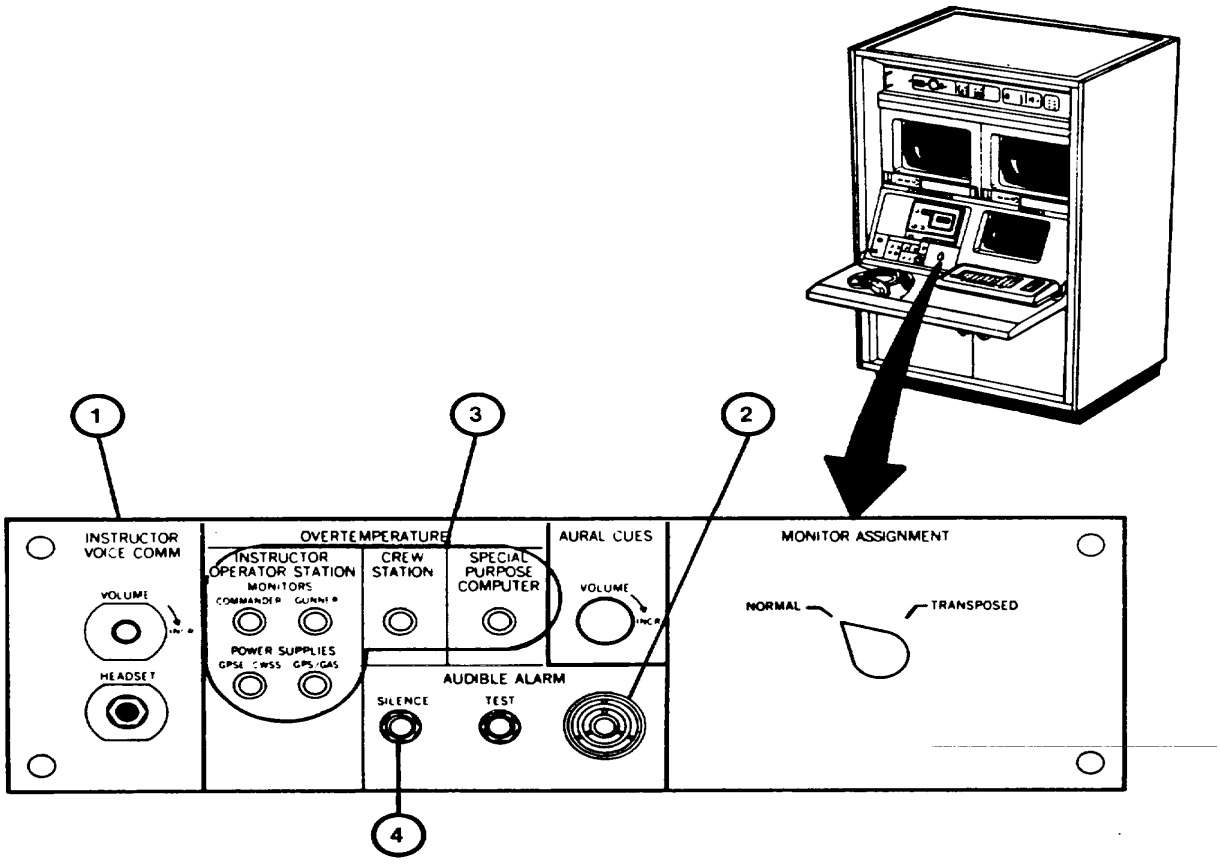
1. Scan the overtemperature indicators (3) to pinpoint the location of the problem.

**WARNING**

An overtemperature condition can rapidly develop into an equipment fire and produce toxic smoke. If the overtemperature condition 'occurs in the Crew Station, alert the students and assure that they exit the Crew Station immediately.

2. Alert the students over the intercom, and if the overtemperature condition is in the Crew Station, make sure that the students exit the Crew Station immediately.

3. Press the SILENCE pushbutton (4) to silence the alarm buzzer.



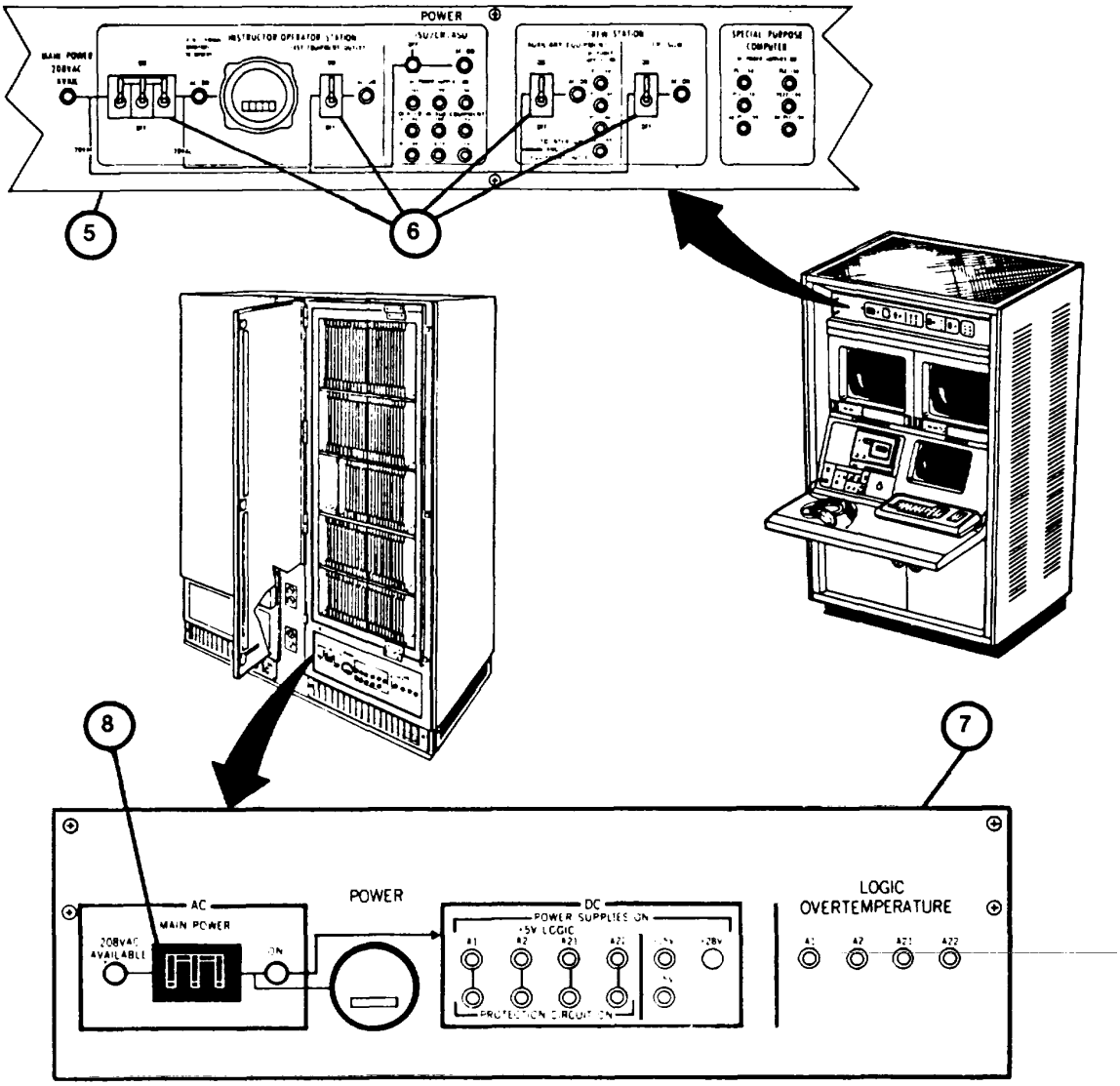
**EMERGENCY PROCEDURES (Continued)**

**RESPONSE TO EQUIPMENT OVERTEMPERATURE ALARM (Continued)**

4. If the overtemperature condition is in the IOS or Crew Station, memorize the location indicator and at the IOS Power Panel (5), set ON/OFF circuit breakers (6) to OFF.

5. If the overtempature condition is in the SPC, go to the Computer Shelter SPC Power Management Panel (7) and set the AC MAIN POWER circuit breaker (8) to OFF.

6. Notify organizational maintenance.



# CHAPTER 3

# MAINTENANCE INSTRUCTIONS

## Section I. LUBRICATION (NOT REQUIRED)

## Section II. TROUBLESHOOTING

**INTRODUCTION**

The Daily Readiness Check (see 2-133) performed on a daily basis will identify any system failures prior to beginning daily training routines.

Another troubleshooting aid available to the Instructor/Operator is the Diagnostic Test (see 3-31). In general, Diagnostic tests should be performed if sight scene problems (streaking, breaking up, object disappearance, etc.) are affecting training performance.

If failures are detected during the Daily Readiness Check or during normal training, the Instructor/Operator should refer to the Troubleshooting table in this section.

The Troubleshooting table lists possible equipment problems. It identifies tests or inspections to isolate the problem and specifies actions to correct the problem. Directions are given to obtain assistance from Organizational Maintenance, as necessary. To use the table, select the item which describes your equipment problem and perform the actions in the sequence given. The table assumes that indicator lamps are working properly. However, individual lamp failure should be suspected and lamps replaced per Chapter 3, Section III, unless other indications (lack of power) prove otherwise.

This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed, or is not corrected by listed corrective actions, notify Organizational Maintenance.

**TROUBLESHOOTING (Continued)**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

**1. BUZZER IN FIRE PROTECTION PANEL SOUNDS BUT FIRE ALARM HORN DOES NOT TURN ON.**

Step 1. Open Fire Protection Panel door and set NORMAL SILENCE TROUBLE switch momentarily in the down position until alarm silences.

**a. If SYSTEM TROUBLE indicator lamp goes out, continue training.**

**b. If SYSTEM TROUBLE indicator lamp remains on, notify Organizational Maintenance.**

**2. NORMAL LIGHTING GOES OUT, EMERGENCY LIGHTS COME ON, BUT FIRE ALARM DOES NOT SOUND.**

Step 1. Check that lights on Computer Shelter Main Power Protection Panel are on.

**a. If Main Power Protection Panel lights are on, perform Recovery from Catastrophic Power Failure Procedure (see 2-210).**

**b. If Main Power Protection Panel lights are not on, notify Organizational Maintenance.**

**3. SIGHT SCENES IN CREW STATION SIGHTS AND IOS 19-INCH COLOR MONITORS DISAPPEAR BUT DISPLAY TERMINAL REMAINS ON.**

Step 1. Check IOS Power Panel SPECIAL PURPOSE COMPUTER POWER SUPPLIES ON indicator lamps.

**a. If one or more lamps are on, call Organizational Maintenance.**
**b. If all six lamps are out, go to step 2.**

Step 2. Check SPC Power Management Panel in the Computer Shelter.

**a. If the AC MAIN POWER ON indicator lamp is ON, notify Organizational Maintenance**

**b. If the AC MAIN POWER ON indicator lamp is off, go to step 3.**

**TROUBLESHOOTING (Continued)**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 3. Check the 208 VAC AVAILABLE indicator lamp.

**a. If the 208 VAC AVAILABLE indicator lamp is OFF, go to step 4.**

**b. If the 208 VAC AVAILABLE indicator lamp is ON, set AC MAIN POWER circuit breaker OFF, then ON.**

**c. If circuit breaker trips again, notify Organizational Maintenance.**

**d. If AC MAIN POWER ON indicator lamp lights, return to IOS and perform Log-On Procedure (see 2-131)**

Step 4. Check Electronic Power Distribution Panel in Computer Shelter.

**a. If red flag on circuit breaker I is showing, set circuit breaker to OFF then ON**

**b. If circuit breaker trips off showing red flag, notify Organizational Maintenance.**

**c. If circuit breaker remains on, return to IOS and perform Log-On Procedure (see 2-131).**

**4. SIGHT SCENES ARE VISIBLE IN CREW STATION SIGHTS BUT NOT ON IOS 19-INCH COLOR MONITORS.**

Step 1. Check that pushbutton switch on each 19-inch Color Monitor is in ON (depressed) position.

Step 2. Adjust BRIGHTNESS and CONTRAST controls on each 19-inch Color Monitor.

Step 3. If steps I or 2 do not solve problem notify Organizational Maintenance.

**5. SIGHT SCENES ARE VISIBLE ON IOS MONITORS BUT NOT ON CREW STATIONS SIGHTS.**

Step 1. Check IOS Power Panel ISU/CR/ASU DC POWER SUPPLIES ON indicator lamps.

**a. If any of the DC POWER SUPPLIES ON indicator lamps are off, notify Organizational Maintenance.**

**b. If all of the DC POWER SUPPLIES ON indicator lamps are off, go to step 2.**

**TROUBLESHOOTING (Continued)**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 2. Check IOS Power Panel ISU/CR/ASU AC ON indicator lamps.

**a. If AC ON indicators are off, set keyswitches to ON.**

**b. If AC ON indicator lamp does not come on when keyswitch is ON, notify Organizational Maintenance.**

**6. NONE OF THE CREW STATION INDICATOR LAMPS ARE ON.**

Step 1. Check IOS Power Panel CREW STATION DC POWER SUPPLIES ON indicator lamps.

**a. If one or more CREW STATION DC POWER SUPPLIES ON indicator lamps are ON, notify Organizational Maintenance**

**b. If all of the CREW STATION DC POWER SUPPLIES ON indicator lamps are OFF, go to step 2.**

Step 2. Check IOS Power Panel AC ON indicator lamp.

**a. If AC ON indicator lamp is OFF, set ON/OFF circuit breaker to ON. If AC ON indicator does not come ON, notify Organizational Maintenance.**

**b. If AC ON indicator lamp is on, go to step 3.**

Step 3. Check Crew Station Power Panel AC ON indicator in front of Crew Station.

**a. If Crew Compartment Power Panel AC ON indicator lamp is OFF, set toggle switch to ON.**

**b. If AC ON indicator lamp does not turn on, notify Organizational Maintenance.**

**7. DISPLAY TERMINAL DOES NOT RESPOND TO KEYBOARD COMMANDS.**

Step 1. Check that KBD LOCKED indicator above keyboard is on.

**a. If KBD LOCKED Indicator is off and ON-LINE indicator is on, notify Organizational Maintenance.**

**TROUBLESHOOTING (Continued)**

| MALFUNCTION<br>TEST OR INSPECTION<br>CORRECTIVE ACTION |
|---|

**b. If KBD LOCKED indicator is on, press keyboard SETUP keys once and then the RESET key.**

**c. When KBD LOCKED indicator goes off, continue operation.**

**8. TERMINAL PRINTER DOES NOT RESPOND TO COMMANDS.**

Step 1. Check that ON-LINE light above Terminal Printer keyboard is on.

**a. If ON-LINE light is off and LOCAL light is on, press and release LINE LOCAL key.**

**b. If ON-LINE light lights red, continue operation.**

Step 2. Check AC ON indicator on Terminal Printer Console.

**a. If AC ON indicator is OFF, press POWER rocker switch to ON.**

**b. If Terminal Printer still does not respond to print commands, notify Organizational Maintenance.**

**9. CREW STATION ISU/CR BROWPADS DO NOT RECOIL WHEN MAIN GUN IS FIRED.**

Step 1. Check IOS Power Panel CREW STATION DC POWER SUPPLIES ON indicator lamps.

**a. If three indicator lamps are on but PS4 +24V indicator lamp is off, go to front of Crew Station andset BROW PAD POWER circuit breaker to ON.**

**b. If Browpad recoil still does not operate, notify Organizational Maintenance.**

**10. CREW STATION SIGHTS AND IOS 19-INCH COLOR MONITOR SCENES SHOW STREAKS, OBJECTS SUDDENLY APPEARING OR DISAPPEARING, OR OTHER DEGRADATIONS WHICH AFFECT TRAINING.**

Step 1. Perform Diagnostic Tests (see 3-31).

**a. If CCA replacement resolves problem, continue training.**

**b. If CCA replacement does not resolve problem, notify Organizational Maintenance.**

**TROUBLESHOOTING (Continued)**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

**11. NO SOUND IN HEADSETS.**

Step 1. Check headset connections.

**a. Push in headset plugs and tighten screw connections to assure proper seating.**

Step 2. Check intercom volume controls.

**a. On IOS Communication Panel slowly adjust INSTRUCTOR VOICE COMM VOLUME control in a clockwise direction while counting into the microphone using a normal voice level**

**b. If increasing the VOLUME control does not increase your voice level notify Organizational Maintenance.**

**c. Perform a. and b. tests in the Crew Station using Crew Helmets and VOLUME controls on Commander's and Gunner's Intercom Box.**

**12. VOICE INTERCOM OPERATES BUT AURAL CUES ARE NOT HEARD.**

Step 1. Check IOS Communication Panel AURAL CUES VOLUME control.

**a. While a training exercise is running adjust AURAL CUES VOLUME control slowly in a clockwise direction.**

**b. If increasing the VOLUME control does not increase the Aural Cue's level for satisfactory listening, notify Organizational Maintenance.**

**13. VOICE INTERCOM AND AURAL CUES OPERATE BUT IOS TAPE RECORDER OUTPUT IS NOT HEARD.**

Step 1. Check Tape Recorder tape cassette and power on pushbutton.

**a. Assure that POWER pushbutton is depressed.**

**b. Assure that tape cassette is inserted and cover closed.**

**TROUBLESHOOTING (Continued)**

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

Step 2. Check Tape Recorder pushbutton settings.

**a. Assure that only the> (forward) pushbutton is depressed and tape counter is increasing.**

Step 3. Check Tape Recorder volume control adjustment.

**a. Adjust PHONE LEVEL control on Tape Recorder in a clockwise direction to increase volume.**

**b. If increasing the PHONE LEVEL control does not increase volume, notify Organizational Maintenance.**

## Section III. MAINTENANCE PROCEDURES

### INTRODUCTION

This Section includes cleaning, removal/installation and test procedures to be performed by the Instructor/Operator. The procedures will be performed on a nonroutine basis. They will be performed only as a result of problems found during normal operation, routine checks or troubleshooting procedures.

### MAINTAIN IOS MONITOR SCREENS AND DISPLAYTERMINAL SCREEN

Dust, dirt, grease, etc., that collects on the monitor screens (1 and 2) and the Display Terminal screen (3) should be removed as follows:

1. On Power Control Panel (4) make sure Main Power circuit breaker is set to OFF.

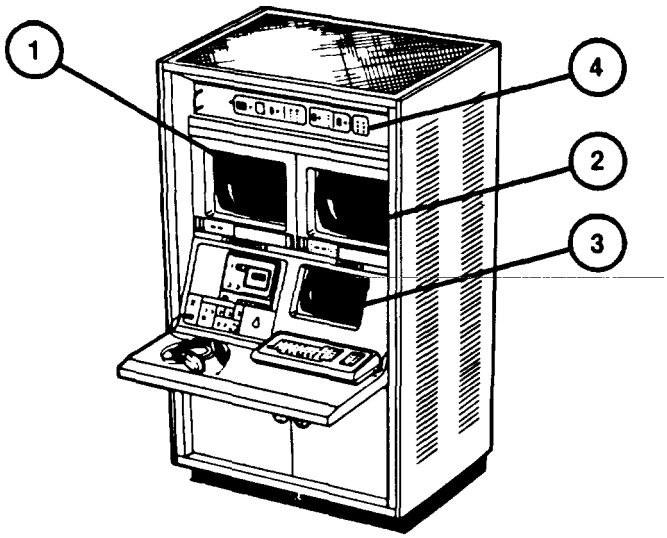
2. Dampen clean soft cloth (item 3, Appendix D) with glass cleaner (item2, Appendix D).

