SYSTEM OPERATOR'S MANUAL
(SOM)

NAVAL MODULAR AUTOMATED COMMUNICATIONS SYSTEM V(2)
(NAVMACS V(2)) – AN/SYQ-7V(2)
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LIST OF EFFECTIVE PAGES

Insert latest pages. Retain superseded addenda pages. Dispose of superseded pages (and all temporary change pages) in accordance with applicable instructions.

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Page Number	*Change Number
Title	0
A - B	0
C Blank	0
D	0
E Blank	0
i - xi	0
xii Blank	0
1-1 - 1-6	0
2-1 - 2-6	0
3-1 - 3-50	0
4-1 - 4-22	0
5-1 - 5-25	0
5-26 Blank	0
6-1 - 6-12	0
7-1 - 7-7	0
7-8 Blank	0
8-1	0
8-2 Blank	0
9-1 - 9-9	0
9-10 Blank	0
10-1 - 10-6	0
11-1 - 11-23	0
11-24 Blank	0
12-1 - 12-12	0
A-1 - A-56	0
B-1 - B-23	0
B-24 Blank	0
C-1 - C-14	0

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LIST OF EFFECTIVE PAGES (Cont'd)

Page Number	*Change Number
D-1 - D-3	0
D-4 Blank	0
Glossary-1 - Glossary-10	0
Index-1 - Index-10	0

*Zero in this column indicates an original page

RECORD OF CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY

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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

TABLE OF CONTENTS (Cont'd)

LIST OF ILLUSTRATIONS

LIST OF TABLES

LIST OF TABLES (Cont'd)

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CHAPTER 1

INTRODUCTION

1-1. PURPOSE AND SCOPE.

1-2. This document is the System Operator's Manual (SOM) for the Naval Modular Automated Communications System (NAVMACS) V2. This SOM provides information regarding procedures and materials required for NAVMACS V2. It is intended for those who use, operate, and maintain computer programs for this system.

1-3. GENERAL INFORMATION.

1-4. NAVMACS is a family of systems designed to provide reliable processing of Naval messages aboard ship while maintaining security protection and achieving delivery in a timely manner. NAVMACS V2 is a computerized shipboard message processing system that automates certain processing functions required in the handling of message traffic.

1-5. NAVMACS is designed to interface in such a way that, starting with the basic system (NAVMACS V1), additional, faster, or more sophisticated hardware can be added as the need arises. Figure 1-1 illustrates this expanding capability through the NAVMACS V5 system.

1-6. ORGANIZATION OF THE NAVMACS V2 SYSTEM OPERATOR'S MANUAL.

1-7. The NAVMACS V2 SOM contains 12 chapters, five appendices, a glossary, and an index. This document provides a comprehensive procedural guideline for understanding and operating the NAVMACS V2 system.

1-8. Following the Introduction (Chapter 1), the System Description (Chapter 2) provides a brief description of the system's purpose, functions, supporting documents, interfaces, and operator control.

1-9. Chapter 3 provides a list of equipment requirements, a description of equipment operation, and a list of program materials.

1-10. Chapter 4 contains three sections. Section I contains information regarding Parameter Pages 1, 3, and 4, their settings at initialization, and the operator action required to change the parameters. Section II contains a brief description of system control lists and the loading of these lists into the system. Section III provides guidance for controlling and monitoring the Link and broadcast circuits.

1-11. Chapter 5 contains four sections which provide information concerning system control lists. Section I contains information regarding the Command Guard List (CGL). Section II describes the maintenance and entering of the Local Routing List (LRL). Section III provides information regarding the use of the Wanted Message List (WML). Section IV describes the Source Data System Afloat (SDSA) Originator Screening List (OSL).

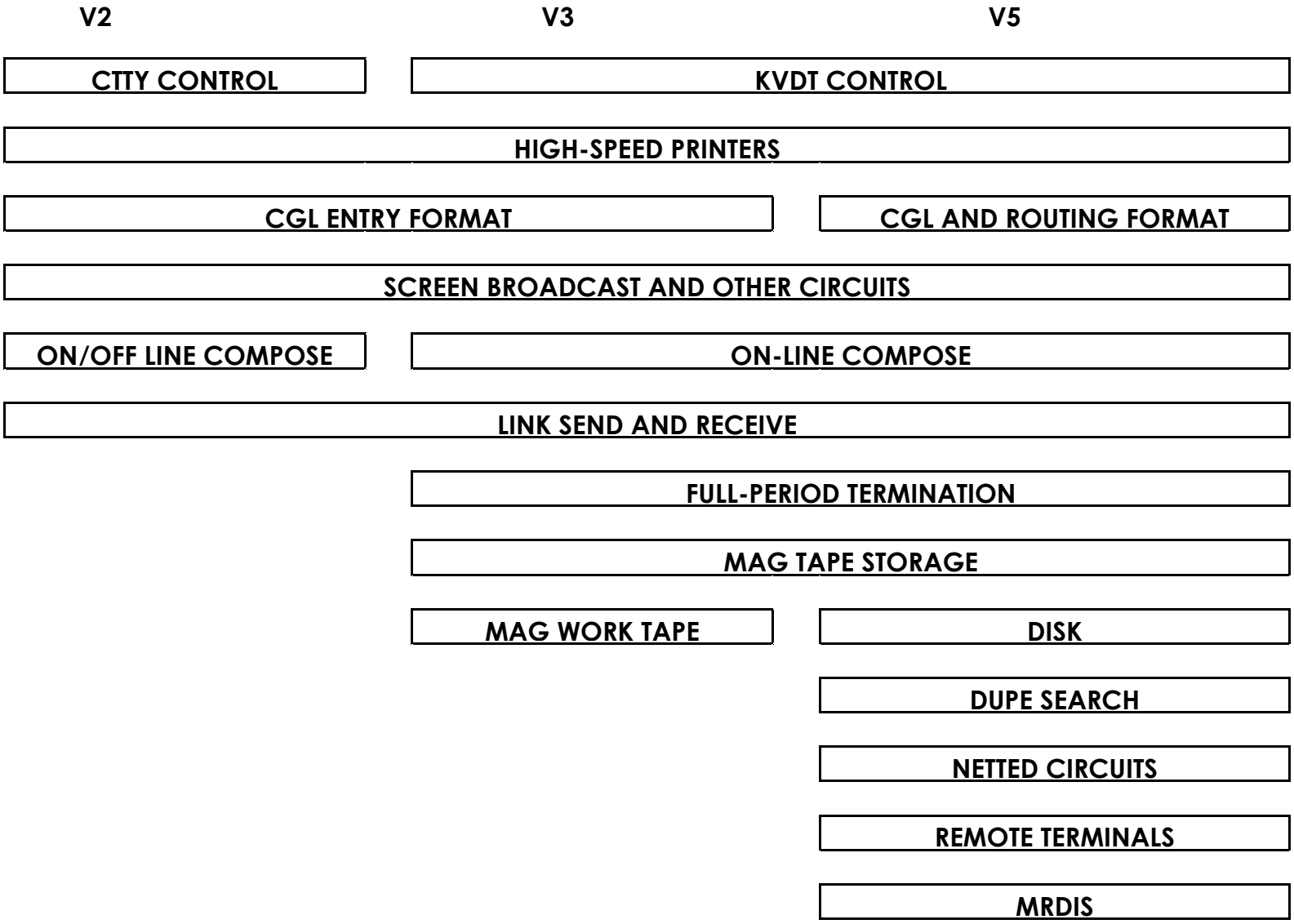

Figure 1-1. The NAVMACS Family

1-12. Chapter 6 contains a breakdown of the main elements of the NAVMACS V2 standard message print format.

1-13. Chapter 7 contains three sections which provide information on incoming message processing. Section I provides guidelines for heading analysis. Section II provides information on general distribution. Section III provides information on operator assistance to incoming message processing.

1-14. Chapter 8 provides the operator with steps for retrieving a message that has been purged from the system.

1-15. Chapter 9 provides guidelines for outgoing circuit operation.

1-16. Chapter 10 provides the operator with message accountability resources.

1-17. Chapter 11 contains three sections which provide guidelines for system initialization. Section I provides steps for equipment preparation and program loading. Section II describes the initialization procedures. Section III provides operating procedures.

1-18. Chapter 12 describes the system restart and recovery procedures for circuit and equipment restoration in case of failure.

1-19. Following Chapter 12, five appendices, a glossary, and an index are provided for operator use. The appendices contain instructions on the NAVMACS V2 system and operator functions, and are as follows:

Appendix A - Operator Commands

Appendix B - System Alerts

Appendix C - System Paper Tape Formats

Appendix D - System Support

1-20. BASIC TERMS.

1-21. The following paragraphs provide basic information about the most important terms used in this SOM.

1-22. THE SYSTEM. The NAVMACS V2 system is comprised of a computer, peripheral equipment, and the computer program. This SOM addresses the operator interface for control of the NAVMACS V2 computer program.

1-23. THE PROGRAM. The NAVMACS V2 computer program contains step-by-step instructions which are executed by the computer following program load. The program performs established functions based on the many design considerations of the system and on the characteristics and sequence of the interface between messages, data, and external environment. By selecting options and specifying data in predetermined ways, the operator can cause the program to perform each of its functions.

1-24. DEVICE/CIRCUIT IDENTIFIERS. The Communication Center equipment and the external interface circuits are referenced by a special set of device or circuit Identifiers (IDs), as shown in Table 1-1. Circuit and device IDs are used in operator-entered commands and appear in system output. These identifiers may be separated into two categories and referred to as Input Channel Identifiers (ICIDs) and the Output Channel Identifiers (OCIDs) depending on the specific function they represent (e.g., TR1 as ICID and TP1 as OCID).

Table 1-1. Device/Circuit Identifiers

DEVICE/CIRCUIT IDENTIFIER	DESCRIPTION
GG1	GateGuard Subsystem
LI1	Link Input Circuit
LO1	Link Output Circuit
LK	Link Input/Output
NI1-NI4	NOVEMBER Input (Broadcast Receive) Circuits 1-4
PR1-PR2	Printers 1-2
TP1	High-Speed Paper Tape Punch (HSPTP) (RD-397(V)/U)
TP2	Low-Speed Paper Tape Punch (LSPTP) (TT-192C/UG)
TR1	High-Speed Paper Tape Reader (HSPTR) (RD-397(V)/U)
TR2	Low-Speed Paper Tape Reader (LSPTR) (TT-187C/UG)

1-25. CHANNEL IDENTIFIERS. The external interface circuits are referenced by a special set of Channel Identifiers (CIDs) consisting of four characters (e.g., NICC). CIDs are specified on the parameter pages used by the system and the operator to direct circuit operation and, along with unique Channel Sequence Numbers (CSNs), provide a method for message accountability and continuity checks.

1-26. SYSTEM MESSAGE NUMBER. For its own purposes, the program assigns a unique System Message Number (SMN) to each processed message. Because the SMN is the only number that uniquely identifies each individual copy of each message, it is made available to the operator for a function such as cancelling a link transmission of a message. SMNs are assigned to both messages and raw input data and, in some cases, may be assigned in

anticipation of a message. For these reasons, messages will not necessarily be processed in sequential SMN order and SMN gaps can occur.

1-27. SYSTEM QUEUE AND ALTROUTING. A queue (also referred to as a backlog) is a sequence of outputs (i.e., messages, alerts, and operator-requested information) backlogged to devices and circuits. The system maintains a queue to prevent the loss of data while the device or circuit specified for a particular output is busy with a current output or is inoperative (Hold). The queue is arranged in a First-In-First-Out (FIFO) by precedence order so that the oldest high-precedence item is output first and the most recent low-precedence item is output last (refer to Table 1-2).

Table 1-2. Queue Structure Example

ITEM IN QUEUE	PRECEDENCE
Flash message requiring prompt operator attention (correction)	1
Equipment failure alert (queued at pseudo-flash precedence)	2
OTO messages (queued at pseudo-flash precedence)	3

1-28. The system maintains a count of the number of items queued for each device and circuit. When the count exceeds a system-selected size (i.e., queue alarm level) for that particular device or circuit, an alert is generated for the operator. For a circuit, when a second system-selected size (i.e., queue altroute level) is reached, a second alert is generated but the system continues queueing outputs for that circuit. For a device, when the count exceeds the queue altroute level, an alert is generated and any additional output is automatically queued (altrouted) to the system-specified altroute device. If, however, the altroute device is Down, the item remains queued to the original device.

1-29. DEFAULT VALUES. In most operator entries, the operator is required to select option elements or specify particular information. In some cases, if the operator does not select an option or specify data, the system automatically assigns a default value. The use of default values simplifies many entry sequences when the default value is typical or appropriate. Each operator entry description in Appendix A includes any applicable default value.

1-30. ALERTS AND ALARMS. The terms "alert" and "alarm," used interchangeably in this SOM, refer to system-generated information or warnings to the operator. In this SOM, all alerts are designated as A or B followed by a number; these designators refer to the type of alert/alarm. Appendix B contains an explanation of these designators, as well as a listing of all alerts generated by the system.

1-31. SERVICE PRINTER/DISTRIBUTION PRINTER. The system designates Printer 1 (PR1) as the distribution printer and Printer 2 (PR2) as the service printer. Messages that require shipboard distribution are automatically directed to the distribution printer. Messages requiring operator attention and system-generated reports are automatically directed to the service printer. The operator can direct certain outputs (e.g., an operator-requested report) to each printer; if the operator does not specify an output device, the system directs that operator-requested information to the service printer as the default device.

1-32. MESSAGE DELIVERY. Message delivery is the output of an incoming message at its assigned delivery device within the Communication Center or the transmission of a message on a circuit.

1-33. OUTPUT CHANNEL SEQUENCE NUMBER. All message deliveries are assigned a unique Output Channel Sequence Number (OCSN). The OCSN and the OCID are used to establish accountability of all message deliveries.

1-34. ON-LINE/OFF-LINE. The terms "on-line" and "off-line" refer, as described below, to equipment and functions.

1-35. The term "on-line" is used to refer to either of the following:

1. System equipment that is in an Up (U) status and that is accessed by the system

2. System functions performed by the operator at the system equipment (e.g., entering an operator command at the Control Teletype (CTTY))

1-36. The term "off-line" is used to refer to either of the following:

1. System equipment that is in a Down (D) status or that is not accessed directly by the system

2. System functions performed by the operator which do not directly interface with the system (e.g., the manual composition of a message at an off-line AN/UGC-6 teletype or equivalent)

1-37. MESSAGE SUMMARY LINE. The system generates a Message Summary Line (MSL) for each incoming and outgoing message processed. The MSL automatically prints at the service printer when the disposition of a message is finalized by the system.

1-38. GATEGUARD. The system will designate GateGuard (GG1) as the primary delivery device, providing that the UP/DOWN status field on Parameter Page 4 is in the UP state. Messages that require shipboard distribution are automatically directed to GateGuard. Also, non-addressed messages that are received from Common User Digital Information Exchange System (CUDIXS), and messages identified with date-time-group, precedence, or classification errors are queued to GG1. These messages are sent to GG1 in the identical format as received by NAVMACS from the input source.

CHAPTER 2

SYSTEM DESCRIPTION

SECTION I

APPLICABLE DOCUMENTS

2-1. APPLICABLE DOCUMENTS.

2-2. The following specifications describe telecommunications procedures and message formats:

Naval Telecommunications Procedures Plain Language Address Directory, NTP 3 SUPP-1.

Message Address Directory (MAD).

Naval Telecommunications User's Manual, NTP 3.

Naval Telecommunications Procedures, Fleet Communications, NTP

Automatic Digital Network (AUTODIN) Operating Procedures, JANAP 128(I).

Communications Instructions-General, ACP 121 US-SUPP-1(F).

Allied Communications Publication, ACP 127 US-SUPP-3(E) NATO.

Communications Instructions Tape Relay Procedures, ACP 127(F).

GateGuard Subsystem Computer Operation Manual, NAVTASC Document Nr. ZK5A 0029 OM-01D.

2-3. EQUIPMENT MANUALS.

2-4. The following manuals provide detailed information for the operation and maintenance of the equipment listed in Table 3-1:

1. AN/UYK-20(V) Data Processing Set Technical Manual, NAVELEX 0967-LP-598-1000, 1010, 1020, 1030, 1040, 1050, 1060, 1070, 1080.

TT-624/UG Teleprinter Technical Manual, NAVELEX 0967-LP-598-0010, 0020, 0050.

AN/USH-26 Signal Data Recorder/Reproducer Set Technical Manual, NAVELEX 0967-LB-598-5010, 5020.

RD-396/U Signal Data Recorder-Reproducer Set Technical Manual, NAFI TP 506.

*The documents necessary are determined by the device installed.

RD-397/U Signal Data Recorder-Reproducer Technical Manual, NAVELEX 0967-LP-614-6010, and NAFI TP 506.

Model 28 Automatic Send-Receive (ASR) Teletypewriter Sets, Technical Manual, NAVELEX 0967-173-6010 (includes detail for the TT-187/UG, TT-192/UG, AN/UGC-20, and AN/UGC-25 Receive Only (RO) Teletypewriter).

CV-3022/UG Converter/Patch Panel Technical Manual, NAVELEX 0967-438-7010.

Teleprinter Set AN/UGC-143A(V)3, EE161-AB-OMI-010/W152-UGC143A

CHAPTER 2

SYSTEM DESCRIPTION

SECTION II

SYSTEM ROLE

IN SHIPBOARD COMMUNICATION

2-5. PURPOSE OF NAVMACS V2.

2-6. NAVMACS V2 is a computerized shipboard message processing system that can guard as many as four broadcast circuits. It also serves as an automated shipboard terminal for a satellite link interfacing ashore with the Common User Digital Information Exchange System (CUDIXS). NAVMACS V2 provides accountability for all incoming and outgoing messages and is intended to serve the message processing needs of small- to medium-sized ships in the fleet. The system consists of a computer, the computer program, and peripheral equipment, all of which are located in the ship's Communication Center. Some ships are equipped with GateGuard, a component of the interface between NAVMACS V2 and a personal computer based Local Area Network (LAN). GateGuard provides the operator with message entry and diskette storage capabilities.

2-7. BROADCAST INTERFACE.

2-8. NAVMACS V2 can guard as many as four broadcast (multichannel fleet broadcast or single-channel area broadcast) circuits simultaneously. All broadcast traffic is analyzed and screened; depending on operator-selected options and the characteristics of each message, broadcast messages are then printed for distribution and immediately purged. Most nonaddressed broadcast messages are purged immediately. Nonaddressed broadcast messages with special characteristics (e.g., first-run with Emergency or Flash precedence, or Wanted Message List (WML) match) are printed and then purged. The operator controls the handling of broadcast traffic by specifying the addressees of concern to the ship and to embarked commands and by selecting processing options as warranted by the following:

1. Characteristics of the broadcast circuits
2. Quality of broadcast reception
3. Communication Center Standard Operating Procedures (SOP)

2-9. The concept of addressee screening is described in Paragraph 5-10. Operator options for controlling and monitoring the automatic processing of broadcast traffic are described in Chapter 4, Section I.

2-10. LINK INTERFACE.

2-11. NAVMACS V2 provides the shipboard terminus of CUDIXS, a synchronous satellite communication network of ships and a shore station. CUDIXS serves as the primary interface for afloat platforms, linking the operating forces with the AUTODIN via the Naval Communications Processing and Routing System (NAVCOMPARS). CUDIXS, the Net Control Station (NCS), coordinates the net operation. The shipboard terminal functions as a subscriber. Each subscriber is assigned a Subscriber Identification (SID) number, from 1 through 60.

2-12. Each CUDIXS net can operate with up to 60 subscribers. Subscribers are assigned SIDs at the time of initial coordination with the shore station; the SID must be entered to permit exchange of information on the net. The subscriber influences the duration of the allotted transmission period by indicating the message load and precedence, all of which is done automatically by NAVMACS V2. The acceptability of exchanged data is acknowledged, with automatic retransmission requested/rendered, as necessary. Inactive subscribers are allowed to enter the net cycle during specific periods of time as designated by the NCS.

2-13. Narrative messages exchanged on the Link interface are formatted in accordance with ACP 126 (Modified) or JANAP 128. Operator-to-Operator (OTO) messages have no defined format (i.e., they are free-form).

CHAPTER 2

SYSTEM DESCRIPTION

SECTION III

OPERATOR CONTROL

2-14. ONSHIP MESSAGE DELIVERY.

2-15. Onship message deliveries may be made, under operator control, to the printers and/or paper tape punches, and GG1 if GG1 is Up. The system selects the output device(s). Options are available to the operator to control which broadcast messages are printed and to request the punching of supply system messages. Options regarding broadcast messages are described in Paragraph 7-28; those relating to supply system messages are in Paragraph 7-13. Messages delivered to the printers are printed in standard message print format, and contain the following blocks of information:

1. Message classification, precedence, and Date-Time-Group (DTG) summary for ease of message handling
2. Identification of recognized addressees
3. An operator-specified Local Routing List (LRL) to facilitate onship distribution (An LRL is not used if a ship depends on GateGuard for distribution.)
4. Page numbers

2-16. Chapter 6 describes the standard message print format; Appendix C, Section II describes the paper tape message header format. In addition, messages requiring operator correction are sent to GG1, if GG1 is Up, or to the service printer. The printed copy will include a summary of the system-detected errors printed on Page 1.

2-17. OPERATOR CONTROL.

2-18. The message handling functions may be controlled and monitored at the Control Teletype (CTTY). The operator can select options and specify system parameters that direct virtually all of the NAVMACS V2 functions, including the following:

1. Message analysis
2. Message delivery
3. Use of Communication Center equipment
4. Circuit control

2-19. In addition, the operator can review printed information to assist in accountability and record-keeping functions. Chapter 11, Section III discusses the basic principles of operator control. Appendix A describes operator commands; and Appendices B and C contain detailed information about operator control.

2-20. MESSAGE ACCOUNTABILITY.

2-21. In order to assist in message accountability and record-keeping functions, the system will generate a Message Summary Line (MSL) for each incoming and outgoing message processed, as well as a report on system queues. Chapter 10 describes the MSL, as well as operator options and format of the queue report.

2-22. OPERATOR COMMANDS.

2-23. Commands which allow the operator to direct the system to perform specific functions are referenced throughout this manual. Appendix A gives a detailed description of the structure and use of, as well as possible system responses to, each operator command.

2-24. SYSTEM ALERTS.

2-25. System alerts are generated automatically to advise the operator of message, system, or equipment problems requiring operator attention and are referenced throughout this manual. For detailed descriptions of, and operator responses to, system alerts, refer to Appendix B.

CHAPTER 3

SYSTEM COMPONENTS

3-1. EQUIPMENT REQUIREMENTS.

3-2. The basic equipment for NAVMACS V2 is listed in Table 3-1 and described in the paragraphs indicated. All figures and tables regarding equipment appear after the explanatory text. The user should become familiar with the equipment before attempting to operate the system. The applicable equipment manuals are specified in Paragraph 2-3.

3-3. CENTRAL PROCESSING UNIT. The AN/UYK-20(V) Central Processing Unit (CPU) is a general purpose minicomputer configured with 64K of memory, 32 general registers, and hardware loaders (bootstraps) to load computer programs from a magnetic tape unit or the High-Speed Paper Tape Reader (HSPTR). The Input/Output (I/O) channel configuration consists of four Naval Tactical Data System (NTDS) slow parallel channels, 10 MIL-STD-188C asynchronous serial channels, and two MIL-STD-188C synchronous serial channels. The program stored and executed in computer memory provides the automated message handling capabilities of the system.

3-4. Figure 3-1 illustrates the CPU control panel mounted on the cabinet door of the computer. Table 3-2 describes the control panel controls and indicators. Figure 3-2 illustrates the maintenance panel (not normally used by the operator), accessible only when the CPU door is open. Table 3-3 describes the maintenance panel controls and indicators.

3-5. CONTROL TELETYPE. The Control Teletype (CTTY) enables the operator to communicate with the NAVMACS V2 program. The CTTY may be either an AN/UGC-20 or equivalent, or an AN/UGC-143A(V)3 Teleprinter Set. If the ship is equipped with an AN/UGC-143A(V)3 Teleprinter Set, refer to the Supplement to NAVMACS V2 System Operator's Manual - AN/UGC-143 Operation, NTSIC 2D7.15 for information on the operation, maintenance, and repair of this device. The UGC-20 or equivalent has a keyboard and a page printer; each is individually connected to the computer. All operator-originated system commands are entered via the keyboard, and the program-generated responses and notices are output to the page printer. The computer and operator share the use of the page printer, but not simultaneously. The program does not interrupt operator use unless the keyboard is idle for more than 30 seconds. The operator may interrupt a computer-generated output by striking any key. The computer will terminate the line and free the keyboard and page printer for operator use.

3-6. Figure 3-3 illustrates the CTTY, and Table 3-4 describes its basic functions. For more detailed procedures and instructions for loading paper and ribbon, see the Model 28 Teletypewriter Set Technical Manual.

3-7. LINE PRINTER. The TT-624/UG Medium-Speed Line Printer is the hard copy printing device for the system. The character set is Baudot except for the upper case H (# symbol), which is not printable. The printing rate is 256 lines per minute when printing the full 80 columns, and faster for shorter

Table 3-1. NAVMACS V2 Equipment List

EQUIPMENT	DESCRIPTION	PARAGRAPH NUMBER	FIGURE PAGE	TABLE PAGE
AN/UYK-20(V) Data Processing Set	Central Processing Unit (CPU)	3-3	3-6, 3-10	3-7 3-11
AN/UGC-20* Teletypewriter Set	Control Teletype (CTTY)	3-5	3-18	3-19
TT-624/UG	Medium-Speed Line Printer	3-7	3-21	3-22
AN/USH-26(V) Recorder-Reproducer Set	Cartridge Magnetic Tape Unit (CMTU)	3-10	3-25, 3-29	3-26 3-30
RD-396/U Recorder-Reproducer Set	Cassette Magnetic Tape Unit	3-13	3-40	3-41
RD-397(V)/U Signal Data Recorder-Reproducer Set	High-Speed Paper Tape Reader/ Punch (HSPTR/P)	3-14	3-43	3-44
TT-187C/UG* Transmitter-Distributor	Low-Speed Paper Tape Reader (LSPTR)	3-16	3-47	3-48
TT-192C/UG* Reperforator (Chad-Type)	Low-Speed Paper Tape Punch (LSPTP)	3-18	3-49	--
CV-3022/UG	Level Converter/ Patch Panel	3-20	3-50	--

*Or equivalent

NOTE

The type of magnetic tape unit used depends on the installation, and is an either/or requirement, not both.

lines. The printer uses a variety of paper, including 1-part to 4-part (three carbons) roll paper commonly available for teletype machines, and may be adapted for pressure feed or sprocket feed, as required, by the paper type selected.

3-8. System outputs to the line printer and their use by the operator consist of the following:

Printed messages for operator action (e.g., distribution)

Operator demand reports to aid message accountability

System data (e.g., the Command Guard List (CGL) and parameter pages) to aid in system control

3-9. Figure 3-4 illustrates the line printer control and maintenance panels. Table 3-5 describes the switches and indicators of the control and maintenance panels.

3-10. CARTRIDGE MAGNETIC TAPE UNIT. The AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU), used in some installations of the system, contains two tape units which use a 1/4-inch wide magnetic tape cartridge containing 300 feet of magnetic tape. Only one unit is used for loading the NAVMACS V2 program. Each unit is capable of writing to and reading from any one of four tracks. Each cartridge unit contains a separate drive and controls. One cartridge unit will contain the computer program to be loaded into computer memory; the other unit (plug-in interchangeability) can be used as a backup or for program duplication as described in Paragraph 12-43.

3-11. It is important to keep the tape heads clean for optimum system write and read functions to and from the magnetic tapes. Use isopropyl alcohol. This will reduce wear on the tape heads and will reduce the possibility of damage to the tapes.

3-12. Figure 3-5 illustrates the CMTU control panel. Table 3-6 describes the control panel controls and indicators including those for the front panel and each drive unit. Figure 3-6 illustrates the maintenance panel and Table 3-7 describes its controls and indicators.

3-13. CASSETTE MAGNETIC TAPE UNIT. The RD-396/U Cassette Magnetic Tape Unit, used in some installations of the system, contains two tape units. Only one unit is used for loading the NAVMACS V2 program, that being the unit designated as Drive 2 by the RECORDER SELECT toggle switch. Each cassette unit has a separate drive and controls. One cassette unit will contain the computer program to be loaded into the computer memory; the other unit can be used as a backup or for program tape duplication as described in Paragraph 12-43. Figure 3-7 illustrates the RD-396/U and Table 3-8 describes its controls and indicators.

3-14. HIGH-SPEED PAPER TAPE READER/PUNCH. The primary paper tape device used by NAVMACS V2 is the RD-397(V)/U Signal Data Recorder-Reproducer. It can read 5-, 6-, 7-, or 8-level paper or mylar chad tape at a rate of 300 characters per second. (Neither 6- nor 7-level tape is used in NAVMACS V2.)

Chadless tape cannot be read by the RD-397(V)/U. Both paper and mylar tapes are punched at a rate of 60 characters per second. Both the reader and punch are packaged in the same cabinet; they operate independently and may operate simultaneously. Tapes to be read by the paper tape reader must be in the read station of the reader so that the side of the tape (relative to the feed holes) with three levels of data, is mounted next to the reader itself. Paper tapes are read from left to right. The system uses the HSPTR to read outgoing Link messages, the CGL, and the Local Routing List (LRL) from 5-level perforated tape. The HSPTR may also be used as a backup program load device using the sectioned, 8-level, mylar program tape. The system uses the High-Speed Paper Tape Punch (HSPTP) to output operator-requested retrievals, altrouted messages, supply system messages, and system data lists.

3-15. Figure 3-8 illustrates the control panel of the High-Speed Paper Tape Reader/Punch (HSPTR/P) and Table 3-9 describes the control panel controls and indicators.

3-16. LOW-SPEED PAPER TAPE READER. The system uses a low-speed, 75-baud, 5-level perforated tape reader, a TT-187C/UG or equivalent, as a secondary means of reading a punched tape. Figure 3-9 illustrates the Low-Speed Paper Tape Reader (LSPTR) and Table 3-10 describes its controls and indicators.

3-17. The channel the system uses for the LSPTR can be used for any 75-, 300-, 600-, or 1200-baud serial asynchronous output.

3-18. LOW-SPEED PAPER TAPE PUNCH. The system uses a Low-Speed Paper Tape Punch (LSPTP) as a backup to the HSPTP. The TT-192C/UG or equivalent is a 75-baud, 5-level paper tape punch which produces chad tape (rather than chadless) required for compatibility with the HSPTR/P. For detailed procedures and instructions for loading paper tape, refer to the Module 28 Teletypewriter Set Technical Manual. Figure 3-10 illustrates the LSPTP. The only controls are the following:

1. POWER/OFF toggle switch, used to apply or remove primary AC power

2. TAPE OUT indicator, used to indicate a low tape situation

3-19. The channel the system uses for the LSPTP can be used for any 75-, 300-, 600-, or 1200-baud serial asynchronous output.

3-20. LEVEL CONVERTER/PATCH PANEL. The system uses a CV-3022/UG Level Converter/Patch Panel (refer to Figure 3-11) for signal level conversion and for a manual patching interface. On ships equipped with low-level equipment for broadcast reception, signal conversion is not required and a simple patch panel to enable manual patching is used. The patch panel enables the following manual patching functions from high-level devices:

1. Bypassing the computer on any given channel or channels

2. Bypassing the computer completely

3. Changing peripheral I/O devices

4. Patching in alternate peripheral output devices

3-21. COMPUTER PROGRAM MATERIALS.

3-22. The following is a list of required tapes for NAVMACS V2:

1. Four sections of perforated 8-level mylar tape for the NAVMACS V2 program
2. Magnetic tape (cassette or cartridge) for the NAVMACS V2 program
3. Maintenance diagnostics and maintenance test tools

3-23. The Communication Center should establish strict procedures for handling the Program Tape. When a master copy of a (new) Program Tape is delivered to the ship, several copies of this tape should be produced immediately (refer to Paragraph 12-43). The master tape should be stored away and never accessed except to make copies of it. If a copy of the Program Tape is destroyed, the master tape can be used to produce a replacement.

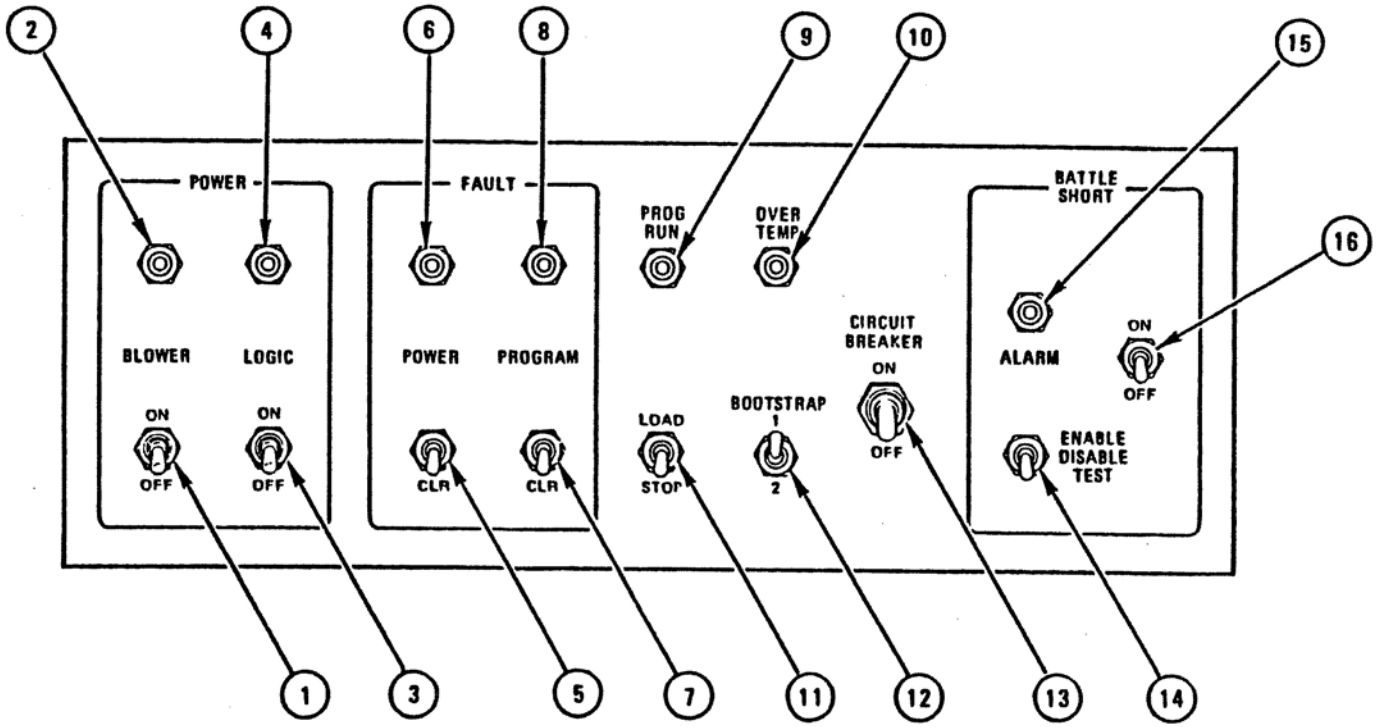

Figure 3-1. AN/UYK-20(V) Central Processing Unit (CPU) Control Panel

Table 3-2. AN/UYK-20(V) Central Processing Unit (CPU) Control Panel Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	BLOWER POWER ON/OFF Toggle Switch	ON	Applies primary power to CPU cooling fans and enables LOGIC POWER ON/OFF switch function.
		OFF	Shuts down primary power to CPU cooling fans and disables LOGIC POWER ON/OFF switch.
2	BLOWER POWER Indicator	LIT	Indicates that primary power is applied to blowers and to LOGIC POWER ON/OFF switch.
3	LOGIC POWER ON/OFF Toggle Switch	ON	Applies power to CPU logic circuits. BLOWER POWER ON/OFF switch must be in ON position.
		OFF	Shuts down power to CPU logic circuits.
4	LOGIC POWER Indicator	LIT	Indicates that power is applied to logic circuits.
5	POWER FAULT CLR Toggle Switch	Momentarily Depressed CLR	Clears POWER FAULT indicators on control and maintenance panels.
6	POWER FAULT Indicator	LIT	Indicates that power fault interrupt has occurred.
7	PROGRAM FAULT CLR Toggle Switch	Momentarily Depressed CLR	Clears PROGRAM FAULT indicators on control and maintenance panels.
8	PROGRAM FAULT Indicator	LIT	Indicates that a program fault interrupt has occurred (caused by an attempt to execute an illegal instruction).

Table 3-2. AN/UYK-20(V) Central Processing Unit (CPU) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
9	PROG RUN Indicator	LIT	Indicates that CPU is executing instructions in run mode.
10	OVER TEMP Indicator	LIT	Indicates that CPU internal cabinet air temperature reached maximum operating temperature of 96EF (36EC). NOTE An audible alarm sounds when cabinet internal air temperature is in OVER TEMP range. CAUTION If OVER TEMP indicator illuminates, call a technician because component damage might result.
11	LOAD/STOP Toggle Switch	Momentarily Depressed LOAD	Causes CPU to execute a master clear, select run mode, and begin executing bootstrap program selected by BOOTSTRAP 1/2 switch.
		Momentarily Depressed STOP	Causes CPU to stop executing instructions if it is in run mode.
12	BOOTSTRAP 1/2 Toggle Switch	Position 1	Enables execution of first bootstrap program in NDRO memory (for magnetic tape).
		Position 2	Enables execution of second bootstrap program in NDRD memory (for paper tape).

Table 3-2. AN/UYK-20(V) Central Processing Unit (CPU) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
13	CIRCUIT BREAKER ON/OFF Toggle Switch	ON	Enables primary power to CPU.
		OFF	Disables primary power to CPU.
14	ALARM ENABLE/ DISABLE/TEST Toggle Switch	ENABLE	Allows audible alarm to sound.
		DISABLE	Prevents audible alarm function.
		TEST	Causes audible alarm to sound and OVER TEMP indicator to light.
15	BATTLE SHORT Indicator	LIT	Indicates that BATTLE SHORT ON/OFF switch is in ON position.
16	BATTLE SHORT ON/OFF Toggle Switch	ON	Disables CPU OVER TEMP shutdown function.
		OFF	Enables CPU OVER TEMP shutdown function. CAUTION Severe damage can result from overheating. This switch should be left OFF under all but extreme circumstances.

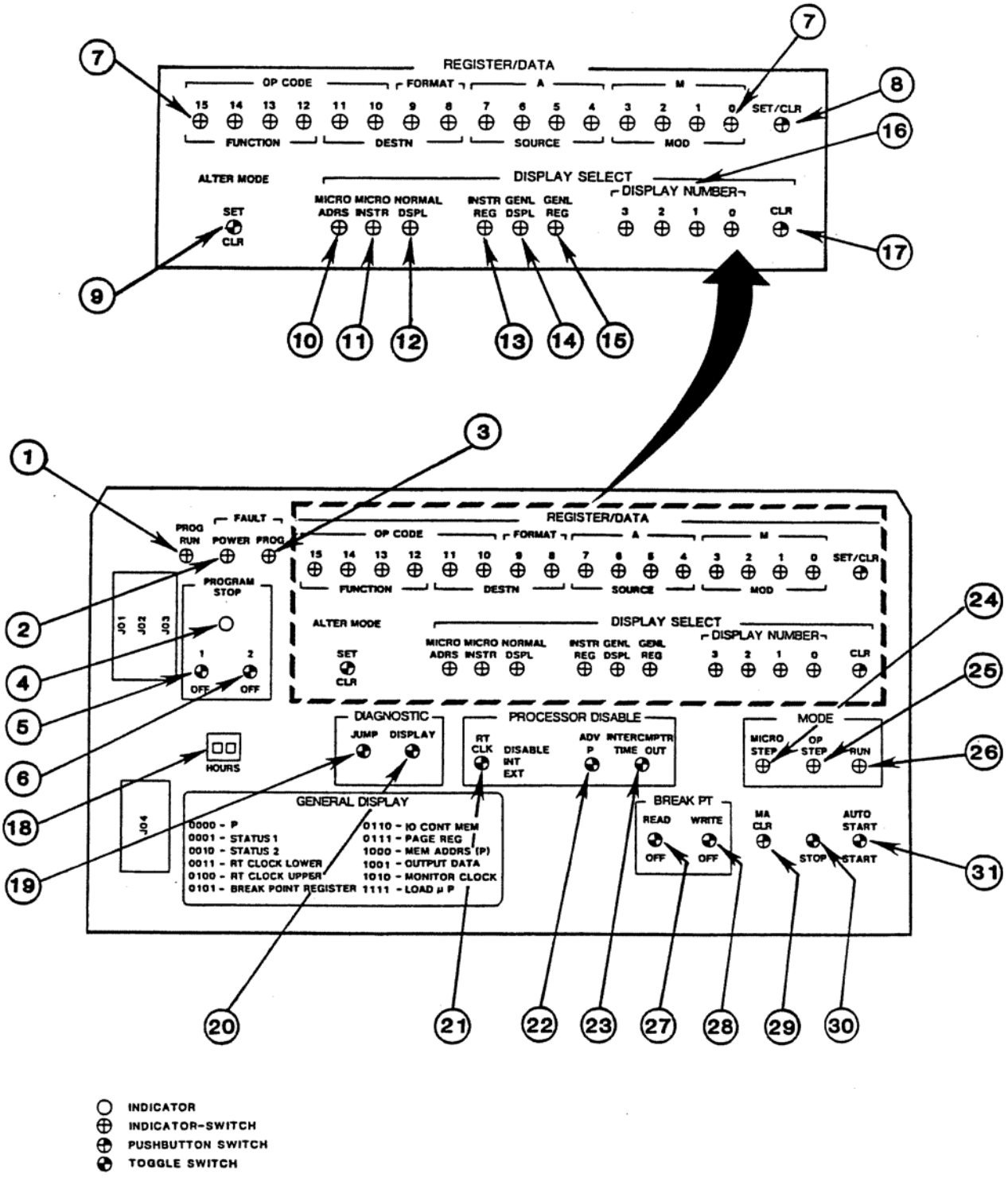

Figure 3-2. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	PROG RUN Indicator-Switch	LIT	Indicates that CPU is executing instructions in run mode.
		PRESSED	Selects run condition in micro-step mode.
2	POWER FAULT Indicator-Switch	LIT	Indicates when power fault interrupt has occurred.
		PRESSED	Clears indicators on main tenance and control panels.
3	PROG FAULT Indicator-Switch	LIT	Indicates when CPU attempts to execute an illegal instruction.
		PRESSED	Clears indicators on main-tenance and control panels.
4	PROGRAM STOP Indicator	LIT	Indicates when a program stop condition has been executed.
5	PROGRAM STOP 1/OFF Toggle Switch	Position 1	Causes a program stop when CPU executes a jump macro-instruction.
6	PROGRAM STOP 2/OFF Toggle Switch	Position 2	Causes a program stop when CPU executes a jump macro-instruction.
7	REGISTER/DATA 0-15 Indicator-Switches	LIT	Each light is 1 bit; con-tents are displayed according to setting of DISPLAY SELECT switches.
		PRESSED	Modifies that particular bit of selected register.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
8	REGISTER/DATA SET/CLR Pushbutton Switch	PRESSED	Sets or clears (according to ALTER MODE SET CLR position) all REGISTER/ DATA indicator-switches.
9	ALTER MODE SET/CLR Toggle Switch	SET	In SET position: 1. Individual bit of register being displayed is set when corresponding bit indicator is pressed. 2. If REGISTER/DATA SET/CLR switch is operated, all bits of register being displayed are set.
		CLR	In CLR position: 1. Individual bit of register being displayed is cleared when corresponding bit indicator is pressed. 2. If REGISTER/DATA SET/CLR switch is operated, all bits of register being displayed are cleared.
	DISPLAY SELECT:	LIT	Indicators identify switch functions and register being displayed by REGISTER/DATA indicator-switches.
10	MICRO ADRS Indicator-Switch	PRESSED	When lit, displays corresponding register. When pressed, corresponding register contents are displayed, changing contents of register.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
	DISPLAY SELECT: (Cont'd)		
11	MICRO INSTR Indicator-Switch	PRESSED	When lit, displays corresponding register. When pressed, corresponding register contents are displayed, changing contents of register.
12	NORMAL DSPL Indicator-Switch	PRESSED	When lit, displays corresponding register. When pressed, corresponding register contents are displayed, changing contents of register.
13	INSTR REG Indicator-Switch	PRESSED	Operation of one of the switches MICRO ADRS, MICRO INSTR, or NORMAL DSPL causes the other two to clear.
14	GENL DSPL Indicator-Switch	PRESSED	Operation of one of the switches INSTR REG, GENL DSPL, or GENL REG causes the other two to clear.
15	GENL REG Indicator-Switch	PRESSED	Operation of one of the switches INSTR REG, GENL DSPL, or GENL REG causes the other two to clear.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
	DISPLAY SELECT: (Cont'd)		
16	DISPLAY NUMBER 3, 2, 1, 0 Indicator-Switches	PRESSED	Selects and indicates register to be displayed by REGISTER/DATA indicator-switches as follows:
	Bits 3,2,1,0	GENL DSPL Selection	GENL REG Section
	0 0 0 0	P-Register	General Register 0
	0 0 0 1	SR #1	General Register 1
	0 0 1 0	SR #2	General Register 2
	0 0 1 1	RTC Lower	General Register 3
	0 1 0 0	RTC Upper	General Register 4
	0 1 0 1	Breakpoint	General Register 5
	0 1 1 0	I/O Control Memory	General Register 6
	0 1 1 1	Page Register	General Register 7
	1 0 0 0	Memory Address	General Register 10
	1 0 0 1	Output Data	General Register 11
	1 0 1 0	Monitor Clock	General Register 12
	1 0 1 1	not assigned	General Register 13
	1 1 0 0	not assigned	General Register 14
	1 1 0 1	not assigned	General Register 15
	1 1 1 0	not assigned	General Register 16
	1 1 1 1	Load Micro P-Register	General Register 17
17	CLR Pushbutton Switch	PRESSED	Clears DISPLAY NUMBERs 0-3 and clears micro-step mode.
18	Time meter (0000-9999)		Indicates time, in hours, that power has been applied to CPU logic.
19	DIAGNOSTIC JUMP Toggle Switch	JUMP	Enables branching on F = 14, M = 17 branch micro-instruction. This causes CPU to jump from operating micro-program.
		DOWN	Disables diagnostic jump.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
20	DIAGNOSTIC DISPLAY Toggle Switch	DISPLAY	In DISPLAY position while CPU is in micro-step mode: 1. With MICRO ADRS set, REGISTER/DATA indicator-switches display address of next micro-instruction to be executed. 2. With MICRO INSTR set, REGISTER/ DATA indicator-switches display micro-instruction currently being executed. 3. With NORMAL DSPL set, REGISTER/ DATA indicator-switches display data on source bus.
	PROCESSOR DISABLE:		
21	RT CLK DISABLE/ INT/EXT Toggle Switch	DISABLE	Inhibits counting up real-time clock register and counting down monitor clock register.
		INT	Connects internal clock to real-time clock and monitor clock functions.
		EXT	Connects external clock source to real-time clock and monitor clock functions.
22	ADV P Toggle Switch	UP	Disables advancing P-register, causing CPU to repeat one 16-bit macro-instruction.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
	PROCESSOR DISABLE: (Cont'd)		
22	ADV P Toggle Switch (Cont'd)	DOWN	Enables advancing P-register.
23	INTERCMPTR TIME OUT Toggle Switch	UP	Inhibits Class III inter-computer timeout interrupt.
		DOWN	Enables Class III inter-computer timeout interrupt.
24	MODE MICRO STEP Indicator-Switch	LIT	Indicates when CPU is in micro-step mode.
		PRESSED	Places CPU in micro-step mode. To clear, press DISPLAY SELECT CLR switch.
25	MODE OP STEP Indicator-Switch	LIT	Indicates when CPU is in either op-step or micro-step mode to execute single macro-instruction.
		PRESSED	Clears run mode and puts CPU in op-step mode to execute one macro-instruction per operation of AUTO START/START switch.
26	MODE RUN Indicator-Switch	LIT	Indicates when CPU is in run or micro-step mode to execute successive instructions.
		PRESSED	Clears op-step mode and places CPU in run mode.

