

TM 55-5830-283-10

TECHNICAL MANUAL

OPERATOR'S MANUAL FOR U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

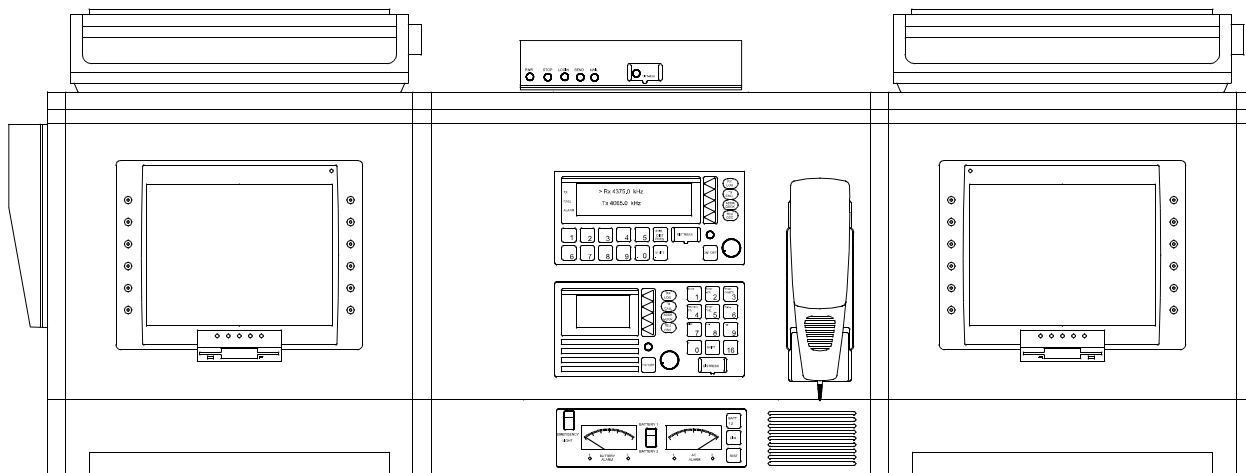
NSN 5830-01-528-6276

FOR

LANDING CRAFT UTILITY (LCU)
NSN 1905-01-154-1191

LOGISTICS SUPPORT VESSEL (LSV)
NSN 1915-01-153-8801

LARGE TUG (LT) 128 FT
NSN 1925-01-247-7110



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HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 2005

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Sailor Handset, Model Number SC4150

Sailor MF/HF Control Unit, Model Number HC4500

Sailor Printer, Model Number H1252B

Sailor Sat C Transceiver, Model Number H2095C

Thrane and Thrane, TT-10202 Message Handling Software, Operators Guide

TT-3020C Maritime Capsat Transceiver

Sailor VHF DSC, Model Number RT 4822

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

BATTERIES

Do not smoke around batteries. Personnel must wear goggles and chemical resistant gloves when adding electrolyte and cleaning up spills.

HAZARD REPORTING

Report all hazards. It is your responsibility to report hazards through your chain-of-command.

HIGH VOLTAGE

Use extreme caution when checking energized circuits. Always place power off warning tags on power supply switches so that no one will apply power while performing maintenance.

ICE BUILDUP

Cold weather operations could create ice buildup on exposed surfaces producing hazardous footing conditions. Use extreme care when operating under icing conditions; death or serious injury to personnel could occur.

FIRST AID

First Aid instructions are given in FM 4-25.11, First Aid.

JEWELRY

Remove rings, bracelets, wristwatches and neck chains before working around or on a unit.

LEAD ACID BATTERIES

Do not smoke around batteries. Personnel must wear goggles and chemical resistant gloves when adding electrolyte and cleaning up spills.

LITHIUM BATTERIES

Do not short circuit lithium batteries, try to recharge lithium batteries, store the lithium batteries with other batteries. Do not expose lithium batteries to open flames or heat, throw the lithium batteries into fire or open, crush or break the lithium batteries. Failure to comply could result in injury or death to personnel.

If the battery compartment becomes hot to the touch, if hissing or burping (battery venting) is heard or irritating gas is smelled (sulfur dioxide), allow the equipment to cool at least one hour. Remove and replace the battery after the equipment is cool to the touch. Failure to comply could result in injury or death to personnel.

NO SMOKING

Smoking is prohibited aboard this vessel.

WARNING SUMMARY - Continued

NUCLEAR, BIOLOGICAL OR CHEMICAL

In the event equipment has been exposed to nuclear, biological or chemical warfare, the equipment shall be handled with extreme caution and decontaminated in accordance with FM 3-5, instructions for immediate, operational and thorough decon procedures adapted for the marine environment. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If equipment is exposed to radioactive, biological or chemical agents, personnel must wear protective mask, hood, protective overgarments, chemical gloves and chemical boots in accordance with MOPP level prescribed by the OIC or NCOIC.

RADIATION

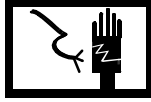
The transmitter should only be operated when the antenna is rotating when at dock side or close to other vessels. The radar system should be turned off before approaching within 6 feet of the antenna for X-band and 15 feet for S-band. Failure to comply could result in exposure to radiation.

SAFETY WARNINGS ICONS



EAR PROTECTION

EAR PROTECTION - headphones over ears shows that noise level will harm ears.



ELECTRICAL

ELECTRICAL - electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.



ELECTRICAL

ELECTRICAL 2 - electrical wire to arm with electricity symbol running through body shows that shock hazard is present.



EYE PROTECTION

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



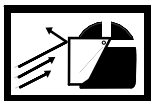
FALLING PARTS

FALLING PARTS - arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.



FLYING PARTICLES

FLYING PARTICLES - arrows bouncing off face shows that particles flying through the air will harm face.



FLYING PARTICLES

FLYING PARTICLES 2 - arrows bouncing off face with face shield shows that particles flying through the air will harm face.



HEAVY OBJECTS

HEAVY OBJECTS - human figure stooping over heavy object shows physical injury potential from improper lifting technique.



HEAVY PARTS

HEAVY PARTS - foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS

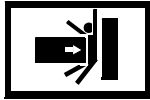
HEAVY PARTS 2 - hand with heavy object on top shows that heavy parts can crush and harm.

SAFETY WARNINGS ICONS - Continued



HEAVY PARTS

HEAVY PARTS 3 - heavy object on human figure shows that heavy parts present a danger to life or limb.



HEAVY PARTS

HEAVY PARTS 4 - heavy object pushed up against human figure shows that heavy parts present a danger to life or limb.



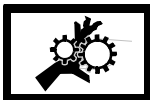
HELMET PROTECTION

HELMET PROTECTION - arrow bouncing off head with helmet shows that falling parts present a danger.



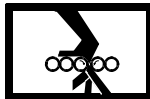
HOT AREA

HOT AREA - hand over object radiating heat shows that part is hot and can burn.



MOVING PARTS

MOVING PARTS - hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS

MOVING PARTS 2 - hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS

MOVING PARTS 3 - human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.



SHARP OBJECT

SHARP OBJECT - pointed object in foot shows that a sharp object presents a danger to limb.



SHARP OBJECT

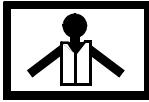
SHARP OBJECT 2 - sharp object on hand shows that a sharp object presents a danger to limb.



SLICK FLOOR

SLICK FLOOR - wavy line on floor with legs prone shows that slick floor presents a danger for falling.

SAFETY WARNINGS ICONS - Continued



VEST

VEST - life preserver on human figure shows life preserver must be worn to prevent drowning.

HAZARDOUS MATERIALS WARNINGS ICONS



CHEMICAL

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



CRYOGENIC

CRYOGENICS - hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.



EXPLOSION

EXPLOSION - rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.



FIRE

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



POISON

POISON - skull and crossbones shows that a material is poisonous or is a danger to life.



RADIATION

RADIATION - three circular wedges shows that the material emits radiative energy and can injure human tissue.



VAPOR

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

LIST OF EFFECTIVE PAGES / WORK PACKAGES

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Original 0 01 Dec 05

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON D.C., 1 DECEMBER 2005

TECHNICAL MANUAL

OPERATOR'S MANUAL

**U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS
AND SAFETY SYSTEM (GMDSS)
NSN 5830-01-528-6276**

FOR

**LANDING CRAFT UTILITY (LCU)
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**LARGE TUG (LT) 128 FT
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CHAPTER 1

**GENERAL INFORMATION,
EQUIPMENT DESCRIPTION AND THEORY OF
OPERATION
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
GENERAL INFORMATION**

SCOPE

This manual contains descriptions and instructions for the GMDSS system.

Type of Manual: Operator's Manual.

Purpose of Equipment: The purpose of the GMDSS is to upgrade the Army LCU, LSV and LT communications. The upgrade features allow secure/non-secure voice/data transmission and reception simultaneously, improved situational awareness and open architecture.

MAINTENANCE FORMS, RECORDS AND REPORTS

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

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If any component in your system needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368, Product Quality Deficiency Report.

CORROSION PREVENTION AND CONTROL (CPC)

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

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words, such as "corrosion", "rust", "deterioration" or "cracking", will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

The procedures for destruction of Army materiel to prevent enemy use are contained in TM 750-244-6.

PREPARATION FOR STORAGE OR SHIPMENT

Contact unit maintenance for storage or shipment.

LIST OF ABBREVIATIONS/ACRONYMS

| Abbreviation/Acronym | Name |
|-----------------------------|---|
| A | Ampere |
| AAL | Additional Authorization List |
| AC | Alternating Current |
| ADDR | Address |
| AGC | Automatic Gain Control |
| AM | Amplitude Modulation |
| AR | Army Regulation |
| ARQ | Automatic Repetition Request |
| ATIS | Automatic Transmitter Identification System |

LIST OF ABBREVIATIONS/ACRONYMS - Continued

| Abbreviation/Acronym | Name |
|-----------------------------|---|
| BFEC | Basic Forward Error Correction |
| BII | Basic Issue Items |
| BPSK | Binary Phase Shift Keying |
| BTU | British Thermal Unit |
| C | Centigrade |
| CAGEC | Commercial And Government Entity Code |
| CEN | Communications Electronic and Navigation |
| CDD | Complete Discharge Device |
| CES | Coast Earth Station |
| CLES | COMSAT Land Earth Stations |
| CLRF | Clarify |
| cm | Centimeters |
| COEI | Components Of End Item |
| CPC | Corrosion Prevention and Control |
| cpi | Characters Per Inch |
| CPS | Characters Per Second |
| CRYPTO | Cryptography |
| CTA | Common Table of Allowances |
| CU | Control Unit |
| CVW | Crypto Variable Weekly |
| D | Depth |
| DA | Department of the Army |
| dB | Decibels |
| dBm | Decibel Relative To 1 Watt |
| DC | Direct Current |
| DIMM | Dual Inline Memory Module |
| DIRTLX | Direct Telex |
| DNID | Data Network ID |
| DSC | Digital Selective Calling |
| DSC ID | Ship Station Identify Number |
| DTMF | Dual Tone Multiple Frequency |
| DUP | Duplex |
| DW | Dual Watch |
| EDIL | Expendable and Durable Item List |
| EIR | Equipment Improvement Recommendations |
| EPIRB | Emergency Position Indicating Radio Beacons |
| EPLGR | Enhanced Precision Lightweight Global Positioning System Receiver |
| ETSI | European Telecommunications Standards Institute |
| F | Fahrenheit |
| FAX | Facsimile Transmission |
| FCC | Federal Communications Commission |
| FEC | Forward Error Correction |
| ft | Feet |
| FIG | Figure |
| FM | Frequency Modulation |
| FSK | Frequency Shift Keying |
| GA | Go Ahead |
| GFI | Ground Fault Indicator |
| GHz | Gigahertz |
| GMDSS | Global Maritime Distress and Safety System |
| GMT | Greenwich Mean Time or Zulu Time |
| GPS | Global Positioning System |
| GUI | Graphical User Interface |
| GUV | Group Unique Variable |
| H | Height |
| HF | High Frequency |
| HSD | High-Speed Draft |
| Hz | Hertz |
| IFRB | International Frequency Registration Board |

LIST OF ABBREVIATIONS/ACRONYMS - Continued

| Abbreviation/Acronym | Name |
|-----------------------------|--|
| ID | Identification |
| IMO | International Maritime Organization |
| in. | Inches |
| INMARSAT | International Maritime Satellite |
| IRS | Information Receiving Station |
| ISS | Information Sending Station |
| ITU | International Telecommunication Union |
| KB | Kilobytes |
| kg | Kilograms |
| kHz | Kilohertz |
| LAN | Local Area Network |
| lb | Pounds |
| LBR | Lifeboat Radio |
| LBT | L-Band Transceiver |
| LCD | Liquid Crystal Display |
| LCU | Landing Craft Utility |
| LED | Light Emitting Diode |
| LF | Low Frequency |
| LSB | Lower Sideband |
| LSV | Logistics Support Vessel |
| LT | Large Tug |
| m | Meters |
| mA | Milliampere |
| MAC | Maintenance Allocation Chart |
| MB | Megabyte |
| MEM | Memory |
| MF | Medium Frequency |
| MHz | Megahertz |
| mm | Millimeter |
| MMSI | Maritime Mobile Service Identity |
| MOB | Man Overboard |
| MOM | Just a moment please |
| MOPP | Mission Oriented Protective Posture |
| MPS | Mission Planning Software |
| MSG | Message |
| MSI | Maritime Safety Information |
| MTOE | Modified Table of Organization and Equipment |
| mW | Milliwatt |
| NAVTEX | Navigational TELEX |
| NCOIC | Non-commissioned Office In Charge |
| NCS | Network Control Station |
| NEMA | National Electric Manufacturers Association |
| NICAD | Nickel Cadmium |
| NLQ | Near Letter Quality |
| NOAA | National Oceanic and Atmospheric Administration |
| NSA | National Security Agency |
| NSN | National Stock Number |
| ODS | Ozone Depleting Substances |
| OIC | Officer In Charge |
| PAM | Pamphlet |
| PBX | Public Branch Exchange |
| PC | Personal Computer |
| PLGR | Precision Lightweight Global Positioning System Receiver |
| PMCS | Preventive Maintenance Checks and Services |
| ppm | Parts Per Million |
| PPS-SM | Precise Positioning Service-Security Module |
| PSTN | Public Switched Telephone Network |
| PTT | Push To Talk |
| RCC | Rescue Coordination Center |

LIST OF ABBREVIATIONS/ACRONYMS - Continued

| Abbreviation/Acronym | Name |
|-----------------------------|--|
| RF | Radio Frequency |
| RF-G | Receiver Frequency Gain |
| RPOA | Recognized Private Operating Agency |
| RPSTL | Repair Parts and Special Tools List |
| RTU | Receiver and Transmitter Unit |
| Rx | Receive |
| SA | Selective Availability |
| SAR | Search and Rescue |
| SART | Search and Rescue Transponder |
| sec | Second |
| SF | Standard Form |
| SFEC | Selective Error Correction |
| SOLAS | Safety Of Life At Sea |
| SQ | Squelch |
| SSB | Single Side Band |
| STN | Station |
| TAMMS | The Army Maintenance Management System |
| TDA | Table of Distribution of Allowances |
| TEL | Telephony |
| TM | Technical Manual |
| TMDE | Test, Measurement, Diagnostic Equipment |
| TOE | Table of Organization and Equipment |
| Tx | Transmit |
| UHF | Ultra High Frequency |
| U/I | Unit of Issue |
| UT | Universal Time |
| UTC | Universal Time Coordinated (Greenwich Mean Time) |
| UV | Ultra Violet |
| V | Volts |
| VAC | Volts Alternating Current |
| VDC | Volts Direct Current |
| VHF | Very High Frequency |
| W | Watt or Width |
| WP | Waypoints or Work Package |
| WRU | Who Are You |

QUALITY OF MATERIAL

Material used for replacement, repair or modification must meet requirements of this manual. If quality of material requirements are not stated in this manual, the material must meet requirements of the drawings, standards, specifications or approved engineering change proposals applicable to subject equipment.

SAFETY, CARE AND HANDLING

The GMDSS does not contain any items of ammunition, explosive or radioactive material.

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 Sailor Sat C Transceiver, Model Number H2095C
 Thrane and Thrane, TT-10202 Message Handling Software, Operators Guide
 TT-3020C Maritime Capsat Transceiver
 Sailor VHF DSC, Model Number RT 4822

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
DESCRIPTION AND DATA**

EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES

HISTORY OF THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

In 1979, the International Maritime Organization (IMO) recognized the need for an updated maritime communications system and helped create the International Maritime Satellite (INMARSAT) system employing geostationary satellites positioned above the Atlantic, Indian and Pacific oceans. Shortly thereafter, a polar orbiting satellite system was established to locate Emergency Position Indicating Radio Beacons (EPIRB). The IMO also decided to commence a general upgrade of the distress and safety system to be known as GMDSS. This system would provide rapid and automated distress reporting and improved telecommunications for the maritime community.

In 1988, the IMO amended its Safety Of Life At Sea (SOLAS) convention to complete this upgrade of the maritime safety communications procedures and equipment for GMDSS. GMDSS applies system automation techniques to the traditional maritime Medium Frequency (MF), High Frequency (HF) and Very High Frequency (VHF) bands, which previously required a continuous listening watch. GMDSS incorporates the INMARSAT and the EPIRB satellite systems to improve the reliability and effectiveness of the distress and safety system on a global basis. GMDSS also provides for the timely dissemination of maritime safety information, including navigational and meteorological warnings and weather forecasts.

On 1 February 1999, the voice watch keeping requirement on 2182 kHz for GMDSS equipped vessels ceased. The Coast Guard shore network now maintains a voice guard on channel 16 VHF and 2182 kHz MF. These networks are being upgraded to include the GMDSS Digital Selective Calling (DSC) on channel 70 VHF and 2187.5 kHz MF. While the Coast Guard plans to maintain the shore watch on channel VHF 16 for a number of years, there is no assurance that the 2182 kHz MF and HF voice watches will be continued. Existing Coast Guard MF and HF watches are being augmented with DSC to improve high seas telecommunications services to the maritime public.

OVERVIEW OF GMDSS

Distress Alerting

Distress alerting may be accomplished in three different ways: ship to shore, ship to ship and shore to ship. If terrestrial radio links, rather than satellite, are used, nearby ships will also hear the alert. The initial alert may be sent in a number of ways. The alert may be sent via CAPSAT, VHF-DSC radio or MF/HF DSC radio. All of these methods give the identity of the vessel, as well as its location. A DSC alert is the only type that can be picked up by another vessel. It is normally the responsibility of the Rescue Coordination Center (RCC) to respond with an acknowledgement. Vessels at sea should not normally acknowledge receipt of an initial distress alert.

Distress Relay

Once an RCC has heard and acknowledged a distress, it may wish to alert other vessels in the area by means of a distress relay. The relay can be addressed to a precise geographic area so that vessels too far away to render help are not involved. Vessels can be alerted using CAPSAT, VHF-DSC radio, MF/HF DSC radio or Navigational TELEX (NAVTEX). Any vessel receiving a distress alert directly, or a distress relay, must contact the RCC to offer assistance. Vessels at sea should not normally send a distress relay themselves.

Search and Rescue

When the Search and Rescue (SAR) phase is entered, all communication is two-way to coordinate the activities of ships and aircraft using terrestrial and satellite communication links available. Specific frequencies are allocated for this purpose. Under all circumstances, a shore based RCC takes charge of the operation. The RCC may be located as much as a hemisphere away from the actual casualty. Vessels and aircraft close to the casualty will communicate between themselves using short range terrestrial communications (VHF or MF). Specially designated Search and Rescue (SAR) radio channels will be used. Precise location of the casualty will be aided by the use of a Search and Rescue Transponder (SART) or the 406 MHz section of a satellite Emergency Position Indicating Radio Beacon (EPIRB). Both of these items may be carried in the lifeboat. Portable Lifeboat Radios (LBR) are used by survivors to communicate with rescuers on channels 6 or 16.

OVERVIEW OF GMDSS - Continued**Maritime Safety Information (MSI)**

Information regarding potential navigation or meteorological hazards, weather forecasts and changes or malfunctions of aids to navigation, such as the Global Positioning System (GPS) or search and rescue information, may be sent via NAVTEX or CAPSAT.

General Communications

General communications between vessels and between vessels and harbor authorities, pilots, Coast Guard, etc., are also provided for in GMDSS. These communications are made using VHF-DSC radio or MF/HF DSC radio. Provisions also exist for calling a group of vessels using a common, temporary Maritime Mobile Service Identity (MMSI) and for calling all vessels within a definable geographic area. E-mail and TELEX messages may be sent via CAPSAT.

Bridge to Bridge Communications

Communications between vessels at sea for the purpose of safety and collision avoidance are conducted with VHF-DSC transceivers. Ships will normally keep watch on VHF/FM when an imminent risk of collision exists, as well as on the appropriate DSC frequency. If a potential collision situation exists, it is appropriate to call the ship directly on VHF/FM in order to agree on appropriate measures to avoid collision. If a vessel is unable to maneuver due to loss of power, an all ships safety call should be made on DSC channel 70 with a subsequent voice call on channel 16.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS
ABOVE DECK LOCATION

The GMDSS antennas are located on the mast along the yardarm (figure 1).

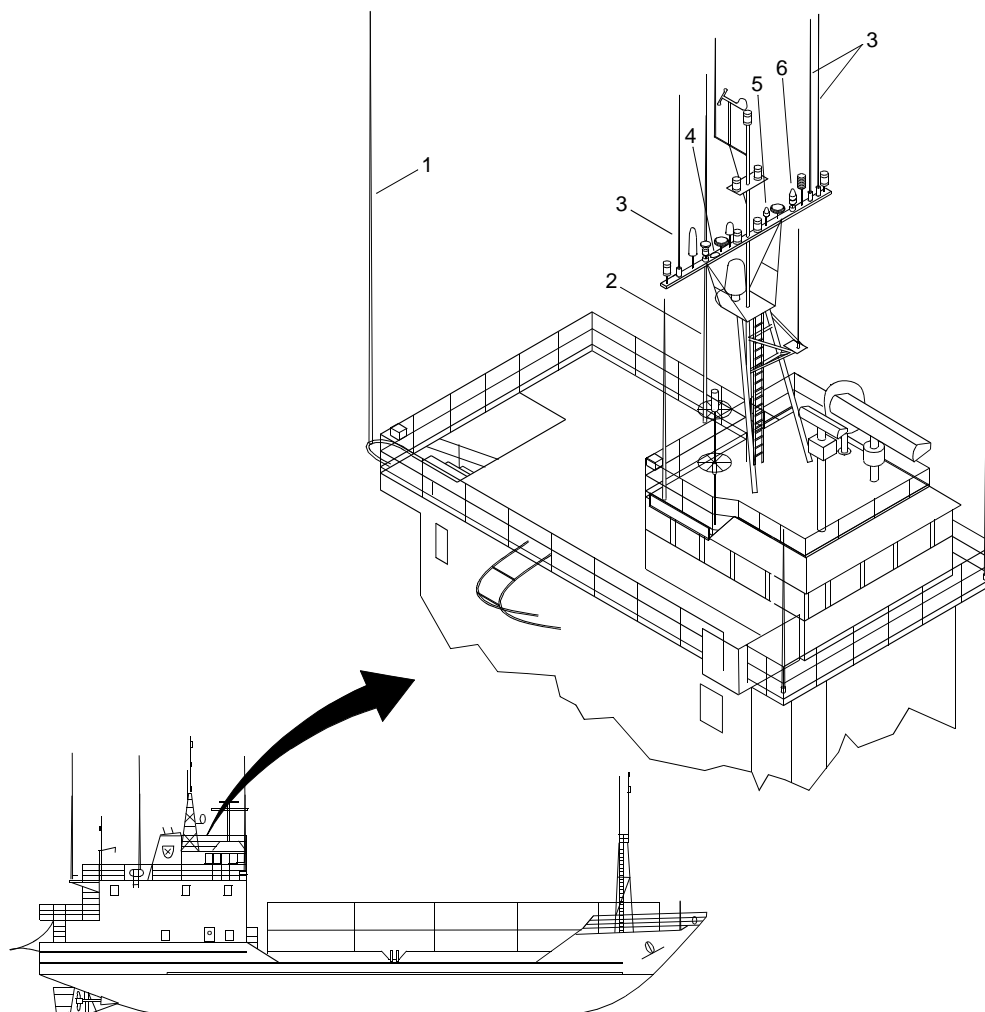


Figure 1. GMDSS Antennas Above-deck Location

Description of the VHF ANT-AR-62 Antenna

The VHF ANT-AR-62 antenna (figure 1, item 1) is a 32 ft fiberglass antenna that provides the radio signal to the MF/HF transceiver. The antenna operates through an antenna coupler mounted on the aft port railing.

Description of the VHF ANT-AV-40 Antenna

The VHF ANT-AV40 antenna (figure 1, item 2) is a 32 ft fiberglass antenna that provides the radio signal to the MF/HF transceiver. The antenna operates through an antenna coupler mounted on the aft port railing on top of the pilothouse.

Description of the VHF ANT-AV-7 Antenna

The VHF ANT-AV-7 antenna (figure 1, item 3) is an 8 ft fiberglass antenna that provides the radio signal to the VHF-DSC transceiver and NAVTEX receiver. There are three VHF ANT-AV-7 antennas on the GMDSS system.

ABOVE DECK LOCATION - Continued**Description of the GPS PLGR ANT-AT1665 Antennas**

Two GPS PLGR ANT-AT1665 antennas (figure 1, item 4) are installed, one for the navigation Precision Lightweight Global Positioning System Receiver (PLGR) and one for the communications PLGR. The antennas provide the GPS signal for operation of the PLGRs.

Description of the Iridium ANT SA-4110 Antenna

The Iridium ANT SA-4110 antenna (figure 1, item 5) is a helical, omnidirectional fiberglass antenna located on the main mast yard arm, that provides satellite signal to the Iridium handset via an Iridium transceiver located on the same bulkhead as the Iridium handset.

Description of the INMARSAT-C ANT-AT-1606 Antenna

The INMARSAT-C ANT-AT-1606 antenna (figure 1, item 6) is an omnidirectional fiberglass antenna that provides satellite data to the CAPSAT transceiver.

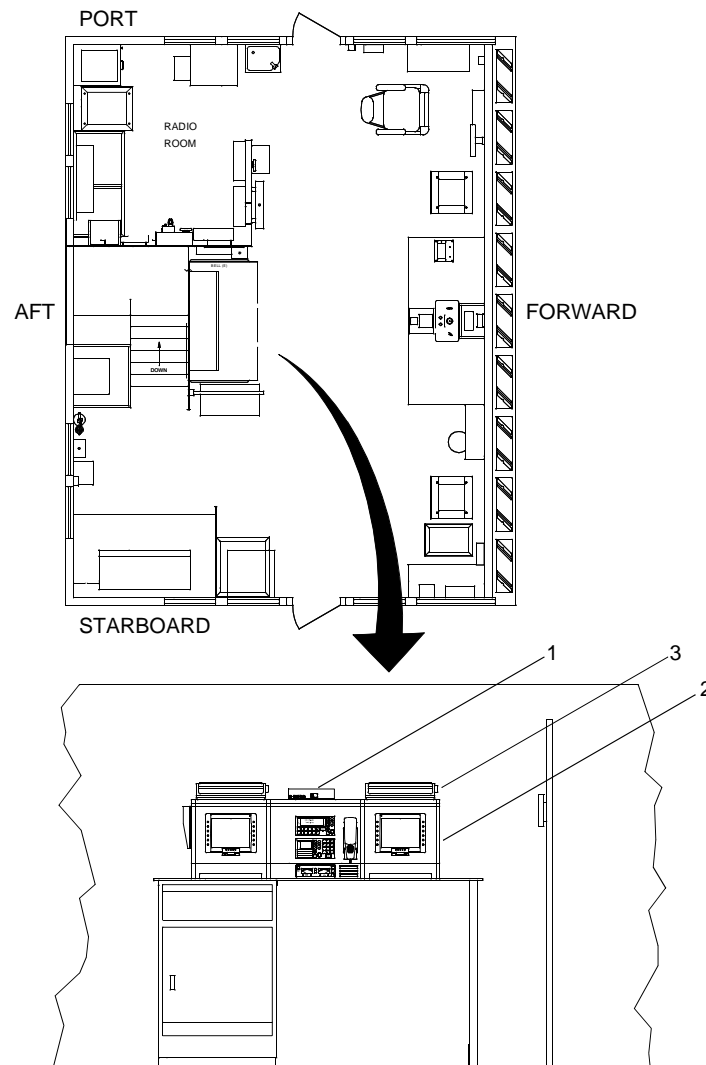
BELOW DECK LOCATION

Figure 2. Satellite Communications System Location

BELOW DECK LOCATION - Continued**Description of the Satellite Communications System**

The satellite communications system is composed of the CAPSAT transceiver (figure 2, item 1), CAPSAT transceiver data terminal (figure 2, item 2), CAPSAT transceiver printer (figure 2, item 3) and an omnidirectional antenna (figure 1, item 6). The satellite communications system, also called CAPSAT, offers high integrity distress and routine communication. The satellite communications system incorporates the Global Positioning System (GPS) signal from the Precision Lightweight Global Positioning System Receiver (PLGR) to insert the vessels position automatically into a distress message. By pushing the required CAPSAT transceiver (figure 4, item 1) distress button, located on the GMDSS console, a distress message may be sent giving the vessels identity number and location. The system is not equipped for voice communication, but provides a high quality e-mail, facsimile transmission (FAX) and TELEX communication by using the CAPSAT data terminal. The satellite communications system has the capability to receive Maritime Safety Information (MSI) appropriate to the ocean area where the vessel is sailing. MSI is comprised of weather forecasts, navigation warnings and distress relays.

Description of the CAPSAT Transceiver

The CAPSAT transceiver (figure 2, item 1) is a component of the satellite communication system. The transceiver will automatically perform a login when the transceiver power is turned on. A manual login is required if a logout was performed and the transceiver power was not turned off or operation in a different ocean region is desired. The transceiver can be operated in one of two modes, normal and terminal. The terminal mode is available for users wanting to customize the system to a degree not available from the windows of the message handling software. In terminal mode, the user is in direct contact with the transceiver and able to issue commands by typing them from the keyboard.

The transceiver is a message center containing transceiver and GPS status reports, in addition to the message log and poll files. All incoming and outgoing messages are recorded in special log files. Each log file may hold as many as 50 messages. The names of the log files have a special layout such as: LOG09-03.001, LOG10.93.001 or LOG10.93.002 where 09 and 10 are September and October respectively. 93 is the year. 001 and 002 is a sequential number within each month. A new log file is generated when a new month begins or when the size of the file gets larger than 100 KB.

A poll is a message, but it differs from normal messages in that it can only be sent from a terrestrial user (TELEX, x .25 or telephone modem), a mobile unit, and in that it may simultaneously be received by several units. A poll can be addressed to one specific mobile, a group of mobiles or a group of mobiles within a specified geographic or navigational area. The reception of a poll can initiate the transmission of a position report or trigger some other pre-defined event. As shipped, the CAPSAT only supports transmission of position reports in response to a poll. When a CAPSAT unit responds to a poll, the response is either forwarded to the terrestrial user at once or it is stored at the land station for later retrieval. When receiving a poll the transceiver will generate a file containing the data of the poll. These files will be named POLLFILE.000, POLLFILE.001, etc. On the data terminal the files will be placed in the start-up directory. No further action will be taken.

The transceiver also utilizes the Data Network ID (DNID). The DNID is a unique number, which serves as a link between the terrestrial user and the mobile units. For example, the DNID is used when the terrestrial user issues a poll and also when the mobile responds. A user may have several DNIDs. When several mobiles have the same DNID, this is called a group. Each user in a group is also designated a member number, which enables a terrestrial user to differentiate between the users in a group. This is especially important when responses from the users are processed at the premises of the terrestrial user. The user interface allows the user to enable or disable DNIDs. If a DNID is disabled, you will not receive any poll with this DNID or be able to use it for position reporting.

Description of the CAPSAT Data Terminal

The CAPSAT data terminal (figure 2, item 2), located on GMDSS console, is a component of the satellite communication system. The data terminal is composed of a computer, Alternating Current (AC) adapter and battery pack. The data terminal is used to compose e-mail messages, TELEX messages and FAX to be sent using the satellite communications system. In addition, the data terminal allows the operator to perform file management and print information received or transmitted.

BELOW DECK LOCATION - Continued**Description of the CAPSAT Transceiver Printer**

The CAPSAT transceiver printer (figure 2, item 3), located above the CAPSAT data terminal on the GMDSS console, is a dot matrix printer capable of printing 240 characters per second in draft mode. The CAPSAT transceiver printer prints e-mail, TELEEX and MSI messages received through the satellite communications system.

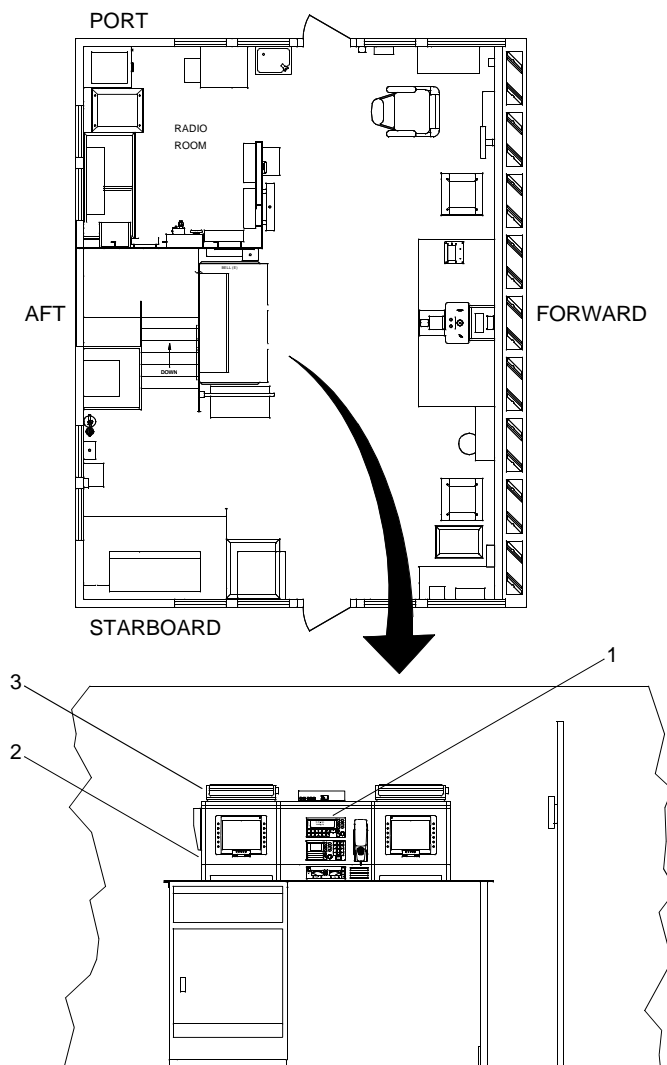
Description of the MF/HF Control Unit

Figure 3. MF/HF Equipment Location

The MF/HF control unit (figure 3, item 1), located on the GMDSS console, provides enhanced distress calling capability. The distress call is received by every ship and coast station monitoring the international distress frequencies. The MF/HF DSC control unit repeats a transmitted distress message every 4 minutes until it is acknowledged. The MF/HF DSC controller incorporates the GPS signal from the PLGR to insert the vessels position automatically into a distress message. An alarm sounds when incoming messages are received. Unanswered calls are logged for automated call back. Routine calls can be transmitted and received between DSC equipped vessels or Coast Earth Stations (CES). Once the call is received by the intended party, an acknowledgement is transmitted to the sender of the call leaving no doubt whether the call was received. Because each station has a unique DSC number, only the intended party will respond to the call. All ships calling is also provided. The all ships format is useful for initiating safety messages, such as weather reports and navigational warnings.

BELOW DECK LOCATION - Continued**Description of the MF/HF TELEX Data Terminal**

The MF/HF TELEX data terminal (figure 3, item 2), located on the GMDSS console, is used in conjunction with the MF/HF control unit (figure 3, item 1). The data terminal is composed of a computer, Alternating Current (AC) adapter and battery pack. The data terminal is used to compose e-mail messages, TELEX messages and FAX to be sent using the satellite communications system. In addition, the data terminal allows the operator to perform file management and print information received or transmitted.

Description of the MF/HF TELEX Printer

The MF/HF TELEX printer (figure 3, item 3), located above the MF/HF TELEX data terminal on the GMDSS console, is a dot matrix printer capable of printing 240 characters per second in draft mode. The MF/HF TELEX printer prints information received through the MF/HF control unit.

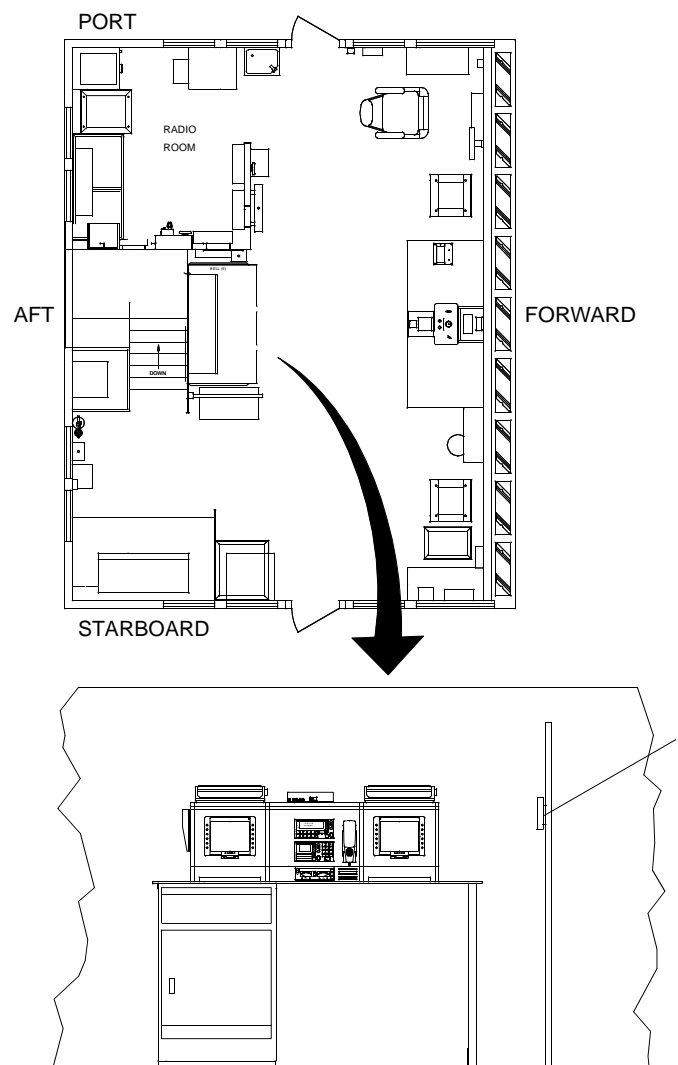
Description of the Iridium Handset

Figure 4. Iridium Handset Location

The Iridium handset (figure 4, item 1), located on the bulkhead on the port side of the GMDSS console, utilizes satellite signal for voice and data communication. The handset is used in conjunction with an Iridium antenna and transceiver.

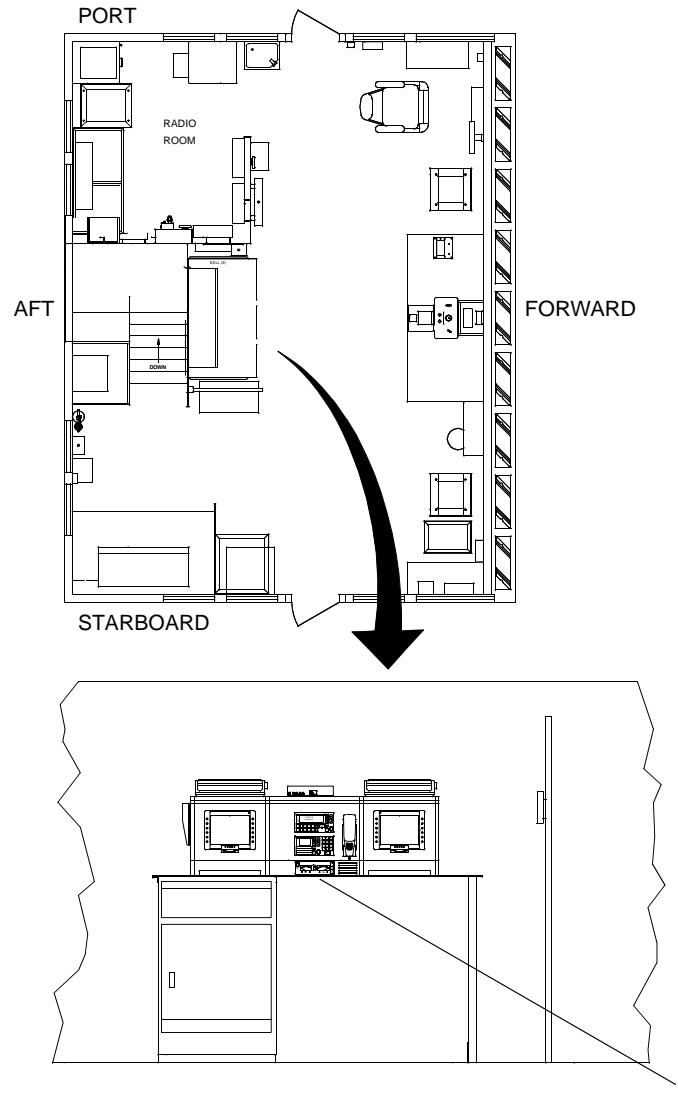
BELOW DECK LOCATION - Continued**Description of the Battery Panel**

Figure 5. Battery Panel Location

The battery panel (figure 5, item 1), located on the GMDSS console, allows the user to switch between the two GMDSS system batteries. The panel indicates the amount of voltage and amperage being supplied by the GMDSS system battery in use and is equipped with alarms to warn the user when the battery is low on power.

BELOW DECK LOCATION - Continued

Description of the PLGR

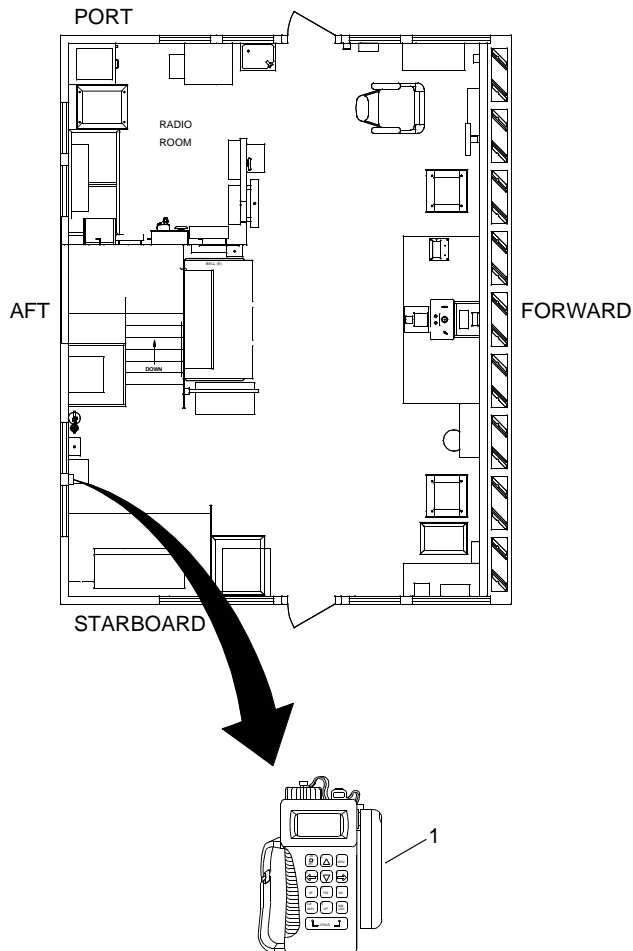


Figure 6. PLGR Location

The PLGR (figure 6, item 1), located on the aft port bulkhead, supplies GPS position to the DSC controller, satellite communications system and the VHF-DSC transceiver through the interface and switchbox. The PLGR receives GPS data from the GPS antenna located on the mast. A PLGR interface cable receives power for the PLGR from the interface and switchbox, receives the GPS signal from the interface and switchbox and returns the ships position to the interface and switchbox for distribution to DSC controller, satellite communications system and the VHF-DSC transceiver. The communications PLGR may be used to mark the position of a man overboard and provide route navigation when properly programmed.