**CAUTION**

Do not spray monitor screens with lens cleaning liquid as excess cleaner may flow between screen and trim panel.

3. Clean monitor and display terminal screens (1, 2 and 3) using circular motions with cloth to avoid streaks.

4. Let monitor and display terminal screens air dry.



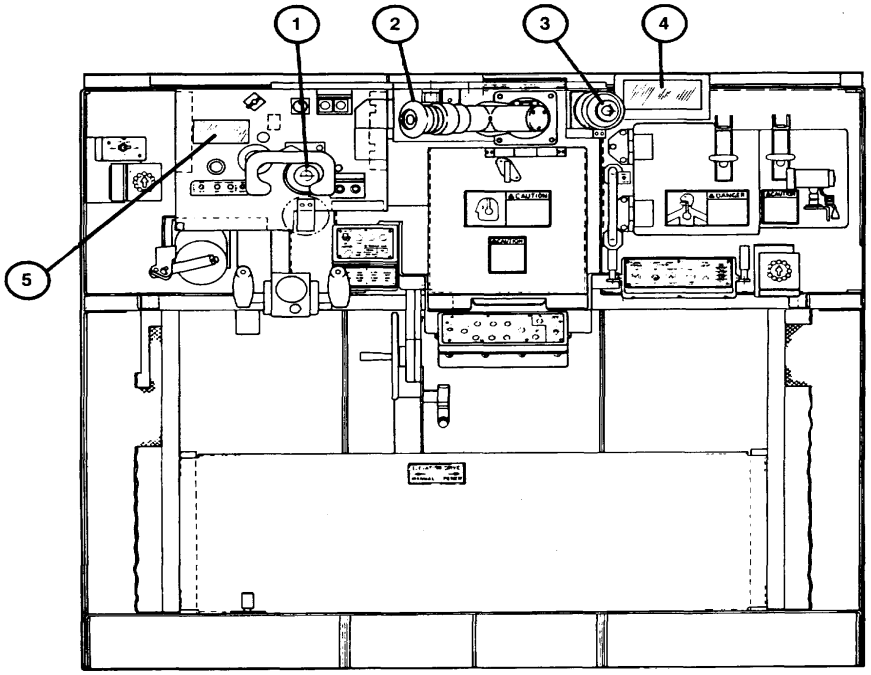
## MAINTAIN CREW STATION SIGHT LENSES

1. Get artist's brush (item I, Appendix D).

2. Remove dust from sight eyepieces (1,2, and 3), Commander's Forward Periscope (4) and unity window (5) by brushing lightly with artist's brush.

3. Soak lens paper (item 6, Appendix D) with lens cleaning compound (item 4,Appendix D) and gently clean eyepiece lenses (1, 2, and 3), Commander's Forward Periscope (4) and unity window (5) using a circular motion to prevent streaks.

4. Let eyepiece lenses and windows air dry.



## MAINTAIN TERMINAL PRINTER (PAPER RELOADING)

**NOTE**

When the terminal printer is out of paper, the red PAPER OUT lamp flashes and the bell sounds for five seconds.

1. Raise Terminal Printer Cover (1) to the open position.

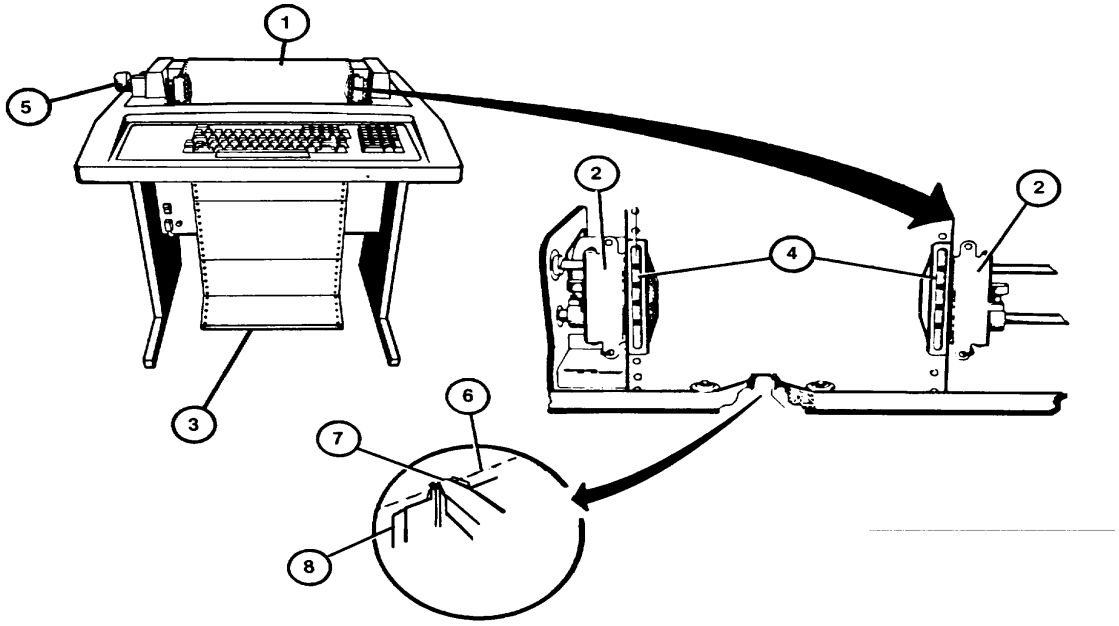
2. Open both tractor covers (2) outward to expose tractor pins.

3. Place the paper (item 5, Appendix D) on the floor between legs of printer (3) with the leading edge of paper parallel to the feed slot. Make sure the left edge of the paper is in line with the left tractor.

4. Feed paper up through the feed slot. Align the margin holes over the tractor feed pins (4) and close the tractor covers (2).

5. Use paper advance knob (5) to align the paper perforations (6) halfway between the top of print head (7) and line indicator (8).

6. Close cover and observe that PAPER OUT lamp has gone out.

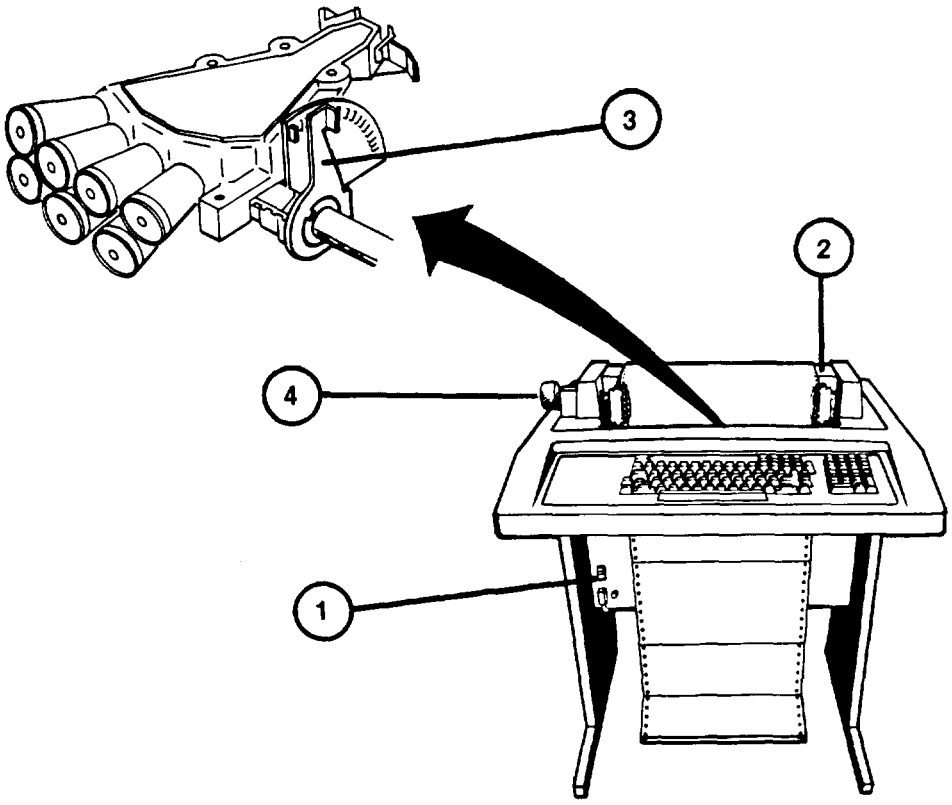


## MAINTAIN TERMINAL PRINTER (ADJUST PRINT IMPRESSION)

**NOTE**

If printing appears smudged or too light, the print impression may be adjusted as follows:

1. Press ON/OFF rocker switch (1) to OFF.
2. Raise Terminal Printer Cover (2) to the open position.
3. Set carriage adjustment lever (3) until print head just makes contact with the paper.
4. Turn paper advance knob (4) while moving carriage adjustment lever (3) forward one notch at a time until paper starts to smudge. Move carriage adjustment lever (3) back one notch at a time until the paper no longer smudges.
5. Close Terminal Printer Cover (2).
6. Press ON/OFF rocker switch (1) to ON.

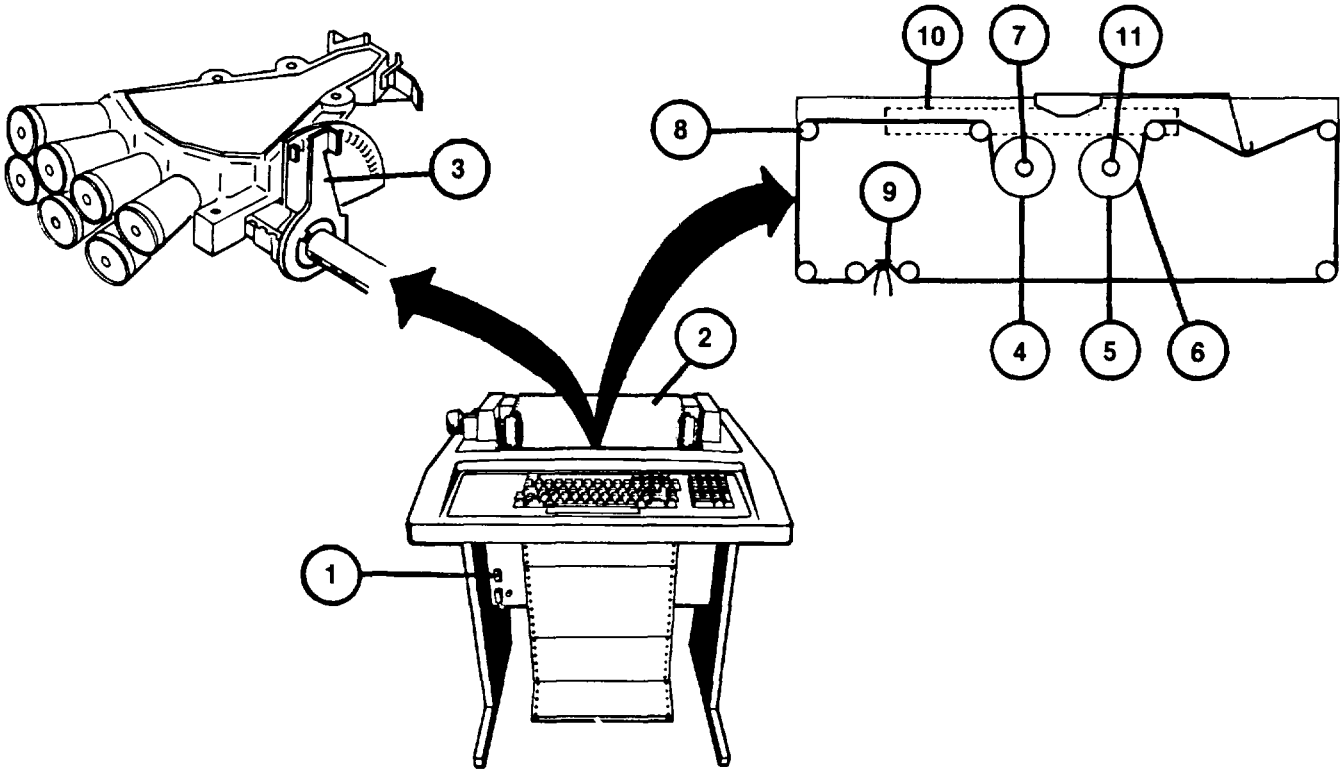


## MAINTAIN TERMINAL PRINTER (REPLACE RIBBON)

**CAUTION**

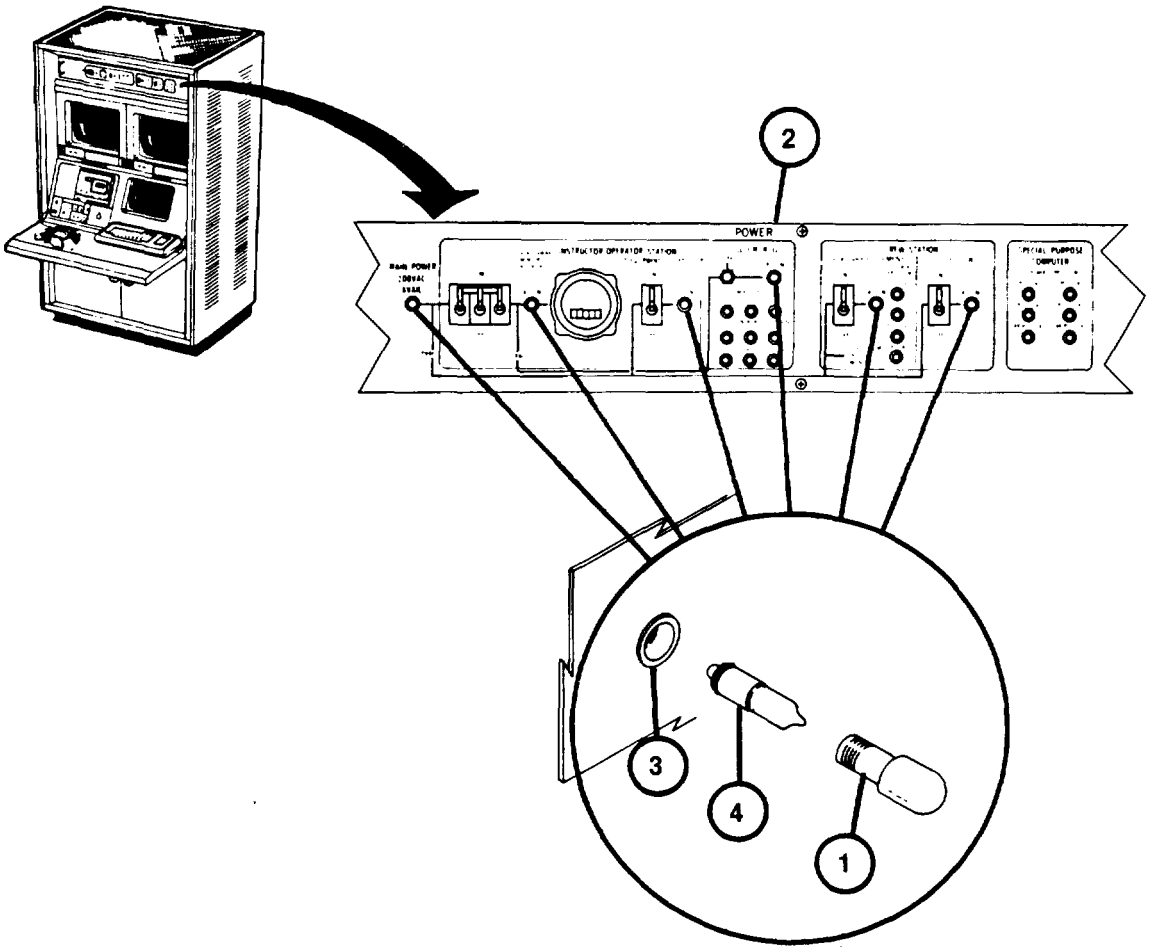
Replace only with ribbons specified in item 7 of Appendix D. Other ribbon may contain abrasive ink which can damage the print head.

1. Obtain new ribbon assembly (item 7, Appendix D).
2. Press ON/OFF rocker switch (I) to OFF.
3. Raise Terminal Printer cover (2) to the open position.
4. Record setting of carriage adjustment lever (3), then move it to the highest setting.
5. Remove and discard old ribbon and spools (4 and 5).
6. Make sure rivet (6) is wound onto near-empty spool of new ribbon assembly.
7. Place full spool on left spindle (7). Turn clockwise until it drops into place.
8. Guide ribbon around eight idler wheels (8), in front of print head (9) and through slots in direction changer bar (10).
9. Place near-empty spool on the right spindle (11) and turn clockwise until it drops into place.
10. Take up slack in ribbon by turning full spool.
11. Return carriage adjustment lever (3) to original setting recorded in step 4.
12. Close cover (2) and press ON/OFF rocker switch (1) to ON.



## IOS POWER PANEL AC ON INDICATOR LAMP REPLACEMENT

1. Unscrew lens (1) from Power Panel (2) lamp housing (3).
2. Pull out lamp (4) from lens (1). Set lens (1) aside for later use.
3. Obtain identical lamp (Part No. M15098/I 1-001) from spare lamp box.
4. Insert new lamp (4) into lens (1).
5. Screw lens (I) with lamp (4) into Power Panel (2) lamp housing (3).



**IOS POWER PANEL DC POWER SUPPLY INIDICATOR LAMPS REPLACEMENT**

1. Unscrew lamp retainer ring (1) from Power Panel (2) lamp housing (3).

2. Set retainer ring (1) aside for later use.

3. Pull out lamp (4) from lamp housing (3).

**CAUTION**

The DC Power Supply indicator lamps in the Power Panel look the same but operate with different voltages and are separately identified by part number. Replacement with an incorrect lamp may cause the lamp to fail immediately or not illuminate when power is applied. Refer to the Power Panel DC Lamp Replacement table for correct part number of lamp to be replaced.