Table 3-3. AN/UYK-20(V) Central Processing Unit (CPU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
27	BREAK PT READ/OFF Toggle Switch	READ	Stops CPU after reading data from memory address entered in breakpoint register.
		OFF	Disables read stop.
28	BREAK PT WRITE/OFF Toggle Switch	WRITE	Stops CPU after writing data in memory address entered in breakpoint register.
		OFF	Disables write stop.
29	MA CLR Pushbutton Switch	PRESSED	Depressing switch when CPU is in run mode clears FAULT indicators on control and maintenance panels. Depressing switch when CPU is not in run mode clears FAULT indicators and places CPU in a master- cleared state.
30	STOP Toggle Switch	Momentarily Depressed STOP	Stops CPU execution of macro-instructions while CPU is executing instructions in run mode.
31	AUTO START/ START Toggle Switch	AUTO START	Causes CPU to execute instruction at NDRO address 00000 after power is applied, or after power is restored following a power fault interrupt.
		Momentarily Depressed START	Starts normal CPU operation in selected mode.

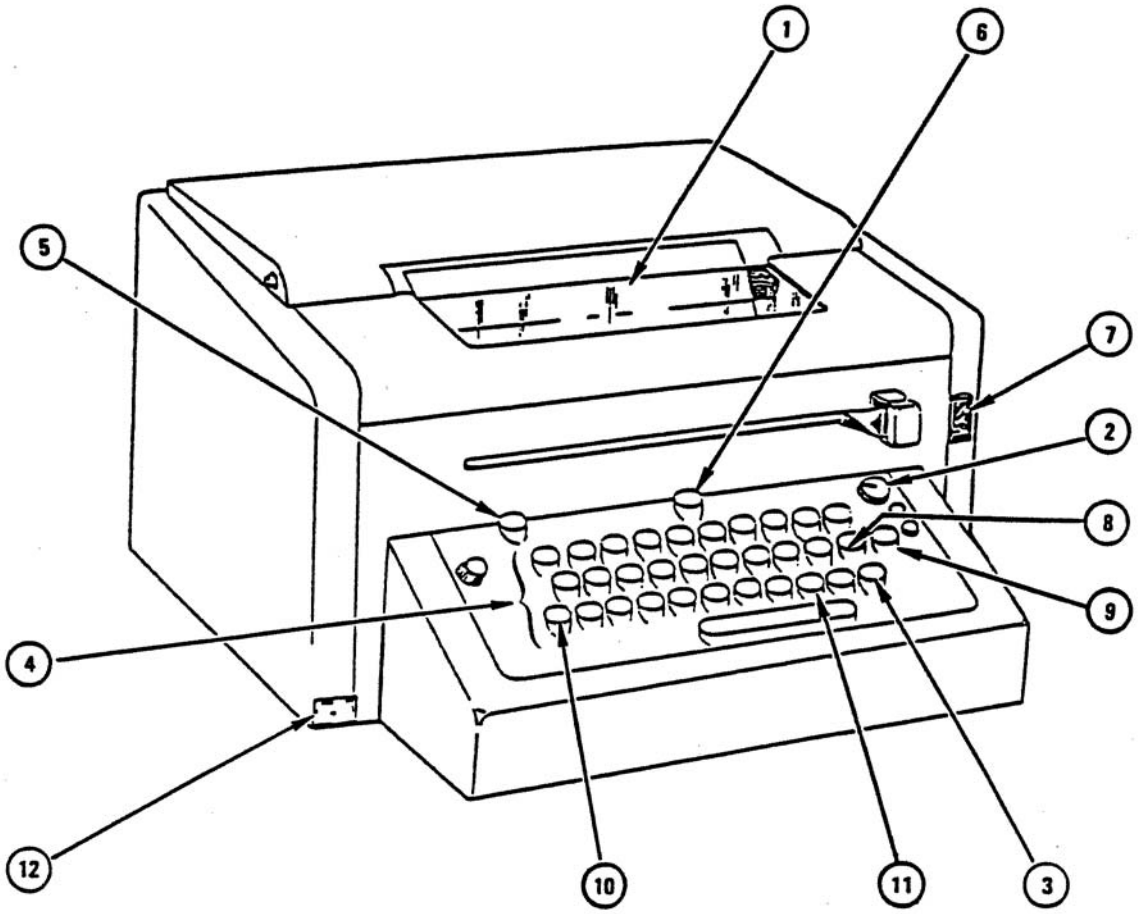

Figure 3-3. AN/UGC-20 Control Teletype (CTTY)

Table 3-4. AN/UGC-20 Control Teletype (CTTY) Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	PRINTER WINDOW		Allows operator to view copy.
2	POWER ON/OFF Switch	ON	Supplies power to printer and keyboard.
3	BLANK Key	PRESSED	Does not print. Used to execute commands in NAVMACS V2.
4	KEYBOARD Keys	PRESSED (individually)	Transmit on channel asso ciated with printer.
5	LOC LF	PRESSED	Advances paper continu ously until released.
6	LOC CR	PRESSED	Returns carriage to starting position.
7	MARGIN Indicator	LIT	Indicates that type box is nearing right margin.
8	RETURN Key	Momentarily DEPRESSED	Returns carriage to left margin and advances paper up one line.
9	REPT Key	Momentarily DEPRESSED	Repeats character until key is released. Must be pressed in conjunction with a character key.
10	FIGS Key	Momentarily DEPRESSED	Places keyboard in figures mode.
11	LTRS Key	Momentarily DEPRESSED	Places keyboard in letters mode.

Table 3-4. AN/UGC-20 Control Teletype (CTTY) Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
12	BAUD RATE Selector Switch	As necessary	Selects rate of data transfer between teletypewriter and the processor as follows: Max counterclockwise 45.5 - 45.5 bits per second, or 65 words per minute. Center 50 - 50 bits per second, or 71.4 words per minute. Max clockwise 75 - 75 bits per second, or 100 words per minute.

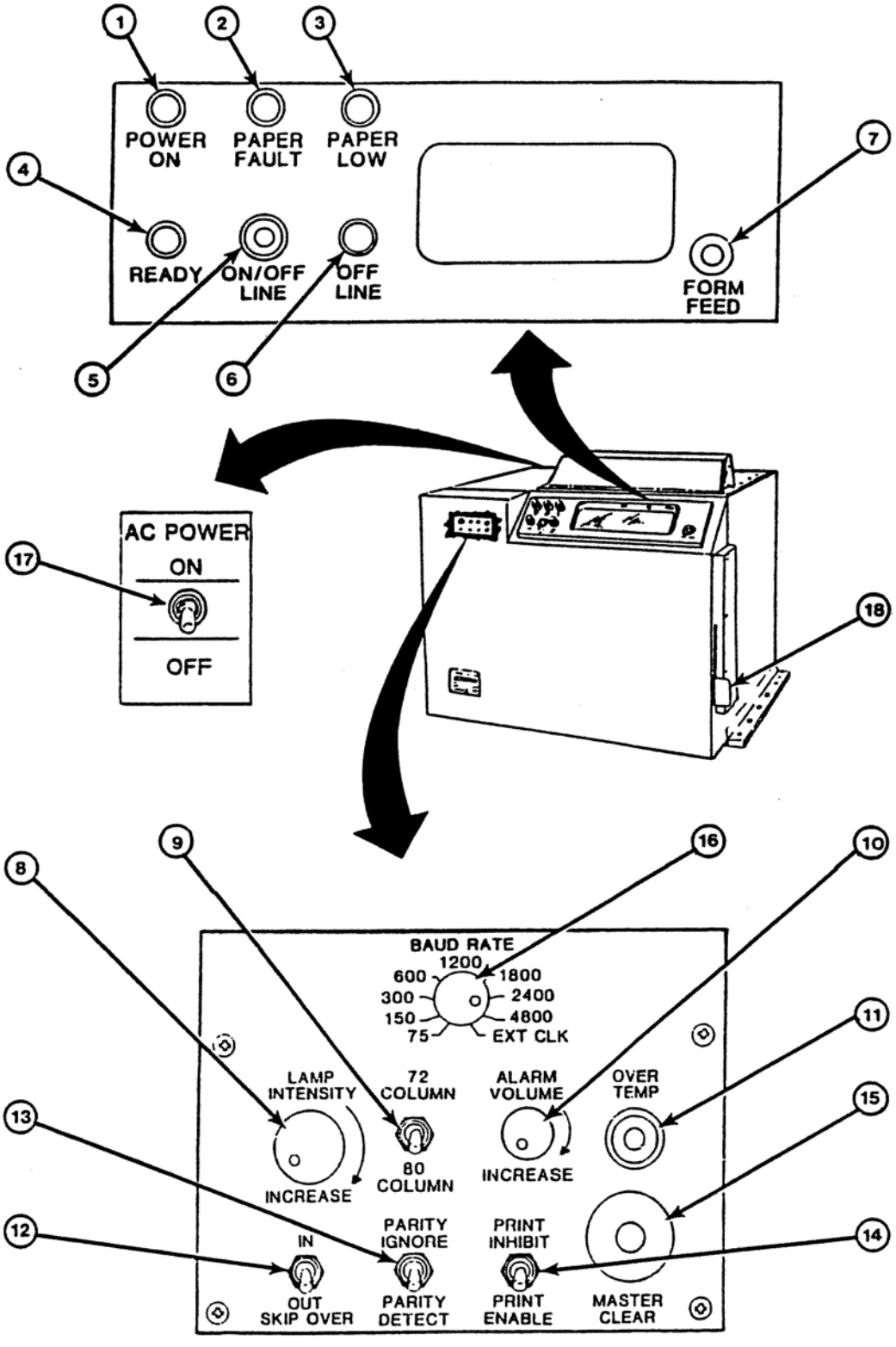

Figure 3-4. TT-624/UG Medium-Speed Line Printer Control and Maintenance Panels

Table 3-5. TT-624/UG Medium-Speed Line Printer Control and

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	POWER ON Indicator	LIT	Indicates that power is supplied to line printer.
2	PAPER FAULT Indicator	LIT	Indicates that paper is torn or jammed, or that supply is gone.
3	PAPER LOW Indicator	LIT	Indicates that paper supply is low.
4	READY Indicator	LIT	Indicates that line printer is on-line and physically ready to receive traffic.
5	ON/OFF-LINE Pushbutton	Momentarily Depressed OFF-LINE	Allows operator to inhibit line printer's reception by taking it off-line.
6	OFF-LINE Indicator	LIT	Indicates that line printer is off-line or not ready to receive traffic.
7	FORM FEED Pushbutton	PRESSED	Advances paper to top of next page.
8	LAMP INTENSITY Potentiometer		Regulates current for all operator panel lamps.
		INCREASE	To increase, rotate clockwise.
		DECREASE	To decrease, rotate counterclockwise.
9	72 COLUMN/ 80 COLUMN Toggle Switch	72 or 80	Controls number of characters per single line. Should be set at 80.

Table 3-5. TT-624/UG Medium-Speed Line Printer Control and Maintenance Panels Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
10	ALARM VOLUME Potentiometer		Controls loudness of alarm indicating that paper supply is low or empty.
		INCREASE	To increase, rotate clockwise.
		DECREASE	To decrease, rotate counterclockwise.
11	OVER TEMP Indicator	LIT	Indicates with light and an audible alarm that internal temperature of electronics exceeds safe level.
12	SKIP OVER IN/OUT Toggle Switch	IN	Counts lines for automatic skip over fold in fanfold paper.
		OUT	Used for rolled paper when no automatic skip is desired.
13	PARITY IGNORE/ PARITY DETECT Toggle Switch	DETECT	Allows odd parity detection; prints diamonds if parity error detected.
		IGNORE	Ignores parity errors.
14	PRINT INHIBIT/ PRINT ENABLE Toggle Switch	ENABLE	Enables normal printing to occur.
		INHIBIT	Inhibits hammer current; takes line printer off-line and allows operator to use MASTER CLEAR and FORM FEED pushbuttons to align paper in line printer.
15	MASTER CLEAR Pushbutton	PRESSED	Clears line printer logic and advances paper one line.

Table 3-5. TT-624/UG Medium-Speed Line Printer Control and Maintenance Panels Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
16	BAUD RATE Switch		Used to select appropriate transfer rate as determined by system operation. NAVMACS V2 uses 2400 baud.
17	AC POWER ON/OFF Toggle Switch (located on back of printer)	ON	Enables power to line printer.
		OFF	Disables power to line printer.
18	DOOR LATCH	UP	Opens door.
		DOWN	Closes door.

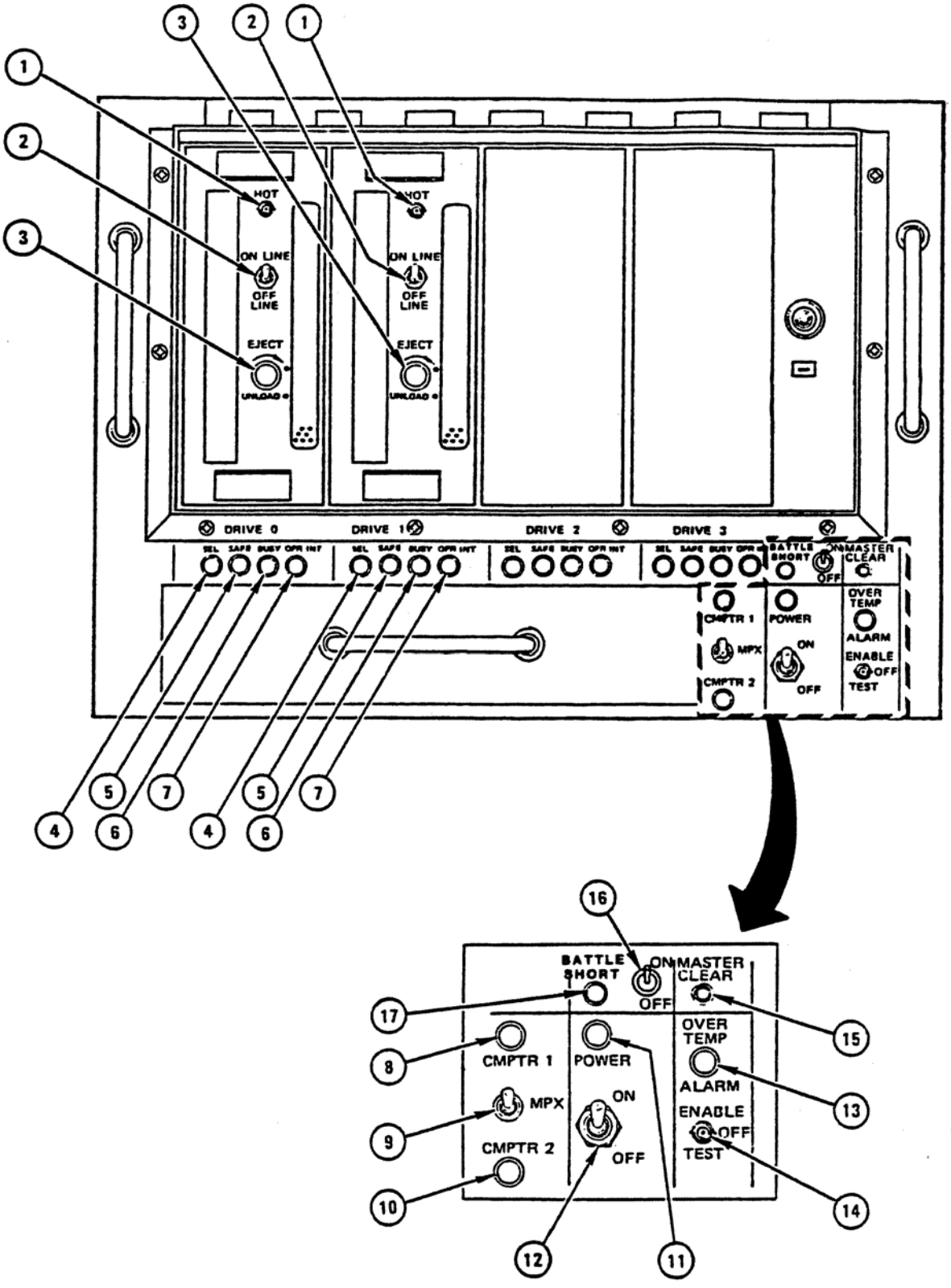

Figure 3-5. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Control Panel

Table 3-6. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Control Panel Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	Drive 0 or 1 HOT Lamp (incandescent with red lens Indicator)	LIT	Indicates that Tape Drive Assembly 0 or 1 temperature exceeds 165EF (74EC). Also lit when ALARM ENABLE/OFF/ TEST switch is set to TEST.
2	ON-LINE/ OFF-LINE Toggle Switch	ON-LINE	Places Tape Drive Assembly 0 or 1 in operational condition.
		OFF-LINE	Places Tape Drive Assembly 0 or 1 in non-operational condition.
3	EJECT/UNLOAD Rotary Switch	EJECT	Enables operator to mechanically eject tape cartridge from Tape Drive Assembly 0 or 1.
		UNLOAD	Enables operator to unload the tape from Tape Drive Assembly 0 or 1. Switch should be rotated 90 degrees clockwise, then depressed.
4	SEL Indicator	LIT	Indicates which Tape Drive Assembly (0 or 1) has been selected.
5	SAFE Indicator	LIT	Indicates that cartridge in Tape Drive Assembly 0 or 1 is write-protected.
6	BUSY Indicator	LIT	Indicates that Tape Drive Assembly 0 or 1 is performing a motion command (i.e., tape is moving).

Table 3-6. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
7	OPR INT Indicator	LIT	Indicates that operator intervention is required for Tape Drive Assembly 0 or 1.
8	CMPTR 1 Indicator	LIT	Indicates that CMTU is operating with CPU 1. Flashes during multiplex operation.
9	CMPTR 1/MPX/ CMPTR 2 Toggle Switch	CMPTR 1	Allows CMTU to operate with CPU 1. Should be left in this position for NAVMACS V2.
		MPX	Allows CMTU to operate with CPU 1 or 2 or both (multiplex).
		CMPTR 2	Not used in NAVMACS V2.
10	CMPTR 2 Indicator	LIT	Not used in NAVMACS V2.
11	POWER Indicator	LIT	Indicates that primary power is applied to CMTU system.
12	POWER ON/OFF Toggle Switch	ON	Enables primary power to CMTU system.
		OFF	Disables primary power to CMTU system.
13	OVER TEMP Indicator	LIT	Indicates that the ambient temperature within CMTU exceeds 110EF (43EC).

Table 3-6. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
14	ALARM ENABLE/ OFF/TEST Toggle Switch	ENABLE	Enables audible alarm when OVER TEMP condition is present.
		OFF	Disables audible alarm.
		TEST	Causes alarm to sound and HOT and OVER TEMP indicators to light.
15	MASTER CLEAR Toggle Switch	Momentarily PULLED OUT and PUSHED UP	Resets entire CMTU system.
16	BATTLE SHORT ON/OFF Toggle Switch	ON	Disables over-temperature shutdown function.
		OFF	Enables over-temperature shutdown function. NOTE Severe damage can re- sult from overheating. BATTLESHORT ON/ OFF switch should be left OFF under all but extreme circumstances.
17	BATTLESHORT Indicator	LIT	Indicates that BATTLESHORT ON/OFF switch is in ON position

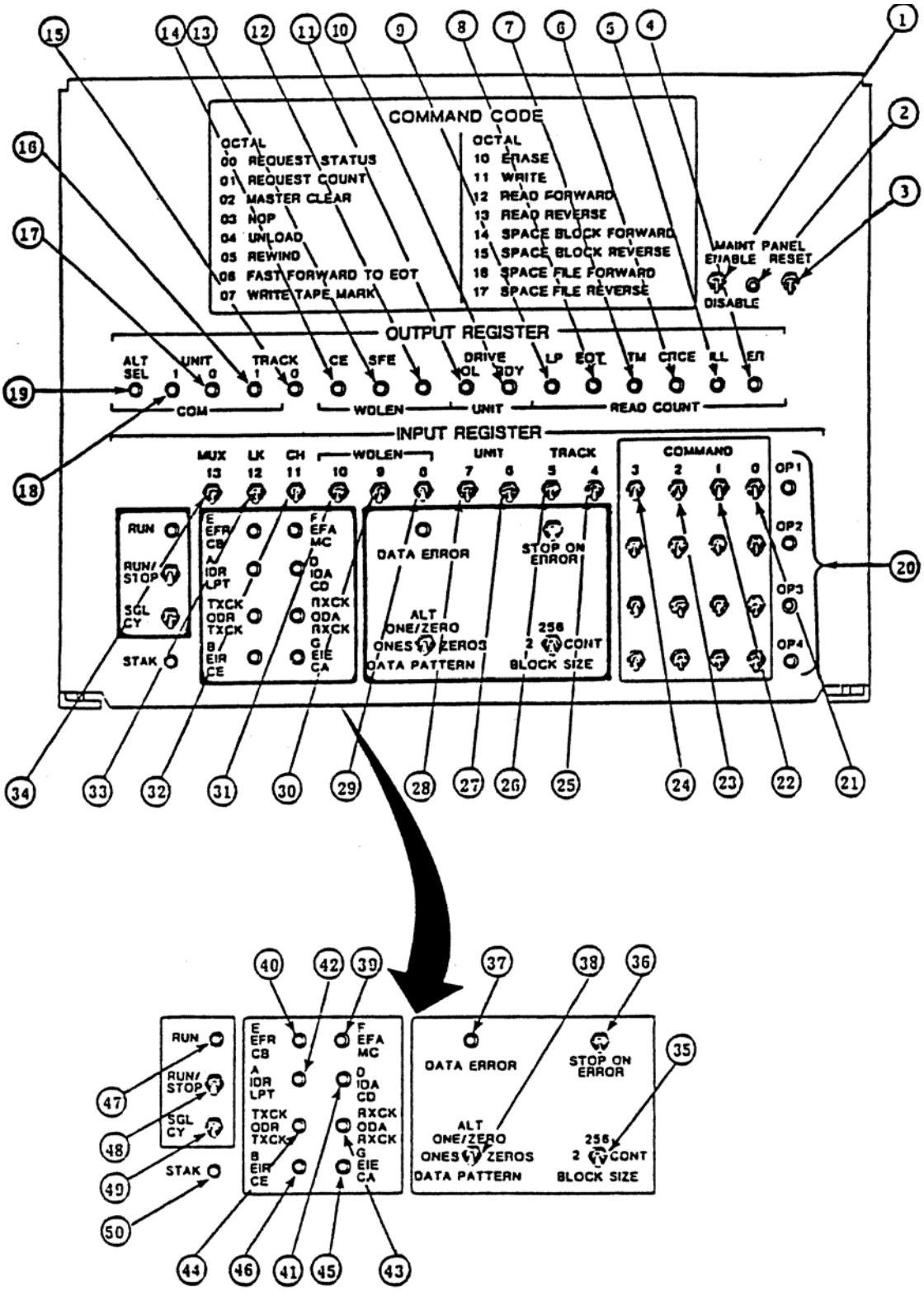

Figure 3-6. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	MAINTENANCE PANEL: ENABLE/DISABLE Toggle Switch	ENABLE	Allows CMTU to perform data processing operations and to be on-line to CPU.
		DISABLE	Allows CMTU to respond to inputs from control panel and to be off-line to CPU.
2	ENABLE/DISABLE Indicator	LIT	Indicates that CMTU maintenance panel ENABLE/ DISABLE switch is in ENABLE position.
3	RESET Toggle Switch	Momentarily DEPRESSED	When CMTU maintenance panel ENABLE/DISABLE switch is in ENABLE position and RESET switch is momentarily depressed, CMTU is reset. Logic is reset to begin operation selected by OP1 octal code COMMAND switches. Operational in off-line mode only.
		PRESSED	When held PRESSED, all maintenance panel assembly indicators should light. NOTE Indicators 4-11 have dual functions: as Status Word displays and as alternate Status Word displays.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
3	RESET Toggle Switch (Cont'd)		NOTE (Cont'd) Status Word is marked above indicators; alternate Status Word is marked below indicators.
	OUTPUT REGISTER <u>STATUS WORD</u>:		Contains indicators for displaying CMTU Status and Read Count Word responses to command words. Status Word responses are marked above indicators; Read Count Word responses are marked below indicators.
4	ER Indicator	LIT	Corresponds to Status Word Bit 0 and indicates an error during previous operation.
5	ILL Indicator	LIT	Corresponds to Status Word Bit 1 and indicates an improper or illegal request (e.g., forward motion at End-of-Tape).
6	CRCE Indicator	LIT	Corresponds to Status Word Bit 2 and indicates a CRCE (Cyclic Redundancy Check Error).

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
7	TM Indicator	LIT	Corresponds to Status Word Bit 3 and indicates that READ, SPACE BLOCK, or SPACE FILE operation has located a TM (Tape or File Mark). Bit 3 sets ER for READ, SPACE BLOCK, or SPACE FILE commands. Bit is cleared by RESET or any tape motion command.
8	EOT Indicator	LIT	Corresponds to Status Word Bit 4 and indicates that selected drive unit is at EW (Early Warning) or EOT (End-of-Tape).
9	LP Indicator	LIT	Corresponds to Status Word Bit 5 and indicates that selected drive unit is at LP (Load Point) position of data cartridge.
10	DRIVE RDY Indicator	LIT	Corresponds to Status Word Bit 6 and indicates that selected drive unit is ready for operation. Interface will stack one command for a rewinding drive.
11	DRIVE OL Indicator	LIT	Corresponds to Status Word Bit 7 and indicates that selected drive unit is set on-line and a data cartridge has been properly installed.
12	BIT 8 Indicator		Nonfunctional.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
13	SFE Indicator	LIT	Corresponds to Status Word Bit 9 and indicates that selected drive unit contains a cartridge with a file-protected plug in SFE (Safe) position.
14	CE Indicator	LIT	Corresponds to Status Word Bit 10 and indicates that current READ operation has a residual CE (Count Error). Bit is valid only for read operations.
15 16	TRACK 0/1 Indicators	LIT	Correspond to Status Word Bit 10 and indicate that current READ operation has a residual CE (Count Error). Bit is valid only for read operations.
17 18	UNIT 0/1 Indicators	LIT	Correspond to Status Word Bits 13 and 14 and indicate tape drive unit previously selected by COMMAND word UNIT select Bits 6 and 7. RESET function clears to UNIT address 0.
19	ALT SEL Indicator	LIT	Corresponds to Status Word Bit 15 and indicates that controller has been selected by alternate channel. Bit is cleared by RESET function, and is valid only with a 2-channel MUX configuration.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
	ALTERNATE STATUS WORD:		
4 thru 9	READ COUNT Indicators	LIT	READ COUNT is presented to the software in place of Status Word when command word specified a Read Count. Read Count Bits 0, 1, 2, 3, 4, and 5 indicate bit count and represent a number from 1 to 36. Bit 0 is the LSB.
10 11	UNIT 0/1 Indicators	LIT	Correspond to Read Count Bits 6 and 7, which indicate UNIT select bits stored by last command word. Bits are cleared to UNIT address zero by RESET function.
12 13 14	WDLEN Indicators	LIT	Correspond to Read Count Bits 8, 9, and 10, which indicate WDLEN (Word Length) set by last command word. Bits are always cleared and reset to octal code for an 8-bit WDLEN by RESET function.
15	NOT USED		Corresponds to Read Count Bit 11, an undesignated bit which is always a zero.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
16 thru 19	COM Indicators	LIT	Correspond to Read Count Bits 12, 13, 14, and 15, which indicate last tape motion command octal code issued to interface.
20	OP1 - OP4 Indicators	LIT	Inform operator of function which will be performed at conclusion of operation in progress. Command words are performed sequentially from OP1 through OP4. Function to be performed depends on octal code selected by COMMAND switches adjacent to a given indicator.
21 thru 24	COMMAND 0/1/2/3 Toggle Switches	PRESSED	Correspond to Bits 0, 1, 2, and 3 of command word, and represent following command codes in octal: 00 request status 01 request count 02 master clear 03 no-op 04 unload 05 rewind 06 fast forward to EDT 07 write tape mark 10 erase 11 write 12 read forward 13 read reverse 14 space block forward 15 space block reverse 16 space file forward 17 space file reverse

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
25 26	TRACK 4/5 Toggle Switches	PRESSED	Correspond to Bits 4 and 5 of command word, and specify one of four data tracks available on each magnetic tape cartridge.
27 28	UNIT 6/7 Toggle Switches	PRESSED	Correspond to Bits 6 and 7 of command word. Switches are set to select one of two tape drive units.
29 30 31	WDLEN 8/9/10 Toggle Switches	PRESSED	Correspond to Bits 8, 9, and 10 of command word. Word length is always reset to 6 bits when RESET or MASTER CLEAR is activated.
32	CH 11 Toggle Switch	PRESSED	Corresponds to Bit 11 of command word, and forces operation when set.
33	LK 12 Toggle Switch	PRESSED	Corresponds to Bit 12 of command word. When set, results in CMTU acceptance of a complete command word.
34	MUX 13 Toggle Switch	PRESSED	Corresponds to Bit 13 of command word. When set, inhibits multiplex operation; when cleared, allows multiplex operation.
35	2/256/CONT BLOCK SIZE Toggle Switch		Specifies number of data words written on tape when an off-line write command is executed.
		2	Specifies that a 2-data-word block is written.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
35	2/256/CONT BLOCK SIZE Toggle Switch (Cont'd)	256	Specifies that a 256-data-word block is written.
		CONT	Specifies that a continuous nonterminating data block is written (i.e., data words are continuously written until EOT is reached).
36	STOP ON ERROR Toggle Switch	PRESSED	When pressed, maintenance panel logic inhibits next command when a read data compare error is detected. If not pressed, drive operation proceeds after error; however, error condition is displayed by DATA ERROR indicator.
37	DATA ERROR Indicator	LIT	Indicates that a read data compare error is detected (i.e., that data recovered during an off-line read operation differs from data specified by DATA PATTERN switch).
38	ONES/ALT ONE/ ZERO/ZEROS DATA PATTERN Toggle Switch	ONES	Indicates that a data pattern consisting of preamble, all data ones, CRC, and postamble is specified for an off-line write operation.
		ALT ONE/ ZERO	Same as when set to ONES, except data is written in alternating words of zeros and ones.
		ZEROS	Indicates that data consists of all zeros.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
39	F/EFA/MC Indicator	LIT	External Function Acknowledge. CMTU input command strobe.
40	E/EFR/CB Indicator	LIT	External Function Request. CMTU output. Advises operator that CMTU is issuing an external function request and is ready to accept a command word.
41	D/IDA/CD Indicator	LIT	Input Data Acknowledge. CMTU input, channel acknowledge of IDR.
42	A/IDR/LPT Indicator	LIT	Input Data Request. CMTU output, active when read data words are presented; interlocked with IDA per MIL-STD-1397.
43	RXCK/ODA/RXCK Indicator	LIT	Output Data Acknowledge. CMTU input, channel acknowledge of ODR.
44	TXCK/ODR/TXCK Indicator	LIT	Output Data Request. CMTU output, active when CMTU is ready to accept data word during a write operation; interlocked with ODA per MIL-STD-1397.
45	G/EIE/CA Indicator	LIT	External Interrupt Enable; nonfunctional.
46	B/EIR/CE Indicator	LIT	External Interrupt Request. CMTU output, active for status cycle.
47	RUN Indicator	LIT	Indicates that maintenance panel is engaged in automatic sequencing.

Table 3-7. AN/USH-26(V) Cartridge Magnetic Tape Unit (CMTU) Maintenance Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
48	RUN/STOP Toggle Switch	PRESSED	Controls two commands to start automatic maintenance panel command sequencing on first depression; stops command sequencing on second depression. Specifies maintenance panel operation through entire command sequence unless STOP ON ERROR switch is set (Up position) and read data error occurs.
49	SGL CY Switch	Momentarily DEPRESSED	Enables operator to initiate each individual step of an operational command code(s). A single operational step is performed each time SGL CY switch is momentarily activated.
50	STAK Indicator	LIT	Indicates that software has stacked a command (i.e., has issued next command after rewind interrupt is acknowledged but before rewind operation is complete).

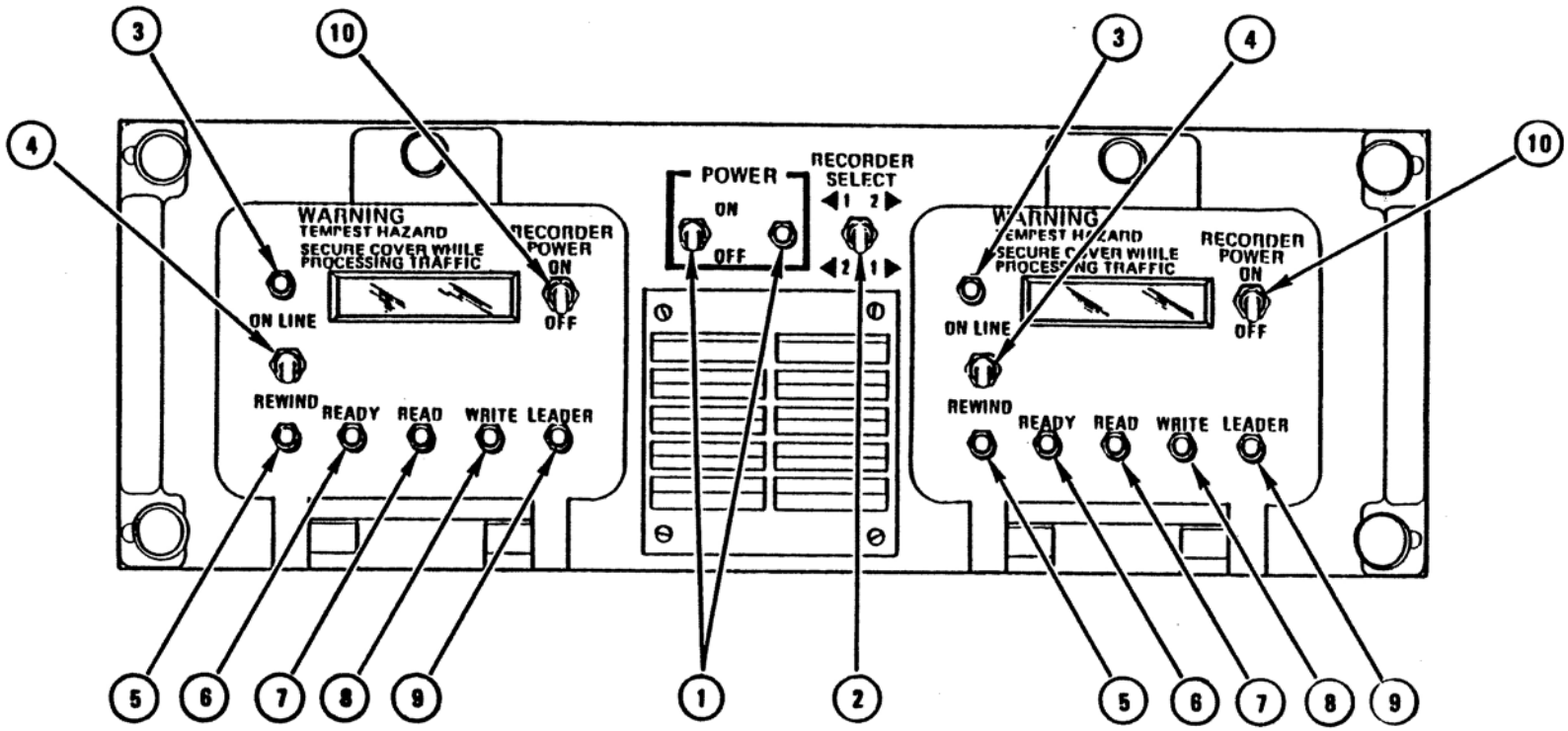

Figure 3-7. RD-396/U Cassette Magnetic Tape Unit

Table 3-8. RD-396/U Cassette Magnetic Tape Unit Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	POWER ON/OFF Switch and Indicator	ON	Applies power to both cassette units and to indicator light.
		OFF	Removes power from both cassette units.
2	RECORDER SELECT Toggle Switch		Enables operator to select unit to be used.
		UP	Selects right unit (address 0). Indicates Drive 1 on left and Drive 2 on right.
		DOWN	Selects left unit (address 0). Indicates Drive 1 on right and Drive 2 on left.
3	ON LINE Indicator	LIT	Indicates that unit is on-line.
4	ON LINE/REWIND Toggle Switch	ON LINE	If raised to ON LINE while ON LINE indicator is off, switches mode to on-line, lights ON LINE indicator, and rewinds cassette. If raised to ON LINE while indicator is on, switches mode to off-line and turns off ON LINE indicator.
		REWIND	If depressed to REWIND while ON LINE indicator is off, rewinds cassette until clear leader is under both sensors. Does nothing if depressed to REWIND when ON LINE indicator is on.

Table 3-8. RD-396/U Cassette Magnetic Tape Unit Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
5	REWIND Indicator	LIT	Indicates that tape is rewinding.
6	READY Indicator	LIT	Indicates that drive is loaded and ready for use.
7	READ Indicator	LIT	Indicates that a read operation is in progress.
8	WRITE Indicator	LIT	Indicates that a write operation is in progress.
9	LEADER Indicator	LIT	Indicates that a cassette is at beginning of clear leader and may be removed.
10	RECORDER POWER ON/OFF Toggle Switch	ON	Applies power to individual cassette units.
		OFF	Removes power from individual cassette units.

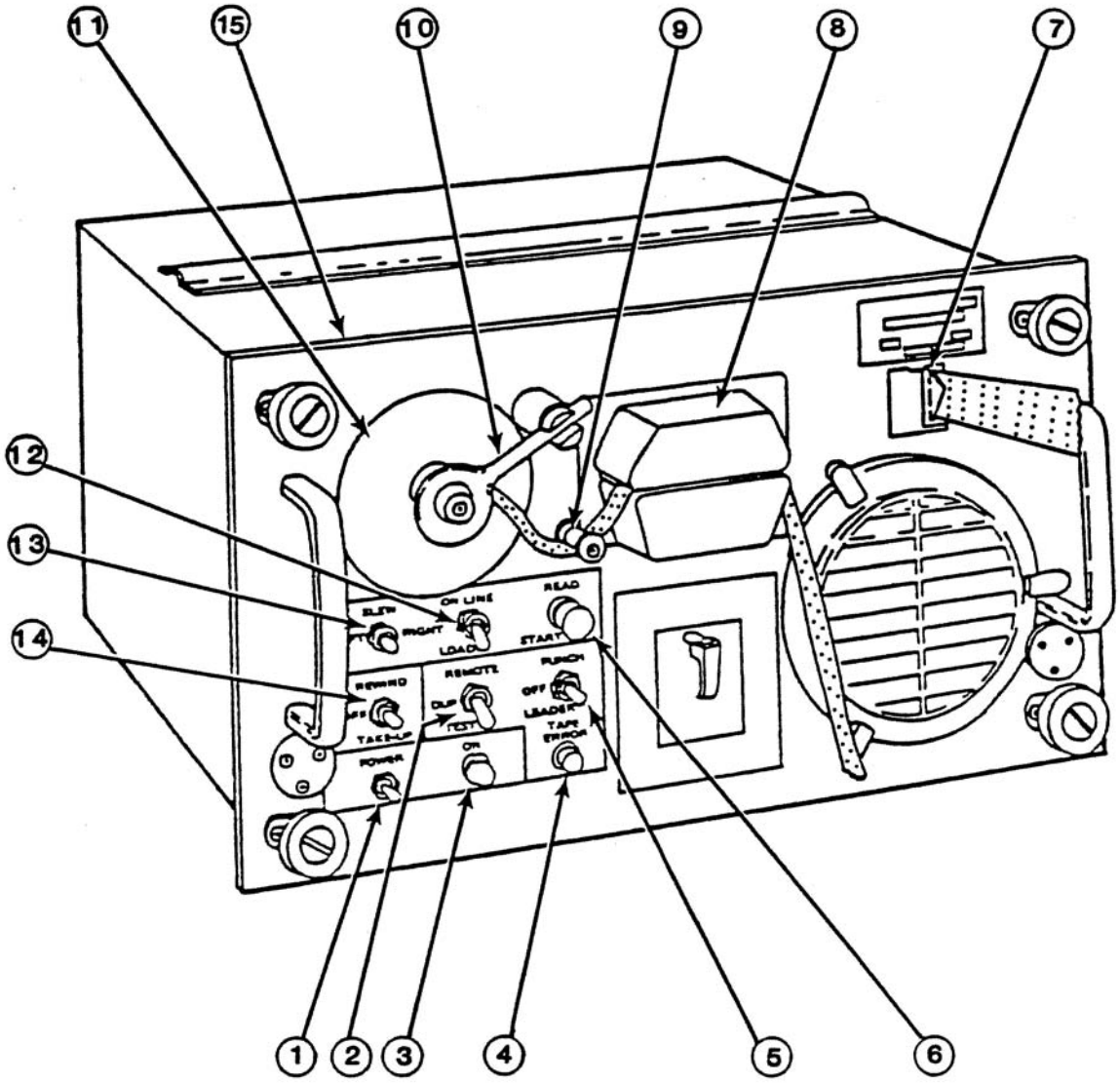

Figure 3-8. RD-397(V)/U High-Speed Paper Tape Reader/Punch (HSPTR/P) Control Panel

Table 3-9. RD-397(V)/U High-Speed Paper Tape Reader/Punch (HSPTR/P) Control Panel Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	POWER Toggle Switch	UP	Energizes unit.
		DOWN	De-energizes unit.
2	REMOTE/DUP/ TEST Toggle Switch	REMOTE (UP)	Places unit under external control via back panel connectors.
		DUP (CENTER)	Connects reader output to punch input to allow tape reproduction.
		TEST (DOWN)	Connects punch for test pattern generation.
3	ON Indicator	LIT	Indicates that unit has been energized.
4	TAPE ERROR Indicator	LIT	Indicates a fault in tape feed system for punch mechanism, because of either low tape or a tape jam.
5	PUNCH/OFF/ LEADER Toggle Switch	PUNCH (UP)	Energizes punch when unit is in dup or test mode.
		OFF (CENTER)	Disables punch motor.
		LEADER (DOWN)	Causes leader to be punched in any mode (remote, dup, or test).
6	READ/START Pushbutton/ Indicator	PRESSED	Not applicable in NAVMACS V2.
		LIT	Indicates that a read operation is in process.
7	PUNCHED TAPE EXIT/CUTTER		Output area for punched paper tape.

Table 3-9. RD-397(V)/U High-Speed Paper Tape Reader/Punch (HSPTR/P) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
8	READ HEAD TAPE GUIDE 5, 6, 7, 8 Wheel (located under removable read head tape guide cover)	5	Controls smooth feeding of 5-level paper tape into sprockets during read. Put in this position during normal operation.
		6	Not applicable in NAVMACS V2.
		7	Not applicable in NAVMACS V2.
		8	Controls smooth feeding of 8-level paper tape into sprockets during read. Put in this position during program load.
9	TAPE ROLLER		Guides paper tape onto spooler reel.
10	SPOOLER TAPE RETAINER		Stabilizes paper tape on reel.
11	SPOOLER REEL		Feeds paper tape during read.
12	ON-LINE/LOAD Toggle Switch	ON-LINE (UP)	Allows reader to be operated in remote mode.
		LOAD (DOWN)	Disables reader to prevent false data generation while loading tape. Also enables SLEW LEFT/ RIGHT switch.
13	SLEW LEFT/RIGHT Toggle Switch	LEFT	Causes tape motion through read head from right to left.
		RIGHT	Causes tape motion through read head from left to right.