BELOW DECK LOCATION - Continued

Description of the Interface and Switchbox

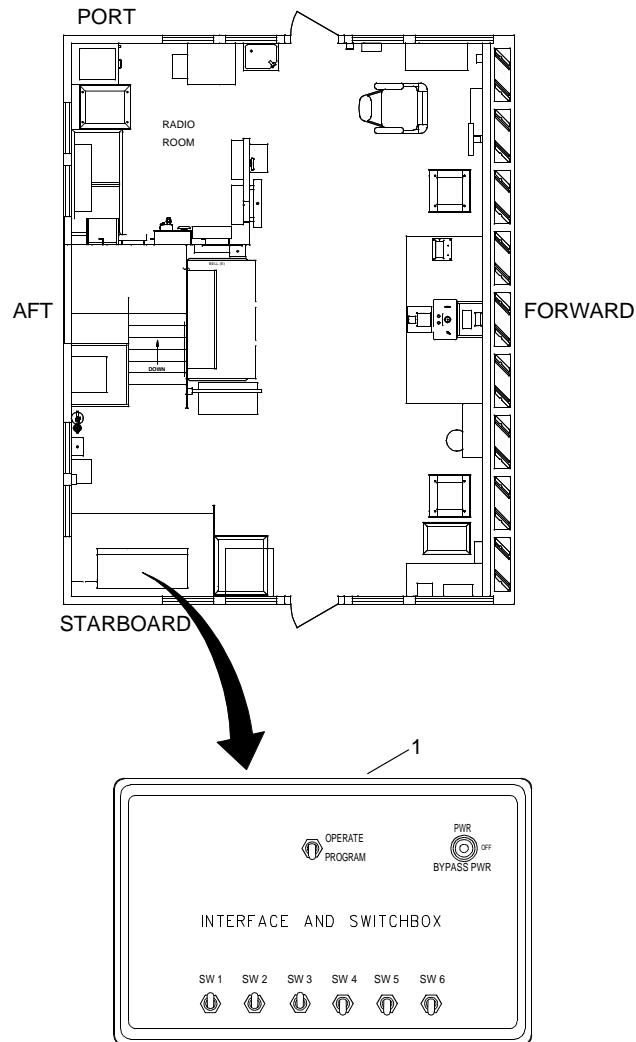


Figure 7. Interface and Switchbox Location

The interface and switchbox (figure 7, item 1), located on the chart table overhead console, is an interface between the communications PLGR, the ships power supply and the GPS antenna. The interface and switchbox is also a switchbox that turns power on or off to the PLGR, allowing the PLGR to be programmed by the CAPSAT data terminal, and allows the operator to turn the position signal on or off to the DSC controller, satellite communications system and the VHF-DSC transceiver. The interface and switchbox also allows input of differential GPS data to the PLGR.

BELOW DECK LOCATION - Continued

Description of the Navigational Telex (NAVTEX) Receiver

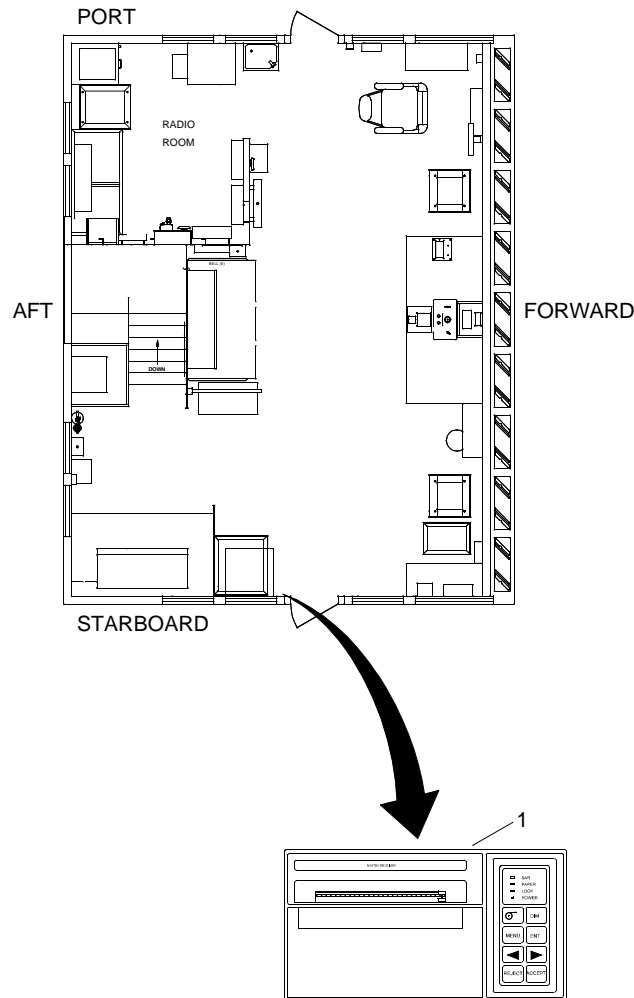


Figure 8. NAVTEX Receiver Location

The NAVTEX receiver (figure 8, item 1) is located on the starboard side of the pilothouse. The NAVTEX receiver is a narrow band radio teletype system for sending, by frequency shift keying, text messages expressed in a seven unit code. The NAVTEX transmitter transmits a nine control character header code ahead of the main message so that the receiver can identify the station, message type and serial number automatically. For automatic identification of messages, each message starts with nine control characters, called a header code. The first five characters are always ZCZC_. The latter four characters of the header code indicate origin, category and serial number of the message. The NAVTEX receiver selectively acquires stations and types of messages specified by the operator. Message types A (navigational warnings), B (meteorological warnings) and C (ice reports) cannot be switched off by the operator. Message type D (Search and Rescue (SAR) information) will be printed immediately, the NAVTEX alarm buzzer will sound and the SAR warning Light Emitting Diode (LED) will light. When an abnormal character is received due to noise interference it will be printed as an asterisk. A message having serial number "00" (emergency message) will be reprinted. Message types A, B, D and L, or serial number "00" from rejected stations will be printed. Message type D will be printed up to 2,000 characters regardless of character error rate. The NAVTEX receiver may be preset to stop printing when the error rate is above thirty-three percent.

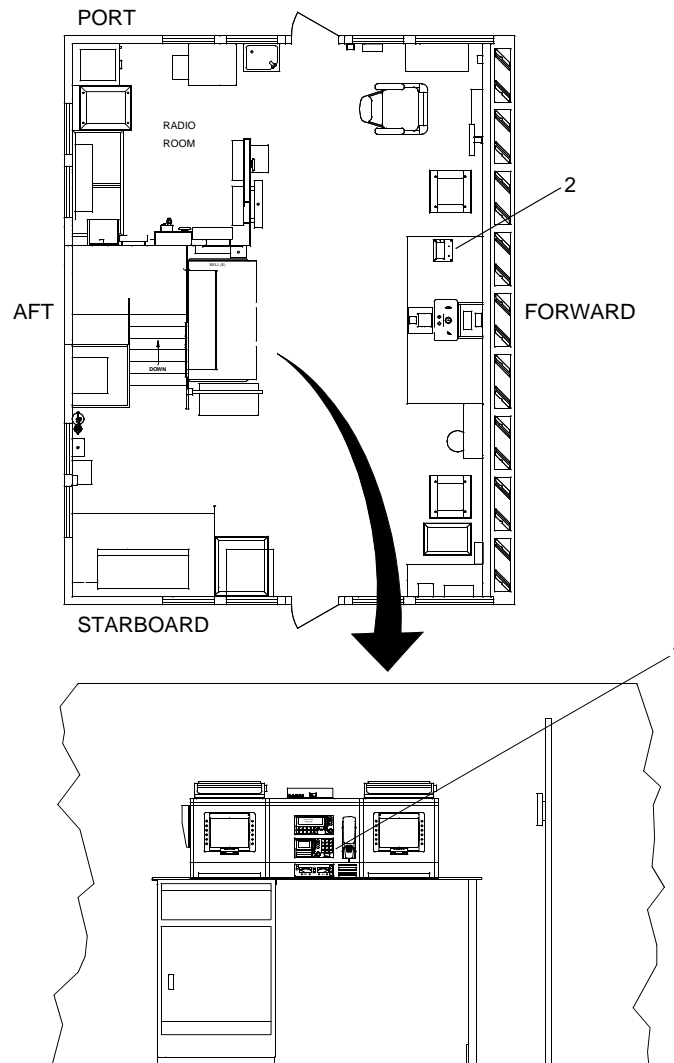
BELOW DECK LOCATION - Continued
Description of the VHF-DSC Transceiver

Figure 9. VHF-DSC Transceiver Location

The VHF-DSC transceiver (figure 9, item 1, 2) is an all channel Digital Selective Calling (DSC) Frequency Modulation (FM) transceiver operating in the Very High Frequency (VHF) marine frequency range. The transceiver employs the latest frequency and microcomputer technology to provide a high performance, reliable communication system for both military and commercial mariners. The DSC features make the transceiver the most advanced marine VHF communication system available. Also, a two-way data communications interface allows automatic position reporting. The transceiver system consists of the compact transceiver with microphone, accessories and cables for installation and electrical connection. The transceiver enables the operator to program into the radio DSC numbers for other vessels, marinas, bridge tenders and coast stations. DSC ship station identification numbers are issued by the FCC or DOC (Canada) and appropriate communications authorities in other countries.

BELOW DECK LOCATION - Continued

Description of the Lifeboat Radio (LBR)

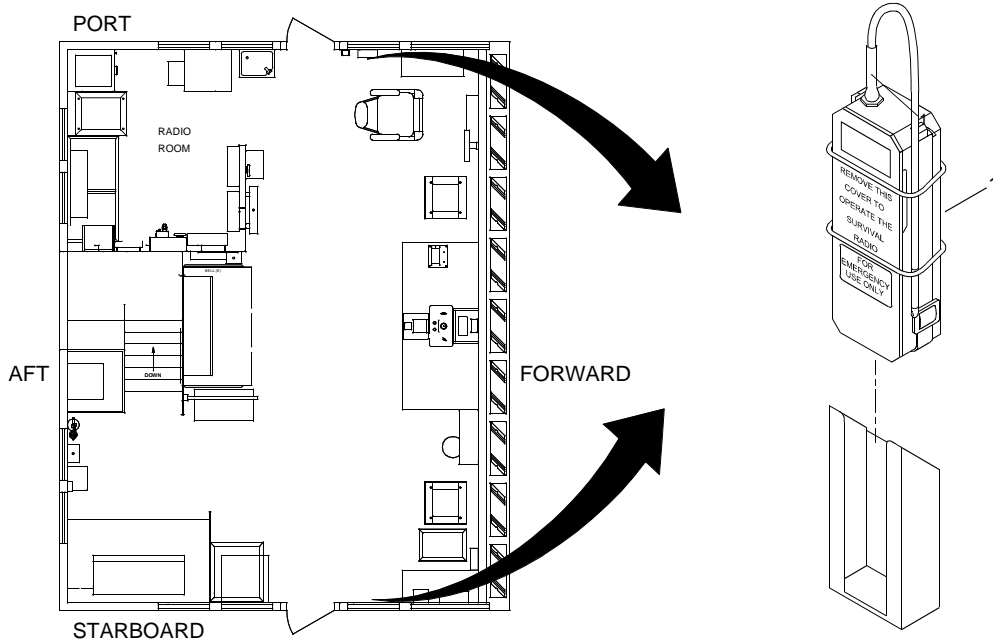


Figure 10. Lifeboat Radio (LBR) Location

The 16/6 lifeboat radio (figure 10, item 1) is a portable two-way radiotelephone used for on-scene emergency communications between survival craft and rescue units. The radio is equipped with a 5 year lithium battery pack, which is operator replaceable. The radio will operate on either channel 6 or 16. The radio is FCC type accepted and GMDSS listed (FCC Part 80.1101) as a survival craft two-way VHF radiotelephone apparatus which complies with the 1988 GMDSS Safety Of Life At Sea (SOLAS) amendments. The lifeboat radio should be tested semi-annually using a spare lifeboat radio battery. Two lifeboat radios are installed on the vessel.

Description of the Search And Rescue Transponder (SART)

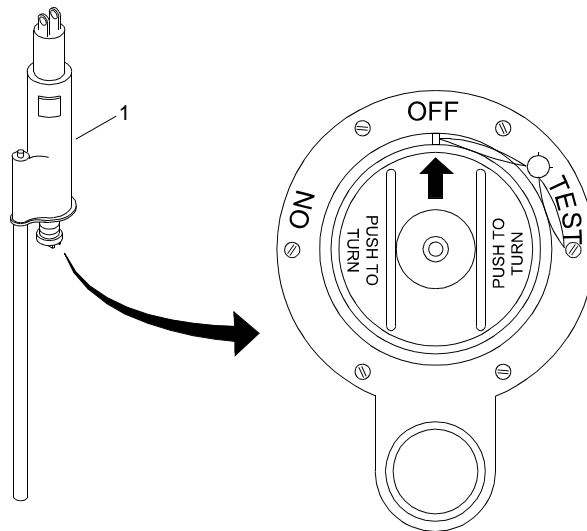


Figure 11. Search and Rescue Transponder (SART) Location

BELOW DECK LOCATION - Continued

The Search and Rescue Transponder (SART) (figure 11, item 1) is a battery powered transponder used in an emergency by survivors of a sinking vessel. The SART must be mounted in the lifeboat one meter above the sea. The signal from the SART is detected by a 9 GHz radar at a range of 5–7 miles using the ships radar. Aircraft radar can receive the SART signal flying at 3,000 ft at up to 40 nautical miles. Once activated, the SART will rebroadcast a very strong response to any interrogating radar. At the same time, a line of 12 dots will appear on the search radar screen, radiating outwards from the position of the SART. Once the search vessel or aircraft has approached within one nautical mile of the SART, these dots widen to eventually form a series of concentric circles around the position of the SART. The SART has a built-in test capability and should be tested monthly. Two SARTs are installed on the vessel.

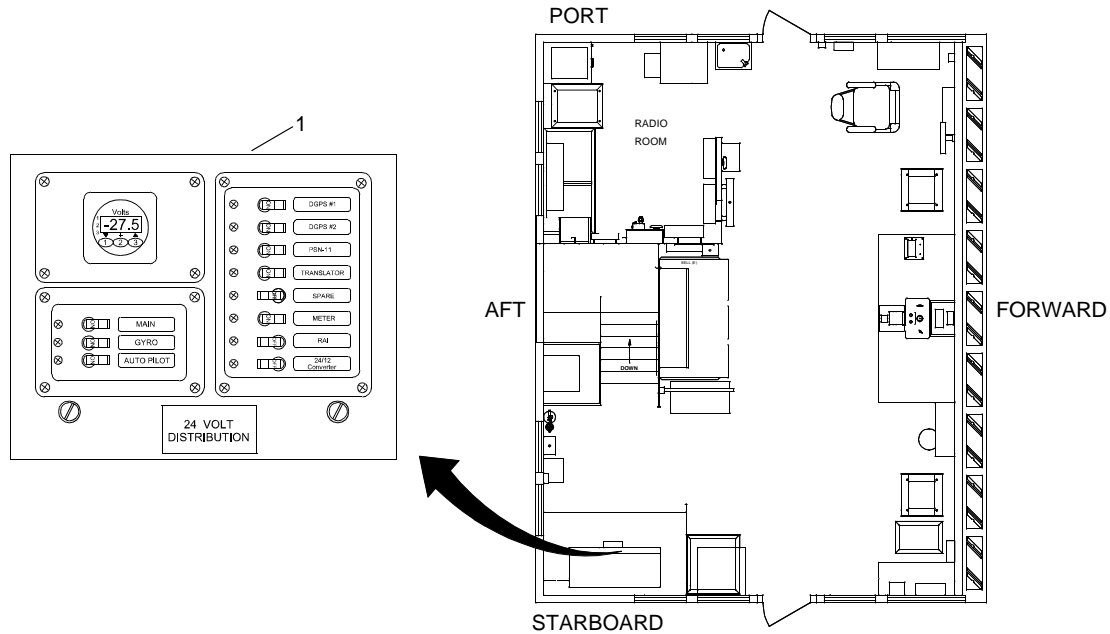
Description of the 24 VDC Distribution Panel

Figure 12. 24 Volt Distribution Panel Location

The 24 VDC distribution panel (figure 12, item 1), located above the chart table, provides power and circuit protection for the communications equipment.

BELOW DECK LOCATION - Continued

Description of the Electrical Distribution Panel EP103

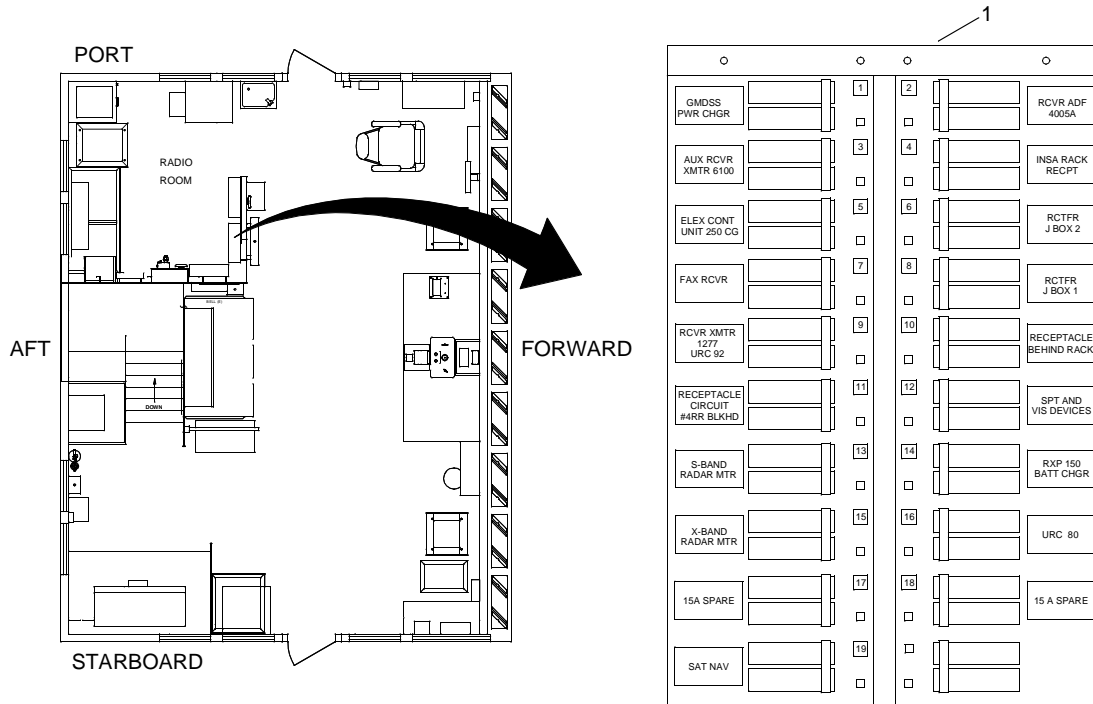


Figure 13. Electrical Distribution Panel EP103 Location

The electrical distribution panel EP103 (figure 13, item 1), located in the radio room on the forward bulkhead, consists of an AC circuit breaker panel that provides circuit breaker protection for the pilothouse electrical equipment.

EQUIPMENT DATA

The following table provide performance data pertaining to operating, electrical and mechanical characteristics of components within the Global Maritime Distress and Safety System (GMDSS).

Table 1. GMDSS Major Component Equipment Data.

| ITEM CHARACTERISTIC | DESCRIPTION |
|---------------------------|---|
| CAPSAT TRANSCEIVER | |
| Size (W X H X D) | 7 in. X 2 in. X 6.5 in. (18 cm X 5 cm X 16.5 cm) |
| Weight | 2.9 lb (1.3 kg) |
| General Specifications | Meets or exceeds all INMARSAT specifications for the INMARSAT-C network and GMDSS requirements. |
| Transmit Frequency | 1626.5–1660.5 MHz |
| Receive Frequency | 1525.0–1559.0 MHz |
| Channel Spacing | 1.25/2.5/5 kHz |
| Modulation | 1,200 symbols/sec BPSK |
| Ambiguity Resolution | Unique word |
| Coding | R 1/2 K=7 convolutional code, (interleaved code symbols RX) |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|-------------------------------|--|
| Data Rate | 600 bit/sec |
| RX Frame Length | 8.64 seconds |
| TX Signalling Access Mode | Slotted ALOHA |
| TX Message Channel | TDMA & FDMA, interleaved code symbol |
| Antenna Interface | Standard 50 ohm female TNC (transceiver), female TNC (antenna) |
| GPS Interface | Serial EIA-422-A optically isolated input (NMEA 0183), DB-15F |
| Terminal Interface | Serial EIA-232-E 110-38-400 Baud IA-5 code, DB-9F connector |
| Printer Interface | Standard parallel IEEE 1284 Centronics, DB-25F connector |
| Navigator and Alarm Interface | CCITT Rec. V.10 special with NMEA0183 interface and multidrop addressing, female BNC-connector, max 100 m cable |
| System Setup | EEPROM programming from operator terminal |
| DC power source | 10–32 floating VDC, Rx: 9.5 W, TX: 80 W |
| Ambient Temperature | -13°–131°F (-25°–55°C) operating, -40°–176°F (-40°–80°C) storage |
| Relative Humidity | -13°–131°F (-25°–55°C) operating, -40°–176°F (-40°–80°C) storage |
| INMARSAT-C Protocol support | Message transmission and reception with IA-5, ITA-2 and binary transfer to/from the following destinations: TELEX, PSTN (telephone modems and fax modems, PSDN (X.25 network), EGC message reception with automatic geographical area selection, Polling and data reporting with automatic transmission of position reports down to one per minute, Special Access Codes, Basic X.400, DNID messaging, Program Unreserved Data Reporting, Pre-assigned DATA Reporting, GMDSS Facilities, Transmit message size: maximum 32 KB, Receive storage: 128 KB |
| CAPSAT DATA TERMINAL | |
| Size (W X H X D) | 11.7 in. X 8.7 in. X 2 in. (29.7 cm X 22.1 cm X 5.1 cm) |
| Weight | 6.83 lb (3.1 kg) |
| Microprocessor | 386SX-40 MHz |
| Memory | 2 MB RAM, 2 MB Flash Disk |
| Display | Width of 10.4 in. (26.4 cm) TFT flat panel monitor measured diagonally, up to 65,536 colors, up to 640 X 480 resolution |
| Keyboard | 84 key, 85 key or 89 key Trackpoint III, Fn key function |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|--|--|
| CAPSAT DATA TERMINAL (CONT'D) | |
| Storage Device | 3.5 in. diskette drive |
| External Interface | 2 SubD 9 male connectors RS-232 terminal interface Standard parallel Centronics, SubD 25 female connector printer interface PC card slots (two Type I or Type II PC cards or one Type III PC card) 5-pin mini-DIN PS/2 keyboard interface |
| Environment (Temperature at altitudes less than 8,000 ft (2438 m)) | Operating temperature -4°–131°F (-20°–55°C) Storage temperature -40°–176°F (-40°–80°C) |
| Environment (Relative Humidity) | 95% non-condensing at 104°F (40°C) |
| Environment (Maximum Altitude) | 10,000 ft (3,048 m) in unpressurized conditions, maximum temperature 88°F (31.1°C) |
| Heat Output | Approximately 119.4 British Thermal Units (BTU) per hour (35 W) |
| Electrical AC Adapter | Sine wave input, at 50–60 Hz, is required, the input rating of the AC adapter is 100–240 VAC |
| Lithium-Ion Battery Pack | Nominal voltage: 10.8 VDC, Capacity: 2.6 A |
| NiMH Battery Pack | Nominal voltage: 8.4 VDC, Capacity: 3.5 A |
| CAPSAT TRANSCEIVER PRINTER | |
| Size (W X H X D) | 14.2 in. X 3.2 in. X 10.8 in. (36.07 cm X 8.13 cm X 27.43 cm) |
| Weight | 10 lb (4.54 kg) |
| Print Speed | Utility: 250 cps, High Speed Draft: 333 cps, Near Letter Quality: 62.5 cps |
| Characters Per Line | at 10 cpi: 80, at 12 cpi: 96, at 17.1 cpi (Microline emulation): 137, at 17.1 cpi (IBM emulation): 132 |
| Electrical Characteristics | 230 VAC (+6%; -14%), 240 VAC (±10%), 50/60 Hz (±2%) |
| Reliability: Mean Time Between Failures | 20,000 hours at 25% duty cycle and 35% page density |
| Reliability: Mean Time To Repair | 15 minutes |
| Reliability: Ribbon Life | 3 million characters |
| Reliability: Printhead Life | 200 million characters |
| Paper Weight | 16–20 lb (7.26–9.07 kg) |
| MF/HF CONTROL UNIT | |
| Size (W X H X D) | 7.9 in. X 3.9 in. X 4.8 in. (20 cm X 10 cm X 12.1 cm) |
| Weight | 5.5 lb (2.5 kg) |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|--|--|
| Frequency Range | 100 kHz–30 MHz |
| Frequency Stability | 0.35 ppm |
| Operating Modes | Simplex, semi-duplex, SSB telephony, AM telephony, TELEX and DSC |
| Environment (Temperature at altitudes less than 8,000 ft (2438 m)) | Operating temperature -4°–131°F (-20°–55°C) |
| MF/HF TELEX DATA TERMINAL | |
| Size (W X H X D) | 11.7 in. X 8.7 in. X 2 in. (29.7 cm X 22.1 cm X 5.1 cm) |
| Weight | 6.83 lb (3.1 kg) |
| Microprocessor | 386SX-40 MHz |
| Memory | 2 MB RAM, 2 MB Flash Disk |
| Display | Width of 10.4 in. (26.4 cm) TFT flat panel monitor measured diagonally, up to 65,536 colors, up to 640 X 480 resolution |
| Keyboard | 84 key, 85 key or 89 key Trackpoint III, Fn key function |
| Storage Device | 3.5 in. diskette drive |
| External Interface | 2 SubD 9 male connectors RS-232 terminal interface Standard parallel Centronics, SubD 25 female connector printer interface PC card slots (two Type I or Type II PC cards or one Type III PC card) 5-pin mini-DIN PS/2 keyboard interface |
| Environment (Temperature at altitudes less than 8,000 ft (2438 m)) | Operating temperature -4°–131°F (-20°–55°C) Storage temperature -40°–176°F (-40°–80°C) |
| Environment (Relative Humidity) | 95% non-condensing at 104°F (40°C) |
| Environment (Maximum Altitude) | 10,000 ft (3,048 m) in unpressurized conditions, maximum temperature 88°F (31.1°C) |
| MF/HF TELEX PRINTER | |
| Size (W X H X D) | 14.2 in. X 3.2 in. X 10.8 in. (36.07 cm X 8.13 cm X 27.43 cm) |
| Weight | 10 lb (4.54 kg) |
| Print Speed | Utility: 250 cps, High Speed Draft: 333 cps, Near Letter Quality: 62.5 cps |
| Characters Per Line | at 10 cpi: 80, at 12 cpi: 96, at 17.1 cpi (Microline emulation): 137, at 17.1 cpi (IBM emulation): 132 |
| Electrical Characteristics | 230 VAC (+6%; -14%), 240 VAC (±10%), 50/60 Hz (±2%) |
| Reliability: Mean Time Between Failures | 20,000 hours at 25% duty cycle and 35% page density |
| Reliability: Mean Time To Repair | 15 minutes |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|--|---|
| MF/HF TELEX PRINTER (CONT'D) | |
| Reliability: Ribbon Life | 3 million characters |
| Reliability: Printhead Life | 200 million characters |
| Paper Weight | 16–20 lb (7.26–9.07 kg) |
| IRIDIUM HANDSET | |
| Size (W X H X D) | 2.7 in. X 8.2 in. X 2.6 in. (6.9 cm X 20.9 cm X 6.7 cm) |
| Weight | 1.1 lb (0.5 kg) |
| Frequency Range | Terminal satellite, 1616–1626.5 MHz (L-Band) Intersatellite, 23.18–23.38 GHz (Ka-Band) |
| Modulation | Voice/data, 2.4 kbit/s Compressed data, 10 kbit/s |
| Power Consumption | 25 W for transmission, 8 W for standby |
| Environment (Temperature at altitudes less than 8,000 ft (2438 m)) | Operating temperature -31°–131°F (-35°–55°C) |
| Environment (Relative Humidity) | 95% non-condensing at 104°F (40°C) |
| BATTERY PANEL | |
| Size (W X H X D) | 4.1 in. X 9.5 in. X 2.6 in. (10.41 cm X 24.13 cm X 9.21 cm) |
| Weight | 2.75 lb (1.25 kg) with all batteries in place |
| Elevation Limits | Operation: -1,312 ft to 29,856 ft MSL, Storage: -1,312 ft to 49,213 ft MSL |
| Temperature Limits | Operation: -4°–158°F (-20°–70°C), Storage without batteries: -76.2°–158°F (-60.1°–70°C) |
| Humidity Limits | 0–100% humidity |
| PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR) | |
| Size (W X H X D) | 4.1 in. X 9.5 in. X 2.6 in. (10.41 cm X 24.13 cm X 9.21 cm) |
| Weight | 2.75 lb (1.25 kg) with all batteries in place |
| Elevation Limits | Operation: -1,312 ft to 29,856 ft MSL, Storage: -1,312–49,213 ft MSL |
| Temperature Limits | Operation: -4°–158°F (-20°–70°C), Storage without batteries: -76.2°–158°F (-60.1°–70°C) |
| Humidity Limits | 0–100% humidity |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|--|--|
| INTERFACE AND SWITCHBOX | |
| Size (W X H X D) | 7 in. X 4.5 in. X 3 in. (17.78 cm X 11.43 cm X 7.62 cm) |
| Weight | 1.1 lb (0.5 kg) |
| Power | Capable of generating 12 VDC at 1.5 A from an input range of 12–30 VDC at a temperature of -40°–120°F (-40°–48.9°C). |
| NAVTEX RECEIVER | |
| Size (W X H X D) | 10.6 in. X 5.6 in. X 4.2 in. (26.92 cm X 14.22 cm X 10.67 cm) |
| Weight | 6.6 lb (3 kg) |
| Power | 10.8–40 VDC |
| Power Consumption | 15 W or less for printing, 9 W for standby |
| AF Signal (Input/Output) | 0 dB/600 ohms, 1,700 ± 85 Hz |
| Alarm Signal (Output) | Contact closure signal (max 1 amp, 12 W) |
| Navigation Data (Input) | Furuno CIF or NMEA0183 format |
| Environmental Data | 5°–131°F (-15°–55°C) |
| Relative Humidity | 0–95% |
| VHF-DSC TRANSCEIVER | |
| Size (W X H X D) | 7.9 in. X 3.9 in. X 6.9 in. (20 cm X 10 cm X 17.6 cm) |
| Weight | 5.5 lb (2.5 kg) |
| Frequency Range | 150.8–163.6 MHz |
| Frequency Stability | +10 ppm/opt. +5 ppm |
| Operating Modes | Simplex/Semi-duplex |
| Environment (Temperature at altitudes less than 8,000 ft (2438 m)) | Operating temperature 5°–131°F (-15°–55°C) |
| LIFEBOAT RADIO (LBR) | |
| Size (W X H X D) | 2.6 in. X 7.6 in. X 1.7 in. (6.6 cm X 19.3 cm X 4.32 cm) |
| Weight | 1.1 lb (0.5 kg) with battery |
| Channel 6 Frequency | 156.300 MHz |
| Channel 16 Frequency | 156.800 MHz |
| Transmitter Power Output | 500 mW ± 2.5 dB |
| Transmitter Frequency Control | Quartz Crystal ± 0.001% |
| Transmitter Modulation Type | Phase |
| Transmitter Maximum Modulation | ± 5 kHz |

Table 1. GMDSS Major Component Equipment Data. (Continued)

| ITEM CHARACTERISTIC | DESCRIPTION |
|--|--|
| LIFEBOAT RADIO (LBR) (CONT'D) | |
| Transmitter Bandwidth | 300/2500 Hz |
| Receiver Sensitivity (12 dB SINAD) | 1.0 UV |
| Receiver Audio Output | 300 mW |
| Battery Type | Primary, Lithium |
| Battery Storage Life | 10 years |
| Battery Operating Life Under Typical Duty Cycle of 1:9 (Transmit to Receive Ratio) | 8 hours @ -4°F (-20°C) |
| Service Condition (Temperature) | -4°–122°F (-20°–50°C) |
| Service Condition (Altitude) | 0–40,000 ft (0–12,000 m) |
| Service Condition (Waterproof) | 3 meters depth, max up to 5 minutes |
| SEARCH AND RESCUE TRANSPONDER (SART) | |
| Size | Stowed: 22.52 in. (57.2 cm) long, Deployed: 72.83 in. (185 cm) long, Max Diameter: 2.36 in. (6 cm) |
| Weight | 2.43 lb (1.1 kg) |
| OPERATING Temperature | -4°–131°F (-20°–55°C) |
| STOWAGE Temperature | -22°–149°F (-30°–65°C) |
| Environmental | Waterproof to 10 meters |
| Battery | Lithium Manganese Dioxide - Type SRT-A-106 or Lithium Sulphur Dioxide - Type SRT-A-116 |
| Transmitter Frequency | 9.2–9.5 GHz |
| Transmitter Sweep Rate | 5 μ per 200 MHz |
| Response Signal | 12 sweeps |

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
THEORY OF OPERATION**

THEORY OF OPERATION FOR THE GMDSS

INTRODUCTION

The GMDSS is comprised of the CAPSAT transceiver, CAPSAT transceiver data terminal, CAPSAT transceiver printer, AN/PSN-11(V)1 PLGR, interface and switchbox, MF/HF control unit, MF/HF TELEX data terminal, MF/HF TELEX printer, Navigation TELEX (NAVTEX) receiver, Iridium handset, VHF-DSC transceiver, Lifeboat Radio (LBR) and Search and Rescue Transponder (SART). All equipment, with the exception of the Lifeboat Radio (LBR) and Search and Rescue Transponder (SART), are powered by the ships power through an equipment power supply. The Lifeboat Radio (LBR) and Search and Rescue Transponder (SART) are battery powered.

SATELLITE COMMUNICATIONS SYSTEM OPERATION

The satellite communications system is comprised of a CAPSAT transceiver, CAPSAT transceiver data terminal and CAPSAT transceiver printer. The CAPSAT transceiver, located in the GMDSS console, receives and transmits a radio signal to a geosynchronous orbiting satellite, allowing distress, e-mail, FAX and TELEX communications. The CAPSAT transceiver is cabled to the INMARSAT-C antenna located on the yardarm. E-mail, FAX and TELEX messages are sent using the CAPSAT transceiver data terminal. The CAPSAT data terminal routes the received messages to the CAPSAT transceiver printer to be printed or viewed by the CAPSAT data terminal. In an emergency situation, a distress may be transmitted from the CAPSAT transceiver. The current ships position is transferred from the AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) through the interface and switchbox to the CAPSAT. The CAPSAT is powered by ships power through the GMDSS console. In the event of an AC system failure, backup power to operate the CAPSAT is received from the GMDSS emergency batteries.

AN/PSN-11(V)1 PLGR

The PLGR receives ships position data through the communications PLGR antenna from Global Positioning System (GPS) satellites. The PLGR is powered by ships power through the communications interface and switchbox and PLGR interface cable. The communications PLGR supplies current position information, through the interface and switchbox and PLGR interface cable, to the CAPSAT transceiver, MF/HF control unit and the VHF-DSC transceiver. The PLGR may be programmed for crypto operations using the KYK-13 or KOI-18 crypto key.

INTERFACE AND SWITCHBOX

The communications interface and switchbox provides isolated and regulated ships power to the communications PLGR. The interface and switchbox acts as an interface to provide position data from the communications PLGR to the CAPSAT transceiver, DSC controller and the VHF/FM DSC transceiver. Switches are located on the interface and switchbox to either turn the position data signal off or on to each component. The communications PLGR may be programmed by the CAPSAT data terminal using the data terminal interface on the interface and switchbox with the appropriate cable.

IRIDIUM HANDSET

The Iridium handset is part of a modular system which includes a helix L-band antenna and a transceiver whose operation is similar to a high end multifunction cellular telephone. The Iridium handset utilizes the Iridium Satellite System, which is a system of 66 satellites allowing communications in areas where communications are problematic. A Public Switched Telephone Network (PSTN) telephone may also be attached to the modular system for placing external calls. The Iridium handset is also capable of acquiring GPS positioning when the transceiver is connected to a GPS receiver.

MF/HF SYSTEM

The MF/HF system is comprised of a MF/HF control unit, MF/HF TELEX data terminal and MF/HF TELEX printer. The MF/HF control unit, located in the GMDSS console, receives and transmits a radio signal to a geosynchronous orbiting satellite, allowing distress, e-mail, FAX and TELEX communications. E-mail, FAX and TELEX messages are sent using the MF/HF TELEX data terminal. The MF/HF TELEX data terminal routes the received messages to the MF/HF TELEX printer to be printed or viewed by the MF/HF TELEX data terminal. In an emergency situation, a distress may be transmitted from the MF/HF control unit. The current ships position is transferred from the AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) through the interface and switchbox to the MF/HF control unit. The MF/HF system is powered by ships power through the GMDSS console. In the event of an AC system failure, backup power to operate the MF/HF system is received from the GMDSS emergency batteries.

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) POWER

The GMDSS communications system is powered by ships power. The CAPSAT transceiver, MF/HF control unit, PLGR, NAVTEX receiver, VHF-DSC transceiver and Iridium handset are supplied with power by a redundant power system through the GMDSS console. The primary source of power for these components is the GMDSS power supply. The GMDSS power supply converts 115 VAC to a nominal 13.8 VDC. The GMDSS power supply receives power from the EP103 circuit box using circuit breaker 3. In the event that alternating current is not available, the automatic power switch relay automatically switches to receive power from the ships GMDSS emergency batteries. The GMDSS DC converter converts 24 VDC emergency battery power to a nominal 13.8 VDC to power the equipment. The CAPSAT data terminal, MF/HF TELEX data terminal, MF/HF TELEX printer and CAPSAT transceiver printer are powered by 115 VAC from the EP103 circuit box using circuit breaker 8. In the event of a main buss AC system failure, the CAPSAT data terminal, MF/HF TELEX data terminal, MF/HF TELEX printer and CAPSAT transceiver printer are powered by the emergency generator. No battery backup power capability exists for these components.

NAVIGATION TELEX (NAVTEX) RECEIVER

The NAVTEX receiver receives weather and distress information. The NAVTEX receiver receives the incoming signal through cabling from the NAVTEX/weather facsimile antenna. The NAVTEX is powered by the navigation power supply.

VHF-DSC TRANSCEIVER

The VHF-DSC is an all channel DSC FM transceiver operating in the VHF range. The current ships position is transferred from the Precision Lightweight Global Positioning System Receiver (PLGR) through the interface and switchbox to the transceiver. Primary power for operation is received from a 115 VAC to a nominal 13.6 VDC power supply. In the event of AC failure, a power relay switches to GMDSS emergency battery backup. A switch, located forward of the transceiver, allows the operator to turn the GMDSS emergency battery power off or on. The radio signal for the transceiver is transmitted and received through cabling and the VHF/FM antenna located on the mast.

LIFEBOAT RADIO (LBR)

The lifeboat radio is a two-way radiotelephone used to coordinate rescue during emergency situations. The radio may be used on channel 6 or channel 16. The radio is powered by a lithium battery.

SEARCH AND RESCUE TRANSPONDER (SART)

The SART is a battery powered transponder used in a lifeboat after an emergency evacuation of a vessel. The signal from the SART is detected by 9 GHz radar at a range of 5–7 miles using the ships radar. Aircraft radar can receive the SART signal flying at 3,000 ft and up to 40 nautical miles. Once activated, the SART will rebroadcast a very strong response to any interrogating radar. At the same time, a line of 12 dots will appear on the search radar screen, radiating outward from the position of the SART. Once the search vessel or aircraft has approached within one nautical mile of the SART, these dots widen to eventually form a series of concentric circles around the position of the SART.

CHAPTER 2

OPERATOR INSTRUCTIONS FOR

U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

**OPERATOR INSTRUCTIONS
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME SAFETY AND DISTRESS SYSTEM (GMDSS)
COMMUNICATIONS GENERAL ARRANGEMENT
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS**

GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) CONTROLS AND INDICATORS (OVERVIEW)

GENERAL

The following paragraphs contain illustrations that show the location of each control and indicator for operation of the GMDSS system. Each control and indicator is clearly labeled as it appears on the equipment. Numbers on illustrations are keyed to the tabular listing, which contains the name, based on the equipment markings, and the functional description of each control and indicator.