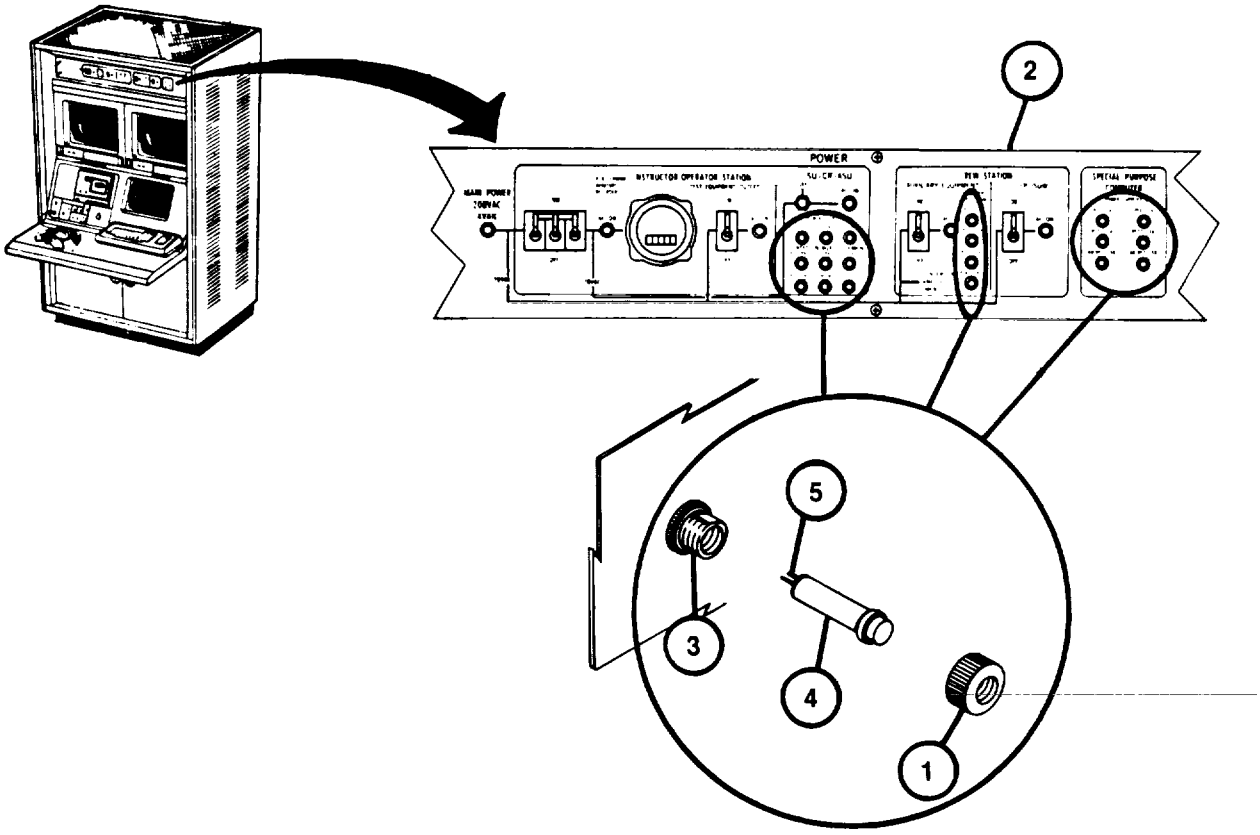
4. Obtain identical lamp (4) from spare lamp box.

5. Align pins (5) of new lamp with recessed holes in lamp housing (3) and gently push in until bottomed.

**NOTE**

Retainer ring (1) cannot be reinstalled in Step 6 unless new lamp is properly seated.

6. Screw lamp retainer ring (1) onto lamp housing (3).



**IOS POWER PANEL DC POWER SUPPLY INDICATOR LAMP REPLACEMENT TABLE**

| PANEL INDICATOR LIGHT | SPARE LAMP PART NUMBER | LAMP V | COLOR |
|---|---|---|---|
| ISU/CR /ASU DC POWER SUPPLIES ON | | | |
| -30V | 12710855-5 | 28 | GREEN |
| +15V | 12710855-4 | 14 | GREEN |
| -15V | 12710855-4 | 14 | GREEN |
| ISU/CR/ASU LOCATED IN AUX EOUIPMENT | | | |
| A+28V | 12710855-5 | 28 | GREEN |
| -28V | 12710855-5 | 28 | GREEN |
| +15V | 12710855-4 | 14 | GREEN |
| B+28V | 12710855-5 | 28 | GREEN |
| + 6.3V | 12710855-6 | 6 | GREEN |
| -15V | 12710855-4 | 14 | GREEN |
| CREW STATION DC POWER SUPPLIES ON | | | |
| PSI + 5V | 12710855-2 | 5 | GREEN |
| PS2 + 10V | 127 10855-3 | 10 | GREEN |
| PS3- 10V | 12710855-3 | 10 | GREEN |
| PS4 + 24V | 12710855-5 | 28 | GREEN |
| SPECIAL PURPOSE COMPUTER - DC POWER SUPPLIES ON | | | |
| PSI + 5V | 12710855-2 | 5 | GREEN |
| PS2 + 5V | 12710855-2 | 5 | GREEN |
| PS21 + 5V | 12710855-2 | 5 | GREEN |
| PS22 + 5V | 12710855-2 | 5 | GREEN |
| A4 PSI + 15V | 12710855-4 | 14 | GREEN |
| A4 PS2 - 15V | 12710855-4 | 14 | GREEN |

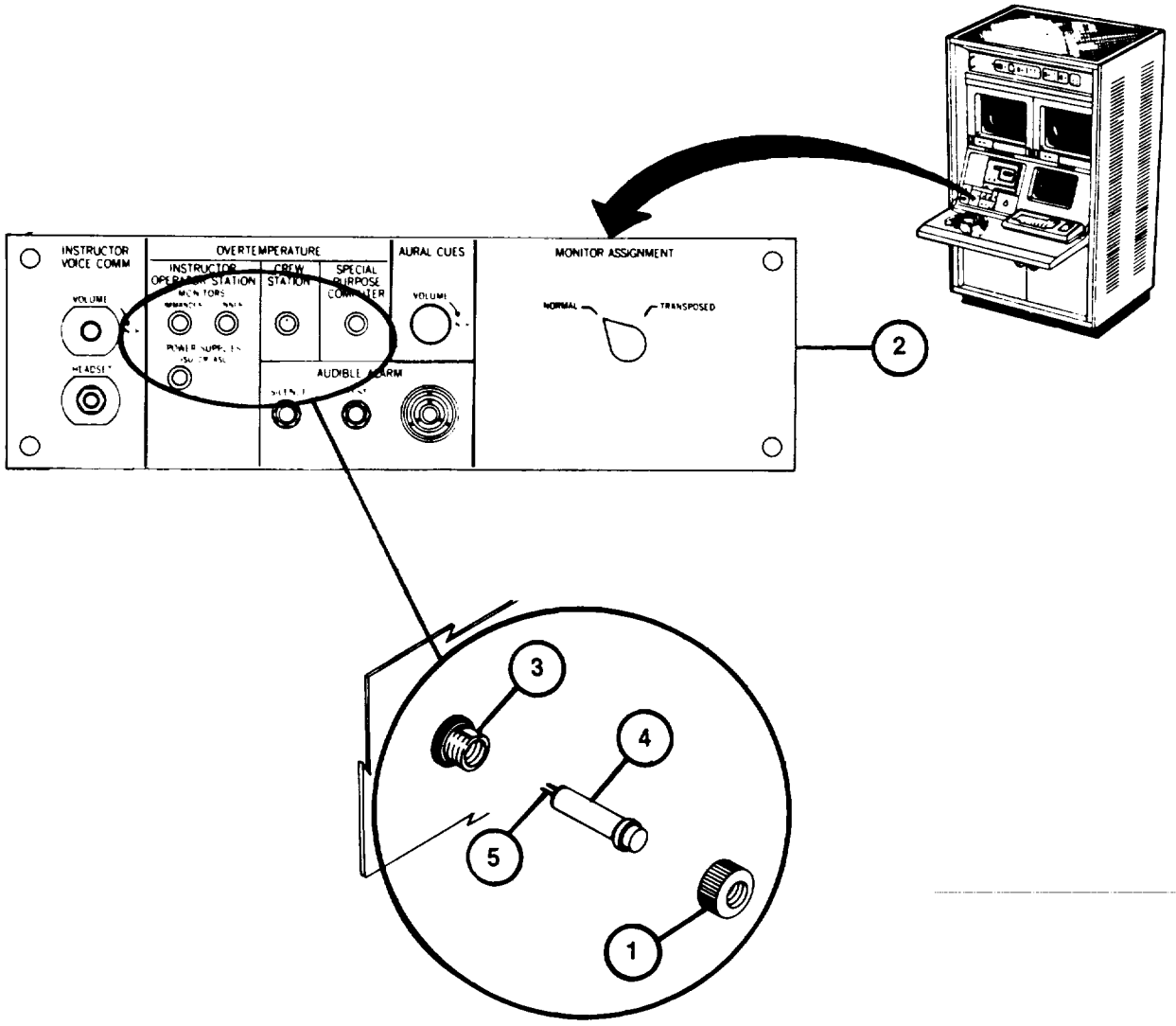
## IOS COMMUNICATION PANEL OVERTEMPERATURE INDICATOR LAMPS REPLACEMENT

1. Unscrew lamp retainer ring (1) from Communication Panel (2) lamp housing (3).
2. Set retainer ring (I) aside for later use.
3. Pull out lamp (4) from lamp housing (3).
4. Obtain identical lamp (Part No. 12710855-7, red) from spare lamp box.
5. Align pins (5) of new lamp (4) with recessed holes in lamp housing (3) and gently push in until bottomed.

**NOTE**

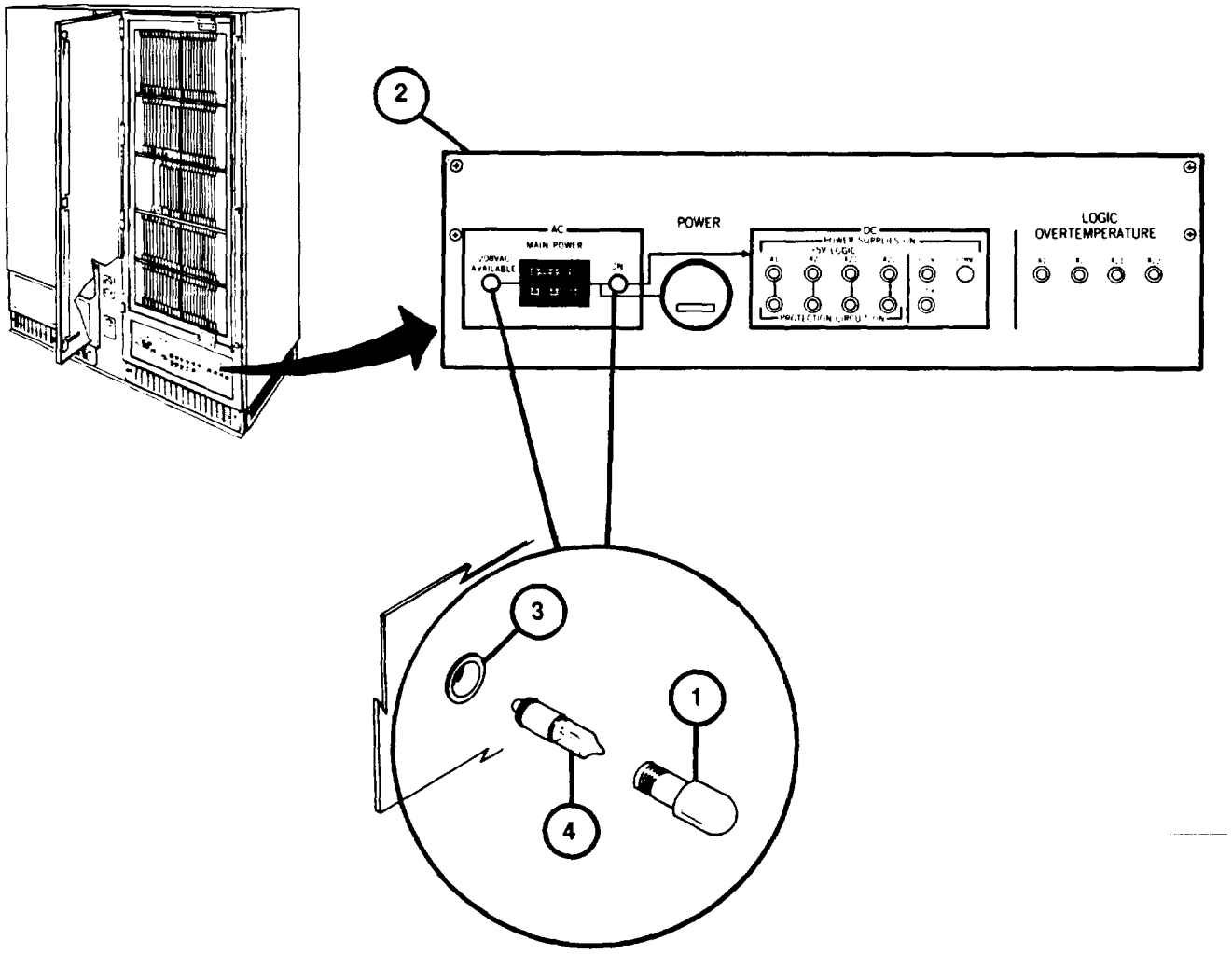
Retainer ring (I) cannot be reinstalled in step 5 unless new lamp (4) is properly seated.

6. Screw retainer ring (I) into lamp housing (3).



**SPC POWER MANAGEMENT PANEL AC ON INDICATOR LAMP REPLACEMENT**

1. Unscrew lens (1) from Power Management Panel (2) lamp housing (3).
2. Pull out lamp (4) from lens (1). Set lens (1) aside for later use.
3. Obtain identical lamp (Part No. M15098/11-001) from spare lamp box.
4. Insert new lamp (4) into lens (1).
5. Screw lens (1) with new lamp installed into lamp housing (3) from which it was removed.



## SPC MANAGEMENT PANEL DC POWER SUPPLIES AND OVERTEMPERTAURE INDICATOR LAMP REPLACEMENT

1. Unscrew lamp retainer ring (5) from Power Management Panel (2) lamp housing (6).

2. Set retainer ring (5) aside for later use.

3. Pull out lamp (7) from lamp housing (6).

**CAUTION**

The DC and Overtemperature indicator Lamps in the Power Management Panel look the same but operate with different voltages and are separately identified by part number. Replacement with an incorrect lamp may cause the lamp to fail immediately or not illuminate when power is applied. Refer to the Power Management Panel DC Lamp Replacement Table (see 3-19) for correct part number of lamp to be replaced.

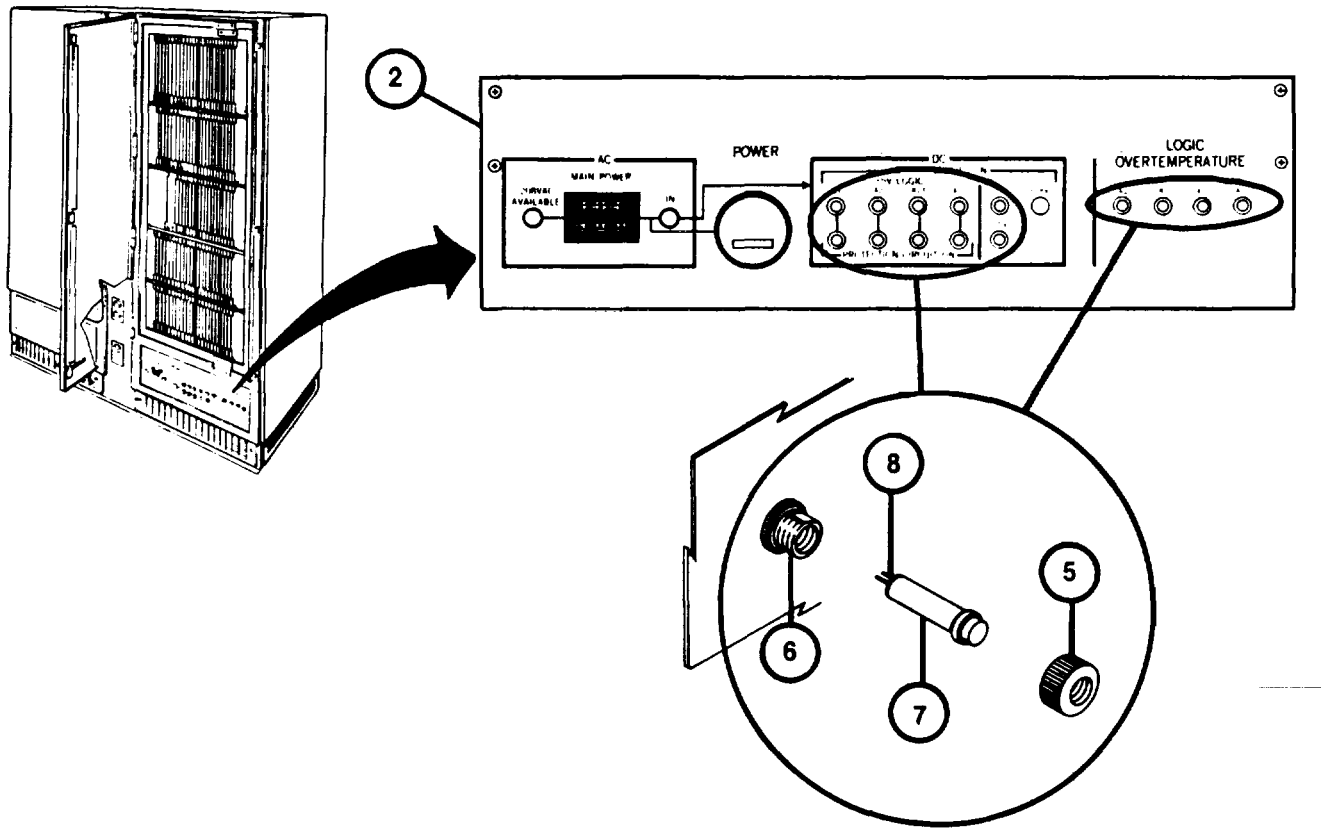
4. Obtain identical lamp (7) from spare lamp box.

5. Align pins (8) of new lamp with recessed holes in lamp housing (6) and gently push in until bottomed.

**NOTE**

Retainer ring (5) cannot be reinstalled in step 6 unless lamp is properly seated.

6. Screw lamp retainer ring (5) onto lamp housing (6).



**SPC POWER MANAGEMENT PANEL DC LAMP REPLACEMENT TABLE**

| PANEL INDICATOR LIGHT | SPARE LAMP PART NUMBER | LAMP V | COLOR |
|---|---|---|---|
| DC POWER SUPPLIES ON +5V LOGIC | | | |
| | 12710855-2 | 5 | GREEN |
| Al | 12710855-2 | 5 | GREEN |
| A2 | 12710855-2 | 5 | GREEN |
| A21 | 12710855-2 | 5 | GREEN |
| A22 | | | |
| DC POWER SUPPLIES ON | | | |
| +15V | 12710855-4 | 14 | GREEN |
| -15V | 12710855-4 | 14 | GREEN |
| PROTECTION CIRCUIT ON | | | |
| A*l* | *12710855-5* | 28 | GREEN |
| A2 | 12710855-5 | 28 | GREEN |
| A21 | 12710855-5 | 28 | GREEN |
| A22 | 12710855-5 | 28 | GREEN |
| LOGIC OVERTEMPERATURE | | | |
| A1 | 12710855-7 | 28 | RED |
| A2 | 12610855-7 | 28 | RED |
| A21 | 12710855-7 | 28 | RED |
| A22 | 12710855-7 | 28 | RED |

## TRAINER SHELTER TRACK LIGHT INCANDESCENT LAMP REPLACEMENT

1. Press dimmer switch (1) to turn off track light.

**WARNING**

Incandescent lamps and covers get hot enough to cause a severe burn. Make sure they are off and have cooled adequately before attempting removal.