Table 3-9. RD-397(V)/U High-Speed Paper Tape Reader/Punch (HSPTR/P) Control Panel Controls and Indicators (Cont'd)

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
13	SLEW LEFT/RIGHT Toggle Switch (Cont'd)	SLEW	Operative only when REMOTE/DUP TEST switch is in either TEST or REMOTE position and ON-LINE/LOAD switch is in LOAD position.
14	REWIND/OFF/ TAKE-UP Toggle Switch	REWIND (UP)	Energizes spooler disk at full torque for rewinding tape.
		TAKE-UP (DOWN)	Places spooler disk in a low torque mode for use as a take-up reel for reader.
15	TAPE LEVEL 5-8-7 Toggle Switch (behind front panel)	5	Locks out the three highest order bits.
		8	Position for 8-level tape (program load) and 5-level tape (system operation). Leave in this position.
		7	Locks out the highest order bit.

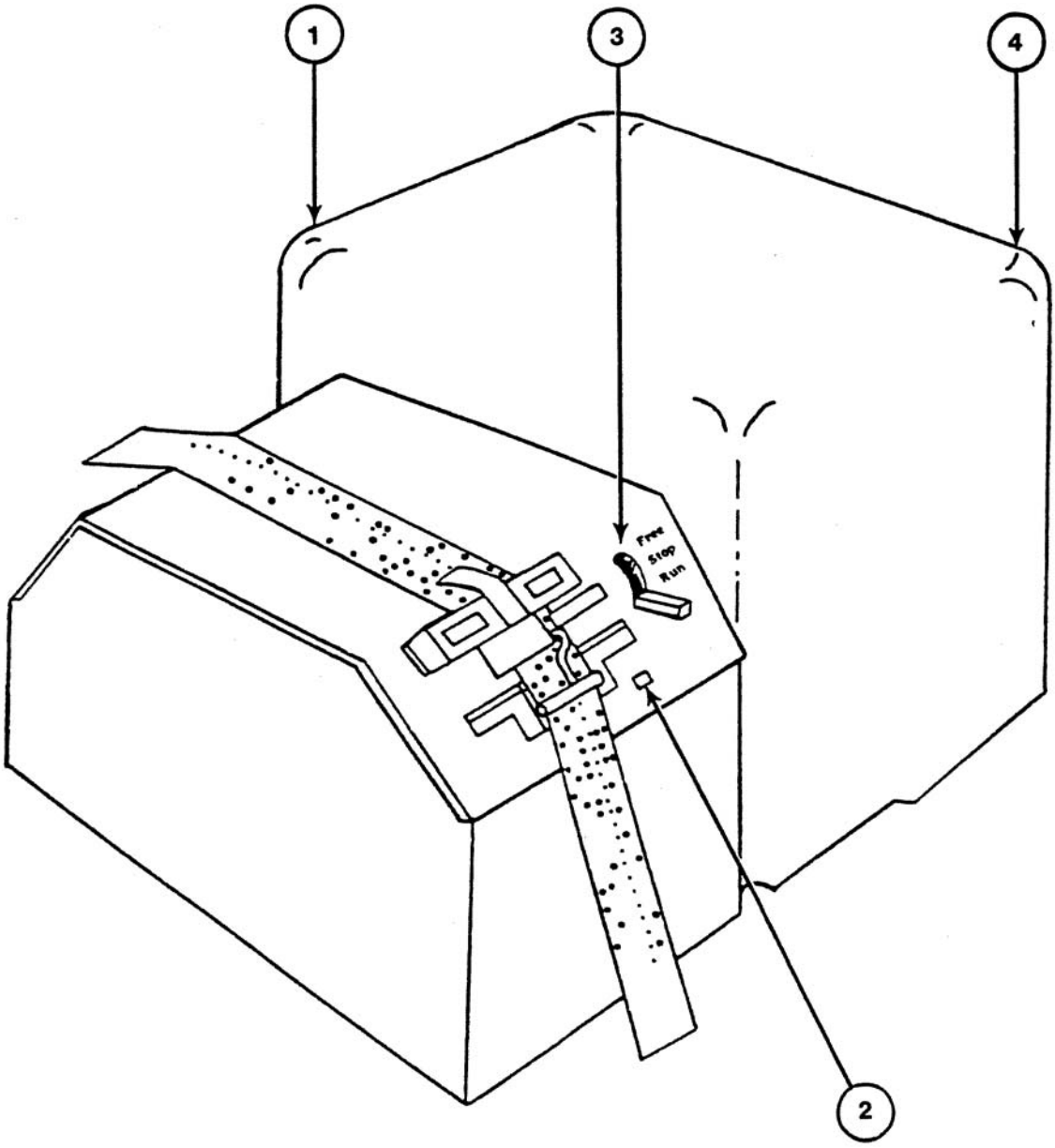

Figure 3-9. TT-187C/UG Low-Speed Paper Tape Reader (LSPTR)

Table 3-10. TT-187C/UG Low-Speed Paper Tape Reader (LSPTR) Controls and Indicators

INDEX NUMBER	SWITCH/ INDICATOR	POSITION/ CONDITION	FUNCTION
1	MOTOR RESET Pushbutton (located on left side of motor under cover)	Momentarily DEPRESSED	If motor overloads, re-enables power after motor has cooled.
2	TAPE LID RELEASE Pushbutton (located on left front of reader)	Momentarily DEPRESSED	Unlatches spring-loaded tape lid to swing open for loading or removing tape. Automatic tape-out feature interrupts control circuit when tape lid button is operated. Lid is relatched manually.
3	FREE/STOP/RUN Toggle Switch	FREE	Enables operator to feed tape manually.
		STOP	Disables electrical control circuit.
		RUN	Enables electrical control circuit.
4	POWER ON/OFF Toggle Switch (located on right side)	ON	Enables power to reader.
		OFF	Disables power to reader.

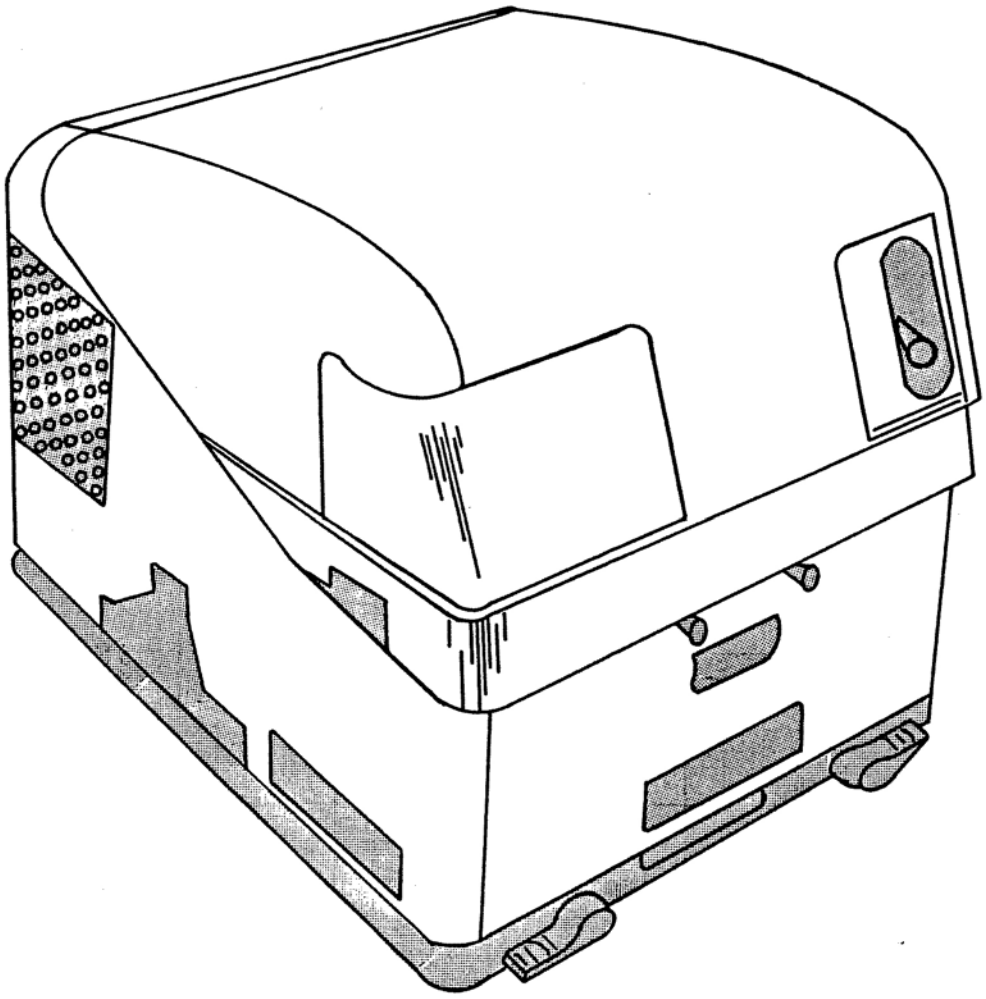

Figure 3-10. TT-192C/UG Low-Speed Paper Tape Punch (LSPTP)

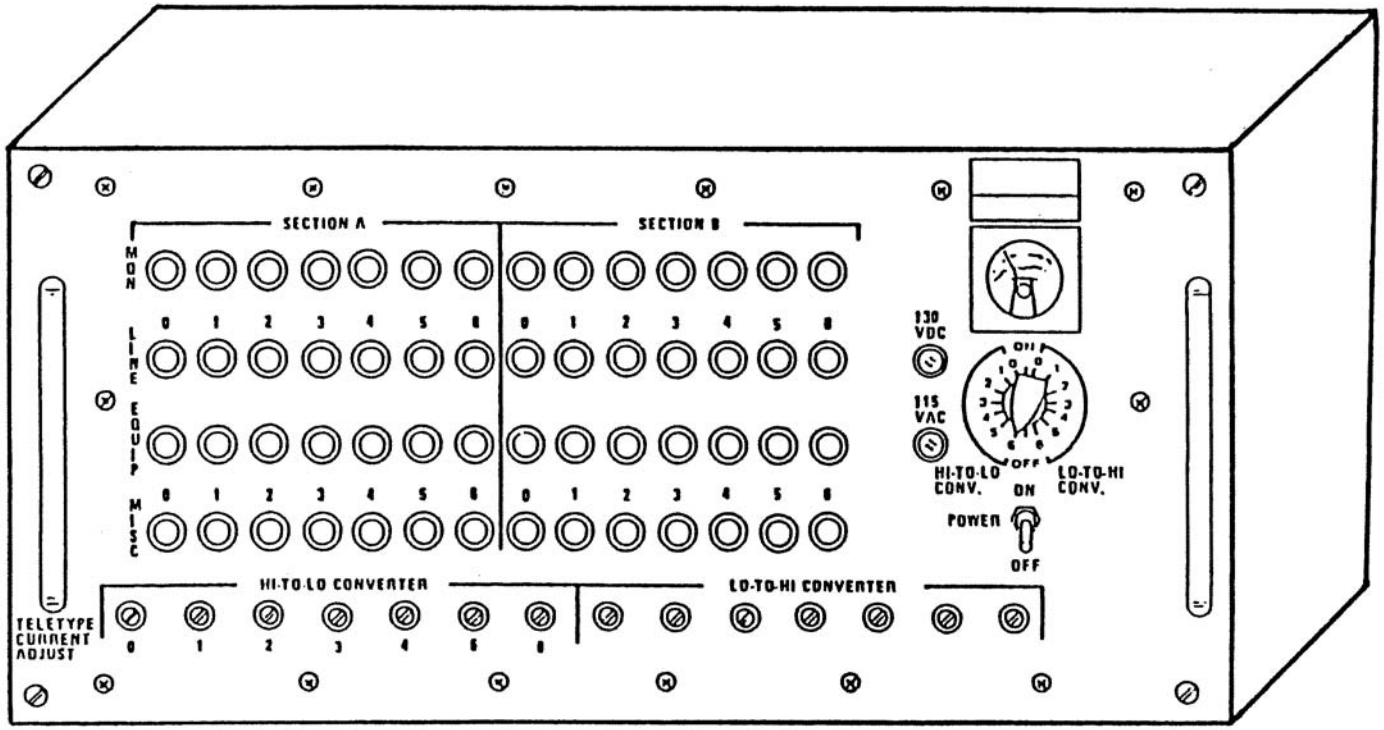

Figure 3-11. CV-3022/UG Level Converter/Patch Panel

CHAPTER 4

SYSTEM CONTROL

SECTION I

SYSTEM PARAMETERS

4-1. GENERAL.

4-2. NAVMACS V2 uses parameter pages to simplify the entry and presentation of system parameters. Parameters include options and data that instruct the system to perform in particular ways (e.g., the operator can place a circuit or a device Up or Down). Parameter pages, containing parameter and status information required to control the basic operation of the system, are in a prescribed format as shown throughout this section.

4-3. NAVMACS V2 contains the following three parameter pages:

Parameter Page	Title
1	BCST Circuits
3	IXS Circuit
4	Comm Center Terminals

4-4. Parameters may be entered or changed by the operator as the situation warrants. The STATUS portion of the parameter page, however, cannot be altered except by use of the DAY command (refer to Paragraph 4-12) or at initialization, and merely includes status information that may be helpful to the operator in making entries/changes to the parameter section. An "X" appearing in any field indicates that the field is not applicable, not accessible, or both.

4-5. RETRIEVING PARAMETER PAGES.

4-6. The operator may ask for the current system parameter values of the broadcast circuits, the Link, and the devices to be printed. Table 4-1 provides the operator action for retrieving a parameter page. Each page may be retrieved and printed for operator review.

Table 4-1. Retrieving a Parameter Page

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: SPP n (Device ID) Depress the BLANK key n = 1, 3, or 4 Optional Device ID = PR1, PR2 Defaults to service printer	Prints the indicated parameter page (n) on the specified device.

4-7. CHANGING PARAMETERS.

4-8. The NAVMACS V2 program, when first loaded, has certain parameter values which the operator may subsequently change. Table 4-2 lists those parameters that can be changed, the parameter pages on which they are used, their values at initialization, and the commands used to change these values. Refer to Appendix A for detailed information on the appropriate command.

4-9. PARAMETER PAGE 1 (BCST CIRCUITS). Parameter Page 1 indicates the parameters and status associated with operator control and monitoring of the four broadcast circuits. Figure 4-1 shows Parameter Page 1 with those values assigned at system initialization. Table 4-3 provides the options available for changing parameters and a description of each parameter entered. Table 4-4 details further information about the effect of various options on broadcast message delivery.

4-10. PARAMETER PAGE 3 (IXS CIRCUIT). Parameter Page 3 indicates the parameters and status associated with operator control and monitoring of the Link (i.e., Information Exchange System (IXS)) circuit. Figure 4-2 shows Parameter Page 3 with those values assigned at system initialization. Table 4-5 provides the options available for changing parameters and a description of each parameter entered. The Link circuit is comprised of a receive circuit (LI1) and a transmit circuit (LO1), which work in tandem.

4-11. PARAMETER PAGE 4 (COMM CENTER TERMINALS). Parameter Page 4 indicates the parameters and status associated with the operator control and monitoring of the Communication Center terminals (i.e., GateGuard, the printers, and paper tape punches). Figure 4-3 shows Parameter Page 4 with those values assigned at system initialization. Table 4-6 provides the options available for changing parameters and a description of each parameter entered.

Table 4-2. Operator-Controlled Parameter Page Entries

PARAMETER	PARAMETER PAGE	INITIAL VALUE	REMARKS
ARQ	3	03	The RPL ARQ command is used to change this value.
BAUD RATE	1, 4	0000, 0075	The RPL BOD command is used to change this value.
CID	1, 3	Default value	Default value is NIAA, NIBB, NICC, NIDD, LIAA, or LOAA, as appropriate. The RPL CID command is used to change the FIRST-RUN CID value on Parameter Page 1 and the CID value on Parameter Page 3.
CLASSIFI-CATION	4	U	The RPL CLS command is used to change this value.
CSN	1, 3	00001	This value advances by one for each message processed. The RPL CSN command is used to change the NEXT FIRST-RUN CSN value on Parameter Page 1 and the NEXT CSN value on Parameter Page 3. The DAY command resets the incoming and outgoing CSNs on Parameter Page 3 to 00001.
IAZZ	4	N	The SUP command enables punch-ing of supply system messages, and results in a value of Y for this parameter. The SDN command disables punching, and results in a value of N.
NEXT OTO NR	3	00001	This value advances by one for each OTO message processed. The RPL OON command is used to change the outgoing OTO number. The DAY command resets the incoming and outgoing OTO numbers to 00001.
QRK	1	2	The RPL QRK command is used to change this value.

Table 4-2. Operator-Controlled Parameter Page Entries (Cont'd)

PARAMETER	PARAMETER PAGE	INITIAL VALUE	REMARKS
SUBSCRIBER NR	3	00	The RPL SID command is used to change this value. The Link must be Down when this command is entered.
UP/DOWN/ HOLD/ EMCON	1, 3, 4	D	The CDN command is used to place a circuit Down on Parameter Pages 1 and 3; the CUP command is used to place a circuit Up on these pages. The EDN command is used to place a device Down on Parameter Page 4; the EUP command is used to place a device Up on this page. The HLD command is used to put the Link circuit in the Hold state on Parameter Page 3, and to put a device in the Hold state on Parameter Page 4. The EMC command is used to put the Link circuit in the EMCON state.

```
PARAMETER PAGE 1                        BCST CIRCUITS           120849Z NOV 91

RELEASE X.Y
                                  NI1    NI2    NI3    NI4
PARAMETER :
   UP/DOWN                        D      D      D      D
   BAUD RATE                      0000   0000   0000   0000
   FIRST-RUN CID                  NIAA   NIBB   NICC   NIDD
   NEXT FIRST-RUN CSN             00001  00001  00001  00001
   QRK                            2      2      2      2
STATUS :
   FIRST-RUN/RERUN                F      F      F      F
```

NOTE

X.Y in the RELEASE field indicates the release (X) and the version (Y) number of the program being used.

Figure 4-1. Parameter Page 1 (BCST Circuits)

Table 4-3. Parameter Page 1 (BCST Circuits)

PARAMETER	OPTION	DESCRIPTION
UP/DOWN	U, D	This parameter indicates the current state of the broadcast circuits. When the system receives the CUP (Circuit Up) command, it starts receiving and processing incoming traffic for that broadcast circuit. This parameter may not be changed to Up unless a baud rate is specified with the RPL BOD command, and a CGL is entered. The CDN (Circuit Down) command stops the reception and processing functions for that broadcast circuit. Refer to Appendix A for a description of these commands.
BAUD RATE	0075, 0300 0600, 1200	This parameter indicates the current baud rate for each of the four broadcast circuits. A baud rate must be entered for a broadcast circuit before that circuit can be brought Up. The sum of the baud rates for all Up broadcast circuits cannot exceed 1200.
FIRST-RUN CID	4 Characters 3rd = 4th	This parameter (e.g., NIAA) is used for first-run message accountability and continuity checks. This tells the system which broadcast CID to look for when receiving and processing traffic.

Table 4-3. Parameter Page 1 (BCST Circuits) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
QRK	2-5	This parameter is used by the system to determine the number of errors allowed when a message addressee is screened against the entries in the CGL.
STATUS:		This part of the parameter page is system-generated, and the operator's control is limited to resetting the counters through the use of the DAY command (refer to Paragraph 4-12).
FIRST-RUN/RERUN	None	This parameter identifies the type of message a circuit is currently processing. The system indicates that a particular circuit is in first-run mode by placing an F under that circuit. The rerun mode is indicated by an R. This status changes automatically from message to message.

Table 4-4. Broadcast Message Delivery Options

FIRST-RUN TRAFFIC

ADDRESSEE SCREENING RESULT	MESSAGE PRECEDENCE (Y,Z OR O-R)	DELIVERY
Addressed	Y,Z	Yes
Addressed	O-R	Yes
Nonaddressed	Y,Z	Yes
Nonaddressed	O-R	No

RETRANSMITTED TRAFFIC

ADDRESSEE SCREENING RESULT	MESSAGE PRECEDENCE (Y,Z OR O-R)	DELIVERY
None	Y,Z	No
None	O-R	No

```
PARAMETER PAGE 3                  IXS CIRCUIT                040810Z NOV 91

RELEASE X.Y
                                LI1       LO1
PARAMETER :
   UP/DOWN/HOLD/EMCON           X         D
   CID                          LIAA      LOAA
   NEXT CSN                     00001     00001
   SECURITY LEVEL               X         T
   SPECAT ?                     X         Y
   QUEUE ALARM LEVEL            X         05
   QUEUE ALTROUTE LEVEL         X         10
   MAX Y/Z ACK TIME             X         1
   SUBSCRIBER NR                X         00
   BAUD RATE                    X         2400
   ARQ                          X         03
   NEXT OTO NR                  00001     00001
STATUS :
   NR MSGS QUEUED               X         00
   NR MSGS/RADIO DAY            0000      0000
   RETRAN PERCENT               00        00
```

NOTE

X.Y in the RELEASE field indicates the release (X) and the version (Y) number of the program being used.

Table 4-5. Parameter Page 3 (IXS Circuit)

PARAMETER	OPTION	DESCRIPTION
UP/DOWN/HOLD/ EMCON	U, D, H, E	This parameter indicates the current state of the Link circuit. The CUP (Circuit Up) command allows the system to send and receive all messages. The CDN (Circuit Down) command stops the sending and receiving of all messages. The HLD (Hold) command allows the system to finish sending the message that is in progress and, upon completion, not to send any more narrative messages. OTOs and control messages may still be transmitted, and the receive capability is still enabled. The EMC (EMCON) command immediately terminates all message transmissions but keeps the receive side in the U (Up) condition.
CID	4 Characters 3rd = 4th	This parameter is used for message accountability and continuity checks on the Link.
NEXT CSN	00001-04095	This parameter reflects the next CSN to be assigned to a narrative transmission. It should not be changed without OTO coordination with the NCS. The DAY command (refer to Paragraph 4-12) resets the incoming and outgoing CSNs to 00001.
SECURITY LEVEL	None	This parameter is used to specify the highest message classification that may be transmitted on the Link circuit. It is initialized as Top Secret and cannot be changed by the operator.
SPECAT ?	None	This parameter indicates whether the Link circuit is authorized to transmit SPECAT messages. It is initialized as Y (Yes) and cannot be changed by the operator. The system can send SPECAT messages.

Table 4-5. Parameter Page 3 (IXS Circuit) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
QUEUE ALARM LEVEL	None	This parameter is initialized at 05 and cannot be changed by the operator. When the number of messages queued for the transmit circuit has reached the queue alarm level, Alert A-24 (refer to Appendix B) is generated for the operator. This alert is a signal that the system is busy, and that any further output to this circuit could cause a delay in message processing.
QUEUE ALTROUTE LEVEL	None	This parameter is initialized at 10 and cannot be changed by the operator. When the number of messages queued for the transmit circuit has reached the queue altroute level, Alert A-27 (refer to Appendix B) is generated for the operator. The system nonetheless continues queuing outputs for this circuit as required.
MAX Y/Z ACK TIME	None	This parameter is initialized at 1 and cannot be changed by the operator. This parameter specifies the number of minutes the system waits for automatic acknowledgement of a transmitted Emergency or Flash message before alerting the operator (refer to Alert B-21 in Appendix B) that the message has not been automatically acknowledged by CUDIXS.
SUBSCRIBER NR	01-60	This parameter contains a value of 00 at system initialization. A SID of 01-60 must be entered before the Link can be brought to an Up condition. The SID number is assigned by appropriate authorities. Two subscribers should not use the same SID.

Table 4-5. Parameter Page 3 (IXS Circuit) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
BAUD RATE	None	This parameter indicates the data rate at which the Link is operating. The value can be either 2400 or 4800. It is initialized to 2400 and cannot be changed by the operator. **Note:** A baud rate of 4800 can only occur during the DAMA mode of operations.
ARQ	00-03	This parameter is initialized at 03 and may be changed by the operator to a value of 00-03. If a value of 00 is set, the system will send an output block once and once only. If a value of 01 is set, the system will send the output block once and automatically send it again if CUDIXS requests a second transmission.
NEXT OTO NR	00001-32767	This parameter is the OTO number to be assigned to the next OTO message processed. It is initialized at 00001 and may be changed by the operator. The operator can change the Link OON using the RPL OON command (refer to Appendix A). The incoming OTO number can be changed only by entering the DAY command (refer to Paragraph 4-12), which resets incoming and outgoing OTO numbers to 00001.
STATUS:		This part of the parameter page is system-generated and the operator's control is limited to resetting the counters through the use of the DAY command (refer to Paragraph 4-12).
NR MSGS QUEUED	None	This parameter indicates the number of messages the operator has placed in the system which are awaiting transmission on the Link. It does not reflect the number of messages being actively transmitted. This value is reset to 00 by use of the DAY command (refer to Paragraph 4-12).

Table 4-5. Parameter Page 3 (IXS Circuit) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
NR MSGS/RADIO DAY	None	This parameter is the number of transmitted messages acknowledged by the NCS, and of received messages processed by the subscriber since the last DAY command or since the system was initialized. These values are reset to 0000 by use of the DAY command (refer to Paragraph 4-12).
RETRAN PERCENT	None	This parameter indicates the percentage of message data blocks received or transmitted that were retransmissions. For example, if NAVMACS sent six data blocks and the NCS requested automatic retransmissions of three of the blocks, the RETRAN PERCENT field value under LO1 would be 50. These values are reset to 00 by use of the DAY command (refer to Paragraph 4-12).

```
PARAMETER PAGE 4            COMM CENTER TERMINALS           040911Z NOV 91

RELEASE X.Y
                          PR1     PR2     TP1     TP2     GG1
PARAMETER :
   UP/DOWN/HOLD           D       D       D       D       D
   BAUD RATE              X       X       X       0075    X
   CLASSIFICATION         X       X       X       X       U
   QUEUE ALARM LEVEL      05      05      03      02      03
   QUEUE ALTROUTE LEVEL   07      07      04      03      XX
   IAZZ                   X       X       N       X       X
STATUS :
   NEXT OCSN              00001   00001   00001   00001   00001
   NR ITEMS QUEUED        00      00      00      00      00
   NR ITEMS/RADIO DAY     0000    0000    0000    0000    0000
```

NOTE

X.Y in the RELEASE field indicates the release (X) and the version (Y) number of the program being used.

Figure 4-3. Parameter Page 4 (Comm Center Terminals)

Table 4-6. Parameter Page 4 (Comm Center Terminals)

PARAMETER	OPTION	DESCRIPTION
UP/DOWN/HOLD	U, D, H	This parameter indicates the current state of the printers, the paper tape punches, and GateGuard. Printers and paper tape punches can be in the Up, Down, or Hold state; GateGuard can be in the Up or Down state. (If GG1 is in the Up state, then TP2 must be in the Down state, and vice versa. PR1 or PR2 must be Up when GG1 is Up). When the system receives the EUP (Device Up) command for a particular device, it will use that device as necessary. When the operator places GG1 in the Up state, this field will show H (Hold) as NAVMACS V2 attempts to connect with GateGuard. After receiving the EDN (Device Down) command, the system will not attempt to use the specified device. If GG1 is in the Down state, messages transferred to GateGuard are not queued. The HLD (Hold) command is used to temporarily suspend output to a specific printer or paper tape punch. Any current output continues to completion, but no other output begins while the device is in Hold. The Hold option allows the operator to temporarily suspend output (while the operator changes printer paper, punch paper tape, etc.) and then return to normal operation without having to route output to an alternate device.

Table 4-6. Parameter Page 4 (Comm Center Terminals)

PARAMETER	OPTION	DESCRIPTION
BAUD RATE	0075, 0300, 0600, 1200	This parameter indicates the current baud rate for the LSPTR and LSPTP. This parameter is initialized at 0075, and it may be changed via the RPL BOD command regardless of the status of these devices. Before changing this setting, the operator should coordinate the baud rate with the device or system that is interfacing with NAVMACS V2 on the CPU channel normally dedicated to the LSPTR and LSPTP.
CLASSIFICATION	T, S, C, E, U	This parameter applies only to GG1 and indicates the maximum classification allowed for messages transferred to GG1. This parameter is initialized at U (Unclassified). The operator may change this parameter via the RPL CLS command to T (Top Secret), S (Secret), C (Confidential), and E (EFTO). If the classification of a message transferred to GG1 exceeds the classification level assigned to GG1, the message is terminated by the system and printed, and Alert A-8 (refer to Appendix B) is queued for the operator. GG1 must be in the Down state when this parameter is changed.
QUEUE ALARM LEVEL	None	When the number of items queued for an output device reaches the queue alarm level, Alert A-24 (refer to Appendix B) is generated for the operator. This alert is a signal that a device is busy and that any further output for this device could cause a delay in message processing.

Table 4-6. Parameter Page 4 (Comm Center Terminals) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
QUEUE ALTROUTE LEVEL	None	When the number of items queued for an output device reaches the queue altroute level, Alert A-27 (refer to Appendix B) is generated for the operator and any additional output is routed to the system- specified altroute device. The altroute device for a printer is the other printer. The altroute device for TP1 is TP2 if GG1 is Down, otherwise TP1 will not have an altroute device. The altroute device for TP1 is TP2; the altroute device for GateGuard is PR1.
IAZZ	Y, N	This parameter allows the operator to enable or disable the automatic punching of supply system messages (i.e., IAZZ messages received on the Link and messages with an OSL match received on the Link or broadcast circuits). Valid options are Y for punching supply system messages and N for not punching them. The SUP (Punch Supply System Messages) command causes the punching of all supply system messages at TP1. The SDN (Do Not Punch Supply System Messages) command stops the automatic punching of these messages. Regardless of the setting of this parameter, supply system messages are delivered to a printer and GG1.
STATUS:		This part of the parameter page is system-generated, and the operator's control is limited to resetting the counters through the use of the DAY command (refer to Paragraph 4-12).
NEXT OCSN	None	This parameter contains the device output number assigned to the next incoming message that is output to that device. This value is reset to 0001 by use of the DAY command (refer to Paragraph 4-12).

Table 4-6. Parameter Page 4 (Comm Center Terminals) (Cont'd)

PARAMETER	OPTION	DESCRIPTION
NR ITEMS QUEUED	None	This parameter indicates the backlog of lists, reports, and incoming messages awaiting output to a printer or punch. This value is reset to 00 by use of the DAY command (refer to Paragraph 4-12).
NR ITEMS/RADIO DAY	None	This parameter indicates the total outputs at that device since the last DAY command was entered or since the system was initialized. This value is reset to 0000 by use of the DAY command (refer to Paragraph 4-12)

4-12. RESETTING STATUS PARAMETERS. The operator, as explained in Paragraph 4-4, does not have the option to change the parameters in the STATUS portion of Parameter Pages 1, 3, and 4. At New Day/Radio Day (RADAY) the operator may reset the STATUS values by using the DAY command (refer to Table 4-7). The operator should print a copy of all three parameter pages before using the DAY command to ensure that the existing numbers from the previous RADAY are on record. When the DAY command is entered at the Control Teletype (CTTY), the STATUS fields are all set to zero except the NEXT OCSN field on Parameter Page 4, which is reset to 00001. Entering the DAY command also resets the incoming/outgoing Channel Sequence Numbers (CSNs) and Operator-to-Operator (OTO) message numbers to 00001 on Parameter Page 3.

Table 4-7. Resetting Status Parameters

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: DAY	
Depress the BLANK key	Resets the cumulative data counts within the STATUS fields. Also resets incoming/outgoing CSN and OTO numbers.

4-13. CHANGING CLASSIFICATION LEVEL. The classification level, as explained in Table 4-6, applies only to messages transferred to GG1. The operator may change the CLASSIFICATION value by using the RPL CLS command (refer to Table 4-8).

Table 4-8. Changing Classification Level

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL CLS n Depress the BLANK key n = U, E, C, S, or T	Replaces the classification level on Parameter Page 4 with the value entered.

CHAPTER 4

SYSTEM CONTROL

SECTION II

SYSTEM CONTROL LISTS

4-14. SYSTEM CONTROL DATA (PAPER TAPE LISTS).

4-15. A variety of paper tapes can be read in as part of the initialization of NAVMACS V2. These tapes provide detailed lists of data required for NAVMACS V2 operations and are as follows:

Command Guard List (CGL)

Local Routing List (LRL)

4-16. Subject to certain restrictions, the operator may modify all or part of these control lists by inputting new paper tapes or by entering commands at the CTTY. Specific instructions on format, entering, deleting, and examples of the CGL and LRL are contained in Chapter 5.

4-17. LOADING PAPER TAPE LISTS.

4-18. The CGL and LRL may be loaded into the system using the High- Speed Paper Tape Reader (HSPTR) or the Low-Speed Paper Tape Reader (LSPTR). The operator places the preformatted paper tape list on the tape reader and, with the LOD command (refer to Table 4-9), reads the list into the system for update.

Table 4-9. Loading a System Paper Tape

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: LOD (Device ID) Depress the BLANK key Optional Device ID = TR1, TR2 Defaults to TR1	 Enter a system data paper tape list into the system; replaces the CGL or LRL with data entered from the device indicated.

CHAPTER 4

SYSTEM CONTROL

SECTION III

CONTROLLING AND MONITORING

4-19. CIRCUIT CONTROL.

4-20. NAVMACS V2 provides two types of circuit control: broadcast circuit control and Link circuit control. The following paragraphs provide information on controlling and patching NAVMACS V2 circuits.

4-21. BROADCAST CONTROL.

4-22. Control of the broadcast circuits is achieved by using operator commands and monitoring changes on Parameter Page 1. The operator is allowed to place each circuit in an Up or Down state (by using the CUP or CDN command, respectively) and to modify parameters that influence the system's message sequence number validation, addressee screening, and broadcast message delivery options.

4-23. PATCHING THE BROADCAST CIRCUITS.

4-24. Prior to system operation, the broadcast crypto for each circuit should be patched into the system and, on a monitor basis, to a backup receive-only teletype printer. When the system has been initialized, the operator should place all necessary broadcast circuits in the Up state. The monitor should be left active until the system is actually copying traffic on the circuit.

4-25. When the system is to be taken Down (e.g., for equipment preventive maintenance), the broadcast circuits should be disconnected in an orderly fashion. Each circuit should be patched, on a monitor basis, to a backup receive-only teletype printer. The operator should monitor this output and, when the next message is being copied, place the circuit in the Down state. At this point, the circuit could be patched out of the system, if necessary. To place a broadcast circuit Up or Down, refer to the CUP or CDN command in Appendix A.

4-26. LINK CONTROL.

4-27. Control of the Link is achieved by entering commands at the CTTY. The Link can be monitored by printing Parameter Page 3. The Link is treated as two separate circuits (the receive circuit LI1 and transmit circuit LO1) for such purposes as Channel Identifier (CID)/CSN and OTO number assignment and continuity checks; however, both receive and transmit circuits must be operating for the successful transmission of data to the shore. Therefore, only one circuit status entry is needed to control the Link. In addition to the system alerts that notify the operator when problems arise with the Link circuit, Parameter Page 3 provides a retransmission percent to aid in determining network quality. This value may be helpful in selecting the Automatic Repeat Request (ARQ) setting on Parameter Page 3. Refer to Table 4-5 for information regarding the specific parameters controlling the Link.

4-28. Since operator judgment is required to select the optimum ARQ setting, the following guidelines are given:

1. The number of repeats depends on the ARQ setting and the quality of the Link circuit.

2. The ARQ may be set from 00-03; an ARQ of 00 means that there will be no repetitions of a transmission.

3. An ARQ of 02 or 03 ensures that a message is delivered with a minimum amount of garble but may increase delivery time.

4. An ARQ of 00 or 01 expedites message delivery but may decrease the probability of error-free reception.

5. If the operator is advised by the Net Control Station (NCS) that reception is excellent, a setting similar to those described in Step 4 should be used. If, however, the operator is advised that reception is poor, a setting similar to those described in Step 3 should be used. If the operator has not been advised by the NCS, an ARQ value of 03 should be used.

4-29. LINK MONITORING.

4-30. As described in Paragraph 4-27, the operator can observe Link operation through the status portion of Parameter Page 3. The use of a KG-84A prevents the operator from being able to directly monitor the Link. Should a crypto alarm condition occur, Alert A-26 (refer to Appendix B) will be generated for the operator.

CHAPTER 5

SYSTEM LISTS

SECTION I

COMMAND GUARD LIST

5-1. GENERAL.

5-2. The Command Guard List (CGL), which is created and maintained by the operator, is composed of two sections. The first, and generally larger, section is the positive guard list, which contains addressees for which the ship is guarding. (Most entries in the CGL are Plain Language Address Directory (PLAD) and Message Address Directory (MAD) addressees). Any message containing one or more addressees that match entries in the positive guard list is delivered to GateGuard, if available, otherwise to a printer. Addressee matches are noted on any printout of the message to facilitate the inrouting process.

5-3. The second, and generally smaller, section of the CGL is the Negative Guard List (NGL), which contains those addressees for which the ship is specifically NOT guarding. The NGL contains entries similar in spelling to, but different in meaning from, those in the positive guard list.

5-4. SCREENING ERROR TOLERANCE.

5-5. The addressee screening process can be performed in the presence of garble, but it is the operator's responsibility to specify to the system the Screening Error Tolerance (QRK) for each broadcast circuit. The QRK setting identifies the quality of message reception on the indicated circuit and specifies the acceptable level of garble within which an addressee match can be determined.

5-6. The QRK setting specifies the degree to which the system will accept a less than perfect match between a message addressee and a CGL entry. The minimum percent of character matches for each QRK setting is shown in Table 5-1. Table 5-2 shows, for each QRK setting, the acceptable number of character errors in relation to the length of the message addressee. Any message addressee that contains fewer character errors than those indicated in Table 5-2 is considered an addressee match.

5-7. A CGL entry that contains one or more numeric characters (e.g., Address Indicator Group (AIG) 328) is screened independently of the QRK setting, and requires a perfect match (i.e., no errors) to be considered an addressee match.

5-8. A backlog of unprocessed broadcast messages or a message received on the IXS circuit, causes no addressee screening to take place. All messages processed during this situation are considered to be of concern and are printed. The message printout is annotated as NOT SCREENED to reflect the fact that no addressee screening was performed.

Table 5-1. Screening Error Tolerance (QRK) Minimum Requirements

QRK Setting	Approximate Minimum Character Match Required	Minimum Number of Character Matches for Each Character Mismatch
5	93%	19
4	90%	11
3	85%	7
2	77%	4

5-9. A QRK setting of 5 is used when message reception quality is excellent, a QRK setting of 4 or 3 when quality is acceptable, and a QRK setting of 2 when quality is poor. A QRK setting of 1 is no longer allowed. It was used to indicate no addressee screening, and all messages were printed. To change the QRK setting, refer to Table 5-3.

Table 5-2. Screening Error Tolerance (QRK)/Character Error

QRK SETTING	ERRORS ALLOWED													
	0	1	2	3	4	5	6	7	8	9	10	11	12	13
5	1-9	10-29	30-49	50-69										
4	1-5	6-17	18-29	30-41	42-53	54-65								
3	1-3	4-11	12-19	20-27	28-35	36-43	44-51	52-59	60-67					
2	1-2	3-7	8-12	13-17	18-22	23-27	28-32	33-37	38-42	43-47	48-52	53-57	58-62	63-67

To use this table:

1. Find the QRK setting.

2. For that QRK setting, find the interval in which the number of characters in the CGL entry falls.

3. Read the number of character errors allowed for that CGL entry at the QRK setting.

Examples:

A QRK setting of 5, with a 20-character CGL entry (interval of 10-29), allows one error.
A QRK setting of 4, with a 20-character CGL entry (interval of 18-29), allows two errors.
A QRK setting of 3, with a 20-character CGL entry (interval of 20-27), allows three errors.
A QRK setting of 2, with a 20-character CGL entry (interval of 18-22), allows four errors.

Table 5-3. Replacing the QRK Setting

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL QRK Circuit ID n or RPL QRK n Circuit ID Depress the BLANK key Circuit ID = NI1, NI2, NI3, NI4 n = 2-5	Replaces current QRK value with the entered value on the circuit indicated.

5-10. ADDRESSEE SCREENING.

5-11. NAVMACS V2 screens the headings of incoming message traffic and segregates those messages addressed to the ship or commands for which it is guarding. For narrative messages received on the Link circuit, addressee screening is performed only to assist the inrouter. All Link messages are considered to be of concern to the ship regardless of whether a CGL match occurs. The system compares every addressee on each incoming first-run message against the entries in its CGL. The CGL contains those entries for which the ship is guarding. When the system finds one or more matches between addressees on a first-run message and entries in the CGL, the matching addressees are flagged (refer to Table 7-1) and the complete message is delivered to GG1, if GG1 is Up, otherwise is printed on a printer. If the message is an Emergency or Flash precedence first-run message, it is delivered regardless of whether a match is found. If a match is not found in a message having a precedence lower than Flash, the message is delivered only if special characteristics (e.g., Wanted Message List (WML) match) override its nonaddressed status.

5-12. During the addressee screening process, each addressee in the message is screened first against the NGL. If an error-free match is made with an entry in the NGL, that message addressee is considered to be of no concern. If the message has only one addressee and it matches one of the NGL entries, the screening process stops and the message is considered not addressed. Because only error-free NGL matches are considered, QRK settings 2-5 have no bearing on the NGL screening process. If there is no match in the NGL, the positive guard list is then screened for a match. Upon completion of screening, if there are matches against the positive guard list, the message is delivered. If no positive guard list matches are found (regardless of what NGL matches may have occurred), the message is never seen by the operator. The operator must understand this screening action to prevent missing addressed traffic because of imperfect CGL entries. (Refer to Chapter 7, Section I for more information on addressee screening.)

5-13. NEGATIVE GUARD LIST.

5-14. Use of the NGL may be required during periods of marginal reception quality when the QRK option is lowered to permit more garble in the addressee screening process. Because of the effect of the QRK setting, it would be wise to make every attempt to identify those addressees likely to be delivered during adverse conditions and see that they are on the NGL. For example, if the entries TF TWO EIGHT and/or TG TWO EIGHT PT ONE are on the positive guard list, it would be advisable to place CTF TWO EIGHT and/or CTG TWO EIGHT PT ONE in the NGL since there is only a 1-letter difference for these commands (the letter C). Even with a QRK setting of 5, a 1-letter difference could cause a print when it is not wanted. If, however, they were entered in the NGL, they would be recognized as addressees of no concern and would not be screened against the positive guard list.

5-15. NGL entries are identified by a minus sign (-). For example:

-CTF TWO EIGHT

-CTG TWO EIGHT PT ONE

5-16. ADDRESSEE BOUNDING.

5-17. A slant sign (/) creates "bounds" around an addressee and, depending on where it is used, modifies the screening process.

5-18. Most addressees entered in the CGL are complete short-title PLAD addressees. They are considered to be fully bound when entered with both a preceding slant and a following slant, as illustrated in the following examples:

/TF TWO EIGHT/

/TG TWO EIGHT PT ONE/

5-19. The system treats fully bound entries as complete addressees and, in principle, will not permit characters preceding or following the message addressee. Depending on the QRK setting and the length of the CGL entry, a small number of extraneous characters may be permitted. For example, if

/COMDESRON TWO/

/FITRON TWO/

were entered in the CGL, only the message addressees

COMDESRON TWO

FITRON TWO

would match, and the message addressees

DESRON TWO

COMDESRON TWO THREE

FITRON TWO FOUR

would not match. Side routing or the operating signal ZEN that may precede some message addressees is not screened and is not, therefore, treated as extraneous information. NGL entries do NOT require any bounding, as a perfect match is required for a message addressee to be considered an NGL match.

5-20. The majority of CGL entries that are not fully bound, as described above, should be either front-bound or rear-bound. These addressees are entered with either a preceding slant or a following slant, as appropriate. For example:

/SEVENTHFLT

AIG TWO SIX/

5-21. Front-bound entries and rear-bound entries are generally used for the following reasons:

1. To use one CGL entry to guard for several short-title PLAD addressees
2. To generalize or limit a short-title PLAD addressee

5-22. The system does not, in principle, permit characters preceding front-bound entries or following rear-bound entries. Depending on the QRK setting and the length of the CGL entry, a small number of extraneous characters may be permitted. For example, if

/DESRON THREE

/ALL SHIPS COPYING

DESRON TWO/

AIG TWO SIX/

were entered into the CGL, the message addressees

DESRON THREE ONE

DESRON THREE THREE

ALL SHIPS COPYING LMAA BCST

ALL SHIPS COPYING THIS BCST

DESRON TWO

COMDESRON TWO

AIG TWO SIX

would match, and the message addressees

COMDESRON THREE ONE

DESRON TWO SIX

COMDESRON TWO THREE

AIG TWO

AIG TWO SIX ZERO

would not match.

5-23. Other addressees may be entered into the CGL unbound. These addressees are entered without preceding or following slants. For example:

JOSEPHUS DANIELS

JOHNSTON

5-24. Unbound CGL entries are used to allow one CGL entry to guard for several short-title PLAD addressees. For example, if

SARATOGA

SEVENTHFLT

JOHNSTON

were entered into the CGL, the message addressees

USS SARATOGA

MARDET USS SARATOGA

SEVENTHFLT

COMSEVENTHFLT

ALL SEVENTHFLT UNITS

USS JOHNSTON

would match. Caution should be used when entering unbound addressees into the CGL, because the system may match considerably more message addressees than desired.

5-25. Optimum screening will be performed if collective addressees are front-bound, AIGs are rear-bound, and all others are unbound. Front- and rear-bounding can be selected on an individually desired basis when circuit quality and message reception are excellent, or when there is a very low possibility that an addressee can be structured differently.