VHF-DSC TRANSCEIVER CONTROLS AND INDICATORS

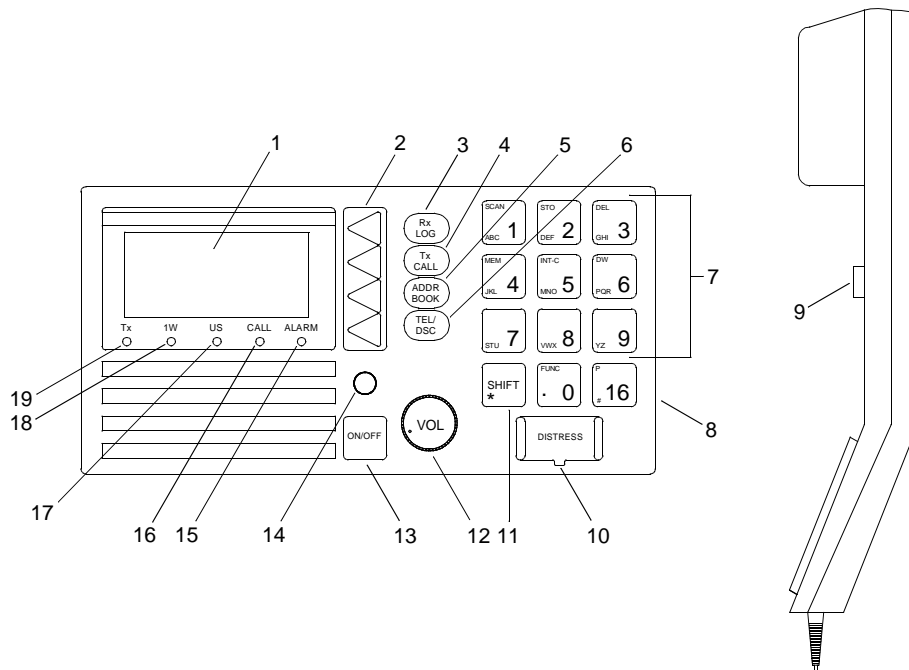


Figure 1. VHF-DSC Transceiver Controls and Indicators

Table 1. VHF-DSC Transceiver Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|------------------------------|---|
| 1 | Liquid Crystal Display (LCD) | The LCD screen displays programmed or function menus. |
| 2 | Soft Keys | Used to select the functions displayed at the right edge of the display. |
| 3 | Rx LOG Button | Press to open the Rx log over received calls in the DSC mode. |
| 4 | Tx CALL Button | Press to start creating a DSC call. |
| 5 | ADDR BOOK Button | Press to open the address book in the DSC mode. |
| 6 | TEL or DSC Button | In TEL mode radiotelephone parameters are displayed and selected. In DSC mode DSC parameters are displayed and selected. |

Table 1. VHF-DSC Transceiver Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|---------------------|--|
| 7 | Alphanumeric Keypad | Provides Liquid Crystal Display (LCD) and alphanumeric programming/operations when using the keypad. |
| 8 | P Key 16 Key | Used to select a private channel, if installed. When pressed, activates basic telephony operations. |
| 9 | PTT Button | Press to send a transmission. Release to receive a transmission. |
| 10 | DISTRESS Button | Used to send distress call when pressed for 5 seconds. |
| 11 | Shift Key | When pressed, activates secondary function keys on alphanumeric keypad. |
| 12 | VOL Knob | When rotated, used to increase or decrease volume. |
| 13 | ON/OFF Button | When pressed, turns power on or off. |
| 14 | Squelch Knob | When rotated, used to adjust squelch setting. |
| 15 | Alarm LED | Lights when an alarm call is received. |
| 16 | CALL LED | Lights when a DSC call is received. |
| 17 | US LED | Lights when US channel system is activated. |
| 18 | 1W LED | Lights when 1 watt transmission mode is selected. |
| 19 | Tx LED | Lights when a call is transmitted. |

MF/HF CONTROL UNIT CONTROLS AND INDICATORS

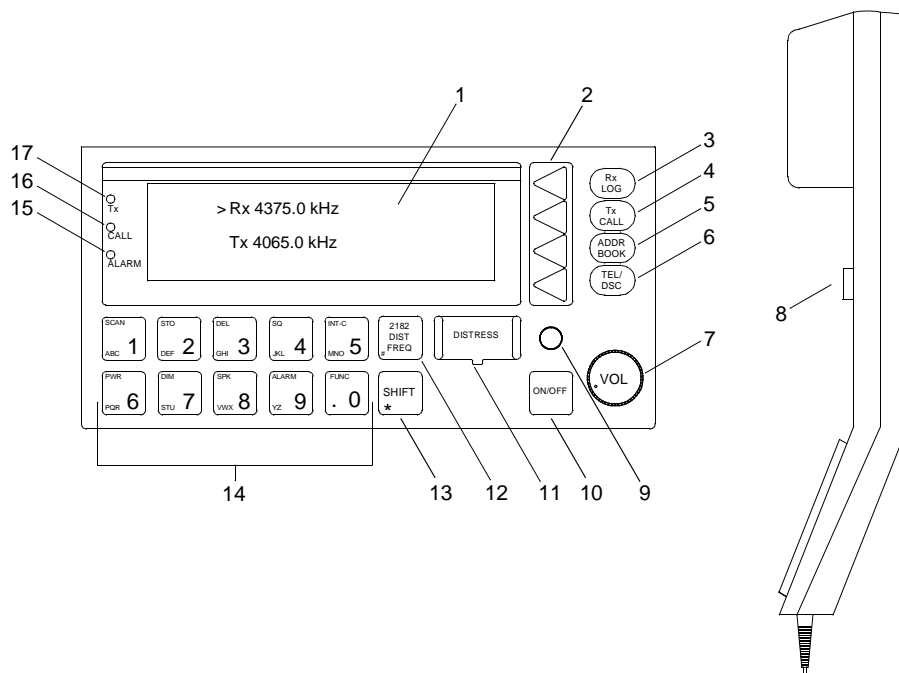


Figure 2. MF/HF Control Unit Controls and Indicators

Table 2. MF/HF Control Unit Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|------------|------------------------------|---|
| 1 | Liquid Crystal Display (LCD) | Displays programmed or function menus. |
| 2 | Soft Keys | Used to select the functions displayed at the right edge of the display. |
| 3 | Rx LOG Button | Opens the Rx log over received calls in the DSC mode. |
| 4 | Tx CALL Button | Press to start creating a DSC call. |
| 5 | ADDR BOOK Button | Press to open the address book in the DSC mode. |
| 6 | TEL or DSC Button | In TEL mode radiotelephone parameters are displayed and selected. In DSC mode DSC parameters are displayed and selected. |
| 7 | VOL Knob | When rotated, used to increase or decrease volume. |
| 8 | PTT Button | Press to send a transmission. Release to receive a transmission. |
| 9 | Tuning Control Knob | When rotated, used to adjust frequency or RF gain of the receiver. |
| 10 | ON/OFF Button | When pressed, turns power on or off. |
| 11 | DISTRESS Button | Used to send distress call when pressed for 3 seconds. |
| 12 | 2182 DIST FREQ Key | When pressed, is used to listen to subsequent information from a distress call received message. |
| 13 | Shift Key | When pressed, activates secondary function keys on alphanumeric keypad. |
| 14 | Alphanumeric Keypad | Provides Liquid Crystal Display (LCD) and alphanumeric programming/operations when using the keypad. |
| 15 | Alarm LED | Is lit when an alarm call is received. |
| 16 | CALL LED | Is lit when a DSC call is received. |
| 17 | Tx LED | Is lit when a call is transmitted. |

CAPSAT TRANSCEIVER CONTROLS AND INDICATORS

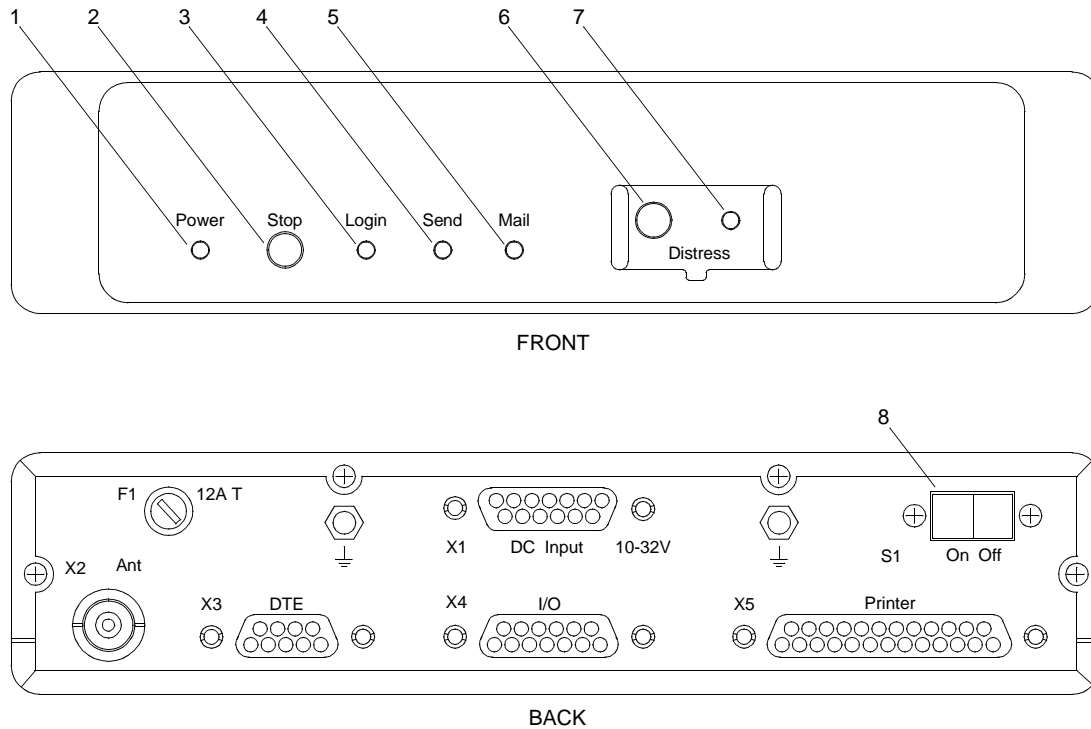


Figure 3. CAPSAT Transceiver Controls and Indicators

Table 3. CAPSAT Transceiver Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|-------------------|--|
| 1 | Power LED | Is lit when powered up. |
| 2 | Stop Button | Used to switch off Distress LED when distress acknowledge has been received. |
| 3 | Login LED | Is lit when logged into an ocean area. Will flash if not logged into an ocean area. Will be off if unable to get synchronization. |
| 4 | Send LED | Flashes when entering transmit mode. Will stay on while transmitting. Will flash until an acknowledgement is received from a Land Earth Station (LES). |
| 5 | Mail LED | Flashes when a message is in the process of being received. Will go out when message has been received. |
| 6 | Distress Button | Sends a distress signal when pressed for 5 seconds. |
| 7 | Distress LED | Lights when the Distress button is pressed. |
| 8 | On/Off Switch | Turns the transceiver on or off. |

MF/HF TELEX DATA TERMINAL AND CAPSAT TRANSCEIVER DATA TERMINAL CONTROLS AND INDICATORS

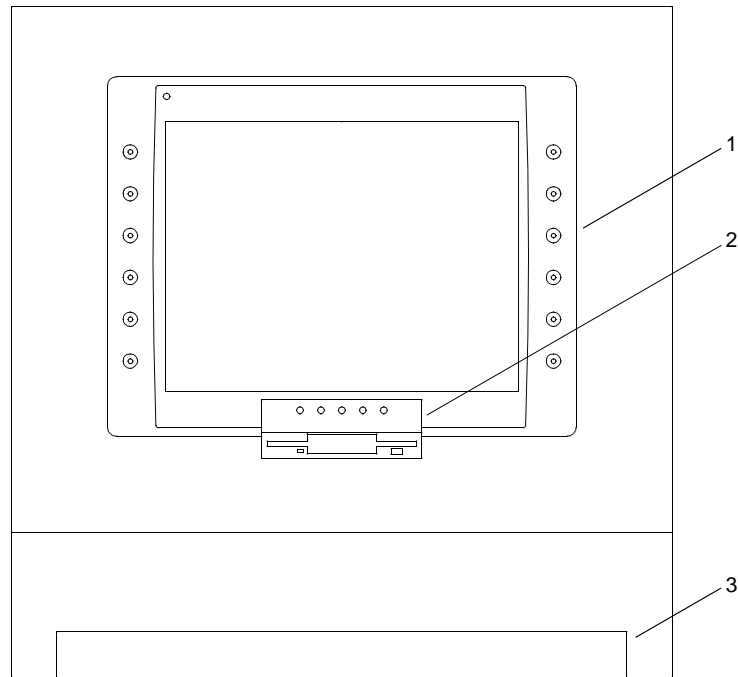


Figure 4. MF/HF TELEX Data Terminal and CAPSAT Transceiver Data Terminal Controls and Indicators

Table 4. MF/HF TELEX Data Terminal and CAPSAT Transceiver Data Terminal Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|------------|------------------------------|---|
| 1 | Liquid Crystal Display (LCD) | Displays current operational and programming status. |
| 2 | 3.5 in. Floppy Drive | Allows user to export and import files. |
| 3 | Keyboard | Liquid Crystal Display (LCD) and alphanumeric programming/ operations keyboard. |

BATTERY PANEL CONTROLS AND INDICATORS

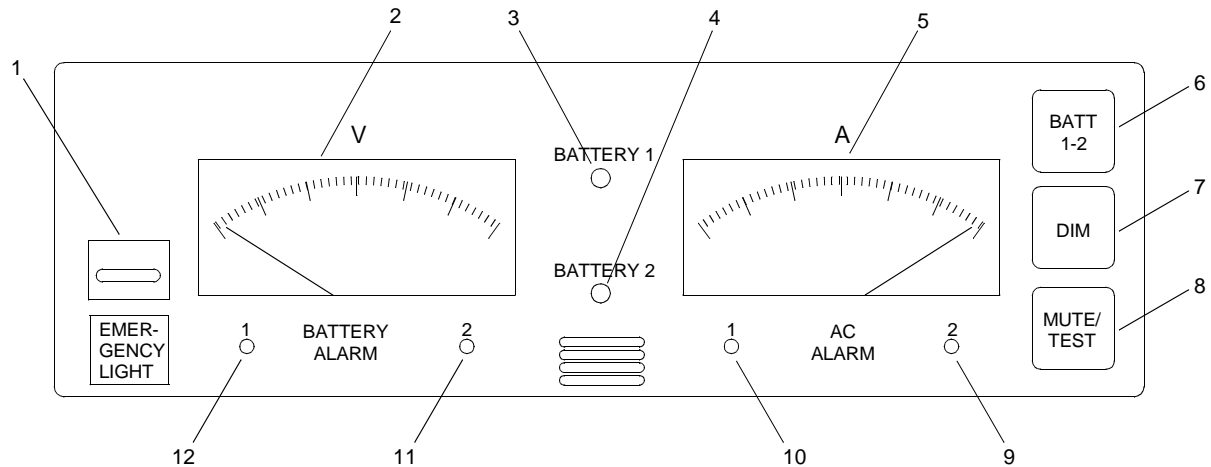


Figure 5. Battery Panel Controls and Indicators

Table 5. Battery Panel Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|--------------------------|--|
| 1 | EMERGENCY LIGHT Switch | Used to switch on lights when a power failure has occurred. |
| 2 | Voltage LCD Display | Displays current voltage. |
| 3 | BATTERY 1 Light | Is lit when battery 1 is selected. |
| 4 | BATTERY 2 Light | Is lit when battery 2 is selected. |
| 5 | Amperage LCD Display | Displays current amperage. |
| 6 | BATT 1-2 Selector Button | Selects between battery 1 or battery 2. |
| 7 | DIM Button | Adjusts light intensity. |
| 8 | MUTE/TEST Button | Mutes an alarm signal. Performs a self-test when pressed for 2 seconds. |
| 9 | AC ALARM 2 LED | Lights to indicate an AC alarm for battery 2. |
| 10 | AC ALARM 1 LED | Lights to indicate an AC alarm for battery 1. |
| 11 | BATTERY ALARM 2 LED | Lights to indicate a battery alarm for battery 2. |
| 12 | BATTERY ALARM 1 LED | Lights to indicate a battery alarm for battery 1. |

IRIDIUM HANDSET CONTROLS AND INDICATORS

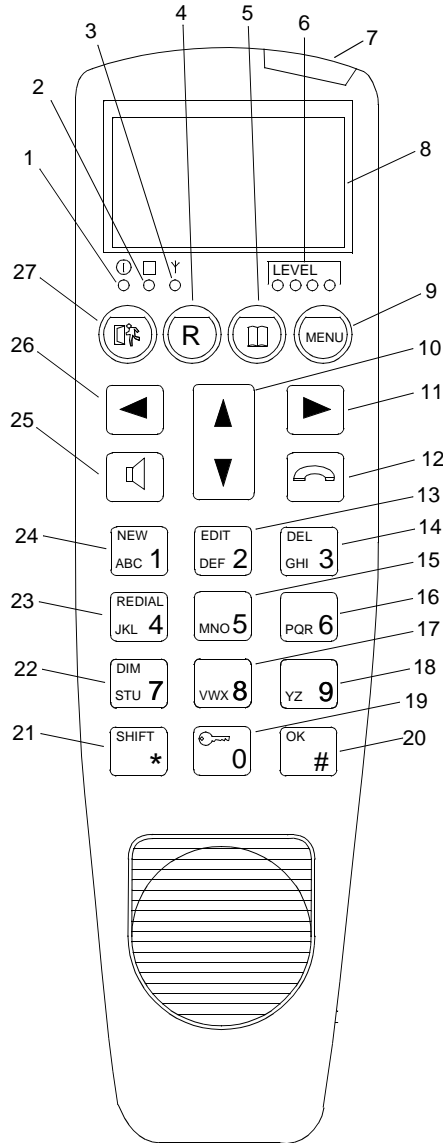














Figure 6. Iridium Handset Controls and Indicators

Table 6. Iridium Handset Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|------------------------------|---|
| 1 | Power LED | Is lit when power is on. |
| 2 | Call LED | Is lit when a call is received or is in progress. |
| 3 | Network LED | Is lit when the user is in network. |
| 4 | Call Transfer Key | Allows calls to be transferred to another user. |
| 5 | Phone Book Key | Opens the phone book. |
| 6 | LEVEL LEDs | The number of lighted LEDs indicates the level of signal. |
| 7 | On/Off Button | When pressed, turns power on or off. |
| 8 | Liquid Crystal Display (LCD) | Displays input or output information. |

Table 6. Iridium Handset Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|---|---|
| 9 | MENU Key | Opens the function menu list. |
| 10 | Up/Down Arrow Key | Used to move up or down in function menus and applications. Used to increase or decrease the speaker and earpiece volume. Used to find previous or following entries in the phone book. |
| 11 | Right Arrow Key | Used to move right in function menus and applications. Used to move ahead one space in an entry. |
| 12 | Hook On/Off Key | Used to begin or end a call when the handset is still on the hook. |
| 13 |  | Used to enter numeric and alphabetic values. Allows the user to edit entries when used as a secondary function key. |
| 14 |  | Used to enter numeric and alphabetic values. Allows the user to delete entries when used as a secondary function key. |
| 15 |  | Used to enter numeric and alphabetic values. |
| 16 |  | Used to enter numeric and alphabetic values. |
| 17 |  | Used to enter numeric and alphabetic values. |
| 18 |  | Used to enter numeric and alphabetic values. |
| 19 |  | Used to enter numeric value. Allows the user to set system lock when used as a secondary function key. |
| 20 |  | Used to enter a space into an entry. Used to complete selections and terminate multiple key entries. |
| 21 |  | Activates secondary function keys on alphanumeric keypad. |
| 22 |  | Used to enter numeric and alphabetic values. Allows the user to select the level of backlighting when used as a secondary function key. |
| 23 |  | Used to enter numeric and alphabetic values. Allows the user to access the last number dialed when used as a secondary function key. |
| 24 |  | Used to enter numeric and alphabetic values. Allows the user to make a new entry in a function menu or application when used as a secondary function key. |
| 25 | Loudspeaker On/Off Key | Used to turn the loudspeaker on or off. |
| 26 | Left Arrow Key | Used to move left in function menus and applications. Used to delete a letter or number in an entry. |
| 27 | Escape Key | Used to move back to a previous menu in function menus. |

MF/HF TELEX PRINTER AND CAPSAT TRANSCEIVER PRINTER CONTROLS AND INDICATORS

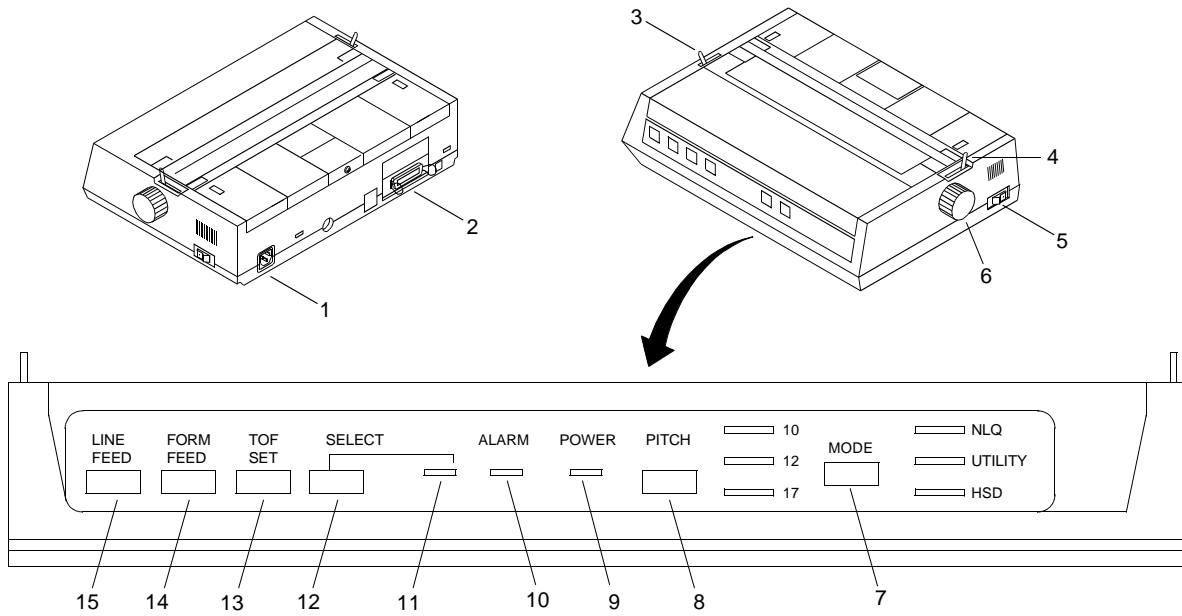


Figure 7. MF/HF TELEX Printer and CAPSAT Transceiver Printer Controls and Indicators

Table 7. MF/HF TELEX Printer and CAPSAT Transceiver Printer Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|--------------------|--|
| 1 | Power Connector | Allows the power cord to plug in, powering the printer. |
| 2 | Parallel Interface | Allows connection of the cable from the data terminal/ INMARSAT-C printer auto switch. This cable is tagged PRNSB/ INMARSAT PRN. |
| 3 | Bail Lever | Opens and closes the bail. |
| 4 | Paper Lever | Releases tension on the paper. |
| 5 | Power Switch | Turns the printer on or off. |
| 6 | Platen Knob | Advances paper through the printer when the paper lever is engaged. |
| 7 | MODE Button | Selects the type of printing indicated by the light next to the button. Three modes of printing are available: Near Letter Quality (NLQ), high resolution printing; Utility, normal printing; High Speed Draft (HSD), fast printing for drafts, underlining is the only printing feature available with HSD. |
| 8 | Pitch Button | Selects the size of the printer characters; 10, 12 or 17 characters per inch as indicated by the light adjacent to the print size. |
| 9 | Power Light | Indicates that the printer is receiving power. |
| 10 | Alarm Light | Indicates that paper is low or out or that there is an internal printer problem. |
| 11 | Select Light | Shows whether the printer is ready to receive data. When the light is on, the printer is ready. When the light is off, the printer is not ready. |

Table 7. MF/HF TELEX Printer and CAPSAT Transceiver Printer Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|-------------------|--|
| 12 | Select Button | Selects or deselects the printer. |
| 13 | TOF Set Button | Sets the top margin at the current position. The select light must be off. |
| 14 | Form Feed Button | Moves the paper to the top margin of the next page. |
| 15 | Line Feed Button | Moves the paper up one line at a time. |

NAVTEX RECEIVER CONTROLS AND INDICATORS

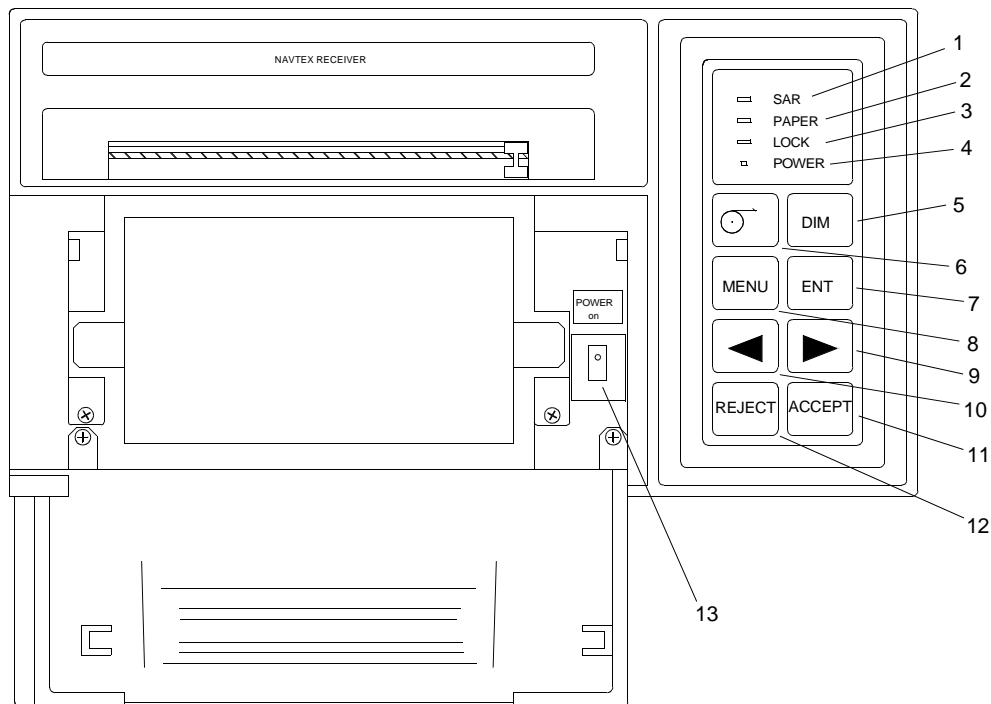


Figure 8. NAVTEX Receiver Controls and Indicators

Table 8. NAVTEX Receiver Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|-----------------------|---|
| 1 | SAR Indicator Light | The Search and Rescue (SAR) indicator light illuminates when a SAR message is received. |
| 2 | PAPER Indicator Light | The paper indicator light illuminates when the NAVTEX is out of paper. |
| 3 | LOCK Indicator Light | The lock indicator illuminates while messages are being received. |
| 4 | POWER Indicator Light | The power indicator light illuminates when the power is on. |
| 5 | DIM Key | The dim key adjusts illumination. |
| 6 | Feed Key | The feed key feeds paper into the NAVTEX. |
| 7 | ENT Key | The enter key registers users set data. |
| 8 | MENU Key | The menu key calls up the main menu. |

Table 8. NAVTEX Receiver Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|-------------------|--|
| 9 | Right Arrow Key | The right arrow key moves the cursor to the right. |
| 10 | Left Arrow Key | The left arrow key moves the cursor to the left. |
| 11 | ACCEPT Key | The accept key is used to select stations/messages or to enter upper case characters. |
| 12 | REJECT Key | The reject key is used to reject stations/messages or to enter lower case characters. Additionally, it cuts off the signal monitor function. |
| 13 | POWER Switch | The power switch turns the unit off and on. |

AN/PSN-11(V)1 PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR) CONTROLS AND INDICATORS

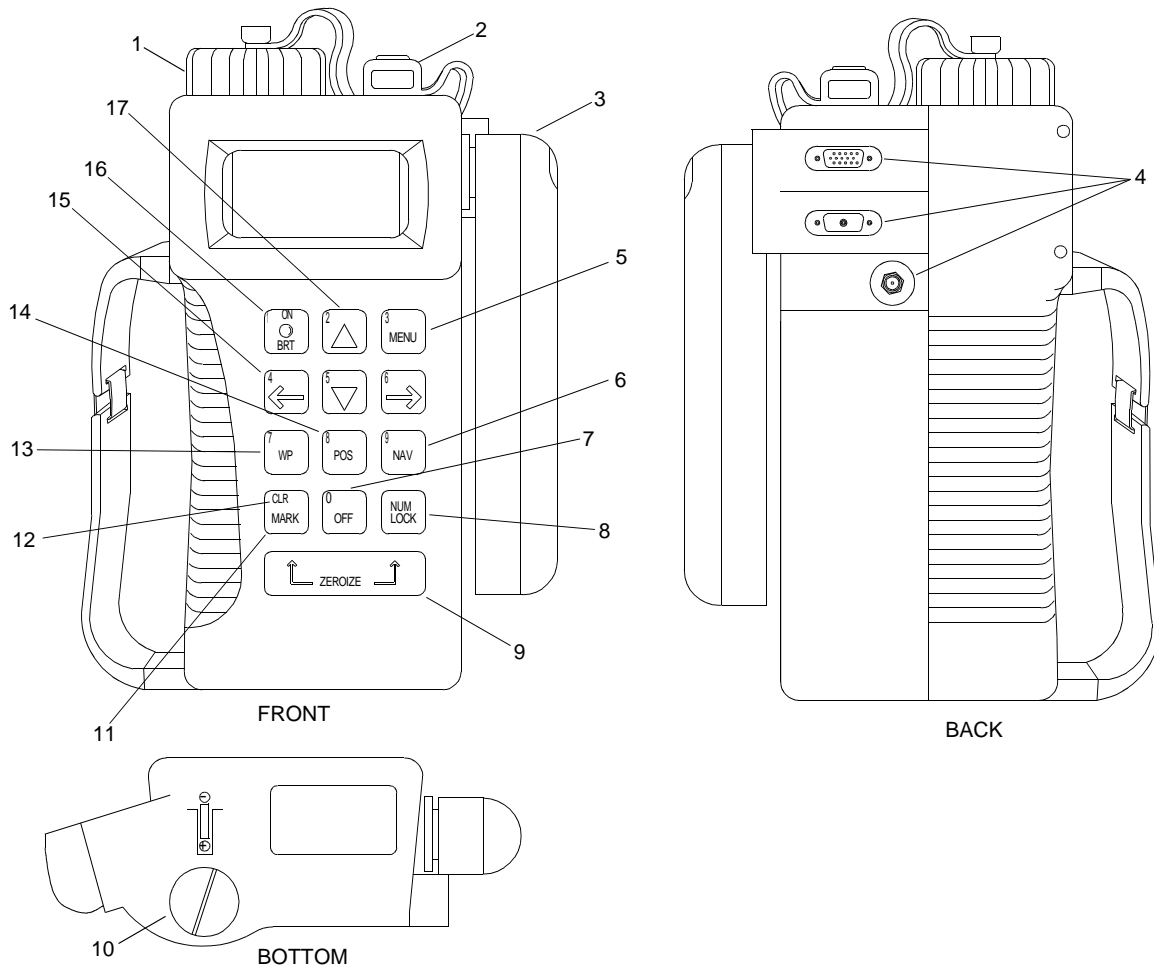


Figure 9. AN/PSN-11(V)1 PLGR Controls and Indicators

Table 9. AN/PSN-11(V)1 PLGR Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|------------------------|--|
| 1 | Battery Compartment | Powers the PLGR when external power is not used. Battery must be removed before external power is applied. |
| 2 | KYK-13 Encryption Port | When loaded, allows user to receive or read encrypted data. |

Table 9. AN/PSN-11(V)1 PLGR Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|----------------------------|--|
| 3 | Integral Antenna | Receives GPS signal when external antenna is not used. |
| 4 | J2, J3 and J4 Ports | Allows PLGR to be used with external power and provides external output of GPS data. Provides a receptacle for connecting PLGR to a data terminal. |
| 5 | MENU Key | Displays the system menu. Changes to new menu page. |
| 6 | NAV Key | Brings up the NAV menu displays. Key is inoperable until way points are loaded. |
| 7 | OFF Key | Turns the PLGR off. |
| 8 | NUM LOCK Key | Toggles the keyboard between control mode and numeric mode. |
| 9 | ZEROIZE Key | Destroys all data that has been entered into, collected or stored by the PLGR. |
| 10 | Memory Battery Compartment | Contains memory battery which retains PLGR memory when the PLGR is turned off. |
| 11 | MARK Key | Activates the MARK and Man Overboard (MOB) waypoint selection page. |
| 12 | CLR Key | Used in numeric mode. Moves the cursor to the left. |
| 13 | WP Key | Displays the WAYPOINT menu. |
| 14 | POS Key | Brings up the POSITION menu. Changes position display pages. |
| 15 | Left/Right Arrow Keys | Moves the cursor from field to field in the display. |
| 16 | ON/BRT Key | Turns the PLGR on. Also adjusts the brightness of the display backlighting. |
| 17 | Up/Down Arrow Keys | Used to change display pages, change numbers/alpha field values and activate functions. |

COMMUNICATIONS INTERFACE AND SWITCHBOX CONTROLS AND INDICATORS

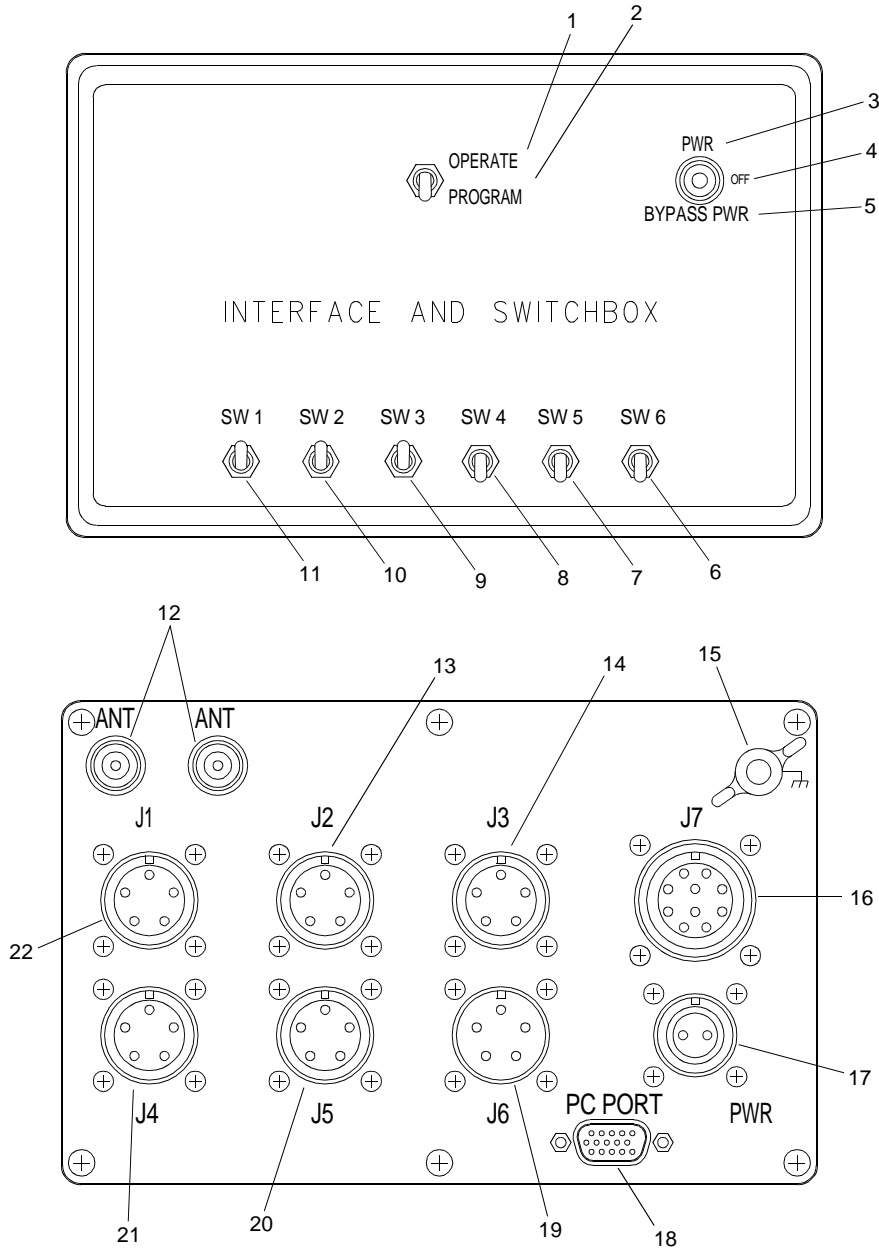


Figure 10. Communications Interface and Switchbox Controls and Indicators

Table 10. Communications Interface and Switchbox Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|--|---|
| 1 | OPERATE/PROGRAM Switch In OPERATE Position | Allows GPS data from PLGR to be distributed to J1–J5 outputs. |
| 2 | OPERATE/PROGRAM Switch In PROGRAM Position | Provides a direct programming link between the PLGR and a data terminal. |
| 3 | Power Switch In PWR Position | Allows the interface and switchbox to receive power from ships power source and supplies regulated power to the PLGR. |
| 4 | Power Switch In OFF Position | Allows the interface and switchbox to receive ships power, but does not allow power output to PLGR. |

Table 10. Communications Interface and Switchbox Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|------------|-------------------------------------|---|
| 5 | Power Switch In BYPASS PWR Position | Allows interface and switchbox to receive ships power and supplies unregulated power to the PLGR. |
| 6 | SW6 | Allows interface of GPS differential signal data. Switch up for ON, switch down for OFF. |
| 7 | SW5 | Turns GPS signal on (UP position) or off (DOWN position) for equipment to be installed at a later date. |
| 8 | SW4 | Turns GPS signal on (UP position) or off (DOWN position) for #2 VHF/FM DSC transceiver. |
| 9 | SW3 | Turns GPS signal on (UP position) or off (DOWN position) to the VHF/FM DSC transceiver. |
| 10 | SW2 | Turns GPS signal on (UP position) or off (DOWN position) to the satellite communications system. |
| 11 | SW1 | Turns GPS signal on (UP position) or off (DOWN position) to the DSC controller. |
| 12 | ANT Connector | Antenna connections for PLGR signal input and output. Connections are interchangeable. |
| 13 | J2 Connector | Provides GPS signal to satellite communications system. |
| 14 | J3 Connector | Provides GPS signal to VHF/FM DSC transceiver. |
| 15 | Grounding Point | Grounding point for grounding the interface and switchbox to the vessel. |
| 16 | J7 Connector | Provides ships power to PLGR and receives GPS data from PLGR for distribution to J1 - J3 outputs. |
| 17 | PWR Connector | Receives power from ship power source to operate PLGR. |
| 18 | PC PORT Connector | Provides data terminal interface with PLGR for programming PLGR from data terminal. |
| 19 | J6 Connector | Allows input of GPS differential data. |
| 20 | J5 Connector | Provides GPS signal to equipment to be installed at a later date. |
| 21 | J4 Connector | Provides GPS signal to #2 VHF/FM DSC transceiver. |
| 22 | J1 Connector | Provides GPS signal to DSC controller. |

COMMUNICATIONS SYSTEM DC CIRCUIT BREAKER PANEL CONTROLS AND INDICATORS

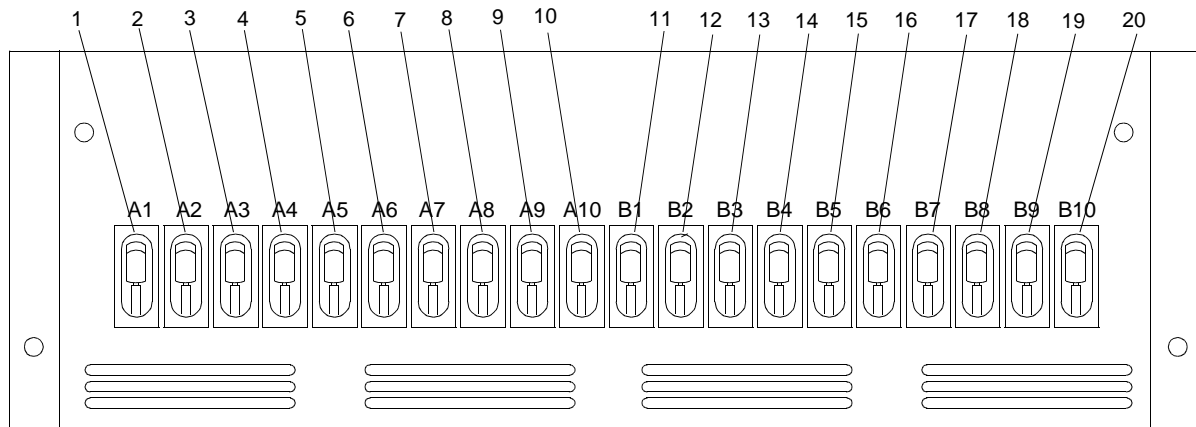


Figure 11. Communications System DC Circuit Breaker Panel Controls and Indicators

Table 11. Communications System DC Circuit Breaker Panel Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|------------------------------------|--|
| 1 | RRSU-1 DC Circuit Breaker | DC circuit breaker for the RRSU-1. |
| 2 | RRSU-2 DC Circuit Breaker | DC circuit breaker for the RRSU-2. |
| 3 | RRSU-3 DC Circuit Breaker | DC circuit breaker for the RRSU-3. |
| 4 | VEI Monitor DC Circuit Breaker | DC circuit breaker for the VEI Monitor. |
| 5 | VEI Monitor DC Circuit Breaker | DC circuit breaker for the VEI Monitor. |
| 6 | Iridium DC Circuit Breaker | DC circuit breaker for the Iridium handset. |
| 7 | AIS DC Circuit Breaker | DC circuit breaker for the AIS. |
| 8 | Spare DC Circuit Breaker | DC circuit breaker for a spare circuit. |
| 9 | IFF AN/APX-72 DC Circuit Breaker | DC circuit breaker for the IFF AN/APX-72. |
| 10 | Spare DC Circuit Breaker | DC circuit breaker for spare circuit. |
| 11 | NAVTEX DC Circuit Breaker | DC circuit breaker for the NAVTEX receiver. |
| 12 | Spare DC Circuit Breaker | DC circuit breaker for a spare circuit. |
| 13 | F-77 DC Circuit Breaker | DC circuit breaker for the F-77. |
| 14 | FURUNO HF Radio DC Circuit Breaker | DC circuit breaker for the FURUNO HF radio. |
| 15 | Harris 103A Cicuit Breaker | DC circuit breaker for the AN/VRC-103(V)1. |
| 16 | Harris 103B Cicuit Breaker | DC circuit breaker for the AN/VRC-103(V)1. |
| 17 | KMW-2050 PWR AMP DC Cicuit Breaker | DC circuit breaker for the KMW-2050 power amplifier. |
| 18 | Spare DC Circuit Breaker | DC circuit breaker for a spare circuit. |

Table 11. Communications System DC Circuit Breaker Panel Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|---|--|
| 19 | Spare DC Circuit Breaker | DC circuit breaker for a spare circuit. |
| 20 | IBS Distribution Panel DC Circuit Breaker | DC circuit breaker for the IBS distribution panel. |

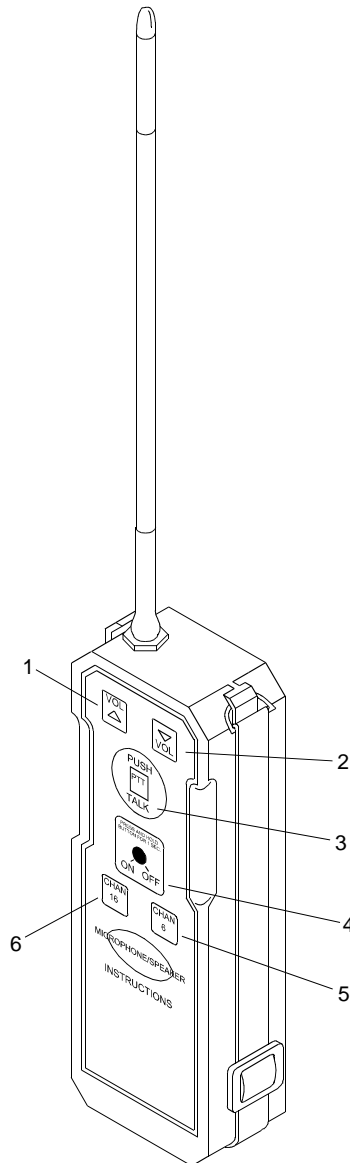
LIFEBOAT RADIO (LBR) CONTROLS AND INDICATORS

Figure 12. Lifeboat Radio (LBR) Controls and Indicators

Table 12. Lifeboat Radio (LBR) Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|--|---|
| 1 | Volume Up Button and Indicator Light | Press the volume up button to increase the audio output level. The volume up indicator lights yellow when the PTT button is pressed. The yellow light indicates that the radio is transmitting. |
| 2 | Volume Down Button and Indicator Light | Press the volume down button to decrease the audio output level. The volume down indicator lights yellow when the PTT button is pressed. The yellow light indicates that the radio is transmitting. |

Table 12. Lifeboat Radio (LBR) Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|------------------------------------|---|
| 3 | PTT Button and Indicator Light | The push to talk button activates the transmission when pressed. When the button is released, the radio returns to the receive mode. The PTT button blinks yellow at a slow rate to assist the operator in locating the PTT switch in darkness. |
| 4 | ON/OFF Button | Press the ON/OFF button for one second to turn the radio on. Press the ON/OFF button again to turn the radio off. |
| 5 | CHAN 6 and Indicator Light | The channel 6 button selects operation on marine band 6 (communications/USCG). The button will be illuminated with a green light when the radio is turned on and channel 6 has been selected. |
| 6 | CHAN 16 Button and Indicator Light | The channel 16 button selects operation on marine band 16 (distress/calling). The button will be illuminated with a red light when the radio is turned on and channel 16 has been selected. |

SEARCH AND RESCUE TRANSPONDER (SART) CONTROLS AND INDICATORS

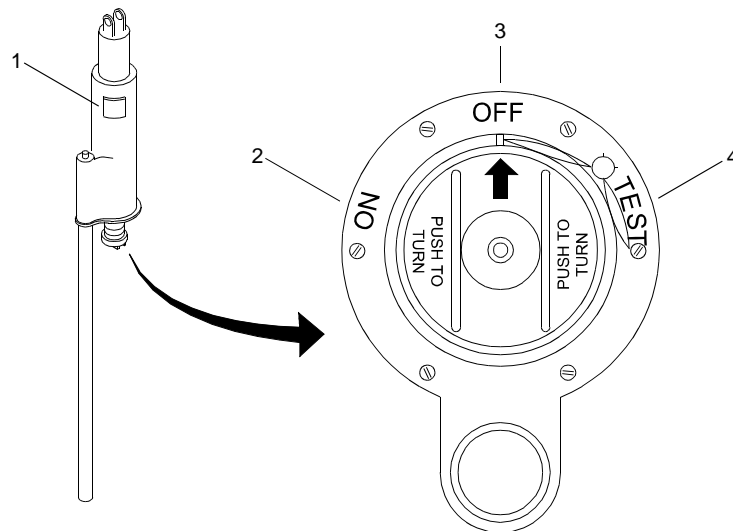


Figure 13. Search and Rescue Transponder Controls and Indicators

Table 13. Search and Rescue Transponder (SART) Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|---------------------------|--|
| 1 | Indicator Lights | Will flash a steady yellow light slowly when in the receive mode. Will flash a red light once every 4 seconds if no radar is present and once every second if a radar is within range when in the test mode. |
| 2 | Switch Ring ON Position | When the switch ring is turned to the ON position, the SART is turned on and in the standby mode. |
| 3 | Switch Ring OFF Position | When the switch ring is turned to the OFF position, the SART is turned off. |
| 4 | Switch Ring TEST Position | When the switch ring is turned and held in the TEST position, the SART may be tested. |

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
POWER DISTRIBUTION
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS**

INTRODUCTION

The following paragraphs contain illustrations that show the location of each control and indicator for operation of the GMDSS power distribution system. Each control and indicator is clearly labeled as it appears on the equipment. Numbers on illustrations are keyed to the tabular listing which contains the name, based on the equipment markings, and the functional description of each control and indicator.