2. Grasp and turn lamp cover (2) to unscrew lamp and cover from lamp socket.

**WARNING**

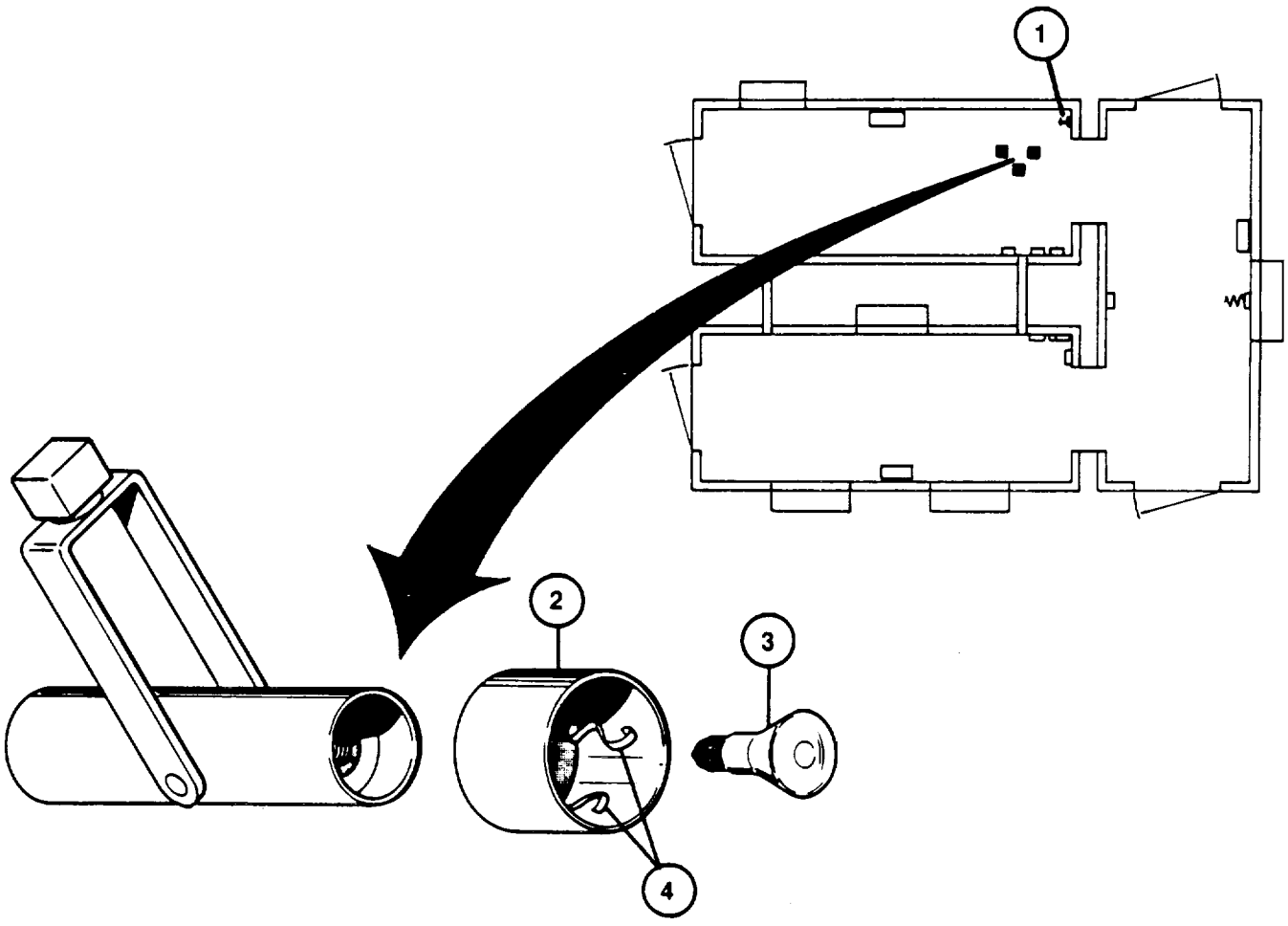
Lamp breakage can cause severe cuts or eye injury. Use caution when releasing lamp from retainer clips.

3. Pull and release lamp (3) from lamp cover retainer clips (4) and discard lamp.

4. Obtain new lamp (Item 3 Section III, Appendix B) and push new lamp into retainer clips on lamp cover.

5. Grasp lamp cover with lamp installed and screw lamp base into track light empty socket

6. Press and release dimmer switch to turn on track lights, then turn clockwise to increase brightness or counter-clockwise to decrease brightness, as desired.



## COMPUTER AND TRAINER SHELTER FLOURESCENT LAMPS REPLACEMENT

**WARNING**

Glass from broken fluorescent lamps can cause severe cuts or eye injuries. Use caution to prevent lamp breakage whenever a light fixture diffuser has been removed or when handling the fluorescent lamps.

1. Get screwdriver (item 5, Section III Appendix B).

2. Push up translucent plastic diffuser (1) and hinged flap (2) along face of fluorescent fixture.

3. While holding up hinged flap (2) use screwdriver (item 5, Section III, Appendix B) to carefully release plastic diffuser (1) from face of fluorescent fixture and set aside for later reinstallation.

4. Locate red fiber tab (3) and gray fiber (4) key at each end of fluorescent lamp to be replaced.

5. While pressing red fiber tab to release gray fiber key, pull down and remove key. Set key aside for later reinstallation.

6. Repeat step five at opposite end of fluorescent lamp.

7. Roll lamp 90" and pull down carefully to release lamp from fixture. Remove red fiber tabs from each end of lamp and set aside for later reinstallation. Then discard lamp.

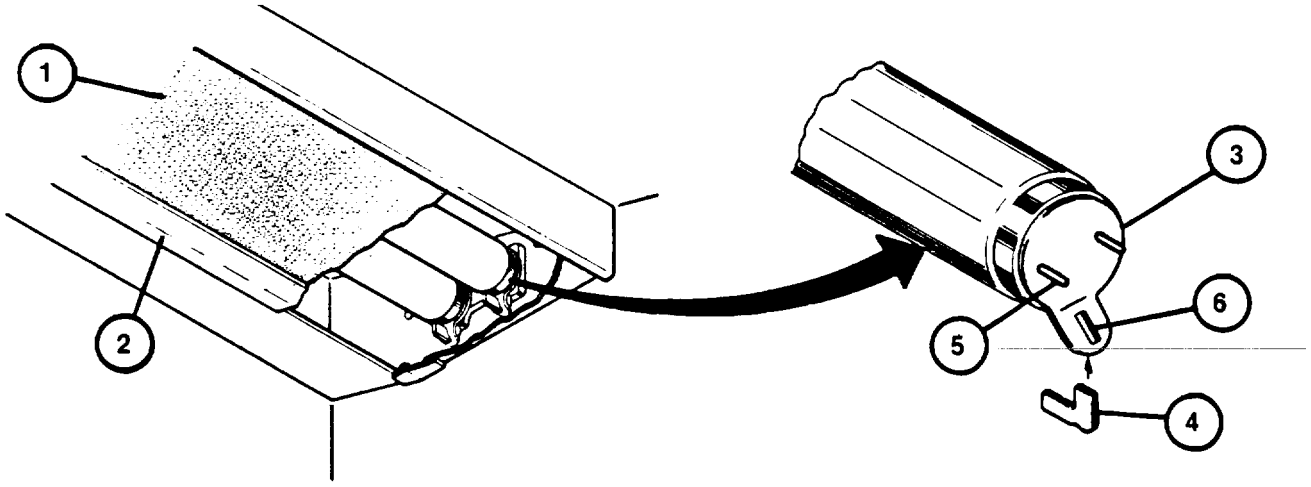
8. Obtain replacement lamp (item 5, Section III, Appendix B) and reinstall red fiber tabs at each end of lamp.

9. Hold lamp horizontally below fixture with connector pins (5) aligned vertically and red fiber tabs pointing to one side.

10. Push lamp up into fixture connectors, then roll lamp 900 so that red tabs installed on each end point down and lamp is locked in place.

11. Reinstall both fiber keys removed in step 5 by inserting narrow ends through slots (6) in red fiber tabs.

12. Reinstall plastic diffuser by inserting one edge above upper lip on fixture, then raising other edge above hinged flap until the flap falls back to hold diffuser in fixture.



## INTEGRATION SHELTER FLUORESCENT LAMPS REPLACEMENT

**WARNING**

Glass from broken fluorescent lamps can cause severe cuts or eye injuries. Use caution to prevent lamp breakage whenever a light fixture diffuser has been removed or when handling the fluorescent lamps.

1. Push up and carefully pull out one side of plastic diffuser (I) to release lip from edge of fluorescent fixture (2), then lift other side of diffuser from lamp fixture and set diffuser aside for later reinstallation.

2. Locate red fiber tab (3) and gray fiber key (4) at each end of fluorescent lamp to be replaced.

3. While pressing red fiber tab (3) to release gray fiber key, pull down and remove key. Set key aside for later reinstallation.

4. Repeat step 3 at opposite end of fluorescent lamp.

5. Roll lamp 900 and pull down carefullyto release lamp from fixture. Remove red fiber tab from each end of lamp and set aside for later reinstallation. Then discard lamp.

6. Obtain replacement lamp (item 5, Section II, Appendix B) and reinstall red fiber tabs (removed in step 5) at each end of lamp.

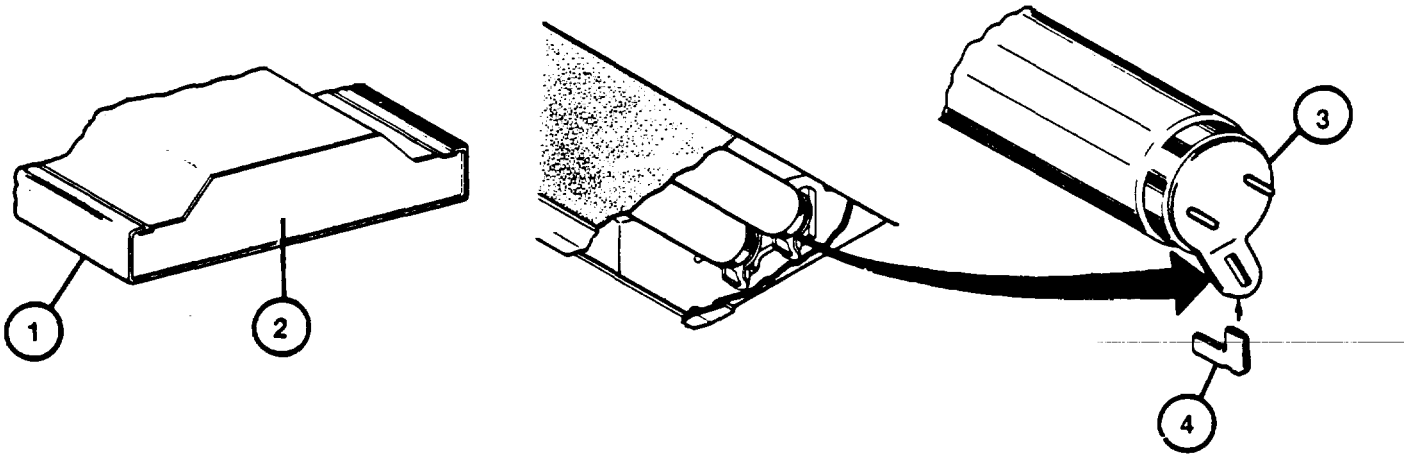
7. Hold lamp horizontally below fixture with connector pins aligned vertically and red fiber tabs pointing to one side.

8. Push lamp up into fixture connectors, then roll lamp 900 so that red tabs at each end point down and lamp is locked in place.

9. Reinstall both fiber keys removed in step 3 by inserting narrow end through slots in red fiber tabs.

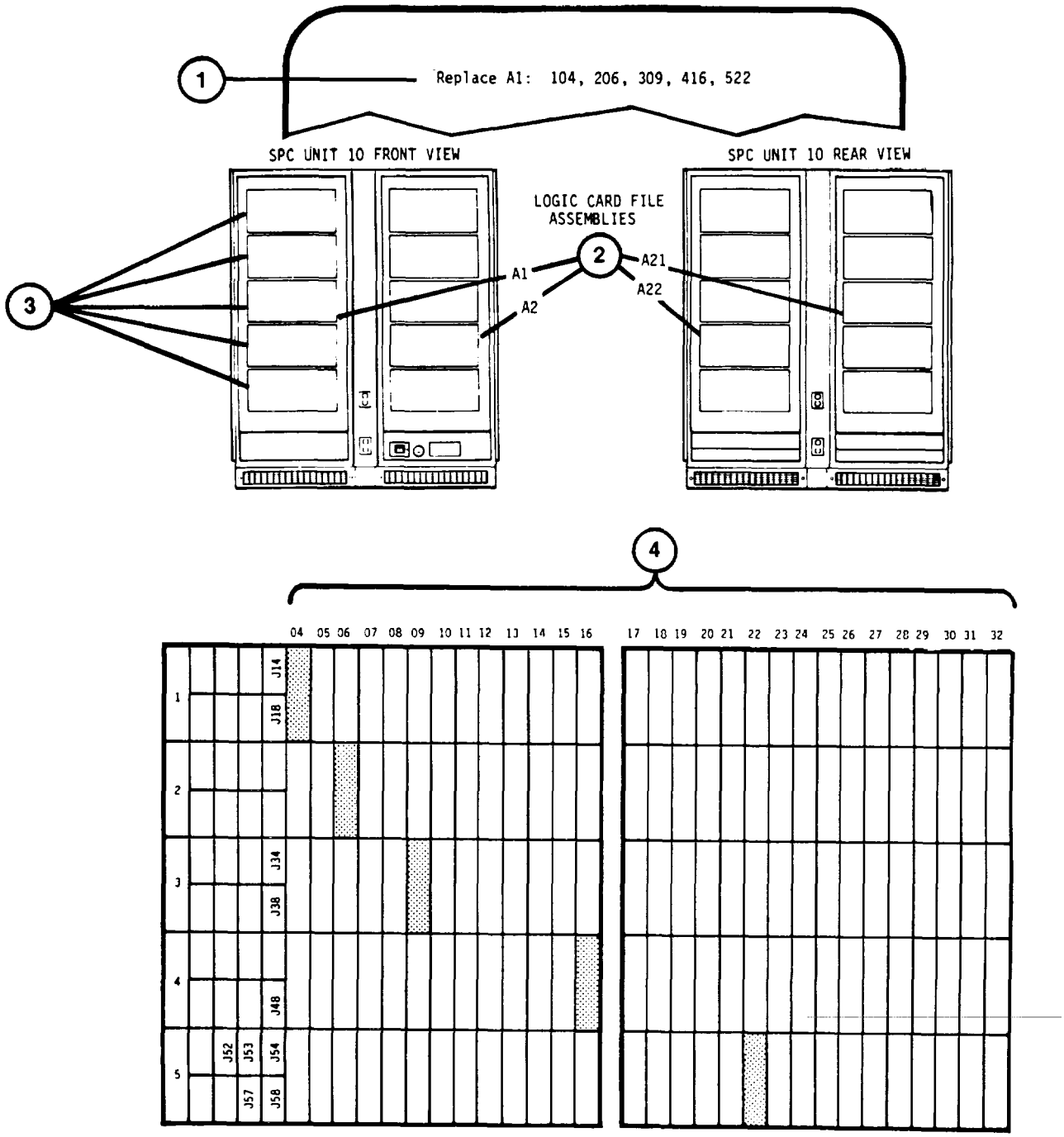
10. Reinstall plastic diffuser (I) by hooking lip of one side along edge of lamp fixture. Carefully pull out either side of diffuser and push up until it slips over edge of fixture and snaps in place.

**INTEGRATION SHELTER FLUORESCENT LAMPS REPLACEMENT (Continued)**



## REMOVING/INSTALLING SPC CIRCUIT CARD ASSEMBLIES (CCA)

CCA's may require replacement as a result of defects discovered during performance of Diagnostic Test Fault Isolation. The following procedure describes how to identify the CCA's, to find a specific CCA's location on the SPC Logic Card File Assembly and to remove and replace the CCA.



**REMOVING/INSTALLING SPC CIRCUIT CARD ASSEMBLIES (Continued)**

1. Observe the Diagnostic Test board replacement message example (1). The "Al" identifies one of the four Logic Card File Assemblies located behind the SPC cabinet doors (2).

2. Open the designated cabinet door by pressing the three thumb latches at the right hand of each door.

3. Observe five rows of CCA's (3) installed in the Logic Card File Assembly. The first digit of each 3-digit identifier 104, 206, 309, 416, 522 of the board replacement message example (1) identifies the row where the designated boards are located.

4. Observe that the CCA's in each row (4) are inserted in slots numbered from 04 to 32. The last two digits of the board replacement message example (1): 104, 206, 309, 416, 522 identify the slots where the designated CCA's are located. The location of CCA's identified in the board replacement message example (1) are shaded in diagram (4) to show their locations.

**WARNING**

Remove personal rings, bracelets, wristwatches or other metal jewelry before replacing Circuit Card Assemblies. SPC power remains on to maintain stable operation. Jewelry could short across an electrical circuit and severely burn or shock you.

**CAUTION**

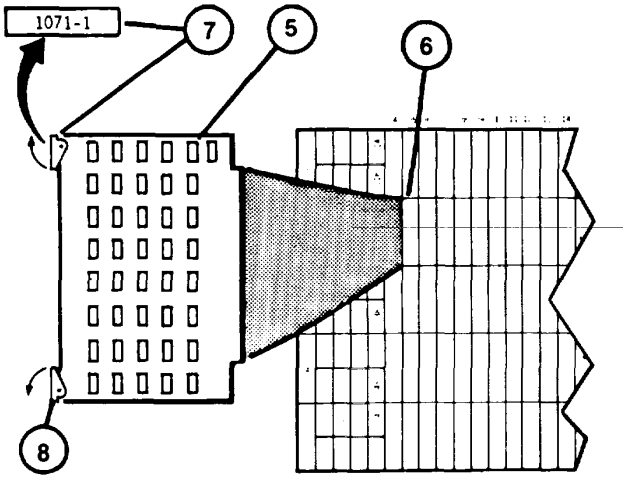
CCA's containing Electrostatic Sensitive Devices (ESD's) are identified by yellow pull tabs and must be protected from static discharges. Keep yellow-tabbed CCA's in special plastic packages and make sure shorting bars are connected whenever CCA's are not installed in Logic Card File Assemblies.

5. Remove CCA (5) from Logic Card File Assembly (6) as follows:

   a. Record location identification of CCA to be removed (as identified on Display Terminal Diagnostic Test error message).

   b. Record number of upper pull tab (7) of CCA to be removed. Check recorded number against Table of CCA Spares (see 3-27 thru 3-30). If CCA is not spared, return to 3-33, step 7T, and identify the next CCA in the board replacement message.

   c. Slowly, pull tabs (7) and (8) out toward you to loosen the CCA from its socket.



**REMOVING/INSTALLING SPC CIRCUIT CARD ASSEMBLIES (Continued)**

**CAUTION**

Use care in removing CCA from logic assembly to prevent catching components on adjacent CCA's.

d. Remove CCA (5) from logic assembly and set aside for possible reinstallation.

6. Obtain new CCA from Spares and install CCA (5) into logic assembly (6) as follows:

a. Refer to CCA locater charts (9) attached to the vertical support next to each row of CCA's to verify the CCA being installed has the correct part number for the intended connector slot.