5-26. ADDRESSEE SCREENING EXAMPLES.

EXAMPLE 1

Situation: CGL entry: AIG TWO SIX/

Message addressee: AIG TWO SIX THREE

QRK = 2

Result: No match

Reason: The message addressee contains an additional six characters (at the end) and only two character errors are allowed at QRK 2 for an 11-character CGL entry.

EXAMPLE 2

Situation: CGL entry: /DESRON TWO

Message addressee: COMDESRON TWO

QRK = 2

Result: No match

Reason: The message addressee contains an additional three characters (at the beginning) and only two character errors are allowed at QRK 2 for a 10-character CGL entry.

EXAMPLE 3

Situation: CGL entry: FITRON TWO ONE/

Message addressee: FITRON TWO ONE ONE

QRK = 2

Result: No match

Reason: The message addressee contains an additional four characters (at the end) and only three character errors are allowed at QRK 2 for a 14-character CGL entry.

EXAMPLE 4

Situation:CGL entry: DESRON TWO

Message addressee: COMDESRON TWO THREE

QRK = 5

Result: Perfect match

Reason: The match alignment

DESRON TWO

COMDESRON TWO THREE

contains no errors.

EXAMPLE 5

Situation:CGL entry: AIG TWO SIX THREE/

Message addressee: AIG TWX SIX THREE

QRK = 5

Result: Match, with errors

Reason: The match alignment

AIG TWO SIX THREE

AIG TWX SIX THREE

contains only one error and QRK 5 permits one error for a 17-character CGL entry.

EXAMPLE 6

Situation:CGL entry: AIG TWO SIX THREE/

Message addressee: AIG TWX SIX THRXEE

QRK = 3

Result: Match, with errors

EXAMPLE 6 (Cont'd)

Reason: The match alignment

AIG TWO SIX THR EE

AIG TWX SIX THRXEE

contains two errors and QRK 3 permits two errors for a 17-character CGL entry.

EXAMPLE 7

Situation: CGL entry: AIG TWO SIX THREE/

Message addressee: AIG TWX SX THRXEE

QRK = 2

Result: Match, with errors

Reason: The match alignment

AIG TWO SIX THR EE

AIG TWX S X THRXEE

contains three errors and QRK 2 permits three errors for a 17-character CGL entry.

EXAMPLE 8

Situation: CGL entry: AIG SEVEN NINE THREE/

Message addressee: AIG SEVEN FIVE THREE

QRK = 4

Result: Match, with errors

Reason: The match alignment

AIG SEVEN NINE THREE

AIG SEVEN FIVE THREE

contains two errors and QRK 4 permits two errors for a 20-character CGL entry.

EXAMPLE 9

Situation: CGL entry: AIG SEVEN NINE THREE/

Message addressee: AG SEVEN FIVE THREE

QRK = 3

Result: Match, with errors

Reason: The match alignment

AIG SEVEN NINE THREE

A G SEVEN FIVE THREE

contains three errors and QRK 3 permits three errors for a 20-character CGL entry.

EXAMPLE 10

Situation: CGL entry: -USS JOHNSTON

Message addressee: USS JOHNSTON

QRK = 2-5

Result: NGL match

Reason: The match alignment

USS JOHNSTON

USS JOHNSTON

contains no errors, is a perfect NGL match, and as a result, the message addressee is of no concern to the ship.

EXAMPLE 11

Situation: CGL entry: AIG 793/

Message addressee: AIG 794

QRK = 2-5

Result: No match

EXAMPLE 11 (Cont'd)

Reason: The match alignment

AIG 793

AIG 794

contains one error; no errors are allowed for CGL entries containing numeric characters.

5-27. MAINTAINING THE COMMAND GUARD LIST.

5-28. To maintain the CGL, the operator may do the following:

1. Establish the CGL (from the paper tape reader)
2. Add entries (from the Control Teletype (CTTY)/paper tape reader)
3. Delete entries (from the CTTY)
4. Clear the entire CGL (from the CTTY)
5. Print the CGL
6. Punch a reloadable paper tape copy of the CGL

5-29. The CGL is limited to a maximum of 300 entries, or 6300 characters. These limits apply to the CGL as a whole, including both the NGL and the positive guard list. Each CGL entry is limited to a maximum of 63 printable characters, including spaces, slants (for addressee bounding), and minus signs (for negative entries). Entries exceeding the limit of 63 printable characters are rejected; Alert A-2 (refer to Appendix B) is generated.

5-30. If either the 300-entry or 6300-character limit is exceeded, Alert A-6 (refer to Appendix B) is generated. The CGL must be retrieved and carefully reviewed to find any CGL entries that either can be eliminated or, by changing them from fully bound to front-bound, rear-bound, or unbound, can allow the operator to eliminate other CGL entries.

5-31. ESTABLISHING THE COMMAND GUARD LIST. When the computer program is first loaded, there are no CGL entries in the system. Consequently, the CGL must be entered before circuits can be brought on-line and screening may begin. The CGL is entered into the system from a tape reader when the operator enters a CGL paper tape with the LOD command (refer to Appendix A).

5-32. Once the CGL is established and entered successfully, it is recommended that a copy be punched on paper tape to use for system reload when circumstances warrant.

5-33. ADDING COMMAND GUARD LIST ENTRIES. CGL entries can be added either from the CTTY or by paper tape. Each CGL entry from the CTTY is limited

to a maximum of 63 printable characters. Only one entry at a time may be added to the CGL with the ADD CGL command (refer to Table 5-4). It is recommended that if more than 10 entries are to be added, the operator enter them with the LOD command (refer to Appendix A) using paper tape. Refer to Appendix C for paper tape format. When the operator attempts to add an entry that is already present in the CGL, the system generates Alert A-3 (refer to Appendix B) and does not add the entry to the CGL.

Table 5-4. Adding a CGL Entry

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: ADD CGL Entry Depress the BLANK key	 Adds the specified entry to the CGL.

5-34. DELETING COMMAND GUARD LIST ENTRIES. To delete an entry from the CGL, refer to Table 5-5. Entries to be deleted from the CGL must be specified exactly as they exist in the CGL, including the minus sign and/or slant signs. The operator will not be allowed to delete the last CGL entry so long as any circuit is in the Up status. The operator should use a current printout of the CGL to verify that entries to be deleted are correctly identified. After deletions are complete, a new copy of the CGL should be printed for operator viewing and a paper tape copy should be punched in case of system failure.

Table 5-5. Deleting a CGL Entry

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: DLT CGL Entry Depress the BLANK key	 Deletes the specified entry from the CGL.

5-35. CLEARING THE COMMAND GUARD LIST. To clear the entire CGL from the system, refer to Table 5-6. The operator will not be allowed to clear the CGL so long as any circuit is in the Up status. No message screening action is taken after the CGL has been cleared.

Table 5-6. Clearing the Entire CGL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CLR CGL Depress the BLANK key	 Clears the entire CGL from system memory; no screening action takes place.

5-36. PRINTING/PUNCHING THE COMMAND GUARD LIST. The operator may want to have a printed copy of the CGL for reference or a paper tape copy for reloading the CGL into the system. Table 5-7 explains the operator action required to print or punch the CGL.

Table 5-7. Printing/Punching the CGL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CGL (Device ID) Depress the BLANK key Optional Device ID = PR1, PR2, TP1, TP2 Defaults to service printer	 Prints/punches the entire CGL at the designated device.

5-37. To facilitate locating particular entries in the CGL, the entries are output in the groups illustrated in Figure 5-1.

CGL

(entries not assigned a partition)
.
.
.
.
(entries starting with AIG)
.
.
.
.
(entries starting with CTF, CTG, CTU, and CTE)
.
.
.
.
(entries starting with TF, TG, TU, and TE)
.
.
.
.
(entries starting with COM)
.
.
.
.
(entries starting with ALL)
.
.
.
.
(entries starting with USS)
.
.
.
.
(entries starting with NAV)
.
.
.
.
(entries preceded by -)
.
.
.
.
ddhhmmZ

Figure 5-1. Command Guard List (CGL) Print Format

CHAPTER 5

SYSTEM LISTS

SECTION II

LOCAL ROUTING LIST

5-38. GENERAL.

5-39. The Local Routing List (LRL) is a 2-line list of shipboard offices/ commands to which messages are most often routed. Printed messages generally have an operator-specified LRL printed on the bottom of the first page. The inrouter uses the LRL to indicate the internal distribution required by marking the number of copies of the message required by the various shipboard offices/commands.

5-40. The LRL is operator-specified; if no LRL is specified, two blank lines are left at the bottom of the first page for adding a manual routing list. Communication Center Standard Operating Procedures (SOP) should specify the LRL to be used. The LRL is completely free-form; however, it is limited to two lines, 69 printable characters per line (including spaces). Offices and commands may be spelled out, abbreviated in any manner, spaced in any manner, or arranged in any order. Figure 5-2 shows an example of an LRL.

5-41. MAINTAINING THE LOCAL ROUTING LIST.

5-42. To maintain the LRL, the operator may do the following:

1. Enter the LRL (from the CTTY/paper tape reader)
2. Clear the LRL (from the CTTY)
3. Print the LRL
4. Punch a reloadable paper tape copy of the LRL

5-43. ENTERING THE LOCAL ROUTING LIST. The LRL can be entered from the CTTY or read in via the High-Speed Paper Tape Reader (HSPTR) or the Low-Speed Paper Tape Reader (LSPTR) and placed into memory. When a message is to be printed, the system will print the LRL on Lines 48 and 49 on the first page only. The system will continue to use this LRL until the operator introduces a new LRL. Refer to Table 5-8 for entering the LRL using the CTTY. Refer to the LOD command (Appendix A) for entering the LRL from paper tape. Refer to Appendix C for paper tape format.

```
PR2 00041 SMN000082 F      U N C L A S S I F I E D              ROUTINE
TOR 251634Z TOP 251635Z                                  250740Z NOV 91
VZCZCHMAA00265                                               HMAA00265

R 250740Z NOV 91
FM OTC COMMAND SIXTY THREE
TO COMNAVTESTFACENGCOM ALEXANDRIA VA
INFO CTE ZERO FIVE PT TWO PT TWO PT ONE
BT
UNCLAS //N07800//
SUBJ:  CONTRACT AND SPECIAL FINANCING (U)
MSGID/GENADMIN/OTC COMMAND SIXTY TH//
RMKS/THIS IS A COMMUNICATION TEST MESSAGE NUMBER 01336.
UNCLASSIFIED FOR TEST PURPOSES ONLY.//
BT
 00265
NNNN

CO   XO   OPS  COMM  CIC   ENG  SUPP  DECK
WPNS  PERS  NAV  RMC   SM'S  GMF  OOD

                              U N C L A S S I F I E D              ROUTINE
PAGE 1                                                   250740Z NOV 91
```

Figure 5-2. Example of a Local Routing List (LRL)

Table 5-8. Entering the LRL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL LRL Text Depress the BLANK key Text = Maximum two lines (69 printable characters per line, including spaces)	 Replaces the old LRL with the new entry for output on the first page of the message printout.

5-44. CLEARING THE LOCAL ROUTING LIST. The LRL may be cleared by using the CLR LRL command (refer to Table 5-9). This command is used when no LRL is required. The system will leave two blank lines at the bottom of the first page of each message as a result of the use of the CLR LRL command.

Table 5-9. Clearing the LRL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CLR LRL Depress the BLANK key	 Clears the existing LRL from memory. Leaves the two bottom lines on the first page of each message blank.

5-45. PRINTING/PUNCHING THE LOCAL ROUTING LIST. To print or punch the LRL for review or retention, the operator uses the LRL command (refer to Table 5-10).

Table 5-10. Printing/Punching the LRL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: LRL (Device ID) Depress the BLANK key Optional Device ID = PR1, PR2, TP1, TP2 Defaults to service printer	Prints or punches a copy of the LRL.

CHAPTER 5

SYSTEM LISTS

SECTION III

WANTED MESSAGE LIST

5-46. GENERAL.

5-47. The WML is used to direct the system to watch for previously missed broadcast messages. Because broadcast traffic may be retransmitted on either a ZFG (idle time and hour delay reruns) or ZDK (request for retransmission) basis under its original Channel Identifier/ Channel Sequence Number (CID/CSN), the WML may be used when the first-run transmission was missed or was of poor reception quality. The system compares the CID/CSNs of incoming broadcast messages against the operator-entered CID/CSNs in the WML when a ZFG or ZDK pilot precedes the message. When an error-free match of a requested CID/CSN occurs, the message is judged a WML match and Alert A-21 (refer to Appendix B) is generated. If the original message transmission was cancelled by the sender, a match will still be made and Alert A-22 (refer to Appendix B) will be generated.

5-48. After being judged a WML match by the system, addressee screening is performed, followed by message delivery to GG1, if GG1 is Up, otherwise to a printer. The CID/CSN is automatically removed from the WML. The system never automatically adds CID/CSNs to the WML; this is strictly the operator's responsibility.

5-49. If the CID listed in the WML does not coincide with the CID listed on Parameter Page 1 and a WML match occurs, the system will maintain the message CID for accountability purposes. If no WML match occurs, the system will use the first two characters from the parameter page CID and the last two characters from the message CID.

5-50. MAINTAINING THE WANTED MESSAGE LIST.

5-51. To maintain the WML, the operator may do the following:

1. Add CID/CSNs (from the CTTY)
2. Delete CID/CSNs (from the CTTY)
3. Clear the WML (from the CTTY)
4. Print the WML

5-52. ADDING A CHANNEL IDENTIFIER/CHANNEL SEQUENCE NUMBER TO THE WANTED MESSAGE LIST. Each ADD WML command (refer to Table 5-11) can contain only one CID/CSN entry. Each CID entry must be four characters long, and the third and fourth characters must be the same (e.g., NIAA). The CSN entry must have five numeric digits, in the range 00001-65535. The WML is limited

to a maximum of 20 CID/CSN entries. If this number is exceeded, Alert A-6 (refer to Appendix B) is printed and the operator must review the WML for messages that may have been received by other means or for messages that may need to be serviced. When the operator attempts to enter a CID/CSN that is already present in the WML, the system generates Alert A-3 (refer to Appendix B) and does not add the entry to the WML.

Table 5-11. Adding a CID/CSN to the WML

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: ADD WML Channel Identifier/Channel Sequence Number Depress the BLANK key CID = Four characters (3rd = 4th) CSN = Five digits (00001-65535)	 Adds the designated CID/CSN to the WML.

5-53. DELETING A CHANNEL IDENTIFIER/CHANNEL SEQUENCE NUMBER FROM THE WANTED MESSAGE LIST. It may be necessary for the operator to delete a CID/CSN from the WML. The DLT WML command (refer to Table 5-12) is used for this purpose. The CID/CSN specified with the command must be the same as the CID/CSN in the WML. The operator should consult a printout of the WML before attempting to delete a CID/CSN.

Table 5-12. Deleting a CID/CSN from the WML

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: DLT WML Channel Identifier/Channel Sequence Number Depress the BLANK key CID = Four characters (3rd = 4th) CSN = Five digits (00001-65535)	 Removes the designated CID/CSN from the WML.

5-54. CLEARING THE WANTED MESSAGE LIST. The operator may wish to clear the entire WML because messages may have been received by other means (e.g., received from other ships in company or Task Group Orestes), the rerun traffic may have passed the wanted messages, or all messages on the WML may have been serviced. The operator should ensure that all messages are accounted for before using the CLR WML command (refer to Table 5-13).

Table 5-13. Clearing the WML

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CLR WML Depress the BLANK key	 Removes all CID/CSNs from the WML.

5-55. PRINTING THE WANTED MESSAGE LIST. To print a copy of the WML for operator viewing or operator retention for later reference, the WML command (refer to Table 5-14) is used.

Table 5-14. Printing the WML

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: WML (Device ID) Depress the BLANK key Optional Device ID = PR1, PR2 Defaults to service printer	 Prints a copy of the WML on the device indicated.

CHAPTER 5

SYSTEM LISTS

SECTION IV

SOURCE DATA SYSTEM AFLOAT

ORIGINATOR SCREENING LIST

5-56. GENERAL.

5-57. The Source Data System Afloat (SDSA) Originator Screening List (OSL) is used to assist the operator in segregating SDSA messages for entry into the supply system. The originators of all first-run and rerun broadcast messages with a WML match, and all incoming Link messages not bearing the IAZZ content indicator code, are screened against the OSL. This screening process of originator against the OSL is identical to the screening of an addressee against the positive CGL.

5-58. After being judged an OSL match by the system, the message is delivered to GG1, if GG1 is Up and the IAZZ option on Parameter Page 4 is set to N. If the IAZZ option on Parameter Page 4 is set to Y, the message will be punched at TP1, if TP1 is Up, otherwise it will be printed at the non-service printer.

5-59. MAINTAINING THE SOURCE DATA SYSTEM AFLOAT ORIGINATOR SCREENING LIST.

5-60. To maintain the OSL, the operator may do the following:

1. Add entries (from the CTTY)
2. Clear the entire OSL (from the CTTY)
3. Print the OSL

5-61. ADDING SOURCE DATA SYSTEM AFLOAT ORIGINATOR SCREENING LIST ENTRIES. OSL entries can be added from the CTTY. An OSL entry may be front- or rear-bound, or both. The OSL is limited to three entries, each containing a maximum of 63 printable characters. If the 3-entry limit is exceeded, Alert A-6 (refer to Appendix B) is generated. If the 63-character limit is exceeded, the system generates Alert A-2 (refer to Appendix B). Only one entry at a time may be added to the OSL with the ADD OSL command (refer to Table 5-15). When the operator attempts to add an entry that is already present in the OSL, the system generates Alert A-3 (refer to Appendix B) and does not add the entry to the OSL.

Table 5-15. Adding an OSL Entry

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: ADD OSL Entry Depress the BLANK key	 Adds the specified entry to the OSL.

5-62. CLEARING THE SOURCE DATA SYSTEM AFLOAT ORIGINATOR SCREENING LIST. To clear the entire OSL from the system, the operator should use the CLR OSL command (refer to Table 5-16). No screening for SDSA messages occurs after the OSL has been cleared.

Table 5-16. Clearing the Entire OSL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CLR OSL Depress the BLANK key	 Clears the entire OSL from system memory; no screening for SDSA messages occurs.

5-63. PRINTING THE SOURCE DATA SYSTEM AFLOAT ORIGINATOR SCREENING LIST. To print the OSL for operator viewing or operator retention for later reference, the OSL command (refer to Table 5-17) is used. Figure 5-3 shows an example of an OSL.

Table 5-17. Printing the OSL

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: OSL (Device ID) Depress the BLANK key Optional Device ID = PR1, PR2 Defaults to service printer	 Prints the OSL on the device indicated.

OSL
/NAVFINCEN SDSA CLEVELAND OH/

Figure 5-3. Example of a Source Data System Afloat (SDSA) Originator Screening List (OSL)

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CHAPTER 6

STANDARD MESSAGE PRINT FORMAT

6-1. GENERAL.

6-2. Messages that are delivered to one of the printers are output in the NAVMACS V2 standard message print format. The only exceptions are messages that have been designated by the system to be one of the following types:

1. Narrative Operator Messages (NOMs)
2. Operator-to-Operator (OTO) messages

6-3. These message types and their associated message print formats are described in Paragraphs 6-33 through 6-36.

6-4. MAIN ELEMENTS OF THE STANDARD PRINT FORMAT.

6-5. The main elements which comprise the NAVMACS V2 standard message print format are shown in Figure 6-1 and are described in the following paragraphs.

6-6. MESSAGE PROCESSING ANNOTATIONS (ELEMENT 1). Message annotations identify the special processing considerations given to the message during processing by NAVMACS V2. The options which may appear on the message are as follows:

NOT SCREENED	Messages are designated as not screened when no addressee screening has been performed on the message as a result of unprocessed backlog broadcast messages and all messages that are received from the IXS circuit. The operator must manually screen the messages to determine if they are addressed and if there are message format errors.
POSSIBLE MISSENT	Messages which are received on the Link, but for which no CGL match was found, are designated as possible missent messages. These messages require manual screening in order to determine if they are addressed, and to determine the appropriate service action necessary to ensure correct message delivery (e.g., if the message is addressed to this command/ ship, the CGL needs to be updated).

```
      Element

(1)   NOT SCREENED
(2)   PR1 00001 SMN000001 F              U N C L A S S I F I E D                    ROUTINE
(3)   TOR 131019Z TOP 131020Z       (9) "FOR OFFICIAL USE ONLY"       (10) 130930Z NOV 91
(4)   VZCZCLMEE00001                                                          LMEE00001

(5)   R 130930Z NOV 91
      FM COMNAVAIRPAC SAN DIEGO CA
      TO ALL AFLOAT UNITS
      USS BLUEFISH
      USS BLUEFOX
      INFO USS ENTERPRISE
      USS KITTY HAWK
      XMT USS SARATOGA
      BT
      UNCLAS FOUO
      MSGID/GENADMIN/COMNAVAIRPAC//
      RMKS/NAVMACS TEST MESSAGE//
      BT
       00001
      NNNN

(6)   CO    XO    OPS   ADM   ENG
      SUP   NAV   ORD   COM


(7)                                    U N C L A S S I F I E D                    ROUTINE
(8)        PAGE x                      "FOR OFFICIAL USE ONLY"          130930Z NOV 91
```

Figure 6-1. Standard Message Print Format

OPCORR

Messages are designated as needing Operator Correction (OPCORR) when certain message requirements are not met during message processing by the system. The message requirements differ for incoming and outgoing messages and are as follows:

1. Incoming broadcast messages require the presence of Format Lines 6, either 7 or 8, and 15. In addition to these lines, incoming Link messages require the presence of Format Lines 2, 4, and 12.

2. Outgoing messages require the presence and correctness of Format Lines 2, 4, 5, 6, either 7 or 8, 11, 12, 13, and 15.

Messages not meeting these major requirements are then analyzed for specific errors, and are output to one of the printers or tape punches with the annotation OPCORR followed by one or more of the error codes listed in Table 6-1. OPCORR messages with date-time-group, precedence, or classification errors will be output in the identical format as received by NAVMACS from the input circuit to only GG1, if GG1 is Up, otherwise to a printer in the standard message print format.

6-7. STANDARD MESSAGE INFORMATION BLOCK (ELEMENTS 2/3). The standard message information block consists of two printed lines which contain the following message information:

1. Output Channel Identifier (OCID)
2. Output Channel Sequence Number (OCSN)
3. System Message Number (SMN)
4. Status Designator
5. Classification
6. Precedence
7. Time-of-Receipt (TOR) or Time-of-Delivery (TOD)
8. Time-of-Print (TOP)
9. Special Handling Designator
10. Date-Time-Group (DTG)

Table 6-1. Operator Correction (OPCORR) Error Codes

CODE	DEFINITION
BT	Either FL11 or FL12 and FL13 are not recognized or are missing.
CID	The message has a garbled or missing CID (FL1).
CLS	The Classification (FL12) is either garbled or different from that presented in FL2 and/or FL4.
CSN	The message has a garbled or missing CSN (FL1).
DTG	The DTG (FL5) is either missing or garbled.
EOM	The EOM (FL16) is missing or garbled (incoming messages only).
FL2	There is an error in FL2 (e.g., invalid or missing information).
FL2, FL4	A TRC error has occurred, indicating either that one or more TRC characters are invalid, or that the TRC characters (A, B, C, X, and Z) are valid but the two TRC characters in FL4 do not match exactly those found in FL2.
FL4	There is missing, garbled, or mismatched security redundancy in FL4, in comparison with FL2 and/or FL12, a mismatched SPECAT indicator in comparison with FL12, or an incorrect character count.
FL5	FL5 data other than the 6-digit DTG and the Precedence is invalid (outgoing messages only).
FM	The From Line (FL6) is garbled or not recognized.
LMF	The LMF is missing the TC designation, and there are more than 69 characters in a line (outgoing messages only).
PRC	The Precedence (FL5) is invalid and does not match FL2, there is no space between the DTG and the Precedence, a dual precedence message does not contain both a TO Line (FL7) and an INFO Line (FL8), or the lower precedence appears first in a dual precedence message.
SOM	The SOM (FL1) is not recognized.
STG	The CSN (FL1) or the SSN (FL2) and the EOM Validation Number (FL15) do not match for incoming messages.
TO	The TO Line (FL7) is not recognized.
VNR	The VNR (FL15) is either missing, garbled, or does not match the FL2 SSN on Link messages.

6-8. Figure 6-2 contains a description of the standard message information block. A description of each of the fields is contained in the following paragraphs.

6-9. Output Channel Identifier (Element 2). The OCID specifies the device/circuit to which the message was output. One of the following OCID designators may be included in the field:

1. PR1 - Printer 1
2. PR2 - Printer 2
3. TP1 - High-Speed Paper Tape Punch (HSPTP)
4. TP2 - Low-Speed Paper Tape Punch (LSPTP)
5. LO1 - Link output

6-10. Output Channel Sequence Number (Element 2). The OCSN uniquely identifies the message delivery for accountability purposes. The OCSN is a 5-digit number which is incremented sequentially for each new message output to a specified device.

6-11. System Message Number (Element 2). The SMN identifies the message and is assigned when the message is processed by the system. Each message processed by the system receives a unique SMN which cannot be changed by the operator.

6-12. Status Designator (Element 2). This field is used to identify the message as first-run or rerun. The following designators are used:

1. F - First-run message
2. R - Rerun message

6-13. Classification (Element 2). This field indicates the classification of the message. The following options may be found in this field:

1. T O P S E C R E T
2. S E C R E T
3. C O N F I D E N T I A L
4. A L L I E D R E S T R I C T E D
5. U N C L A S S I F I E D EFTO (Encrypted for Transmission Only)
6. U N C L A S S I F I E D
7. GARBLED CLASS (the system did not recognize the classification)
8. N A T O C L A S S I F I E D

```
     Element (2)   PR1     00001     SMN000001       F         U N C L A S S I F I E D
ROUTINE
                1.       2.          3.          4.                  5.                      6.

 Element (3)   TOR    131019Z    TOP  131020Z            "FOR OFFICIAL USE ONLY"   130930Z NOV 91
                         7.             8.                          9.                10.
```

1. Output Channel Identifier (OCID)
2. Output Channel Sequence Number (OCSN)
3. System Message Number (SMN)
4. Status designator
5. Classification
6. Precedence
7. Time-of-Receipt (TOR) or Time-of-Delivery (TOD)
8. Time-of-Print (TOP)
9. Special handling designator
10. Date-Time-Group (DTG)

Figure 6-2. Standard Message Information Block

6-14. The GARBLED CLASS annotation also appears on messages exceeding a system-determined number of characters (i.e., 5,000 for outgoing messages and 7,680 for incoming messages) prior to Format Line 12. This occurs because the message starts to print before the classification on Format Line 12 can be validated.

6-15. Precedence (Element 2). This field indicates the precedence of the message. The following options may be found in this field:

1. EMERGENCY
2. FLASH
3. IMMEDIATE
4. PRIORITY
5. ROUTINE
6. GARBLED PREC (the system did not recognize the message precedence)

6-16. Time-of-Receipt/Time-of-Delivery (Element 3). This field indicates the TOR assigned to the message when it was first processed by the system. The time is indicated by six digits (i.e., ddhhmmZ).

6-17. Messages which have been transmitted include the TOD given to the message when the system is notified of its receipt as acknowledged by the receiving station.

6-18. Time-of-Print (Element 3). This field indicates the TOP of the message output.

6-19. Special Handling Designator (Element 3). This field indicates any special handling designators which were recognized during message analysis. The following options (quotes included) may be found centered within this field:

1. "SPECAT"
2. "LIMDIS"
3. "NOFORN"
4. "SPECAT/LIMDIS"
5. "SPECAT/NOFORN"
6. "FOR OFFICIAL USE ONLY" (printed if the classification of the message is unclassified; otherwise, this field is blank)
7. "PERSONAL FOR"
8. "EYES ONLY"

6-20. Date-Time-Group (Element 3). This field contains the DTG, month, and year assigned to the message. If the message DTG was not recognized by the system, the GARBLED DTG annotation is found in this field.

6-21. INFORMATION APPENDED TO FORMAT LINE 1 (ELEMENT 4). The Channel Identifier (CID) and Channel Sequence Number (CSN) by which the message is received in the system are indicated on the right-hand portion of the Format Line 1 printout. Any operator procedures which require message identification via CID/CSN specification (e.g., message request via the Wanted Message List (WML)) must use these fields.

6-22. If the CSN field is unrecognizable, the Garbled Channel Sequence Number (GCSN) annotation is inserted into the appended CSN field. If no Format Line 1 was recognized during message processing, the GARBLED VZCZC annotation is inserted in place of the message CID/CSN.

6-23. BLANK LINE. Following the printing of Format Line 1 on the standard message printout, a blank line is inserted to separate Communication Center information from the actual message printout.

6-24. MESSAGE HEADING AND TEXT (ELEMENT 5). The message itself, including message heading and text, is printed next and may be separated into standard-sized pages that contain up to 50 lines each.

6-25. LOCAL ROUTING LIST (ELEMENT 6). The Local Routing List (LRL) is a 2-line listing of shipboard offices/commands to which messages are most often routed. If no LRL is specified, two blank lines are left at the bottom of the first page for manually assigning internal distribution. Refer to Chapter 5, Section II for a detailed description of the LRL.

6-26. MODIFIED MESSAGE INFORMATION BLOCK (ELEMENTS 7/8). The standard message information block is printed only at the top of the first page of the message. If the message is longer than one page, a modified form of the standard message information block is used to begin printout of the second and all other pages. The modified information block is also printed at the bottom of all pages of the message output; it consists of the classification, precedence, special handling designator, and DTG of the message (refer to Figure 6-3). The description of all fields used is the same as that given in the standard message information block description.

6-27. PAGING INFORMATION (ELEMENT 8). Paging information appears in the left-hand portion of the last line of each page.

6-28. ABNORMAL MESSAGE TERMINATION INDICATORS.

6-29. The abnormal message termination indicators are used to notify the operator that output of a message has terminated prematurely. The following abnormal message termination indicators may be inserted into a message output:

1. NAVMACS FORCED EOM (End-of-Message)
2. PRINTER DOWN

```
U N C L A S S I F I E D          ROUTINE
          1.                        2.

"FOR OFFICIAL USE ONLY"     130930Z NOV 91
          3.                        4.
```

1. Classification
2. Precedence
3. Special handling designator
4. Date-Time-Group (DTG)

Figure 6-3. Modified Message Information Block

6-30. NAVMACS FORCED END-OF-MESSAGE. This termination indicator shows that message input was terminated before the EOM sequence (Format Line 16) was received. Message input could have been any of the following:

1. Broadcast input
2. Link input
3. Paper tape input
4. GG1 input

6-31. The actual cause for the premature message termination could be one of the following:

1. The operator set the circuit in the Down state during message input.
2. A circuit or paper tape reader hardware failure (i.e., failure of sending station hardware, receiving station hardware, or paper tape reader hardware) occurred during input of the message.
3. The message, intended for transmission, consists of more than 40,000 characters and has been split by NAVMACS into two or more messages.
4. The message is input from the Low-Speed Paper Tape Reader (LSPTR), and computer core memory is not readily available.

6-32. PRINTER DOWN. This termination indicator shows that the message printout could not be successfully completed because of a printer failure or because the printer was placed Down during output of the message.

6-33. EXCEPTIONS.

6-34. As described in Paragraph 6-1, the only exceptions to the standard message printout are NOMs and OTO messages.

6-35. NARRATIVE OPERATOR MESSAGE PRINTOUT. A modified version of the standard print format is used for NOMs. The following differences constitute the modified print format:

1. There are no message processing annotations.
2. The standard message information block and the modified information block found on a standard message printout are replaced by the NOM information block. An example of the NOM information block is shown in Figure 6-4.

6-36. OPERATOR-TO-OPERATOR MESSAGE PRINTOUT. Messages which are defined by the system to be OTO messages receive no print formatting and are delivered to the Control Teletype (CTTY) exactly as received. They are preceded with the annotation OTO, the OTO number assigned to that OTO message, and the time (hhmmZ) that the OTO was received. Copies of out-going Link OTOs (i.e., at the CTTY) are followed by the annotation OTO NR and the specific OTO number for that transmission.

6-37. NAVMACS INCOMPLETE MESSAGE.

6-38. When the system cannot locate all or part of a message, it will generate the notice NAVMACS INCOMPLETE MESSAGE. This will inform the operator that the message is not (or is only partially) received.

```
NI2             00001          SMN000001
 1.               2.               3.

TOR 131019Z                 TOP 131020Z
    4.                           5.
```

1. Input Channel Identifier (ICID)
2. Input Channel Sequence Number (ICSN)
3. System Message Number (SMN)
4. Time-of-Receipt (TOR)
5. Time-of-Print (TOP)

Figure 6-4. Narrative Operator Message (NOM) Information Block

CHAPTER 7

INCOMING MESSAGE PROCESSING

SECTION I

HEADING ANALYSIS

7-1. ADDRESSED MESSAGES.

7-2. All incoming messages undergo addressee screening against the Command Guard List (CGL) unless a backlog of unprocessed broadcast messages exists or the messages were received on the IXS circuit. Addressee screening is described in Chapter 5, Section I. Messages that are not screened are treated as addressed and have the notice NOT SCREENED appended to the top of the first page. Refer to Paragraph 6-6 for a description of message annotations.

7-3. Each message addressee screened against the CGL may be judged to be one of the following:

1. A perfect CGL match ($$$) (addressed)
2. A possible CGL match (???) (addressed)
3. A perfect Negative Guard List (NGL) match (---) (not addressed)
4. No CGL match (not addressed)

7-4. The result of screening each message addressee is recorded on the printout of the message itself (refer to Table 7-1). The screening result is added on the same line and three spaces to the right of the message addressee, as shown in the following example:

```
R 131930Z NOV 91
FM COMNAVAIRPAC SAN DIEGO CA
TO USS KITTY HAWK  $$$
INFO USS BLUEFISH  $$$
USS BLUEFOX  ---
USS BLUEGILL  ???
```

7-5. The addressee screening results are recorded to assist the operator in the inrouting process.

7-6. In some cases, messages not addressed to the ship may be marked as addressed. This can occur during periods of poor reception quality when the QRK setting is so low that message addressees are mistakenly recognized as CGL entries. In other cases, messages addressed to the ship may not be marked as addressed. This can occur during periods of poor reception quality when the QRK setting is higher than the actual message reception quality. Both situations can occur when the CGL does not accurately reflect the addressees for which the ship is guarding.

Table 7-1. Addressee Screening Results

SYMBOLS	INTERPRETATION	RESULT
Nothing	Message addressee did not match any entry in the NGL or CGL. Message is probably not addressed to this command/ship.	Message is not delivered.
$$$	Message addressee matched a CGL entry perfectly (i.e., error-free). Message is addressed to this command/ship.	Message is delivered unless this is an exempt addressee.
???	Message addressee matched a CGL entry, but with errors. Message is probably addressed to this command/ship.	Message is delivered unless this is an exempt addressee.
---	Message addressee matched an NGL entry perfectly (i.e., error-free). Message is not addressed to this command/ship; this ship is specifically not guarding for this addressee.	Message is not delivered.

7-7. All narrative messages received on the Link are considered of concern and are delivered as addressed. Addressee screening is performed to assist the inrouter. Link messages that contain no addressee matches are marked POSSIBLE MISSENT to notify the operator to manually screen the message addressees, to check the CGL, and to ensure that the message is properly delivered.

CHAPTER 7

INCOMING MESSAGE PROCESSING

SECTION II

GENERAL DISTRIBUTION

7-8. MESSAGE DELIVERY.

7-9. All inrouted messages are automatically delivered to GateGuard, if available, otherwise to a printer. When GateGuard is not available, inrouted messages (e.g., a Wanted Message List (WML) match) will have a system-determined primary and secondary printer assigned to them. Most messages to be distributed aboard ship are directed to the distribution printer as the primary printer; other messages requiring operator attention (which may include distribution) are directed to the service printer as the primary printer.

7-10. A message is automatically output to the primary printer unless the printer is Down or its queue altroute level has been exceeded. If the primary printer is Down, the secondary printer becomes the primary output device. If the queue altroute level of the primary printer has been exceeded, the message is output to either the primary or secondary printer, whichever is first available. The secondary device for each printer is its altroute device (refer to Paragraph 7-22).

7-11. The system expedites Emergency and Flash messages by executing two form feeds (for each copy) at the printers on receipt of a valid Y or Z precedence message.

7-12. GATEGUARD. A ship may be equipped with a GateGuard subsystem (GG1). When GateGuard is in an Up status, only inroute messages will be automatically delivered to GG1. All other output assignments will be for the print devices. GG1 does not have a secondary delivery device; therefore, if the GG1 status changes from Up to Down, any messages in its queue will be requeued using the system-determined primary and secondary delivery device assignments. GG1 status and classification limits are operator options found on Parameter Page 4.

7-13. SUPPLY SYSTEM MESSAGES. The following types of incoming messages are destined for entry into the supply system:

1. Link messages bearing the IAZZ (i.e., supply) content indicator code

2. Broadcast and Link messages with a Source Data System Afloat (SDSA) Originator Screening List (OSL) match

7-14. The system will deliver incoming supply messages to GG1, if GG1 is Up and the IAZZ option on Parameter Page 4 is set to N. If the IAZZ option on Parameter Page 4 is set to a Y, the message will be punched at TP1, if TP1 is Up, otherwise it will be printed. If GG1 is down and the IAZZ option on Parameter Page 4 is set to N, the system-determined primary and secondary delivery device assignments will be used.

7-15. The SUP command (refer to Table 7-2) initiates the automatic punching of incoming supply system messages at Tape Punch 1 (TP1). If the operator enters the SUP command and TP1 is Down, Alert A-5 (refer to Appendix B) is generated at the Control Teletype (CTTY); if TP1 is Up, the IAZZ entry on Parameter Page 4 is changed from N (No) to Y (Yes).

7-16. If TP1 is placed in either the Down or Hold state after the SUP command is entered, the IAZZ entry on Parameter Page 4 is changed to N. Any supply system messages already on queue remain on queue and are output when TP1 is brought back Up. A new SUP command must be entered to resume punching of additional supply system messages.

Table 7-2. Punching Supply System Messages

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: SUP Depress the BLANK key	 Punches all incoming supply system messages at TP1; changes the IAZZ entry on Parameter Page 4 to Y.

7-17. The SDN command (refer to Table 7-3) inhibits the automatic punching of incoming supply system messages and records N (No) as the IAZZ entry on Parameter Page 4. Any supply system messages already queued to TP1 are output at TP1.

Table 7-3. Stopping the Automatic Punching of Supply System Messages

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: SDN Depress the BLANK key	 Stops the automatic punching of incoming supply system messages; changes the IAZZ entry on Parameter Page 4 to N.

7-18. OUTPUT PRECEDENCE. Inrouted messages are output on a First-In-First-Out (FIFO) by precedence basis. If the system becomes saturated and the amount of available memory storage falls below a defined value, a message already on queue is output on a strictly FIFO basis to TP1 or any printer that is Up and not currently busy. Alert A-18 (refer to Appendix B) is printed at the CTTY when this

condition occurs. Despite system saturation, Operator-to-Operator (OTO) messages are output at the CTTY.

7-19. MESSAGE DELIVERY ACCOUNTABILITY. Message deliveries to the printers and paper tape punches are assigned a unique Output Channel Sequence Number (OCSN) to establish message delivery accountability.

7-20. PRINTER OUTPUT FORMAT. Messages output at a printer are printed in the standard message print format, are marked to identify any addressees of concern, and have an operator-specified Local Routing List (LRL) printed at the bottom of the first page. Refer to Chapter 6 for a description of the standard message print format; to Chapter 7, Section I for addressee screening results; and to Chapter 5, Section II for LRL information.

7-21. PAPER TAPE OUTPUT FORMAT. Messages will be output at a paper tape punch only when the IAZZ option on Parameter Page 4 is set to Y. These messages will have a paper tape header appended to the front of the actual message output. Refer to Appendix C, Section II for the message paper tape header format.

7-22. DEVICE ALTROUTING.

7-23. Altrouting between devices occurs when an output device is placed Down or the number of items queued exceeds the queue altroute level, the data item is automatically queued to the system- specified altroute device as follows:

Original Device		Altroute Device
Printer 1	to	Printer 2
Printer 2	to	Printer 1
Tape Punch 1	to	Printer 1
Tape Punch 2	to	Tape Punch 1
GateGuard	to	Printer 1 or Printer 2

If the altroute device is Down, the item remains queued to the original device until one of the devices is brought back Up.

7-24. If the system automatically places the GateGuard interface Down, Alert A-13 (refer to Appendix B) will be output and items queued to GG1 will be requeued using the system-determined primary and secondary delivery device assignments. This queue processing is also performed in the event that the item queued to GateGuard exceeds five or more messages. The queued items will be requeued to the available system primary or secondary printer so that the items will be output in a timely manner. However, if the system's memory capacity is inadequate, items queued to GG1 will be purged.

CHAPTER 7

INCOMING MESSAGE PROCESSING

SECTION III

OPERATOR ASSISTANCE TO

INCOMING PROCESSING

7-25. MESSAGES IN ERROR.

7-26. During message processing, the system may discover key elements in error within a message.

7-27. Incoming messages with errors that may require operator attention will be delivered to GG1, if GG1 is Up, otherwise to one of the printers. The printed messages will be annotated with OPCORR followed by one of the error codes listed in Table 6-1. Examples of the types of errors screened for are the following:

1. Date-Time-Group (DTG) errors
2. Precedence errors
3. Classification errors

7-28. BROADCAST MESSAGE DELIVERY OPTIONS.

7-29. All first-run broadcast messages are screened against the CGL, and messages of concern are delivered to GG1, if GG1 is Up, otherwise to a printer. All rerun messages are discarded except Wanted messages.

7-30. Wanted Messages. Wanted messages are broadcast messages which the ship needs because the original message contained an excessive amount of garble or the message was missed because of equipment problems. In either case, a message whose Channel Identifier/Channel Sequence Number (CID/CSN) is entered on the WML is delivered to GG1, if GG1 is Up, otherwise to a printer, regardless of the addressee screening result. Refer to Chapter 5, Section III for maintaining the WML.

7-31. RECAP Summary Messages. RECAP Summary messages are transmitted on an hourly basis and consist of a list of the messages broadcast during the last hour on the same circuit. RECAP Summary messages are delivered to PR2 if its up, otherwise to PR1.

7-32. INCOMING LINK MESSAGES.

7-33. The system examines each incoming narrative Link message for a unique header. This header will contain a unique Subscriber Identification (SID) number indicating the subscriber destination for that message. If the header indicates that the message is for this subscriber, NAVMACS V2 accepts the message and subjects it to the screening process described in Chapter 5, Section I.

7-34. The Net Control Station (NCS) may send parts of a long message in several separate transmissions. NAVMACS V2 keeps track of the parts, requests retransmissions of garbled parts, and assembles and prints the entire message. NAVMACS V2 discards Link traffic not specifically destined to its assigned SID.

7-35. CANCELLING PAPER TAPE PUNCH ACTIVITY.

7-36. To cancel the present tape punch activity, the operator may use the CAN command (refer to Table 7-4). This command is used to abort the current activity at the indicated paper tape punch. The aborted message is terminated and is not automatically requeued for this or an alternative device.

Table 7-4. Cancelling Paper Tape Punch Activity

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CAN Device ID Depress the BLANK key Device ID = TP1, TP2	Aborts the current activity on the indicated punch.

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CHAPTER 8

MESSAGE RETRIEVAL

8-1. GENERAL.

8-2. All incoming broadcast messages are retained in the Central Processing Unit (CPU) for a limited time. Since CPU memory is limited, space is created for storing new messages by automatically purging (eliminating) messages immediately after they have been successfully delivered. Therefore, the retrieval function is no longer available.

8-3. RETRIEVAL OF A MESSAGE PURGED FROM CENTRAL PROCESSING UNIT MEMORY.

8-4. Because messages are no longer retained in the system for retrieval, the operator must enter the CID/CSN of the message in the WML, or send a service message in order to receive another copy of a message that has been processed and purged. For information regarding the WML, refer to Chapter 5, Section III.

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CHAPTER 9

OUTGOING CIRCUIT OPERATION

9-1. MESSAGE COMMANDS.

9-2. The operator may manipulate message movement through the system in several ways. The options available are as follows:

1. Transmit a narrative message on the Link from a paper tape reader or from GateGuard (GG1)
2. Cancel transmission of a narrative message
3. Transmit an Operator-to-Operator (OTO) message on the Link from the Control Teletype (CTTY) keyboard
4. Cancel transmission of an OTO message
5. Print a list of messages awaiting output or transmission

9-3. RESETTING THE CHANNEL SEQUENCE NUMBER. On a channel-by-channel basis, messages are accounted for by use of a Channel Sequence Number (CSN). The operator may change the CSN value for incoming and outgoing Link messages and incoming broadcast messages by using the RPL CSN command (refer to Table 9-1) with a value of 00001-04095 for the Link and 00001-65535 for broadcast circuits. Whenever the system is restarted, the operator should reestablish Link and broadcast CSN continuity by replacing the initial CSN value with a value one greater than the last CSN actually transmitted or received.

Table 9-1. Replacing the CSN

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL CSN Circuit ID nnnnn Depress the BLANK key Circuit ID = NI1, NI2, NI3, NI4, LO1, LI1, LK nnnnn = 00001-04095 (Link) 00001-65535 (BCST)	Changes the current CSN for the specified circuit to the indicated number.

9-4. TRANSMITTING A NARRATIVE MESSAGE. All CUDIXS subscribers can send narrative message traffic on the Link. Messages from GG1 are placed on the Link outgoing queue without operator intervention. Non-GateGuard message traffic can be sent by loading a prepared paper tape of the message (ACP 126 (Modified) or JANAP 128) into the tape reader. At the CTTY, the operator then enters a command to read the tape. NAVMACS V2 reads the tape and prepares the outgoing message for transmission; the message is then automatically transmitted on the Link according to message precedence. Specific loading procedures are as follows:

1. The punched tape must be loaded into a paper tape reader and input into the system with the TRA command (refer to Table 9-2).