24 VOLT DISTRIBUTION PANEL CONTROLS AND INDICATORS

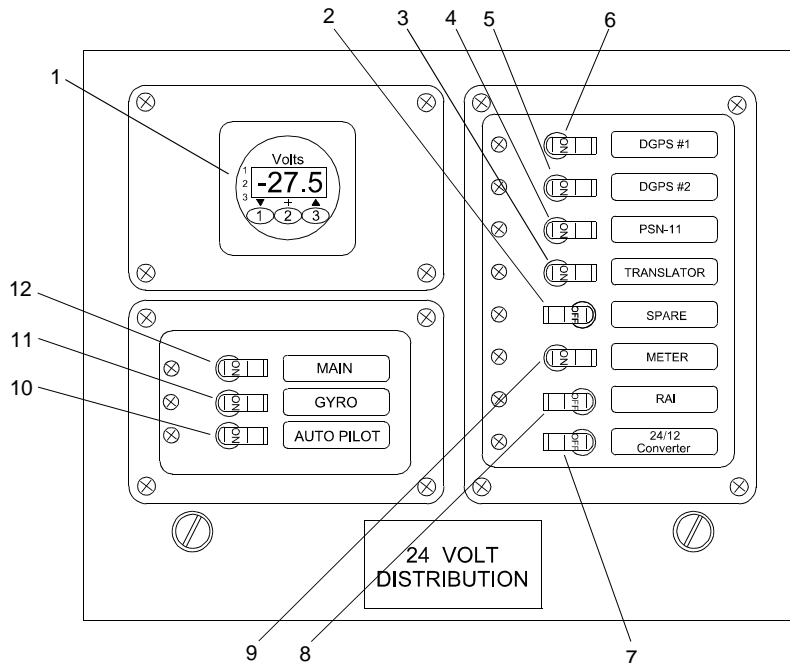


Figure 1. 24 Volt Distribution Panel Controls and Indicators

Table 1. 24 Volt Distribution Panel Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|----------------------------|---|
| 1 | Voltage Indicator Panel | Indicates voltage. |
| 2 | SPARE Circuit Breaker | Circuit breaker for spare circuit. |
| 3 | TRANSLATOR Circuit Breaker | Circuit breaker for weather translator. |
| 4 | PSN-11 Circuit Breaker | Circuit breaker for PLGR. |
| 5 | DGPS #2 Circuit Breaker | Circuit breaker for differential GPS #2. |
| 6 | DGPS #1 Circuit Breaker | Circuit breaker for differential GPS #1. |
| 7 | 24/12 CONVERTER. | Circuit breaker for 24/12 power convertor. |
| 8 | RAI Circuit Breaker | Circuit breaker for the rudder angle indicator on the steering stand. |
| 9 | METER Circuit Breaker | Circuit breaker for the test meter. |
| 10 | AUTOPILOT Circuit Breaker | Circuit breaker for autopilot steering stand system and components. |

Table 1. 24 Volt Distribution Panel Controls and Indicators. (Continued)

| KEY | CONTROL/INDICATOR | FUNCTION |
|-----|----------------------|--|
| 11 | GYRO Circuit Breaker | Circuit breaker for GYRO. |
| 12 | MAIN Circuit Breaker | Circuit breaker for main power supply. |

ELECTRICAL DISTRIBUTION PANEL EP103 CONTROLS AND INDICATORS

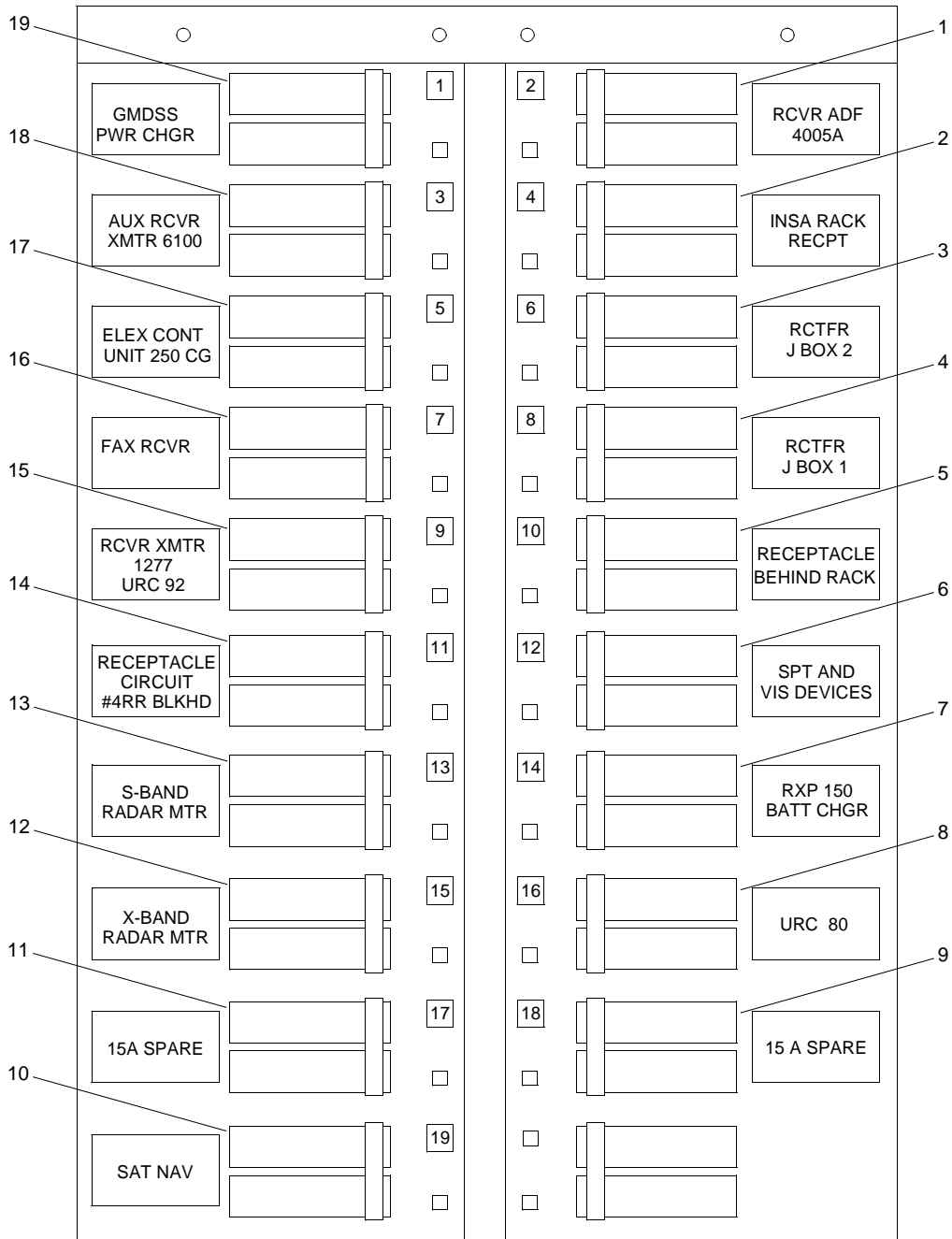


Figure 2. Electrical Distribution Panel EP103 Controls and Indicators

Table 2. Electrical Distribution Panel EP103 Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|------------|--------------------------|---|
| 1 | Breaker Number 2 | Circuit breaker for spare circuit. |
| 2 | Breaker Number 4 | Circuit breaker for INSA rack receptacle. |
| 3 | Breaker Number 6 | Circuit breaker for Rectifier J Box #1. |
| 4 | Breaker Number 8 | Circuit breaker for Rectifier J Box #2. |
| 5 | Breaker Number 10 | Circuit breaker for receptacle behind the rack. |
| 6 | Breaker Number 12 | Circuit breaker for SPT audio visual devices. |
| 7 | Breaker Number 14 | Circuit breaker for RPX 150 battery charger. |
| 8 | Breaker Number 16 | Circuit breaker for URC 80. |
| 9 | Breaker Number 18 | Circuit breaker for spare circuit. |
| 10 | Breaker Number 19 | Circuit breaker for spare circuit. |
| 11 | Breaker Number 17 | Circuit breaker for spare circuit. |
| 12 | Breaker Number 15 | Circuit breaker for X-Band radar monitor. |
| 13 | Breaker Number 13 | Circuit breaker for S-Band radar monitor. |
| 14 | Breaker Number 11 | Circuit breaker for Receptacle circuit #4 RR BLKHD. |
| 15 | Breaker Number 9 | Circuit breaker for RX Trans 1277 URC92. |
| 16 | Breaker Number 7 | Circuit breaker for Fax RX. |
| 17 | Breaker Number 5 | Circuit breaker for electronics control unit. |
| 18 | Breaker Number 3 | Circuit breaker for spare circuit. |
| 19 | Breaker Number 1 | Circuit breaker for GMDSS power charger. |

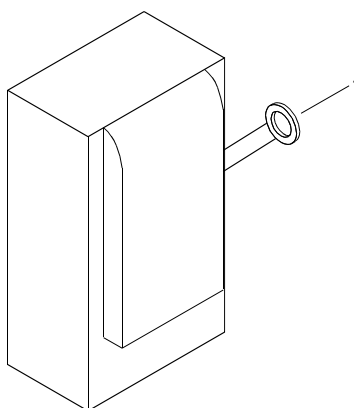
60 AMP AC POWER DISCONNECT CONTROLS AND INDICATORS

Figure 3. 60 Amp AC Power Disconnect Controls and Indicators

Table 3. 60 Amp AC Power Disconnect Controls and Indicators.

| KEY | CONTROL/INDICATOR | FUNCTION |
|------------|--------------------------|----------------------------|
| 1 | Power On/Off Switch | Turns AC power on and off. |

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**Seaman 88K

OPERATING PROCEDURES - GMDSS GENERAL OPERATING PROCEDURES

1. Verify the GMDSS circuit breaker switch is in the on position in electrical distribution panel EP103 (WP 0005 00).
2. Verify the 60 amp power disconnect switch is in the on position (WP 0005 00).
3. Place the power switch to the PWR position to turn on the interface and switchbox (WP 0004 00).
4. Press the ON/OFF button on the MF/HF control unit (WP 0004 00).
5. Press the on/off button on the Iridium handset (WP 0004 00).
6. Press the ON/OFF button on the VHF-DSC transceiver (WP 0004 00).
7. Verify the power LED is lit on the CAPSAT transceiver (WP 0004 00).
8. Press the ON/OFF monitor buttons to turn on the MF/HF TELEX and CAPSAT transceiver monitors (WP 0004 00).
9. Press the power switch to turn on the MF/HF TELEX and CAPSAT transceiver printers (WP 0004 00).
10. Press the power switch to turn on the NAVTEX (WP 0004 00).
11. Press the ON/BRT key to turn on the PLGR (WP 0004 00).

PERFORM A MANUAL LOGIN**NOTE**

A manual login must be performed when a logout has been performed but the equipment hasn't been turned off, the first time the GMDSS equipment is used or another ocean region is to be selected.

1. Press the ALT key to access the menu bar.
2. Highlight Options (figure 1, item 1) on the menu bar.
3. Press the ENTER key.
4. Highlight Login (figure 1, item 2) from the drop-down menu.

PERFORM A MANUAL LOGIN - Continued

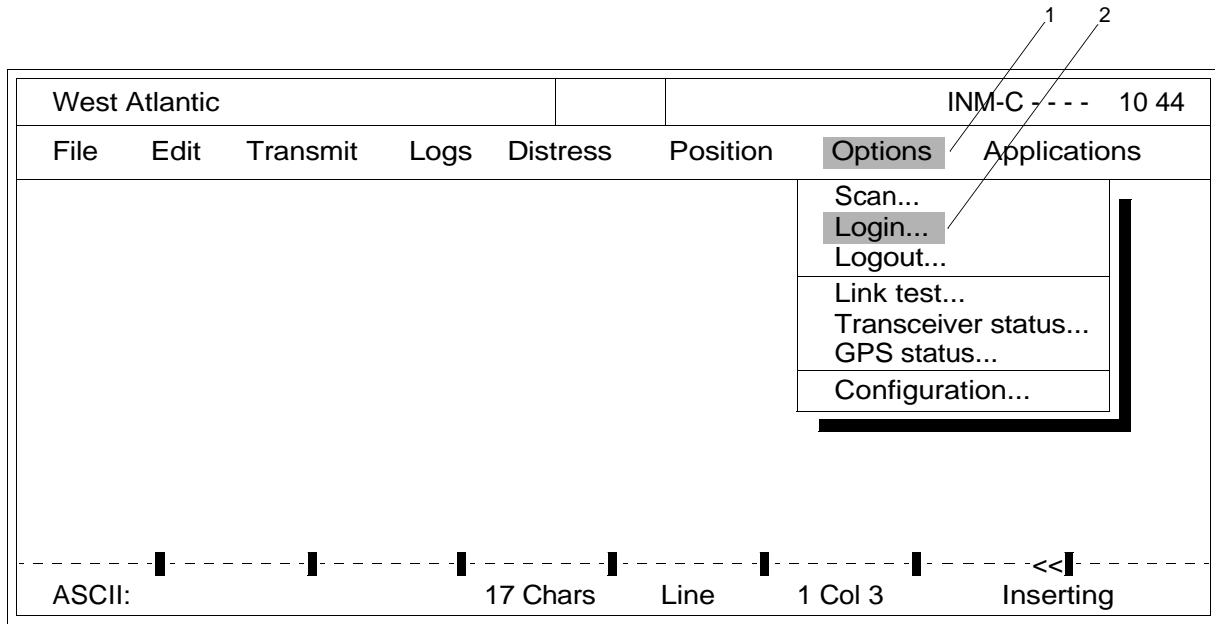


Figure 1. Options Drop-Down Menu

5. Press the ENTER key.
6. Highlight the desired ocean region (figure 2, item 1) from the drop-down menu.

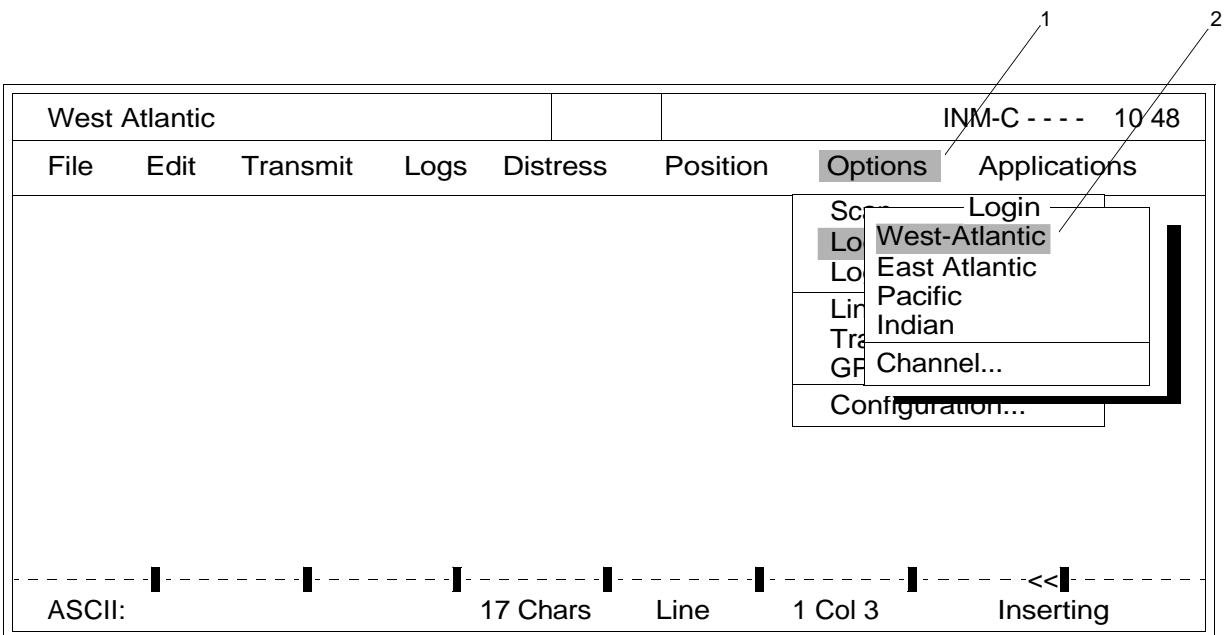


Figure 2. Login Drop-Down Menu

7. Press the ENTER key.

PERFORM A MANUAL SATELLITE SCAN**NOTE**

Perform a manual scan to force the transceiver to stay within a specified ocean region or to find the best possible satellite frequency of all regions.

1. Press the ALT key to access the menu bar.
2. Highlight Options (figure 3, item 1) from the drop-down menu.

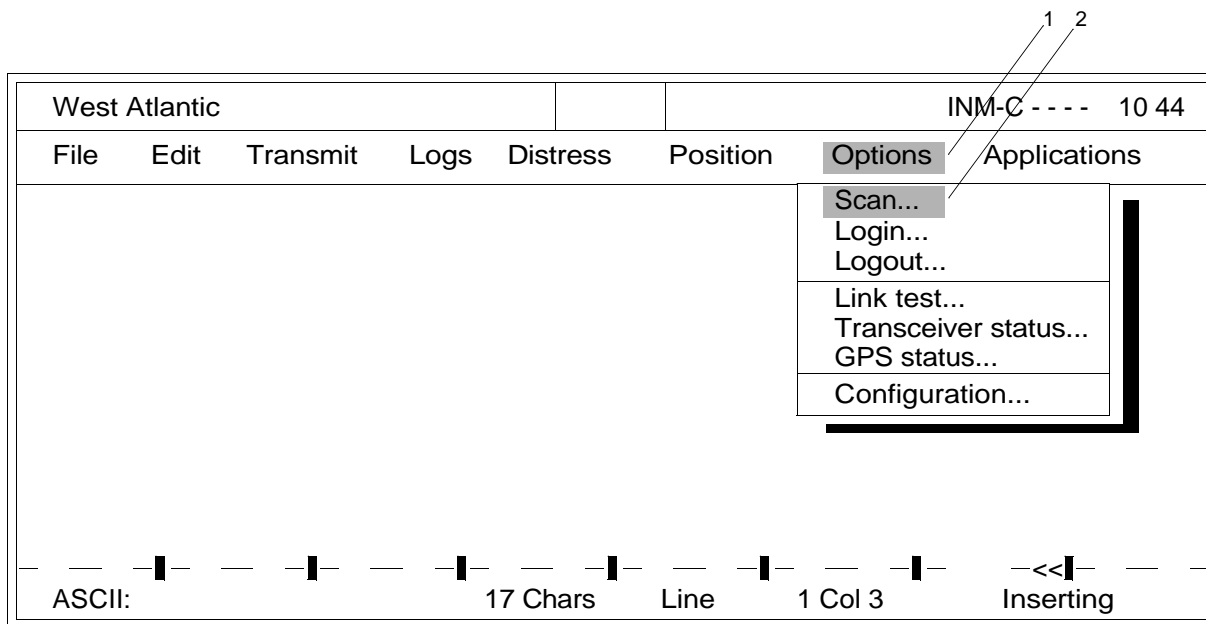


Figure 3. Options Drop-Down Menu

3. Press the ENTER key.
4. Highlight Scan (figure 3, item 2) from the drop-down menu.
5. Highlight the desired ocean or all oceans.
6. Press the ENTER key.

PERFORM COMPONENT OPERATING PROCEDURES

1. To operate the SC4150 Iridium handset, refer to chapter 2, section II.
2. To operate the HC4500 MF/HF control unit, refer to chapter 2, section III.
3. To operate the RT4822 VHF-DSC transceiver, refer to chapter 2, section IV.
4. To operate the TT-10202 Message handling software, refer to chapter 2, section V.
5. To operate the ML280 Elite printer, refer to chapter 2, section VI.
6. To perform emergency procedures, refer to chapter 2, section VII.

PERFORM A LOGOUT**NOTE**

Before turning off the transceiver, perform a logout.

1. Press the ALT key to access the menu bar.
2. Highlight Options (figure 4, item 1) from the menu bar.

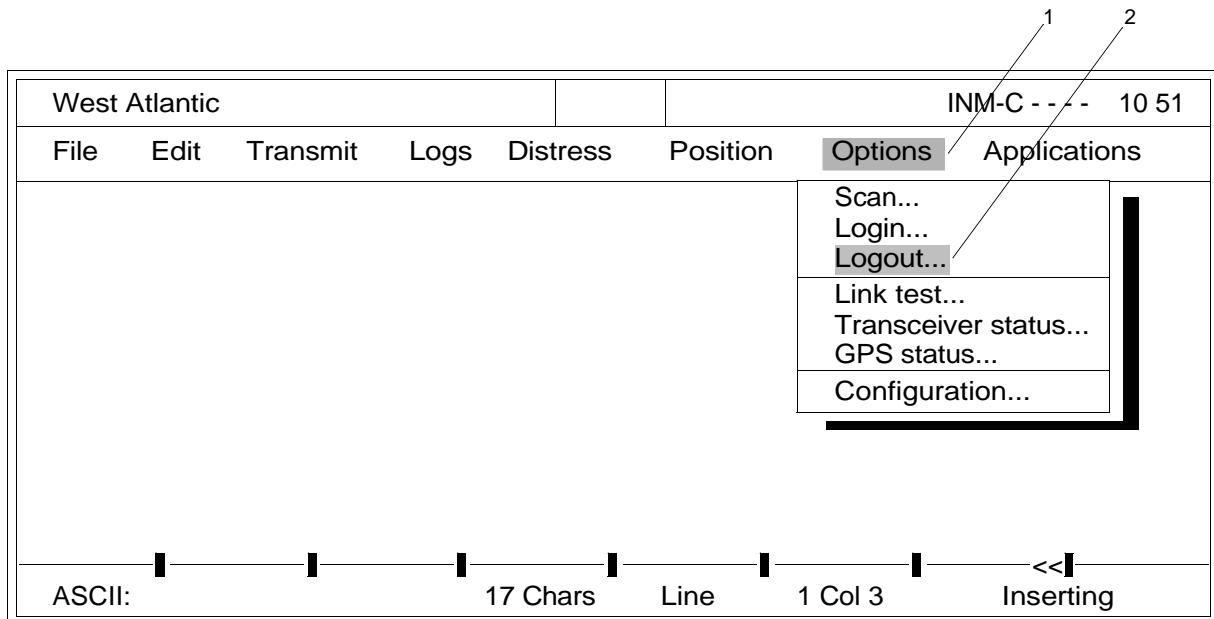


Figure 4. Options Drop-Down Menu

3. Press the ENTER key.
4. Highlight Logout (figure 4, item 2) from the drop-down menu.
5. Press the ENTER key.

EXIT THE CAPSAT PROGRAM

1. Press the ALT key to access the menu bar.
2. Highlight File (figure 5, item 1) from the menu bar.
3. Press the ENTER key.
4. Highlight Exit (figure 5, item 2) from the drop-down menu.

EXIT THE CAPSAT PROGRAM - Continued

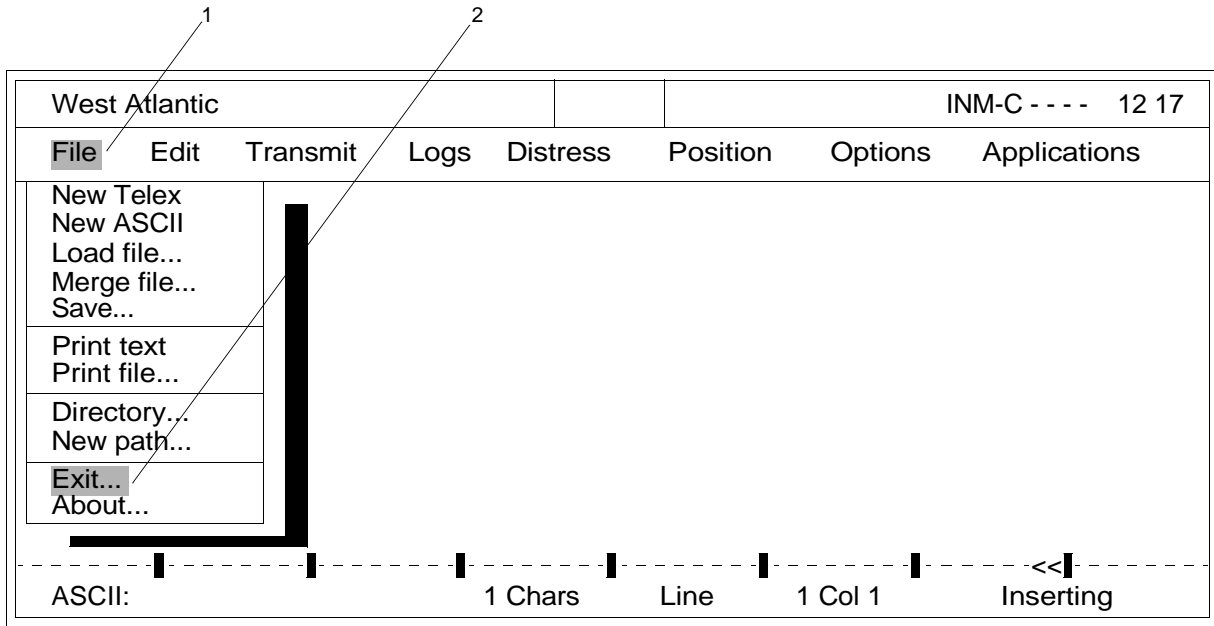


Figure 5. Options Menu Bar

- 5. Press the ENTER key.
- 6. Highlight Yes (figure 6, item 1) on the Confirm screen.

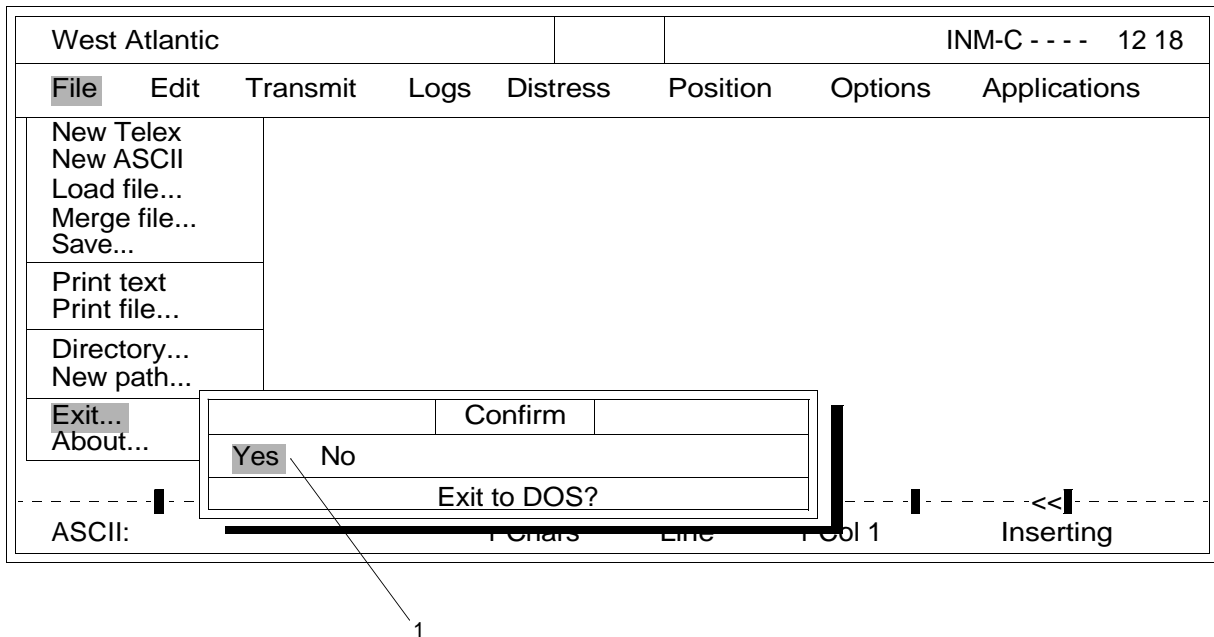


Figure 6. Confirm Screen

- 7. Press the ENTER key.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR)
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:

Personnel Required

Seaman 88K

References

TM 11-5825-291-13

OPERATING PROCEDURES - PLGR

Reference AN/PSN-11(V)1, TM 11-5825-291-13, Satellite Signal Navigational Sets, Operations and Maintenance Manual.

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
PRECISION LIGHTWEIGHT GLOBAL POSITIONING SYSTEM RECEIVER (PLGR)
OPERATION UNDER USUAL CONDITIONS

INITIAL SETUP:**Personnel Required**

Seaman 88K

OPERATING PROCEDURES - PERFORM INITIAL SETUP OF PLGR**SET UP PLGR****WARNING**

Remove BA-5800 battery before applying external power. Failure to comply could result in injury to personnel.

NOTE

The following procedure provides instructions to accomplish basic Precision Lightweight Global Positioning System Receiver (PLGR) setup for U.S. Army watercraft. It is recommended that the applicable U.S. Army publications be reviewed and referenced for additional PLGR operating and setup procedures.

1. Press the ON key (figure 1, item 1) to turn the PLGR on.

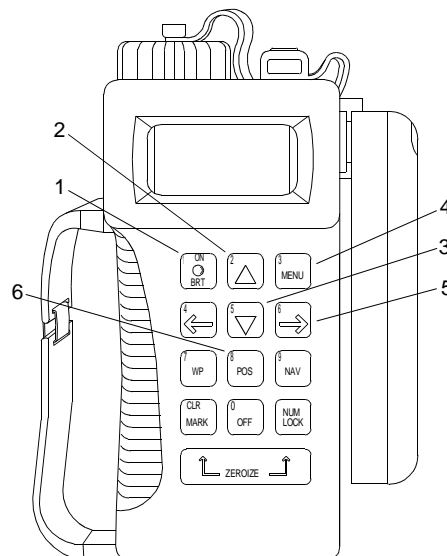


Figure 1. Precision Lightweight Global Positioning System Receiver (PLGR)

2. Adjust the display backlighting by simultaneously pressing the ON/BRT key (figure 1, item 1) and the up arrow key (figure 1, item 2) to increase lighting or the down arrow key (figure 1, item 3) to decrease lighting (figure 2).

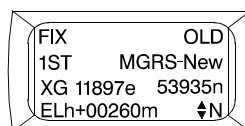


Figure 2. Startup Display

3. Press the MENU key (figure 1, item 4).

SET UP PLGR - Continued

4. SETUP must flash (figure 3). If STATUS is flashing, press the right arrow key (figure 1, item 5).

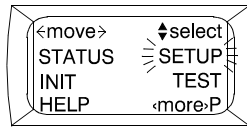


Figure 3. SETUP Display

5. Press the down arrow key (figure 1, item 3).
6. Press the right arrow key (figure 1, item 5). FIX will be flashing in SETUP MODE (figure 4).

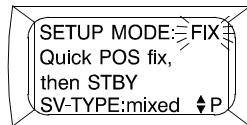


Figure 4. FIX Display

7. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until CONT is flashing in SETUP MODE (figure 5).

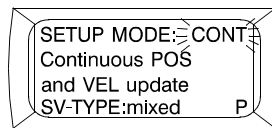


Figure 5. CONT Display

8. Press the right arrow key (figure 1, item 5) to save CONT and move to the next selection.
9. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until mixed is flashing in SV TYPE (figure 6).

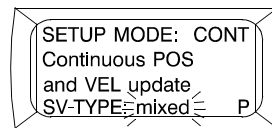


Figure 6. Mixed Display

10. Press the right arrow key (figure 1, item 5) to save mixed.

SET UP UNITS

1. Press the down arrow key (figure 1, item 3) to advance to SETUP UNITS.
2. Press the right arrow key (figure 1, item 5) to start selection flashing (figure 7).

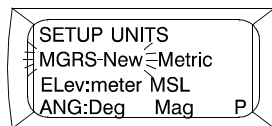


Figure 7. SETUP UNITS Display

3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until L/L-dm. is flashing (figure 8).

SET UP UNITS - Continued

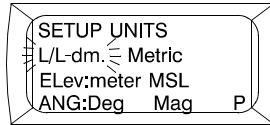


Figure 8. L/L-dm. Display

4. Press the right arrow key (figure 1, item 5) to save L/L-dm. and move to the next selection.
5. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until NAUT is flashing (figure 9).

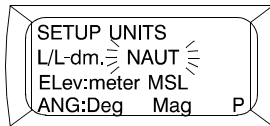


Figure 9. NAUT Display

6. Press the right arrow key (figure 1, item 5) to save NAUT and move to the next selection.
7. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until feet is flashing for ELv (figure 10).

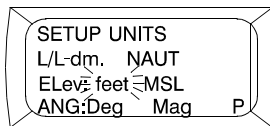


Figure 10. Feet Display

8. Press the right arrow key (figure 1, item 5) to save feet and move to the next selection.
9. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until MSL is flashing (figure 11).

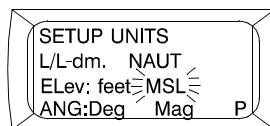


Figure 11. MSL Display

10. Press the right arrow key (figure 1, item 5) to save MSL and move to the next selection.
11. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until Deg is flashing for ANG (figure 12).

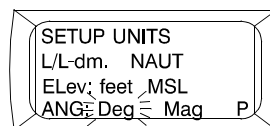


Figure 12. Deg Display

12. Press the right arrow key (figure 1, item 5) to save Deg and move to the next selection.
13. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until True is flashing for vessels with a gyro compass (figure 13). For vessels without a gyro compass, select Mag.

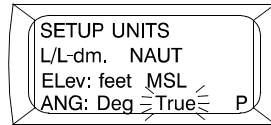
SET UP UNITS - Continued

Figure 13. True Display

SET UP ELHOLD, TIME AND ERR

1. Press the down arrow key (figure 1, item 3) twice to advance to SETUP.
2. Press the right arrow key (figure 1, item 5) to start selection flashing.
3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until automatic is flashing for ELHold (figure 14).

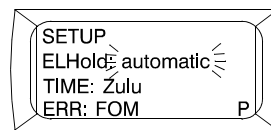


Figure 14. Automatic Display

4. Press the right arrow key (figure 1, item 5) to save automatic and move to the next selection.
5. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until Zulu is flashing for TIME (figure 15).

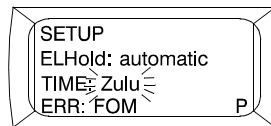


Figure 15. Zulu Display

6. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) to save Zulu and move to the next selection.
7. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until ± yd is flashing for ERR (figure 16).

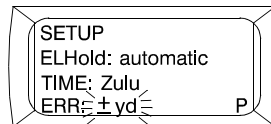


Figure 16. Yd Display

8. Press the right arrow key (figure 1, item 5) to save ± yd and end selection flashing.

SET UP DTM AND AUTOMATIC OFF TIMER

1. Press the down arrow key (figure 1, item 3) to advance to SETUP.
2. Press the right arrow key (figure 1, item 5) to start selection flashing.
3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until WGD is flashing (figure 17).

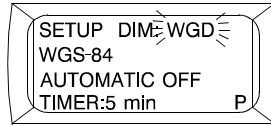
SET UP DTM AND AUTOMATIC OFF TIMER - Continued

Figure 17. WGD Display

4. Press the right arrow key (figure 1, item 5) to save WGD WGS-84 and move to the next selection.
5. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until off is flashing for TIMER (figure 18).

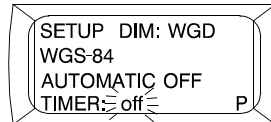


Figure 18. Timer Off Display

6. Press the right arrow key (figure 1, item 5) to save off and end selection flashing.

SET UP I/O SERIAL, HAVEQUICK AND 1PPS

1. Press the down arrow key (figure 1, item 3) to advance to SETUP I/O.
2. Press the right arrow key (figure 1, item 5) to start selection flashing.
3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until Custom is flashing for SERIAL (figure 19).

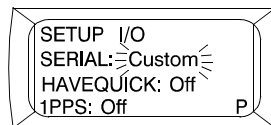


Figure 19. Custom Display

4. Press the right arrow key (figure 1, item 5) to save Custom and move to the next selection.
5. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until Off is flashing for HAVEQUICK (figure 20).

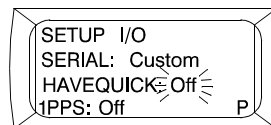


Figure 20. Havequick Off Display

6. Press the right arrow key (figure 1, item 5) to save Off and move to the next selection.
7. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until Off is flashing for 1PPS (figure 21).

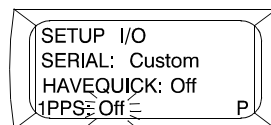


Figure 21. 1PPS Off Display

SET UP I/O SERIAL, HAVEQUICK AND 1PPS - Continued

- Press the right arrow key (figure 1, item 5) to save OFF and end selection flashing.

SET UP SERIAL IN OUT

- Press the down arrow key (figure 1, item 3) to advance to SERIAL IN OUT.
- Press the right arrow key (figure 1, item 5) to start selection flashing.
- Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until STD is flashing for SERIAL IN MODE (figure 22).

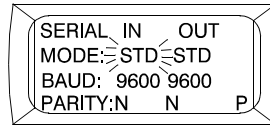


Figure 22. STD Display

- Press the right arrow key (figure 1, item 5) to save STD and move to the next selection.
- Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until NMEA is flashing for SERIAL OUT MODE (figure 23).

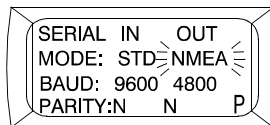


Figure 23. NMEA Display

- Press the right arrow key (figure 1, item 5) to save NMEA and end selection flashing.

SET UP NMEA SENTENCE STRING

- Press the down arrow key (figure 1, item 3) to advance to SETUP.
- Press the right arrow key (figure 1, item 5) to start selection flashing.
- Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) to change the NMEA sentence string (figure 24).

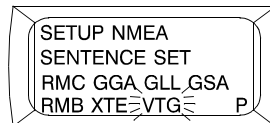


Figure 24. NMEA Sentence String Display

- Press the right arrow key (figure 1, item 5) to advance to the next string after entering each three letter group sentence string.
- Verify sentence strings [RMC] [GGA] [GLL] [GSA] [RMB] [XTE] [VTG] are entered correctly.
- Press the right arrow key (figure 1, item 5) after the last NMEA sentence string is entered.

SET UP AUTO MARK MODE

- Press the down arrow key (figure 1, item 3) to advance to SETUP AUTOMARK.

SET UP AUTO MARK MODE - Continued

2. Press the right arrow key (figure 1, item 5) to start selection flashing.
3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) until off is flashing for MODE (figure 25).

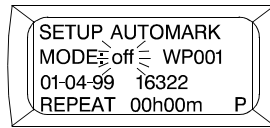


Figure 25. Mode Off Display

4. Press the right arrow key (figure 1, item 5) four times to save off and end selection flashing.

SET BULLSEYE**NOTE**

The bullseye menu will only activate when waypoint data is entered.

1. Press the down arrow key (figure 1, item 3) to advance to SET BULLSEYE.
2. Press the right arrow key (figure 1, item 5) to start selection flashing (figure 26).

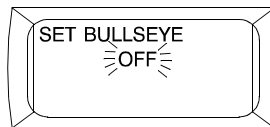


Figure 26. Bullseye Off Display

3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) to select flashing OFF.
4. Press the right arrow key (figure 1, item 5) to save OFF and end selection flashing.

SET UP OPERATOR ID

1. Press the down arrow key (figure 1, item 3) to advance to SETUP OPERATOR ID.
2. Press the right arrow key (figure 1, item 5) to start selection flashing.
3. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) to enter the operator ID.
4. Press the right arrow key (figure 1, item 5) to advance to the next letter/number position after each letter/number is entered.
5. Press the up arrow key (figure 1, item 2) or down arrow key (figure 1, item 3) to change the letter/number.
6. Continue until the complete operator ID is entered.
7. Press the right arrow key (figure 1, item 5) until the double arrow symbol appears in the right lower corner of the display to the left of P.

SET UP APPROACH

1. Press the down arrow key (figure 1, item 3) to advance to SETUP APPROACH.
2. Verify default settings.

SET UP APPROACH - Continued

3. Press the POS key (figure 1, item 6) to end setup and return to POSITION display.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
INTERFACE AND SWITCHBOX
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**

Seaman 88K

OPERATING PROCEDURES - OPERATE THE INTERFACE AND SWITCHBOX**NOTE**

The interface and switchbox will not transmit the current position to any interfaced devices with the OPERATE/PROGRAM switch in the PROGRAM position or the power switch in BYPASS PWR position.

1. Place the power switch (figure 1, item 1) in the PWR position (figure 1, item 2) to allow the interface and switchbox (figure 1, item 3) to receive ships power and supply regulated power to the PLGR.

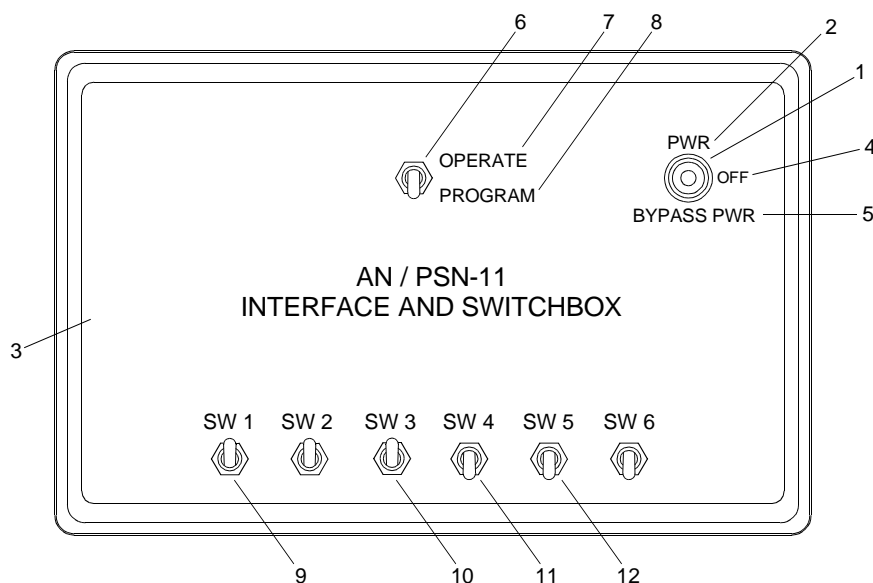


Figure 1. Interface and Switchbox

2. Place the power switch (figure 1, item 1) to the OFF position (figure 1, item 4) to allow the interface and switchbox (figure 1, item 3) to receive ships power, but not allow power output to the PLGR.
3. Place the power switch (figure 1, item 1) in the BYPASS PWR position (figure 1, item 5) to allow the interface and switchbox (figure 1, item 3) to receive ships power and supply unregulated power to the PLGR.
4. Place the OPERATE/PROGRAM switch (figure 1, item 6) in the OPERATE position (figure 1, item 7) to allow GPS data from the PLGR to be distributed to J1–J5 outputs.
5. Place the OPERATE/PROGRAM switch (figure 1, item 6) in the PROGRAM position (figure 1, item 8) to provide a direct programming link between the PLGR and a data terminal.

NOTE

SW2 and SW6 are not used when the interface and switchbox is installed in the navigation location.