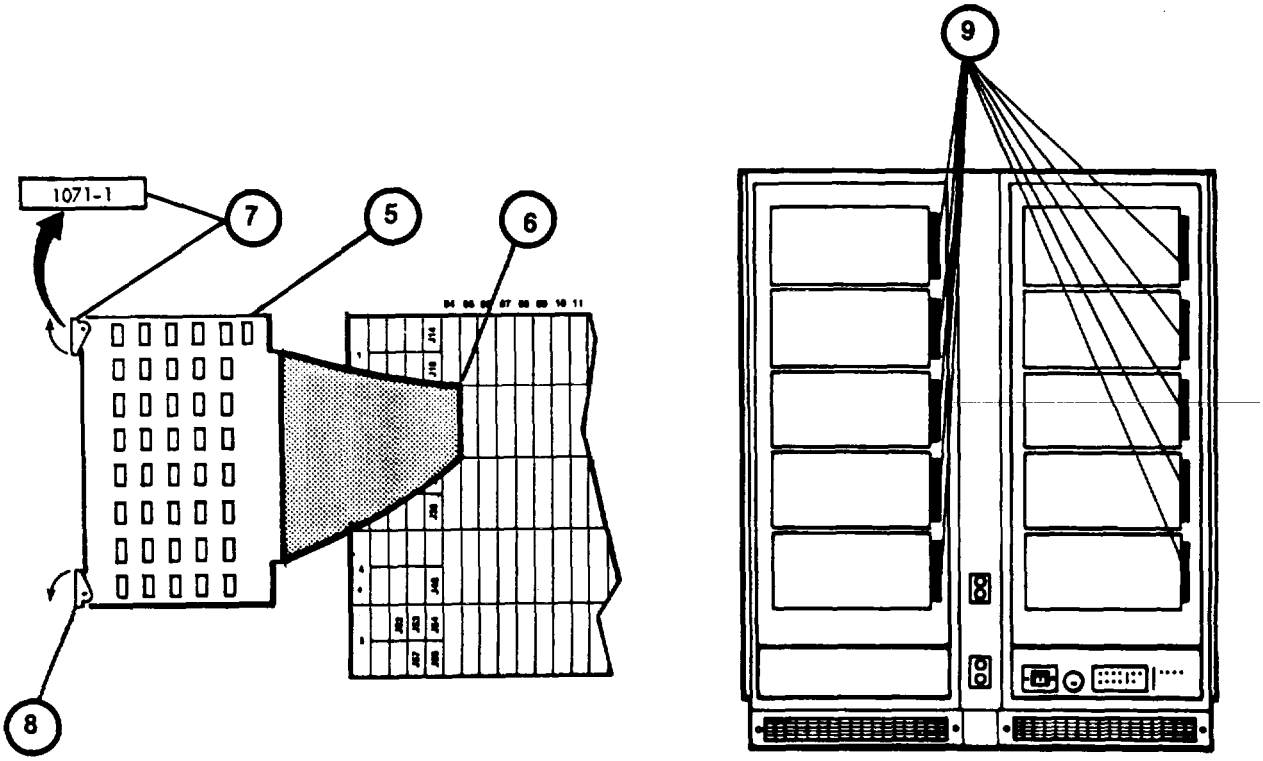
b. Verify that identifying number on tab is at top.

**CAUTION**

Do not use excessive force to install CCA's. CCA's are keyed with four slots at connector end to prevent installation in wrong location. Excessive force can break the socket. If board cannot be bottomed with firm pressure during installation, verify part number and location agree with CCA locator charts.

c. Carefully align CCA in correct guide slot location and push in firmly until bottomed in socket.

7. Return to Diagnostic Test Procedure (see 3-33, step 19).



## TABLE OF CCA'S FOR LOGIC CARD FILE ASSEMBLY A1

| ROW NO | INTERFACE CONNECTOR | CIRCUIT CARD SLOT NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 1 | | 12710200-1 | 12710237-1 | 12710247-1 | 12710248-1 | 12710410-1 | 12710204-1 | NOT USED | NOT USED | NOT USED | NOT USED | 12713423-1 | 12713423-1 | 12710233-1 | | 12710232-1 | 12710232-1 | 12710235-1 | 12710244-1 | 12710231-1 | 12710410-1 | 12710410-1 | 12710205-1 | 12710257-1 | 12710417-1 | 12710254-1 | 12710252-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 2 | | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12713423-1 | 12713423-1 | 12713423-1 | 12713423-1 | 12713423-1 | 12713423-1 | 12710201-1 | | 12710234-1 | 12710245-1 | 12710244-1 | 12710249-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12713450-1 | 12710262-1 | 12710417-1 | 12710258-1 | 12710253-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 3 | | 12710240-1 | 12710271-1 | 12710274-1 | 12710417-1 | 12710256-1 | 12710202-1 | 12710255-1 | 12710254-1 | 12710417-1 | NOT USED | 12710230-1 | 12710413-1 | 12710263-1 | | 12710256-1 | 12710417-1 | 12710253-1 | 12710252-1 | 12710201-1 | 12710254-1 | 12710417-1 | 12710261-1 | 12710417-1 | 12710260-1 | 12710262-1 | 12710259-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 4 | | 12710270-1 | 12713422-1 | 12710410-1 | 12710275-1 | 12710251-1 | 12710417-1 | 12710417-1 | 12710256-1 | 12710202-1 | 12710253-1 | 12710253-1 | 12710253-1 | 12710252-1 | | 12710252-1 | 12710252-1 | 12710254-1 | 12710417-1 | NOT USED | 12710254-1 | 12710417-1 | 12710259-1 | 12710417-1 | 12710252-1 | 12710253-1 | 12710417-1 | 12710280-1 | NOT USED | NOT USED | NOT USED |
| 5 | | NOT USED | 12710294-1 | 12710293-1 | 12710292-1 | 12710291-1 | 12710290-1 | 12710281-1 | NOT USED | 12710290-1 | 12710417-1 | NOT USED | 12710259-1 | 12710289-1 | | 12710288-1 | NOT USED | 12710201-1 | 12710282-1 | 12710259-1 | 12710286-1 | 12710417-1 | 12710259-1 | 12710285-1 | 12710284-1 | 12710283-1 | 12710252-1 | 12710253-1 | 12710417-1 | 12710282-1 | 12710282-1 |

STIFFENER SUPPORT

SHADED BLOCKS IDENTIFY CCA ON-BOARD SPARES

Form 1F466

## TABLE OF CCA'S FOR LOGIC CARD FILE ASSEMBLY A2

| ROW NO | INTERFACE CONNECTOR | CIRCUIT CARD SLOT NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 1 | | 12710211-1 | 12710212-1 | 12710218-1 | 12710222-1 | 12710213-1 | 12710214-1 | 12710215-1 | NOT USED | 12710410-1 | 12710410-1 | 12710410-1 | NOT USED | 12710219-1 | | NOT USED | 12710221-1 | 12710220-1 | 12710223-1 | 12710216-1 | NOT USED | 12710201-1 | 12710209-1 | 12713421-1 | 12710210-1 | 12710207-1 | 12713423-1 | 12713423-1 | NOT USED | NOT USED | 12710206-1 |
| 2 | | NOT USED | 12710170-1 | 12710171-1 | 12710171-1 | 12710171-1 | 12710171-1 | 12710126-1 | 12710172-1 | 12710172-1 | 12710172-1 | 12710172-1 | NOT USED | 12710201-1 | | 12710126-1 | 12710175-1 | 12710175-1 | 12710175-1 | 12710177-1 | 12710176-1 | 12710176-1 | 12710178-1 | 12710176-1 | NOT USED | NOT USED | 12710182-1 | 12710182-1 | NOT USED | 12710181-1 | 12710181-1 |
| 3 | | 12710200-1 | 12710196-1 | 12710195-1 | 12710179-1 | 12710180-1 | 12710126-1 | 12710197-1 | 12710173-1 | 12710173-1 | 12710173-1 | 12710173-1 | 12710174-1 | NOT USED | | 12710413-1 | 12710175-1 | 12710175-1 | 12710175-1 | 12710177-1 | 12710176-1 | 12710176-1 | 12710178-1 | 12710176-1 | NOT USED | NOT USED | NOT USED | 12710182-1 | 12710182-1 | NOT USED | 12710181-1 | 12710181-1 |
| 4 | | 12710193-1 | 12710193-1 | 12710193-1 | 12710126-1 | 12710126-1 | 12710126-1 | 12710126-1 | 12710188-1 | NOT USED | 12710191-1 | 12710190-1 | 12710189-1 | 12710126-1 | | 12710126-1 | 12710183-1 | 12710183-1 | NOT USED | 12710185-1 | 12710186-1 | 12710184-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED |
| 5 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710194-1 | NOT USED | NOT USED | NOT USED | 12710198-1 | 12710201-1 | 12710191-1 | 12710190-1 | 12780189-1 | 12710126-1 | | 12710126-1 | 12710183-1 | 12710183-1 | NOT USED | 12710185-1 | 12710186-1 | 12710184-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED |

STIFFENER SUPPORT

SHADED BLOCKS IDENTIFY CCA ON-BOARD SPARES

Form 1F466

## TABLE OF CCA'S FOR LOGIC CARD FILE ASSEMBLY A21

| ROW NO | INTERFACE CONNECTOR | CIRCUIT CARD SLOT NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 1 | | 12710201-1 | 12710120-1 | 12710121-1 | 12710123-1 | 12713422-1 | 12710127-1 | 12710125-1 | 12710119-1 | 12710115-1 | 12710131-1 | 12710138-1 | 12710138-1 | 12710138-1 | | 12710132-1 | 12710409-1 | 12710409-1 | 12710409-1 | 12710409-1 | 12710416-1 | NOT USED | 12710416-1 | NOT USED | 12710416-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED |
| 2 | | 12710200-1 | 12710120-1 | 12710128-1 | 12710122-1 | 12713422-1 | 12710124-1 | 12710125-1 | 12710117-1 | 12710116-1 | NOT USED | 12710138-1 | 12710138-1 | 12710138-1 | | 12710132-1 | 12710409-1 | 12710409-1 | 12710409-1 | 12710409-1 | 12710416-1 | NOT USED | 12710416-1 | NOT USED | 12710416-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED |
| 3 | | 12710415-1 | NOT USED | 12710276-1 | 12710277-1 | 12710276-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | 12710413-1 | | 12713423-1 | NOT USED | 12710418-1 | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED | NOT USED |
| 4 | | 12710200-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710161-1 | 12710142-1 | 12710140-1 | NOT USED | NOT USED | 12710143-1 | | 12710144-1 | 12710145-1 | 12710146-1 | NOT USED | 12710162-1 | 12710162-1 | 12710160-1 | 12710153-1 | 12710152-1 | 12710154-1 | 12710401-1 | 12710156-1 | 12710157-1 | NOT USED | NOT USED | NOT USED |
| 5 | | 12710151-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710410-1 | 12710159-1 | 12710159-1 | NOT USED | NOT USED | 12710401-1 | 12710401-1 | 12710144-1 | | 12710201-1 | NOT USED | 12710147-1 | 12710147-1 | 12710150-1 | 12710148-1 | 12710143-1 | 12710143-1 | 12710149-1 | 12710158-1 | 12710126-1 | 12713421-1 | 12713421-1 | NOT USED | NOT USED | NOT USED |

STIFFENER SUPPORT

SHADED BLOCKS IDENTIFY CCA ON-BOARD SPARES

Form 1F466

## TABLE OF CCA'S FOR LOGIC CARD FILE ASSEMBLY A22

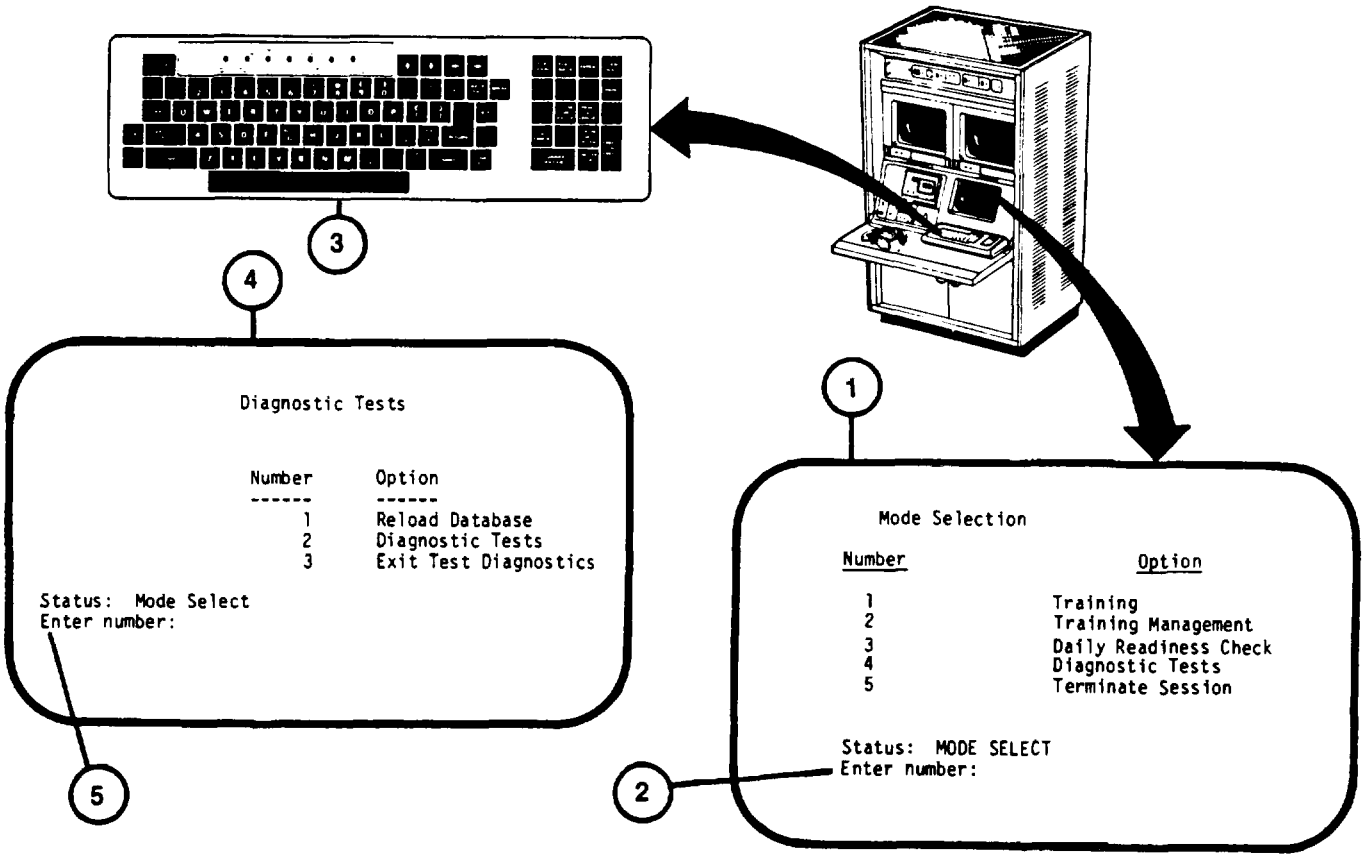
| ROW NO | INTERFACE CONNECTOR | CIRCUIT CARD SLOT NUMBER | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 1 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710101-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710104-1 | 12710109-1 | 12710109-1 | 12710110-1 | 12710110-1 | STIFFENER SUPPORT | 12710111-1 | 12710112-1 | 12710419-1 | 12710419-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12710105-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 2 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710102-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710104-1 | 12710106-1 | 12710106-1 | 12710106-1 | 12710107-1 | | 12710107-1 | 12710108-1 | 12710419-1 | 12710419-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12710105-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 3 | | NOT USED | NOT USED | NOT USED | 12710414-1 | NOT USED | 12710166-1 | 12710167-1 | 12710168-1 | 12710169-1 | 12710200-1 | 12710114-1 | NOT USED | 12710413-1 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710401-1 | 12710113-1 | 12710401-1 | 12710401-1 | 12710401-1 | 12710401-1 | 12710113-1 | 12710201-1 | 12710201-1 | NOT USED | NOT USED | NOT USED | NOT USED |
| 4 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710101-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710104-1 | 12710109-1 | 12710109-1 | 12710110-1 | 12710110-1 | | 12710111-1 | 12710112-1 | 12710419-1 | 12710419-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12710105-1 | 12710105-1 | NOT USED | NOT USED | NOT USED |
| 5 | | 12710401-1 | 12710401-1 | 12710401-1 | 12710102-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710103-1 | 12710104-1 | 12710106-1 | 12710106-1 | 12710106-1 | 12710107-1 | | 12710107-1 | 12710108-1 | 12710419-1 | 12710419-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12713420-1 | 12710105-1 | 12710105-1 | NOT USED | NOT USED | NOT USED |

SHADED BLOCKS IDENTIFY CCA ON-BOARD SPARES

Form 1F466

**DIAGNOSTIC TEST PROCEDURE (FAULT ISOLATION)**

1. Assure that the User Log–On Procedure has been performed (see 2-131).
2. Observe that the Mode Selection display (I) with the "Enter number:" prompt (2) appears on the Display Terminal.
3. Press number 4 key on the keyboard (3).
4. Observe that the number 4 appears after "Enter number:" prompt (2).
5. Press RETURN key on keyboard (3).
6. Observe that the "Diagnostic Tests" menu (4) with "Enter number:" prompt (5) appears on the display.
7. Enter number 2 on keyboard (3) and observe that number 2 appears after prompt (5).
8. Press RETURN key on keyboard (3).



**DIAGNOSTIC TEST PROCEDURE (FAULT ISOLATION) (Continued)**

9. Observe that the "COFT VISUAL SYSTEM DIAGNOSTICS MENU" (6) with "OPTION➔" prompt (7) appears on the display.

**NOTE**

To exit diagnostic testing at this point go to step 24 (see 3-33).