2. If Tape Reader 1 (TR1) (i.e., the High-Speed Paper Tape Reader (HSPTR)) is used, the system will automatically start the reader. If Tape Reader 2 (TR2) (i.e., the Low-Speed Paper Tape Reader (LSPTR)) is used, the FREE/STOP/RUN toggle switch must be set to RUN within 30 seconds after the TRA command is entered. Both tape readers may be used simultaneously.

Table 9-2. Transmitting a Narrative Message

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: TRA (Device ID) Depress the BLANK key Optional Device ID = TR1, TR2 Defaults to TR1	Processes the loaded message for transmission and enters the message into the transmit queue for output.

9-5. The system automatically transmits messages according to precedence (First-In-First-Out (FIFO) within the same precedence). The TRA command causes only one message to be read. If there is more than one message on the same tape, the TRA command must be repeated for each message after the previous message has been read. Since NAVCOMPARS processes only messages of 40,000 characters or less, NAVMACS splits messages exceeding this limit into two or more messages.

9-6. TRANSMITTING AN AUTOMATIC RECALL MESSAGE. To transmit an Automatic Recall message, refer to Table 9-3. The TRA OVR command is used to initiate message transmission without content/format verification. The only requirement is for the system to be able to identify the FL2 precedence, since it is required during the transmission of the message. The TRA OVR command should not be used to transmit an OTO or narrative message.

Table 9-3. Transmitting an Automatic Recall Message

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: TRA (Device ID) OVR Depress the BLANK key Optional Device ID = TR1, TR2 Defaults to TR1	 Transmits, without content/format verification, a free-form message from the tape reader.

9-7. An Automatic Recall message tape is used to request, directly from NAVCOMPARS, retransmission of previously received Link messages (i.e., missed messages or messages in error received on the Link). Automatic Recall messages can only be transmitted using the TRA OVR command (refer to Table 9-3).

9-8. The format for the automatic recall parameter is:

RTTUZYVW (OSRI/SSN) TOF-UUUU--RXXXSRR.
(Recall parameter)
#(SSN) 2CR
8LF
NNNN

9-9. The following are examples of the three automatic recall parameters:

EXAMPLE 1

Format for automatic recall by Originating Station Routing Indicator (OSRI)

RTTUZYVW RHSSEKA0001 3330324-UUUU--RXXXSRR.
OSRI. RHSSEKA00241610024
#0001 2CR
8LF
NNNN

RHSSEKA = Routing Indicator (RI) of message originator
0024 = Station Serial Number (SSN) of message to be recalled
1610024 = Time-of-File (TOF) from Format Line 2 of message to be recalled

EXAMPLE 2

Format for automatic recall by Originator Date-Time-Group (ODTG)

RTTUZYVW RHSSEKA0001 3140324-UUUU--RXXXSRR.
ODTG. USS JOHNSON//100024ZNOV91
#0001 2CR
8LF
NNNN

USS JOHNSON = Message originator
// = Separator between originator and Date-Time-Group (DTG)
100024ZNOV91 = DTG of message to be recalled

EXAMPLE 3

Format for automatic recall by Processing Sequence Number (PSN)
(i.e., using PSNA as the recall designator)

RTTUZYVW RHSSEKA0001 3330324-UUUU--RXXXSRR.
PSNA. 234956
#0001 2CR
8LF
NNNN

234956 = Processing Sequence Number (assigned by Nova)
from Format Line 5 of message to be recalled

9-10. TRANSMITTING A SHORT-FORM READDRESSAL MESSAGE. The short-form readdressal allows Nova to readdress a message. To transmit a short-form readdressal, refer to Table 9-2. The structure and composition format of a short-form readdressal is as follows:

1. Structure Format Line 2 and Format Line 4 using the classification of the message that is to be readdressed.

2. Complete Format Line 5 using the precedence that the readdressal heading will have. The precedence in Format Lines 2 and 5 must match.

3. Complete Format Line 6 using the ship's Plain Language Address (PLA) or the PLA of the command requesting the readdressal.

4. Complete Format Line 7 and/or Format Line 8 using the commands that are to receive the readdressed message.

5. Under Format Line 11, enter RADDR as the classification for Format Line 12, a space, and the 6-digit PSN (found in Format Line 5) of the message being readdressed; for a sectioned message, enter RADDR (PSN) SECT and the 2-digit section number.

6. When the message to be readdressed was a previously readdressed, the most recent originator and DTG are used in the second line of Format Line 12.

7. Do not use downgrading instructions in this short-form readdressal; none are needed.

8. Use normal message-ending procedures to end the short-form readdressal composition.

9-11. The following are examples of a short-form readdressal:

EXAMPLE 1

PTTCZYUW RHSSEKD0002 3180749-CCCC--RXXXSUU.
ZNY CCCCC
P 140749Z NOV 91
FM USS SHIP ALFA ALFA
TO USS SHIP ONE
INFO USS SHIP TWO
USS SHIP THREE
BT
RADDR 024731
USS NEVERSAIL//101314Z NOV 91
BT
#0002 2CR
8LF
NNNN

EXAMPLE 2

RTTUZYUW RHSSEKD0173 3182216-UUUU--RXXXSUU.
ZNR UUUUU
R 142216Z NOV 91
FM USS SHIP ALFA ALFA
INFO USS SHIP FOUR FOUR
USS SHIP FIVE FIVE
BT
RADDR 100376 SECT 02
USS NEVERSAIL//061626Z NOV 91
BT
#0173 2CR
8LF
NNNN

9-12. CANCELLING A NARRATIVE TRANSMISSION. To cancel a Link transmission of a narrative message, the operator uses the CAN TRA command (refer to Table 9-4). The message indicated by the System Message Number (SMN) is cancelled and removed from the transmit queue. Normally, a message is cancelled in conjunction with the Queue Status Report (QUE) (refer to Paragraph 10-6) to remove a single message from the queue when the Link is taken off-line (i.e., is put in the Down or Emission Control (EMCON) status). Any message that is cancelled must be reentered if the message is to be transmitted.

Table 9-4. Cancelling a Narrative Message

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CAN TRA System Message Number Depress the BLANK key SMN = 000001-999999	 Cancels the Link transmission of the indicated message and removes the message from the Queue Status Report.

9-13. RESETTING THE OUTPUT OPERATOR-TO-OPERATOR MESSAGE NUMBER. The Output OTO Number (OON) indicates the serial number assigned to the outgoing OTO message. The system automatically assigns the outgoing OTO message an OON one greater than the last OON. When the system is restarted, it starts with an OON of 00001. To reestablish continuity on OONs whenever the system is restarted, the initial OON value should be replaced with a value one greater than the last OON used. The RPL OON command (refer to Table 9-5) is used to change the outgoing OTO message number.

Table 9-5. Replacing the OON

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY RPL OON nnnnn Depress the BLANK key nnnnn = 00001-32767	 Assigns the number indicated to the next outgoing OTO.

9-14. TRANSMITTING AN OPERATOR-TO-OPERATOR MESSAGE. When circuit or message coordination with the Net Control Station (NCS) is required, an OTO should be used to exchange the required information. To transmit an OTO, the operator uses the TRA OTO command (refer to Table 9-6). The text of an OTO may contain a maximum of 80 characters; the command itself (i.e., TRA OTO) does not count in the 80 characters. The 80 characters include all printable characters, spaces, carriage returns, and line feeds. The system does not accept an OTO with more than 80 characters and responds in such cases with Alert A-2 (refer to Appendix B). If the OTO entry is valid, the system assigns the OON and notifies the operator of the OON and the time.

Table 9-6. Transmitting an OTO Message

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: TRA OTO (Circuit ID) Text Depress the BLANK key Circuit ID = LO1, LK Defaults to LK Text not to exceed 80 characters	Places the OTO message in the transmit queue.

9-15. CANCELLING AN OPERATOR-TO-OPERATOR MESSAGE. An OTO may be cancelled after it has been entered into the system but before the system has begun to prepare it for transmission. The CAN TRA OTO command (refer to Table 9-7) cancels all OTOs in the outgoing queue.

Table 9-7. Cancelling OTO Messages

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CAN TRA OTO Depress the BLANK key	Cancels all OTOs queued (but not yet prepared by the system) for transmission.

9-16. RETRIEVING A LIST OF ALL MESSAGES AWAITING OUTPUT OR TRANSMISSION. To print a list of all messages awaiting output to devices and/or on the Link, the operator uses the QUE command (refer to Appendix A). Refer to Paragraph 10-6 for information on the QUE.

9-17. DETERMINING THE STATUS OF MESSAGES. During periods of system saturation, messages and OTOs in the transmit queue may be purged. In order to determine if a particular message or OTO has been purged from the transmit queue, the operator uses the QUE command (refer to Appendix A). Refer to Paragraph 10-6 for information on the Queue Status Report.

9-18. LINK HOLD STATUS.

9-19. When the Link is placed in the Hold status, all outgoing narrative message transmissions already in queue remain in queue, and subsequent narrative message transmission is suspended until the Link status is changed to Up. At that time, the queued messages are transmitted and need not be reentered into the system. If a message is in the process of transmission when the Hold status is set, the message transmission is completed. The subscribers will continue to receive narrative messages and will be able to receive and transmit OTOs while the Link is in Hold. Refer to Table 9-8 for placing the Link in Hold.

Table 9-8. Placing the Link in Hold

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: HLD Circuit ID Depress the BLANK key Circuit ID = LO1, LK	Places the Link in Hold; suspends narrative message transmission.

9-20. EMISSION CONTROL OPERATION.

9-21. Normal Link operation requires a continuous automatic exchange of computer-to-computer System Control Messages (SCMs) between the subscriber (ship) and the NCS. These SCMs are not visible to operators. If the NCS fails to receive the necessary SCMs from a subscriber, the NCS automatically places that subscriber inactive on the Link. To prevent this (i.e., before a subscriber enters the EMCON status of receive-only), the subscriber must coordinate the change to the EMCON status with the NCS. The NCS operator must place a subscriber in EMCON to prevent the subscriber from being placed inactive on the Link; such a procedure will permit the subscriber to continue receiving both narrative traffic and OTOs without transmitting. If an operator tries to transmit an OTO or narrative message while in EMCON, the system will reject the entry and generate Alert B-1 (refer to Appendix B). When the Link is returned to the Up status, normal transmission resumes.

9-22. After informing the NCS of an EMCON status change, the operator places the Link in the EMCON status by using the EMC command (refer to Table 9-9).

Table 9-9. Placing the Link in EMCON

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: EMC Depress the BLANK key	 Places the Link in EMCON, ceases transmission, and continues reception of incoming narrative traffic and/or OTO messages.

9-23. To return to normal Link operation, the operator enters the CUP command (refer to Appendix A). To place the system in the Hold status, which allows the sending of OTO messages but not narrative messages, the operator enters the HLD command (refer to Appendix A).

9-24. UNRESTRICTED LINK OPERATION.

9-25. When unrestricted Link operation is required to transmit and receive narrative and OTO messages, the CUP command (refer to Appendix A) is used. If a SID number has not been entered, Alert B-2 (refer to Appendix B) is generated. The CUP command is used to put the Link in an unrestricted status after initialization and also to remove the EMCON and HLD restrictions.

9-26. RECEIPT OF LINK TRAFFIC.

9-27. Link traffic is automatically acknowledged by the NCS after receipt. After a message is acknowledged or negatively acknowledged (i.e., a message that reached its transmit Automatic Repeat Request (ARQ) limit but may have been received at the NCS with errors), NAVMACS V2 automatically outputs the Message Summary Line (MSL) at the service printer and Alert B-24 or B-25 (refer to Appendix B) at the CTTY. If the MSL (refer to Chapter 10) indicates that the message was negatively acknowledged, the operator should coordinate with the NCS via OTO message to see if a retransmission is required.

9-28. If the operator does not closely monitor the MSLs, a message which was not successfully transmitted may go unnoticed. It is recommended that a periodic ZIC/ZID report (last number sent/received) be sent to the NCS to verify message continuity.

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CHAPTER 10

MESSAGE ACCOUNTABILITY

10-1. GENERAL.

10-2. The Message Summary Line (MSL) and Queue Status Report (QUE) are resources available to aid the NAVMACS operator in maintaining accountability and continuity of all incoming and outgoing messages by displaying key elements of processed messages as well as the current status of system output queues. Collectively the MSLs provide historical records of system message processing. The MSL printout at the service printer is system-generated, whereas the Queue Status Report is generated on a demand basis.

10-3. MESSAGE SUMARY LINE.

10-4. The MSL automatically prints at the service printer each time the system completes the disposition of an incoming or outgoing message. If there exists multiple Message Processing Status dispositions for a message at the time the MSL prints, the system prints an MSL indicating only one of the processing statuses. Therefore, all message processing statuses for a message may not necessarily be represented by an MSL. Lines containing other system-generated items can be interspersed between the MSL entries. The data displayed in this line provides a visual correlation between the DTG, Channel Identifier/Channel Sequence Number (CID/CSN), and processing status of a message. The MSL includes the following key elements from the system files:

1. DTG
2. Originator
3. SMN
4. Processing Status (action) indicator
5. Time
6. Input Channel Identifier/Input Channel Sequence Number (ICID/ICSN)
7. Output Channel Identifier/Output Channel Sequence Number (OCID/OCSN)
8. Classification indicator

10-5. The MSL key elements occupy one service printer print line. Figure 10-1 illustrates examples of MSL entries. Each MSL is formatted with the following fields:

1. DTG Field. This field is the DTG of the message the system processed. If the DTG is missing or garbled, this field is left blank.

```
020923Z NOV CINCPACFLT MAKALAPA H 000081 T 021740 LOAA00056 PR1 00020 C
012303Z NOV CCGDELEVEN LONG BEACH 000080 D 021740 LMAA00333 PR1 00021 U
302328Z OCT NAVSCOLCOM SAN FRANCI 000082 F 021741 LMAA00334           U
020020Z NOV COMCRUDESPAC SAN DIEG 000083 I 021741 LMDD00020 PR1 00022 C
010211Z NOV HELSUPPROM THREE      000078 R 021742 LMBB00021           C
           OTO 000002             000086 D 021742
021738Z NOV USS RANGER            000087 ? 021743 LOAA00005           U
                                  000090 N 021743 NI2       PR2 00013
011110Z NOV NAVFINCEN CLEVELAND O 000089 D 021744 LMCC00882 PR1 00024 U
010902Z NOV AMCROSS WASHINGTON DC 000085 P 021745 LMAA00336 PR2 00014
020022Z NOV PSO SAN DIEGO CA      000091 P 021745 LMCC00883 PR1 00027 U
                                  000094 N 021745 NI4       PR1 00028
020023Z NOV COMCARGRU SEVEN       000095 T 021746 LOAA      LO1 00057 U
020824Z NOV NCTAMS LANT NORFOLK   000084 D 021746 LIAA00057 PR1 00029 U
302050Z OCT AFRTS WASHINGTON DC   000096 P 021748 LMAA00337 PR2 00015
020741Z NOV NCTAMS LANT NORFOLK   000093 D 021748 LIAA00058 PR1 00031 C
```

Figure 10-1. Examples of Message Summary Lines (MSL)

2. ORIGINATOR Field. This field contains the first 21 characters of the message originator found in Format Line 6. If Format Line 6 is not recognizable, this field is left blank. If a Narrative Operator Message (NOM) or an Operator-to-Operator (OTO) message is received from CUDIXS, this field will contain NOM or OTO (OTO #), respectively.

3. SMN Field. This field contains the SMN that is assigned to that message only.

4. Message Processing Status Field. This field contains one of the following legends, which are listed in order of precedence:

   Q = Queued
   P = Purged (messages of no concern)
   I = Purged (messages of concern)
   O = Operator correction needed
   N = Discarded (undefined raw data)
   D = Delivered (addressed first-run or rerun output to a device, or positively acknowledged Link transmission)
   ? = NAK'd (negatively acknowledged Link transmission)
   T = Transmitted
   K = Cancelled (operator- or system-cancelled outgoing message, or busted incoming message)
   F = First-run (nonaddressed)
   R = Rerun (nonaddressed)

   If more than one of these legends apply to a given message, the legend output is selected by precedence.

5. TIME Field. This field contains the time the processing action indicated by the message processing status field occurred.

6. INPUT Field. This field identifies for incoming and outgoing messages the input circuit/device and usually a sequence number for this circuit/device. When an incoming Link or first-run broadcast message is processed by the system and a CID is present, this field contains the message CID; however, if no CID is found, this field contains the ICID (i.e., the input circuit Identifier (ID)). When a rerun broadcast message goes through Wanted Message List (WML) processing and a WML match is made, the message CID appears in this field. However, if no WML match is made, the first two characters of this field are the first two characters of the current Parameter Page 1 CID for the appropriate circuit and either the remaining characters of the message CID or, if these are garbled, the last character of the ICID.

7. OUTPUT Field. This field contains the OCID and OCSN, or is left blank if the message was not output.

8. Classification Field. This field contains one of the following legends:

   T = Top Secret
   S = Secret
   C = Confidential

R = Allied Restricted
E = Unclassified but Encrypted for Transmission Only (EFTO)
U = Unclassified
(blank) = Undetected or garbled

10-6. QUEUE STATUS REPORT.

10-7. The QUE provides data for use in monitoring the current status of the system's output queues. Line one of the heading contains the report classification, report name, and generation Date-Time-Group (DTG). Line two contains "DEMAND", indicating that the QUE is generated on a demand basis. Each report includes data on all items queued for output to onship devices and offship circuits. The QUE includes the following elements:

1. OCID
2. SMN (messages only)
3. Precedence
4. Message type

10-8. The QUE is formatted as shown in Figure 10-2 with the following fields:

1. OCID Field. This field contains the device or circuit ID to which the item is queued. The OCID entry may be one of the following:

   GG1
   LO1
   PR1
   PR2
   TP1
   TP2
   NONE = No items on queue
   (blank) = Delivery device not yet determined for inrouted message

2. SMN Field. This field contains the unique SMN assigned to that message.

3. Precedence (P) Field. The P field contains one of the following legends indicating the output precedence of the item:

   Y = Emergency
   Z = Flash
   O = Immediate
   P = Priority
   R = Routine

4. Type Field. This field contains a brief description of the queued output. The possible entries in this field are as follows:

```
UNCLASSIFIED              QUEUE STATUS REPORT                  050943Z NOV 91
DEMAND                                                                 PAGE 1

                  OCID    SMN       P                        TYPE
CIRCUITS:
                  LO1     000127    R                        NARR MSG
GATEGUARD:
                  GG1     000125    R                        NARR MSG
PRINTERS:
                  PR1     000129    P                        NARR MSG
                          000131    R                        OPCORR MSG
                  PR2               R                        SYSTEM LIST
PUNCHES:
                  TP1     000133    R                        IAZZ
```

Figure 10-2. Sample Queue Status Report (QUE)

IAZZ = Supply message (i.e., with an IAZZ content indicator code)
NARR MSG = Narrative message
NOM = Narrative Operator Message
OPCORR MSG = Operator correction needed
OTO = Operator-to-Operator message
SORG = Special originator message (i.e., with an Originator Screening List (OSL) match)
SYSTEM LIST = System list

10-9. Table 10-1 describes the QUE command used to print the Queue Status Report.

Table 10-1. Printing/Punching the QUE

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: QUE (Device ID) Depress the BLANK key Optional Device ID = GG1, PR1, PR2, TP1, TP2 Defaults to service printer	Prints/punches a Queue Status Report on the designated device.

CHAPTER 11

SYSTEM INITIALIZATION

SECTION I

EQUIPMENT PREPARATION

11-1. PRELIMINARY COMMUNICATION ENVIRONMENT.

11-2. All communication support equipment used for the broadcast and Link circuits must be operationally on-line in advance of NAVMACS V2 operation. Figure 11-1 provides an equipment interconnection diagram for NAVMACS V2. The operator should verify that:

1. Radio transmitters and receivers are operational and are properly tuned to the correct frequencies.

2. Demultiplex and demodulator equipment is operational and on-line.

3. Crypto devices are operational and on-line.

4. All circuits (cryptos) are patched into the system (in addition to being patched to backup teletype printers).

11-3. EQUIPMENT PREPARATION.

11-4. This section contains the step-by-step procedures required to prepare the NAVMACS V2 equipment for system operation in the normal operating modes (operation under casualty conditions is described in Chapter 12). For more details on the equipment, refer to the appropriate equipment manuals listed in Paragraph 2-3. For example, to load paper in line printers or tape in punches prior to setting up equipment, refer to the applicable equipment manual. These procedures assume that the user has become familiar with the controls and indicators on the equipment as illustrated and described in Chapter 3.

11-5. For the convenience of the operator, the equipment preparation procedures are presented in this section in two formats. First, there appears a listing of the appropriate steps; then, the same steps are summarized for quick reference.

11-6. CENTRAL PROCESSING UNIT PREPARATION. At the Central Processing Unit (CPU) maintenance panel (refer to Figure 3-2), do the following:

1. Set PROGRAM STOP 1/OFF toggle switch to OFF.

2. Set PROGRAM STOP 2/OFF toggle switch to 2.

3. Set ALTER MODE SET/CLR toggle switch to SET.

4. Set DIAGNOSTIC JUMP toggle switch to Down position.

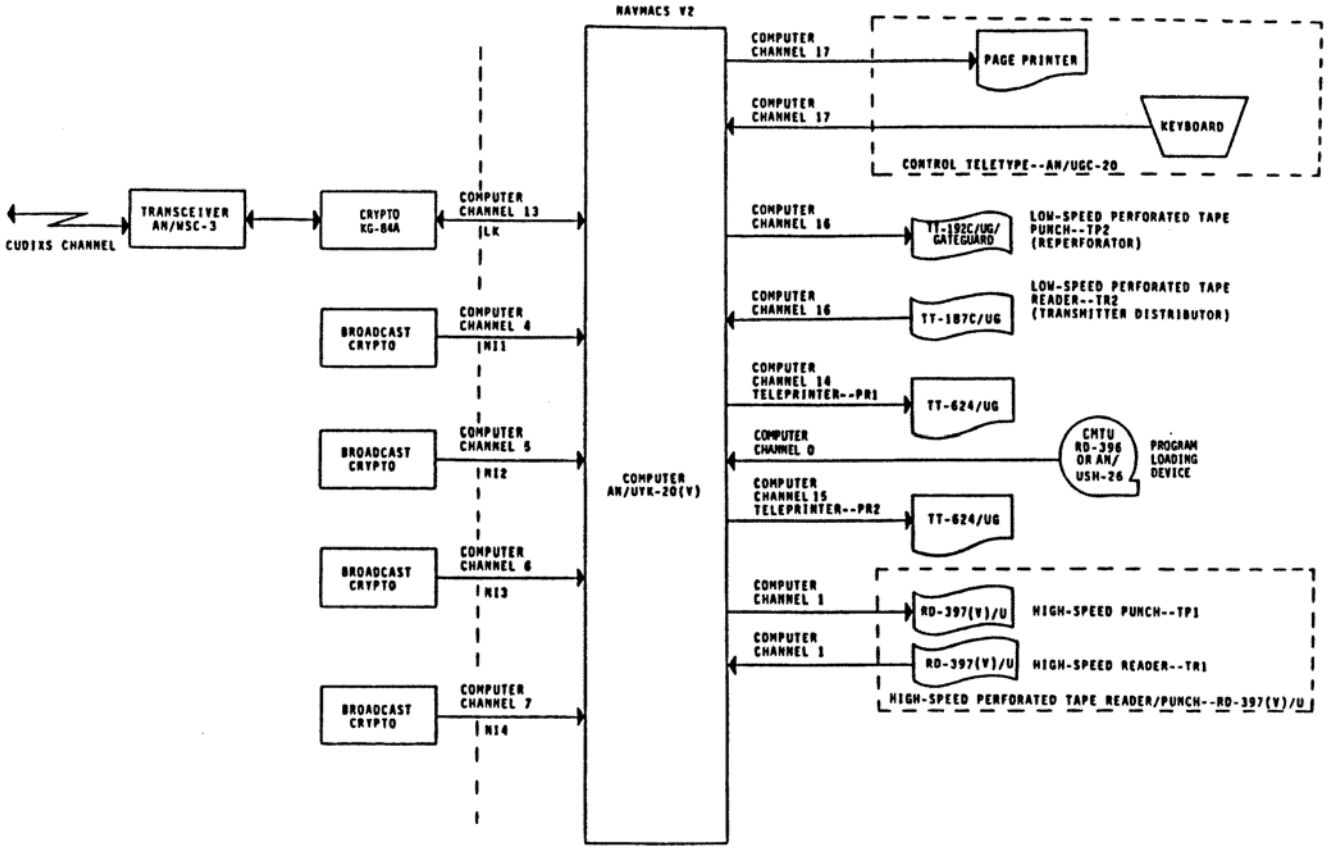

Figure 11-1. NAVMACS V2 Interconnection Diagram

5. Set DIAGNOSTIC DISPLAY toggle switch to Down position.
6. Set RT CLK DISABLE/INT/EXT toggle switch to INT.
7. Set ADV P toggle switch to Down position.
8. Set INTERCMPTR TIME OUT toggle switch to Down position.
9. Set BREAK PT READ/OFF toggle switch to OFF.
10. Set BREAK PT WRITE/OFF toggle switch to OFF.
11. Set AUTO START/START toggle switch to AUTO START position.
12. Close and secure CPU front cover. (For paper tape load, keep door open until load procedures are completed (refer to Paragraph 11-23).)

11-7. At the CPU control panel (refer to Figure 3-1), do the following:

1. Set LOAD/STOP toggle switch to Center position.
2. Set BOOTSTRAP 1/2 toggle switch to 1 for magnetic tape load, 2 for mylar tape load.
3. Set BATTLE SHORT ON/OFF toggle switch to OFF.
4. Set ALARM ENABLE/DISABLE/TEST toggle switch to ENABLE.
5. Set CIRCUIT BREAKER ON/OFF toggle switch to ON.
6. Set BLOWER POWER ON/OFF toggle switch to ON.

   OBSERVE:
   a. BLOWER POWER indicator lights.
   b. Blowers operate (i.e., are audible).

7. Set LOGIC POWER ON/OFF toggle switch to ON.

   OBSERVE:
   a. LOGIC POWER indicator lights.
   b. POWER FAULT indicator does NOT light.
   c. OVER TEMP indicator does NOT light.

11-8. CONTROL TELETYPE PREPARATION. At the Control Teletype (CTTY) (refer to Figure 3-3), do the following:

NOTE

If the ship is equipped with an AN/UGC-143A(V)3 Teleprinter Set, refer to the Supplement To NAVMACS V2 System Operator's Manual - AN/UGC-143 Operation, NTSIC 2D7.15.

1. Verify that power is on; POWER ON/OFF switch is set to ON.
2. Set BAUD RATE selector switch to 75 (maximum clockwise).

3. Press LOC CR key to start carriage at left margin. This causes margin indicator to clear.

11-9. LINE PRINTER PREPARATION. At each line printer (refer to Figure 3-4), do the following:

1. Set AC POWER ON/OFF toggle switch to ON and verify that POWER indicator is lit.

2. Open front door of line printer and check all switch settings for proper operation. Set switches as follows:

    a. SKIP OVER IN/OUT toggle switch to OUT (If using fanfold paper, set to IN.)
    b. PARITY IGNORE/PARITY DETECT toggle switch to PARITY IGNORE
    c. PRINT INHIBIT/PRINT ENABLE toggle switch to PRINT ENABLE
    d. 72 COLUMN/80 COLUMN toggle switch to 80 COLUMN
    e. ALARM VOLUME control to desired setting
    f. BAUD RATE switch 2400

3. Close line printer front door.

4. Press ON/OFF-LINE pushbutton.

    OBSERVE: OFF-LINE indicator lights.

5. Press ON/OFF-LINE pushbutton.

    OBSERVE: OFF-LINE light goes out and READY light is lit.

11-10. CARTRIDGE MAGNETIC TAPE UNIT PREPARATION. At the Cartridge Magnetic Tape Unit (CMTU) controller (refer to Figure 3-5), do the following:

1. Set POWER ON/OFF toggle switch to ON and verify that POWER indicator is lit.

2. Set CMPTR 1/MPX/CMPTR 2 toggle switch to CMPTR 1.

3. Set ALARM ENABLE/OFF/TEST toggle switch to ENABLE.

4. Set ON-LINE/OFF-LINE toggle switch to ON-LINE for each drive.

5. Set BATTLE SHORT ON/OFF toggle switch to OFF.

6. Momentarily pull out MASTER CLEAR toggle switch and push up.

7. Mount system Program Tape magnetic cartridge in Drive 1.

8. Set maintenance panel ENABLE/DISABLE toggle switch (refer to Figure 3-6) to DISABLE.

11-11. CASSETTE MAGNETIC TAPE UNIT PREPARATION. At each cassette magnetic tape unit (refer to Figure 3-7), do the following:

1. Set POWER ON/OFF toggle switch to ON and verify that POWER indicator is lit.

2. Set RECORDER SELECT toggle switch to Up position (indicating Drive 1 on left and Drive 2 on right) or to Down position (indicating Drive 1 on right and Drive 2 on left). Program is normally loaded from Drive 2.

3. Set Drive 1 RECORDER POWER ON/OFF toggle switch to OFF.

4. Set Drive 2 RECORDER POWER ON/OFF toggle switch to ON.

11-12. HIGH-SPEED PAPER TAPE READER/PUNCH PREPARATION. At the High-Speed Paper Tape Reader/Punch (HSPTR/P) (refer to Figure 3-8), do the following:

1. Set POWER toggle switch to Up position and verify that ON indicator is lit.

2. Set REMOTE/DUP/TEST toggle switch to REMOTE.

3. Set PUNCH/OFF/LEADER toggle switch to OFF.

4. Set ON-LINE/LOAD toggle switch to ON-LINE.

5. Ensure that TAPE LEVEL 5-8-7 toggle switch inside High-Speed Paper Tape Punch (HSPTP) chassis is in 8-level position.

6. Set read head tape guide wheel under HSPTP read head tape guide cover to 8 for mylar program tape load or to 5 for normal operations.

7. Verify that HSPTP has sufficient paper tape supply.

11-13. The following two points should be noted:

1. The paper tape reader is not available to the computer system when loading tape into the punch or at any time the REMOTE/DUP/TEST toggle switch is not in the REMOTE position.

2. The ON-LINE/LOAD toggle switch should be placed in the LOAD position when placing a tape in the tape reader. With the tape reader in the LOAD position, the operator may slew the message right or left to prevent any extra characters from being inserted in front of Format Line 2.

11-14. LOW-SPEED PAPER TAPE READER PREPARATION. At the Low-Speed Paper Tape Reader (LSPTR) (refer to Figure 3-9), do the following:

1. Set FREE/STOP/RUN toggle switch to STOP.

2. Set POWER ON/OFF toggle switch to ON.

11-15. LOW-SPEED PAPER TAPE PUNCH PREPARATION. At the Low-Speed Paper Tape Punch (LSPTP) (refer to Figure 3-10), do the following:

1. Set POWER/OFF toggle switch to Up position.

2. Verify that reperforator has sufficient paper tape supply.

11-16. LEVEL CONVERTER/PATCH PANEL PREPARATION. At the Level Converter/Patch Panel (refer to Figure 3-11), do the following:

1. Set POWER ON/OFF toggle switch to ON.

2. Verify that the two power indicators (130 VDC and 115 VAC) are lit.

11-17. QUICK REFERENCE GUIDE. The following tabulated procedures serve as a quick reference guide to system initialization. This guide should be used only after the operator has become thoroughly familiar with the preceding step-by-step explanation.

CENTRAL PROCESSING UNIT (CPU) MAINTENANCE PANEL

SWITCH	POSITION
PROGRAM STOP 1/OFF	OFF
PROGRAM STOP 2/OFF	2
ALTER MODE SET/CLR	SET
DIAGNOSTIC JUMP	Down
DIAGNOSTIC DSPL	Down
RT CLK DISABLE/INT/EXT	INT
ADV P	Down
INTERCMPTR TIME OUT	Down
BREAK PT READ/OFF	OFF
BREAK PT WRITE/OFF	OFF
AUTO START/START	AUTO START

CENTRAL PROCESSING UNIT (CPU) CONTROL PANEL

SWITCH	POSITION
LOAD/STOP	Center
BOOTSTRAP 1/2	1 for magnetic tape load 2 for mylar tape load
BATTLE SHORT ON/OFF	OFF
ALARM ENABLE/DISABLE/TEST	ENABLE
CIRCUIT BREAKER ON/OFF	ON
BLOWER POWER ON/OFF	ON
BLOWER POWER INDICATOR	Lit
LOGIC POWER ON/OFF	ON
LOGIC POWER INDICATOR	Lit
POWER FAULT INDICATOR	Off
OVER TEMP INDICATOR	Off

CONTROL TELETYPE (CTTY)

SWITCH	POSITION
POWER ON/OFF	ON
BAUD RATE	75
LOC CR	Press

LINE PRINTER

SWITCH	POSITION
AC POWER ON/OFF	ON
POWER INDICATOR	Lit
SKIP OVER IN/OUT	OUT (IN if using fanfold paper)
PARITY IGNORE/PARITY DETECT	PARITY IGNORE
PRINT INHIBIT/PRINT ENABLE	PRINT ENABLE
72 COLUMN/80 COLUMN	80 COLUMN
ALARM VOLUME	Desired Setting
BAUD RATE	2400
ON/OFF-LINE	Press
OFF-LINE INDICATOR	Lit
ON/OFF-LINE	Press
OFF-LINE INDICATOR	Not Lit
READY LIGHT	Lit

CARTRIDGE MAGNETIC TAPE UNIT (CMTU)

SWITCH	POSITION
POWER ON/OFF	ON
POWER INDICATOR	LIT
CMPTR 1/MPX/CMPTR 2	CMPTR 1
ALARM ENABLE/OFF/TEST	ENABLE
ON-LINE/OFF-LINE	ON-LINE
BATTLE SHORT ON/OFF	OFF
MASTER CLEAR	Up

CASSETTE MAGNETIC TAPE UNIT

SWITCH	POSITION
POWER ON/OFF	ON
POWER INDICATOR	Lit
RECORDER SELECT	Up (Drive 2 on left) Down (Drive 2 on right)
DRIVE 2:	
RECORDER POWER ON/OFF	ON
ON-LINE/REWIND	Desired Setting
DRIVE 1:	
RECORDER POWER ON/OFF	OFF
ON-LINE/REWIND	Desired Setting

HIGH-SPEED PAPER TAPE READER/PUNCH (HSPTR/P)

SWITCH	POSITION
POWER	Up
ON INDICATOR	Lit
REMOTE/DUP/TEST	Remote
PUNCH/OFF/LEADER	OFF
ON-LINE/LOAD	ON-LINE
TAPE LEVEL 5-8-7	8
READ HEAD TAPE GUIDE	8 (Program load) 5 (Normal operation)

LOW-SPEED PAPER TAPE READER (LSPTR)

SWITCH	POSITION
FREE/STOP/RUN	STOP
POWER ON/OFF	ON

LEVEL CONVERTER/PATCH PANEL

SWITCH	POSITION
POWER/OFF	Up

LEVEL CONVERTER/PATCH PANEL

SWITCH	POSITION
POWER ON/OFF	ON
130 VDC POWER INDICATOR	Lit
115 VAC POWER INDICATOR	Lit

11-18. PROGRAM LOAD PROCEDURES.

11-19. The NAVMACS V2 program is loaded into the system by magnetic tape (primary) or 8-level mylar tape. The magnetic tape can be on either cartridge or cassette. The preceding paragraphs described the equipment setup necessary to load the program. The operator should become familiar with the program loading procedures that apply to this system.

11-20. Under normal circumstances the magnetic Program Tape should be mounted in the primary drive of the tape unit. When loading from the CMTU, mount the Program Tape in Drive 1. When loading from the cassette magnetic tape unit, mount the Program Tape in Drive 2. If there are problems with the magnetic tape load, refer to Paragraph 11-23 for procedures for loading the NAVMACS V2 program from paper (mylar) tape.

11-21. PROGRAM LOAD FROM MAGNETIC TAPE CARTRIDGE. To load the NAVMACS V2 program from magnetic tape cartridge, perform the following steps:

1. Ensure that equipment is prepared as described in Paragraphs 11-6 through 11-16.

2. At CPU control panel, set BOOTSTRAP 1/2 toggle switch to 1.

3. Mount Program Tape in Drive 1 of CMTU Controller.

4. Program Tape should already be at start-of-tape (rewound), but as a precaution, wait for any automatic rewind action to complete.

5. Momentarily pull out and push up MASTER CLEAR toggle switch at right of CMTU control panel.

6. At CPU control panel, momentarily set LOAD/STOP switch to LOAD.

   OBSERVE: At CMTU, CMPTR 1 indicator and SEL and BUSY indicators for Drive 1 light momentarily.

7. At CTTY, a successful program load is indicated by the following system-generated response:

   NAVMACS V2 RELEASE X.Y
   ENTER TIME

   (where X is the release and Y is the version). If program load is unsuccessful, retry procedures.

8. Ensure that automatic rewind of Program Tape has occurred. (This alleviates possibility of damage to any exposed portion of tape.)

9. Proceed to system initialization procedures (refer to Section II of this chapter).

11-22. PROGRAM LOAD FROM MAGNETIC TAPE CASSETTE. To load the NAVMACS V2 program from magnetic tape cassette, perform the following steps:

1. Ensure that equipment is set up in accordance with Paragraphs 11-6 through 11-16.

2. At CPU control panel, set BOOTSTRAP 1/2 toggle switch to 1.

3. Install program cassette by turning thumb wheel at top of cassette compartment door, in counterclockwise direction, and allow door to drop open slowly. Ensure that file protect tabs are not covering openings on back of cassette, and that, when installed in compartment, labeled side is facing operator. Close compartment door and turn thumbscrew clockwise to lock door.

4. Verify that READY and LEADER lights illuminate.

5. Momentarily set ON LINE/REWIND switch to ON LINE.

6. Observe that READY light extinguishes.

7. Observe that REWIND light illuminates momentarily, then extinguishes.

8. Observe that READY and ON LINE lights illuminate.

9. At CPU control panel, momentarily set LOAD/STOP toggle switch to LOAD.

10. At CTTY, a successful program load is indicated by the following system-generated response:

    NAVMACS V2 RELEASE X.Y
    ENTER TIME

    (where X is the release and Y is the version). If program load is unsuccessful, retry procedures.

11. Ensure that an automatic rewind of Program Tape has occurred. (This alleviates possibility of damage to any exposed portion of tape.)

12. Proceed to system initialization procedures (refer to Section II of this chapter).

11-23. PROGRAM LOAD FROM MYLAR TAPE. To load the NAVMACS V2 program from the 4-section, 8-level mylar tape, perform the following steps:

1. Ensure that equipment is set up in accordance with Paragraphs 11-6 through 11-16.

2. At CPU control panel, set BOOTSTRAP 1/2 toggle switch to 2.

3. At HSPTR/P, set read head tape guide located under read head cover to 8. (See tape level number on front of tape guide.) Load Section 1 first, then Section 2, Section 3, and Section 4. Load each section as follows:

a. Load paper tape into HSPTR/P. Slew as necessary to position tape properly.
b. At CPU control panel, momentarily set LOAD/STOP toggle switch to LOAD position. This will cause tape to be read into computer.
c. Observe that system stops at address 0177731 displayed in P-register at CPU maintenance panel following successful load of each of first three sections of Program Tape.
d. Repeat Steps a-c for first three sections and Steps a and b for fourth section until all sections are loaded.

4. Close and secure CPU front cover.

5. Return read head tape guide to 5.

6. At CTTY, after fourth section is read into system, a successful program load is indicated by the following system-generated response:

   NAVMACS V2 RELEASE X.Y
   ENTER TIME

   (where X is the release and Y is the version). If program load is unsuccessful, retry procedures.

7. Ensure that each section of Program Tape is properly rewound.

8. Proceed to system initialization procedures (refer to Section II of this chapter).

CHAPTER 11

SYSTEM INITIALIZATION

SECTION II

INITIALIZATION PROCEDURES

11.24. GENERAL.

11-25. This section contains procedures required or recommended prior to normal system operation. After a successful program load, the system will print on the CTTY:

NAVMACS V2 RELEASE X.Y
ENTER TIME

The X.Y fields indicate the release (X) and version (Y) numbers of the program in use. At this point, the program is requesting operator input to begin system initialization. The operator then updates all parameter settings according to Communications Center Standard Operating Procedures (SOP).

11-26. GREENWICH MEAN TIME.

11-27. In response to the ENTER TIME notice, the operator must enter the Greenwich Mean Time (GMT) with the RPL TIM command (refer to Table 11-1). The system will not permit any other operator entries until a correctly formatted GMT is entered.

Table 11-1. Replacing the GMT

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL TIM ddhhmmZ mmm yy Depress the BLANK key dd = day (01-31) hh = hour (00-23) mm = minute (00-59) Z = GMT (Zulu time) mmm = month (3-letter abbreviation) yy = year (72-99, or 00-34)	Replaces the system time with the time specified.

11-28. After the GMT is entered, the operator updates all parameter settings according to operational commitments.

11-29. SUBSCRIBER IDENTIFICATION.

11-30. At system initialization, the Subscriber Identification (SID) number is set to 00. The operator must change the value of the SID to a predetermined value of 01-60 as assigned by the Naval Computer and Telecommunications Area Master Station (NCTAMS). To change the SID value, the operator uses the RPL SID command (refer to Table 11-2). The Link must be Down before a SID value can be changed.

Table 11-2. Replacing the SID Number

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL SID nn Depress the BLANK key nn = 01-60	Replaces the current SID with the value indicated.

11-31. CHANNEL SEQUENCE NUMBER.

11-32. The system Channel Sequence Number (CSN) is initialized at 00001. The operator may change the CSN value for outgoing narrative messages and incoming broadcast messages by using the RPL CSN command (refer to Appendix A). A value of 00001-04095 for the Link and 00001-65535 for broadcast circuits may be entered.

11-33. LINK OUTPUT OPERATOR-TO-OPERATOR MESSAGE NUMBER.

11-34. The system initializes the Output Operator-to-Operator (OTO) Number (OON) at 00001. The operator may change the OON by using the RPL OON command (refer to Appendix A). A value of 00001-32767 may be entered. The system will then assign the number indicated by the RPL OON command to the next OTO message to be transmitted.

11-35. BAUD RATE.

11-36. At system initialization, the baud rate for each broadcast circuit is 0000. The operator must enter a baud rate for a broadcast circuit before that circuit can be brought Up. The sum of the baud rates for all Up broadcast circuits cannot exceed 1200. To change the baud rate, the operator uses the RPL BOD command (refer to Table 11-3). A broadcast circuit must be Down before its baud rate can be changed.

Table 11-3. Replacing the Baud Rate

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL BOD Circuit ID nnnn or RPL BOD Device ID nnnn Depress the BLANK key Circuit ID = NI1, NI2, NI3, NI4 Device ID = TP2, TR2 nnnn = 0075, 0300, 0600, 1200	Replaces the baud rate for the specified broadcast circuit or device.

11-37. The baud rate for Link operations, and for GateGuard, is initialized at 2400. This value cannot be changed by the operator.

11-38. The operator can adjust the baud rate for the LSPTR and LSPTP by using the RPL BOD command (refer to Table 11-3). The baud rate is preset to 75, the rate at which the LSPTR and LSPTP normally operate. This command can be entered regardless of the status of those devices. Before entering this command, the operator should coordinate the baud rate setting with the device or system that is interfacing with NAVMACS V2 on the CPU channel normally dedicated to the LSPTR and LSPTP.

11-39. NAVMACS-TO-LINK INTERFACE DEVICE.

11-40. The device serving as an interface between NAVMACS V2 and the Link is the KG-84A Cryptographic Device. Since the KG-84A is not maintained by the NAVMACS V2 operator, coordination will be required for the use of a cryptographic device.

11-41. AUTOMATIC REPEAT REQUEST LIMIT.

11-42. At system initialization, the Automatic Repeat Request (ARQ) limit value is 03. The operator may change this value at any time by using the RPL ARQ command (refer to Table 11-4). If circuit continuity is excellent, a smaller value may be used; if circuit continuity is poor, the highest setting should be used. Values of 00-03 will be accepted by the system. Since narrative messages may be transmitted in parts on the Link, if a value of 01 is set, the system may send a part of a message once and automatically send it again if CUDIXS requests a retransmission of that part.

Table 11-4. Replacing the ARQ Limit

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL ARQ nn Depress the BLANK key nn = 00-03 or 0-3	 Specifies the ARQ parameter which determines the maximum number of times data will be retransmitted by the ship.

11-43. SCREENING ERROR TOLERANCE.

11-44. At system initialization, a Screening Error Tolerance (QRK) value of 2 is assigned for each broadcast circuit. The RPL QRK command (refer to Appendix A) is used to specify the relative traffic quality level of each broadcast circuit. The QRK parameter for each circuit is used to determine the number of errors allowed when each message addressee is screened against each address of the Command Guard List (CGL). Refer to Paragraph 5-4 for information about the QRK values of 2-5.

11-45. COMMAND GUARD LIST.

11-46. A list of addresses for which the system assumes responsibility for message delivery is entered by the operator into the system. At initialization, there is no active CGL. The operator must enter a CGL before a circuit may be brought Up. Refer to Chapter 5, Section I for information concerning the CGL.

11-47. WANTED MESSAGE LIST.

11-48. The WML contains a list of broadcast messages, identified by Channel Identifier (CID) and CSN, that the operator wants delivered in full the next time the messages are received. The WML is empty at system initialization. Refer to Chapter 5, Section III for entering the WML.

11-49. LOCAL ROUTING LIST.