6. Place SW1 (figure 1, item 9) in the on (up) position to supply the GPS signal to the VHF/FM radio.

OPERATE THE INTERFACE AND SWITCHBOX - Continued

7. Place SW1 (figure 1, item 9) in the off (down position) to prevent the GPS signal from being supplied to the VHF/FM radio.
8. Place SW3 (figure 1, item 10) in the on (up) position to supply the GPS signal to the S-band radar.
9. Place SW3 (figure 1, item 10) in the off (down) position to prevent the GPS signal from being supplied to the S-band radar.
10. Place SW4 (figure 1, item 11) in the on (up) position to supply the GPS signal to the X-band radar.
11. Place SW4 (figure 1, item 11) in the off (down) position to prevent the GPS signal from being supplied to the X-band radar.
12. Place SW5 (figure 1, item 12) in the on (up) position to supply the GPS signal to the conning display.
13. Place SW5 (figure 1, item 12) in the off (down) position to prevent the GPS signal from being supplied to the conning display.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
NAVTEX RECEIVER
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:

Personnel Required

Seaman 88K

OPERATING PROCEDURES - OPERATE THE NAVTEX RECEIVER

NOTE

The flow chart below (figure 1) shows the configuration of commands provided in the NAVTEX receiver. It is useful if you forget at which command level you are, or if you would like to move to another setting. Most command levels selected at main menu revert to the main menu after selecting escape.

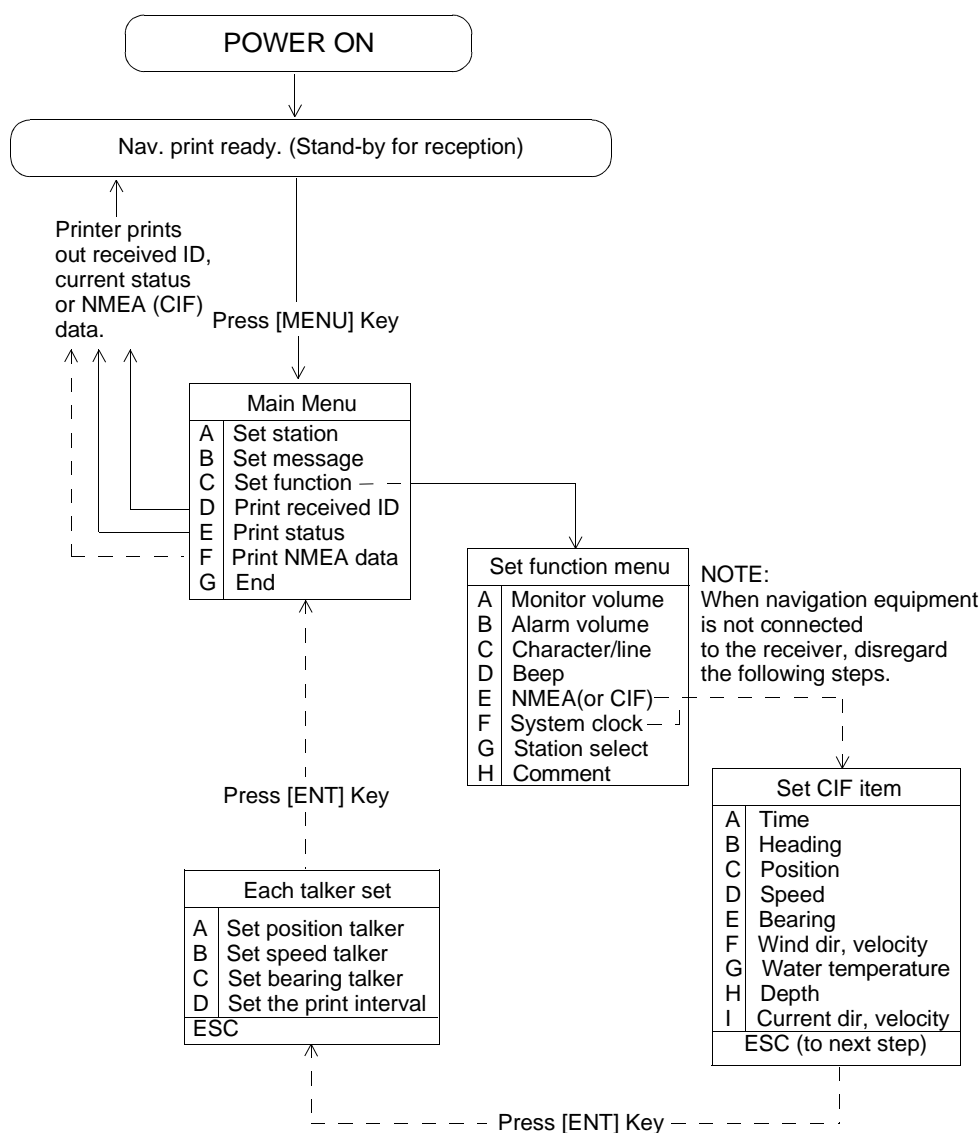


Figure 1. NAVTEX Receiver Command Flowchart

OPERATE THE NAVTEX RECEIVER - Continued
NOTE

As soon as the NAVTEX receiver is turned on, the message "NAV. PRINT READY." is printed. This message indicates the receiver is in stand-by, ready to receive the NAVTEX signal.

The receiver should be turned on for the duration of a voyage so that important warning messages will not be missed.

1. Open the front panel (figure 2, item 1) and turn on the power switch (figure 2, item 2).

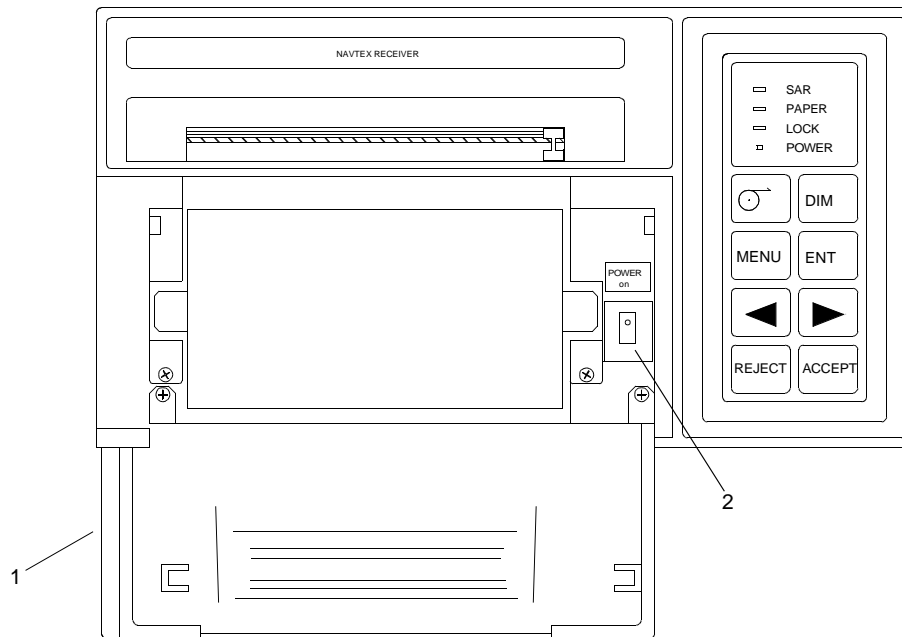


Figure 2. Power Switch

NOTE

Each time the key is pressed, illumination, backlighting and brightness are changed in the sequence of BRIGHT-DIM-OFF.

2. Press the DIM key (figure 3, item 1) to adjust paper illumination, touchpad panel backlighting and LED brightness concurrently.

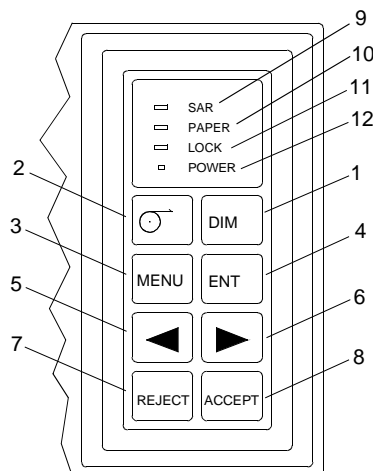


Figure 3. Control Panel

OPERATE THE NAVTEX RECEIVER - Continued

3. Press the FEED key (figure 3, item 2) to advance the paper by one line. To advance the paper more rapidly, press and hold the key. The key is inoperable while a message is being printed.
4. Press the MENU key (figure 3, item 3) to display the main menu.
5. Press the ENT key (figure 3, item 4) to register user set data.
6. Press the left arrow key (figure 3, item 5) to move the cursor leftward.
7. Press the right arrow key (figure 3, item 6) to move the cursor rightward.
8. Press the REJECT key (figure 3, item 7) to reject stations/messages or to enter lower case (small) characters.
9. Press the ACCEPT key (figure 3, item 8) to select stations/messages or to enter upper case (capital) characters. Additionally, it also enables aural monitoring of NAVTEX signal.

NOTE

The SAR light (figure 3, item 9) illuminates when a Search and Rescue (SAR) message is received. The audio alarm is also activated.

The PAPER light (figure 3, item 10) illuminates when the receiver is out of paper.

The LOCK light (figure 3, item 11) illuminates when messages are being received.

The POWER light (figure 3, item 12) illuminates when receiver power is on.

The list below shows the stations registered with the International Frequency Registration Board (IFRB) for transmission of 518 kHz (as of Feb. 2004). Note that all stations are not operational.

10. Additional information on the operation of the NAVTEX receiver is supplied below (figure 4).

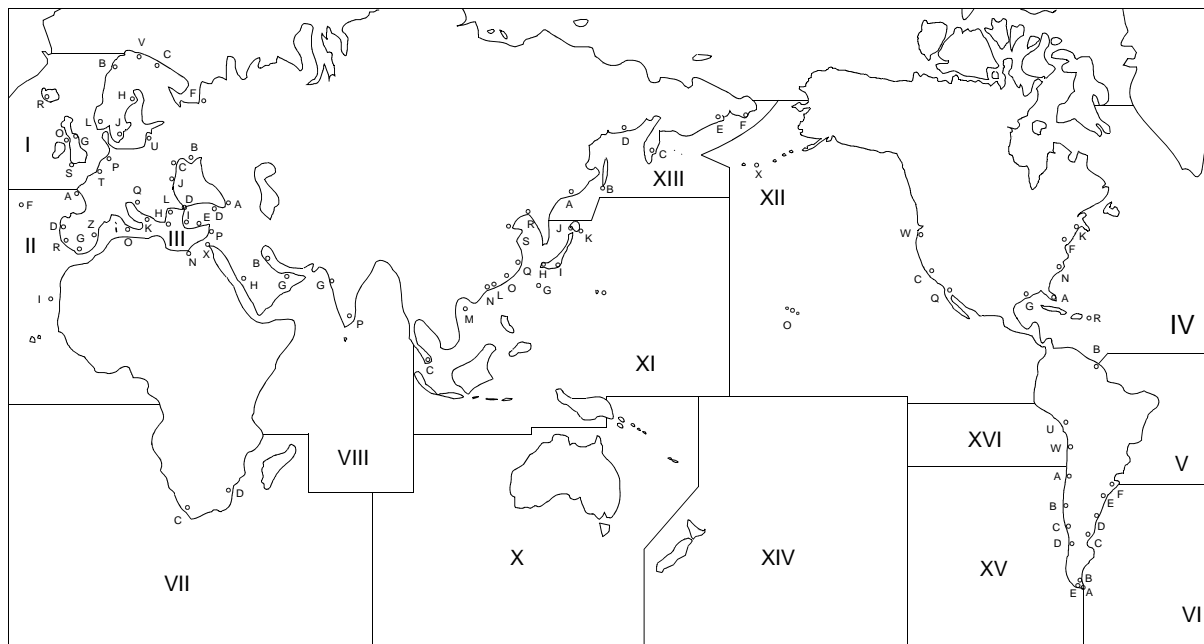


Figure 4. NAVTEX Station Map

Table 1. NAVTEX Station List.

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|----------|---------|------------|------------------------------------|------------------------------------|---------|
| I | B | NORWAY | Bodo | 0010, 0410, 0810, 1210, 1610, 2110 | |
| | D | SWEDEN | Gothenburg | 0030, 0430, 0830, 1230, 1630, 2030 | |
| | E | U.K. | Niton | 0040, 0440, 0840, 1240, 1640, 2040 | |
| | G | U.K. | Cullercoats | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | H | SWEDEN | Haernoessand | 0110, 0510, 0910, 1310, 1710, 2110 | |
| | J | SWEDEN | Karlskrona | 0130, 0530, 0930, 1330, 1730, 2130 | |
| | K | U.K. | Niton | 0140, 0540, 0940, 1340, 1740, 2140 | |
| | L | NORWAY | Rogaland | 0150, 0550, 0950, 1350, 1750, 2150 | |
| | M | BELGIUM | Ostend | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | N | NORWAY | Orlandet | 0210, 0610, 1010, 1410, 1810, 2210 | |
| | O | U.K. | Portpatrick | 0220, 0620, 1020, 1420, 1820, 2220 | |
| | P | HOLLAND | Den Helder | 0230, 0630, 1030, 1430, 1830, 2230 | |
| | Q | IRELAND | Malin Head | 0240, 0640, 1040, 1440, 1840, 2240 | |
| | R | ICELAND | Reykjavik | 0250, 0650, 1050, 1450, 1850, 2250 | |
| | S | U.K. | Niton | 0300, 0700, 1100, 1500, 1900, 2300 | |
| | T | BELGIUM | Ostende | 0310, 0710, 1110, 1510, 1910, 2310 | |
| | U | ESTONIA | Tallin | 0320, 0720, 1120, 1520, 1920, 2320 | |
| | W | IRELAND | Valentia | 0340, 0740, 1140, 1540, 1940, 2340 | |
| X | ICELAND | Reykjavik | 0350, 0750, 1150, 1550, 1950, 2350 | | |
| II | A | FRANCE | Corsen | 0000, 0400, 0800, 1200, 1600, 2000 | |
| | D | SPAIN | Corunna | 0030, 0430, 0830, 1230, 1630, 2030 | |
| | F | PORTUGAL | Azores | 0050, 0450, 0850, 1250, 1650, 2050 | |
| | G | SPAIN | Tarifa | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | I | SPAIN | Canary Islands | 0120, 0520, 0920, 1320, 1720, 2120 | |
| | M | MORROCCO | Casablanca | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | P | PORTUGAL | Porto Santo | 0230, 0630, 1030, 1430, 1830, 2230 | Planned |
| | R | PORTUGAL | Monsanto | 0250, 0650, 1050, 1450, 1850, 2250 | |
| | | CAPE VERDE | Sao Vicente de Cape Verde | | Planned |
| | | CAMEROON | Douala | | Planned |
| | | MAURITANIA | Nouadhibou | | Planned |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|----------|--------|----------------|------------------------------------|------------------------------------|----------------|
| III | A | RUSSIA | Novorossiysk | 0300, 0700, 1100, 1500, 1900, 2300 | |
| | B | UKRAINE | Mariupol | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | C | UKRAINE | Odessa | 0230, 0630, 1030, 1430, 1830, 2230 | |
| | D | TURKEY | Istanbul | 0030, 0430, 0830, 1230, 1630, 2030 | |
| | E | TURKEY | Samsun | 0040, 0440, 0840, 1240, 1640, 2040 | |
| | F | TURKEY | Antalya | 0050, 0450, 0850, 1250, 1650, 2050 | |
| | G | N. CYPRUS | Kyrenia | 0100, 0500, 0900, 1300, 1700, 2100 | Out of Service |
| | H | GREECE | Heraklion | 0110, 0510, 0910, 1310, 1710, 2110 | |
| | I | TURKEY | Izmir | 0120, 0520, 0920, 1320, 1720, 2120 | |
| | J | BULGARIA | Varna | 0130, 0530, 0930, 1330, 1730, 2130 | |
| | K | GREECE | Corfu | 0140, 0540, 0940, 1340, 1740, 2140 | |
| | L | GREECE | Limnos | 0150, 0550, 0950, 1350, 1750, 2150 | |
| | M | CYPRUS | Troodos | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | N | EGYPT | Alexandria | 0210, 0610, 1010, 1410, 1810, 2210 | |
| | O | MALTA | Malta | 0220, 0620, 1020, 1420, 1820, 2220 | |
| | P | ISRAEL | Haifa | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | Q | HERZOG | Split | 0240, 0640, 1040, 1440, 1840, 2240 | |
| | R | ITALY | Rome | 0250, 0650, 1050, 1450, 1850, 2250 | |
| | T | ITALY | Cagliari | 0310, 0710, 1110, 1510, 1910, 2310 | |
| | U | ITALY | Trieste | 0320, 0720, 1120, 1520, 1920, 2320 | |
| | V | ITALY | Augusta | 0330, 0730, 1130, 1530, 1930, 2330 | |
| | W | FRANCE | La Garde | 0340, 0740, 1140, 1540, 1940, 2340 | |
| | W | RUSSIA | Astrakhan | 0340, 0740, 1140, 1540, 1940, 2340 | |
| X | SPAIN | Cabo De La Nao | 0350, 0750, 1150, 1550, 1950, 2350 | | |
| | | ITALY | Bari | | Planned |
| | | ITALY | Anacona | | Planned |
| IV | A | USA | Miami | 0000, 0400, 0800, 1200, 1600, 2000 | |
| | B | BERMUDA | Bermuda Harbour | 0010, 0410, 0810, 1210, 1610, 2010 | |
| | C | CANADA | Riviere-au-Renard | 0020, 0420, 0820, 1220, 1620, 2020 | |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS | |
|----------------|--------|-------------|------------------------|---|-----------------------------|---------|
| IV (CONT'D) | D | CANADA | Riviere-au-Renard | 0035, 0435, 0835, 1235, 1635, 2035 | To move to 490 kHz 1/1/2005 | |
| | E | USA | Savannah | 0040, 0440, 0840, 1240, 1640, 2040 | | |
| | F | USA | Boston | 0045, 0445, 0845, 1245, 1645, 2045 | | |
| | H | CANADA | Prescott | 0110, 0510, 0910, 1310, 1710, 2110 | | |
| | J | CANADA | Sydney | 0255, 0655, 1055, 1455, 1855, 2255 | | |
| | N | USA | Chesapeake | 0130, 0530, 0930, 1330, 1730, 2130 | | |
| | O | CANADA | St. John's | 0220, 0620, 1020, 1420, 1820, 2220 | | |
| | P | CANADA | Thunder Bay | 0230, 0630, 1030, 1430, 1830, 2230 | | |
| | Q | CANADA | Sydney | 0240, 0640, 1040, 1440, 1840, 2240 | | |
| | T | CANADA | Iqaluit | 0310, 0710, 1110, 1510, 1910, 2310 | June - Dec. | |
| | U | CANADA | Fundy | 0320, 0720, 1120, 1520, 1920, 2320 | | |
| | V | CANADA | Fundy | 0335, 0735, 1135, 1535, 1935, 2335 | | |
| | W | GREENLAND | Nuuk (Kook Islands) | 0340, 0740, 1140, 1540, 1940, 2340 | | |
| | W | CANADA | Montreal | 0340, 0740, 1140, 1540, 1940, 2340 | Out of Service | |
| | X | CANADA | Labrador | 0350, 0750, 1150, 1550, 1950, 2350 *0910, 2110 | * July - Oct. | |
| | G | USA | New Orleans | 0300, 0700, 1100, 1500, 1900, 2300 | | |
| | H | ANTILLES | Curacao | 0110, 0510, 0910, 1310, 1710, 2110 | | |
| | R | PUERTO RICO | San Juan | 0200, 0600, 1000, 1400, 1800, 2200 | | |
| | | | MEXICO | Cozumel | | Planned |
| | | | MEXICO | Veracruz | | Planned |
| | | VENEZUELA | La Guaira | | Planned | |
| V | F | URUGUAY | La Paloma | 0050, 0450, 0850, 1250, 1650, 2050 | Planned | |
| | | URUGUAY | Laguna del Sauce | | Planned | |
| | | URUGUAY | Montevideo | | Planned | |
| | | URUGUAY | Punte de Este | | Planned | |
| | | URUGUAY | Salto | | Planned | |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|---------------|--------|-----------|--------------------|------------------------------------|----------------|
| V (CONT'D) | | URUGUAY | Colonia | | Planned |
| | | BRAZIL | Rio de Janeiro | | Planned |
| VI | A | ARGENTINA | Ushuaia | 0200, 1000, 1800 | |
| | B | ARGENTINA | Rio Gallegos | 0210, 1010, 1810 | |
| | C | ARGENTINA | Comodoro Rivadavia | 0220, 1020, 1820 | |
| | D | ARGENTINA | Bahia Blanca | 0230, 1030, 1830 | |
| | E | ARGENTINA | Mar Del Plata | 0240, 1040, 1840 | |
| | F | ARGENTINA | Buenos Aires | 0250, 1050, 1850 | |
| | G | ARGENTINA | Rosario | 0300, 1100, 1900 | Out of Service |
| VI | M | ARGENTINA | Ushuaia | 0600, 1400, 2200 | |
| | N | ARGENTINA | Rio Gallegos | 0610, 1410, 2210 | |
| | O | ARGENTINA | Comodoro Rivadavia | 0620, 1420, 2220 | |
| | P | ARGENTINA | Bahia Blanca | 0630, 1430, 2230 | |
| | Q | ARGENTINA | Mar Del Plata | 0640, 1440, 2240 | |
| | R | ARGENTINA | Buenos Aires | 0650, 1450, 2250 | |
| | S | ARGENTINA | Rosario | 0700, 1500, 2300 | Out of Service |
| VII | B | NAMIBIA | Walvis Bay | 0010, 0410, 0810, 1210, 1610, 2010 | |
| | C | S. AFRICA | Capetown | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | I | S. AFRICA | Port Elizabeth | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | O | S. AFRICA | Durban | 0220, 0620, 1020, 1420, 1820, 2220 | |
| VIII | C | MAURITIUS | Mauritius | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | G | INDIA | Bombay | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | P | INDIA | Madras | 0230, 0630, 1030, 1430, 1830, 2230 | |
| | | INDIA | Port Blair | | Planned |
| | P | TAZMANIA | Dar es Salaam | | Planned |
| IX | A | IRAN | Bushehr | 0000, 0400, 0800, 1200, 1600, 2000 | |
| | B | BAHRAIN | Hamala | 0010, 0410, 0810, 1210, 1610, 2010 | |
| | F | IRAN | Abbas | 0050, 0450, 0850, 1250, 1650, 2050 | |
| | G | S. ARABIA | Dammam | 0005, 0605, 1205, 1805 | Out of Service |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|----------------|---------|-------------|------------------------------------|------------------------------------|---------|
| IX (CONT'D) | H | S. ARABIA | Jeddah | 0705, 1305, 1905 | |
| | M | OMAN | Muscat | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | P | PAKISTAN | Karachi | 0230, 0630, 1030, 1430, 1830, 2230 | |
| | V | EGYPT | Quseir | 0330, 0730, 1130, 1530, 1930, 2330 | |
| | X | EGYPT | Ismailia | 0350, 0750, 1150, 1550, 1950, 2350 | |
| X | A | INDONESIA | Jayapura | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | B | INDONESIA | Ambon | 0010, 0410, 0810, 1210, 1610, 2010 | |
| | C | SINGAPORE | Jurong | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | D | INDONESIA | Makassar | 0030, 0430, 0830, 1230, 1630, 2030 | |
| | E | INDONESIA | Jakarta | 0040, 0440, 0840, 1240, 1640, 2040 | |
| | F | THAILAND | Bangkok | 0050, 0450, 0850, 1250 | |
| | G | JAPAN | Naha | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | H | JAPAN | Moji | 0110, 0510, 0910, 1310, 1710, 2110 | |
| | I | PHILLIPINES | Puerto Princesa | 0120, 0520, 0920, 1320, 1720, 2120 | |
| | I | JAPAN | Yokohama | 0120, 0520, 0920, 1320, 1720, 2120 | |
| | J | PHILLIPINES | Manila | 0130, 0530, 0930, 1330, 1730, 2130 | |
| | J | JAPAN | Otaru | 0130, 0530, 0930, 1330, 1730, 2130 | |
| | K | PHILLIPINES | Davao | 0140, 0540, 0940, 1340, 1740, 2140 | |
| | K | JAPAN | Kushiro | 0140, 0540, 0940, 1340, 1740, 2140 | |
| | L | HONG KONG | Hong Kong | 0150, 0550, 0950, 1350, 1750, 2150 | |
| | M | CHINA | Sanya | 0200, 0600, 1000, 1400, 2200 | |
| | N | CHINA | Guangzhou | 0210, 0610, 1010, 1410, 2210 | |
| | O | CHINA | Fuzhou | 0220, 0620, 1020, 1420, 2220 | |
| | P | TAIWAN | Chilung | 0230, 0630, 1030, 1430, 1830, 2230 | |
| | P | TAIWAN | Kaohsiung | 0230, 0630, 1030, 1430, 1830, 2230 | |
| P | VIETNAM | Da Nang | 0230, 0630, 1030, 1430, 1830, 2230 | | |
| Q | CHINA | Shanghai | 0240, 0640, 1040, 1440, 2240 | | |
| R | CHINA | Dalian | 0250, 0650, 1050, 1450, 2250 | | |
| S | CHINA | Tianjin | 0300, 0700, 1100, 1500, 2300 | Planned | |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|---------------|--------|----------|------------------|------------------------------------|----------------|
| X (CONT'D) | S | MALAYSIA | Sandakan | 0300, 0700, 1100, 1500, 1900, 2300 | |
| | T | MALAYSIA | Miri | 0310, 0710, 1110, 1510, 1910, 2310 | |
| | U | MALAYSIA | Penang | 0320, 0720, 1120, 1520, 1920, 2320 | |
| | V | USA | Guam | 0100, 0500, 0900, 1300, 1700, 2100 | |
| | V | KOREA | Chukp'yong | 0330, 0730, 1130, 1530, 1930, 2330 | |
| | W | KOREA | P'youngsan | 0340, 0740, 1140, 1540, 1940, 2340 | |
| | W | VIETNAM | Hai Phong | 0340, 0740, 1140, 1540, 1940, 2340 | |
| | X | VIETNAM | Ho Chi Minh City | 0350, 0750, 1150, 1550, 1950, 2350 | |
| XI | C | USA | San Francisco | 0000, 0400, 0800, 1200, 1600, 2000 | |
| | D | CANADA | Prince Rupert | 0030, 0430, 0830, 1230, 1630, 2030 | |
| | H | CANADA | Tofino | 0110, 0510, 0910, 1310, 1710, 2110 | |
| | J | USA | Kodiak | 0300, 0700, 1100, 1500, 1900, 2300 | |
| | Q | USA | Cambria | 0045, 0445, 0845, 1245, 1645, 2045 | |
| | W | USA | Astoria | 0130, 0530, 0930, 1330, 1730, 2130 | |
| | X | USA | Kodiak | 0340, 0740, 1140, 1540, 1940, 2340 | |
| | X | USA | Adak | 0340, 0740, 1140, 1540, 1940, 2340 | Out of Service |
| XII | A | RUSSIA | Vladivostok | 0000, 0400, 0800, 1200, 1600, 2000 | Out of Service |
| | B | RUSSIA | Kholmsk | 0010, 0410, 0810, 1210, 1610, 2010 | |
| | C | RUSSIA | Petropavlovsk | 0020, 0420, 0820, 1220, 1620, 2020 | Out of Service |
| | D | RUSSIA | Magadan | 0030, 0430, 0830, 1230, 1630, 2030 | Out of Service |
| | E | RUSSIA | Beringovskiy | 0040, 0440, 0840, 1240, 1640, 2040 | Out of Service |
| | F | RUSSIA | Provideniya | 0050, 0450, 0850, 1250, 1650, 2050 | Out of Service |
| XIII | A | CHILE | Antofagasta | 0400, 1200, 2000 | |
| | B | CHILE | Valparaiso | 0410, 1210, 2010 | |
| | C | CHILE | Talcahuano | 0420, 1220, 2020 | |
| | D | CHILE | Puerto Montt | 0430, 1230, 2030 | |
| | E | CHILE | Magallanes | 0440, 1240, 2040 | |
| | F | CHILE | Easter Island | 0450, 1250, 2050 | |
| | G | CHILE | Pascua Island | 0050, 0850, 1650 | |
| | H | CHILE | Antofagasta | 0000, 0800, 1600 | |

Table 1. NAVTEX Station List. (Continued)

| NAV-AREA | STN ID | COUNTRY | CITY | TIME SCHEDULE (UTC) | REMARKS |
|------------------|--------|---------|--------------|------------------------------------|---------|
| XIII (CONT'D) | I | CHILE | Valparaiso | 0010, 0810, 1610 | |
| | J | CHILE | Talcahuano | 0020, 0820, 1620 | |
| | K | CHILE | Puerto Montt | 0030, 0830, 1630 | |
| | L | CHILE | Magallanes | 0040, 0840, 1640 | |
| XIV | M | EQUADOR | Guayaquil | 0200, 0600, 1000, 1400, 1800, 2200 | |
| | O | USA | Honolulu | 0040, 0440, 0840, 1240, 1640, 2040 | |
| | S | PERU | Paita | 0300, 0700, 1100, 1500, 1900, 2300 | |
| | U | PERU | Callao | 0320, 0720, 1120, 1520, 1920, 2320 | |
| | W | PERU | Mollendo | 0340, 0740, 1140, 1540, 1940, 2340 | |
| | | MEXICO | Manzanillo | | Planned |
| | | MEXICO | Salina Cruz | | Planned |
| POLAR REGION | A | NORWAY | Svalbard | 0000, 0400, 0800, 1200, 1600, 2000 | |
| | C | RUSSIA | Murmansk | 0020, 0420, 0820, 1220, 1620, 2020 | |
| | F | RUSSIA | Archangel | 0050, 0450, 0850, 1250, 1650, 2050 | |
| | V | NORWAY | Vardo | 0330, 0730, 1130, 1530, 1930, 2330 | |
| | | RUSSIA | Dikson | | Planned |
| | | RUSSIA | Amderma | | Planned |
| | | RUSSIA | Tiksi | | Planned |
| | | RUSSIA | Yanrangay | | Planned |

OPERATE THE NAVTEX RECEIVER - Continued

11. An example of a NAVTEX message printout is shown below (figure 5).

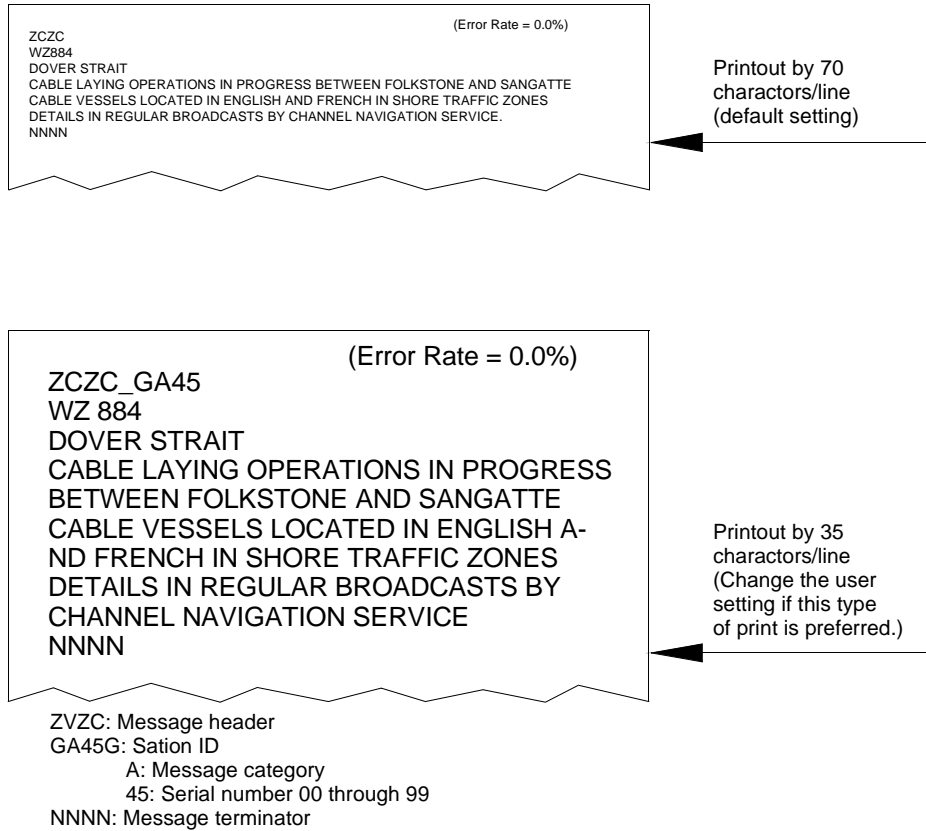


Figure 5. NAVTEX Message Printout

12. After printing is completed, control is returned to the receiving mode. Messages carrying the same station ID and message category of ones already received less than 66 hours earlier will not be printed, to avoid redundancy and paper waste. SAR messages (message category D) and messages carrying serial numbers, however, will be printed even if they are received repeatedly.
13. Error rate and message reception status may be added to each message. A comment can be added to messages by entering H on the Main Menu-C: Set function. The comments printed out are listed in Table 2.

Table 2. Comment Definitions.

| COMMENT | MEANINGS |
|-------------------------|---|
| (Error Rate = 0.0%) | No error is found in the received messages. |
| (Error rate = 33% Over) | When the character error rate exceeds 33%, the receiver prints this comment and suspends printing. (See NOTE 2) |
| Corrupt Message | When the character error rate in one message exceeds 33%, the receiver suspends printing and the message "Corrupt Message" is printed. (See NOTE 2) |

OPERATE THE NAVTEX RECEIVER - Continued**NOTE**

When a character could not be received due to noise interference, for example, an asterisk (*) is printed in its place.

Messages carrying message type "D" or serial number "00" are printed regardless of character error rate.

14. When the receiver, receives a message carrying type "D", it generates an audible alarm. To silence the alarm, press any key.
15. The user setting mode allows you to custom tailor the receiver according to your needs. You can select which category of message you wish to receive, set monitor speaker volume, specify which data are to be printed, etc.
16. All user settings are contained in the main menu. To get into the main menu press the Menu key. The printout should look similar to the figure shown below (figure 6).

* - - - - - printing head

A B C D E F G

-----Main Menu-----

A: Set Station
 B: Set Message
 C: Set function
 D: Print received ID
 E: Print status
 F: Print NMEA data
 G: END

Figure 6. Main Menu Printout

17. The printing head is above "A" of "ABCDEFGG". Each character corresponds to a Main Menu, which is listed below them on the printout. To call up a menu, place the printing head above the letter corresponding to the menu desired by operating the left or right arrow keys (figure 3, item 5 and item 6) and press the ENT key (figure 3, item 4) or ACCEPT key (figure 3, item 8).
18. Most functions are selected or deselected by designating upper (capital) or lower (small) case characters by pressing the ACCEPT key (figure 3, item 8) or REJECT key (figure 3, item 7) at relevant characters, respectively.
19. The left and right arrow keys (figure 3, item 5 and item 6) move the printing head leftward or rightward to skip over functions or items that do not need to be changed.
20. To escape from the user setting mode (at this stage), place the printing head above "G" and press either the ENT key (figure 3, item 4) or the ACCEPT key (figure 3, item 8). The message "Nav. print ready." is displayed (figure 7), indicating control is returned to the receiving mode.

Nav. print ready.

Figure 7. Print Ready Message

OPERATE THE NAVTEX RECEIVER - Continued

NOTE

Menus D, E and F are not for parameter setting but for activating the printer for use as a data logger.

Any message received during user setting (lock lamp illuminates) is stored in the memory and will be printed out immediately after "NAV. PRINT READY." is printed.

21. The MENU-A: SET STATION allows you to select what stations you wish to receive. In order to select stations, you have to switch the reception mode to MANUAL in MENU-C: SET FUNCTION. If you attempt to proceed the SET STATION menu while in the AUTO station selection mode, the receiver will print the following alert message (figure 8).

Change to manual selection mode and try again.

Figure 8. Alert Message

22. To change the station selection (figure 9), go to SET FUNCTION MENU-C and switch to MANUAL selection mode.

```

*  -----printing head
A b C D e f G H I j K L M ESC -----current setting
-----Set station-----
Selected station = capital letter
ESC: ESCAPE
    
```

Figure 9. Main Menu A

23. Move the printing head to "A", then press either the ENT key (figure 3, item 4) or the ACCEPT key (figure 3, item 8). A message will be printed (figure 9).
24. The characters in the top line of the menu represent station IDs and may be in upper or lower case depending on if C, D, G, H, I, K, L and M are selected for reception and stations B, E, F and J are eliminated from reception.
25. To select or deselect a station, place the printing head above the letter (station ID) and press the ACCEPT key (figure 3, item 8) or REJECT key (figure 3, item 7), depending on whether it is desired to select or deselect the station.
26. If the wrong character case is entered, place the printing head above the character once again and press the ACCEPT key (figure 3, item 8) or REJECT key (figure 3, item 7). The incorrect character case is overwritten. After all changes are made, press the ENT key (figure 3, item 4). If the current station is not to be changed, press the ENT key (figure 3, item 4) once, or select ESC and press the ENT key (figure 3, item 4) to escape. Then, the second page of the menu, showing the status of stations N - Z, is printed out along with the status of stations A - M.
27. Make changes as necessary followed by pressing the ENT key (figure 3, item 4), or select ESC and press the ENT key (figure 3, item 4) to escape. The main menu is reprinted.

OPERATE THE NAVTEX RECEIVER - Continued**NOTE**

If any selection for stations A through M is found to be incorrect after the ENT key (figure 3, item 4) is pressed or ESC is selected, it is necessary to start over from the main menu to make any corrections.

28. The MENU-B: SET MESSAGE allows you to specify which category of message you wish to receive. The category of messages is shown in Table 3.

NOTE

Categories A, B and D cannot be rejected from printout, in accordance with international regulations.

Table 3. Message Categories.

| LETTER | CATEGORY |
|---------------|--|
| A | Navigational warnings |
| B | Meteorological warnings |
| C | Ice reports |
| D | Search and Rescue information |
| E | Meteorological forecasts |
| F | Pilot service messages |
| G | DECCA messages |
| H | LORAN messages |
| I | OMEGA messages |
| J | SATNAV messages |
| K | Other electronic navaid messages (Messages concerning radio-navigation services) |
| L | Navigational warnings-additional to letter A |
| M through Y | Not specified |
| V through Y | Special services-allocation by IMO |
| Z | No message in hand |

29. Get into the MAIN MENU, place the printing head above "B" and press either the ENT key (figure 3, item 4) or ACCEPT key (figure 3, item 8). The following is printed out (figure 10).
30. In accordance with the procedure for STATION SELECTION/REJECTION, select or reject each message category by pressing ACCEPT key (figure 3, item 8) to enter upper case character or REJECT key (figure 3, item 7) to enter lower case character. The left arrow key (figure 3, item 5) and right arrow key (figure 3, item 6) may be used to skip over characters.
31. Message categories are identified by letters A, B, ..., Z and are divided into two groups just like station selection: A through M and N through Z.
32. As soon as selection/rejection for messages N through Z is completed, the main menu is printed.

OPERATE THE NAVTEX RECEIVER - Continued

33. To change an incorrect selection, move the cursor to that incorrect character and press either the ACCEPT key (figure 3, item 8) or REJECT key (figure 3, item 7) accordingly. The incorrect character is overprinted.

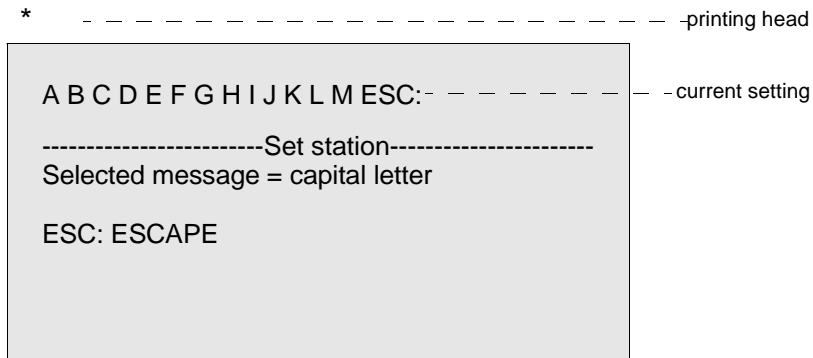


Figure 10. Main Menu B

34. The MENU-C: SET FUNCTION items that are able to be set on the following menu include automatic or manual (as registered) station selection, number of characters/line, navigation data to be printed out (connection kit: option), talker priority (if several navigation receivers are connected), printout interval, etc.

35. Select “C” on the Main Menu. The following is printed out (figure 11).

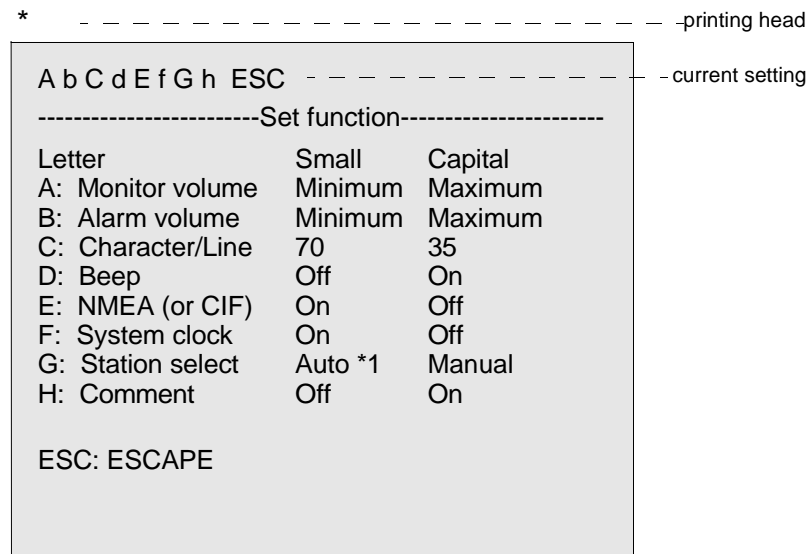


Figure 11. Main Menu C

36. *1 AUTO is available for Europe, USA, Japan, China, Hong Kong and Singapore area.
37. The meaning of each function is listed in Table 4.

Table 4. Function Categories.

| LETTER | CATEGORY |
|--------|--|
| A | Signal monitor volume minimum/maximum |
| B | Alarm volume minimum/maximum |
| C | Number of character/line (Message print out only. For user setting 35 characters/line is always used.) |

Table 4. Function Categories. (Continued)

| LETTER | CATEGORY |
|--------|---|
| D | Key press confirmation beep on/off |
| E | Navigation data input on/off (See NOTE 1) |
| NEMA | National Marine Electronics Association |
| CIF | Furuno Communication Interface |
| F | Time from connected navigation equipment on/off |
| G | Automatic or manual station selection |
| H | Printing of character error rate on/off |

OPERATE THE NAVTEX RECEIVER - Continued

38. Make necessary changes with the ACCEPT key (figure 3, item 8) or REJECT key (figure 3, item 7). After making selections, press the ENT key (figure 3, item 4).

NOTE

When entry of "NMEA-0183" or "CIF" data is accepted, the receiver provides: time, heading, position, speed, bearing, wind direction and speed. Water temperature, depth and ocean current direction and speed, as available, will be printed automatically at a preset time interval.

In order to activate the manual station selection, "G" should be entered in this MENU: SET FUNCTION mode.

Error rate, message reception status (duplicate reception, etc.) may be added to each message received. You may activate the comment printout to check signal quality by entering "H". To delete it, enter "H".

39. Select MENU-D: PRINT SELECTED ID on the main menu. The receiver prints out station IDs and message categories, preceded by time information by hour, for messages received within the last 66 hours. An example printout is shown below (figure 12).

```

Nav. print ready.
-----End of print ID-----
(Passed time : Received ID code)
00:AF00      00:BB01      01:LL01
02:CD01      02:ED00      04:DD01
-----Print ID-----

```

Figure 12. Main Menu D

40. After printing out IDs, control is returned to the receiving mode.
41. Select MENU -E on main menu and the receiver prints out the following (figure 13).
42. After printing out setup data, control is returned to the receiving mode.
43. If NMEA (or CIF) is off in MENU-C, above SETUP DATA is not printed.

OPERATE THE NAVTEX RECEIVER - Continued

```

Nav. print ready.
-----End of print setup data-----
Time          (UTC/SMT/LOCAL TIME)
Heading
Position      (Talker name)
Speed         (GRD/WATER) (Talker name)
Bearing       (Talker name)
Wind          Dir. (N/H) Vel. (True/Rel.)
Water temp
Depth
Current       Dir. Vel.
Print interval      2 Hours
Print start time    1 o'clock

-----Print NMEA setup data -----

----- End of print status -----
Selected station = capital letter
ABCDEFGHIJKLMnOPqRstUVWxyz
Selected message
ABCDEFGHIJKLMNopQRSTUVWXYZ

Selected status
Monitor volume      Maximum
Alarm Volume        Minimum
Character/Line      70
Beep                Off
Data format         NMEA
System clock        On
Station select      Manual
Comment             Off

----- Print status -----
( Station, Message, Function )
    
```

These items do not appear when "System clock" is off.