10. Enter number 1 on keyboard (3).

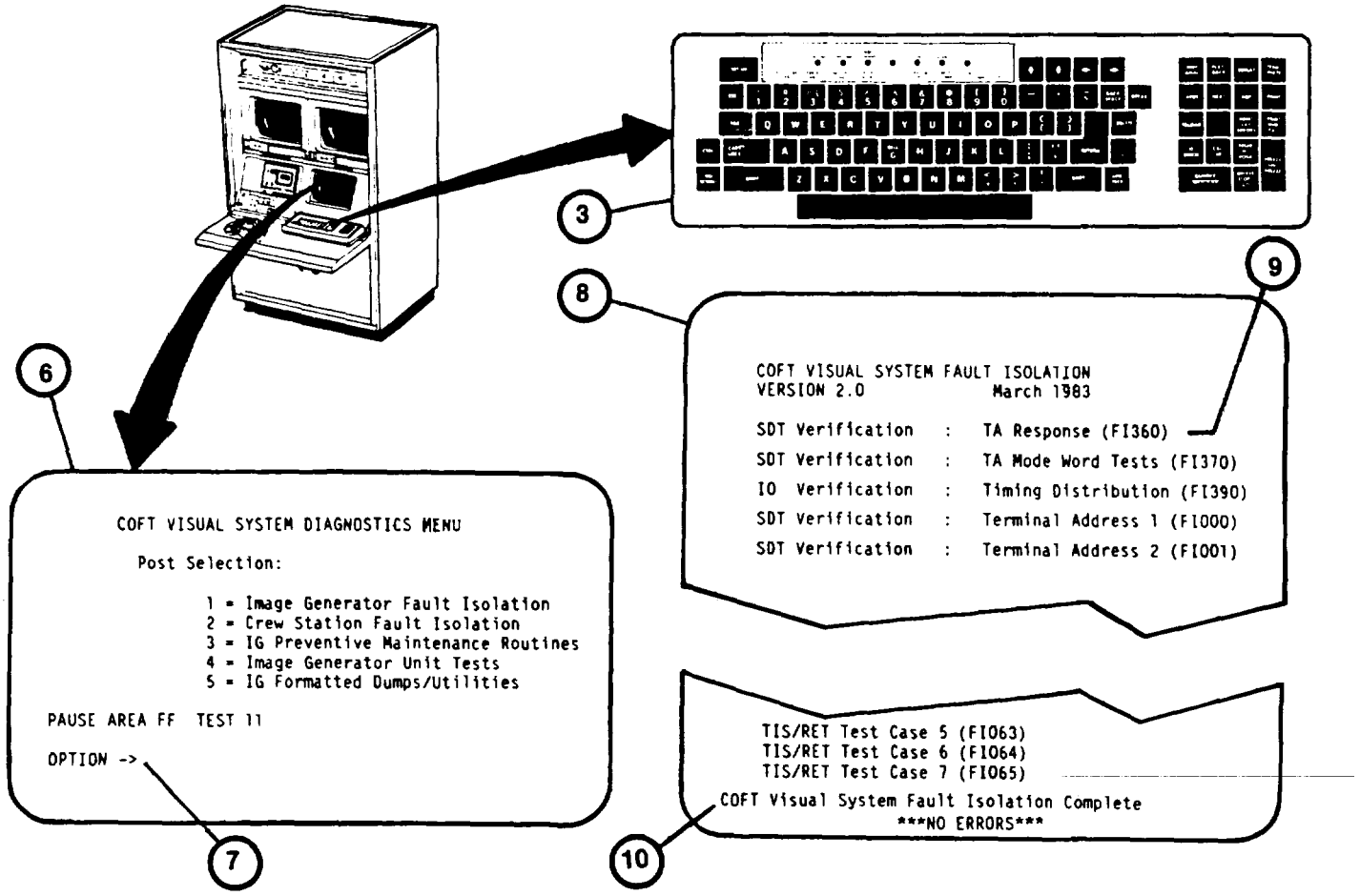
11. Observe that 1 appears after "OPTION" prompt (7).

12. Press RETURN key on keyboard (3).

13. Observe that the "COFT VISUAL SYSTEM FAULT ISOLATION" display page (8) appears on the display.

14. Observe that the display, slowly and automatically, steps down through the test with the first test being "SDT Verification: TA Response (FI360)" displayed (9).

15. If no faults are identified by the test, the test will end with the message "COFT Visual System Fault Isolation Complete *** No ERRORS ***" (10) and automatically returns to "COFT VISUAL SYSTEM DIAGNOSTICS MENU". Then move to step 24 (see 3-33 ).



**DIAGNOSTIC TEST PROCEDURE (FAULT ISOLATION) (Continued)**

**NOTE**

The following steps assume that the Diagnostic Test uncovers a typical fault in the Special Purpose Computer.

16. Observe that the test continues until a fault is detected and fault data appears on the screen. When a board replacement message (I ) appears, the test will halt.

17. Observe that the board replacement message identifies one or more (up to 12 maximum) circuit card assemblies (CCA) where the fault may exist. The example identifies the first CCA to be replaced as AI: 104 (12).

18. Determine the location and replace the CCA as described in Removing/Installing SPC Circuit Card Assemblies (see 3-24)

19. Press RETURN on keyboard (3) to rerun the test and determine if the replaced CCA corrected the fault.

20. If the CCA replacement corrected the fault, the test will automatically continue to completion. Then go to step 23.

21. If the CCA replaced did not correct the fault, the same board replacement message (11) will be displayed. Reinstall the CCA removed previously and replace the next CCA (13) identified in the series.

22. Repeat steps 19 and 21 (substituting next spared CCA on list) until the test moves onto completion (step 23) or all available CCA's identified have been replaced. If the test cannot be completed, notify Organizational Maintenance.

23. Observe the "COFT VISUAL SYSTEM DIAGNOSTICS MENU" reappears on the Display Terminal at the completion of testing.

24. Press RETURN on keyboard (3) and observe "Diagnostic Tests" menu (4) appears on display.

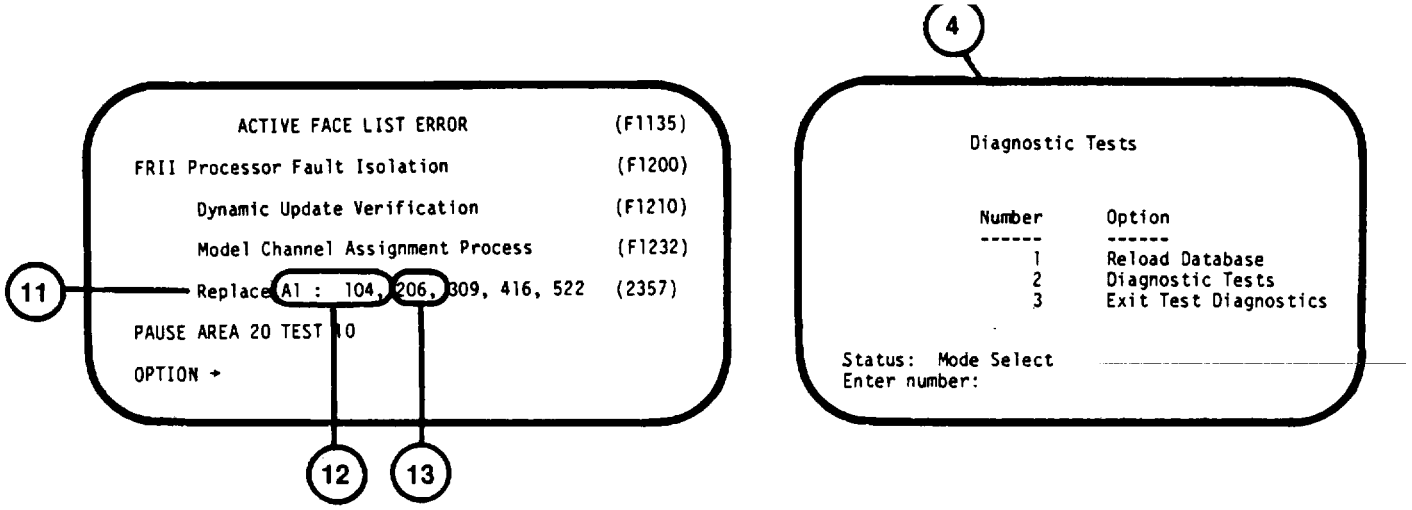
**NOTE**

Make sure step 25 is performed to reload database before returning to Training Mode. If not, sight scenes will not appear.

25. Press number 1, then RETURN on keyboard (3).

26. Press number 3, then RETURN on keyboard (3).

27. Observe the Mode Select page appears on the display (see 2-132, step 11).



# APPENDIX A

# REFERENCES

## SCOPE

This appendix lists all forms and publications referenced in this manual.

## FORMS

| | |
|---|---|
| COFT System Log (Daily Operations) | SCS 1612 |
| Quality Deficiency Report | SF 368 |
| Recommended Changes to Equipment Technical Manuals | DA Form 2028-2 |
| Recommended Changes to Publications and Blank Forms | DA Form 2028 |

## PUBLICATIONS

| | |
|---|---|
| First Aid | FM 21-11 |
| Instructor's Utilization Handbook | HB23-1-BFVS<br>U-COFT-I through 5 |
| Operator's Manual, Fighting Vehicle, Infantry, M2 (2350-01-048-5920) and Fighting Vehicle, Cavalry, M3(2350-01-049-2695) Turret | TM 9-2350-252-10-2 |
| The Army Maintenance Management System (TAMMS) | DA Pam 738-750 |

# APPENDIX B

# COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

## Section I. INTRODUCTION

### SCOPE

This appendix lists Components of End Item and Basic Issue Items for the Sheltered U-COFT to help you inventory items required for safe and efficient operation.

### GENERAL

The Components of End Item and Basic Issue Item lists are divided into the following sections:

a. Section II - Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These components are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these components must be with the end item whenever it is issued or transferred between property accounts. An illustration is furnished to assist you in identifying the items.

b. Section III - Basic Issue Items. These are the minimum essential items required to place the Sheltered U-COFT in operation, to operate it, and to perform emergency repairs. The listed items must be with the Sheltered U-COFT during operation and whenever it is transferred between property accounts. This manual is your authority to request/requisition replacement Basic Issue Items, based on TOE/MTOE authorization of the end item.

### EXPLANATION OF COLUMNS

Below is an explanation of columns found in the tabular listings:

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration which shows the item.

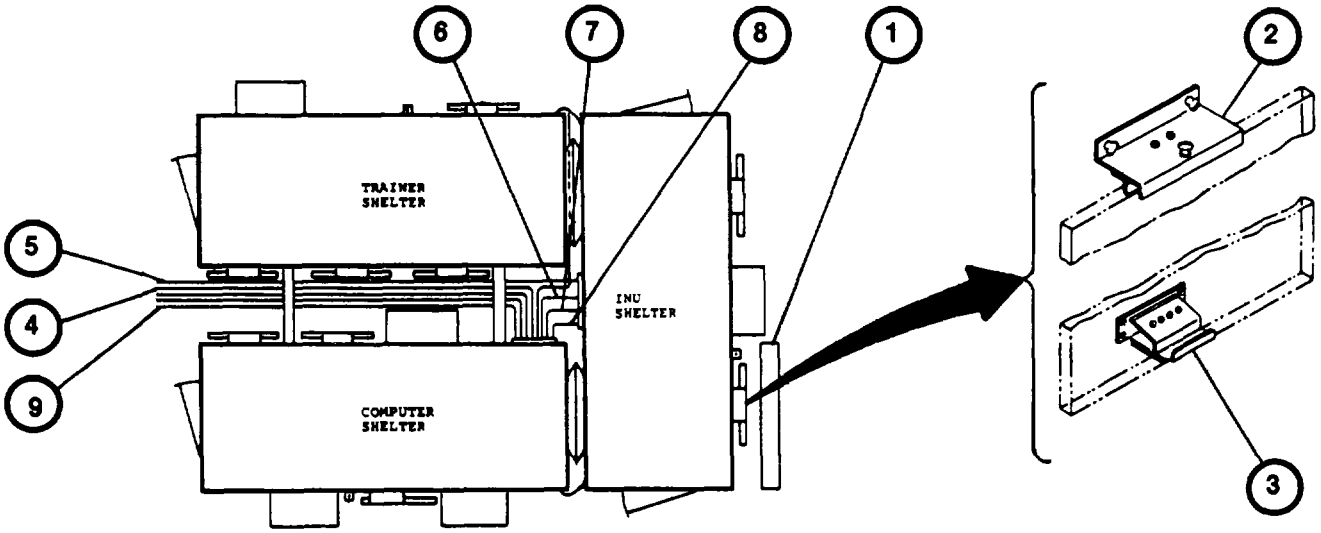
b. Column (2) - National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the National item name and, if required, a minimum description in parentheses to identify and locate the item. The entry for each item ends with the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in., pr).

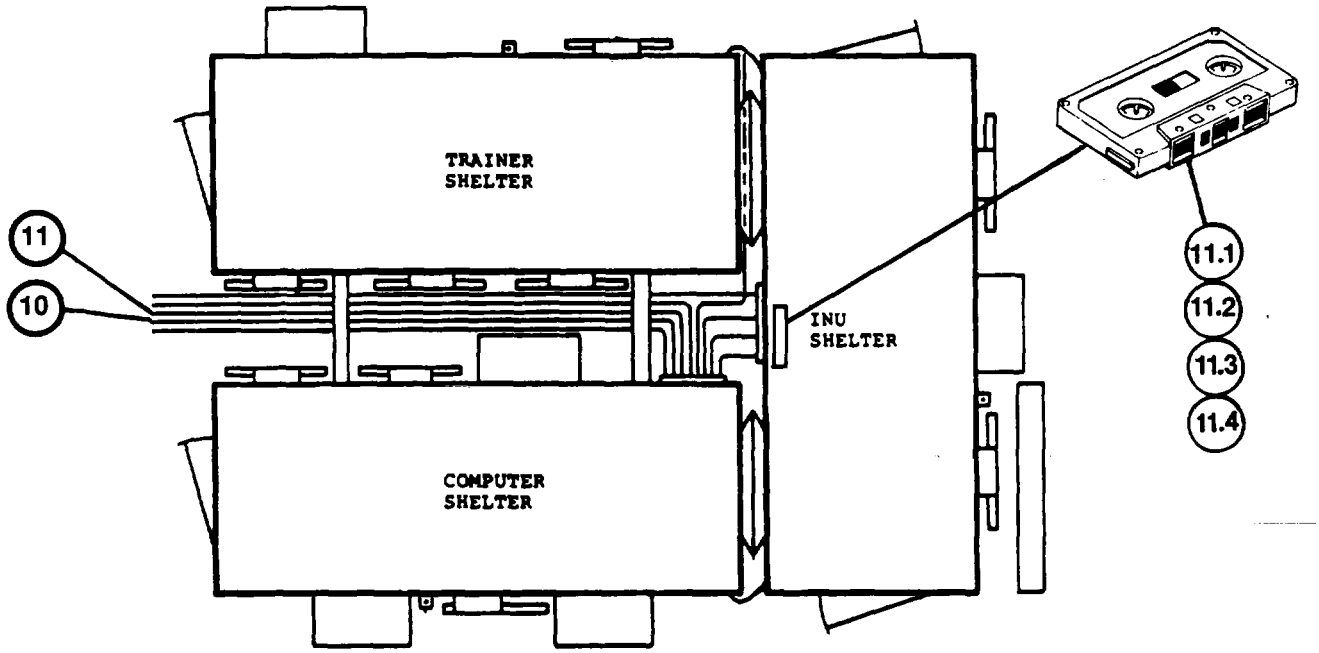
e. Column (5) - Quantity Required (Qty Req'd). Indicates the quantity of the item authorized to be used with the equipment.

## Section II. COMPONENTS OF END ITEM



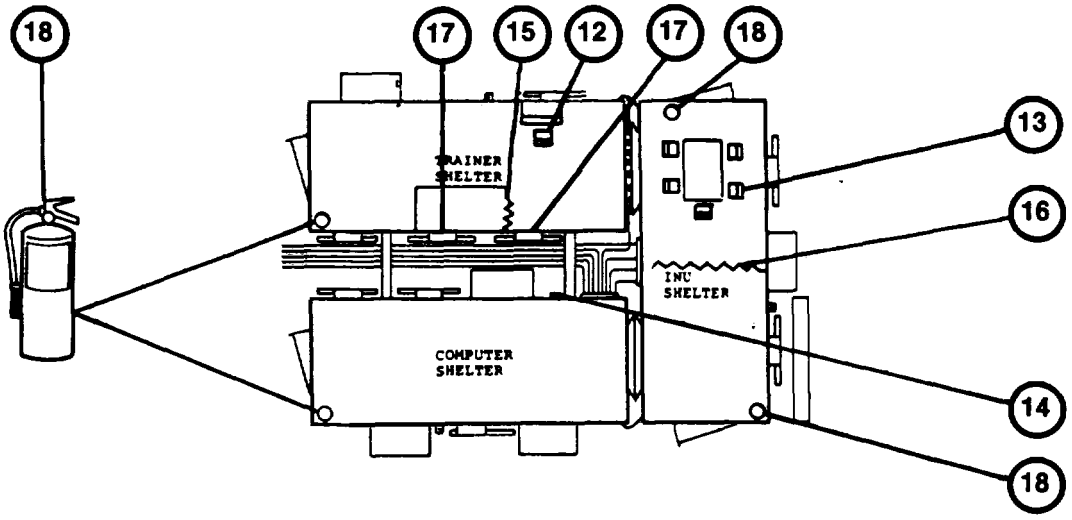

| (1) Illus Number (Not Used ) | (2) National Stock Number | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 1 | | Box, Storage (19200) 1271120-1 | Ea | 1 |
| 2 | | Bracket, Door, Storage. (top) (19200) | Ea | 9 |
| 3 | | Bracket, Door, Storage, (bottom) (19200) 12711086-1 | Ea | 9 |
| 4 | | Cable Assy, W18 External, Ground (96909) 12711147-1 | Ea | 1 |
| 5 | | Cable Assy, W3 External, (96906) 12711145-1 | Ea | 1 |
| 6 | | Cable Assy, W5, External, (96906) 12711150-1 | Ea | 1 |
| 7 | | Cable Assy, W4, External, (96906) 12711149-1 | Ea | 1 |
| 8 | | Cable Assy, W17 External, Ground (96909) 1271146-1 | Ea | 1 |
| 9 | | Cable Assy, W6 External, (96906) 12711148-1 | Ea | 1 |

**COMPONENTS OF END ITEM (Continued)**



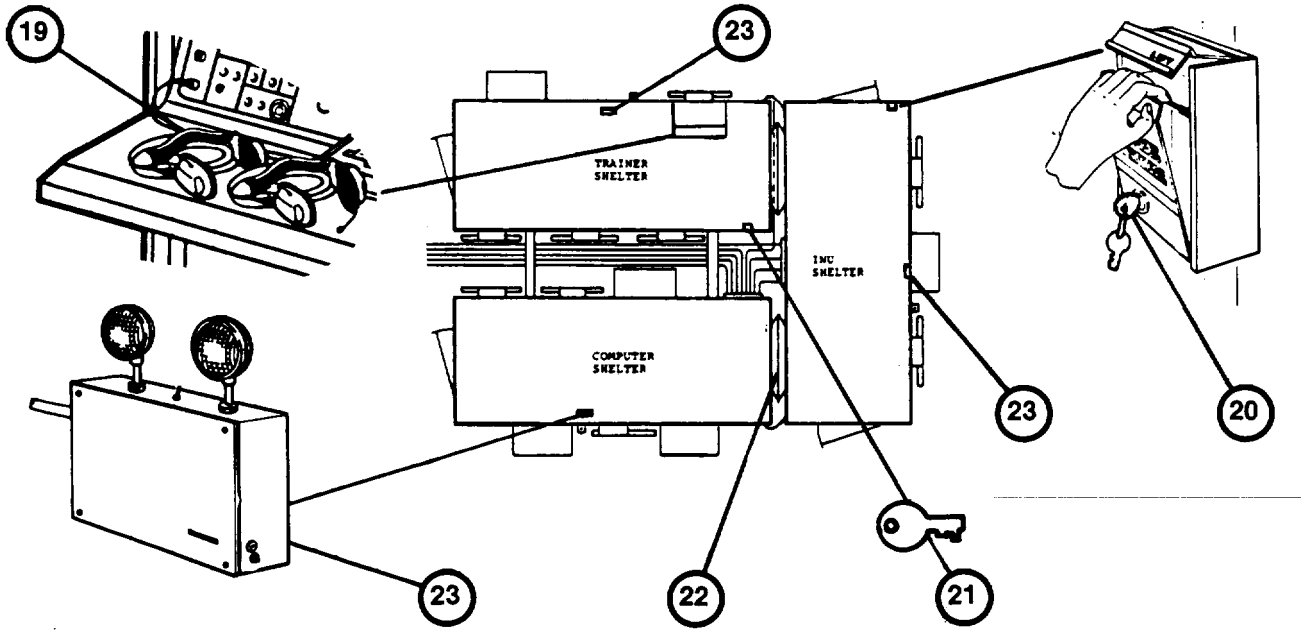

| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 10 | | Cable Assy, W1, External, (96906) 12711143-1 | Ea | 1 |
| 11 | | Cable Assy, W2, External, (96906) 12711144-1 | Ea | 1 |
| 11.1 | | Cassette, Brief, M2/M3 (19200) 9368435-4 | Ea | 1 |
| 11.2 | | Cassette, Brief, M2/M3 (19200) 9368435-5 | Ea | 1 |
| 11.3 | | Cassette, Brief, M2/M3 (19200) 936835-6 | Ea | 1 |
| 11.4 | | Cassette, Brief, M2/M3 (19200) 19200) 936835-10 | Ea | 1 |