11-50. At initialization, the system contains no Local Routing List (LRL); therefore, the operator must either add an LRL or leave it blank. If the LRL is added, it must be added with the provisions outlined in Chapter 5, Section II. The LRL is free-form. If an LRL is not added, the first page of each message will contain two blank lines for the operator's manual insertion of an LRL.

11-51 DEVICE AND COMMUNICATION CIRCUIT STATUS CHANGES.

11-52. The system records status for devices and circuits as U (Up) or D (Down). The Up status means that the system may attempt to use the device or the circuit; it does not necessarily indicate that the device or circuit is working properly. The Down status means that the system will not attempt to use the device or to read or send messages on the circuit. Initially, the system assumes the status of all devices and all communication circuits to be Down. However, paper tape readers are always considered Up by the system. If the system cannot access a paper tape reader, Alert A-17 (refer to Appendix B) is generated at the CTTY after approximately 30 seconds. Also, in order for NAVMACS to be able to successfully place GateGuard in the Up status, the GateGuard system must be loaded and started prior to establishing the interface protocol. If the operator wants to know the status (Up or Down) of devices or circuits as currently held in the computer memory, a printout of the system parameter pages can be obtained by using the SPP command (refer to Appendix A). To change the status of a device, refer to Table 11-5; to change the status of circuits, refer to Table 11-6.

Table 11-5. Changing Device Status

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: EUP Device ID or EDN Device ID Depress the BLANK key Device ID = GG1, PR1, PR2, TP1, TP2	 Places the indicated device Up or Down as specified. (Approximate status is noted on Parameter Page 4.)

Table 11-6. Changing Circuit Status

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: CUP Circuit ID or CDN Circuit ID Depress the BLANK key Circuit ID = NI1, NI2, NI3, NI4, LO1, LK	 Places the indicated circuit Up or Down as specified. (Appropriate status is noted on Parameter Page 1 for broadcast circuits and on Parameter Page 3 for the Link.)

11-53. CHANNEL IDENTIFIER.

11-54. The CID is made up of four characters. The system is initialized at LOAA and LIAA for the Link; for the broadcast circuits, it is initialized at NIAA, NIBB, NICC, and NIDD. The CID may be changed by the operator to any characters, with the constraint that the third and fourth characters must be the same. Refer to Table 11-7 to change the CID.

Table 11-7. Replacing the CID

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: RPL CID Circuit ID nnnn Depress the BLANK key Circuit ID = NI1, NI2, NI3, NI4, LO1, LI1 nnnn = 4 characters (3rd = 4th)	Replaces the current CID with the CID indicated on the specified circuit.

11-55. SERVICE PRINTER.

11-56. The system designates Printer 2 (PR2) as the service printer; this assignment cannot be changed by the operator. Any operator commands defaulting to the service printer cause Alert A-5 (refer to Appendix B) to be generated at the CTTY. If PR2 is in Hold, information is queued to PR2.

11-57. SYSTEM OPERATION.

11-58. At this time, system operation and performance are controlled by operator commands and parameter settings. For contingency operation procedures during startup or on-line operation, the operator should refer to Chapter 12.

CHAPTER 11

SYSTEM INITIALIZATION

SECTION III

OPERATING PROCEDURES

11-59. ENTERING COMMANDS.

11-60. Before the system accepts commands, the program must be loaded and the system started as described in Sections I and II of this chapter. The loaded program initially contains preset parameter values that control system operation. Some of these parameters can and should be changed by the operator.

11-61. Operator commands, as listed in Appendix A, are entered into the system with the BLANK (execute) key on the CTTY. Striking the BLANK key once indicates that the command is complete and is to be executed. The system acknowledges a valid operator command by responding with a two carriage return, one line feed sequence and the time.

11-62. The system recognizes spaces within a part of a command. Unless otherwise indicated, the operator may not insert spaces between characters within a part of a command. The first part of all commands consists of three characters.

11-63. The general format of a command to retrieve and to output data consists of identifying the data to be retrieved by a 3-letter code (e.g., CGL, WML, LRL) or a 4-letter code (e.g., SPP 1, SPP 3, SPP 4), and then specifying the device on which the data is to be output. If an output device is not specified, the system defaults to the service printer.

11-64. The general format of a command to manipulate data is to first input a code indicating the nature of the manipulation; second, identify the message, list, or parameter that is to be acted on; and third, provide amplifying information.

11-65. CONTROL TELETYPE SHARING.

11-66. The page printer on the CTTY is shared between operator-originated input and computer-originated output. The keyboard is enabled for operator input whenever the system is not originating output. The system prints on the page printer whatever the operator types. While the system is originating output, the keyboard is disabled for input. Neither the CPU nor the operator should tie up the page printer for a long period of time.

11-67. The operator may interrupt CPU operation by striking any key while computer-originated output is being printed. If CPU output is interrupted, the system generates a two carriage return, one line feed sequence, and then waits up to 30 seconds for the operator to begin data input.

11-68. Once the operator begins typing, the system will permit the operator to continue the input and to execute or abort the selected command. Either executing or aborting a command will return control to the system.

11-69. CONTROL TELETYPE OPERATOR ERROR.

11-70. The operator may correct an operator error in an unexecuted command by either aborting the entry as described in the following paragraph or by correcting a typing error as described in Paragraph 11-72.

11-71. To abort an unexecuted command, the operator types two exclamation points (!!). On receiving !!, the system automatically generates a two carriage return, one line feed sequence; prints "!! ABORTED !!"; and then disregards the command.

11-72. To correct a typing error, the operator types a pound (#) symbol (i.e., a figures shift, H sequence) immediately after the incorrect key was struck. The operator may correct a sequence of errors by entering an equal number of # symbols immediately after the incorrect characters. For example, if D and P are incorrectly entered as the second and third characters of the EUP command, the correction sequence appears as follows:

EDP##UP

The two characters to the immediate left of the # symbols, and the # symbols themselves, are printed but are disregarded by the system. The operator continues the command input.

11-73. If the operator enters a command and, upon receipt of the BLANK key signal, the system does not recognize the command, it immediately generates a two carriage return, one line feed sequence and Alert A-2 (refer to Appendix B). It then generates another two carriage return, one line feed sequence and repeats (echoes) any part of the command that was recognized. For example:

ADD SGL (BLANK)	(Operator entry)
ERROR	(System generates this because it does not
ADD	recognize command)
CGL (BLANK)	(Operator completes command)

11-74. LINK OPERATION.

11-75. This section describes the various aspects of the CUDIXS/NAVMACS V2 satellite link interface not covered elsewhere in the document. The Link itself consists of a single, half-duplex satellite channel which is dedicated to the synchronous communication between a shore station (the Net Control Station (NCS)) and Naval ships (subscribers).

11-76. The combined systems provide a 2-way, ship/shore/ship link. Subscribers interchange Link control information, narrative message traffic, and OTOs with the shore station.

11-77. Link operations are performed continuously in a cyclic fashion, with the net cycle consisting of one transmission by the shore station followed by an individual transmission from each participating subscriber in turn. Full net control of traffic flow between the shore station and subscribers is maintained by the

shore; subscriber transmission capability and sequence are assigned specifically for each net cycle based on subscriber system's request.

11-78. SIDs are assigned by NCTAMS, normally on a first-come, first-served basis, and two subscribers should not use the same SID. When the system is initialized, NAVMACS V2 contains a SID of zero. This is not a valid value and Link operation cannot be started until a valid SID is entered. The Link status cannot be changed to Up, Hold, or Emission Control (EMCON) unless a valid SID has been entered. The CGL must also be loaded into the system before the Link status can be changed to Up.

11-79. RESPONDING TO ALERTS.

11-80. The first time the system attempts to use a device or communication circuit that does not respond properly, the system will print Alert 26 (refer to Appendix B) indicating that the circuit or device is inoperative.

11-81. On receipt of an alert that indicates a device or communication circuit is inoperative, the operator should either change its status to Down and adjust it for proper operation, or call for repair or adjustment of the inoperative circuit or device. The system assumes equipment status to be Down (except paper tape readers) unless informed otherwise. The system will place GG1, PR1, PR2, Tape Punch 1 (TP1) and Tape Punch 2 (TP2) in Hold if equipment is Up but cannot be accessed.

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CHAPTER 12

SYSTEM RESTART AND RECOVERY

12-1. GENERAL.

12-2. System restart or recovery is the process of returning the system as close as possible to the state that existed prior to system failure. The information in this chapter describes the procedures to follow when a system problem occurs. It discusses the situations not covered in the previous sections.

12-3. PROGRAM OR INPUT/OUTPUT CONTROLLER FAULT RECOVERY.

12-4. A program fault is defined as an error in the program or a malfunction in the Central Processing Unit (CPU) which interrupts normal system operation. When this condition occurs, Alert A-31 (refer to Appendix B) is printed at the Control Teletype (CTTY) indicating the octal location of the fault.

12-5. An Input/Output Controller (IOC) fault is defined as an error in the I/O chain which interrupts normal system operation. When this condition occurs, Alert A-32 (refer to Appendix B) is printed at the CTTY, indicating the octal location of the fault.

12-6. The operator is also alerted to a program or IOC fault condition by illumination of the PROGRAM FAULT indicators at the maintenance and control panels of the CPU, and by the halting of message processing. Recovery procedures are as follows:

1. Shift to manual broadcast immediately, bypassing the CPU at the patch panel. (Refer to Paragraph 3-20 for a discussion of the Level Converter/Patch Panel.)

2. Reload and initialize the system using the procedures described in Chapter 11.

3. If the program fails to load or if it continues to fault, notify maintenance personnel so that they may implement the AN/UYK-20(V) diagnostic procedures to find the malfunctions and perform corrective maintenance procedures.

4. When the CPU has been returned to normal operation, activate the broadcast input circuits and patch them back to the CPU.

12-7. OVER-TEMPERATURE RECOVERY.

12-8. At an over-temperature condition (i.e., when the air temperature within the CPU cabinet reaches 96EF (36EC)), an audible alarm sounds and the OVER TEMP indicator is illuminated. If the temperature reaches 122EF (50EC), power is disabled to the CPU logic circuits. Recovery procedures are as follows:

1. If the alarm persists, notify maintenance personnel so that corrective maintenance can be performed.

2. Shift to manual broadcast immediately, bypassing the CPU at the patch panel. (Refer to Paragraph 3-20 for a discussion of the Level Converter/Patch Panel.)

3. Turn the LOGIC POWER ON/OFF toggle switch on the CPU to OFF. Keep the BLOWER POWER ON/OFF toggle switch set to ON to decrease the internal cabinet temperature. Allow the internal cabinet temperature to decrease to safe operating levels so that the OVER TEMP indicator extinguishes and the audible alarm ceases to sound.

4. Reload and initialize the system using the procedures in Chapter 11.

5. It may be necessary (e.g., due to tactical situations) to continue to operate even though the CPU is in a high-temperature condition. The BATTLE SHORT ON/OFF toggle switch on the CPU control panel is provided to allow an override of the over-temperature shutdown. Operating at excessive temperatures causes rapid deterioration of the CPU. Unnecessary overriding of the temperature protection mechanism on the CPU should, therefore, be avoided.

12-9. POWER FAULT RECOVERY.

12-10. If electrical power fails or voltage drops too low for more than a few seconds, the CPU will stop. When lit, the POWER FAULT indicator shows that the CPU has stopped because of low voltage. If the AUTO START/ START toggle switch on the CPU maintenance panel is in the AUTO START position, the CPU should restart automatically when power is restored. If power is restored and the CPU fails to restart, it must be initialized again following the procedures outlined in Chapter 11.

12-11. After the system has automatically restarted, Alert A-20 (refer to Appendix B) is printed at the CTTY. The operator should replace the system time by using the RPL TIM command (refer to Appendix A) and clear the POWER FAULT indicator by pressing the POWER FAULT CLR toggle switch on the CPU control panel.

12-12. After resumption of system operation, the operator should verify the traffic status and account for all missing messages.

12-13. PROGRAM LOADING PROBLEMS.

12-14. If a program fails to load successfully, the operator should suspect failure of any of the following:

1. The Program Tape cartridge/cassette

2. The tape drive which contains the Program Tape
3. The controller to which the Program Tape drive is connected
4. The cartridge or cassette magnetic tape unit/CPU interface
5. The CPU

12-15. The operator should retry the procedures for the appropriate magnetic tape unit several times (refer to Paragraph 11-18). The operator should ensure that the tape head is clean. If not successful, the operator should try again with one or more identical magnetic tape copies of the Program Tape. The operator may succeed if the original Program Tape failed. (The operator should ensure that sufficient additional copies of the Program Tape have been made as described in Paragraph 12-43 and are readily available.) If changing Program Tape copies is unsuccessful, the operator may suspect the tape drive. If a different tape transport is to be used, the operator should have a technician exchange transports.

12-16. If the above procedures fail to solve the problem, the operator should suspect the CPU and/or the magnetic tape unit/CPU interface. To clear CPU memory, perform the following procedures at the CPU maintenance panel:

1. Set PROGRAM STOP 1/OFF toggle switch to OFF and PROGRAM STOP 2/OFF toggle switch to 2.
2. Press GENL DSPL indicator-switch.
3. Press Display Select DISPLAY NUMBER Indicator-Switch 0.
4. Press REGISTER/DATA SET/CLR pushbutton switch.
5. Enter 1 (10000 octal) into REGISTER/DATA Bit 12.
6. Press Display Select CLR pushbutton switch.
7. Press Display Select DISPLAY NUMBER Indicator-Switch 3.
8. Press REGISTER/DATA SET/CLR pushbutton switch.
9. Enter 32401 (octal) into REGISTER/DATA Bits 0-15 (i.e., press Bits 13, 12, 10, 8, and 0).
10. Press Display Select CLR pushbutton switch.
11. Press Display Select GENL REG indicator-switch.
12. Press REGISTER/DATA SET/CLR pushbutton switch.
13. Press Display Select DISPLAY NUMBER Indicator-Switch 0.
14. Press REGISTER/DATA SET/CLR pushbutton switch.

15. Enter 1 into REGISTER/DATA Bit 0.

16. Set ADV P toggle switch to Up position.

17. Set AUTO START/START toggle switch to START. CPU will have a running PROGRAM FAULT (i.e., PROG FAULT and PROG RUN indicator-switches will be lit).

18. Press, in order, CLR pushbutton switch, STOP toggle switch, and MA CLR pushbutton switch.

19. Set ADV P toggle switch to Down position.

20. Press GENL DSPL indicator-switch.

21. Enter 00501 (octal) or higher into REGISTER/DATA Bits 0-15 (e.g., for 00501, press Bits 8, 6, and 0).

22. Press Display Select DISPLAY NUMBER Indicator-Switch 3. Nothing will be displayed in REGISTER/DATA Bits 0-15.

23. Retry load procedures.

12-17. If the procedure in Paragraph 12-16 does not result in a successful load, a technician should be called to perform diagnostic tests on the CPU and the magnetic tape unit/CPU interface.

12-18. During NAVMACS V2 program load, the system executes a memory test. This diagnostic test ensures that the system can accurately store and retrieve data. The test is executed on each cell (except where the test itself resides) and is conducted in four subtests. In each subtest, a value is stored in the address being tested and then checked for accuracy. These octal values are as follows:

Subtest Number	Value Entered
1	000000 (all zeros)
2	177777 (all ones)
3	052525 (alternate zeros and ones)
4	125252 (alternate ones and zeros)

If any one of the subtests fails (i.e., the value entered in the cell is inaccurate), a system stop occurs at address 165366 (octal). The operator can recognize this condition because the PROGRAM STOP indicator at the maintenance panel is illuminated and the system is unresponsive. The address in memory where the stop occurred is indicated at the maintenance panel under REGISTER/DATA. The address of the cell being tested is contained in General Register 1 (R1). The subtest which failed is suggested by the contents of the address in R1.

12-19. When the failure occurs, recovery procedures are as follows:

1. Reload program several times, if necessary (refer to Paragraph 11-18).

2. If reloading does not solve problem, notify maintenance personnel.

When all memory is tested and no error is found, the system-loaded response is printed at the CTTY as follows:

NAVMACS V2 RELEASE X.Y
ENTER TIME

The X.Y field indicates the release (X) and version (Y) numbers of the program in use.

12-20. EQUIPMENT FAILURES.

12-21. If any of the NAVMACS V2 equipment fails, maintenance technicians should be called immediately so that the equipment can be returned to an on-line status and the system can be returned to full operation. The following procedures are recommended for maintaining system operation while system equipment is off-line.

12-22. HIGH-SPEED PAPER TAPE READER FAILURE. The High-Speed Paper Tape Reader (HSPTR) is the primary paper tape loading device and the secondary program loading device for the system. A malfunction of the HSPTR requires the operator to rely on the Low-Speed Paper Tape Reader (LSPTR) as a backup paper tape loading device for messages and system data. No mylar tape program loading may take place on the LSPTR.

12-23. HIGH-SPEED PAPER TAPE PUNCH FAILURE. The High-Speed Paper Tape Punch (HSPTP) is the recommended output device for paper tape copies of the Command Guard List (CGL), Local Routing List (LRL), and supply messages. A malfunction of the HSPTP, resulting in its being taken off-line, requires the operator to ensure that the alternate Low-Speed Paper Tape Punch (LSPTP) is placed Up (i.e., on-line) on Parameter Page 4. When this occurs, the system will automatically altroute all punch output (except supply system messages) to the LSPTP.

12-24. LOW-SPEED PAPER TAPE READER FAILURE. The LSPTR provides an alternate method for loading paper tapes. A malfunction of both the HSPTR and the LSPTR prevents the operator from loading paper tapes. Another tape reader (if available) should be substituted for the failed unit whenever system operation requires the loading of either system data paper tapes or message paper tapes.

12-25. LOW-SPEED PAPER TAPE PUNCH FAILURE. The LSPTP serves as an alternate output device. A malfunction of both the HSPTP and LSPTP prevents the operator from obtaining any punched paper tape copy until either or both have been repaired and put back on-line, or until another chad-type reperforator (if available) is substituted for the failed unit.

12-26. GATEGUARD FAILURE. The system will use GateGuard as the primary delivery device if GG1 is Up. A malfunction will cause the system to place GG1 in the Down state. The system will then attempt to re-queue all messages to PR1 or PR2, which ever one is in the UP condition.

12-27. LINE PRINTER FAILURE. The system uses two medium-speed, receive-only line printers as the output devices for message traffic and operator-specified or program-generated data. These line printers are generally configured as a distribution printer and a service printer. If one line printer fails and is placed Down (refer to the EDN command in Appendix A), all output for that line printer is automatically altrouted to the other line printer. One line printer is able to keep up with normal message traffic, but backlogs and printer delay can occur from time to time. During such periods, the operator should restrict operator-selected printer output to a minimum to avoid excessive backlogs.

12-28. A malfunction of both line printers and the absence of GateGuard will cause all traffic to be automatically altrouted to the paper tape punch. If only one line printer has failed, the remaining line printer may be placed off-line for short durations to change paper or ribbon without adverse effect.

12-29. CARTRIDGE MAGNETIC TAPE UNIT AND CASSETTE MAGNETIC TAPE UNIT FAILURE. If Cartridge Magnetic Tape Unit (CMTU) or cassette magnetic tape unit failure is suspected, the following steps should be taken:

1. Clean tape head with isopropyl alcohol.

2. AN/USH-26(V) (CMTU): If the CMTU fails to load the Program Tape, the transport may be removed from Drive 1 (MT1) and swapped with the transport unit in Drive 2 (MT2). If this action permits loading, the malfunctioning transport unit should be turned over to maintenance personnel for corrective maintenance. If this isolation process fails to rectify the no-load situation, the equipment problem should be reported, and loading of the program should be done from the HSPTR (refer to Paragraph 11-23).

3. RD-396/U (cassette magnetic tape unit): If the cassette magnetic tape unit fails to load the Program Tape, the operator should remove the Program Tape from the selected compartment and place the tape in the other compartment. Reverse the position of the RECORDER SELECT toggle switch to ensure that the alternate drive has been selected. If this isolation process permits successful loading, the first drive used should be reported as inoperative to the maintenance personnel. If this isolation process fails to rectify the no-load situation, the cassette magnetic tape unit should be reported as inoperative, and loading of the program should be done from the HSPTR (refer to Paragraph 11-23).

12-30. LEVEL CONVERTER/PATCH PANEL FAILURE. The level converter/ patch panel, as its nomenclature implies, is not only a patch panel but also a high-to-low-to-high level DC converter. The CPU, because of its low-level DC operating characteristics, requires DC voltage conversion in order to be compatible with shipboard communication equipment, which is characteristically high-level DC.

12-31. If message processing is in progress and one or more of the broadcast circuits being copied are suspended for no apparent reason, the system will generate Alert A-26 (refer to Appendix B) indicating possible converter equipment malfunction. (Crypto failure and level converter/patch panel failure may produce similar symptoms.) Recovery procedures for a failure of the level converter/patch panel are as follows:

1. Bypass suspect converter channel by patching into monitor jack, thereby establishing manual broadcast coverage of channel. Crypto equipment may be verified by the message traffic being copied on these circuits. If crypto equipment is faulty, contact maintenance personnel and switch to spare crypto equipment when possible.

2. Check for loss of power at level converter/patch panel.

3. Contact maintenance personnel to repair failed converter channel and restore it to service.

12-32. The traffic being processed through the failed converter channel should be copied off-line until either the failed converter is repaired or the circuit is patched through another converter channel and that channel is patched to the CPU as the original channel was.

12-33. BROADCAST CIRCUIT FAILURE.

12-34. The communication system equipment associated with the broadcast circuits are the on-line crypto devices and the level converter/patch panel. The output of Alert A-26 (refer to Appendix B) at the CTTY may indicate possible crypto or patching problems.

12-35. In the event that a broadcast circuit is lost because of a crypto device failure, the operator is advised to take the circuit off-line. When the crypto device is again operational or an alternate crypto device can be substituted for the failed unit, the operator may bring the circuit back on-line.

12-36. LINK CIRCUIT FAILURE.

12-37. If the crypto device or other receive/transmit equipment fails, the Link should be taken Down until the appropriate repairs have been made.

12-38. While the Link is Down, offship transmissions must be made on other ship-shore circuits, as appropriate.

12-39. In addition, some alerts and Operator-to-Operator (OTO) message communication with the Net Control Station (NCS) may indicate that the receive path or transmit path is marginal. Facilities control personnel should be contacted to verify the operation of onship equipment.

12-40. LINK CIRCUIT DEGRADATION.

12-41. Link circuit degradation is a condition in which message exchange from shore to ship or from ship to shore is not occurring at maximum efficiency, therefore causing message backlogs, possibly at both ends of the network. Three main conditions which can cause Link degradation are as follows:

1. Constant Transmit Key. A constant transmit key, sometimes referred to as a Steady Receive Key (SRK), is a Radio Frequency (RF) carrier transmitted on the frequency used for satellite access. This carrier is usually of

sufficient power to disable any shore-to-ship or ship-to-shore computer data exchange, which inhibits message exchange.

2. Low Response Rate. A ship's Response Rate (R/R) is a percentage value of the number of times a ship has accurately responded to a shore inquiry, divided by the number of times the shore station expected the ship to respond. A high R/R means that the ship received the shore inquiry and responded, and the shore received the response accurately. A low R/R can mean either that the ship did not receive the shore inquiry and therefore did not transmit, or that the ship did receive the shore inquiry and responded but the shore did not receive the ship response accurately.

3. High Automatic Repeat Request. The Automatic Repeat Request (ARQ) is a percentage based on the number of times the receiving station did not receive the sending station's message data error-free and thus requested a repeat transmission. At the shore station, two percentages are maintained: shore-to-ship (XMT) ARQ and ship-to-shore (RCV) ARQ. High XMT ARQ percentages occur when the ship requests multiple repeat transmissions from the shore, thereby causing a shore message backlog. High RCV ARQ percentages occur when the shore requests multiple repeat transmissions from the ship, thereby causing a ship message backlog.

12-42. As an aid to operators, the following checklist is provided to help in identifying and possibly eliminating the causes of constant transmit keys, low R/Rs, or high ARQs.

1. Antenna system:

   Improper antenna look angle to satellite
   RESULTS - Low R/R, possibly high ARQ
   CHECK - Antenna azimuth and elevation to ensure that they are correctly set for ship's present location

   Physical obstruction in antenna path (e.g., stacks, dockside cranes, superstructures)
   RESULTS - Low R/R and high ARQ
   CHECK - Link operations will improve only when obstruction is no longer in antenna path

   Improper pressurization of antenna coaxial cables
   RESULTS - Water in antenna line, low R/R, and high ARQ
   CHECK - Antenna pressurization to ensure that it is at proper level and no water is inside coaxial cable

   Improper antenna maintenance
   RESULTS - Low R/R and high ARQ
   CHECK - Antenna to ensure that it is free from dirt, soot from stacks, and salt film. The antenna should be cleaned with warm, soapy water.

2. AN/WSC-3 transceivers:

   b. Improper Phase Shift Keying (PSK) receiver alignment

RESULTS - Low R/R and high ARQ
CHECK - Module A7 and A3 alignment (technicians)

c. Defective A10 module
RESULTS - Low R/R and generation of Alert B-13 (refer to Appendix B) at CTTY even though NAVMACS is transmitting
CHECK - A10 module (technicians)

d. Defective AN/WSC-3 combiner unit
RESULTS - Fluctuating R/R and ARQ when two or more AN/WSC-3 devices on the ship are keyed simultaneously
CHECK - Proper combiner unit operation and adequate isolation between AN/WSC-3 devices (technicians)

e. Defective AN/WSC-3 key line relay
RESULTS - Constant transmit keys
CHECK - Constant transmit light on AN/WSC-3 front panel and Power Out indication on AN/WSC-3 front panel meter

f. Any remote AN/WSC-3 control indicator patched to AN/WSC-3 and in a keyed position
RESULTS - Constant transmit keys
CHECK - Constant transmit light on AN/WSC-3 front panel, Power Out indication on AN/WSC-3 front panel meter, and all remotes to insure that they are not patched to Link AN/WSC-3 and not in a keyed position

3. AN/UYK-20(V) CPU:

g. Any computer stop (including diagnostics)
RESULTS - Constant transmit keys
CHECK - Constant transmit light on AN/WSC-3 front panel. If computer is stopped, MASTER CLEAR it to see if the constant key clears. Adherence to cable disconnects while running serial diagnostics (as referenced in AN/UYK-20(V) diagnostic manuals) is imperative.

h. Defective interface boards in computer
RESULTS - Constant transmit keys, low R/R, and high ARQ
CHECK - Computer using CPU diagnostics (technicians). R/R and ARQ problems may be caused by improper seating of cards in processor and/or interface boards.

i. Defective computer clock
RESULTS - Low R/R
CHECK - Accuracy of system time function compared to Zulu clock. If clock is in error, check CPU (technicians).

4. TT-624 line printers:

Low line printer availability (e.g., use of only one line printer, out-of-paper situations, ribbon replacements)
RESULTS - High ARQ
CHECK - Attempt to keep two line printers on-line. If not possible, inform shore station via OTO of reduced line printer availability.

5. Additional checks:

Subscribers that send only occasional message traffic but leave the Link in an Up status are cautioned to check Link equipment periodically for constant transmit keys as well as to check for incoming traffic from the shore.

12-43. PROGRAM TAPE DUPLICATION.

12-44. It is recommended that the Program Tape be duplicated and the original Program Tape removed from easy access unless needed (i.e., if the duplicate tape fails). To duplicate the Program Tape, proceed as follows:

1. Cartridge Magnetic Program Tape

   a. Load program as outlined in Paragraph 11-18. DO NOT ENTER TIME.
   b. Place blank cartridge in Drive 1 (MT1) or Drive 2 (MT2), as desired.
   c. Blank cartridge should already be at start but as a precaution wait for any automatic rewind action to complete.
   d. Enter SYS MT1 or SYS MT2 command (refer to Table 12-1), depending on which drive is being used for writing duplicate program.
   e. When program duplication (writing) has been completed, Alert A-34 (refer to Appendix B) prints at CTTY.
   f. Ensure that automatic rewind of tape has occurred. (This alleviates possibility of damage to any exposed portion of tape.)
   g. Check duplicate tape by using it to reload system.

2. Cassette Magnetic Program Tape

   a. Load program as outlined in Paragraph 11-18. DO NOT ENTER TIME.
   b. Place blank cassette in either Drive 1 (MTA) or Drive 2 (MTB), whichever is desired. Ensure that RECORDER SELECT toggle switch is in proper position to select blank cassette. Close compartment door and turn thumbscrew clockwise (right) to lock door.
   c. Observe that READY and LEADER lights illuminate.
   d. Momentarily set ON LINE/REWIND switch to ON LINE.
   e. Ensure that READY light extinguishes.
   f. Observe that REWIND light illuminates momentarily, then extinguishes.
   g. Ensure that READY and ON LINE lights illuminate.
   h. Enter SYS MTA or SYS MTB command (refer to Table 12-1), depending upon which drive is being used for writing duplicate program.
   i. When program duplication (writing) has been completed, Alert A-34 (refer to Appendix B) prints at CTTY.
   j. Ensure that automatic rewind of tape has occurred. (This

alleviates possibility of damage to any exposed portion of tape.)
k. Check duplicate tape by using it to reload system.

3. Paper Program Tapes

l. Load program as outlined in Paragraph 11-18. DO NOT ENTER TIME. At this time Program Tapes are no longer required, and should be rewound and properly stored.
m. Ensure that HSPTP (TP1) is loaded with 8-level paper tape and is in condition to punch.
n. Enter SYS PT1 command (refer to Table 12-1). Section 1 (PT1) of program will be punched at TP1. When this output is complete, Alert A-34 (refer to Appendix B) prints at CTTY. Enter SYS PT2 command. Follow this procedure with PT3 and PT4 until all four sections are output.
o. Remove 8-level paper tape from tape punch and replace it with 5-level paper tape.
p. Rewind each section of duplicated tape with torn-off end at center of spool.
q. Check duplicate tapes by using them to reload system.

Table 12-1. Duplicating the System Program Tape

OPERATOR ACTION	NAVMACS V2 RESPONSE
Type on CTTY: SYS Device ID Depress the BLANK key Device ID = MT1 = Tape Drive 1 (AN/USH-26(V)) MT2 = Tape Drive 2 (AN/USH-26(V)) MTA = Tape Drive 1 (RD-396/U) MTB = Tape Drive 2 (RD-396/U) PT1-PT4 = Paper Tape Sections 1-4	Duplicates the NAVMACS V2 Program Tape on cartridge magnetic tape, cassette magnetic tape, or 8-level paper tape.

12-45. BYPASS FOR PREVENTIVE MAINTENANCE.

12-46. The operator may perform necessary preventive maintenance procedures on equipment at any time during the operation schedule. The system

may be taken Down in an orderly fashion without losing any messages in the process by employing the following procedures on a circuit-by-circuit basis:

1. Coordinate with the NCS before taking the Link Down.

2. Patch the broadcast circuit to a monitor. After a new message starts to print on the monitor, place that circuit Down in the CPU. Do this process for each active broadcast circuit.

3. Bypass the CPU on a circuit-by-circuit basis at the level converter/ patch panel until complete manual broadcast coverage is achieved.

4. Perform maintenance functions as required.

5. Reload the program and initialize the system using the procedures described in Chapter 11.

APPENDIX A

OPERATOR COMMANDS

A-1. GENERAL.

A-2. Operator commands, entered with the BLANK key on the Control Teletype (CTTY), are used to direct the system to perform specific functions. Operator commands are structured entries with required and optional elements. The first element identifies the command, and any subsequent elements modify, clarify, provide data, or select options. This appendix discusses each of the operator commands in detail; the commands are arranged in alphabetical order.

A-3. OPERATOR COMMAND STRUCTURE.

A-4. The first element of an operator command consists of a 3-letter abbreviation. This abbreviation consists of two categories: the first type is used when something (e.g., a system data list) is requested; the second type is used when an action (e.g., loading a message from paper tape) is to be taken. This 3-letter abbreviation, therefore, is either a request or an action.

A-5. Each element is separated by a space. This space is a meaningful character within the entry. Without the space character, the command itself is changed and/or rejected by the system.

A-6. Each command description includes an entry format sequence which contains both required and optional elements. The following conventions are used throughout this appendix:

1. Words in upper case letters indicate elements that must be entered as shown.

2. Words with the first letter in upper case and the following letters in lower case indicate that the material must be entered, but the operator has a choice of material to enter.

3. Words in parentheses indicate that the information therein is optional.

4. The date/time format to be used wherever indicated is ddhhmmZ mmm yy, where:

dd	=	day (01-31)
hh	=	hour (00-23)
mm	=	minute (00-59)
Z	=	Greenwich Mean Time (GMT) (Zulu time)
mmm	=	month (3 letters)
yy	=	year (72-34)

A-7. OPERATOR COMMAND RESPONSES. Operator commands are verified and processed immediately by the system. If the command is valid, the

time-stamp response, hhmmZ, means the entry was accepted by the system, and the command has been or is being executed. If the command is in error (i.e., does not adhere to the command structure), an alert is generated. Any deviation from the entry format sequence results in rejection of the entry and an error response, requiring correction and resubmittal of the entry.

A-8. OPERATOR COMMAND FORMAT. In this appendix, all commands are listed in alphabetical order. Table A-1 contains a summary of all commands with a description and page number for ready reference to the following information:

1. Purpose--Describes the use of the command and what action is to be performed.

2. Format--Provides the sequence of the entry. Any information in parentheses is an optional entry.

3. Function Key--Provides the operator action necessary to enter the command into the system.

4. Example--Provides the operator with various uses of the command.

5. Response--Describes what action the system will take when it receives the entered command.

6. Errors--Provides an indication of what responses can be generated by the system if an error occurs. Alert codes are explained in Appendix B.

7. Reference--Supplies both a page and a paragraph reference to aid in finding further information concerning the command.

Table A-1. NAVMACS V2 Operator Commands

INPUT COMMAND	DESCRIPTION	PAGE
ADD CGL	Add One or More Entries to the Command Guard List	A-6
ADD OSL	Add One or More Entries to the Source Data System Afloat Originator Screening List	A-7
ADD WML	Add One Channel Identifier/Channel Sequence Number to the Wanted Message List	A-8
CAN	Cancel the Present Paper Tape Punch Activity	A-9
CAN TRA	Cancel the Link Transmission of a Message	A-10
CAN TRA OTO	Cancel the Transmission of Operator-to-Operator Messages in the Transmit Queue	A-11
CDN	Place a Circuit Down	A-12
CGL	Print or Punch a Copy of the Command Guard List	A-14
CLR CGL	Clear All Entries from the Command Guard List	A-15
CLR LRL	Clear All Entries from the Local Routing List	A-16
CLR OSL	Clear All Entries from the Source Data System Afloat Originator Screening List	A-17
CLR WML	Clear All Channel Identifier/Channel Sequence Numbers from the Wanted Message List	A-18
CUP	Place a Circuit Up	A-19
DAY	Reset Data in the STATUS Fields of the Parameter Pages; Reset Incoming/Outgoing Channel Sequence Numbers and Operator-to-Operator Numbers	A-21
DLT CGL	Delete One Entry from the Command Guard List	A-22

Table A-1. NAVMACS V2 Operator Commands (Cont'd)

INPUT COMMAND	DESCRIPTION	PAGE
DLT WML	Delete One Channel Identifier/Channel Sequence Number from the Wanted Message List	A-23
EDN	Place GateGuard, a Printer, or a Paper Tape Punch Down	A-24
EMC	Place the Link in Emission Control Status	A-25
EUP	Place GateGuard, a Printer, or a Paper Tape Punch Up	A-26
HLD	Place a Printer, a Paper Tape Punch, or the Link in Hold	A-27
LOD	Load a System Data Paper Tape	A-29
LRL	Print or Punch a Copy of the Local Routing List	A-30
OSL	Print a Copy of the Source Data System Afloat Originator Screening List	A-31
QUE	Print or Punch a Copy of the Queue Status Report	A-32
RPL ARQ	Specify the Link Automatic Repeat Request Limit	A-33
RPL BOD	Specify a Baud Rate	A-34
RPL CID	Specify a Channel Identifier	A-36
RPL CLS	Specify a Classification Level for GateGuard	A-37
RPL CSN	Specify a Channel Sequence Number	A-38
RPL LRL	Compose the Free-Form Local Routing List	A-40
RPL OON	Specify the Next Output Operator-to-Operator Number	A-41
RPL QRK	Specify a Broadcast Circuit's Traffic Quality Level	A-42

Table A-1. NAVMACS V2 Operator Commands (Cont'd)

INPUT COMMAND	DESCRIPTION	PAGE
RPL SID	Specify or Change the Subscriber Identification Number	A-44
RPL TIM	Specify or Change the Current System Time	A-45
SDN	Do Not Punch Supply System Messages	A-46
SPP	Print a Copy of a System Parameter Page	A-47
SUP	Punch Supply System Messages	A-48
SYS	Duplicate the System Program Tape	A-49
TRA	Load a Message from a Paper Tape Reader and Transmit the Message on the Link	A-51
TRA OTO	Compose and Transmit an Operator-to-Operator Message	A-53
TRA OVR	Load a Message from a Paper Tape Reader and Transmit the Message on the Link without Format Line Analysis	A-54
WML	Print a Copy of the Wanted Message List	A-56

ADD CGL

PURPOSE:	Add One Entry to the Command Guard List	
FORMAT:	ADD CGL Entry	Valid Entry Maximum of 63 printable characters
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. ADD CGL USS LASALLE 2. ADD CGL /USS JOHN F KENNEDY 3. ADD CGL USS RICHMOND K TURNER/ 4. ADD CGL /USS PUGET SOUND/ 5. ADD CGL -USS RANGER	

NAVMACS V2 RESPONSE:

1. Adds the specified entry to the CGL
2. Adds the specified entry to the NGL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the entry exceeds the 63-printable-character limit
2. System Alerts
   a. Alert A-3 printed if the entry added is the same as a previously added entry
   b. Alert A-6 printed if the CGL exceeds the 300-entry limit
   c. Alert A-10 printed if there is a conflict between entries in the CGL and NGL

REFERENCE:

Page 5-12
Paragraph 5-33

ADD OSL

PURPOSE:	Add One Entry to the Source Data System Afloat Originator Screening List	
FORMAT:	ADD OSL Entry	Valid Entry Maximum of 63 printable characters
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLE:	ADD OSL /NAVFINCEN SDSA CLEVELAND OH/	

NAVMACS V2 RESPONSE:

Adds the specified entry to the OSL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed

   a. If the mandatory values of the command are entered incorrectly
   b. If the entry exceeds the 63-printable-character limit
   c. If the first character of the entry is a space or a hyphen

2. System Alerts

   a. Alert A-3 printed if the entry added is the same as a previously added entry
   b. Alert A-6 printed if the OSL exceeds the 3-entry limit or the limit of 210 printable and nonprintable characters for the entire OSL

REFERENCE:

Page 5-23
Paragraph 5-61

ADD WML

PURPOSE:	Add One Channel Identifier/Channel Sequence Number to the Wanted Message List
FORMAT:	ADD WML Channel Identifier/Channel Sequence Number Valid CID: 4 characters with 3rd = 4th Valid CSNs: 00001-65535
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. ADD WML NIAA00123 2. ADD WML NIBB04321
NAVMACS V2 RESPONSE:	Adds the CID/CSN of the "missing" broadcast message to the WML
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated CID does not contain four characters where the third and fourth are the same c. If the indicated CSN does not contain five digits with a value between 00001-65535 2. System Alerts a. Alert A-3 printed if the indicated CID/CSN is already contained in the WML b. Alert A-6 printed if the WML exceeds the 20-entry limit
REFERENCE:	Page 5-20 Paragraph 5-52

CAN

PURPOSE:	Cancel the Present Paper Tape Punch Activity	
FORMAT:	CAN Device ID	Valid Device IDs TP1 TP2
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. CAN TP1 2. CAN TP2	

NAVMACS V2 RESPONSE:

Terminates punching of the item currently being punched on the indicated paper tape punch

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed

   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid

2. System Alerts

   a. Alert A-3 printed if the indicated device is not actively punching when the command is entered
   b. Alert A-5 printed if the indicated device is off-line

REFERENCE:

Page 7-7
Paragraph 7-36

CAN TRA

PURPOSE:	Cancel the Link Transmission of a Message	
FORMAT:	CAN TRA System Message Number	Valid SMNs 000001-999999
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLE:	CAN TRA 003764	

NAVMACS V2 RESPONSE:

1. Cancels the Link transmission of the indicated message
2. Removes the message from the transmit queue

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the SMN does not contain six digits with a value between 000001-999999
2. System Alerts
   a. Alert A-3 printed if the indicated message cannot be found in the transmit queue
   b. Alert B-20 printed if the indicated message is cancelled

REFERENCE:

Page 9-6
Paragraph 9-12

CAN TRA OTO

PURPOSE:	Cancel the Transmission of Operator-to-Operator Messages in the Transmit Queue
FORMAT:	CAN TRA OTO
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	CAN TRA OTO

NAVMACS V2 RESPONSE:

Cancels the transmission of all OTOs presently in the transmit queue but not yet prepared for transmission

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-3 printed if there are no OTOs in the transmit queue

REFERENCE:

Page 9-7
Paragraph 9-15

CDN

PURPOSE:	Place a Circuit Down	
FORMAT:	CDN Circuit ID	Valid Circuit IDs NI1 LO1 NI2 LK NI3 NI4
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. CDN NI1 2. CDN NI2 3. CDN NI3 4. CDN NI4 5. CDN LO1 6. CDN LK	

NAVMACS V2 RESPONSE:

1. Places the indicated circuit Down
2. Outputs the message to the service printer if the message is not completed
3. Ceases to receive or transmit data on the indicated circuit

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated circuit ID is invalid
2. System Alerts
   a. Alert A-3 printed if the indicated circuit is already Down
   b. Alert B-1 printed if the operator attempts to transmit messages or OTOs while the Link is Down

CDN (Cont'd)

REFERENCE:

Page 11-19
Paragraph 11-52

CGL

PURPOSE:	Print or Punch a Copy of the Command Guard List
FORMAT:	CGL (Device ID) Valid Device IDs PR1 TP1 PR2 TP2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. CGL (Defaults to service printer) 2. CGL PR1 3. CGL PR2 4. CGL TP1 5. CGL TP2
NAVMACS V2 RESPONSE:	1. Prints a copy of the CGL at the designated printer 2. Punches a paper tape copy at the designated tape punch
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid 2. System Alerts a. Alert A-3 printed if no CGL is in the system b. Alert A-5 printed if the indicated device is Down c. Alert A-13 printed if the system cannot access the indicated device
REFERENCE:	Page 5-14 Paragraph 5-36

CLR CGL

PURPOSE:	Clear All Entries from the Command Guard List
FORMAT:	CLR CGL
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	CLR CGL

NAVMACS V2 RESPONSE:

Clears all entries from the existing CGL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-3 printed if the CGL is already cleared
3. System Alert A-41 printed if the operator attempts to clear the CGL while a circuit is Up

REFERENCE:

Page 5-13
Paragraph 5-35

CLR LRL

PURPOSE:	Clear All Entries from the Local Routing List
FORMAT:	CLR LRL
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	CLR LRL

NAVMACS V2 RESPONSE:

Clears all entries from the existing LRL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-3 printed if the LRL is already cleared

REFERENCE:

Page 5-18
Paragraph 5-44

CLR OSL

PURPOSE:	Clear All Entries from the Source Data System Afloat Originator Screening List
FORMAT:	CLR OSL
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	CLR OSL

NAVMACS V2 RESPONSE:

Clears all entries from the existing OSL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-3 printed if the OSL is already cleared

REFERENCE:

Page 5-24
Paragraph 5-62

CLR WML

PURPOSE:	Clear All Channel Identifier/Channel Sequence Numbers from the Wanted Message List
FORMAT:	CLR WML
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	CLR WML

NAVMACS V2 RESPONSE:

Clears all entries from the existing WML

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-3 printed if the WML is already cleared

REFERENCE:

Page 5-22
Paragraph 5-54

CUP

PURPOSE:	Place a Circuit Up	
FORMAT:	CUP Circuit ID	Valid Circuit IDs NI1 LO1 NI2 LK NI3 NI4
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. CUP NI1 2. CUP NI2 3. CUP NI3 4. CUP NI4 5. CUP LO1 6. CUP LK	
NAVMACS V2 RESPONSE: Places the indicated circuit on-line		
ERROR CONSIDERATIONS: 1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated circuit ID is invalid c. If a broadcast circuit is indicated but a baud rate for the circuit had not been designated prior to entering the command d. If a broadcast circuit is indicated but the sum of the baud rates for all Up broadcast circuits, including the one being brought Up, exceeds 1200 2. System Alert A-42 (CANTCO NO CGL) printed If an attempt is made to bring up an input Interface with no CGL loaded.		