Figure 13. Main Menu E

44. Select MENU-F. The receiver can print out navigation data if interfaced with navigation equipment. To commence printout, select "F" Print NMEA (or CIF) data on main menu (figure 14).

OPERATE THE NAVTEX RECEIVER - Continued

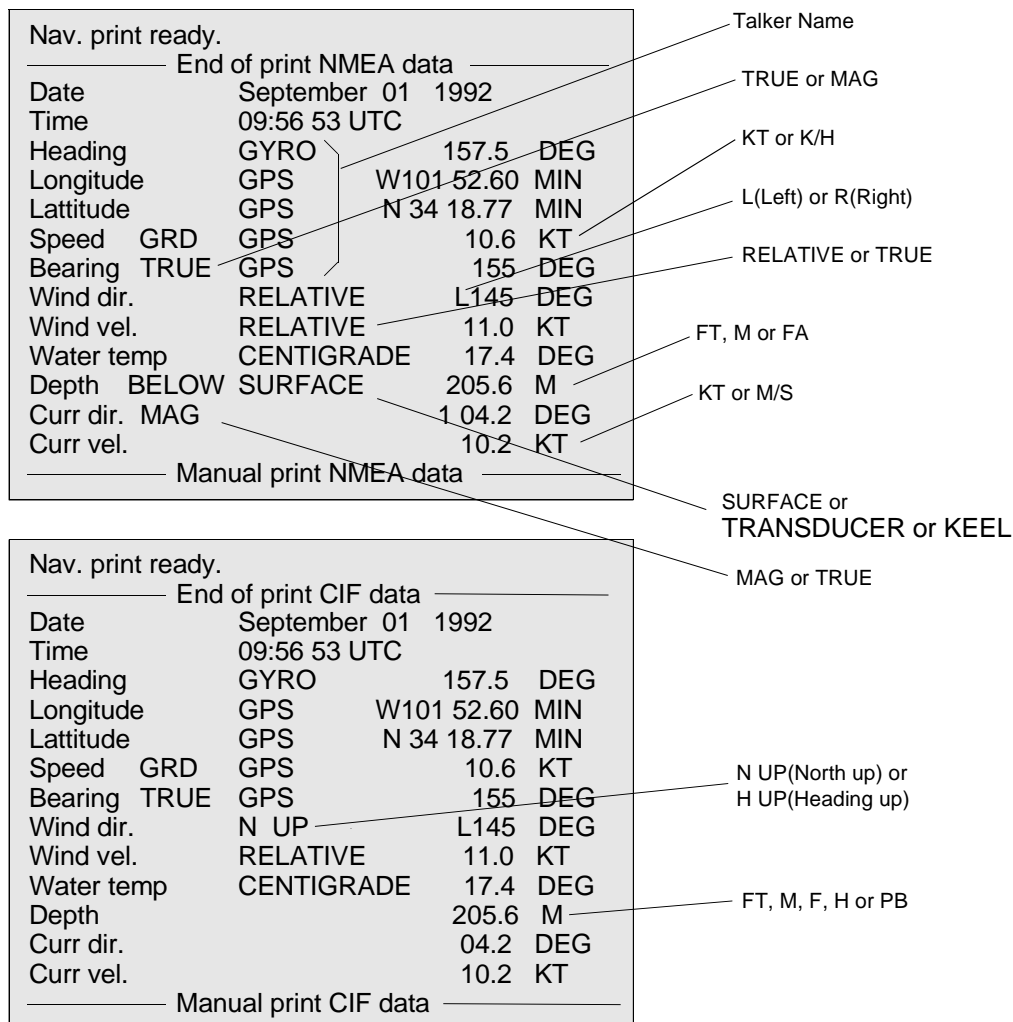


Figure 14. Main Menu F

NOTE

The printout shows talker IDs and indications as listed in Table 5.

For periodical printout of navigation data, "AUTO PRINT ---" will be printed instead of "MANUAL PRINT ---"

If navigation data is not available, the following is printed (figure 15).

Table 5. Talker ID and Indication

| TALKER DEVICE | TALKER ID | INDICATION |
|------------------------|-----------|------------|
| GPS | GP | GPS |
| Loran A | LA | LA |
| Loran C | LC | LC |
| Decca | DE | DC |
| Integrated Instruments | II | DR |
| Omega | OM | OMEGA |

OPERATE THE NAVTEX RECEIVER - Continued

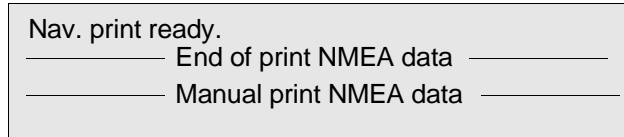


Figure 15. Main Menu F

- 45. When navigation data is fed to the receiver it may be used as a data logger, or a peripheral printer for navigation equipment.

NOTE

To feed navigation data, a connector assembly (optional supply) is required. When no navigation equipment is connected, the following descriptions can be disregarded.

- 46. To select navigation data to be printed, select “C” on the main menu and set NMEA (or CIF) to ON by entering lower case character “e”, then press ENT key (figure 3, item 4). The receiver prints out the following (figure 16).

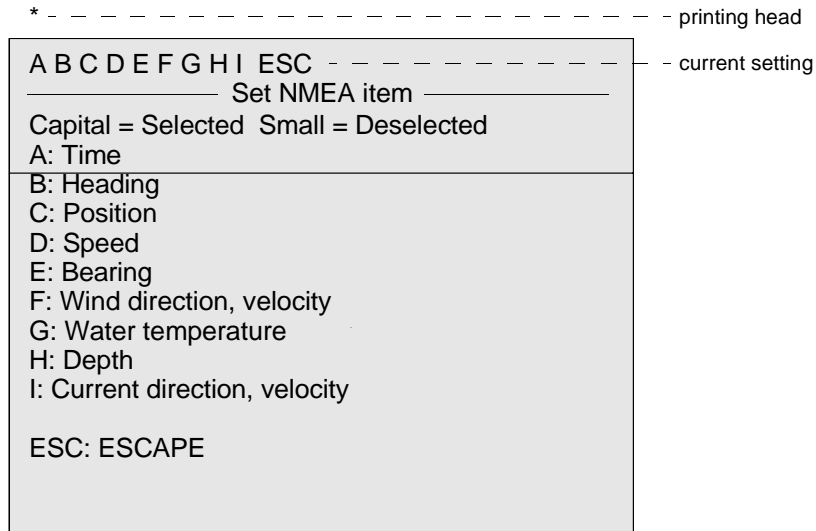


Figure 16. Main Menu Printout

NOTE

“CIF” may be printed instead of “NMEA”, depending on internal setting.

- 47. Enter upper or lower case characters to select or deselect navigation data, respectively. Press the ENT key (figure 3, item 4) to register selections.
- 48. After the ENT key (figure 3, item 4) is pressed to register navigation data to be printed, the menu is printed (figure 17).

OPERATE THE NAVTEX RECEIVER - Continued

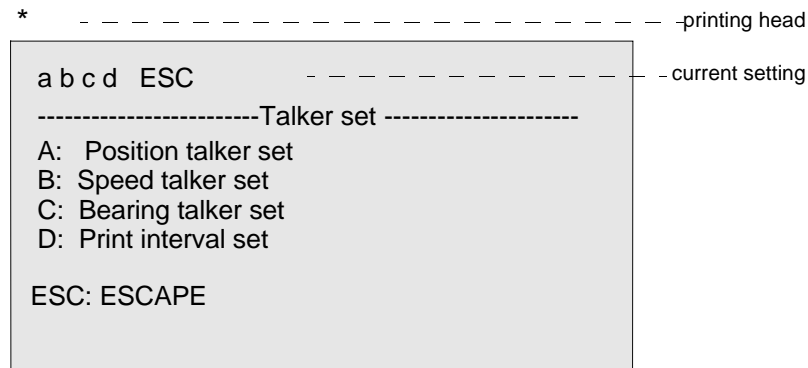


Figure 17. Main Menu Printout

NOTE

In the default setting, A, B, C and D are printed in lower case characters.

49. If this is the first time talker and print interval are being set, press the ACCEPT key (figure 3, item 8) four times to change all the characters on the top line to upper case characters, then press the ENT key (figure 3, item 4).
50. After the ENT key (figure 3, item 4) is pressed, the position talker menu is printed out (figure 18).

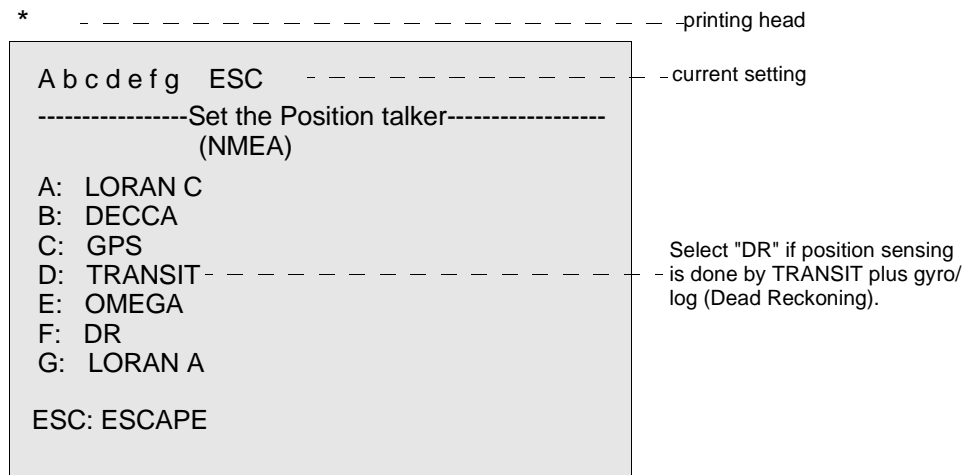


Figure 18. Main Menu Printout

51. This menu is used to set talker on the receiver to LISTEN to position data. The currently selected talker is shown in upper case character on the top line and the talker (navigation equipment) connectable to this unit are printed below.
52. To change the talker, press the ACCEPT key (figure 3, item 8) at characters representing a navigator. To switch the talker from LORAN-C to GPS, place the printing head above C and press the ACCEPT key (figure 3, item 8).
53. If the wrong talker is selected, select ESC and press the ENT key (figure 3, item 4) to return to the position talker submenu. If the talker does not need to be changed, press the ENT key (figure 3, item 4).
54. The speed talker will print out (figure 19).

OPERATE THE NAVTEX RECEIVER - Continued

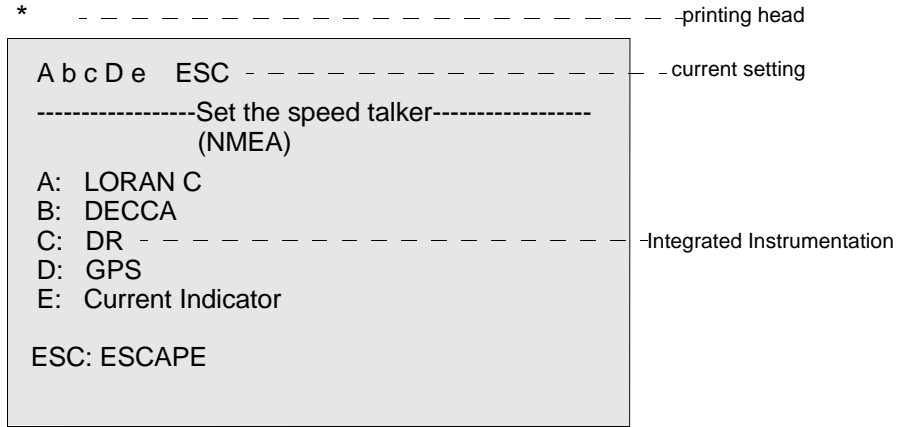


Figure 19. Main Menu Printout

55. Similar to the manner in which positioning talker selection is done, set the desired talker equipment for ships speed data and then press the ENT key (figure 3, item 4) (figure 20). The bearing talker menu is printed (figure 20).

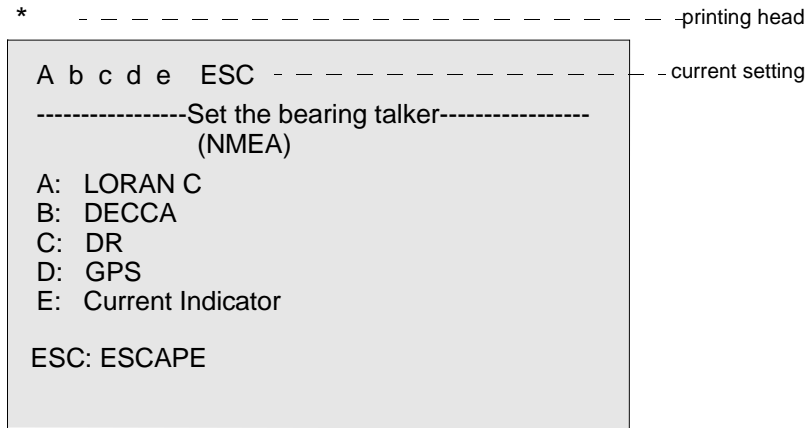


Figure 20. Main Menu Printout

56. Set the talker for bearing data followed by the ENT key (figure 3, item 4). The print interval menu will print out.

57. The below menu (figure 21) appears when SYSTEM CLOCK is on in the MENU-C.

58. In the above example (figure 21), the current print interval setting is “E” (three hours), i.e., selected navigation data is printed every three hours. Select a print interval by placing the printing head above the character designating the interval desired followed by pressing the ACCEPT key (figure 3, item 8). If automatic printout of navigation data is not desired, select “A” (STOP).

OPERATE THE NAVTEX RECEIVER - Continued

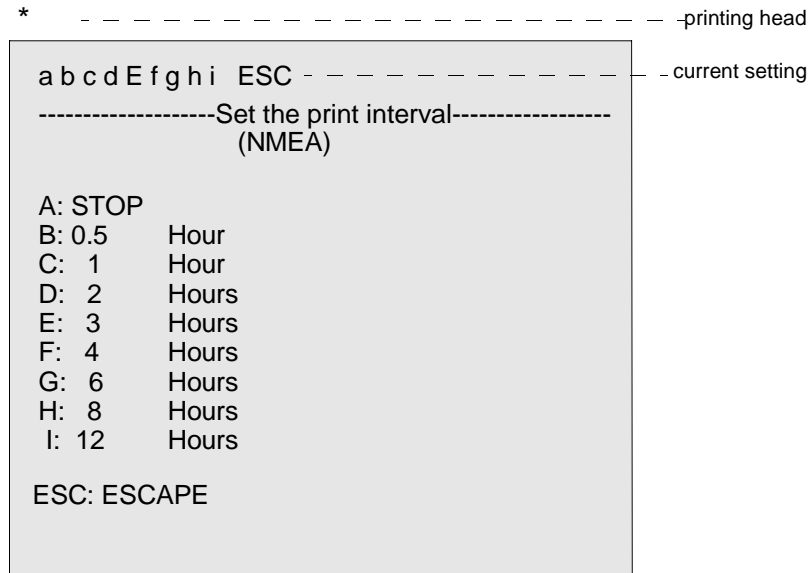


Figure 21. Main Menu Printout

59. After selecting a print interval, press ENT (figure 22). Then, PRINT START TIME MENU is printed. (If A, B, or C is selected, PRINT START TIME MENU is not printed).

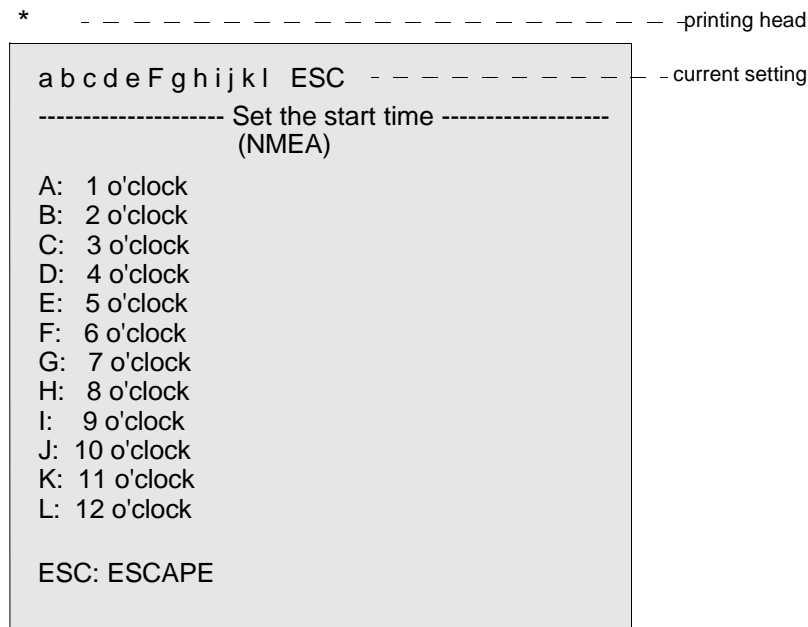


Figure 22. Main Menu Printout

60. Move the cursor to the desired time and press the ACCEPT key (figure 3, item 8). The selected upper case character will be printed.
61. After making the selection, press the ENT key (figure 3, item 4) (figure 23). Each Talker Set menu is printed again.
62. Press the ENT key (figure 3, item 4) to return to main menu.

OPERATE THE NAVTEX RECEIVER - Continued

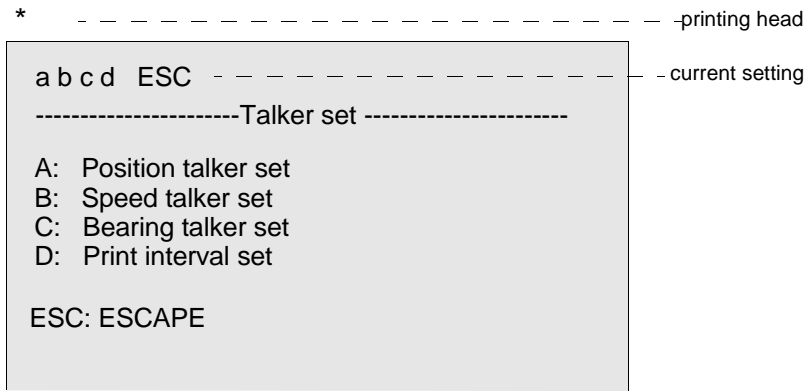


Figure 23. Main Menu Printout

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
SEARCH AND RESCUE TRANSPONDER (SART)
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**

Seaman 88K

Equipment Condition

Search and Rescue Transponder (SART) removed.

OPERATING PROCEDURES - TEST THE SEARCH AND RESCUE TRANSPONDER (SART)**WARNING****EXPLOSION****VAPOR****POISON**

The lithium battery in the search and rescue transponder contains pressurized sulfur dioxide gas. The gas is toxic and the battery must not be abused in any way that might cause the battery to rupture.

Do not heat, short circuit, crush, puncture, mutilate or disassemble batteries.

Do not use any battery that shows signs of damage. Damage can appear as bulging, disfigurement, a brown liquid on the outside, etc.

Failure to follow these instructions could result in an explosion or production of toxic gases that may kill or injure personnel.

NOTE

Self-test is to be performed at monthly intervals.

1. Push in on the lanyard spool (figure 1, item 1).

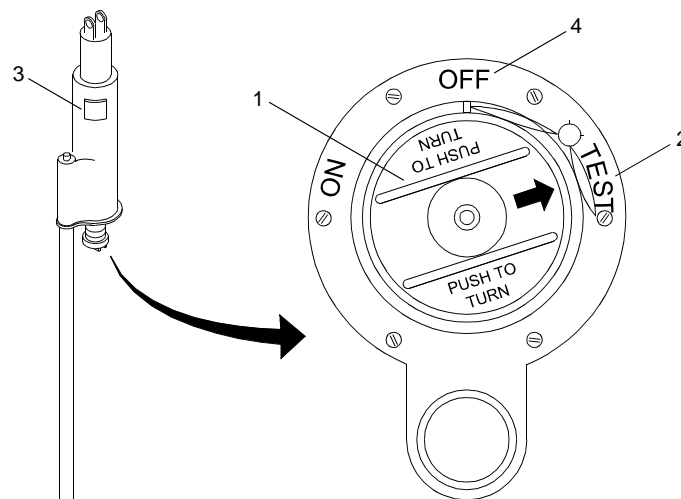


Figure 1. Search and Rescue Transponder (SART)

2. Turn the lanyard spool (figure 1, item 1) in a clockwise direction to the TEST position (figure 1, item 2) and hold it there for 10 seconds.

TEST THE SEARCH AND RESCUE TRANSPONDER (SART) - Continued

3. Verify that the SART beeps once and the indicator light (figure 1, item 3) flashes red once every 4 seconds if no radar is within range or once every second if a radar is within range.
4. Turn the lanyard spool (figure 1, item 1) in a counterclockwise direction to the OFF position (figure 1, item 3).
5. Install the Search and Rescue Transponder (SART).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
LIFEBOAT RADIO (LBR)
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**Materials/Parts**

Battery, nonrechargeable (item 2, WP 0047 00)

Personnel Required

Seaman 88K

OPERATING PROCEDURES - TEST THE LIFEBOAT RADIO (LBR)**WARNING****EXPLOSION****VAPOR****POISON**

The lithium battery in the lifeboat radio contains pressurized sulfur dioxide gas. The gas is toxic and the battery must not be abused in any way that might cause the battery to rupture.

Do not heat, short circuit, crush, puncture, mutilate or disassemble batteries.

Do not use any battery that shows signs of damage. Damage can appear as bulging, disfigurement, a brown liquid on the outside, etc.

Failure to follow these instructions could result in an explosion or production of toxic gases that may kill or injure personnel.

NOTE

This test requires that a separate VHF marine radio transceiver be used to monitor transmitted and received signals. Any transmissions effected for the purpose of testing the lifeboat radio shall be as brief as possible.

The recommended test message format is as follows: "<name of station receiving the test message> this is <name of station transmitting this text> <station call sign or call letters>". Example: "BLUE DUCK THIS IS MARY JANE WXT599".

When a second radio telephone or ships receiver is utilized to monitor proper operation of the lifeboat radio, the test distance between devices should be kept to a maximum and the following message format should be observed: "<name of station transmitting this text> this is <name of station transmitting this text> mobile 1". Example: "MARY JANE THIS IS MARY JANE MOBILE 1 WXT599". If the unit to be tested is not on board the vessel containing the fixed station, "UNIT 1" should be used rather than "MOBILE 1".

1. Remove the lifeboat radio (figure 1, item 1) from the lifeboat radio mount (figure 1, item 2).
2. Remove the control panel protective cover (figure 1, item 3).
 - a. Slide o-rings (figure 1, item 4) down past end of antenna (figure 1, item 5) and lifeboat radio battery (figure 1, item 6).
 - b. Remove the control panel protective cover (figure 1, item 3).
3. Remove the lifeboat radio battery (figure 1, item 6) from the lifeboat radio (figure 1, item 1).

TEST THE LIFEBOAT RADIO (LBR) - Continued**NOTE**

The lifeboat radio must be tested with a spare battery.

4. Install spare lifeboat radio battery (figure 1, item 6).

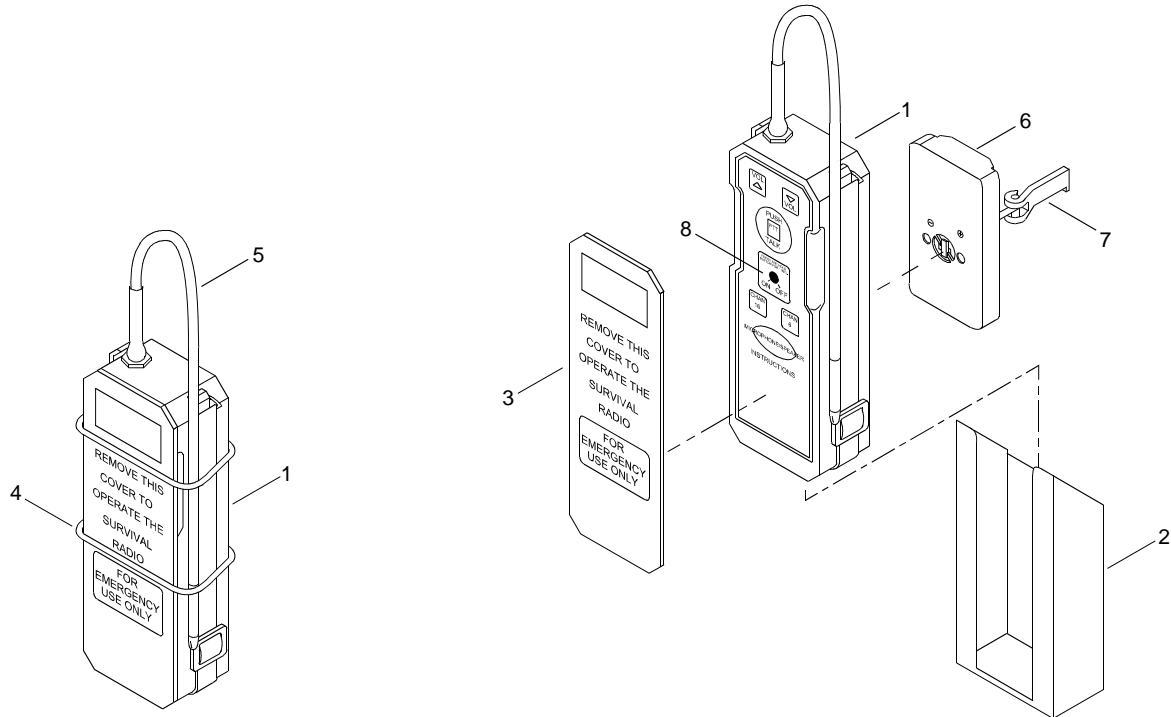


Figure 1. Lifeboat Radio (LBR)

- a. Insert spare lifeboat radio battery (figure 1, item 6) in upright position into lifeboat radio (figure 1, item 1).
- b. Activate lifeboat radio battery (figure 1, item 6) for testing.

{1} Grasp the activation indicator lever (figure 1, item 7) and lift to break the safety seal. Turn lever (figure 1, item 7) counterclockwise to open latch and seat the lifeboat radio battery (figure 1, item 6) in lifeboat radio (figure 1, item 1).

{2} Turn lever (figure 1, item 7) clockwise to lock lifeboat radio battery (figure 1, item 6) in place.

5. Press and hold ON/OFF button (figure 1, item 8) for 1 second.
6. Listen for the tone and the squelch action 3 seconds after activating the unit.

NOTE

The receiver tunes to channel 16 automatically when the unit is turned on.

7. Listen to any activity on the frequency (channel 16).
8. If no activity is detected, transmit the test message and have someone monitor the transmission.
9. If the test signal was not heard, refer to troubleshooting procedures (WP 0038 00).
10. Have someone return the call from the monitoring station to verify proper radiotelephone receiver operation.
11. If a response is not heard, contact unit maintenance.

TEST THE LIFEBOAT RADIO (LBR) - Continued

12. Press the channel 6 key to tune to channel 6.
13. Set the monitoring transceiver to channel 6 (156.3 MHz).
14. Listen to any activity on the frequency (channel 6).
15. If no activity is detected, transmit the test message and have someone monitor the transmission.
16. If the test signal is still not heard, contact unit maintenance.
17. Have someone return the call from the monitoring station to verify proper radiotelephone receiver operation.
18. If a response is not heard, contact unit maintenance.
19. Press ON/OFF button (figure 1, item 8) to turn unit off.
20. Remove spare lifeboat radio battery (figure 2, item 1).

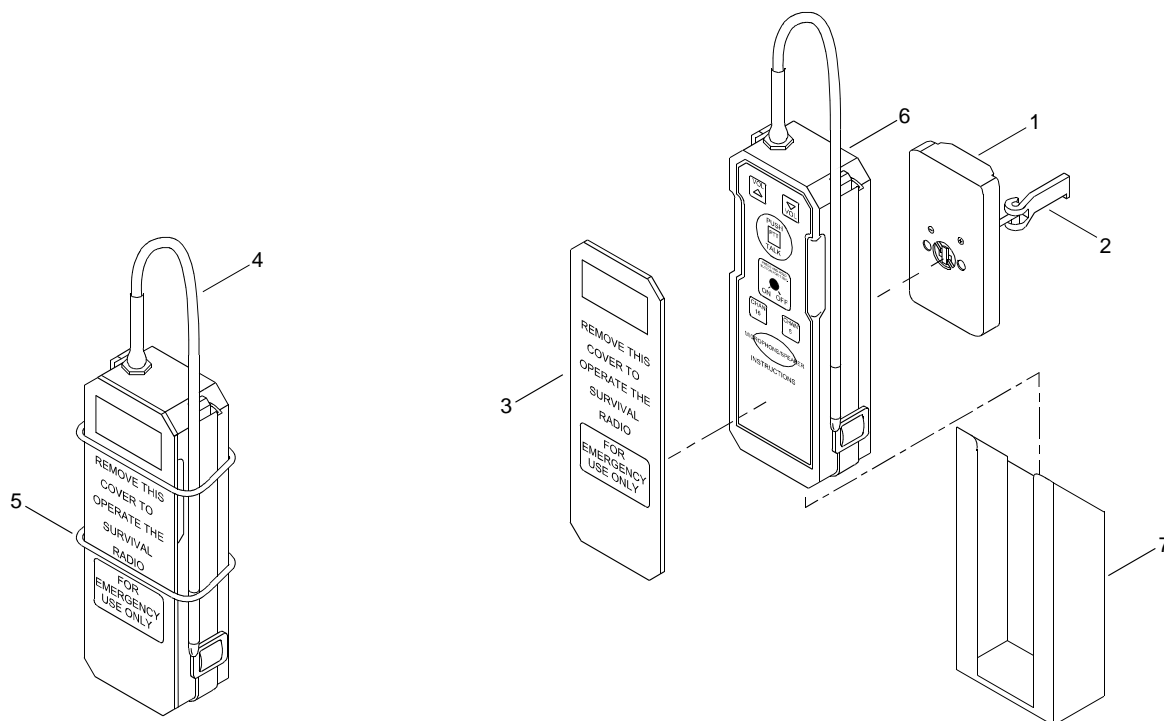


Figure 2. Lifeboat Radio (LBR)

- a. Deactivate lifeboat radio battery (figure 2, item 1).
 - {1} Grasp the activation indicator lever (figure 2, item 2).
 - {2} Lift lever (figure 2, item 2) and turn counterclockwise to open latch and deactivate lifeboat radio battery (figure 2, item 1).
 - b. Lift out spare lifeboat radio battery (figure 2, item 1).
21. Install the lifeboat radio battery (figure 2, item 1).

TEST THE LIFEBOAT RADIO (LBR) - Continued**NOTE**

Do not activate lifeboat radio battery at this time.

22. Install the control panel protective cover (figure 2, item 3).
 - a. Bend antenna (figure 2, item 4) back down and slide o-rings (figure 2, item 5) up over lifeboat radio battery (figure 2, item 1) and end of antenna (figure 2, item 4).
 - b. Slide the control panel protective cover (figure 2, item 3) up under o-rings (figure 2, item 5).
23. Place the lifeboat radio (figure 2, item 6) into the lifeboat radio mount (figure 2, item 7).

END OF WORK PACKAGE

**SAILOR SC4150 HANDSET
OPERATING PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)



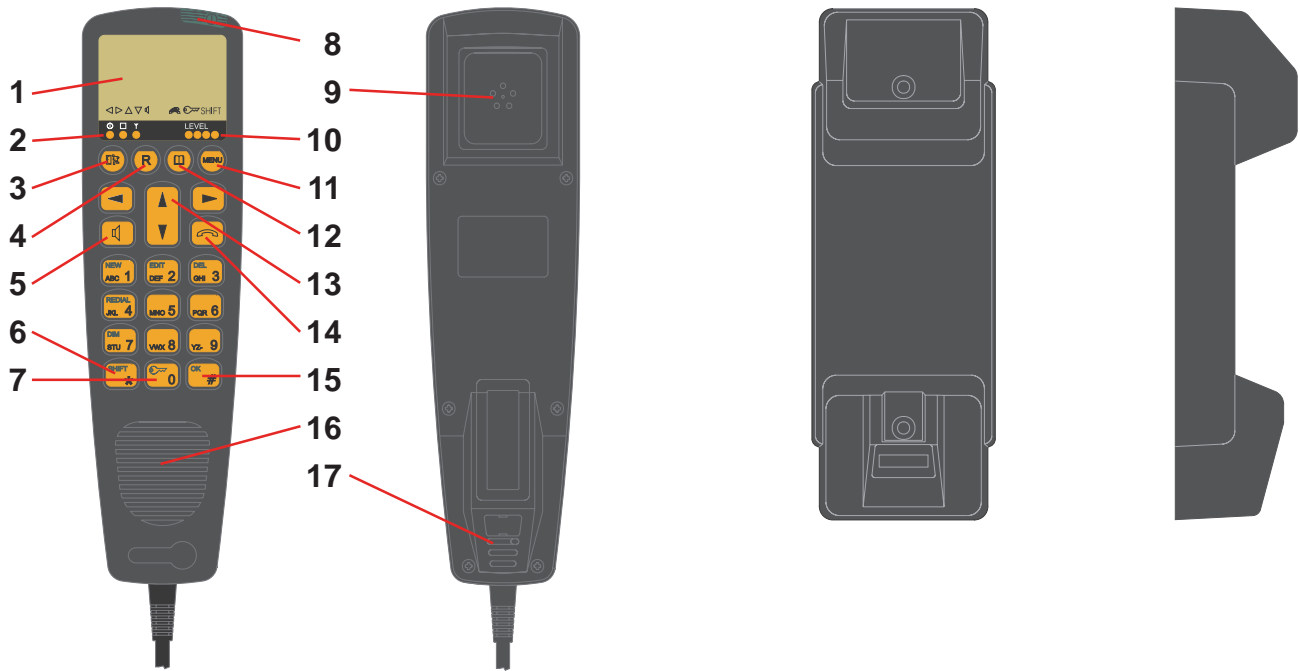
SAILOR SC4150

Operating Instructions

List of contents, see page 1.

Handset

What Is What?



1. Display
2. Indicator lamps
 - Ⓜ Power
 - ☐ Call
 - ⏏ Network
3. Escape key
4. Call transfer key
5. Loudspeaker on/off key
6. Shift key
7. Lock on/off key

8. On/off button
9. Earpiece
10. Signal level
11. Opens menu
12. Opens phone book
13. Volume control
14. Hook on/off key
15. OK key
16. Loudspeaker
17. Microphone

Introduction

Congratulations on your new Iridium equipment.

Your Iridium equipment is a modular system that consists of an antenna, transmitter/receiver, control handset and/or fixed control unit, and optional PSTN telephone/PBX.

You can operate the Iridium equipment in voice mode from a control handset, fixed control unit, and/or PSTN telephone. To the system you can connect up to four handsets or fixed control units **and** one PSTN telephone or PBX switchboard.

Important!

For FCC RF exposure compliance, the antenna must be installed with a minimum distance of 0.61m (2 feet) away from all persons.

About this Manual


This manual provides instructions on how to operate a control handset and telephone.

Basically, the manual consists of two main parts: The first deals with **simple** operation, which includes e.g. making and answering calls. The second part describes the more **advanced** functions of the system.

All functions of your Iridium equipment can be tested by following the step by step procedures described in this manual. Each procedure is an explicit sequence of key presses that has to be carried out.



Unless otherwise specified, the description of the individual procedures has been based on the assumption that the CU is enabled and has returned to idle state. See section "Handset Enabling/Disabling" under "Handset Simple Operation" on how to enable and disable the handset.

Returning to Idle State on an Enabled CU:

1. Press  , if necessary, a number of times until one of the following idle texts are shown in the display:

- Ready
- Occupied
- Internal Call
- External Call
- Locked

and possibly time, date and time or position depending on the status of your Iridium equipment. Alternative idle texts are specified in section "SIM Card Messages" under "SIM Card Handling".

2. Make sure that the CU is hooked on. Place the handset in the cradle and press  if the  icon is shown in the display.

We recommend that you read the manual before using the equipment.

Please note

Any responsibility or liability for loss or damage in connection with the use of this product and the accompanying documentation is disclaimed. The information in this manual is furnished for informational use only, is subject to change without notice, may contain errors or inaccuracies, and represents no commitment whatsoever. This agreement is governed by the laws of Denmark.

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Iridium Satellite System

Iridium is a global satellite network for telecommunications. It consists of 66 satellites providing world-wide coverage.

The Iridium system makes it possible for any two locations on Earth to establish wireless global telephone contact.

Abbreviations















| | |
|------|---|
| CU | Control unit |
| GPS | Global Positioning System |
| DTMF | Dual Tone Multiple Frequency |
| LBT | L-Band Transceiver |
| PBX | Public Branch Exchange |
| PSTN | Public Switched Telephone Network |
| UTC | Universal Time Coordinated (app. the same as Greenwich Mean Time) |
| RTU | Receiver and Transmitter Unit (also called Transceiver) |

Using a Telephone






To your Iridium equipment, you can connect a PSTN telephone or a PBX. Many of the system's more advanced features, like the security lock function, are however not accessible from a telephone. Neither is any SIM card action. Therefore, when using the telephone, the SIM card has to be operational. This means that the pin code has to be disabled on the card, or the pin code must be entered from a CU before the telephone is used. A CU is either a handset control unit or a desk mounted control unit.

Telephone Call Syntax

For **external calls**, entering a telephone number on a PSTN telephone follows the syntax of this example:

1. Pick up phone: ready tone.
2. External call 0 
3. Prefix for automatic call 00  
4. Country code, e.g. 45  
5. Area code, e.g. 70  
6. Subscriber's number, e.g. 137000      
7. To confirm you want to make the call, press # 

For **internal calls**, entering a telephone number on a PSTN telephone follows the syntax of this example:








1. Pick up phone: ready tone.
2. Internal number, e.g. 1001    
3. To confirm you want to make the call, press # 

Factory setup of extension numbers are:

| | |
|-----------|------|
| PSTN/PBX: | 1000 |
| CU 1: | 1001 |
| CU 2: | 1002 |
| CU 3: | 1003 |
| CU 4: | 1004 |

Up to four control units and a telephone/PBX can be connected to the transceiver at the same time. Note that if connecting a PBX to the transceiver, the PBX must function as a PSTN telephone.

To dial control unit 1 from a local telephone connected to your Iridium equipment via a PBX, first pick up the phone, then:

1. Dial the number for the outgoing line connected to the transceiver, eg. 10  
2. When you hear the ready tone, dial the extension number of control unit 1: 1001    
3. To confirm you want to make the call, press # 

DTMF Tones - Limitations:

When used for internal calls, control units do not generate DTMF tones. Therefore the PBX cannot be set up for using DTMF tones to access extension numbers.

Handset Simple Operation

To the Iridium system you can connect up to four handsets. A handset can be in one of two states: enabled or disabled.

Handset States

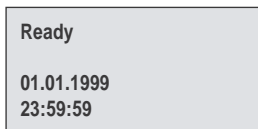
In each of the two states, the handset's normal display and signalling can be described as follows:

Disabled State:

- The display is cleared and the light is off.
- The indicator lamp **Power** is flashing briefly every 5 seconds.

Enabled State:

- In the enabled state, various information is shown on the display. An example:



- The indicator lamp **Power** is on.

Handset Enabling/Disabling

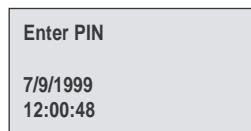
To enable/disable the handset:

1. Press and hold the on/off button.
2. Wait until you hear the continuous tone signalling or see that the indicator lamps **Power**, **Call** and **Network** are turned on simultaneously.
3. Release the on/off button.

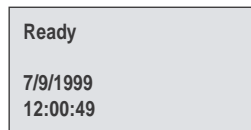


Pin Code

Each time a valid SIM card with an enabled PIN code is inserted, you are asked to enter your pin code:



Key in the pin code supplied with the SIM card (see the installation manual). If the pin code keyed in is correct, the handset enters ready state also called **idle state**:

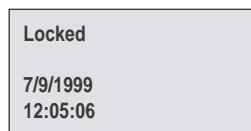


If any internal or external call is in progress or if for some reason the Iridium network is not available at the time, a different text is shown in the display.

If you did not key in the correct pin code, you will have to try again. If you keyed in a wrong pin code three times in a row, you will have to enter the PUK code (also supplied with the SIM card). See section "SIM Card Handling" under "Handset Advanced Operation" for further details.

Unlocking Handset

If the handset is locked, you have to unlock it before it can be used.

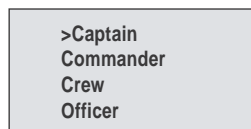


To unlock the handset:

1. Press:



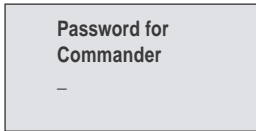
The display shows a list of user names. Your user name (i.e. the current value of the associated priority level) determines which facilities you have access to. Furthermore, the user name that is used for unlocking the handset is the name stored in the call log each time an external call is made.



2. To find the right user name on the list, eg. Commander, use:



3. Confirm:



4. Key in the password that corresponds to the selected user name.

5. Confirm:



Call Functions

Speaker, Earpiece and Microphone

The earpiece is always turned on. The speaker and microphone are always in opposite states, i.e. if the speaker is on, the microphone is off, and vice versa.



You can toggle the speaker and microphone states by means of the speaker key. The speaker icon appears on the display when the speaker is on, and disappears when the microphone is on.

Hands free operation is not possible. You can call or receive a call, and toggle the speaker on - for listening purposes only.

Note: When the speaker is off, you can see that you are being called (the display will show "Incoming Call") - but there will be no sound in the speaker.

Hooking On/Off

Before a call can be initiated, the handset must be hooked off. To do so, either remove the handset from the hook or use the on/off-hook key.

The handset icon on the display indicates three states, depending on whether the handset has been hooked on or off.

1. Handset removed from hook, but hooked on by hook key.



2. Hook off.



3. No icon: Handset placed in hook, and hook on.

Volume

During a conversation, the speaker and earpiece volume can be adjusted by means of:



Manual Telephone Call Syntax

For **external calls**, entering a telephone number on the handset follows the syntax of this example:

1. Hook off either by removing the handset from the hook

or by pressing the hook key



2. External call 0



3. Prefix for automatic call 00



4. Country code, e.g. 45



5. Area code, e.g. 70



6. Subscriber's number, e.g. 137000



7. Confirmation #



For **internal calls**, entering a telephone number on the handset follows the syntax of this example:

1. Hook off either by removing the handset from the hook

or by pressing the hook key



2. Internal number, e.g. 3 4 4



3. Confirmation #



Making a Manual Call

Provided that no internal or external calls are in progress and that the CU is enabled and unlocked, it is possible to make an internal call.

Furthermore, if a valid SIM card has been inserted into the SIM card slot and the correct PIN code has been entered or the PIN code has been disabled, it is also possible to make an external call.

In order to be able to make a manual call, the CU must either be in idle state or inside the phone book. For a description on how to return to idle state, see section "About this Manual". If the idle text differs from 'Ready' (e.g. SIM card messages) only internal calls are possible.

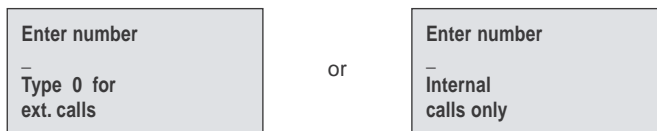
Now in order to make a manual call, do the following:

1. Hook off.

If the system is **occupied**, a busy tone is heard in the earpiece/speaker, and the display shows either



depending on whether an internal or external call is in progress. If the system is **ready** to make a call, a ready tone is heard in the earpiece/speaker, and the display shows:



2. Use the numeric keys to key in the number you want to dial.

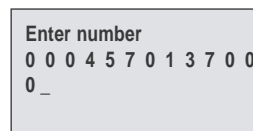
For external calls, first key: 0



To delete the previous digit, if desired, press:



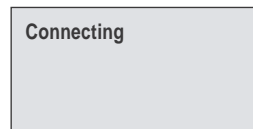
An Example:



3. Confirm the call and start dialling by pressing:



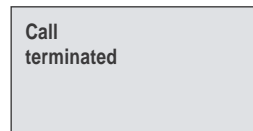
4. A calling tone is heard from the earpiece/speaker, and the display shows:



5. When the connection has been established, the display shows:



6. When one of the communicating parties hooks on, the display indicates that the other user should do the same by the words:



Answering a Call

NOTE: When the speaker is off you can see that you are being called, (the display will show “Incoming Call”) but there will be no sound in the speaker. The speaker can be toggled on and off using:



1. When the handset rings, remove it from the hook and communicate as on an ordinary telephone.
2. Adjust the volume in the earpiece or loudspeaker by means of:



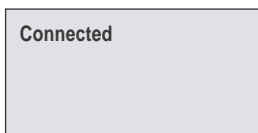
3. When you want to stop communicating, or when you hear a busy tone, hang up.