**COMPONENTS OF END ITEM (Continued)**



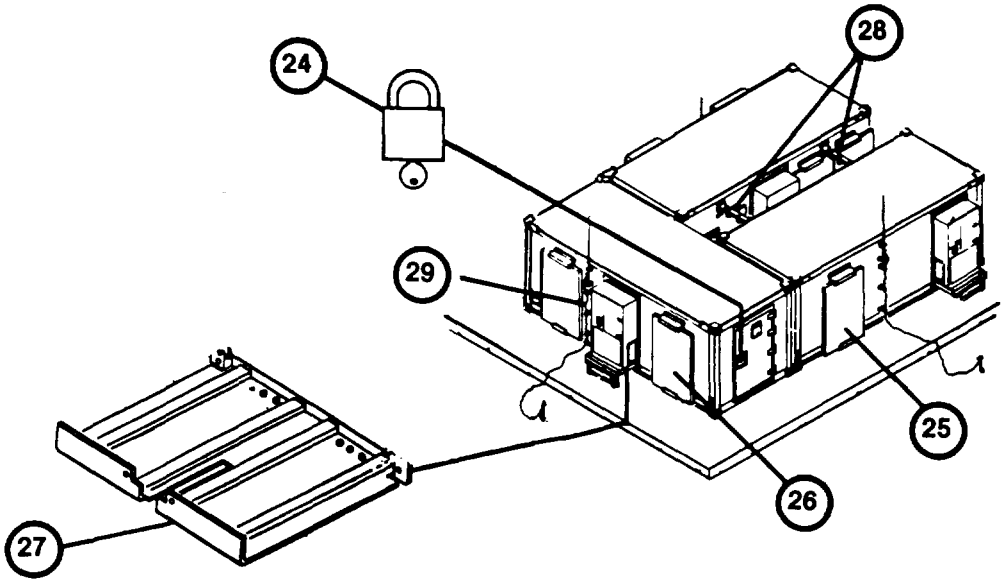

| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 12 | | Chair, Posture, Swivel (19200) 12714039 | Ea | 1 |
| 13 | | Chair, Metal, General, Office (19200) 12714083 | Ea | 1 |
| 14 | | Cover, Raceway Port (19200) 12711096-1 | Ea | 1 |
| 15 | | Curtain, Door (Crew Station) (19200) 12714879-1 | Ea | 1 |
| 16 | | Cutain, Integration Shelter (19200) 12714330-1 | Ea | 1 |
| 17 | | Door, Shelter Assy, (removed) (30003) 1339AS381-1 | Ea | 1 |
| 18 | | Extinguisher, Fire (19200) 12711080 | Ea | 1 |

**COMPONENTS OF END ITEM (Continued)**



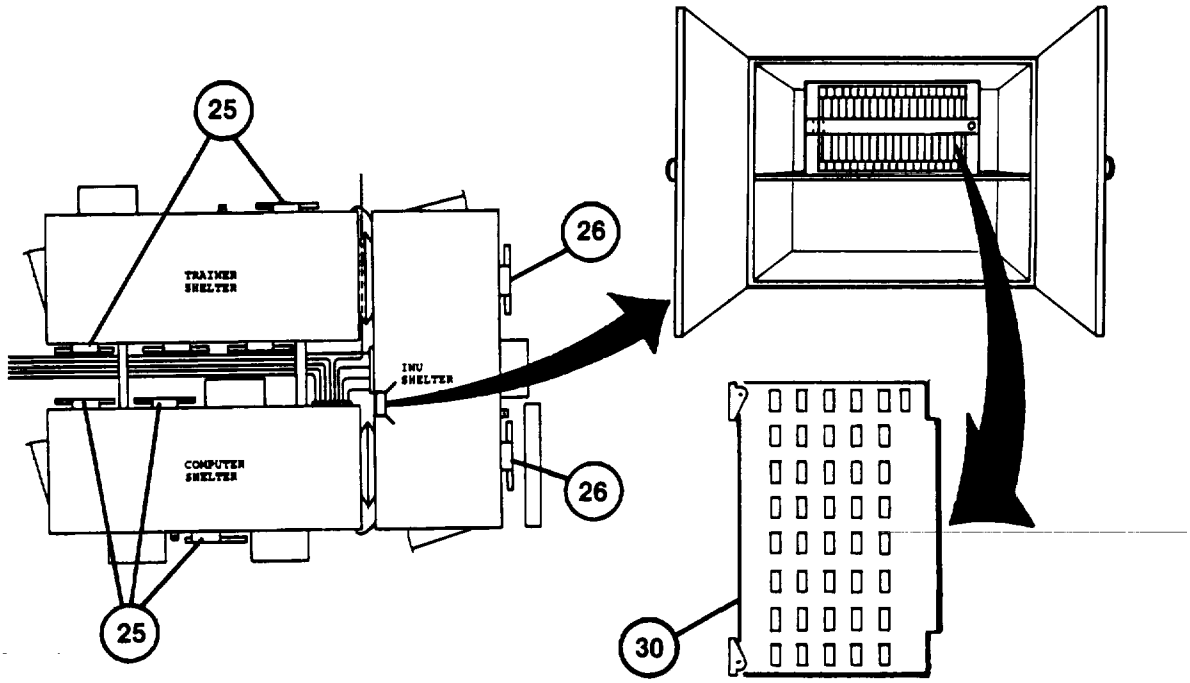

| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 19 | | Headset, IOS Communication | | |
| | | a. Cable Assembly, Special (19200) | Ea | 1 |
| | | b. Headset-Microphone (1920) 12710899 | Ea | 2 |
| | | c. Switch Assembly, Intercom (19200) 12710913 | Ea | 2 |
| 20 | | Key, Halon Release, Manual Pull Station | Ea | 2 |
| 21 | | Key, Fire Protection Panel | Ea | 2 |
| 22 | | Kit, Butting (19200) 12711110-1 | Ea | 2 |
| 23 | | Light, Emergency (19200) 12711216 | Ea | 3 |

**COMPONENTS OF END ITEM (Continued)**



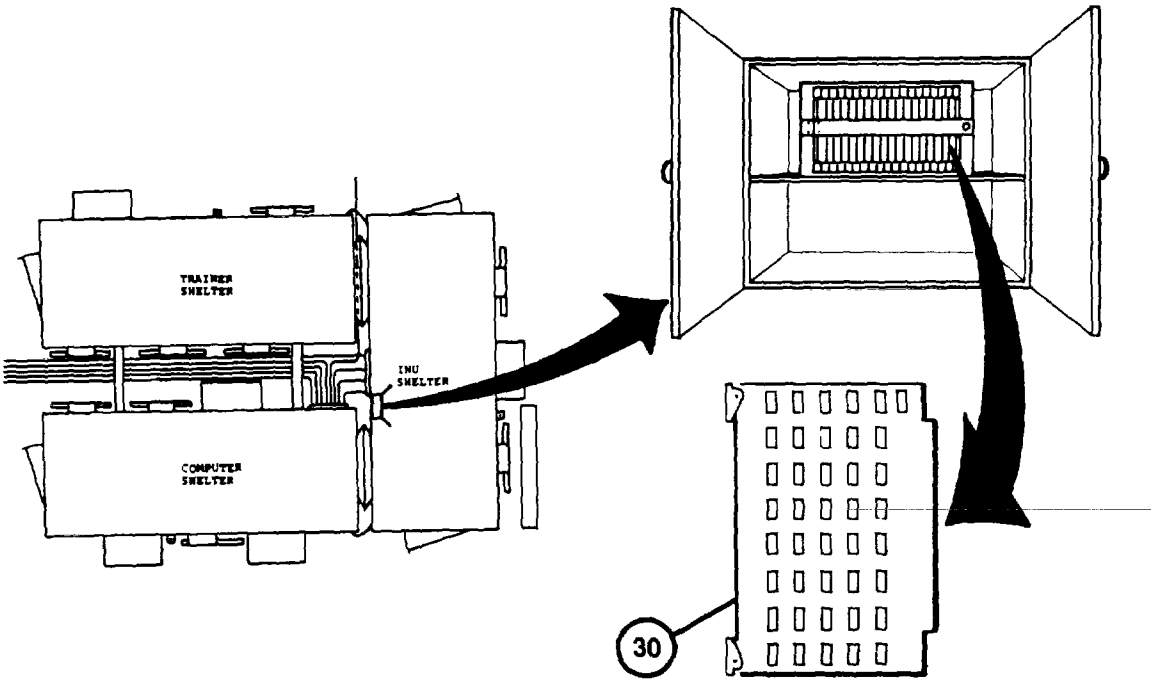

| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 24 | | Padlock and key, Shelter Door (30003) 1339AS116-1 | Each | 1 |
| 25* | | Panel Assy, Air Conditioner Access (removed) (30003) 1339AS376-1 | Each | 1 |
| 26* | | Panel Assy, Doorway (removed) (19200) 1339AS440-1 | Each | 1 |
| 27 | | Platform, Air Conditioner (19200) 12714020-1 | Each | 1 |
| 28 | | Raceway, Cable (19200) 12711072-1 | Each | 1 |
| 29 | | Rod Assy, Lightning: | | |
| | | a. Guide (19200) 12711169-1 | Each | 1 |
| | | b. Support (19200) 12711170-1 | Each | 1 |
| | | c. Rod, Ground (19200) 12711298-1 | Each | 1 |
| | | d. Standoff Cable (19200 12711306-1 | Each | 1 |
| | | e. Ground Cable (19200) | Each | 1 |
| | | f. Lightning Rod (19200) 12711298-1 | Each | 1 |

**COMPONENTS OF END ITEM (Continued)**



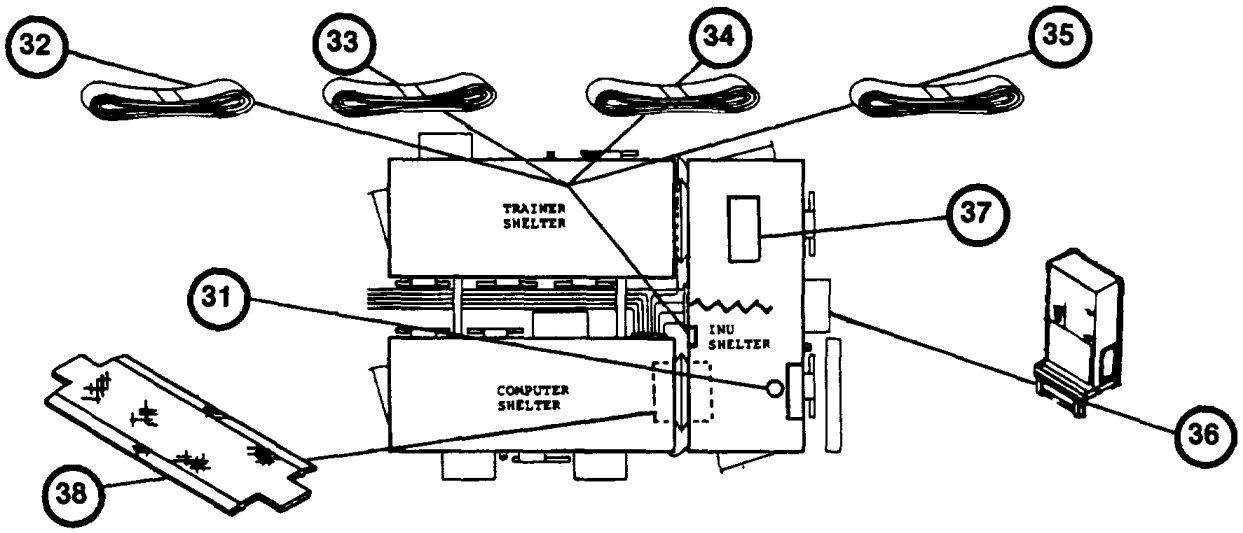

| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 30 | | Spares, On-Board, Circuit Card Assembly (CCA) (19200) | | |
| | | a. 12710103-1 | Each | 1 |
| | | b. 12710105-1 | Each | 1 |
| | | c. 12710106-1 | Each | 1 |
| | | d. 12710109-1 | Each | 1 |
| | | e. 12710120-1 | Each | 1 |
| | | f. 12710129-1 | Each | 1 |
| | | g. 12710138-1 | Each | 1 |
| | | h. 12710143-1 | Each | 1 |
| | | i. 12710147-1 | Each | 1 |
| | | j. 12710159-1 | Each | 1 |
| | | k. 12710162-1 | Each | 1 |
| | | l. 12710171-1 | Each | 1 |
| | | m. 12710172-1 | Each | 1 |
| | | n. 12710175-1 | Each | 1 |

**COMPONENTS OF END ITEM (Continued)**




| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| | | o. 12710176-1 | Each | 1 |
| | | p. 12710183-1 | Each | 1 |
| | | q. 12710185-1 | Each | 1 |
| | | r. 12710200-1 | Each | 1 |
| | | s. 12710201-1 | Each | 1 |
| | | t. 12710252-1 | Each | 1 |
| | | u. 12710253-1 | Each | 1 |
| | | v. 12710254-1 | Each | 1 |
| | | w. 12710259-1 | Each | 1 |
| | | x. 12710401-1 | Each | 1 |
| | | y. 12710409-1 | Each | 1 |
| | | z. 12710410-1 | Each | 1 |
| | | aa. 12710413-1 | Each | 1 |
| | | ab. 12710417-1 | Each | 1 |
| | | ac. 12710419-1 | Each | 1 |
| | | ad. 12710420-1 | Each | 1 |
| | | ae. 12710423-1 | Each | 1 |

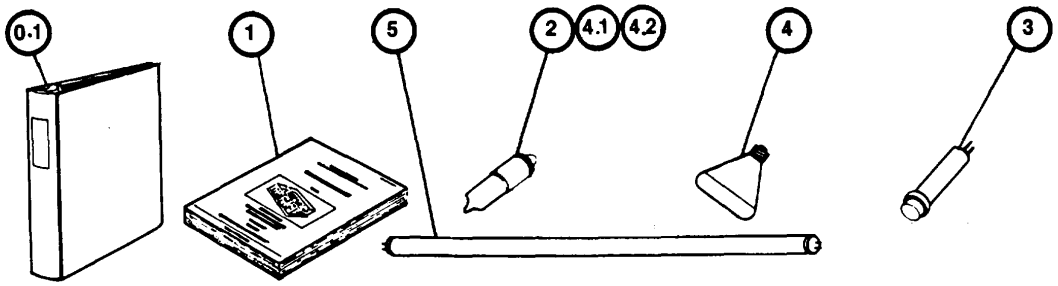
**COMPONENTS OF END ITEM (Continued)**




| (1) Illus Number | (2) National Stock Number | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| | (Not Used) | | | |
| 31 | | Stool Maintenance Bench (19200) 12714307 | Ea | 1 |
| 32 | | Strap, Tie Down (80205) NAS 1213R20H54 | Ea | 5 |
| 33 | | Strap, Tie Down (80205) NAS1212R20HJ54 | Ea | 5 |
| 34 | | Strap, Tie Down (80205) NAS1212R20HJ72 | Ea | 1 |
| 35 | | Support, Air Conditioner (19200) 12714050 | Ea | 5 |
| 36 | | Table, Debriefing (19200) 12714306 | Ea | 1 |
| 37 | | Walkway, Inter-Shelter (19200) 11211076-1 | Ea | 2 |
| 38 | | | | |

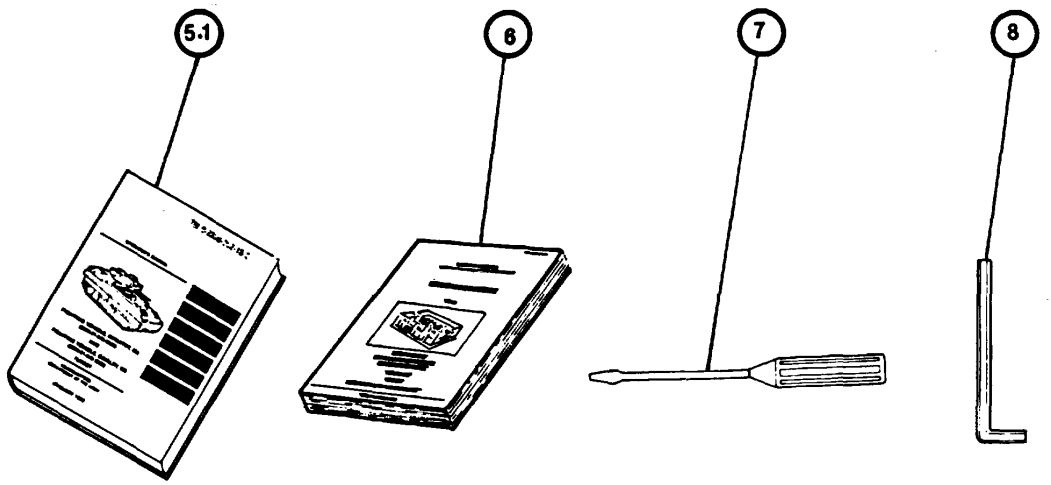
*Returned to manufacturer for subsequent system shipments.