CUP (Cont'd)

ERROR CONSIDERATIONS (Cont'd):

3. System Alerts

   a. Alert A-3 printed if the indicated circuit is already Up
   b. Alert A-19 printed if no printers are on-line; warns the operator that a backlog may occur
   c. Alert B-2 printed if the Link is indicated but the SID had not been designated prior to entering the command

REFERENCE:

Page 11-19
Paragraph 11-52

DAY

PURPOSE:	Reset Data in the STATUS Fields of the Parameter Pages; Reset Incoming/Outgoing Channel Sequence Numbers and Operator-to-Operator Numbers
FORMAT:	DAY
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	DAY

NAVMACS V2 RESPONSE:

1. Resets the cumulative information in the parameter pages under STATUS fields
2. Resets incoming/outgoing CSNs and OTO numbers on Parameter Page 3 to 00001

ERROR CONSIDERATIONS:

System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly

REFERENCE:

Page 4-18
Paragraph 4-12

DLT CGL

PURPOSE:	Delete One Entry from the Command Guard List	
FORMAT:	DLT CGL Entry	Valid Entry Maximum of 63 printable characters
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. DLT CGL USS LASALLE 2. DLT CGL /USS JOHN F KENNEDY 3. DLT CGL USS RICHMOND K TURNER/ 4. DLT CGL /USS PUGET SOUND/ 5. DLT CGL -USS RANGER	

NAVMACS V2 RESPONSE:

1. Deletes the indicated entry from the CGL
2. Deletes the indicated entry from the NGL

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of command are entered incorrectly
   b. If the entry exceeds the 63-printable-character limit
2. System Alert A-3 printed
   a. If the indicated entry cannot be located in the CGL
   b. If the indicated entry is not exactly the same as an entry appearing in the CGL
3. System Alert A-41 printed if the operator attempts to delete the last CGL entry while a circuit is Up

REFERENCE:

Page 5-13
Paragraph 5-34

DLT WML

PURPOSE:	Delete One Channel Identifier/Channel Sequence Number from the Wanted Message List
FORMAT:	DLT WML Channel Identifier/Channel Sequence Number Valid CID: 4 characters with 3rd = 4th Valid CSNs: 00001-65535
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. DLT WML NIAA00123 2. DLT WML NIBB13765
NAVMACS V2 RESPONSE:	Deletes the indicated CID/CSN from the WML
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated CID does not contain four characters where the third and fourth are the same c. If the indicated CSN does not contain five digits with a value between 00001-65535 2. System Alert A-3 printed if the indicated CID/CSN cannot be found in the WML
REFERENCE:	Page 5-21 Paragraph 5-53

EDN

PURPOSE:	Place GateGuard, a Printer, or a Paper Tape Punch Down
FORMAT:	EDN Device ID Valid Device IDs GG1 TP1 PR1 TP2 PR2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. EDN GG1 2. EDN PR1 3. EDN PR2 4. EDN TP1 5. EDN TP2

NAVMACS V2 RESPONSE:

Places the indicated device Down and suspends all output to that device

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid
2. System Alerts
   a. Alert A-3 printed if the indicated device is already Down
   b. Alert A-5 printed if the operator attempts to send data to a device that is Down
   c. Alert A-19 printed if both printers are taken off-line

REFERENCE:

Page 11-19
Paragraph 11-52

EMC

PURPOSE:	Place the Link in Emission Control Status
FORMAT:	EMC
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	EMC

NAVMACS V2 RESPONSE:

1. Places the Link in EMCON
2. Ceases all transmissions on the Link
3. Permits the Link to receive narrative and OTO traffic

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alerts
   a. Alert A-3 printed if the Link is already in EMCON
   b. Alert B-1 printed if the operator attempts to transmit messages or OTOs while the Link is in EMCON
   c. Alert B-2 printed if the SID had not been designated before the command was entered

REFERENCE:

Page 9-8
Paragraph 9-21

EUP

PURPOSE:	Place GateGuard, a Printer, or a Paper Tape Punch Up
FORMAT:	EUP Device ID Valid Device IDs GG1 TP1 PR1 TP2 PR2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. EUP GG1 2. EUP PR1 3. EUP PR2 4. EUP TP1 5. EUP TP2
NAVMACS V2 RESPONSE:	Places the indicated device Up for system operation
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid c. If GG1 is attempted to be brought Up with no printers on-line 2. System Alert A-3 printed if the indicated device is already Up
REFERENCE:	Page 11-19 Paragraph 11-52

HLD

PURPOSE:	Place a Printer, a Paper Tape Punch, or the Link in Hold
FORMAT:	1. HLD Device ID 2. HLD Circuit ID Valid Device IDs: PR1, PR2, TP1, TP2 Valid Circuit IDs: LO1, LK
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. HLD PR1 2. HLD PR2 3. HLD TP1 4. HLD TP2 5. HLD LO1 6. HLD LK
NAVMACS V2 RESPONSE:	1. Completes the output in progress, then places the designated printer or paper tape punch in Hold 2. Completes transmission of the narrative message in progress, queues any outgoing narrative message already entered, and suspends transmission on the Link (OTOs may still be transmitted)
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid

HLD (Cont'd)

ERROR CONSIDERATIONS (Cont'd):

2. System Alerts

   a. Alert A-3 printed if the indicated device is already in Hold
   b. Alert A-5 printed if the operator attempts to send data to a printer or punch that is in Hold
   c. Alert B-1 printed if the operator attempts to transmit a message while the Link is in Hold
   d. Alert B-2 printed if the SID had not been designated before the command was entered

REFERENCE:

Page 9-8
Paragraph 9-19

LOD

PURPOSE:	Load a System Data Paper Tape	
FORMAT:	LOD (Device ID)	Valid Device IDs TR1 TR2
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. LOD (Defaults to TR1) 2. LOD TR1 3. LOD TR2	

NAVMACS V2 RESPONSE:

1. Receives system data from the indicated device
2. Prints Alert A-15 if there are no errors in the read process

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid
2. System Alerts
   a. Alert A-4 printed if the indicated paper tape reader is busy
   b. Alert A-14 printed if there were errors in the data loaded or in the paper tape format, or the paper tape was disengaged for some reason
   c. Alert A-17 printed
      (1) If no tape is mounted in the paper tape reader
      (2) If TR2 is used and the FREE/STOP/RUN toggle switch is not set to RUN

REFERENCE:

Page 4-20
Paragraph 4-17

LRL

PURPOSE:	Print or Punch a Copy of the Local Routing List
FORMAT:	LRL (Device ID) Valid Device IDs PR1 TP1 PR2 TP2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. LRL (Defaults to service printer) 2. LRL PR1 3. LRL PR2 4. LRL TP1 5. LRL TP2
NAVMACS V2 RESPONSE:	1. Prints a copy of the LRL for retention or review 2. Punches a reloadable paper tape copy of the LRL
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid 2. System Alerts a. Alert A-3 printed if the LRL is empty b. Alert A-5 printed if the indicated device is Down or in Hold c. Alert A-13 printed if the system cannot access the indicated device
REFERENCE:	Page 5-18 Paragraph 5-45

OSL

PURPOSE:	Print a Copy of the Source Data System Afloat Originator Screening List
FORMAT:	OSL (Device ID) Valid Device IDs PR1 PR2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. OSL (Defaults to service printer) 2. OSL PR1 3. OSL PR2
NAVMACS V2 RESPONSE: Prints a copy of the OSL on the device indicated	
ERROR CONSIDERATIONS: 1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid 2. System Alerts a. Alert A-3 printed if the OSL is empty b. Alert A-5 printed if the indicated device is off-line	
REFERENCE: Page 5-24 Paragraph 5-63	

QUE

PURPOSE:	Print or Punch a Copy of the Queue Status Report
FORMAT:	QUE (Device ID) Valid Device IDs GG1 TP1 PR1 TP2 PR2
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. QUE (Defaults to service printer) 2. QUE PR1 3. QUE PR2 4. QUE TP1 5. QUE TP2
NAVMACS V2 RESPONSE:	Delivers a copy of the QUE to the device indicated
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid 2. System Alerts a. Alert A-5 printed if the indicated device is Down b. Alert A-7 printed if another report is in progress at the time of command entry
REFERENCE:	Page 10-4 Paragraph 10-7

RPL ARQ

PURPOSE:	Specify the Link Automatic Repeat Request Limit	
FORMAT:	RPL ARQ nn	Valid nn 00-03 0-3
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. RPL ARQ 00 2. RPL ARQ 01 3. RPL ARQ 02 4. RPL ARQ 3	

NAVMACS V2 RESPONSE:

Replaces the ARQ value with the value entered

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated ARQ value is not between 00-03 (or 0-3)
2. System Alert A-3 printed if the ARQ value entered is the same as the previous value

REFERENCE:

Page 11-17
Paragraph 11-42

RPL BOD

PURPOSE:	Specify a Baud Rate
FORMAT:	1. RPL BOD Circuit ID nnnn 2. RPL BOD Device ID nnnn

Valid Circuit IDs		Valid Device IDs		Valid nnnn
NI1	NI3	TP2	0075	0600
NI2	NI4	TR2	0300	1200

FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. RPL BOD NI1 0075 2. RPL BOD NI2 0600 3. RPL BOD NI3 1200 4. RPL BOD NI4 0300 5. RPL BOD TP2 0075 6. RPL BOD TR2 0600

NAVMACS V2 RESPONSE:

1. Replaces the baud rate on Parameter Page 1 for the specified broadcast circuit
2. Replaces the baud rate for the specified device

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated circuit ID, device ID, or baud rate is invalid
2. System Alert A-3 printed if the baud rate entered is the same as the previous value
3. System Alert A-41 printed if the operator attempts to replace the baud rate while the specified broadcast circuit is Up

RPL BOD (Cont'd)

REFERENCE:

Page 11-16
Paragraph 11-36

RPL CID

PURPOSE:	Specify a Channel Identifier
FORMAT:	RPL CID Circuit ID nnnn Valid Circuit IDs: NI1 LO1, NI2 LI1, NI3, NI4 Valid nnnn: 4 characters with 3rd = 4th
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. RPL CID NI1 NIBB 2. RPL CID NI2 NICC 3. RPL CID NI3 NIDD 4. RPL CID NI4 NIAA 5. RPL CID LO1 LOAA 6. RPL CID LI1 LIAA
NAVMACS V2 RESPONSE:	1. Replaces the CID on Parameter Page 1 for the designated circuit 2. Replaces the CID on Parameter Page 3 for the incoming or outgoing Link circuit
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated circuit ID is invalid c. If the indicated CID does not contain four characters where the third and fourth are the same 2. System Alert A-30 printed if the indicated CID is not the same as the value being received for that channel
REFERENCE:	Page 11-20

Paragraph 11-54

RPL CLS

PURPOSE:	Specify a Classification Level for GateGuard	
FORMAT:	RPL CLS n	Valid n U E C S T
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. RPL CLS U 2. RPL CLS C 3. RPL CLS S 4. RPL CLS T	
NAVMACS V2 RESPONSE: Replaces the classification level on Parameter Page 4 with the value entered		
ERROR CONSIDERATIONS: System Alert A-3 printed if the entry added is the same as a previously added entry		
REFERENCE: Page 4-18 Paragraph 4-13		

RPL CSN

PURPOSE:	Specify a Channel Sequence Number
FORMAT:	RPL CSN Circuit ID nnnnn Valid Circuit IDs: NI1 LO1, NI2 LI1, NI3 LK, NI4 Valid nnnnn: 00001-65535 (BCST), 00001-04095 (Link)
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. RPL CSN NI1 00123 2. RPL CSN NI2 42867 3. RPL CSN NI3 11225 4. RPL CSN NI4 31684 5. RPL CSN LO1 03090 6. RPL CSN LI1 00001 7. RPL CSN LK 00001
NAVMACS V2 RESPONSE:	1. Replaces the broadcast CSN with the designated value 2. Replaces the Link CSN with the designated value
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the value entered as a broadcast CSN is not between 00001-65535 c. If the value entered as a Link CSN is not between 00001-04095 2. System Alert A-30 printed if the indicated CSN does not coincide with next expected CSN

RPL CSN (Cont'd)

REFERENCE:

Page 9-1
Paragraph 9-3

RPL LRL

PURPOSE:	Compose the Free-Form Local Routing List	
FORMAT:	RPL LRL Text	Valid Text Maximum 2 lines, 69 printable characters per line, including spaces
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLE:	RPL LRL CO XO OPS CIC SUPP NAV ENG WEP DECK COMM	

NAVMACS V2 RESPONSE:

Replaces the current LRL with the entered LRL

ERROR CONSIDERATIONS:

System Alert A-2 (ERROR) printed

1. If the mandatory values of the command are entered incorrectly
2. If the LRL exceeds the 69-character-per-line limit or the 2-line limit
3. If more than one space separates the command code from the first LRL entry

REFERENCE:

Page 5-16
Paragraph 5-43

RPL OON

PURPOSE:	Specify the Next Output Operator-to-Operator Number	
FORMAT:	RPL OON nnnnn	Valid nnnnn 00001-32767
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLE:	RPL OON 08392	

NAVMACS V2 RESPONSE:

Assigns the specified value to the next outgoing OTO message

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated OON value is not between 00001-32767
2. System Alert A-3 printed if the indicated value is the same as the previous value

REFERENCE:

Page 9-6
Paragraph 9-13

RPL QRK

PURPOSE:	Specify a Broadcast Circuit's Traffic Quality Level
FORMAT:	1. RPL QRK Circuit ID n 2. RPL QRK n Circuit ID Valid Circuit IDs: NI1 NI3, NI2 NI4 Valid n: 2 = Poor, 3 = Average, 4 = Good, 5 = Excellent
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. RPL QRK NI1 4 2. RPL QRK NI2 2 3. RPL QRK NI3 3 4. RPL QRK NI4 5 5. RPL QRK 4 NI1 6. RPL QRK 5 NI2 7. RPL QRK 3 NI3 8. RPL QRK 2 NI4
NAVMACS V2 RESPONSE:	Replaces the QRK value with the value entered
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated circuit ID is invalid 2. System Alert A-3 printed if the indicated value is the same as the previous value

RPL QRK (Cont'd)

REFERENCE:

Page 5-2
Paragraph 5-9

RPL SID

PURPOSE:	Specify or Change the Subscriber Identification Number	
FORMAT:	RPL SID nn	Valid nn 01-60
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. RPL SID 10 2. RPL SID 22 3. RPL SID 60	

NAVMACS V2 RESPONSE:

Changes the SID to the value entered

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated SID value is not between 01-60
2. System Alert A-41 printed if the operator attempts to replace the SID value while the Link is on-line

REFERENCE:

Page 11-16
Paragraph 11-30

RPL TIM

PURPOSE:	Specify or Change the Current System Time
FORMAT:	RPL TIM ddhhmmZ mmm yy
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	RPL TIM 071730Z NOV 91

NAVMACS V2 RESPONSE:

Replaces the current system time with the value entered

ERROR CONSIDERATIONS:

System Alert A-2 (ERROR) printed

1. If the mandatory values of the command are entered incorrectly
2. If the GMT is not in the ddhhmmZ mmm yy format, where:

DD = day (01-31)
hh = hour (00-23)
mm = minute (00-59)
Z = GMT (Zulu time)
mmm = month (3-letter abbreviation)
yy = year (72-99 or 00-34)

REFERENCE:

Page 11-15
Paragraph 11-27

SDN

PURPOSE:	Do Not Punch Supply System Messages
FORMAT:	SDN
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	SDN
NAVMACS V2 RESPONSE:	Stops automatic punching of incoming messages bearing the IAZZ content indicator code and incoming messages with an OSL match
ERROR CONSIDERATIONS:	System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
REFERENCE:	Page 7-4 Paragraph 7-17

SPP

PURPOSE:	Print a Copy of a System Parameter Page
FORMAT:	SPP n (Device ID) Valid Device IDs: PR1, PR2 Valid n: 1, 3, 4
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. SPP 1 (Defaults to service printer) 2. SPP 3 (Defaults to service printer) 3. SPP 4 (Defaults to service printer) 4. SPP 1 PR1 5. SPP 3 PR2
NAVMACS V2 RESPONSE:	Prints a copy of the indicated parameter page on the device designated
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid c. If the indicated parameter page number is not 1, 3, or 4 2. System Alerts a. Alert A-5 printed if the device is not on-line b. Alert A-7 printed if another request for a parameter page is being processed c. Alert A-13 printed if the system cannot access the device indicated
REFERENCE:	Page 4-1 Paragraph 4-6

SUP

PURPOSE:	Punch Supply System Messages
FORMAT:	SUP
FUNCTION KEY:	BLANK (Enter command)
EXAMPLE:	SUP

NAVMACS V2 RESPONSE:

Punches at TP1 a paper tape copy of each incoming message bearing the IAZZ content indicator code and each incoming message with an OSL match

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed if the mandatory values of the command are entered incorrectly
2. System Alert A-5 printed if TP1 is Down

REFERENCE:

Page 7-4
Paragraph 7-15

SYS

PURPOSE:	Duplicate the System Program Tape
FORMAT:	1. SYS Device ID 2. SYS Paper Tape Section Valid Device IDs MT1 = Tape Drive 0 (AN/USH-26(V)) MT2 = Tape Drive 1 (AN/USH-26(V)) MTA = Tape Drive 1 (RD-396/U) MTB = Tape Drive 2 (RD-396/U) Valid Paper Tape Sections PT1 PT3 PT2 PT4
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. SYS MT1 2. SYS MT2 3. SYS MTA 4. SYS MTB 5. SYS PT1 6. SYS PT2 7. SYS PT3 8. SYS PT4
NAVMACS V2 RESPONSE:	1. Duplicates the NAVMACS V2 Program Tape on magnetic tape 2. Duplicates the sections of the NAVMACS V2 Program Tape on reloadable paper tape 3. Prints Alert A-34 each time a section of the NAVMACS V2 Program Tape is successfully duplicated on paper tape or each time the complete Program Tape is successfully duplicated on magnetic tape

SYS (Cont'd)

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed

   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid
   c. If the command is entered after system initialization

2. System Alerts

   a. Alert A-36 printed if the magnetic tape unit malfunctioned or an invalid status exists
   b. Alert A-37 printed if the magnetic tape unit is off-line
   c. Alert A-38 printed if the magnetic tape tab is in the write-protected position
   d. Alert A-39 printed if the unit does not respond with a reasonable time limit

REFERENCE:

Page 12-9
Paragraph 12-43

NOTE

This command is only functional prior to system initialization.

TRA

PURPOSE:	Load a Message from a Paper Tape Reader and Transmit the Message on the Link	
FORMAT:	TRA (Device ID)	Valid Device IDs TR1 TR2
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. TRA (Defaults to TR1) 2. TRA TR1 3. TRA TR2	

NAVMACS V2 RESPONSE:

1. Prints Alert A-16 upon completion of message load; processes the loaded message for transmission, and places it in the transmit queue

2. Transmits the message to the NCS; prints at the service printer the MSL; prints at the CTTY Alert B-24 if the NCS acknowledges the message, or Alert B-25 if the NCS has not acknowledged receipt and the ARQ limit is reached

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed

   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid

2. System Alerts

   a. Alert A-4 printed if the indicated paper tape reader is busy
   b. Alert A-14 printed if the operator disables the paper tape reader or if the paper tape becomes torn or tangled during the read process
   c. Alert A-17 printed

      (1) If no tape is mounted in the paper tape reader
      (2) If TR2 is used and the FREE/STOP/RUN toggle switch is not set to RUN

TRA (Cont'd)

ERROR CONSIDERATIONS (Cont'd):

2. System Alerts (Cont'd):

   d. Alert A-28 printed if the system is saturated
   e. Alert B-1 printed if the Link is off-line for message transmission
   f. Alert B-5 printed if message errors are detected

REFERENCE:

Page 9-2
Paragraph 9-4

TRA OTO

PURPOSE:	Compose and Transmit an Operator-to-Operator Message
FORMAT:	TRA OTO (Circuit ID) Text Valid Text: Maximum of 80 characters Valid Circuit IDs: LO1, LK
FUNCTION KEY:	BLANK (Enter command)
EXAMPLES:	1. TRA OTO Text (Defaults to LK) 2. TRA OTO LO1 Text 3. TRA OTO LK Text
NAVMACS V2 RESPONSE:	1. Transmits the OTO on the indicated circuit; assigns the OON and prints Alert B-3 or, if the indicated circuit is in the Hold state, Alert B-4 2. Prints Alert B-14 if the NCS acknowledges receipt of the OTO, or Alert B-16 if the NCS does not acknowledge receipt
ERROR CONSIDERATIONS:	1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated circuit ID is invalid c. If the text exceeds the 80-character limit 2. System Alert B-1 printed if the Link is Down or in EMCON
REFERENCE:	Page 9-7 Paragraph 9-14

TRA OVR

PURPOSE:	Load a Message from a Paper Tape Reader and Transmit the Message on the Link without Format Line Analysis	
FORMAT:	TRA (Device ID) OVR	Valid Device IDs TR1 TR2
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. TRA OVR (Defaults to TR1) 2. TRA TR1 OVR 3. TRA TR2 OVR	

NAVMACS V2 RESPONSE:

1. Loads the message for transmission from the indicated device; prints Alert B-6 acknowledging operator override; prints Alert A-16 and assigns an SMN to the message
2. Places the loaded message in the transmit queue
3. Transmits the Automatic Recall message to the NCS; prints at the service printer the MSL; prints at the CTTY Alert B-24 if the NCS acknowledges the message, or Alert B-25 if the NCS has not acknowledged receipt and the ARQ limit is reached

ERROR CONSIDERATIONS:

1. System Alert A-2 (ERROR) printed
   a. If the mandatory values of the command are entered incorrectly
   b. If the indicated device ID is invalid
2. System Alerts
   a. Alert A-4 printed if the indicated paper tape reader is busy
   b. Alert A-14 printed if the paper tape reader is disabled or if the tape is removed during read
   c. Alert A-17 printed
      (1) If there is no tape mounted in the paper tape reader
      (2) If TR2 is used and the FREE/STOP/RUN toggle switch is not set to RUN

TRA OVR (Cont'd)

ERROR CONSIDERATIONS (Cont'd):

2. System Alerts (cont'd)

   d. Alert B-1 printed if the Link is off-line for message transmission

REFERENCE:

Page 9-2
Paragraph 9-6

WML

PURPOSE:	Print a Copy of the Wanted Message List	
FORMAT:	WML (Device ID)	Valid Device IDs PR1 PR2
FUNCTION KEY:	BLANK (Enter command)	
EXAMPLES:	1. WML (Defaults to service printer) 2. WML PR1 3. WML PR2	
NAVMACS V2 RESPONSE: Prints a copy of the WML on the device indicated		
ERROR CONSIDERATIONS: 1. System Alert A-2 (ERROR) printed a. If the mandatory values of the command are entered incorrectly b. If the indicated device ID is invalid 2. System Alerts a. Alert A-3 printed if the WML is empty b. Alert A-5 printed if the indicated device is off-line		
REFERENCE: Page 5-22 Paragraph 5-55		

APPENDIX B

SYSTEM ALERTS

B-1. INTRODUCTION.

B-2. NAVMACS V2 generates preformatted system alerts that inform the operator of specific operating conditions or situations. Table B-1 lists all system alerts in alphabetical order, with their assigned designators under the ALERT ID column.

B-3. For easy reference, the NAVMACS V2 system alerts are divided into the following two categories:

1. A-alerts. These are general system alerts for common system functions. Table B-2 provides a description of, and the operator response (if required) to, these alerts.

2. B-alerts. These are system alerts unique to Link operations. Table B-3 provides a description of, and the operator response (if required) to, these alerts.

B-4. SYSTEM ALERT FORMAT.

B-5. Although the system alerts are preformatted, some of them have variable fields within their format which require system-provided information at the time the alert is printed. These variable fields are described as follows:

1. (DEVICE ID). This field identifies the device to which the alert is referring. The device identified can be GG1, PR1, PR2, TP1, or TP2.

2. (CID/CSN). This field identifies a message Format Line 1 Channel Identifier (CID) and Channel Sequence Number (CSN). The CID can be any valid 4-letter combination received via the circuits. The CSN can be any valid 5-number combination received on the Link or on a broadcast circuit.

3. (SMN). This field identifies the System Message Number (SMN) assigned to an individual system message. The SMN contains six digits.

4. (CIRCUIT ID). This field identifies the circuit to which the alert is referring. The circuit identified can be LO1, LI1, LK, NI1, NI2, NI3, or NI4.

5. (hhmmZ). This field identifies the hour and minute that the event occurred.

Table B-1. NAVMACS V2 System Alerts

ALERT ID	ALERT	PAGE
A-24	BACKLOG -- (CIRCUIT/DEVICE ID) hhmmZ	B-11
A-27	BACKLOG -- (CIRCUIT/DEVICE ID) ALTROUTE LEVEL EXCEEDED hhmmZ	B-12
A-41	CANTCO CIRCUIT ACTIVE	B-16
B-1	CANTCO CIRCUIT NOT UP	B-17
A-4	CANTCO DEVICE ACTIVE	B-5
A-5	CANTCO DEVICE DOWN	B-5
A-6	CANTCO LIST FULL	B-6
B-2	CANTCO NO SID	B-17
A-7	CANTCO RPT IN PROGRESS	B-6
A-10	CGL CONFLICT	B-7
A-30	(CIRCUIT ID) EXP (CID/CSN) RCV (CID/CSN) hhmmZ	B-13
A-22	(CIRCUIT ID) WML MATCH CANTRAN (CID/CSN) hhmmZ	B-11
A-21	(CIRCUIT ID) WML MATCH (CID/CSN) hhmmZ	B-10
A-25	(CIRCUIT/DEVICE ID) FORCED EOM (SMN) hhmmZ	B-11
A-13	(CIRCUIT/DEVICE ID) IMPROPER CONDITION hhmmZ	B-8
A-26	(CIRCUIT/DEVICE ID) TIMEOUT hhmmZ	B-12
B-10	CSN (CSN) ABORTED--SMN (SMN) hhmmZ	B-19
A-14	(DEVICE ID) LOAD ABORTED hhmmZ	B-9
A-15	(DEVICE ID) LOAD COMPLETED hhmmZ	B-9
A-16	(DEVICE ID) LOAD COMPLETED (SMN) hhmmZ	B-9
A-2	ERROR	B-5

Table B-1. NAVMACS V2 System Alerts (Cont'd)

ALERT ID	ALERT	PAGE
A-1	hhmmZ	B-5
A-32	IOC FAULT (ADDRESS)	B-13
A-9	ITEM NOT FOUND (SMN) hhmmZ	B-7
B-18	LI1 NO RCV hhmmZ	B-21
B-15	LI1 OTO EXP (OTO #) RCVD (OTO #) hhmmZ	B-20
B-19	LI1 PARITY LIMIT hhmmZ	B-21
B-7	LO1 CRYPTO ALARM hhmmZ	B-18
A-33	MON CLOCK DISABLED hhmmZ	B-14
B-24	MSG ACK (SMN) CSN (CSN) hhmmZ	B-22
B-25	MSG NAK (SMN) CSN (CSN) hhmmZ	B-23
B-8	NCS INITIALIZE hhmmZ	B-18
B-13	NCS NO RCV hhmmZ	B-20
B-12	NCS RCV ABORT hhmmZ	B-19
B-11	NCS XMIT ABORT hhmmZ	B-19
A-19	NO PRINTERS ON LINE hhmmZ	B-10
B-17	NO VALID LINK INPUT hhmmZ	B-21
B-14	OTO ACK (OTO #) hhmmZ	B-20
B-16	OTO NAK (OTO #) hhmmZ	B-20
B-3	OTO NR (OON) hhmmZ	B-17
B-4	OTO NR (OON) ??hhmmZ	B-17
B-9	OTO (OTO #) NOT SENT hhmmZ	B-18
A-31	PGM FAULT (ADDRESS)	B-13
B-23	POSSIBLE MISSENT	B-22
A-20	POWER FAILURE hhmmZ	B-10

Table B-1. NAVMACS V2 System Alerts (Cont'd)

ALERT ID	ALERT	PAGE
A-35	RECOVERY FM OVLD	B-14
A-18	(SMN) ALTROUTED TO (TP1 or PRn) hhmmZ	B-10
A-8	(SMN) SECURITY EXCEEDS (CIRCUIT ID) LEVEL hhmmZ	B-6
A-12	SMN (SMN)	B-8
B-5	(SMN) TRA CAN ON LO1--MSG ERROR hhmmZ	B-18
B-20	(SMN) TRA CANTRAN ON LO1 hhmmZ	B-21
B-6	(SMN) TRA ON LO1-OPERATOR OVERRIDE OF MSG ERRORS hhmmZ	B-18
B-21	(SMN) Y/Z ACK NOT RCVD ON LO1 hhmmZ	B-22
B-22	(SMN) Y/Z NO TRA ON LO1 AFTER 30 SEC hhmmZ	B-22
A-40	(SMN) Y/Z QUEUED TO DEV	B-16
A-23	(SMN) Y/Z RCVD ON (DEVICE ID) hhmmZ	B-11
A-36	SYS ERROR -- MALFUNCTION	B-15
A-37	SYS ERROR -- OFFLINE	B-15
A-38	SYS ERROR -- PROTECTED	B-15
A-39	SYS ERROR -- TIMEOUT	B-15
A-34	SYS (PTn or DEVICE ID) COMPLETE	B-14
A-28	SYSTEM OVERLOAD	B-12
A-29	SYSTEM OVERLOAD hhmmZ	B-13
A-17	TRn TIMEOUT hhmmZ	B-10
A-3	??hhmmZ	B-5
A-11	!! ABORTED !!	B-7

Table B-2. General System Alerts

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-1	hhmmZ The entry is valid, has been accepted by the system, and has been or is being executed. The time stamp records the time of command entry for subsequent review.	None required.
A-2	ERROR The entry is in error and has been rejected. Either the command itself is in error or the command entry format sequence was not strictly observed.	Correct the entry to a proper value or sequence and reenter.
A-3	??hhmmZ The entry is valid but is illogical. It may have been accepted and the command executed, or it may have been rejected and the command not executed. Usually the command or value just entered was already in that status and no change has taken place.	Ensure that the entry is the desired value.
A-4	CANTCO DEVICE ACTIVE The entry was rejected because the paper tape reader is "busy" reading system data or a message for transmission.	Wait until the paper tape reader has completed reading and then reenter the command.
A-5	CANTCO DEVICE DOWN The entry was rejected because the indicated printer or paper tape punch is off-line (i.e., in the Down or Hold state).	Place the indicated device Up or indicate an alternate device.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-6	CANTCO LIST FULL	
	The entry was rejected because the CGL, OSL, or WML is full.	None of the entry was accepted. Review the CGL, OSL, or WML, and remove or combine any item(s) on the list.
A-7	CANTCO RPT IN PROGRESS	
	The entry was rejected because another report retrieval to a printer or punch is in progress; only one report (i.e., one MSL, QUE, or parameter page) may be generated at a time.	Monitor the printer or punch output to determine when the previous output is complete, and then reenter the command.
A-8	(SMN) SECURITY EXCEEDS (CIRCUIT ID) LEVEL hhmmZ	
	The indicated message classification or special handling restrictions exceed those assigned to the indicated circuit. The message has been removed from the queue for that circuit.	Raise the security level of that circuit, or redirect the message to a circuit already assigned the appropriate security level.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-10	CGL CONFLICT The entry was rejected because the entry being added to the positive CGL already exists in the NGL, or vice versa. An entry may not be entered in both the positive CGL and the NGL at the same time.	Review the CGL to determine in which portion of the CGL the entry belongs.
A-11	!! ABORTED !! The entry was aborted, either by the operator or because 30 seconds or more elapsed since the last character entry at the CTTY and there were system outputs queued for the CTTY.	If required, reinitiate the entry in its entirety.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-12	SMN (SMN) The entry was accepted and the message load from the paper tape process has been initiated. The indicated SMN has been assigned to the message to be transmitted.	None required.
A-13	(Circuit/Device ID) IMPROPER CONDITION hhmmZ The indicated device cannot be accessed by the system or, if a broadcast circuit is indicated, no valid EOL has been found in a system-specified number of characters or three consecutive URDs have been received on a broadcast circuit.	For a printer, the system has placed that printer Down; call a technician to determine the cause. For GateGuard, ensure that the subsystem is Up and that the baud rate setting is correct. For a broadcast circuit, ensure that the baud rate setting for that circuit matches the incoming baud rate, or patch the circuit to a receive-only teletype printer, monitor the input, and take appropriate action to improve circuit quality, if required.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-14	(Device ID) LOAD ABORTED hhmmZ The paper tape read was aborted by the system because of paper tape errors or paper tape format errors, because the paper tape because disengaged for some reason before the EOM was detected, because computer core memory is not available, or because an attempt was made to load the OSL via paper tape.	Determine the status of the device or check the paper tape for errors; correct if necessary and reenter. For the CGL, retrieve a printed copy of the list and verify the portion currently in memory. For the OSL, load the list via the CTTY; it cannot be loaded via paper tape.
A-15	(Device ID) LOAD COMPLETED hhmmZ The paper tape load of lists on the indicated paper tape reader is completed. The tape reader is available for reading other tapes.	None required.
A-16	(Device ID) LOAD COMPLETED (SMN) hhmmZ The paper tape load of a narrative message on the indicated paper tape reader is complete and the indicated SMN was assigned to the message. The tape reader is available for reading other tapes. This alert is also generated following the complete loading of a message from GateGuard.	None required.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-17	TRn TIMEOUT hhmmZ The indicated paper tape reader is off-line or malfunctioning, or a correct EOM was not recognized by the system.	Check the paper tape reader and select another if needed. Ensure that the EOM is present.
A-18	(SMN) ALTROUTED TO (TP1 or PRn) hhmmZ The indicated message (SMN) was altrouted to another device when the system because saturated.	None required.
A-19	NO PRINTERS ON LINE hhmmZ * All printers are off-line (Down).	Place the printers on-line as soon as possible to prevent a system backlog.
A-20	POWER FAILURE hhmmZ * The system has experienced a power failure.	Check the system and reset the time or restart the system, if necessary.
A-21	(Circuit ID) WML MATCH (CID/CSN) hhmmZ A wanted broadcast message (CID/CSN) contained in the WML was received on the indicated broadcast circuit. The message (CID/CSN) has been cleared from the WML.	None required.

*Alert with CTTY bell sequence.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-22	(Circuit ID) WML MATCH CANTRAN (CID/CSN) hhmmZ A wanted broadcast message (CID/CSN) contained in the WML was busted during broadcast first-run transmission and cannot be retransmitted. The message (CID/CSN) has been cleared from the WML.	None required.
A-23	(SMN) Y/Z RCVD ON (Device ID) hhmmZ * An incoming Emergency, Flash, or garbled precedence message (SMN) has been received on the device indicated.	Process the message in accordance with Communication Center SOP.
A-24	BACKLOG -- (Circuit/Device ID) hhmmZ The designated output circuit or device queue alarm level has been reached.	Place the circuit or device on-line if necessary.
A-25	(Circuit/Device ID) FORCED EOM (SMN) hhmmZ A message (SMN) was terminated prematurely and is probably incomplete. This may have been the result of a circuit input timeout.	Request retransmission of the message or service message accordingly.

*Alert with CTTY bell sequence.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-26	(Circuit/Device ID) TIMEOUT hhmmZ The indicated device or circuit is not responding at the rate expected by the system and may be off-line or malfunctioning; the system received a crypto alarm from the KG-84A; or the level converter/patch panel failed.	Place the device on-line or select an alternate device. Check the circuit for proper operation. If the alert persists for the Link, a technician may need to perform off-line tests on the KG-84A. If generated for a level converter/patch panel failure, follow the steps in Paragraph 12-30.
A-27	BACKLOG -- (Circuit/Device ID) ALTROUTE LEVEL EXCEEDED hhmmZ The indicated circuit or device may be off-line or malfunctioning.	None required; however, ensure that, for a device, altrouting is taking place.
A-28	SYSTEM OVERLOAD The system is saturated and the operator has entered the TRA command.	Limit the loading of messages from a paper tape reader and reenter the message that generated the alert.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-29	SYSTEM OVERLOAD hhmmZ The system has reached its saturation point during broadcast channel reception.	Keep processing requirements to a minimum. If either printer is off-line, attempt to bring the printer Up.
A-30	(Circuit ID) EXP (CID/CSN) RCV (CID/CSN) hhmmZ CSN continuity on the indicated circuit has been interrupted or the message CID cannot be recognized.	Refer to the CHR to determine if any messages have been missed. Add missing broadcast messages to the WML, or request missing Link messages by OTO or service message.
A-31	PGM FAULT (Address) * The system has indicated a CPU program fault at the specified address.	Shift to manual broadcast; reload and initialize the system.
A-32	IOC FAULT (Address) * The system has indicated an IOC program fault at the specified address.	Shift to manual broadcast; reload and initialize the system.

*Alert with CTTY bell sequence.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-33	MON CLOCK DISABLED hhmmZ *	
	The operator has disabled the monitor clock (i.e., has placed the RT CLK DISABLE/INT/EXT toggle switch on the CPU maintenance panel in the DISABLE position).	Place the RT CLK DISABLE/INT/EXT toggle switch on the CPU maintenance panel in the INT position.
A-34	SYS (PTn or Device ID) COMPLETE	
	The system has successfully duplicated the indicated section of the NAVMACS V2 Program Tape on paper tape or the complete Program Tape on magnetic tape.	For paper tape, enter the SYS command for the next section of the Program Tape to be duplicated. For the magnetic tape and after the last section of paper tape is duplicated, check duplicate tape(s) by using the duplicate(s) to reload the system.
A-35	RECOVERY FM OVLD	
	The system is no longer at its saturation point.	Resume normal processing.

*Alert with CTTY bell sequence.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-36	SYS ERROR -- MALFUNCTION	
	The magnetic tape unit has malfunctioned, or an invalid status exists.	For the cartridge magnetic tape unit, pull out and push up the MASTER CLEAR toggle switch; for the cassette magnetic tape unit, press the POWER ON/OFF switch. Retry the procedure.
A-37	SYS ERROR -- OFFLINE	
	The magnetic tape unit is offline.	Place the magnetic tape unit on-line, and then retry the procedure.
A-38	SYS ERROR -- PROTECTED	
	The magnetic tape is protected from being written on.	Check the magnetic tape and ensure that the write-protect tab is not engaged.
A-39	SYS ERROR -- TIMEOUT	
	The unit selected for Program Tape duplication did not respond within a reasonable length of time.	Check the unit to ensure that it is properly attached to the CPU.

Table B-2. General System Alerts (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
A-40	(SMN) Y/Z QUEUED TO DEV The indicated Emergency or Flash message (SMN) has been queued for output.	If the printer or punch is outputting other data when this alert is received, the operator either can wait for the current output to finish or can place both printers or punches Down momentarily, then bring them Up. The Emergency or Flash message will print at the first available device.
A-41	CANTCO CIRCUIT ACTIVE The entry was rejected because the Link is on-line (i.e., in the Up, Hold, or EMCON state), or the broadcast circuit specified in the command is Up.	Place the Link in the Down state prior to changing the SID, or place the broadcast circuit in the Down state prior to changing its baud rate. Place all circuits in the Down state prior to clearing the CGL or deleting the last CGL entry.
A-42	The operator has attempted to CUP an input circuit with no CGL loaded.	Load the CGL, then attempt to enter the command again.

Table B-3. System Alerts Unique to Link Operation

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-1	CANTCO CIRCUIT NOT UP	
	The entry was rejected because the Link is Down or in the EMCON state for narrative or OTO message transmissions, or in the Hold state for narrative message transmissions.	If out of the EMCON state, place the Link Up for message transmissions, and in the Up or Hold state for composing or transmitting OTOs.
B-2	CANTCO NO SID	
	The entry was rejected because the SID has not yet been assigned.	Assign a SID value and then bring the Link to the Up state. The Link must be Down before assigning a SID.
B-3	OTO NR (OON) hhmmZ	
	The entry was accepted and the indicated OON was assigned to the OTO just composed. The OTO has been placed in the transmit queue.	None required.
B-4	OTO NR (OON) ??hhmmZ	
	The entry was accepted and the indicated OON was assigned to the OTO just composed. The ??hhmmZ response is a reminder that the Link is in the Hold state.	None required.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-5	(SMN) TRA CAN ON LO1 The EOM of a message that was input via the Paper Tape reader was missing or incorrect.	Check the tape of the message to be transmitted, correct the message if necessary, and reenter.
B-6	(SMN) TRA ON LO1-OPERATOR OVERRIDE OF MSG ERRORS hhmmZ The operator has loaded an Automatic Recall message into the Link transmit queue using the TRA OVR command	None required.
B-7	LO1 CRYPTO ALARM hhmmZ The system received a crypto alarm from the IG Box and attempted to reset the crypto automatically. If this alert is received frequently, the IG Box or crypto may be malfunctioning or the crypto may have to be manually reset.	None required normally; however, if the alert persists, the crypto may require manual resetting, or the IG Box may have to be checked for possible malfunction.
B-8	NCS INITIALIZE hhmmZ The NCS has initiated Link operations.	None required.
B-9	OTO (OTO #) NOT SENT hhmmZ The NCS has not received (i.e., neither ACK'd nor NAK'd) the ship's indicated OTO (OTO #). The OTO has been removed from the transmit queue.	Retransmit the OTO.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-10	CSN (CSN) ABORTED--SMN (SMN) hhmmZ The indicated outgoing Link message was aborted during transmission. The alert informs the operator of which message was aborted as indicated by both the CSN and the SMN.	Enter the QUE command to print an output Queue report, ensure that the outgoing Link message (SMN), was re-queued, if not then send the message again.
B-11	NCS XMIT ABORT hhmmZ The NCS has sent a TABORT system control message. This alert is generated when CUDIXS output traffic status is placed Down.	None required.
B-12	NCS RCV ABORT hhmmZ The NCS has sent a RABORT system control message. An RABORT is sent in case of a malfunction to indicate to the subscriber that the NCS can no longer process received data.	Verify, via OTO, CSN and message continuity with the NCS and reprotect any outgoing message that the NCS has not received.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-13	NCS NO RCV hhmmZ	
	The NCS has not received the ship's transmission for the last three net cycles (maximum six minutes). If received too frequently, the ship's transmission path may be malfunctioning.	If the alert persists, check the transmit and receive paths for possible malfunction. If these are working properly, the problem may be extreme satellite interference. Check CSN accountability to ensure that there is no CSN gap after the alert.
B-14	OTO ACK (OTO #) hhmmZ	
	The NCS has acknowledged receipt of the indicated OTO message (OTO #).	None required.
B-15	LI1 OTO EXP (OTO #) RCVD (OTO #) hhmmZ	
	The system expected the indicated OTO number from the NCS, but received another OTO number. An NCS OTO may have been lost.	Consult with the NCS for possible loss of an OTO message.
B-16	OTO NAK (OTO #) hhmmZ	
	The NCS has negatively acknowledged receipt of the indicated OTO message (OTO #).	Retransmit the OTO.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-17	NO VALID LINK INPUT hhmmZ	
	The ship is receiving unintelligible data. The NCS's transmission path, the ship's receive path, and/or the crypto set should be investigated.	Reset the crypto code settings, then check the receive patch from the NCS, if necessary.
B-18	LI1 NO RCV hhmmZ	
	The ship has not received an NCS transmission for the last four minutes. The NCS may be Down, the ship's receive patch may be malfunctioning, or the NCS may not have allocated the ship a transmission slot because of high-precedence traffic on the net.	If the alert persists, the IG Box, crypto, and transceiver should be checked for proper operation.
B-19	LI1 PARITY LIMIT hhmmZ	
	A received message reached the error tolerance threshold, and the system did not receive the message (or part thereof) error-free. The message will be processed as received. This problem is usually caused by Link interference. Observing the RECEIVE indicator on the IG Box for spurious transmissions will aid the operator in determining the amount of interference being experienced.	None required; however, if the alert persists and there is little Link interface, the IG Box, crypto, and transceiver should be checked for proper operation.
B-20	(SMN) TRA CANTRAN ON LO1 hhmmZ	
	Either the transmission of the indicated message (SMN) on the Link was aborted, or the indicated message (SMN) was purged prior to the start of transmission.	Determine the status of the message and retransmit, if necessary.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-21	(SMN) Y/Z ACK NOT RCVD ON LO1 hhmmZ *	
	Acknowledgment of the indicated Emergency or Flash message (SMN) transmitted on the Link has not been received from the NCS (maximum one minute).	Check the receive and transmit paths and retransmit, if necessary.
B-22	(SMN) Y/Z NO TRA ON LO1 AFTER 30 SEC hhmmZ *	
	The indicated Emergency or Flash message (SMN) has not begun transmission on the Link within 30 seconds.	Check the Link status; if necessary, use an alternate circuit for transmission.
B-23	POSSIBLE MISSENT	
	A message for which no addressee match was found was received from CUDIXS.	Check the CGL to ensure that all addressees for which the ship is guarding are entered. Check message addressees for possible errors.
B-24	MSG ACK (SMN) CSN (CSN) hhmmZ	
	The indicated outgoing Link message (SMN) has been acknowledged.	None required.

*Alert with CTTY bell sequence.

Table B-3. System Alerts Unique to Link Operation (Cont'd)

ALERT	DESCRIPTION OF ALERT	OPERATOR RESPONSE
B-25	MSG NAK (SMN) CSN (CSN) hhmmZ The indicated outgoing Link message (SMN) has reached the ARQ setting on Parameter Page 3 and was negatively acknowledged by the NCS.	Check circuit continuity; check with the NCS to see if they received the message; then retransmit the message, if necessary.

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APPENDIX C

SYSTEM PAPER TAPE FORMATS

SECTION I

SYSTEM DATA PAPER TAPE FORMATS

C-1. GENERAL.

C-2. System data paper tapes are used by the operator to provide a convenient off-line storage medium for large and/or frequently needed system data parameter values. The two system data paper tape formats are as follows:

1. Command Guard List (CGL) paper tape format
2. Local Routing List (LRL) paper tape format

C-3. Both system data paper tapes can be generated by the system upon operator request or manually if required. Regardless of the construction technique, all system data paper tapes can be loaded into the system with the LOD command (refer to Appendix A). These paper tapes provide the operator with a quick and easy method of making major changes to the system data when required.

C-4. COMMAND GUARD LIST PAPER TAPE FORMAT.

C-5. The CGL paper tape is used to add entries to the CGL. Chapter 5, Section I contains a description of the CGL and its function in the addressee screening process. The operator can maintain one large CGL tape or several segments of the CGL on different tapes. When changes to the CGL are frequent and involve a number of entries, it may be advantageous to keep various segments of the CGL on different tapes (e.g., one tape with all of the ship's addressees, several tapes with addressees of different embarked commands, and several tapes with addressees of other ships/commands in the fleet for which the ship may guard from time to time). The CGL paper tape is loaded into the system by using the LOD command (refer to Appendix A).