Call Transferring

A call can be transferred to another CU. The procedure depends on whether or not the call is answered before it is transferred.

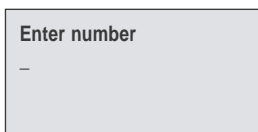
Transferring AFTER Answering

When you answer a call, the display shows:



To transfer the call:

1. Press:



2. Now, key in the extension number to which the call should be transferred.

3. To transfer the call, press:



Call is transferred

- or:

To cancel transferring the call, press:



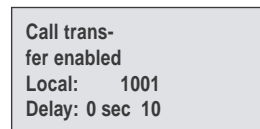
Automatic Transferring BEFORE Answering

A call can be transferred to another CU automatically before it is answered. To see if the auto transferring function is enabled,

press:



The display will show eg.:



or



The auto transferring parameters can be set up individually for each handset in the function menu:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. To find the “Transfer” item, use:



and press:



4. To select “Enable” or “Disable”, use :



and press:



The function has now been enabled or disabled depending on your choice.

To select to which extension number(s) incoming calls should be transferred, follow the steps described above. In step 4, however, select “Extension”, after which you can key in and confirm the wanted extension number.

To specify the time in seconds (0-60) that the call should ring before it is transferred to the specified unit, follow the steps described above. In step 4, however, select “Delay”. If the delay is set to 0 seconds, the call is transferred immediately; before the first handset rings, the call is transferred to the chosen transfer destination.

Handset Advanced Operation

The system features a large number of special functions. For those of the functions that are likely to be used the most, there are special buttons or shifted functions in connection with the numeric keys. The functions used less often can be found in the menu system.

Menu System

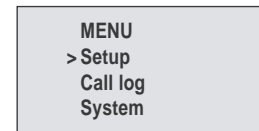
The handset contains several functions for changing the system settings, showing the status of certain system parameters, configurations, and testing the system.

The menu system can always be entered from an enabled and unlocked CU which is in idle state. See section “About this Manual” on how to return to idle state.

To enter the function menu system, press the following key:



The function menus appear:




The “Setup” menu contains all functions for changing the system parameters, such as volume, ringing tone, user names and passwords.

The “Call log” menu contains information on each call made, including details about when the call was made, its duration, and the receiver’s telephone number.

The “System” menu contains all functions needed for the system administrator/super user to test and configure the system.

Keying in Names and Numbers

When keying in letters and numbers in the phone book, or in connection with user names and passwords, you will need to know

how many times to press each key. Pressing the key  once,

for instance, will give a “D”; pressing the key twice, will give an “E”, etc.

| | |
|-----------------------|---|
| 1 st push: | D |
| 2 nd push: | E |
| 3 rd push: | F |
| 4 th push: | d |
| 5 th push: | e |
| 6 th push: | f |
| 7 th push: | 2 |

After each character keyed in, wait a little while to go to the next character (the cursor appears when it is ready), or use the right arrow key. The left arrow key deletes the last character entered.

When inside the phone book or user list;

- to create a **new entry**, press:



- to begin **editing** the entry selected on the list,

press:



- to **delete** the entry selected on the list, press:



Phone Book

The phone book offers the following facilities:

- Up to 100 entries with names and numbers can be stored. A telephone number may consist of up to 20 digits, and a name may contain a maximum of 11 characters.
- Any of the 100 stored telephone numbers can be used to initiate a call.
- Each entry in the phone book can be deleted.
- New entries can be added to the phone book as long as some of the 100 entries are free.
- The name and/or number stored in every entry can be changed.
- The stored entries can be searched alphabetically.
- The current extension/local number for all connected control units are stored in the phone book. However, only one control unit at a time can operate in new, edit, or delete mode. If a

control unit tries to enter one of these modes, and another control unit has done the same, the display will show: **Phone book occupied.**

The phone book can always be entered from an enabled and unlocked CU which is in idle state. See section “About this Manual” on how to return to idle state.

Searching the Phone Book

When you need to find a stored entry, first open the phone book by pressing:



The display then shows a list beginning with the first entry in the phone book:



To find previous/following entries, use:



When you have reached the last entry, the phone book begins from number one again.

Alphanumeric Search

You can also search the phone book by means of the alphanumeric keys. When inside the phone book, pressing e.g.



moves the cursor to the first entry beginning with an A. If no entry begins with an A, or if the key is pressed twice, the cursor moves on to the first entry beginning with a B, etc.

Changing a Number Stored in the Phone Book

To edit a stored number in the phone book:

1. To enter the phone book, press:
2. To select the desired entry in the phone book, press:
3. To enter the shifted functions, press:
4. To select the edit mode, press:
5. Key in the name that corresponds to the number.
6. To store the name, press:
7. Key in the number using of the numeric keys.
8. To store the new number, press:



Storing a New Entry in Phone Book

To store a new entry (name and number) in the phone book:

1. To enter the phone book, press:
2. To enter the shifted functions, press:
3. To select the new mode, press:
4. Key in the name that corresponds to the number.
5. To store the name, press:



6. Key in the number using of the numeric keys.

7. To store the number, press:



Deleting a Stored Entry in the Phone Book

1. To enter the phone book, press:
2. To select the desired entry in the phone book, press:
3. To enter the shifted functions, press:
4. To select the delete mode, press:
5. To confirm deleting the selected entry, press:



Calling a Number from the Phone Book

To call a number stored in the phone book:

1. To enter the phone book, press:
2. To select the desired entry in the phone book, press:
3. To prepare for making the call:
 - Lift the handset
 - or*
 - Press:



Now, follow the steps described in connection with “Making a manual call”, beginning with step 3.

Redialling

It is possible to redial the last number dialed by the current user. To do so:

1. Hook off.

2. Press:



3. Press:



4. To initiate the call, press:



A ringing tone is now heard from the handset. To go on with the call, follow the steps described in connection with “Making a manual call”, beginning with step 4.

Security Lock Function

The handset can be protected against unauthorized use via the security lock function. This works together with the list of user names and corresponding passwords. The security lock requires that the user selects his user name from the list, and then keys in his personal password before the handset can be used for making calls.

The default password for all the users on the user list is “password”, i.e. 61778562. Passwords can be edited in the Setup/Password menu (the user’s own password) or in the /Setup/Users menu using



(Passwords of users with a lower priority than the current user).

The security lock function ensures that only users recognized by the system can unlock the handset and make calls through the Iridium system.

Answering incoming calls is not protected by the security lock.

Note that from a PSTN phone (stand alone or via PBX), the security lock is not an option.

The security lock function affects all control units. That means that if one control unit disables the lock, the lock is disabled on all control units connected. The same goes for enabling the lock.

User ID/User Name List

Every user specified in the system is given a priority value. The priority value determines what the user is allowed to do in the system. By default, the user list contains 6 entries with different priority values. The 6 default users are shown below.

| User ID/User Name | Priority value |
|-------------------|----------------|
| SUPER USER | 0 |
| Captain | 1 |
| Commander | 4 |
| Officer | 10 |
| Crew | 100 |
| Passenger | 200 |

The super user has the highest priority in the system and is therefore not restricted in any action. The super user can edit all other users. A user can create, edit, and delete users of a lower priority; e.g. a user of priority value 4 may create, edit, and delete users of priority values 10, 100, and 200.

Each facility/function in the handset has a priority value. The priority value of the facility/item and the user’s priority value determine whether the user has access to the item or not.

The user ID is written in the call log so it is possible to identify who has made which calls.

Disabling Security Lock

To disable the security lock, the user has to be identified with a priority value of 4 or less (Commander, Captain, or SUPER USER).

To disable the security lock:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Lock” item using:



and press:



4. Find the “Disable” item using :



and press:



5. Find the right user name using:



and press:



6. Key in the password, and press:



The security lock function is now disabled. This means that the handset is ready for use for everyone without any identification of the user. To avoid misuse of the handset, the user who disables the security lock is asked to set the priority value. This is done by selecting a user name from the user list and keying in the associated password. That user name is then used as the default user of the unlocked system. Information about subsequent outgoing calls from any CU will be logged under this default user name.

Enabling Security Lock

If the security lock function has been disabled, it can be enabled by users with a priority value of 4 or less:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Lock” item using:



and press:



4. To select the “Enable” item, press:



5. Find a user name of priority level 4 or less, using:



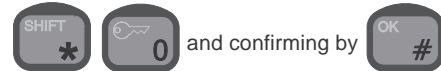
and press:



6. Enter the password using the numeric keys, and press:



The handset from which the system lock was enabled, is not actually locked before an explicit lock is issued via pressing:



This action can only be carried out if the CU is in idle state. See section “About this Manual” on how to return to idle state.

When the lock is enabled, all **other** control units are automatically locked if they are in idle state (no call in progress and not inside the menu system or phone book). If one of these control units is not in idle state, it is automatically locked when returning to idle state.

Password

A user may change his password at any time. To do so:

1. To enter the function menu, press



2. To select the "Setup" item, press



3. To find the "Password" item, use:



4. To confirm, press:



5. Key in the old password and confirm by pressing



6. Key in the new password and confirm by pressing



7. Re-enter the new password and confirm by pressing



5. Key in the new user name, and confirm by



6. Key in the password, and confirm by



A new user has now been added to the system with a default priority. The priority is one of the properties that can be edited using the procedure described next.

Editing the Properties of an Existing User:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



and confirm by



4. To find the user to be edited, use:



5. To edit the user, press:



6. To go to the user property to be edited, use



and confirm

by



Users

Up to 25 users can be registered in the system by manually creating an entry for each user. Both a user name and a temporary password must be entered for each user.

A user may create, edit, and delete users with a priority value higher than the user's own priority value.

Adding a New User to the System:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



and confirm by



4. To create a new user, press:



Deleting an Existing User:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. To find the "Users" item, use



4. To find the user to be deleted, use:



5. To delete the user, press



6. Confirm by



Viewing the Last Private Call Log:

The call log for the current user can be retrieved as shown in the following:

1. To enter the function menu, press:



2. Find the item "Call Log" using



3. Find the item "Private" using



4. Find the item "Outgoing" using



Call Log

Information about all outgoing calls are logged. Information about the latest 50 outgoing calls can be found in the call log. Furthermore, information about the duration of the last outgoing call can be retrieved.

Viewing the Last Call:

1. To enter the function menu, press:



2. Find the item "Call Log" using



3. Find the item "Last Call" using



A list showing the phone numbers of the outgoing calls made by the current user now appears on the display.

To see more details about a specific call, find the call using



and confirm by



The total account of the current user can be retrieved by choosing "Account" instead of "Outgoing" at step 4.

Viewing the Global Call Log:

The global call log for all users in the system can be retrieved as shown in the following:

1. To enter the function menu, press




2. Find the item "Call Log" using  and confirm by 

Now, find the user by means of  and press 



3. Find the item "Global" using  and confirm by 

Setting Time and Date

Time and date can be displayed and adjusted manually. The time is used in the call log. Adjusting the time requires that the user is identified with a priority value of 4 or less (Commander, Captain, or SUPER USER).

A list of all outgoing calls made from the system can now be retrieved by choosing the item "Outgoing" and pressing 

1. To enter the function menu, press: 

To see more details about a specific call, find the call using  and confirm by 

2. Go to the "System" item using: 

Alternatively, the account of each user can be retrieved as shown below:

1. Follow steps 1-3 above.


and press: 

2. Find the item "Account" using  and confirm by 

3. Go to "Time/date" using: 


The available items are now:

```
>Users
Phone
Unknown
Deleted Users
```

and press: 

You can now choose between "Status", "Set", "System update", and "GPS update"

```
DATE-TIME
>Status
Set
Sys.update
```

To select e.g. a specific user, choose "Users" and press 

Status: Shows current time and date (from system).

Set: Allows you to edit time and date manually, using the numeric keys.

Sys. update: If this option is chosen, the time written in the display is updated using only the internal circuitry of the RTU itself. Consequently, if your Iridium system is turned off and then on again, the clock will be reset to a default time. The correct time must then be set again manually each time.

GPS update: If this option is chosen, the time written in the display is updated using the connected GPS, if any. Consequently, even if your Iridium system is turned off and then on again, the clock will still be adjusted to the correct time each time a GPS update is received. If no GPS is available, it makes no sense choosing this option.

Setting Dimmer and Contrast

To adjust the background light and the contrast level, first press the two keys:



The **dimmer/contrast** menu appears:



Now, move to the desired item – **dimmer** or **contrast** – by means of:

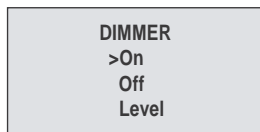


Then, to select the item, press:



An Example

When you select **dimmer** in the **dimmer/contrast** menu, the display shows the **dimmer** menu:



To enable or disable the light, select the **On** or **Off** item respectively. To adjust the dimmer level, select the **Level** item.

Then, to increase or decrease the dimmer level, use:



For the changes to take effect, press:



The **dimmer/contrast** menu may also be entered via the “Setup” menu as follows:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Light” item using



and press:



GPS

Via this menu item, it is possible to obtain the geographical position in terms of longitude and latitude if an optional GPS receiver is connected via the transceiver. If this is the case, the position is available by going through the following steps:

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “GPS” item using



and press:



Display

For each handset, the user may select the information to be shown in the display when the handset is in idle state. However, the state of the system will always be shown in the display. The available choices are:

- **Time/date:** Both the time (hours, minutes, seconds) and the date is shown.
- **Time:** Only the time (hours and minutes) is shown.
- **Position:** If a GPS receiver is connected to the transceiver, choosing "Position" will show the geographic position in terms of latitude and longitude.
- **State only:** Only the state of the transceiver is shown.

If for instance you want to choose time/date;

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Display" item using  and press:



4. Find the "Time/date" item using  and press:



To see the effect, exit the menu system.

SIM Card Handling

Your Iridium equipment monitors the SIM card status. The status information is shown in the display of each handset in idle state.

SIM Card Messages

As long as one of the following messages are seen in the display, the SIM card currently inserted in the RTU cannot be used for making external outgoing calls.

- **SIM card blocked:** This message indicates that a wrong pin code has been entered three times in a row with the current SIM card inserted into the transceiver. To unblock the SIM card, enter the correct PUK1 code.
- **Card blocked permanently:** This message indicates that a wrong PUK1 code has been entered ten times in a row. The SIM card is now permanently blocked and cannot be unblocked.
- **Check SIM card:** This message indicates that your Iridium equipment has detected that some item has been inserted into the SIM card slot. It has not, however, recognized this item as a SIM card.
- **SIM card defective:** This message indicates that your Iridium equipment has detected that a SIM card has been inserted into the SIM card slot. For some reason, however, the Iridium equipment cannot communicate with the SIM card.
- **SIM card validation:** This message indicates that a valid SIM card has been inserted into the SIM card slot, and that the pin code just entered is being validated by the Iridium system.

NOTE: The following features for sim card handling are only available with RTU software version 3.0.0 and higher.

Enabling and Disabling PIN Codes

Each SIM card has an associated PIN code. In order to prevent unauthorized use of SIM cards, your Iridium equipment is capable of enabling and disabling the associated PIN codes.

When the PIN code from a given SIM card is enabled, the user must enter the current value of this PIN code each time the SIM card is re-entered into the SIM card holder in the RTU. When the PIN code for a given SIM card is disabled, the SIM card can be used for making external outgoing calls, provided that it is not defect or blocked.

Enabling the PIN Code

1. To enter the function menu, press:



2. Find the "System" item using:



and press:



1. Key in the 4-8 digit PIN code and press:



3. Find the "SIM Card" item using:



Changing the PIN Code

1. To enter the function menu, press:



and press:



2. Find the "System" item using:



4. Find the "PIN enable" item using:



and press:



and press:



3. Find the "SIM Card" item using:



5. Key in the PIN code and press:



and press:



Disabling the PIN code

Follow steps 1 – 5 above with the following substitution:

4 Find the "PIN disable" item using:



4. Find the "Change PIN" item using:



and press:



and press:



Entering the PIN Code

Each time a valid SIM card with an enabled PIN code is inserted into the SIM card holder, the current value of the associated PIN code must be entered using the alphanumeric keys. The PIN code must be a number consisting of 4 to 8 digits.

In order to enter the PIN code, do the following:

5. Enter the current PIN code and press:



6. Enter the new PIN code and press:



7. Reenter the new PIN code and press:



Unblocking a Blocked SIM Card

If a wrong PIN code has been entered 3 times in a row, the RTU blocks the SIM card. If a blocked SIM card is inserted into the SIM card holder or if a SIM card already in the SIM card holder is blocked, the display will show “SIM Card blocked” when the CU is in idle state. In order to unblock a blocked SIM card:

Follow step 1 – 3 above.

4. Find the “PUK Code” item and press:



5. Enter the correct PUK code and press:



6. Enter a new 4-8 digit PIN code and press:



7. Re-enter the new PIN code and press:



Ringing Tone

When configuring each handset, the user can choose among a number of different ringing tones.

The procedure is to choose one of the following 4 ringing tones:

- Deep
- High
- Alternating slowly
- Alternating fast

The ringing tone for internal incoming calls as well as the ringing tone for external incoming calls are both affected by this single choice. Therefore they cannot be set independently.

For **external** incoming calls, resulting tones are respectively:

- Deep
- High
- Alternating slowly
- Alternating fast

For **internal** incoming calls (local calls), the resulting tones are respectively:

- Deep dual
- High dual
- Deep dual
- High dual

As mentioned above, choosing a ringing tone affects both the external incoming ringing tone and the internal incoming (local call) ringing tone according to the following table:

| Choice of ringing tone | External incoming calls | Internal incoming calls |
|------------------------|-------------------------|-------------------------|
| Deep | Deep | Deep dual |
| High | High | High dual |
| Alternating slowly | Alternating slowly | Deep dual |
| Alternating fast | Alternating fast | High dual |

An **internal incoming call** (local call) can always be recognized by two equal consecutive tones (hence the term “dual” in the table) followed by a pause. The tones may be deep or high.

An **external incoming call** can always be recognized by a single continuous sound sequence (deep, high, alternating slowly or alternating fast), followed by a pause.

An **example**: To set the external incoming ringing tone to alternating slowly, and the internal incoming ringing tone to deep dual (remember that they cannot be set independently as described above):

1. To enter the function menu, press:



2. To select the “Setup” item, press:



3. Find the “Ring tone” item using



and press:



4. Find the “Slow alt.” item using



and press:



Extension

At any time, each handset is uniquely characterised by an extension number. That is, only one handset at a time may have a given extension number. The extension numbers may be changed, but no two handsets can have the same extension number simultaneously. To change the extension number of a handset do the following:

1. To enter the function menu, press:



2. To select the "Setup" item, press:



3. Find the "Extension" item using



and press:



4. Key in a number below 10,000 that is not in use by any other control unit, and press:



3. Find the item "Call Answer" using



and press:



4. Find the item "One CU" using



and press:



5. Find the extension number of the handset to which you want all external incoming calls to be directed, using



and press:



Call Answer

If your Iridium equipment includes more than one control unit or a control unit and a PSTN telephone, you may configure the answering of external incoming calls in a number of different ways. The available choices are:

- **One CU:** Choosing this option, you must specify the extension of the control unit to which you want external incoming calls to be directed automatically.
- **PSTN:** If there is a PSTN telephone connected to your Iridium equipment, selecting this option will direct external incoming calls to your PSTN telephone.
- **All:** Choosing this option will make all control units and the PSTN telephone (if any) ring when your Iridium equipment receives an external incoming call. Any of these units may be used for answering the call.

An example: If you want all external incoming calls to be directed to a control unit with the extension number 1001:

1. To enter the function menu, press:



2. Find the item "System" using



and press:




Alternatively, if you want to direct external incoming calls to your PSTN telephone (if any), follow steps 1-3 above, and proceed as follows:

4. Find the item "PSTN" using



and press:



5. Press  again to confirm that external incoming calls should be directed to the PSTN telephone.

Call Forwarding

NOTE: This feature is only available with RTU software version 3.0.0 and higher.

The Iridium network offers the possibility of forwarding incoming calls to another phone number. This facility can be configured from your Iridium equipment. The call forwarding can be divided into the following two categories:

- **Forward all calls:** All external incoming calls will immediately be forwarded to the number you specify when you activate this category.
- **Forward on not reachable:** When your Iridium equipment has been turned off or cannot for some reason be contacted by the network or when the line of your Iridium equipment is occupied, either by an internal or an external call, external incoming calls will be forwarded to the number you specify when you activate this category.

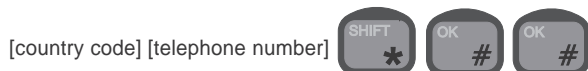
Note: By default, the above two categories of calls will all be forwarded to your personal mailbox. When you activate a category, the calls in this category will be forwarded to the number that you specify and no longer to your personal mailbox.

In the following, the procedures for activating, restoring and reviewing settings for the above two categories are described. As usual, when manually dialing a number to call, this must be done from idle state.

Forwarding all Calls

Activate:

1. Hook off



Deactivate:

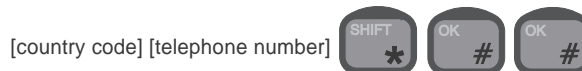
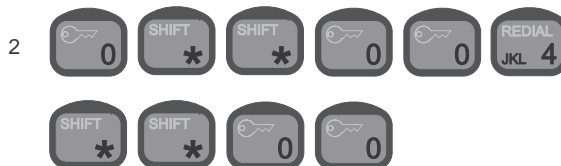
1. Hook off



Forwarding on no Answer

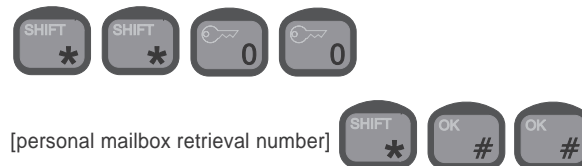
Setting a new number to forward to:

1. Hook off



Reactivating forwarding to personal mailbox:

1. Hook off



Reviewing the number to forward to:

1. Hook off



Voice Mail

NOTE: This feature is only available with RTU software version 3.0.0 and higher.

Voice mail allows callers to leave a voice message in your personal mailbox. As described in section "Call Forwarding", by default external incoming calls are forwarded to your personal mailbox if the call is not answered, if your equipment is switched off, if your Iridium system is occupied by an internal or external call or cannot, for some reason, be contacted by the Iridium network. Therefore these calls will be forwarded to your personal mailbox unless you set a new telephone number to transfer to.

You may record a personal greeting which the callers will hear when they are forwarded to your mailbox. After hearing your personal greeting, callers can leave a voice mail message which is stored in your mailbox.

Your personal mailbox has a lot of features which can be configured by you. The caller also has a number of facilities to choose between when forwarded to your mailbox. See the "Iridium Services User Guide" that comes together with your Iridium equipment.

Call Barring

NOTE: This feature is only available with RTU software version 3.0.0 and higher.

Call barring allows you to bar either all external incoming or all external outgoing calls. If you bar external incoming calls, your Iridium equipment will not receive external incoming calls. If you bar external outgoing calls, nobody will be able to place external outgoing calls from your Iridium equipment

Note: External incoming calls will not be sent to your personal mailbox if call barring of external incoming calls is active.

Before activating call barring, **disable all types of call forwarding:**

1. Hook off



Reactivating call forwarding and restoring your previous settings:

1. Hook off



Barring external incoming calls:

Activate:

1. Hook off



Deactivate:

1. Hook off



Barring external outgoing calls:

Activate:

1. Hook off



Deactivate:

1. Hook off



If you want to change the call barring setting you must enter your password. The initial password will be supplied by your service provider.

Changing Your password :

1. Hook off

2. 0 0
- 0
- [old password] [new password]
- [new password]

Call Waiting

NOTE: This feature is only available with RTU software version 3.0.0 and higher. Contact your service provider to find out when this feature will become available.

Call waiting allows you to answer an external incoming call while you are connected to another external number.

Activate:

1. Hook off

2. 0
-

Deactivate:

1. Hook off

2. 0
-

To put the current call on hold and answer a second call:



To switch between two calls:



Call Hold

NOTE: This feature is only available with RTU software version 3.0.0 and higher. Contact your service provider to find out when this feature will become available.

Putting a call on hold allows you to place a second call without ending the first.

To put the current call on hold and place a second call:

Put the current call on hold:

Place the second call: [telephone number to call]

To switch between two calls:

To end the current call and return to the held call:

To end both calls:

To combine both calls creating a conference call:

Conference Calling

NOTE: This feature is only available with RTU software version 3.0.0 and higher. Contact your service provider to find out when this feature will become available.



You can link up to 6 parties, including yourself, to a conference call.

To create a conference call:

Activate:

1. Hook off
2. Establish a call to the first party.

For each new party to add to the conference call, do the following:

3.   [telephone number of next party]



To end the conference call, press:



Software Version

Primarily for service purposes, it is possible to get information about the version of the software for the following pieces of hardware in your Iridium equipment:

- **Transceiver:** This software handles the configuration of your Iridium equipment, audio routing, the information to be shown on the displays, communication with your SIM card, etc.
- **LBT:** This software handles the communication between the global Iridium network and your Iridium equipment.
- **Control Unit (CU):** This software consists of low level drivers (for each control unit) that control the dot matrix display, the key pad, the status indicator lamps, and the microphone, earpiece and speaker.

To get information on these software modules, go through the following steps:

1. To enter the function menu, press:



2. Find the item "System" using



3. Find the item "SW version" using



4. Choose the hardware whose software version you want informa-

tion on, using



and press:



Resetting

Primarily for service and test purposes, it is possible to reset your Iridium equipment to force it into a well-defined state. The following two different levels of resetting are available:

- **Restart:** No configuration information or user data (call log, user list, phone book) are deleted. When this command is issued/ chosen, all control units are forced back to idle state regardless of their current state.
- **Factory reset: *NOTE!* ALL (!) configuration information AND (!) user data (call log, user list, phone book) are deleted.** When this command is issued, your Iridium equipment returns to the state it was in when leaving the factory.

To restart your system:

1. To enter the function menu, press:



2. Find the item "System" using



3. Find the item "Reset" using



Tone Signalling

The system will give you information on its status as well as instructions by means of tone signalling. This is done on four different frequencies: 450, 900, 1440 and 1800 Hz. Appendix A illustrates what the various tone signalling sounds like.

4. Find the item “Restart” using



and press:

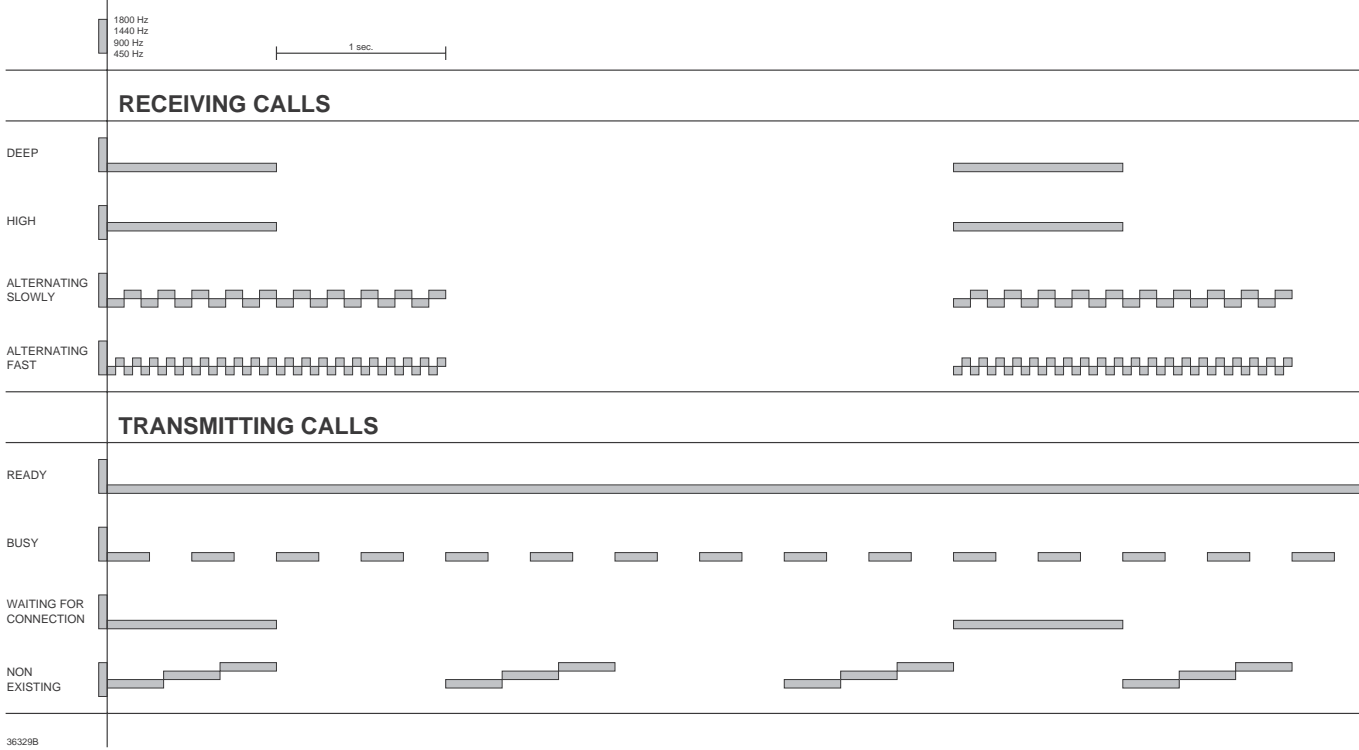


5. To confirm that you want to restart the equipment, press:



Appendix A

Tone Signalling



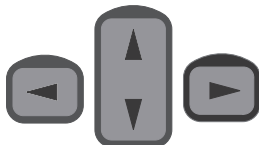
Appendix B

Function Menu Overview

To access the function menus, press:



To move about in the menus, use the arrow keys:



To confirm that you want to select an item, use the OK key:



To regret the last step, use the Escape key:



Functions marked with an asterisk (*) concern the specific handset. All other functions are global, i.e. they concern the whole system. The following table contains a total list of the entries in the function menu system.

| Menu | 1st submenu | 2nd submenu | 3rd submenu | Action |
|----------|------------------|-----------------|-------------|--|
| Setup | Ringing tone | Deep | | Sets ringing tone to deep (see Appendix A). |
| | | High | | Sets ringing tone to high (see Appendix A). |
| | | Slow alt. | | Sets the ringing tone to alternating slowly (see Appendix A). |
| | | Fast alt. | | Sets the ringing tone to alternating fast (see Appendix A). |
| | Ring test | External | | Generate external ringing tone in order to test the setting of this sound. |
| | | Internal | | Generate internal ringing tone in order to test the setting of this sound. |
| | Ring vol. (*) | | | Sets the volume of the ringing tone. |
| | Speaker vol. (*) | | | Sets the speaker volume. |
| | Key beep (*) | Enable | | Turns on the key beep function: When a key is pressed, a beep is heard. |
| | | Disable | | Turns off the key beep function: When a key is pressed, no beep is heard. |
| | | Volume | | Sets the volume of the beep heard when a key is pressed. |
| | Lock | Enable | | Requires users to log in. When selecting this function, the user is prompted to log in. |
| | | Disable | | Does not require users to log in. This function can only be selected by users with certain priorities. When selecting the function, the user is asked to state a default user priority level that decides what all users will be allowed to do. This default priority level cannot be higher than that of the user disabling the lock. |
| | Password | | | Sets the current user's password. |
| | Users | Userlist + Add | | Browses the user list, and adds new users, entering names and passwords. |
| | | Userlist + Edit | Name | Browses the user list, and edits user names. |
| | | | Password | Browses the user list, and edits user passwords. |
| | | | Priority | Browses the user list, and edits user priorities. |
| | | Userlist + Del. | | Browses the user list, and deletes users from the list. |
| | Extension (*) | | | Selects the extension number of the current handset. |
| | Transfer (*) | Enable | | Enables the auto transfer function. |
| | | Disable | | Disables the auto transfer function. |
| | | Extension | | Selects the extension number(s) to which calls are to be transferred. |
| | | Delay Time | | Selects the delay time before a call is transferred. |
| | GPS | | | Shows the current position. |
| | Display (*) | Time/date | | Displays the time and date when the handset is idle. |
| | | Time | | Displays the time (hour and minute) when the handset is idle. |
| | | Position | | Displays the position when the handset is idle. |
| | | State only | | Displays only the state of the system when the handset is idle. |
| | Light | Dimmer | On | Turns the display backlight on |
| | | | Off | Turns the display backlight off |
| | | | Level | Adjusts the level of the display backlight |
| | | Contrast | | Adjusts the display contrast |
| Call log | Global | Outgoing | Userlist | Browses the log of all outgoing calls. |
| | | Account | Users | Browses the user list, and shows the accounts of selected users. |
| | | | Phone | Shows the account of the PSTN phone. |
| | | | Del. Users | Shows the accounts of deleted users. |
| | | | Unknown | Shows the accounts of unknown users. |
| | Private | Outgoing | | Browses the log of the current user's calls. |
| | | Account | | Views the current user's account. |
| | Last call | | | View the duration of the last call |

| System | Time/date | Show | Shows the time and date. |
|--------|-------------|-------------|---|
| | | Set | Sets the time and date. |
| | | Sys.update | Sets the system to update the time and date. |
| | | GPS update | Sets the GPS to update the time and date. |
| | SW versions | Transceiver | Displays the software version number of the transceiver. |
| | | LBT | Displays the software version number of the LBT. |
| | | Ctrl unit | Displays the software version number of the handset. |
| | Call answer | Status | Shows the status of Call Answer, i.e. who is set to receive incoming calls. |
| | | All | Incoming calls go to all control units and the PSTN phone. |
| | | One CU | Incoming calls go to a specific control unit. |
| | | PSTN | Incoming calls go to the PSTN phone. |
| | SIM Card | PIN enable | Enable PIN code |
| | | PIN disable | Disable PIN code |
| | | Change PIN | Change PIN code |
| | | PUK code | Enter PUK code |
| | Reset | Restart | Restarts the system (works like switching the power off and on again). |
| | | Factory res | Restarts the system and reloads all factory settings. |

Dimmer/Contrast Menu

To access the dimmer/contrast function menu, press:



| Menu | | Action |
|----------|-------|---|
| Dimmer | On | Turns the display backlight on. |
| | Off | Turns the display backlight off. |
| | Level | Adjusts the level of the display backlight. |
| Contrast | | Adjusts the display contrast. |

**SAILOR HC4500 MF/HFCONTROL UNIT
OPERATING PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)



SAILOR HC4500 MF/HF CONTROL UNIT Operating Instructions

Distress Calls, see page ii. List of contents, see page 1.

Quick DISTRESS Call

1. If off or STANDBY:
press ON/OFF.



2. Open DISTRESS lid.

3. Press DISTRESS until RELEASE is displayed



3 - 2 - 1 -
RELEASE

Then the undesignated distress call will be sent by default on the distress frequency 2187.5 kHz.

**Wait
for answer!**

(The distress call is auto-repeated every 5 minutes on the same distress frequency.)



Press the DISTRESS button
for **3** seconds to transmit

TYPE : Distress
MSG. : Undesignated
Pos : N57°01 W009°53
Time : 13:01 UTC

CANCEL

| | | | | |
|-------------------------------|------------|--------|-----|--------|
| Awaiting Automatic Repetition | Rx | 2182.0 | kHz | CANCEL |
| | Tx | 2182.0 | kHz | MODE |
| SSB TELEPHONY | | | | TUNE< |
| POWER HIGH | SQUELCH ON | SIGNAL | | CLRf |
| | | | | RF-G |

DISTRESS Acknowledgement

4. Press VIEW to read the contents of call.



| | | |
|-----------------|---|------|
| Tx | Distress acknowledgement received | VIEW |
| CALL | | |
| ALARM | | |
| FROM: 002191000 | ABORT | |

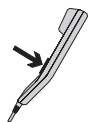
Read call contents.

5. Press "2182".



6. Lift handset.

Press



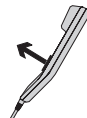
Press PTT and say:

"MAYDAY"

"This is"

- the 9-digit identity and the call sign or other identification of the ship,
 - The ship's position,
 - The nature of distress and assistance wanted,
 - any other information which might facilitate the rescue.
- "OVER."

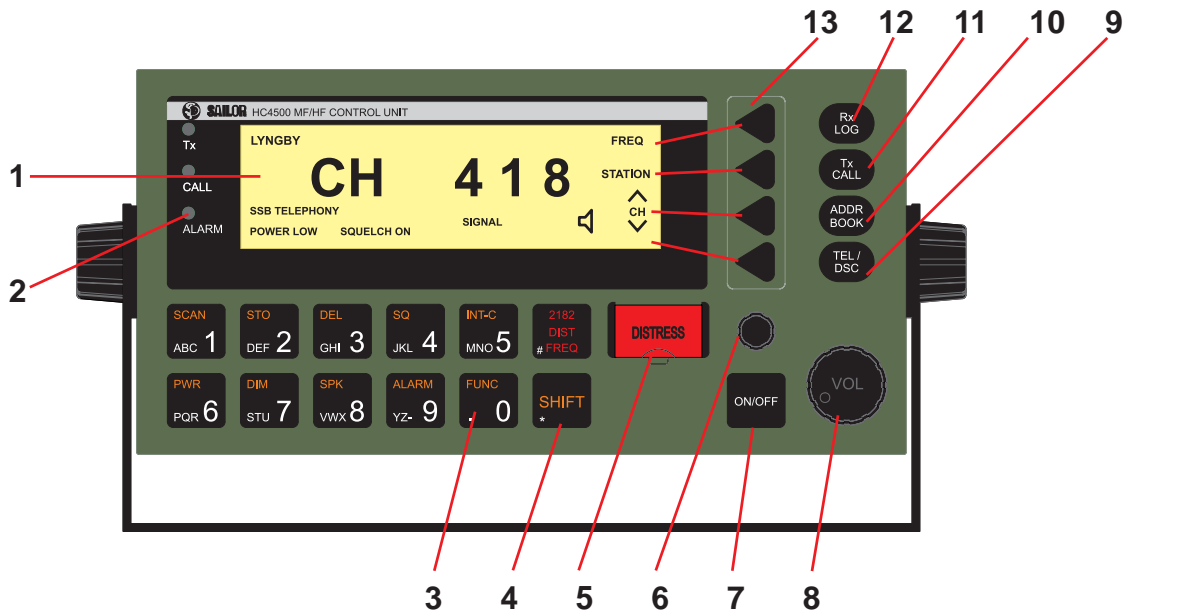
Release



Listen for answer!

| | |
|--------------|--------|
| DISTRESS | CH |
| Rx/Tx 2182.0 | FREQ |
| kHz | MODE |
| AM TELEPHONY | BAND |
| POWER HIGH | |
| | SIGNAL |

What is What?



1. Display.
2. Indicator lamps. Condition when lit:
Tx: Transmitting.
CALL: DSC (see button 9) call for you received.
ALARM: Alarm call received.
3. Keyboard.
4. Shift key. Press and hold for yellow functions.
5. DISTRESS button. Protected by shield. To use, lift the shield and press for 3 seconds, guided by the text displayed.
6. Tuning control.
7. ON/OFF push button.
8. Volume control.
9. TEL/DSC function switch.
In TEL mode radiotelephone parameters are shown and selected.
In DSC mode DSC parameters are shown and selected.
10. Opens the ADDR BOOK in DSC mode.
11. Tx CALL: Press to start creating a DSC call.
12. Opens the Rx log over received calls in DSC mode.
13. Soft keys. The function of each key is described in its respective line at the right edge of the display.

Introduction

Congratulations on your new SAILOR HC4500 MF/HF maritime radio telephone with built-in DSC (Digital Selective Calling) system and radiotelex, fulfilling the highest international standards for marine MF/HF communication and safety procedures. For an explanation of DSC, see page 2.

Your SAILOR HC4500 MF/HF is a part of the modular system 4000 which also includes a HF single sideband radiotelephone. It has built-in MF/HF telex if connected to a PC and/or a printer. If connected to a GPS or other maritime navigation system it can automatically include the true UTC time and your position in its DSC distress messages.

SAILOR marine equipment is specially designed for the extremely rugged conditions on board a ship, based on more than 50 years' experience with all kinds of boats, from small pleasure crafts, over fishing boats working under all climatic conditions, to the biggest ships.

S.P. Radio A/S is one of Europe's leading manufacturers of maritime radiocommunication equipment - a position which has been maintained by means of constant and extensive product development. We have a worldwide network of dealers with general agencies in more than fifty countries. All our dealers are specially trained to service all your SAILOR products.

About this manual

This manual is for the daily user of the system. Additionally, it includes a section on the installation procedures, and - on page ii - standard distress procedures. **We highly recommend you to read the manual before you start using the equipment.**

Please note

Any responsibility or liability for loss or damage in connection with the use of this product and the accompanying documentation is disclaimed. The information in this manual is furnished for informational use only, is subject to change without notice, may contain errors or inaccuracies, and represents no commitment whatsoever. This agreement is governed by the laws of Denmark.

Document no.: B4500GB0 E/0404

Abbreviations Used in this Manual

| | |
|--------|---|
| ADDR | Address |
| AGC | Automatic Gain Control |
| AM | Amplitude Modulation |
| ARQ | Automatic Repetition reQuest |
| CLRF | Clarify |
| CU | Control Unit |
| DIRTLX | Direct Telex |
| DSC | Digital Selective Calling |
| ETSI | European Telecommunications Standards Institute |
| FEC | Forward Error Correction |
| GA | Go Ahead |
| GMDSS | Global Maritime Distress and Safety System |
| GPS | Global Positioning System |
| HF | High Frequency |
| IMO | International Maritime Organisation |
| IRS | Information Receiving Station |
| ISS | Information Sending Station |
| ITU | International Telecommunication Union |
| MF | Medium Frequency |
| MMSI | Maritime Mobile Ship Identification |
| MOM | Just a moment please |
| MSG | Message |
| NBPD | Narrow Band Direct Printing |
| PTT | Push-To-Talk |
| RF-G | Receiver Frequency Gain |
| Rx | Receive |
| SSB | Single Side Band |
| TEL | Telephony |
| Tx | Transmit |
| UTC | Co-ordinated Universal Time |
| VHF | Very High Frequency |



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MF/HF Fundamental Info

Propagation of MF and HF Radio Waves.

MF/HF radiocommunications provide a medium and long range service. The 1.6-4 MHz marine band is intended primarily for coastal operation beyond normal VHF communication range. A reliable range of more than 150 nautical miles can be expected in most areas in the daytime, more in the nighttime. Propagation of the radio waves in this band is mainly by ground waves i.e. the waves from the transmitter aerial follow the earth's curvature to the receiver aerial. The high frequency range 4 - 30 MHz can provide communication for hundreds or even thousands of nautical miles. The long range is achieved by sky waves reflected from the ionosphere. Propagation of the radio waves depends on a number of factors such as frequency, time of day, time of year, and solar activity. The channels allocated to the maritime mobile service in the HF range are divided into a number of bands: 4, 6, 8, 12, 16, 18, 22, 25 MHz to allow a suitable frequency band to be selected for communication dependent on distance and time of day.

Radiotelephony

The mode of emission used for telephony transmissions in the marine bands is SSB (single-sideband, J3E). On the international distress frequency 2182 kHz compatible AM (amplitude modulation, H3E) may be used in addition for communication with non-GMDSS ships. AM mode is used also when receiving broadcasting. The frequencies for radiotelephone distress and safety traffic in the HF bands are 4125 kHz, 6215 kHz, 8291 kHz, 12290 kHz, and 16420 kHz. Working frequencies for public correspondence with coast stations are arranged in pairs for duplex/semi-duplex operation. For the HF bands these channels are allocated numbers by ITU on an international basis. In addition a number of simplex frequencies are available in each band for ship-to-ship communication.