## Section III. BASIC ISSUE ITEMS




| (1) Illus Number | (2) National Stock Number (Not Used) | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| 0.1 | 7510-00-889-3494 | Binder, Looseleaf<br>(For containment of:<br>COFT System Log, SCS 1612<br>and PA Pam 738-750 | Ea | 1 |
| 1 | | Handbook, Instructor's Utilization,<br>HB 23-1-BFVS U-COFT-I through 5 | Ea | 1 |
| 2** | 6240-00-892-4620 | Lamp, Glow, Type C7A (81349)<br>M 15098/11-001 | Ea | 1 |
| 3** | | Light, Indicator, Led (72619) | | |
| | 6240-01-38-3761 | a. 12710855-2 | Ea | 1 |
| | 6240-01-061-5122 | b. 12710855-3 | Ea | I |
| | 6240-01-075-4672 | c. 12710855-4 | Ea | 1 |
| | 6240-01-062-6678 | d. 12710855-5 | Ea | 1 |
| | 6240-01-016-8140 | e. 12710855-6 | Ea | 1 |
| | 6240-01-020-2655 | f. 12710855-7 | Ea | I |
| 4 | 6240-00-538-8897 | Lamp, Incandescent, Flood<br>(24446) 100R30FLRS125 | Ea | 3 |
| 4.1** | 6240-00-763-7744 | Lamp, Incandescent, SC (96906)<br>MS2537-387 | Ea | 1 |
| 4.2** | 6240-01-093-7323 | Lamp, Incandescent, SC (96906)<br>MS2537-8918 | Ea | 1 |
| 5 | 6240-00-152-2987 | Lamp, Flourescent (65083)<br>F40CW (Installed) | Ea | 38 |

**BASIC ISSUE ITEMS (Continued)**




| (1) Illus Number | (2) National Stock Number | (3) Description FSCM and Part Number | (4) U/M | (5) Qty Req'd |
|---|---|---|---|---|
| | (Not Used) | | | |
| 5.1 | TM 9-2350-252-10-2 | Manual, Operator's, Fighting Vehicle, Infantry, M2 and Fighting Vehicle, Cavalry, M3 Turret | | |
| 6 | | Manual, Operator's, Trainer U-COFT M2/M3 Fighting Vehicles (Sheltered) TM 9-6920-737-10 | Ea | 2 |
| 7 | 5120-00-278-1283 | Screwdriver, flat tip, 3/16 wide blade, 6 in. long, (19200) 12712640-1 | Ea | 1 |
| 8 | 5120-00-889-2163 | Wrench, Hex, L-Shape 9/64 (19200) 12712640-2 | Ea | 1 |

**Replenish from organizational maintenance spares.

# APPENDIX C

## ADDITIONAL AUTHORIZATION LIST

## (NOT APPLICABLE FOR THIS MANUAL)

# APPENDIX D

# EXPENDABLE SUPPLIES AND MATERIALS LIST

## Section I. INTRODUCTION

### SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the U-COFT. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

### EXPLANATION OF COLUMNS

a. Column I - Item Number. This number is assigned to each item in the list and is used in the narrative instructions to identify the material (e.g., Soak lens paper (item 6, Appendix D).

b. Column 2 - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew

c. Column 3 - National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

d. Column 4 - Description. Indicates the federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column 5 - U/M (Unit of Measure). Indicates the measure used in performing the actual Maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pt). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

## Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL NUMBER | (4) DESCRIPTION | (5) U/M |
|---|---|---|---|---|
| 1 | C | 8020-00-224-8024 | Brush, Artists (19200) 12712544 | EA |
| 2 | C | 6850-00-926-2275 | Cleaner, Class(16331) 1902 | EA |
| 3 | C | 7920-00-263-2765 | Cloth, Batiste (82128) MIL-C-40129 | EA |
| 4 | C | 6850-00-227-1887 | Compound, Lens Cleaning (81349) MIL-C-43454 | PT |
| 5 | C | 7530-00-145-0414 | Paper, ADP (15476) H9850-PA | BX |
| 6 | C | 6640-00-597-6745 | Paper, Lens (19200) 12712543 | EA |
| 7 | C | 7510-01-157-0285 | Ribbon, CMPTG MACH (15476) LAXXR-12 | EA |

# APPENDIX E

# U-COFT SYSTEM LOGBOOK

## LOGBOOK ENTRIES

The U-COFT System Logbook consists of blank forms, SCS 1612 (see E-2) contained in the green TA.MMS loose leaf binder. Data entries on the logbook forms will be made by both the Instructor/Operator and Organizational Maintenance personnel. The Instructor/Operator will enter operational and maintenance data on a daily basis. Each entry shall include the date, time (to the nearest minute), descriptive operational data, and signature of the Instructor/Operator making the entry. Typical operational data to be logged includes:

a. System Power-up and Power-down.

b. User Log-on and Log-off (Instructor/Operator or Manager).

c. Equipment problems that do not interrupt training but require operation in a degraded mode

d. Equipment problems that interrupt training and require correction before training can commence. (Identify faulty component or training exercise number.)

e. Sight scene problems requiring Diagnostic Tests.

(1) Diagnostics run but no fault identified.
(2) Diagnostics board replacement list by CCA location number.
(3) Location number of spare CCA's used.
(4) Location number of CCA replaced which corrected fault.

f. Equipment returned to operational status or Organizational Maintenance notified.

g. Notes for Organizational Maintenance information to assist corrective action.

## U-COFT SYSTEM LOGBOOK

### COFT SYSTEM LOG — DAILY OPERATIONS

COFT TYPE: _____ SERIAL NUMBER: _____ LOCATION: _____

| DATE | TIME | REMARKS | ACCOUNTABLE FAILURE TIME (HOURS/MIN) | SIGNATURE |
|---|---|---|---|---|
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EXAMPLE

SCS-1612

INDEX


| Subject | Page |
|---|---|
| A | |
| Abbreviations and Acronyms, List of | 1-3 |
| AC Power-Line Protection Panel Controls and Indicators | 2-4 |
| Acronyms, List of | 1-3 |
| Additional Authorization List | C-1 |
| Air Conditioning Units: | |
| Controls and Indicators | 2-12 |
| Location and Description | 1-7 |
| Technical Principles of Operation | 1-46 |
| B | |
| Basic Issue Items, Appendix B, Section III | B-10 |
| C | |
| Circuit Card Assembly, SPC, Removing/Installing | 3-24 |
| Color Monitors, 19-Inch, IOS, Controls and Indicators | 2-27 |
| Color Monitors, 19-Inch, Remote Monitor Station, | |
| Controls and Indicators | 2-114 |
| Communication Panel, IOS, Controls and Indicators | 2-31 |
| Components of End Item and Basic Issue Items Lists, | |
| Section I, Introduction | B-1 |
| Components of End Item, Section II, | B-2 |
| Computer, General Purpose, Location and Description | 1-8 |
| Computer Shelter Controls and Indicators | 2-4 |
| AC Power Line Protection Panel | 2-4 |
| Electronic Power Distribution Panel | 2-6 |
| Power Monitor Panel | 2-5 |
| Utility Power Distribution Panel | 2-8 |
| Computer Shelter, Location and Description | 1-7 |
| Controls and Indicators, Description and Use of: | |
| Chapter 2, Section I | 2-1 |
| Air Conditioners | 2-12 |
| Crew Station: | |
| Gunner's and Commander's Stations | 2-21 |
| Power Panel | 2-23 |
| Utility Panel | 2-21 |
| Disk Drive | 2-16 |
| General Purpose Computer (Control Panel) | 2-14 |
| Instructor Operator Station: | |
| Color Monitors, 19-Inch | 2-27 |
| Communication Panel | 2-31 |
| Display Terminal: | |
| Display Pages | 2-40 |
| Keyboard | 2-34 |
| Keypad | 2-38 |

INDEX (Continued)


| Subject | Page |
|---|---|
| Controls and Indicators (Continued) | |
| Instructor Operator Station (Continued) | |
| Power Panel | 2-24 |
| Tape Recorder | 2-28 |
| Remote Monitor Station: | |
| Audio Amp/Power Panel | 2-116 |
| Color Monitors, 19-Inch 2-114 | |
| Monochrome Monitors, 12-Inch2-115 | |
| Shelters: | |
| AC Power-Line Protection Panel (Computer Shelter) | 2-4 |
| Electronic Power Distribution Panel (Computer Shelter) | 2-6 |
| Emergency Shutdown Switches | 2-1 |
| Fire Control Panel and Alarms (Trainer Shelter) | 2-11 |
| Lighting Switches | 2-3 |
| Manual Fire Alarms2-2 | |
| Power Monitor Panel (Computer Shelter) | 2-5 |
| Utility Power Distribution Panel (Computer Shelter) | 2-8 |
| Utility Power Distribution Panel (Integration Shelter) | 2-10 |
| Special Purpose Computer Power Management Panel | 2-20 |
| Terminal Printer: | |
| Controls | 2-18 |
| Printouts | 2-71 |
| Crew Station: | |
| Controls and Indicators | 2-21 |
| Location and Description | 1-7, 1-15 |
| Maintenance (Sight Lenses) | 3-9 |
| Technical Principles of Operation | 1-23, 1-26 |
| Troubleshooting | 3-1 |


D


| | |
|---|---|
| Daily Readiness Check Procedure | 2-133 |
| Description and Use of Controls and Indicators, | |
| Chapter 2, Section I | 2-1 |
| Diagnostic Test, Principles of Operation | 1-37 |
| Diagnostic Test Procedure (Fault Isolation) | 3-31 |
| Disk Drive: | |
| Controls and Indicators | 2-16 |
| Location and Description | 1-9 |
| Technical Principles of Operation 1-23 | |
| Display Terminal Keyboard, IOS, Controls and Indicators | 2-34 |
| Display Terminal Keypad, IOS, Controls and Indicators | 2-38 |
| Display Terminal Pages, Instructor Operator Station: | |
| Exercise Complete-Freeze | 2-57 |
| Exercise Playback 2-62 | |
| Exercise Playback Complete-Freeze | 2-64 |

INDEX (Continued)


| Subject | Page |
|---|---|
| Display Terminal Pages, IOS (Continued) | |
| Exercise Playback Running | 2-63 |
| Exercise Playback-Freeze | 2-65 |
| Exercise Running | 2-52 |
| Exercise Running-Freeze. | 2-59 |
| Exercise Select by Content | 2-78 |
| Exercise Select-Acquisition and Manipulation - Commander | 2-86 |
| Exercise Select-Acquisition and Manipulation – Gunner | 2-85 |
| Exercise Select-Boresight and Zero | 2-84 |
| Exercise Select-Crew Station Preparation | 2-83 |
| Exercise Select-Evaluation | 2-87 |
| Exercise Select-Gunnery | 2-88 |
| Exercise Select-Orientation | 2-82 |
| Exercise Select/Session Summary | 2-44 |
| Exercise Selection-Instructions | 2-51 |
| Exercise Selection-Scope | 2-47 |
| Instructor Crew Record Check | 2-108 |
| Mode Select | 2-40 |
| Performance Analysis | 2-66 |
| Training Management System-Student Index | 2-107 |
| Training Management System-Vehicle Index | 2-106 |
| Training Management System-Function Menu | 2-100 |
| Training Manager Crew Record Check | 2-111 |
| Training Session Initialization | 2-41 |
| E | |
| Electronic Equipment Power-Down Procedure | 2-199 |
| Electronic Equipment Power-Up Procedure | 2-124 |
| Electronic Power Distribution Panel, Controls and Indicators | 2-6 |
| Emergency Procedures: | |
| Electrical Shutdown | 2-214 |
| Equipment Overtemperature Alarm | 2-217 |
| Fire Alarm Automatic Initiation | 2-215 |
| Fire Alarm Manual Initiation | 2-216 |
| Fire Extinguisher (Hand Held) Operation | 2-216 |
| Equipment Characteristics, Capabilities and Features | 1-5 |
| Equipment Data | 1-18 |
| Equipment Description, Chapter 1, Section II | 1-5 |
| Equipment Improvement Recommendations, Reporting | 1-1 |
| Equipment Overtemperature Alarm System, Principles of Operation | 1-41 |
| Expendable Supplies and Materials List | D-1 |
| External Referencing | iii |

INDEX (Continued)


| Subject | Page |
|---|---|
| F | |
| Fire Control Panel, Controls and Indicators | 2-11 |
| Fire Protection Equipment Principles of Operation. | 1-39 |
| Fluorescent Lamp Replacement, Computer and Trainer Shelters | 3-21 |
| Fluorescent Lamp Replacement, Integration Shelter | 3-22 |
| G | |
| General Information, Chapter 1, Section I | 1-1 |
| Abbreviations and Acronyms | 1-3 |
| Maintenance Forms and Records | 1-1 |
| Nomenclature Cross Reference List | 1-2 |
| Reporting Equipment Improvement Recommendations | 1-1 |
| Scope. | 1-1 |
| General Purpose Computer: | |
| Controls and Indicators. | 2-14 |
| Location and Description | 1-8 |
| Technical Principles of Operation | 1-24 |
| Gunner Station, Description of | 1-17 |
| H | |
| How to Use This Manual | iii |
| I | |
| Instructor Operator Station: | |
| Controls and Indicators | 2-24 |
| Location and Description | 1-12 |
| Technical Principles of Operation | 1-29 |
| Integration Shelter Fluorescent Lamp Replacement | 3-22 |
| Integration Shelter, Location and Description | 1-7 |
| Integration Shelter, Utility Power Distribution Panel | 2-10 |
| Internal Referencing | iii |
| Introduction - Chapter 1 | 1-1 |
| J | |
| Jacks, Telephone and Computer Data Link | 1-44 |
| K | |
| Keyboard, Display Terminal, Controls and Indicators | 2-34 |
| Keypad, Display Terminal, Controls and Indicators | 2-38 |

INDEX (Continued)


| Subject | Page |
|---|---|
| **L** | |
| Lighting, Shelter | 1-45, 2-3 |
| Location and Description of Major Components: | |
| Disk Drive (Unit 3) | 1-9 |
| Crew Station (Unit 30) | 1-15 |
| General Purpose Computer (Unit 1) | 1-8 |
| Instructor Operator Station (Unit 20) | 1-12 |
| Remote Monitor Station (Unit 21) | 1-7, 1-14 |
| Shelters | 1-7 |
| Special Purpose Computer (Unit 10) | 1-11 |
| Terminal Printer (Unit 2) | 1-10 |
| Logbook, U-COFT System | 1-1, E-1 |
| **M** | |
| Maintain Crew Station Sight Lenses | 3-9 |
| Maintain IOS Monitor Screens and Display Terminal Screen | 3-8 |
| Maintain Terminal Printer: | |
| Adjust Print Impression | 3-11 |
| Paper Reloading | 3-10 |
| Replace Ribbon | 3-12 |
| Maintenance Forms and Records | 1-1 |
| Major Components, Location and Description | 1-7 |
| Manual Fire Alarms, Shelter | 2-2, 2-216 |
| Maintenance Instructions, Chapter 3: | |
| Lubrication, Section | 3-1 |
| Procedures, Section III | 3-8 |
| Troubleshooting, Section II | 3-1 |
| **N** | |
| Nomenclature Cross Reference List | 1-2 |
| **0** | |
| Operation Under Usual Conditions, Chapter 2, Section III | 2-117 |
| Operation Under Unusual Conditions, Chapter 2, Section IV | 2-209 |
| Electronic Equipment Power-Up Procedure | 2-212 |
| Emergency Procedures: | |
| Automatic Initiation of Fire Alarm | 2-215 |
| Emergency Electrical Shutdown | 2-214 |
| Response To Equipment Overtemperature Alarm | 2-217 |
| Hand Held Fire Extinguisher Operation | 2-216 |
| Manual Initiation of Fire Alarm | 2-216 |
| Failure of One 19-Inch Color Monitor | 2-209 |
| Recovery from Catastrophic Power Failure | 2-210 |
| Overnight and Weekend Shutdown Procedure | 2-205 |

INDEX (Continued)


| Subject | Page |
|---|---|
| **P** | |
| Power Distribution and Protection, Technical Principles of Operation | 1-43 |
| Power-Down Procedure, Electronics | 2-199 |
| Power-Down Procedure, System (Long-Term) | 2-207 |
| Power Monitor Panel, Computer Shelter, Controls and Indicators | 2-5 |
| Power-Up Procedure, Electronics | 2-124 |
| Preconditioning Procedure, Shelter | 2-118 |
| Preventive Maintenance Checks and Services, Chapter 2, Section II | 2-117 |
| Printout, Lay Error, Terminal Printer | 2-76 |
| Printout, Session Summary, Terminal Printer | 2-71 |
| Printout, Unit Backup, Terminal Printer | 2-76.2 |
| Printout, Unit Summary, Terminal Printer | 2-74 |
| Procedure Index, Operation Under Usual Conditions, Chapter 2, Section III | 2-117 |
| **R** | |
| Recovery From Catastrophic Power Failure Procedure | 2-210 |
| References, Appendix A | A-1 |
| Remote Monitor Station (Unit 21): | |
| Controls and Indicators | 2-114 |
| Location and Description | 1-14 |
| Technical Principles of Operation | 1-23 |
| Removing/Installing SPC Circuit Card Assemblies | 3-24 |
| Reporting Errors and Recommending Improvements | i |
| Reporting Equipment Improvement Recommendations (EIR'S) | 1-1 |
| **S** | |
| Shelter, Computer: | |
| Controls and Indicators2-1 | |
| Fluorescent Lamps Replacement | 3-21 |
| Location and Description | 1-7 |
| Troubleshooting, Power Outage | 3-2 |
| Shelter Fire Protection Equipment, Technical Principles of Operation | 1-39 |
| Shelter, Integration: | |
| Controls and Indicators2 | 2-10 |
| Fluorescent Lamps Replacement | 3-22 |
| Location and Description | 1-7 |
| Technical Principles of Operation | 1-39, 1-43 |
| Track Light Lamp Replacement | 3-20 |
| Troubleshooting Power Outage | 3-2 |

INDEX (Continued)


| Subject | Page |
|---|---|
| Shelter, Trainer: | |
| Controls and Indicators | 2-1, 2-11 |
| Fluorescent Lamps Replacement | 3-21 |
| Location and Description | 1-7 |
| Troubleshooting, Power Outage | 3-2 |
| Special Purpose Computer: | |
| AC On Indicator Lamp Replacement | 3-17 |
| Controls and Indicators | 2-20 |
| DC Indicator Lamp Replacement | 3-18 |
| Diagnostic Test Procedure | 3-31 |
| Location and Description | 1-11 |
| Logic Card File Assembly Tables | 3-27 thru 3-30 |
| Remove/Install Circuit Card Assemblies | 3-24 |
| Technical Principles of Operation | 1-25 |
| Student Search Procedure, Crew Records | 2-182 |
| Summary of Warnings | b |
| System Block Diagram | 1-22 |
| System Power-Down | 2-207 |


T


| | |
|---|---|
| Table of CCA's: | |
| Logic Card File Assembly Al | 3-27 |
| Logic Card File Assembly A2 | 3-28 |
| Logic Card File Assembly A21 | 3-29 |
| Logic Card File Assembly A22 | 3-30 |
| Table of Contents | i |
| Tape Recorder, IOS, Controls and Indicators | 2-28 |
| Technical Principles of Operation, Chapter 1, Section III | 1-23 |
| Air Conditioning Units | 1-46 |
| Crew Station | 1-26 |
| Diagnostic Test Program (Built-In Test) | 1-37 |
| Equipment Overtemperature Alarm System | 1-41 |
| General Purpose Computer | 1-24 |
| Instructor Operator Station | 1-29 |
| Lighting | 1-45 |
| Power Distribution and Protection | 1-43 |
| Shelter Fire Protection Equipment | 1-39 |
| Special Purpose Computer | 1-25 |
| Telephone and Computer Jacks | 1-44 |
| Utility Outlets | 1-44 |
| Terminal Printer: | |
| Adjust Print Impression | 3-11 |
| Controls and Indicators | 2-18 |
| Location and Description | 1-10 |
| Paper Reloading | 3-10 |

INDEX (Continued)


| Subject | Page |
|---|---|
| Terminal Printer (Continued) | |
| Replace Ribbon | 3-12 |
| Technical Principles of Operation | 1-31 |
| Troubleshooting | 3-5 |
| Trainer Shelter, Location and Description | 1-7 |
| Troubleshooting | 3-1 |
| **U** | |
| Unusual Conditions, Operation Under, Chapter 2, Section IV | 2-209 |
| User Log-On Procedure | 2-131 |
| Usual Conditions, Operation Under, Chapter 2, Section III | 2-117 |
| Utility Outlets, Shelter | 1-44 |
| Utility Power Distribution Panel, Controls and Indicators, Computer Shelter | 2-8 |
| Utility Power Distribution Panel, Controls and Indicators, Integration Shelter | 2-10 |
| **V** | |
| Vehicle Search Procedure, Crew Record | 2-178 |
| **W** | |
| Warnings, Cautions, and Notes | iii |
| Warnings, Summary of | b |
| Warnings, General | a |

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