C-6. Whenever a CGL tape is loaded, each entry read from the tape is compared with those already in the CGL, and any exact duplicates are discarded so that only one entry (of each unique spelling) for each addressee will be placed in the CGL. Multiple CGL tapes can therefore be combined in the CGL by the Central Processing Unit (CPU) to produce the desired CGL required for a particular situation.

C-7. Each CGL entry is limited to 63 printable characters, including spaces, slants, and minus signs. The CGL is limited to a maximum of 300 entries or 6300 characters. If either the 300-entry or the 6300-character limit is reached, no more CGL entries can be made without deleting other CGL entries. If an attempt is made to add more entries to the CGL via paper tape beyond the 300-entry or 6300-character limit, an overflow will result and Alert A-14 (refer to Appendix B) will be generated. A printed copy of the CGL should be retrieved, and the operator should verify the portion of the paper tape currently in memory. The operator should then combine or delete some of the less critical entries from the CGL via the Control Teletype (CTTY); once these have been processed, additional space in the CGL is freed and more entries can then be added one at a time from the CTTY.

C-8. PROGRAM-GENERATED COMMAND GUARD LIST PAPER TAPE FORMAT. The operator can, at any time, obtain a program-generated paper tape copy of the current CGL stored in the CPU by using the CGL command (refer to Appendix A).

C-9. Upon receipt of the operator command to punch the CGL, the system outputs the entire CGL as it is contained in the CPU to the designated paper tape punch. An example of a program-generated CGL paper tape is shown in Figure C-1. The format sequence of this tape is explained in Table C-1.

C-10. The advantage of the program-generated CGL paper tape is that it is automatically punched in the correct format and may be loaded into the system whenever the CGL contained on the paper tape is required.

C-11. MANUALLY PREPARED COMMAND GUARD LIST PAPER TAPE FORMAT. The CGL paper tape can be generated using the keyboard and reperforator (chad-type) of an off-line Teletype (TTY) (e.g., the AN/UGC-6 or equivalent). The manually prepared CGL tape is loaded into the CPU in the same manner as the program-generated version. When a CGL paper tape is manually prepared, the format shown in Figure C-1 should be observed. The End-of-Line (EOL) sequence (two carriage returns and one line feed), which is part of the separator sequence, is ignored when a manually prepared CGL paper tape is loaded into the system. When the operator prints the CGL paper tape at an off-line TTY, the EOL sequence is inserted after each separator sequence so that only one entry is printed per line.

C-12. LOCAL ROUTING LIST PAPER TAPE FORMAT.

C-13. The LRL paper tape is used to load the LRL into the CPU. The LRL is a listing of shipboard offices/commands to which messages are most often routed. An LRL paper tape is loaded by using the LOD command (refer to Appendix A). This load is usually part of the system initialization procedure. Failure to load the tape causes the LRL to be left blank and to appear as two blank lines in the standard message print format (refer to Chapter 6). Each time a new LRL paper tape is loaded, it completely replaces the contents of the LRL currently contained in the CPU.

C-14. ters, including spaces. The LRL paper tape can be prepared manually off-line or by program-generated output of the LRL stored in the CPU.

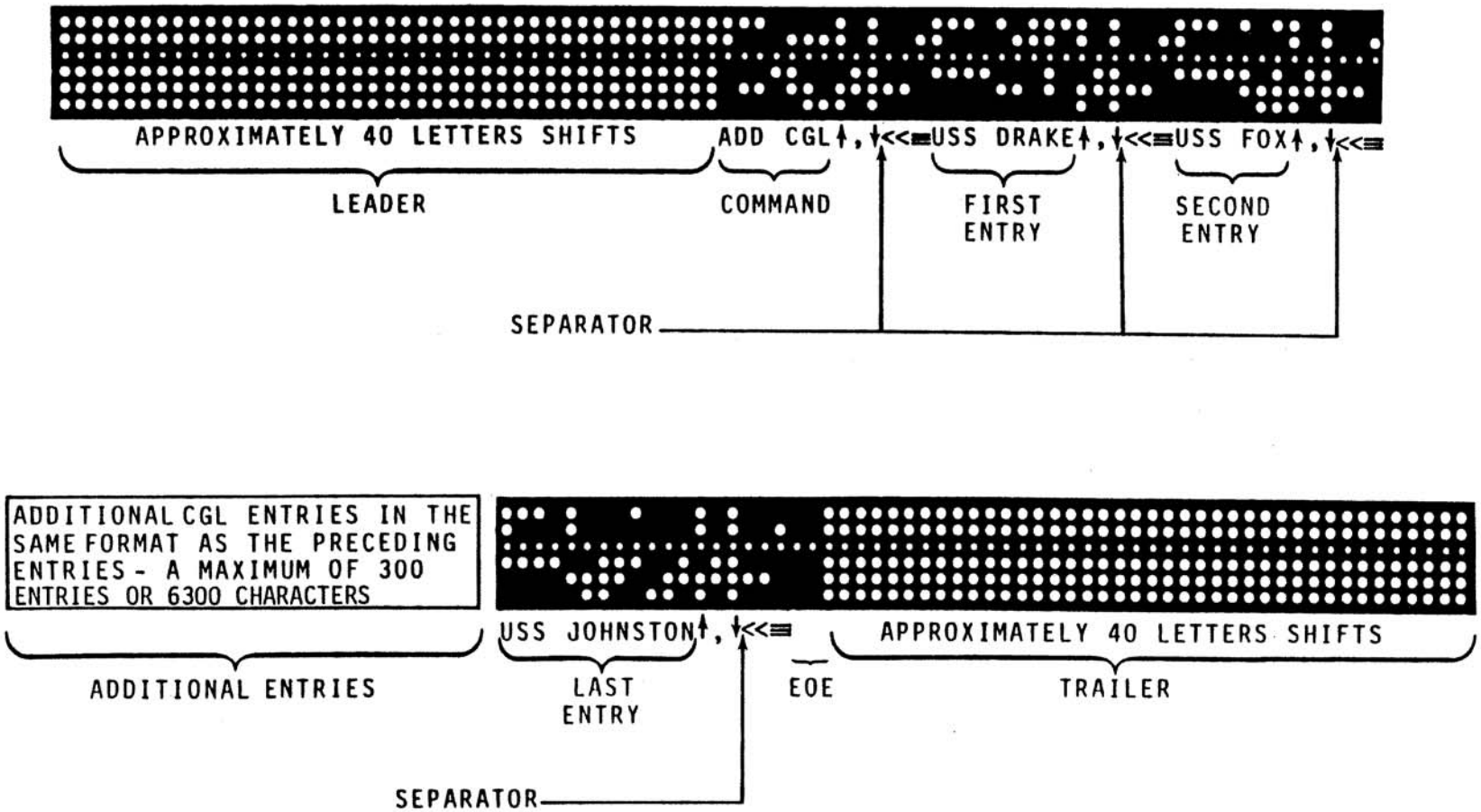


Figure C-1. Example of a Command Guard List (CGL) Paper Tape

Table C-1. Program-Generated Command Guard List (CGL) Paper Tape

FORMAT	DESCRIPTION
LEADER	Approximately 40 letters shift codes, used to position the CGL paper tape in the paper tape reader.
ADD CGL (Command Code)	Identifies the tape as a CGL tape.
SEPARATOR	Sequence (figures shift, comma, letters shift, carriage return, carriage return, line feed) separates the command code from the first CGL entry.
FIRST ENTRY	USS DRAKE as shown in Figure C-1 (space is used as part of the entry).
SEPARATOR	Sequence (figures shift, comma, letters shift, carriage return, carriage return, line feed) separates the first CGL entry from the second CGL entry.
SECOND ENTRY	USS FOX as shown in Figure C-1 (space is used as part of the entry).
SEPARATOR	Sequence (figures shift, comma, letters shift, carriage return, carriage return, line feed) separates each CGL entry from the next entry.
ADDITIONAL ENTRIES	Entry format and separator format repeated until the last entry.
LAST ENTRY	USS JOHNSTON as shown in Figure C-1 (space is used as part of the entry).
END-OF-ENTRY	Sequence (null, null) identifies the end of the ADD CGL command. The end-of-entry sequence is inserted after the separator following the last entry. A null indicates a blank.
TRAILER	Approximately 40 letters shift codes.

C-15. PROGRAM-GENERATED LOCAL ROUTING LIST PAPER TAPE FORMAT. The operator can, at any time, obtain a program-generated LRL paper tape copy of the current LRL stored in the CPU by using the LRL command (refer to Appendix A). Upon receipt of the operator command to punch the LRL, the system outputs the entire LRL as it is contained in the CPU to the designated paper tape punch. An example of a program-generated LRL paper tape is shown in Figure C-2. The format sequence of this tape is explained in Table C-2.

C-16. The advantage of a program-generated LRL paper tape is that it is automatically punched in the correct format and can be loaded into the system whenever the LRL contained on the paper tape is required.

C-17. MANUALLY PREPARED LOCAL ROUTING LIST PAPER TAPE FORMAT. The LRL tape can be generated using the keyboard and the reperforator (chad-type) of an off-line TTY (e.g., the AN/UGC-6 or equivalent). The manually prepared LRL paper tape is loaded into the CPU in the same manner as the program-generated version. When an LRL paper tape is manually prepared, the format shown in Figure C-2 must be closely observed.

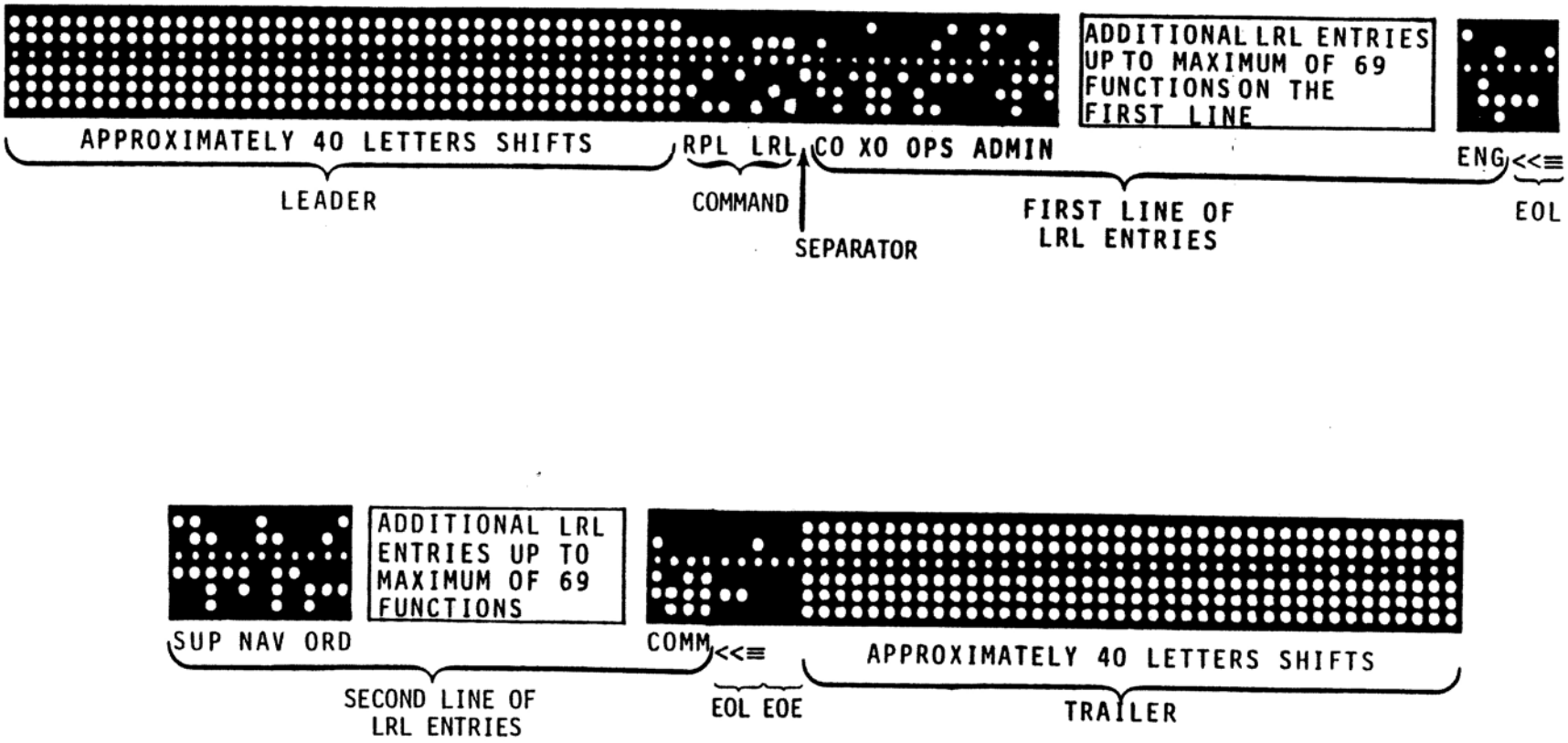


Figure C-2. Example of a Local Routing List (LRL) Paper Tape

Table C-2. Program-Generated Local Routing List (LRL) Paper Tape

FORMAT	DESCRIPTION
LEADER	Approximately 40 letters shift codes, used to position the LRL paper tape in the paper tape reader.
ADD LRL (Command Code)	Identifies the tape as an LRL tape.
SEPARATOR	(One space separates the command code from the beginning of the first LRL entry.
TEXT (First Line)	Limited to 69 alphanumeric, punctuation, and space functions.
END-OF-LINE	Sequence (carriage return, carriage return, line feed) separates the two lines of the LRL.
TEXT (Second Line)	Limited to 69 alphanumeric, punctuation, and space functions.
END-OF-LINE	Sequence (carriage return, carriage return, line feed) follows the second line of text.
END-OF-ENTRY	Sequence (null, null) identifies the end of the ADD LRL command. The end-of-entry sequence is inserted after the end-of-line sequence following the second line of text. A null indicates a blank.
TRAILER	Approximately 40 letters shift codes.

APPENDIX C

SYSTEM PAPER TAPE FORMATS

SECTION II

MESSAGE PAPER TAPE HEADER FORMAT

C-18. GENERAL.

C-19. All messages output to either of the paper tape punches have a paper tape header appended to the front of the actual message output. The paper tape header is provided to facilitate operator identification of the message and to assist in message storage and security.

C-20. Messages may be output to a paper tape punch when the punch option for supply system messages is enabled (refer to the SUP command in Appendix A)

C-21. MESSAGE PAPER TAPE HEADER.

C-22. An example of a message paper tape header is shown in Figure C-3, and the elements of a paper tape header are described in the following paragraphs.

C-23. VARIABLE-LENGTH MESSAGE PROCESSING DESIGNATOR. The message processing designator is used to identify the processing condition under which the message was output to a paper tape punch. Figure C-4 contains a complete listing of all possible paper tape message processing designators.

C-24. FOUR-CHARACTER CLASSIFICATION DESIGNATOR. The 4-character classification designator is used to denote the classification of the message. Figure C-5 contains a complete listing of all possible classification designators.

C-25. VARIABLE-LENGTH SPECIAL HANDLING DESIGNATOR. The special handling designator is used to identify any message special handling requirements. If no special handling has been assigned to the message, the field is not included in the paper tape header. Figure C-6 contains a complete listing of all possible special handling designators. The following special handling designators are not included in the paper tape header:

1. "FOR OFFICIAL USE ONLY"
2. "PERSONAL FOR"
3. "EYES ONLY"

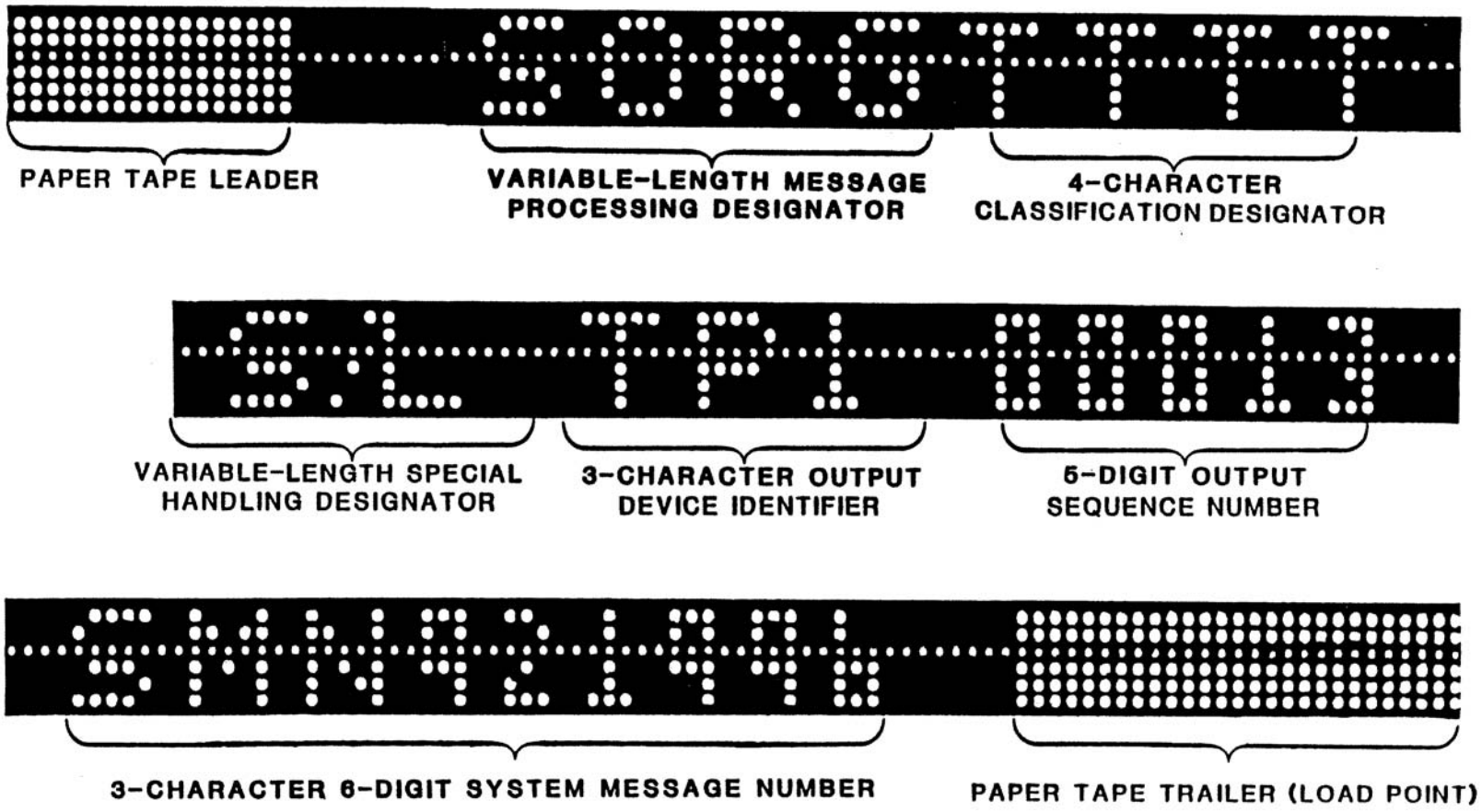


Figure C-3. Example of a Message Paper Tape Header

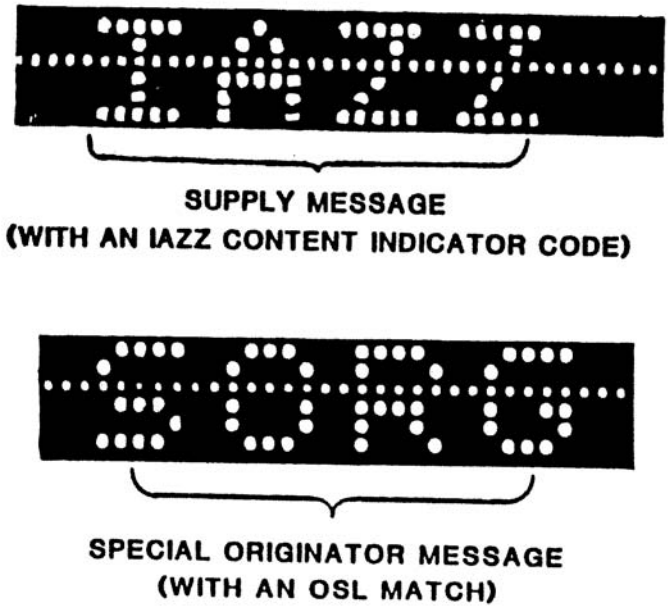


Figure C-4. Variable-Length Message Processing Designators

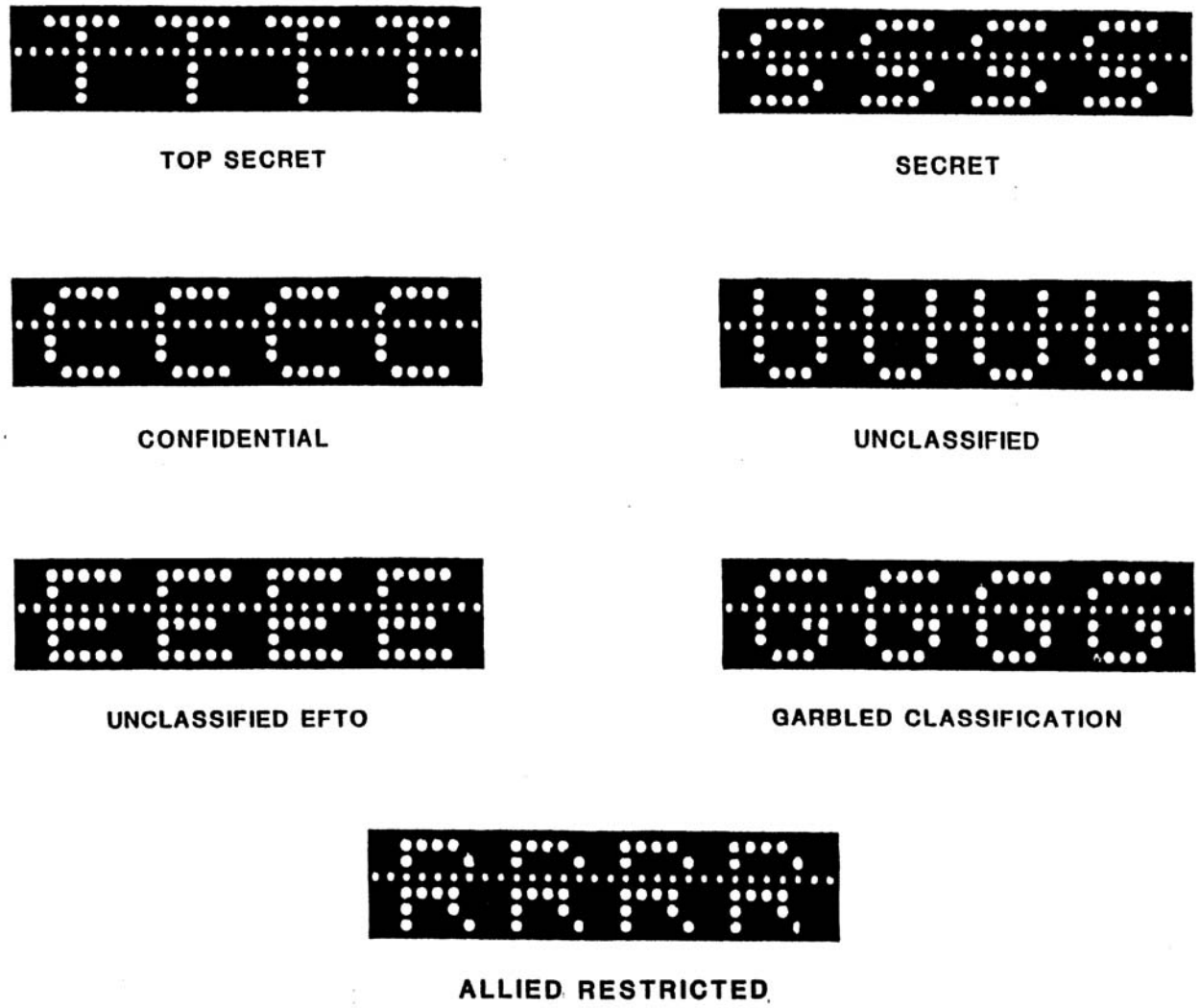


Figure C-5. Four-Character Classification Designators

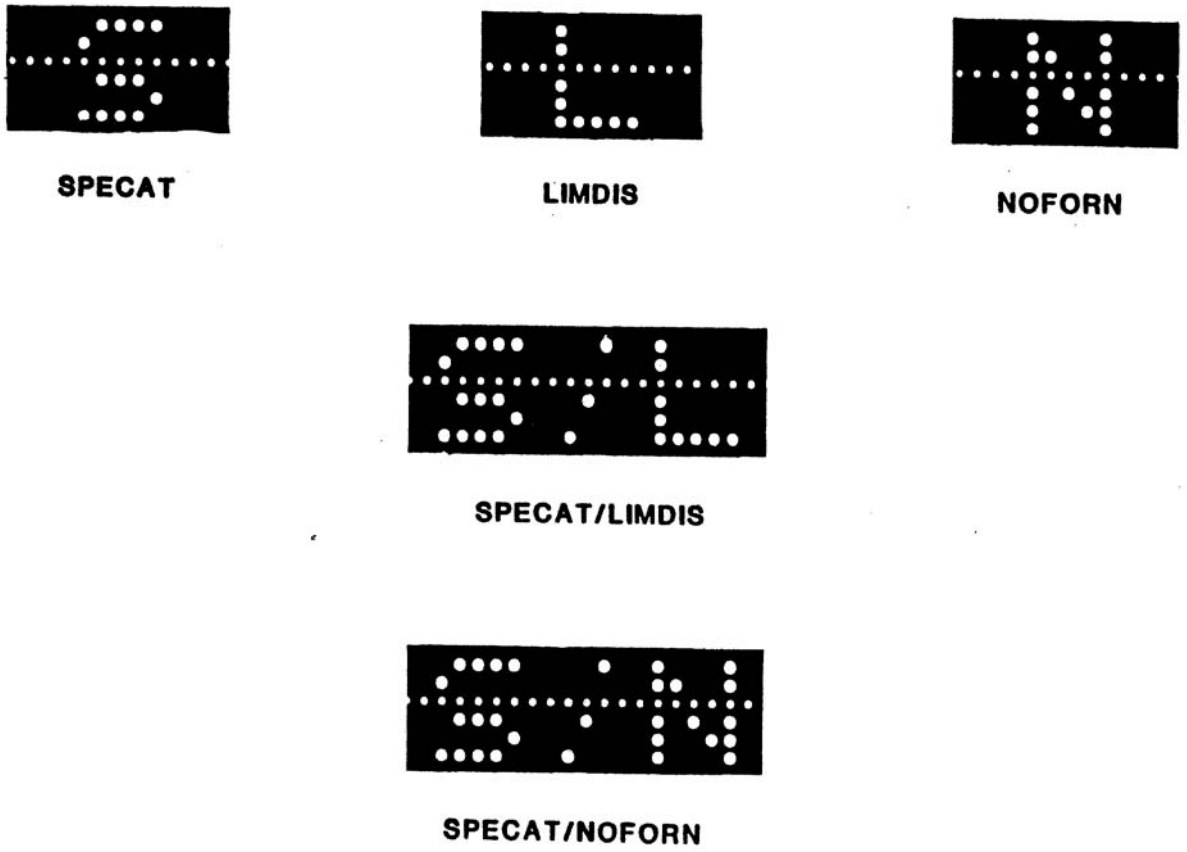


Figure C-6. Variable-Length Special Handling Designators

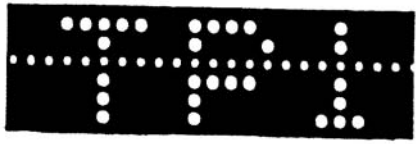
C-26. THREE-CHARACTER OUTPUT CHANNEL IDENTIFIER. The 3-character Output Channel Identifier (OCID) is used to identify the output device of the message. For all messages, the OCID denotes one of the paper tape punches. Figure C-7 contains a list of OCIDs.

C-27. FIVE-CHARACTER OUTPUT CHANNEL SEQUENCE NUMBER. The 5-character Output Channel Sequence Number (OCSN) is used to denote the output sequence number of the message. Sequential OCSNs are assigned for all paper tape message output.

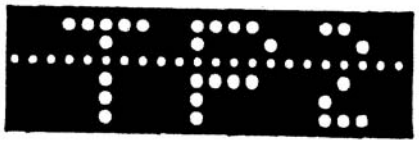
C-28. NINE-CHARACTER SYSTEM MESSAGE NUMBER DESIGNATOR. Nine characters are used to represent the System Message Number (SMN). The first 3-character group is the identifier "SMN"; the last 6-character group is the 6-digit number which uniquely denotes the message.

C-29. PAPER TAPE TRAILER (LOAD POINT). The paper tape trailer is used to separate physically the paper tape header from the actual message output. When a message is transmitted, the message is positioned in the reader so that the actual read function begins within this load point.

PAPER TAPE PUNCH OCID DESIGNATORS



HIGH-SPEED PAPER TAPE PUNCH



LOW-SPEED PAPER TAPE PUNCH

Figure C-7. Three-Character Output Channel Identifier (OCID) Designators

APPENDIX D

SYSTEM SUPPORT

SECTION I

PROGRAMS AND DOCUMENTATION

D-1. GENERAL.

D-2. Space and Naval Warfare System Center Charleston (SPAWARSYSCEN CHASN) is the controlling activity for distribution of NAVMACS V2 programs and documentation. To obtain additional copies of the current program release and/or System Operator's Manual (SOM), requests should be submitted via message, letter, by contacting the Tactical Messaging Afloat (TMA) Help Desk at 1-800-222-4156 option 2, or via the web site (https://navmacsii.nosc.mil) depending on the urgency. Requests sent via message should use the short title of: SPAWARSYSCEN Charleston SC//523//. Requests sent via letter should be addressed to:

COMMANDING OFFICER
ATTN: CODE 523, CM DIRECTOR
SPAWARSYSCEN CHASN
P.O. BOX 190022
North Charleston, SC 29419-9022

APPENDIX D

SYSTEM SUPPORT

SECTION II

SYSTEM TROUBLE REPORT

D-3. GENERAL.

D-4. When a program does not perform as documented in the SOM, or when a change or enhancement is desired that will assist operators in doing their job more effectively, a System Trouble Report (STR) is warranted. An STR is included at the end of APPENDIX D. Whether submitting an STR by phone, message, or email, all information on the form must be communicated. The two types of STRs that may be submitted are explained in the following paragraphs.

D-5. URGENT SYSTEM TROUBLE REPORT (STR).

D-6. To be considered an urgent STR, the problem must require immediate correction and create one or more of the following conditions:

1. Significant message delay
2. Message nondelivery
3. System security degradation
4. Complete system outage

D-7. Urgent STRs will be submitted via message with action to SPAWARSYSCEN CHARLESTON SC//523// and as a minimum, with information to COMSPAWARSYSCOM//PM166-2//, JITC WASH OPS INDIAN HEAD MD//JTCA/JTCB//, Fleet Commander, and Type Commander.

D-8. ROUTINE SYSTEM TROUBLE REPORT (STR).

D-9. A routine STR is any problem not fitting the criteria of an urgent STR. Routine STRs will be submitted via phone, fax or letter:

PHONE (Option 1 for Hardware, Option 2 for Software)
Toll Free: 800-222-4156
Commercial: 843-218-5562
Defense Switched Network (DSN): 588-5562

FAX (ATTN: CM Director)
Commercial: 843-218-5382
DSN: 588-5382

URL: https://navmacsii.nosc.mil

MAILING ADDRESS:

COMMANDING OFFICER
ATTN: CODE 523, CM DIRECTOR
SPAWARSYSCEN CHASN
P.O. BOX 190022
North Charleston, SC 29419-9022

D-10. USER INFORMATION.

D-11. Users of automated telecommunication systems not familiar with procedures for reporting system problems and/or seeking assistance are encouraged to contact the:

TACTICAL MESSAGING AFLOAT DESK

DSN: 588-5562

COMMERCIAL:

Toll Free: 1-800-222-4156
Local: 1-843-218-5562

(Option 1 for Hardware, Option 2 for Software)

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THIS FORM SHALL NOT CONTAIN SENSITIVE OR CLASSIFIED INFORMATION

Tactical Messaging Afloat (TMA)
System Trouble Report

1. Your Name:

2. Date:

3. Unit/Site:

4. Activity/Code:

5. Phone: Commercial
   DSN

6. Software Version:
   Operating System and Version:

7. Report Type (check one):
   _____ Problem/Error
   _____ Inconvenience
   _____ Suggested Enhancement
   _____ New Requirement
   _____ Other

8. Severity (check one):
   _____ Prevents Mission _____ Degrades Mission _____ Suggestion
   _____ Affects Mission

9. _____ Hardware _____ Software _____ Documentation _____ Training

10. Can this problem be reproduced at will?
    Check one:
    _____ Yes _____ No
    _____ Not Applicable

11. Does a restart, reboot or reload resolve the problem? Check one:
    _____ Yes _____ No
    _____ Not Applicable

12. Trouble Description (use the back of this form if necessary):

_____

_____

13. Has a work-around been identified which provides some kind of resolution to this problem?
    If so, describe:

_____

_____

STR SUBMISSION METHODS

Phone: Commercial (843) 218-4825 or (843) 218-4336
DSN 588-4825 or 588-4336
Fax: Commercial (843) 218-5382
DSN 588-5382
Attn: TMA Configuration Management (CM) Director

Internet: https://navmacsii.nosc.mil/

Mail: COMANDING OFFICER
ATTN CODE 523 / CM DIRECTOR
SPAWARSYSCEN CHARLESTON
P O BOX 190022
NORTH CHARLESTON SC 29419-9022

FOR INTERNAL USE ONLY
STR No:_____
Recv'd by:_____
Date:_____

If submitting a problem by phone or e-mail, all information on this form must be communicated.

This page provided for additional comments.

GLOSSARY

A

ACK--Acknowledgement. A positive acknowledgement of a transmission.

ACTIVE SUBSCRIBER--A member of the CUDIXS net who is designated in the Sequence Order List.

ADDRESSED MESSAGE--A message in which the address component of the message heading contains an action or information address designation for which the communication facility assumes delivery responsibility.

ADDRESSEE--A command to which a message is addressed.

AIG--Address Indicator Group.

ALTROUTE--Alternate Route. A transmission route other than the normal route. It is also used to indicate delivery to an alternate device when the device to which the output is normally delivered is unavailable.

AN/UGC-6--Teletype (offline).

AN/UGC-20--Control Teletype.

AN/USH-26(V)--Cartridge Magnetic Tape Unit.

AN/UYK-20(V)--Central Processing Unit.

AN/WSC-3--UHF Transceiver onboard ship.

ARQ--Automatic Repeat Request. The maximum number of automatic retransmissions allowed for a transmission if the receiving computer detects any errors in the message data.

AUTODIN--Automatic Digital Network.

B

BAUD--A measure of transmission speed. The highest rate (per second) of code elements in a transmission.

BAUDOT--Five-bit teletype code.

BCST--Broadcast.

B (Cont'd)

BITE--Built-In Test Equipment.

BLOCK--A group of 96 characters transmitted as the smallest unit of data in a Link transmission.

BOOTSTRAP--A series of hardwired instructions that, when executed, loads additional programs from an external device.

C

CGL--Command Guard List. A list of addressee designations of those commands and activities for which the communication activity assumes some type or degree of action or delivery responsibility.

CHANNEL--A path along which signals can be sent.

CID--Channel Identifier. A 4-character ID assigned to each external circuit and used for message accountability.

CLASSIFICATION--A specific degree of security against unauthorized disclosure.

CMTU--Cartridge Magnetic Tape Unit. An AN/USH-26(V).

COLLECTIVE ADDRESS--An address designator that represents two or more facilities, commands, authorities, or units.

COMNAVCOMTELCOM--Commander, Naval Computer and Telecommunications Command.

CPU--Central Processing Unit. An AN/UYK-20(V).

CR--Carriage Return.

CRC--Cyclic Redundancy Check.

CRYPTO--Cryptographic device. It is used to encrypt and decrypt binary data for security purposes.

CSN--Channel Sequence Number. A unique number assigned to each message on a channel-by-channel basis and used for accountability purposes.

CTTY--Control Teletype. An AN/UGC-20 or equivalent.

CUDIXS--Common User Digital Information Exchange System. An automated shore-based installation that provides RF link control of the network and processes message traffic.

CV-3022/UG--Level Converter/Patch Panel.

D

DEFAULT--A system-assigned value used when no value is specified by the operator.

DTG--Date-Time-Group.

E

EFTO--Encrypted for Transmission Only.

EMCON--Emission Control. The state in which a CUDIXS subscriber can receive only.

EOE--End-of-Entry.

EOL--End-of-Line.

EOM--End-of-Message.

EOT--End-of-Transmission.

EW--Early Warning.

F

FIFO--First-In-First-Out.

FIRST-RUN MESSAGE--The first copy of a message transmitted on a broadcast circuit.

FL--The ID for the format lines.

G

GARBLE--An error in transmission, reception, encryption, or decryption which renders a message or a portion thereof incorrect or undecipherable.

GATEGUARD--Communications gateway message exchange system that provides security protection between networks.

GCSN--Garbled Channel Sequence Number.

GG1--Device identifier for GateGuard.

GMT--Greenwich Mean Time.

H

HSPTP--High-Speed Paper Tape Punch. An RD-397(V)/U.

H (Cont'd)

HSPTR--High-Speed Paper Tape Reader. An RD-397(V)/U.

HSPTR/P--High-Speed Paper Tape Reader/Punch. An RD-397(V)/U.

I

I/O--Input/Output.

IAZZ--A Content Indicator Code that indicates a supply message.

ICID--Input Channel Identifier.

ICSN--Input Channel Sequence Number.

ID--Identifier.

INACTIVE SUBSCRIBER--A member of the CUDIXS net who is not trans- mitting to the NCS.

INCOMING MESSAGE--A message received from an external command or activity via any transmission path and terminated onboard.

INROUTED MESSAGE--A message received via a circuit (i.e., not an operator-requested retrieval).

IOC--I/O Controller.

IXS--Information Exchange System. A high-speed, half-duplex, automated digital communication net which links NAVMACS to CUDIXS.

J

JITC--Joint Interoperability Test Center.

L

LAN--Local Area Network.

LF--Line Feed.

LI--The ID for Link input.

LIMDIS--Limited Distribution.

LINK--The satellite communication path between the NCS and subscriber stations.

L (Cont'd)

LK--The ID for the Link.

LO--The ID for Link output.

LRL--Local Routing List. A list of internal offices and commands to which messages are most often routed; also a command for outputting this list.

LS--Letters Shift.

LSB--Least Significant Bits.

LSPTP--Low-Speed Paper Tape Punch. A TT-192C/UG or equivalent.

LSPTR--Low-Speed Paper Tape Reader. A TT-187C/UG or equivalent.

M

MAD--Message Address Directory. A list of authorized addressees for electrically transmitted messages.

MESSAGE--A transmitted series of words or symbols intended to convey information. In general Navy communication terms, a narrative or data pattern message indicates a header, text, and ending; within NAVMACS, a delimited body of narrative information that conforms to standard Navy message formats.

MISSENT MESSAGE--A message which contains a correct routing indicator but is transmitted to a station other than the one represented by the routing indicator, usually as a result of equipment malfunction.

MSL--Message Summary Line

MT--The ID for the magnetic tape drives.

MUX--Multiplex.

N

NAK--Negative Acknowledgement. A negative acknowledgement of a transmission.

NARRATIVE MESSAGE--In NAVMACS terminology, a standard Navy communication message.

NAVCOMPARS--Naval Communications Processing and Routing System.

NAVCOMTEL SUPP DET--Naval Computer and Telecommunications Support Detachment.

N (Cont'd)

NAVCOMTELSTA--Naval Computer and Telecommunications Station.

NAVMACS--Naval Modular Automated Communications System.

NCS--Net Control Station. The shore station (i.e., CUDIXS) that functions as the network controller.

NCTAMS--Naval Computer and Telecommunications Area Master Station.

NDRO--Nondestructive Readout.

NGL--Negative Guard List.

NI--The ID for broadcast input.

NOFORN--No Foreign Dissemination.

NOM--Narrative Operator Message. An unformatted message in excess of 80 characters that is exchanged between operators.

NONADDRESSED MESSAGE--A message in which the address component of the message heading does not contain an action or information address designation for which the communication facility assumes delivery responsibility.

NST--Navy Standard Teleprinter.

NTDS--Naval Tactical Data System.

NTS--Naval Telecommunications System.

O

OCID--Output Channel Identifier.

OCSN--Output Channel Sequence Number.

ODTG--Originator DTG.

OON--Output OTO Number.

OPCORR--Operator Correction. An annotation for a message containing a system-detected error that requires correction by the operator.

ORIGINATOR--The command or activity by whose authority a message is sent.

OSL--Originator Screening List. A list of special originators which is used to segregate SDSA messages for entry into the supply system.

OSRI--Originating Station Routing Indicator.

O (Cont'd)

OTO--Operator-to-Operator. A short, free-format narrative message used by operators for circuit or message coordination.

OUTGOING MESSAGE--A message originated onboard and sent to an external command or activity via any transmission path.

P

PARAMETER--A variable whose value controls decisions in NAVMACS (e.g., IAZZ).

PARITY--A method of error-checking binary-coded data by adding a redundant bit.

PILOT--Instructions preceding a message pertaining to the transmission or the handling of the message. A sequence of either three ZFGs or three ZDKs, two carriage returns, and one line feed.

PLA--Plain Language Address.

PLAD--Plain Language Address Directory. A list of activities, including long titles, short titles, and geographic locations to be used in addressing messages for the Navy, Marine Corps, and Coast Guard; also contains a limited number of U.S. Joint Department of Defense addressees.

PR--The ID for the printers.

PRECEDENCE--A designator used to indicate the relative order in which a message is handled with respect to other messages.

PSK--Phase Shift Keying.

PSN--Processing Sequence Number.

PSNA--The designator for automatic recall by PSN.

PT--The ID for the paper tape segments.

PURGE--Remove data from CPU memory.

Q

QRK--Screening Error Tolerance.

QUE--Queue Status Report.

QUEUE--A backlog of items awaiting output.

R

R/R--Response Rate.

RABORT--Receive Abort. A TU element indicating that the receiving processor can no longer accept transmissions.

RADAY--Radio Day.

RD-396/U--Cassette Magnetic Tape Unit.

RD-397(V)/U--High-Speed Paper Tape Reader/Punch.

RECAP SUMMARY MESSAGE--An hourly broadcast message containing a list of messages transmitted during the last hour on the same channel.

RERUN MESSAGE--A repetition of a previously transmitted broadcast message.

RETRIEVAL--The extraction of data from computer memory and the output of the data to a device.

RF--Radio Frequency.

RI--Routing Indicator.

RTC--Real-Time Clock.

S

SATCOM--Satellite Communications.

SCM--System Control Message. A computer-to-computer message sent between NAVMACS and CUDIXS to control Link operations.

SCP--Software Change Proposal.

SDSA--Source Data System Afloat.

SERVICE MESSAGE--A message used to assist communication personnel in handling and processing traffic; it includes a reference to a message previously sent which requires clarification, repetition, or modification.

SID--Subscriber Identification. A unique identification number assigned by the NCS to each subscriber in the net.

SMN--System Message Number. A unique sequential number assigned by NAVMACS to each incoming and outgoing message.

SOM--System Operator's Manual.

S (Cont'd)

SOP--Standard Operating Procedures.

SORG--Special Originator. A designator for a message with an OSL match.

SPECAT--Special Category.

SR--Status Register.

SRK--Steady Receive Key.

SSN--Station Serial Number.

SUBSCRIBER--A communication platform capable of interfacing with the CUDIXS satellite link (i.e., joining the CUDIXS net).

SUPPLY SYSTEM MESSAGE--An incoming message that has a Content Indicator Code of IAZZ or an OSL match.

SYNCHRONOUS--A method of transmitting data at a fixed rate of speed with the transmitter and receiver synchronized.

T

TABORT--Transmit Abort. A TU element which, when sent by the NCS, indicates that the shore has abnormally stopped sending message data to subscribers. It is sent by a subscriber in order to enter the net initially, to reenter the net, or to terminate a message transmission.

TOD--Time-of-Delivery.

TOF--Time-of-File.

TOP--Time-of-Print.

TOR--Time-of-Receipt.

TP--The ID for the paper tape punches.

TR--The ID for the paper tape readers.

TRAFFIC--Communication data transmitted to and from NAVMACS.

TRC--Transmission Release Code.

TT-187C/UG--Low-Speed Paper Tape Reader.

TT-192C/UG--Low-Speed Paper Tape Punch.

TT-624(V)/UG--Medium-Speed Line Printer.

T (Cont'd)

TTY--Teletype. An AN/UGC-20 or equivalent.

TU--Transmission Unit. The unit of data transmitted on the Link at a given time. A TU contains 1-24 Logical Units when sent by the NCS, 1 Logical Unit when sent by a subscriber.

U

URD--Undefined Raw Data.

V

VNR--Verification Number.

W

WML--Wanted Message List. A list of CSNs and associated CIDs for messages which are to be recouped from broadcast rerun traffic and processed.

Z

Z--The time zone designator for GMT.

ZULU TIME--Synonym for GMT.

INDEX

A.

B.

C.

INDEX (Cont'd)

C.

(cont'd)

INDEX (Cont'd)

D.

E.

F.

G.

INDEX (Cont'd)

H.

I.

K.

L.

INDEX (Cont'd)

L. (cont'd)

M.

INDEX (Cont'd)

M. (cont'd)

N.

O.

INDEX (Cont'd)

O. (cont'd)

P.

INDEX (Cont'd)

Q.

R.

S.

S. (cont'd)

PAGE

T.

U.

V.

INDEX (Cont'd)

W. PAGE