Radiotelex

Marine telex is also referred to as 'Narrow Band Direct Printing' (NBDP). Due to the narrow bandwidth of the transmissions, a longer range may be expected compared to radiotelephony. The frequencies for radiotelex distress and safety traffic are 2174.5 kHz, 4177.5 kHz, 6268 kHz, 8376.5 kHz, 12520 kHz, and 16695 kHz. Working frequencies for public correspondence with coast stations are arranged in pairs. For the HF bands these channels are allocated numbers by ITU on an international basis. In addition a number of simplex frequencies are available in each band for ship-to-ship communication.

DSC

DSC (Digital Selective Calling) is an automatic calling system which allows a specific station to be contacted and made aware that a station wishes to communicate with it. In addition to calls to specific stations the system can also be used to call 'all ships' and groups of ships and this is of significance for its use for DSC distress alerting. DSC is an alerting signal only and the communication which follows the call is made on an appropriate frequency band using radiotelephony or radiotelex. The frequencies for DSC distress and safety calling are 2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 kHz, 12577 kHz, and 16804.5 kHz. Calling frequencies for public correspondence with coast stations are arranged in pairs, both international and national frequencies are assigned. In addition the frequency 2177 kHz may be used for ship-to-ship calling.

Basic Functions

Switching ON/OFF

1. Press the ON/OFF button.



Setting Backlight Level

1. Press the Shift key followed by the DIM key.



The backlight is changed from zero to maximum in four steps.
Repeat until the desired setting is reached.

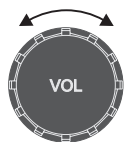
Switching Loudspeaker ON/OFF

1. Press the Shift key followed by the SPK key.



Volume Control

1. Rotate the VOL button to adjust the loudspeaker sound volume.



Switching Squelch ON/OFF

(SSB Telephony mode)

1. Press the Shift key followed by the Squelch key.



When squelch is ON, the receiver output is muted in speech pauses.

Setting Transmitter Power Level

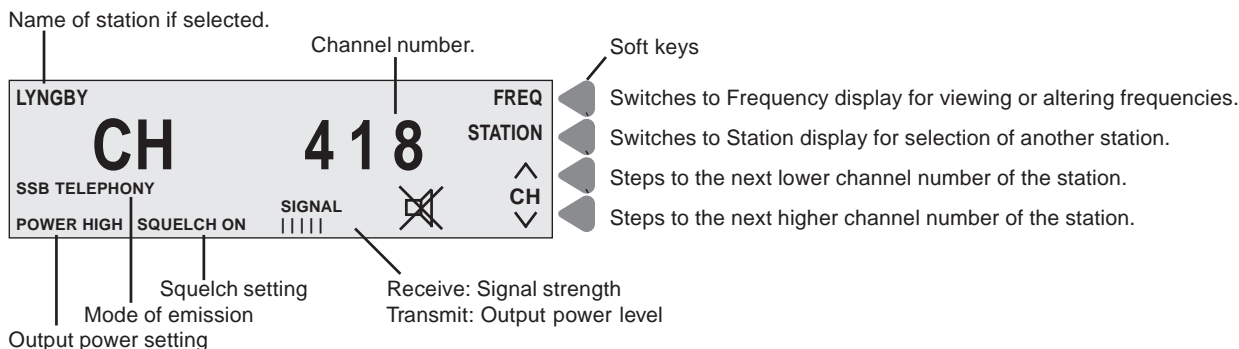
1. Press the Shift key followed by the Power Key.



The output power is set to HIGH, MED or LOW.
Repeat until the desired setting is reached.

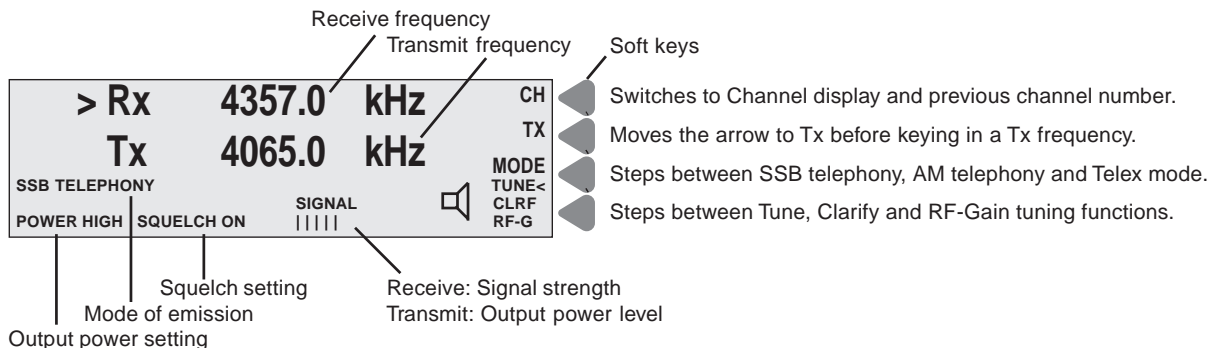
Manual Call Functions

Telephony Channel Display Functions:



A channel number may also be keyed in directly from the keyboard.
If the channel is not allocated to the station selected, the station name will disappear from the display.

Frequency Display Functions:



Rx frequencies may be keyed in directly from the keyboard

Tuning

(Frequency display only)

1. Rotate the TUNE button to adjust frequency or RF-gain of the receiver.



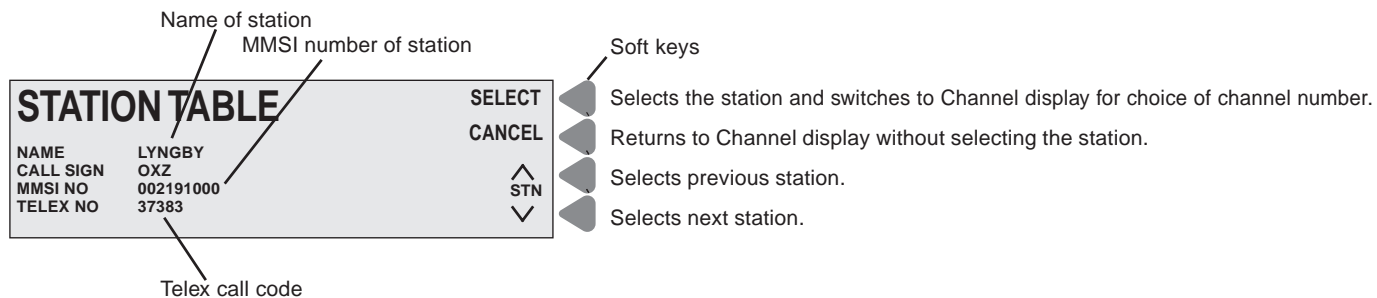
Functions indicated by arrow in the Frequency display:

TUNE: Frequency tuning in 1 kHz steps (AM), 100 Hz steps (SSB) or 500Hz (Telex).

CLRf: Frequency tuning in 10 Hz steps.

RF-G: Manual RF-gain tuning, AGC off.

Station Display Functions:

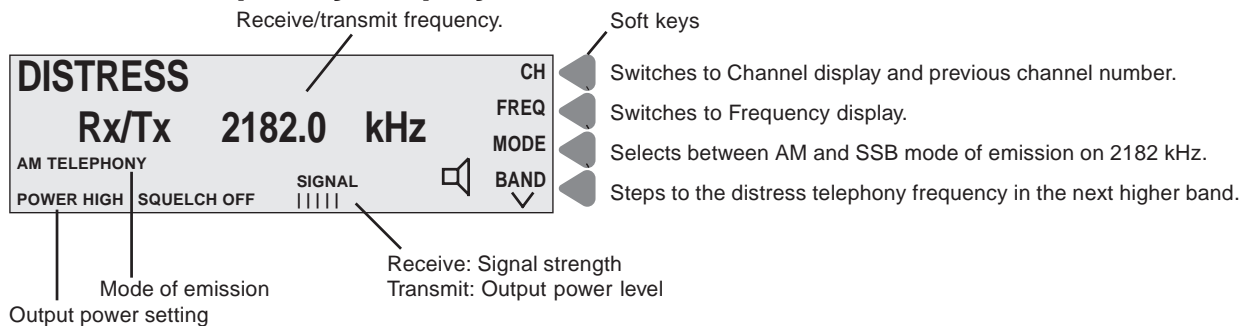


Distress Telephony Frequencies

To switch to Distress Frequency display: Press 2182 Distress Freq key.



Distress Frequency Display Functions:



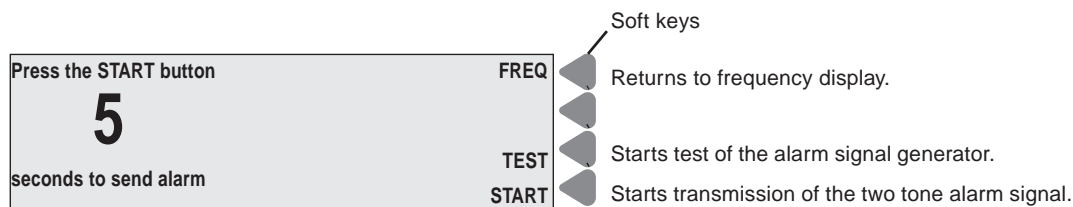
The frequencies for distress and safety telephony traffic are
2182 kHz, 4125 kHz, 6215 kHz, 8291 kHz, 12290 kHz, 16420 kHz

Two-tone Alarm Signal

To switch to the Two Tone Alarm Signal display: Press the Shift key followed by the Alarm key.



Two-tone Alarm Display Functions:



Transmission of the two tone alarm signal will continue for 45 seconds, but may be stopped manually by pressing the STOP key in the frequency display. When the alarm signal ceases press the handset key and transmit your distress message by speaking into the handset microphone with a clear and calm voice.

Note: The two tone alarm signal generator is intended for alerting ships not yet equipped with DSC equipment. It may be used only to announce a distress message and primarily on the frequency 2182 kHz in AM telephony mode.

Listening for Calls

Coast stations transmit traffic lists consisting of call signs/names of the ships for which they have traffic. The traffic lists are sent at specified times and at intervals of typically two hours. They are broadcasted on the normal working frequencies on the coast station. Ships should, as far as possible, listen to the traffic lists transmitted by relevant coast stations. On hearing their call sign they should establish communication as soon as they can do so.

1. Select the appropriate station.
2. Select the channel on which traffic lists are transmitted.
3. Switch loudspeaker on and adjust volume to an appropriate level.

If on HF, traffic lists are transmitted in more frequency bands simultaneously, search for the channel with the best propagation conditions.

Making a Manual Call

Wait until transmission of the traffic list has finished and the channel is free. Call the coast station on the working frequency on which the traffic list was received or as instructed by the coast station.

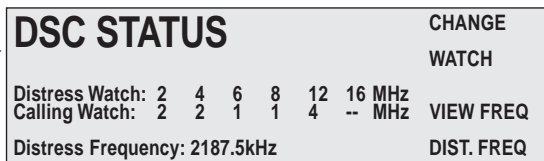
1. Hook off the handset.
2. Press the PTT key on the handset when speaking.
Say:
 1. <Called station's name (3 times)>
 2. 'This is' <Your ship's name (3 times)>
 3. 'Over'
3. Release the PTT key to listen.
4. When answered:

Follow the instructions from the coast station. The coast station may ask for further identification, information on position and next port of call, and may suggest another working channel for the traffic to follow. If the coast station is not ready to receive traffic immediately it may ask you to wait for a specific number of minutes.

DSC Main Buttons

To switch between the DSC STATUS and telephony displays:
press TEL/DSC.

TEL /
DSC



The DSC STATUS display shows the following information:

| | |
|-----------------------------------|------------|
| DSC STATUS | CHANGE |
| | WATCH |
| Distress Watch: 2 4 6 8 12 16 MHz | VIEW FREQ |
| Calling Watch: 2 2 1 1 4 -- MHz | DIST. FREQ |
| Distress Frequency: 2187.5kHz | |

DSC STATUS display

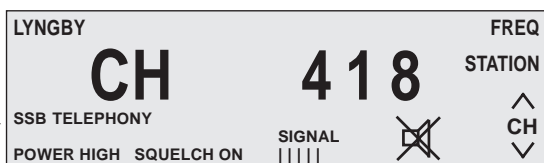
Soft keys

Changes calling watch frequencies.

Switches between calling watch On/Off

Views watch frequencies.

Changes distress frequency used default for quick distress calls.



The Telephony Display shows the following information:

| | |
|-----------------------|--------------|
| LYNGBY | FREQ |
| CH | 4 1 8 |
| SSB TELEPHONY | STATION |
| POWER HIGH SQUELCH ON | ^ CH |
| SIGNAL | ∇ |
| | ✗ |

Telephony Display

Rx
LOG

The Rx LOG button opens to the screen menu where all DSC calls are stored. In this menu NORMAL or DISTRESS calls, can be read separately and sorted by time.

Tx
CALL

The Tx CALL button opens to the DSC transmitter menu. From here it is possible to make very easy calls. (SHORE, SHIP) and more complicated calls including special category and tele commands.

ADDR
BOOK

The ADDR BOOK button opens the Address book menu. An addr book call is a complete DSC call added a name. It is possible to transmit, add or delete calls from here.

TEL /
DSC

The TEL / DSC button switches between the DSC STATUS and telephony displays. The MF/HF set is equipped with two receivers. One for watch on the distress frequencies and one for watch on the public DSC frequencies (calling watch). The calling watch receiver is identical with the receiver of the radio, and therefore it is possible to switch the calling watch on and off. The calling watch is only active in DSC mode, i.e. calling watch is automatically switched off when switching to the TEL screen. But if calling watch is on and the user hooks on the handset, the control unit will automatically switch to the DSC status menu.

Calling Watch

To switch to DSC screen:
press TEL/DSC.



| | |
|-----------------------------------|-------------------|
| DSC STATUS | CHANGE |
| Distress Watch: 2 4 6 8 12 16 MHz | WATCH |
| Calling Watch: 2 2 1 1 4 -- MHz | VIEW FREQ |
| Distress Frequency: 2187.5kHz | DIST. FREQ |

DSC STATUS display

Soft keys

- Changes calling watch frequencies.
- Switches between calling watch On/Off
- Views watch frequencies.
- Changes distress frequency used default for quick distress calls.

Active calling watch frequencies.

| | |
|----------------------------------|-------------|
| STATUS | EXIT |
| Calling Watch: 02 02 01 01 04 -- | > |
| Rx Freq: 02187.5kHz | ^ |
| | v |

Cursor

- Return to DSC screen
- Move cursor
- Freq. up
- Freq. down

Specified frequency

List of watch frequencies

When wanted frequency is selected, press EXIT to return to DSC screen.

DSC Display Operation

Receiving an Individual DSC Call


When calling watch is on, your MF/HF set is constantly scanning the selected DSC channels for incoming DSC calls.

Lift **HANDESET** to connect

Individual call received

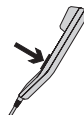
FROM: 219000012

VIEW
ABORT



Lift the handset and press PTT to connect to the caller.

OR




Press VIEW to read out the call.

Press ABORT to return to TEL screen.

CALL CONTENT

Time 10:55:00 13 Okt 97
 TYPE: Individual
 FROM: 219000012
 CAT.: Routine
 ACKN: Request

MORE




Press MORE to view the second part of call.

Select **CONNECT** to reply call

COMM: SSB telephony
 MSG.: No Info
 AD.: Freq. RX 2053.0 TX 2053.0

CONNECT
 CHANGE
 CANCEL
 AGAIN




Press CONNECT to transmit and set channel.

Press CHANGE to change the acknowledgement.

Select send to transmit

TYPE: Individual
 TO : 219000012
 COMM: SSB telephony
 AD.: Freq. RX 2053.0 TX 2053.0
 ACKN: Reply

SEND
 CANCEL




Press SEND to transmit the reply.

> Rx 2053.0 kHz CH
 Tx 2053.0 kHz TX

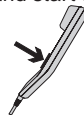
SSB TELEPHONY
 POWER HIGH SQUELCH OFF

SIGNAL
 |||||

MODE
 TUNE<
 CLR F
 RF-G



Take the handset and start talking.



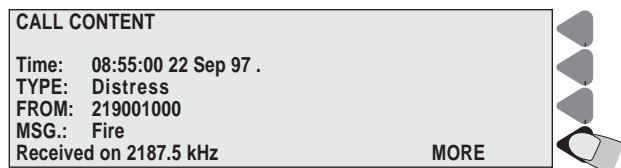
Receiving DISTRESS Call

When switches on your MF/HF set is constantly scanning all DSC distress channels for incoming DSC distress calls.

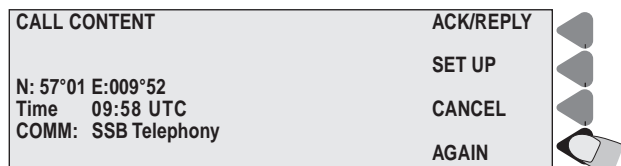


Press VIEW to read out the call.

Press ABORT to return to TEL screen



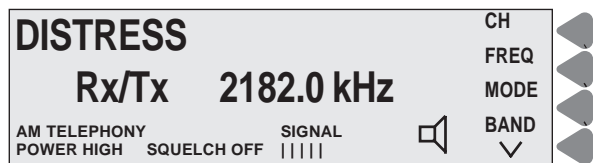
Press MORE to view the second part of call.



Press ACK/REPLY to send distress acknowledgement or distress relay. In these menus there is a security that makes it impossible to send an acknowledgement by mistake. Press SETUP to return to the TEL screen with the appropriate radio distress frequency, in this case 2182 kHz.

Press AGAIN to view the first part of call.

If the ship in distress is within a reachable distance press "2182" and listen to the subsequent information.



Calling a SHIP

Press Tx CALL



| | |
|----------------------|----------|
| Select type of call: | SHORE |
| | SHIP |
| | DISTRESS |
| | MORE |



Select a SHIP call.

| | | | | |
|---------------|--------------|--------------|----------------|----------------|
| SCAN ABC 1 | STO DEF 2 | DEL GHI 3 | SQ JKL 4 | INT-C MNO 5 |
| PWR PQR 6 | DIM STU 7 | SPK VWX 8 | ALARM YZ- 9 | FUNC . 0 |

Key in the nine digit MMSI number of the wanted ship.

| | |
|-----------------------------|--------|
| Key in the ship MMSI number | ACCEPT |
| | < |
| | MEMORY |
| | CANCEL |
| TYPE: Individual | |
| TO : 210215456 | |



Accept the number.

A sub menu where a pre-programmed ship can be selected.

The current telephony frequency is included in the call, and this frequency is used as working frequency for the following radio communication.

| | |
|----------------------|------------|
| Select DSC frequency | ACCEPT |
| | ^ |
| | v |
| | CANCEL |
| Rx | 2177.0 kHz |
| Tx | 2177.0 kHz |



Select the frequency on which the call is transmitted.

| | |
|--------------------------------|---------------------|
| Select send to transmit | SEND |
| | TYPE: Individual |
| | TO : 210215456 |
| | COMM: SSB telephony |
| AD.: Freq. RX 2053.0 TX 2053.0 | |
| ACKN: Request | CANCEL |



Select SEND to transmit the call.

You first see the messages "Call in progress" and then "Waiting for acknowledgement"

Wait for answer

If the ship answers, see page 8 Receiving an Individual DSC call.

Calling a SHORE Station

Press Tx CALL



| | |
|----------------------|----------|
| Select type of call: | SHORE |
| | SHIP |
| | DISTRESS |
| | MORE |



Select a SHORE call.

| | | | | |
|---------------|--------------|--------------|----------------|----------------|
| SCAN ABC 1 | STO DEF 2 | DEL GHI 3 | SQ JKL 4 | INT-C MNO 5 |
| PWR PQR 6 | DIM STU 7 | SPK VWX 8 | ALARM YZ- 9 | FUNC . 0 |

Key in the nine digit MMSI number of the wanted coast station.

| | |
|--|--------|
| Key in the coast station MMSI number TYPE: Individual TO : 002191000 | ACCEPT |
| | < |
| | MEMORY |
| | CANCEL |



Accept the number.

A sub menu where a preprogrammed station can be selected.

If the SHORE station supports the possibility of including a telephone number, the telephone number can be keyed in followed by ACCEPT.

| | |
|---|-----------|
| Key in the phone number TYPE: Individual TO : LYNGBY - | ACCEPT |
| | < |
| | TEST CALL |
| | CANCEL |



Select ACCEPT to make a call directly to the shore station and talk with a person there if no phone number is keyed in.

Select TEST CALL to make a test call to the coast station.

| | |
|--|--------|
| Select DSC frequency Rx 8049.0 kHz Tx 8049.0 kHz | ACCEPT |
| | ^ |
| | v |
| | CANCEL |



Select the frequency on which the call is transmitted.

| | |
|---|--------|
| Select send to transmit TYPE: Individual TO : LYNGBY AD.: No info ACKN: Request | SEND |
| | |
| | |
| | CANCEL |



Select SEND to transmit the call.

You first see the messages "Call in progress" and then "Waiting for acknowledgement"

Wait for answer

Note that when calling a coast station, it is always the coast status that selects the working frequency for the following communication.

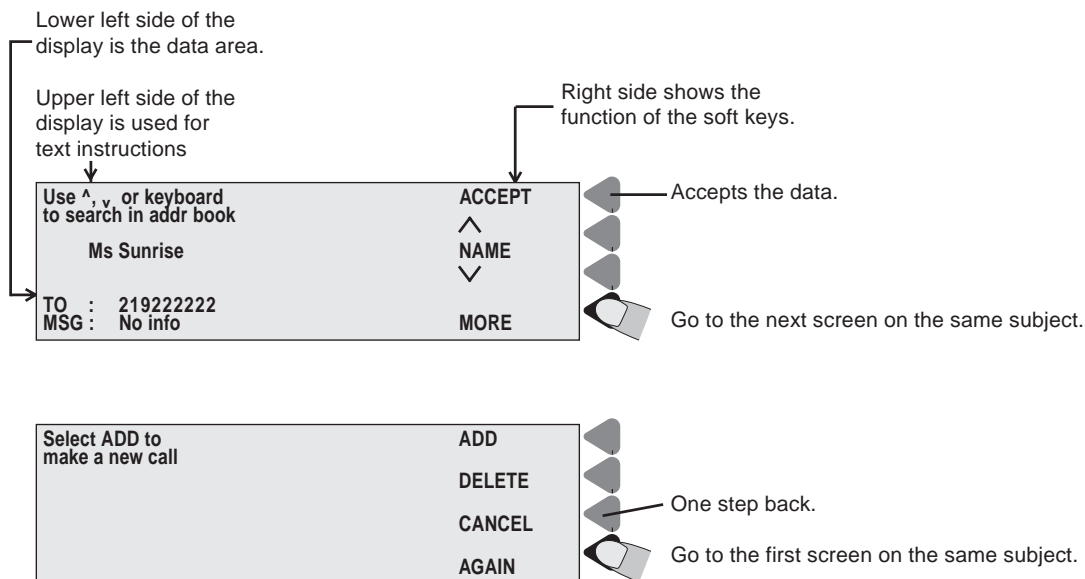
If the coast station answers see page 8 Receiving an Individual DSC call.

Address Book

This MF/HF set is designed with self explaining menus.
The four soft keys on the right side of the display refer to the display text.



Open the addr book menu.



Using Two Control Units

You can connect two control units to the system. However, it can only be controlled by one control unit at a time.

Priority of Control Unit #1

Control unit #1 has the highest priority, i.e. you can always control the system by means of control unit #1 – even if control unit #2 has initiated a distress call.

Control Unit #2 Taking Over the Control

When control unit #1 is in the DSC Status Menu, control unit #2 can take over the control of the system by leaving the DSC Status Menu. When control unit #2 returns to the DSC Status Menu, the control is automatically given back to control unit #1.

Status Indication

Control Unit #1:

When control unit #2 controls the system, the display of control unit #1 shows what activity is taking place. The following read-outs may appear:

- “*OCC by unit 2 sending Distress alert*” means that control unit #2 is transmitting a distress call, or awaiting automatic retransmission.
- “*OCC by unit 2 sending DSC call*” means that control unit #2 is transmitting an ordinary DSC call.
- “*OCC by unit 2 using DSC functions*” means that control unit #2 is in a DSC menu without transmitting a call.
- “*OCC by unit 2 using Radio functions*” means that control unit #2 is not in a DSC menu.

Control Unit #2:

The display of control unit #2 always shows when the system is busy. When the system is not busy, the display shows the DSC Status Menu.

If control unit #2 tries to take over the control, but is not allowed to do so, this is indicated by both a sound and the display read-out “*OCC by unit 1*”.

Responding to Incoming DSC Calls

When a call comes in, only the active control unit – i.e. the one that controls the system at the moment – is to respond.

If for instance control unit #2 has sent an individual DSC call, control unit #2 is to receive and respond to the acknowledgement call that may follow.

If a call comes in when both control units are in the DSC Status Menu, and therefore not active, both control units are to receive and respond to the call.

Power On/Off By Control Unit #2

Power On

You can turn on the whole system by means of control unit #2. If the display shows the words “*Unit switched off*”, and the on/off button is pressed, what happens depends on whether or not control unit #1 is controlling the system at the moment:

- a) If control unit #1 is controlling the system, this will be indicated by the display of control unit #2.
- b) If control unit #1 is not controlling the system, control unit #2 will start up in the DSC Status Menu.

When the whole system is off, it makes no difference which control unit turns it on.

Power Off

You cannot turn off the whole system by means of control unit #2. When you press the on/off button, only control unit #2 is turned off. The display will then show the words “*Unit switched off*”.

Interconnecting

When you have received a DSC call, including working frequency, it is possible to transfer the system control from control unit #1 to control unit #2. To do so, in the Frequency menu, key: “*Shift*” + “*INT-C/InterCom*”.

When a DSC call is transferred from control unit #1 to control unit #2, the right working frequencies are maintained.

If the handset of control unit #2 is not lifted within five minutes, the control automatically returns to control unit #1.

DSC Scanning Frequencies

You cannot change the DSC scanning frequencies by means of control unit #2. The scanning frequencies used when in the DSC Status Menu of control unit #2 are the same as if in the DSC Status Menu of control unit #1.

If control unit #1 changes the DSC scanning frequencies, that information is passed on to control unit #2. Therefore, if control unit #2 is given the control, and starts scanning, the same scanning frequencies are used.

Advanced DSC Calls

Extended DSC calls make it possible for you to control the call completely within the international rules, including the possibility of sending data or fax from optional equipment connected to your MF/HF set.

To start an extended call, select EXTENDED as the 'Type of call' in the Tx menu below, and then continue in the Extended calls menu on next page.

If you have selected an INDIVIDUAL Ship, GROUP, or Group AREA call, all your options are the same after having selected the address.

Please observe the international rules for the rights to forward DISTRESS RELAY calls.

Tx menu. Enter correct data instead of examples shown in *italics*::

| Type of call | Address | Options | Other data transmitted | Telecom 1 | Ackn. |
|-------------------------------|----------------------------|--|---|--------------------------------------|-------|
| SHORE Shore →Phone: | 00 1234567 | No info: Call shore station | Routine - SSB telephony - No Info | | Yes |
| | or from ADDR.BOOK | 98765432: Call Phone No. Test call | Routine - SSB telephony - <Phone number> Safety - Test - No info | | Yes |
| SHIP | 123456789 | (none) | Routine - SSB telephony - No Info - Work frequency | | Yes |
| LAST CALL | Repeat the last call made. | | | | |
| DISTRESS | | UNDESIGNATED DISABLE SINKING LISTING (CAPSIZE) GROUNDING COLLISION FLOODING FIRE ABANDONING PIRACY MAN OVER BOARD EPIRB | Position UTC time for position ... to be entered manually if not obtained from e.g. a GPS. | SSB telephony AM telephony FEC | ? |
| EXTENDED | (See next page) | | | | |

EXTENDED Tx call started from "EXTENDED" in the table on the previous page. Enter correct data instead of examples shown in *italics*:

| Type of call | Address | | Options | | Category | Telecom 1 | Telecom 2 | Add. msg. | Ackn. |
|--|---|-----------|-----------------------------|------------------------|--|--|---|---|-----------|
| INDIVIDUAL Shore: Shore phone: Ship: | 001234567 | | No info: Call shore station | | Routine | SSB telephony | No info | | Yes |
| | 123456789 | | 98765432: Call Phone No. | | Routine | SSB telephony | No info | | |
| GROUP | 012345678 | | | | | SSB telephony AM telephony POLLING | No info MEDICAL AIRCRAFT | No info Position Work. frequency | Yes No |
| G.AREA | N:5° d02° W:009° d03° The data in the example gives the area: N:55..57° W:6..9° | | | | | No info FAX ARQ FEC TTY RX TTY TAPE MORSE SHIP POSITION DATA | No info | | |
| | | | | | ROUTINE URGENCY DISTRESS SAFETY BUSINESS | Unable to comply | V21 V22 V22 BIS V23 V26 V26 BIS V26 TER V28 TER V32 | | |
| ALL SHIPS | | | | | DISTRESS SAFETY URGENCY | Same as above | Same as above | Work. frequency | No |
| DISTRESS RELAY | Type of address | Address | Ship in distress | Distressed ship's MMSI | Distress relay | As for DISTRESS in table Tx Call | As for DISTRESS in table Tx Call | As for DISTRESS in table Tx Call | |
| | ALL SHIPS | All ships | UNKNOWN | | | | | | |
| | INDIVIDUAL | 001234567 | KNOWN | 123456789 | | | | | |
| DISTRESS ACK | Type of address | Address | Distressed ship's MMSI | | Distress ack | As for DISTRESS in table Tx Call | As for DISTRESS in table Tx Call | As for DISTRESS in table Tx Call | |
| | ALL SHIPS | All ships | 123456789 | | | | | | |

MMSI address rule:

Shore station numbers start with 00, group numbers start with one 0, ship numbers start with a digit 1-9.

Changing a Function

There are a large number of function settings available, selectable from a function tree, see the next page. This chapter only deals with the principles of how to use the function tree.

An example:

Changing the Display Contrast

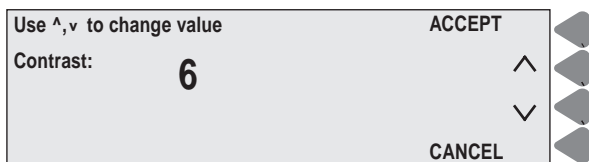
Press SHIFT and FUNC to enter function menu.



Select the USER functions.



Select DISPLAY.



Use ^ and v to change the contrast value.

The Function Tree

| Menu | Submenu Level 1 | Submenu Level 2 | Parameters |
|--------|-----------------|------------------|-----------------------------|
| User | Display | Contrast | 0 to 7. High Contrast = 7 |
| | Sound | Earpiece level | Attenuation Level 0 - 15 |
| | | Alarm level | Attenuation Level 0 - 15. |
| | Version | | SW versions for all modules |
| | Print DSC | | Printer On/Off |
| Config | | HW configuration | |

| Menu | Submenu Level 1 | Submenu Level 2 | Parameters |
|-----------|-----------------|-----------------|-----------------------------------|
| Telephony | CH | Add | Add new user ch |
| | | Delete | Delete user ch |
| | | View | View ch |
| | Protection | | Read Transceiver protection codes |
| | Test | | Self test TU module |

| Menu | Submenu Level 1 | Submenu Level 2 | Parameters |
|----------|-----------------|----------------------------|---------------------------------|
| DSC | MMSI | | The MMSI number of the unit |
| | ACKN | | Auto ackn on request On/Off |
| | DSC Freq | Add | Add new DSC call/receive freq |
| | | Delete | Delete DSC call/receive freq |
| | | View | View DSC call/receive freq |
| | Position | Change | Automatic if connected to a GPS |
| | Time | Change | Automatic if connected to a GPS |
| | Test | | DSC modem self test |
| Language | | Change language if allowed | |

| Menu | Submenu Level 1 | Submenu Level 2 | Parameters |
|---------|-----------------|-----------------|--------------------------------|
| Station | Add | Shore | Add new shore station |
| | | Ship | Add new ship station |
| | Delete | | Delete station |
| | View / Edit | | View stations or Edit stations |

Options: System settings.
For authorized service personnel only.

GMDSS Radiotelex Terminal

Introduction

The GMDSS Radiotelex Terminal is an option used for handling transmission/reception of telex messages over radio. The terminal consists of a printer and a keyboard, connected to the transceiver control unit which provides the interface to the DSC/telex modem located in the transceiver unit. The keyboard is equipped with an affixed template for function keys and indicator lamps.

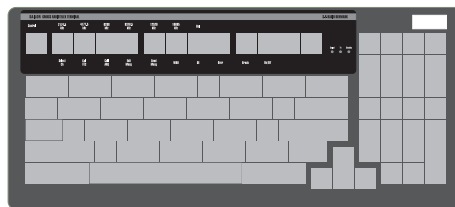
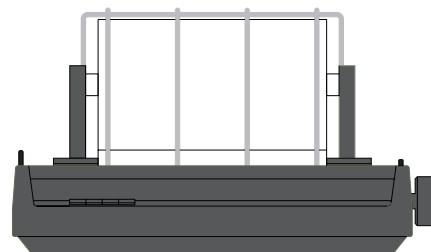
The GMDSS Radiotelex Terminal was designed in accordance with relevant IMO, ITU and ETSI recommendation/specifications and has been approved for shipboard installations to be operating within the Global Maritime Distress and Safety System.

It supports world-wide ship-to-ship, shore-to-ship and ship-to-shore communication by utilizing the radiotelex protocols described in ITU- Rec. 625 to overcome the deficiencies of the HF medium. In case of two-way communication an ARQ (Automatic Repetition reQuest) algorithm for error correction is thus used, and when sending to more than one station an FEC (Forward Error Correction) algorithm is used.

To facilitate error detection the source text consisting of 5-bit telex characters is coded to a constant weight (3/4 ratio of mark and space bits) 7-bit code. In FEC mode the message is sent in time diversity i.e. each character is sent twice with a time interval by interleaving the original character stream with a delayed version of itself. The receiving station thus has two chances to receive the character correctly. If both are in error a '*' is printed. FEC broadcast calls are used for sending collective messages to several stations simultaneously. A special class of FEC allows selective calling by means of call codes. The message is transmitted in inverted format and only receiving stations with the correct call codes will receive the message.

ARQ operation involves two stations. The information sending station (ISS) sends the information in blocks of 3 characters and listens in the interval between the blocks for an acknowledgement character to be received from the information receiving station (IRS) indicating whether or not the latter has detected any erroneous character(s) in which case the block will be repeated by the ISS. Both the stations involved in a communication session may initiate an OVER sequence to change the direction of information flow or a BREAK sequence to terminate the connection. The station which initiates the connection becomes the 'master' station by transmitting the call signal of another station after going from 'standby' to 'phasing' state. The called station becomes the 'slave'. When it recognizes its own call signal it will

also leave 'standby' and enter 'phasing' state by transmitting an appropriate control character. After having verified the other station's identity both stations will proceed to 'traffic' state and start exchanging messages. If the quality of the radio link deteriorates resulting in a large number of block repetitions, both stations will automatically advance to the 'rephasing' state, in which the 'master' station tries to call the 'slave' again, as it did in the 'phasing' state, without any of them terminating the connection now under re-establishment. Both 9 digit and 5/4 digit call signals are supported and the corresponding switching between the new protocol (ITU-R M. 625) and the old ITU-R M. 476 is automatically performed.



Keyboard Indicator Lamps

| | |
|-----------|--|
| 'Standby' | Steady light indicates that the terminal is ready. Flashing light indicates that the printer is off or out-of-paper or the modem is busy/inhibited. Telex mode must be selected in the frequency display of the CU. |
| 'Tx' | Steady light indicates that a radiotelex transmission is in progress. Flashing indicates phasing, rephasing ('Called' diode flashes as well) or repetitions. |
| 'Called' | Steady light indicates that a radiotelex call has been detected and reception is in progress. Flashing indicates rephasing ('Tx' diode flashes as well). |

Keyboard Function Keys

| | |
|-----------------|---|
| Select CH (F1): | Sets the frequencies of the transceiver in accord with the selection of ITU coast station or ITU intership channel and the entry of ITU channel number. |
| Call FEC (F2): | Initiates an FEC transmission. Responds to the printer with a choice of broadcast or selective FEC. Selecting selective FEC requires entry of call code, before the transmission begins. |
| Call ARQ (F3): | Initiates an ARQ call. Responds by printing 'ARQ call code?', expecting the call code of the station to be called to be typed. Upon carriage return (↵ Enter), the ARQ transmission begins. |
| Edit Mesg (F4): | Edits a message to be transmitted later. |
| Send Mesg (F5): | Transmits (prints in Standby) the edited message. |
| WRU (F6): | Requests the other station to transmit its answer-back code. |
| DE (F7): | Transmits own answer-back code, see Modem Set-up also. |
| Over (F8): | Changes the direction of an ARQ connection. |

| | |
|----------------------|---|
| Break (F9): | Terminates a connection. Responds by printing 'Breaking connection'. If pressed during transmission of an edited message this is terminated. Press once more to terminate the connection. |
| On/Off (F10): | Switches the GMDSS telex On/Off. The 'Standby' keyboard indicator lamps gives out steady light when the switch on process is finished. Call codes and abbreviated ID are printed. |
| 2174.5 kHz (Ctrl+F1) | Selects the distress frequency 2174.5 kHz. |
| 4177.5 kHz (Ctrl+F2) | Selects the distress frequency 4177.5 kHz. |
| 6268 kHz (Ctrl+F3) | Selects the distress frequency 6268.0 kHz. |
| 8376.5 kHz (Ctrl+F4) | Selects the distress frequency 8376.5 kHz. |
| 12520 kHz (Ctrl+F5) | Selects the distress frequency 12520.0 kHz. |
| 16695 kHz (Ctrl+F6) | Selects the distress frequency 16695.0 kHz. |
| Bell (Ctrl+F7) | Transmits Bell character. |

Switching On

Press F10 and switch on the printer (The 'Select' printer indicator must be on). Select telex mode in the Frequency Display of the control unit. If the modem is used for DSC or is inhibited because the transceiver is used for telephony, the Standby keyboard indicator lamp is flashing to indicate that the terminal is not ready.

The 'Standby' keyboard indicator lamp shines steady light when connection to the telex modem is established and the following text appears on the printer (example):

5-digit call code: 12345
MMSI number: 123456789
Abbreviated ID: abcd

Channel Selection

Press F1. The printer responds by printing:
'ITU Coast station / interShip channel (C/S)?:'

After pressing 'C' or 'S' as desired the channel number is requested and must be typed in. The validity of the channel number is checked. If the channel number does not exist this is indicated.

If the channel number exists the corresponding frequency pair is printed and the transceiver is set accordingly.

The radiotelex *distress and safety* frequencies may be selected by simultaneously pressing 'Ctrl' and the appropriate function key F1 to F6.

Transmitting a Message

Before calling, it must be ensured that the transmission will not interfere with transmissions already in progress. Switch the loud-speaker on and listen in on the selected channel.

Press *Call FEC* or *Call ARQ* as desired and enter the call code of the station to be called. For transmission to two or more stations the FEC mode should be used. For communication between two stations the ARQ mode should be used.

Before any message can be sent, wait until the connection has been established, or in the case of FEC until the opening phase sequence has been transmitted. When the system is ready for message transmission a ">" is printed and the Tx keyboard indicator shines steady light.

After a successful ARQ connection has been established, answer-back codes may be exchanged by pressing the *WRU* and *DE* keys. A

message may now be transmitted by pressing carriage return (↵ Enter) followed by the message to be transmitted, either typed in directly from the keyboard, or recalled from the text memory by pressing the *Send Message* key. Communication with coast stations must be in accordance with the procedures specified by the particular coast station. Where the appropriate facilities are provided by the coast station, traffic may be exchanged with the land telex network. Having completed the transmission, an exchange of answer-back codes should take place. The radio connection is terminated by pressing the *Break* key.

Editing a Message

A text memory is used for storing a message for later transmission. The message can be transmitted one or more times. The message is printed out when the *Send Message* key is pressed.

A message can be entered into the text memory after pressing the *Edit Message* key in standby mode. Any previous contents of the text memory are printed out then and may be supplemented, corrected or deleted.

Editing keys:

| | |
|----------------------|---|
| <i>Edit Mesg(F4)</i> | Selects edit-mode and prints the contents of the text memory. |
| <i>Backspace</i> | Deletes the last character keyed in if it has not been printed. |
| <i>Insert</i> | followed by line number, selects a line. The contents of the line, if any, are printed. Text may be added or deleted. |
| <i>Delete</i> | Deletes the last word of the line Deletes message (after confirmation) if pressed after <i>Edit</i> (F4). |

Line numbers (10, 20, etc.) are added automatically when typing the message.

Receiving a Message

Reception is possible whenever the terminal is on, indicated by steady light in the 'Standby' keyboard indicator. The radio must be set to telex mode and to the desired working channel.

When a call is detected the 'Call' keyboard indicator lamps turns on.

In case of paper-out during reception the connection is terminated.

The process may be repeated if 'N' is pressed; the modem set-up mode is left if 'Y' is pressed.

The answer back of the modem is generated by combining the 5-digit call code or MMSI number, the abbreviated ID and an "x" e.g.:

12345 abcd x
or
123456789 abcd x

Installation and Initial Set-up

Printer

The terminal uses an OKI Microline 280 parallel interface dot-matrix printer with roll paper stand, please refer to the operation guide delivered with the printer. The printer should be connected to the printer socket at the rear of the control unit by means of the parallel interface cable included with the printer. The printer is equipped with a special firmware which allows the paper to be scrolled up so the current line can be read in printing pauses, and scrolled back down when printing continues. The firmware version can be checked by performing a selftest: Disconnect the parallel interface cable. Press the LF button (line-feed) while switching the printer on. When light comes on in the indicator lamps, release the LF button. The printer version is now printed followed by a test print-out. The version must be: F/W 01.01 S33-67-7145.

Keyboard

The keyboard is a Cherry 1800 PC/AT compatible keyboard. The self-adhesive keyboard template delivered with the equipment must be mounted on the keyboard: Remove the protective paper. Carefully place the template around the function keys and indicator lamps so the latter are fully visible.

Modem Set-up

Modem set-up mode is selected automatically when turning the GMDSS telex on if no call codes are valid or if the abbreviated ID is not valid. To change a valid set-up, a factory resetting of the modem must be performed.

The 5-digit call code, the MMSI number and the abbreviated ID allocated to the station may then be entered in turn. To leave a setting unchanged just press '↵ Enter'. Otherwise key in a new setting and press '↵ Enter'. The next item is then printed. After the last item follows:

Accept settings (Y/N) ?

Example of FEC Transmission

Assuming the GMDSS telex terminal is in Standby and the radio is set up to telex mode and to the desired frequencies following a DSC Distress alert call, proceed as follows:

Press *Call FEC*. The printer responds by printing:
Broadcast FEC or Selective FEC (B/S)?

Press the 'B' key. The printer responds by printing:
Broadcast FEC call 1997-10-05 12:30:23, Tx 2174.5 kHz

The transmission starts, the 'Tx' keyboard indicator starts flashing and the control unit display indicates that the transmitter is delivering RF output to the aerial. When the phasing sequence (including carriage return, line feed, letter shift) has been transmitted the 'Tx' lamp shines steady light and the printer responds by printing:
>

The communication to follow must be in accordance with the procedures specified for distress traffic and contain:

- the distress signal 'Mayday';
- the words 'this is';
- the 9-digit identity and call sign or other identification of the ship,
- the ship's position if not included in the DSC distress alert;
- the nature of distress;
- any other information which may facilitate the rescue.

The connection is terminated by pressing the *Break* key. After a few seconds transmission stops, the Standby keyboard indicator lamp goes on and the terminal is ready to receive.

Example of ARQ Transmission to a Coast Station

When the GMDSS telex terminal is on, indicated by the 'Standby' keyboard indicator lamp, and the radio is set up to the desired working channel (and, if requested by the coast station, free signal can be heard in the speaker), press the *Call ARQ* key.

The printer responds by printing:
Enter ARQ call code:

Type in the call code, e.g.: 0832

If ok, press carriage return (<- Enter), (otherwise press *Call ARQ* again).

The printer responds by printing:
ARQ 0832 call, 1997-10-05 12:45:10,

The transmission starts, the 'Tx' keyboard indicator lamp starts flashing and the control unit display indicates that the transmitter is delivering RF output to the aerial. When successful connection has been established the 'Tx' keyboard indicator lamp shines steady light and the printer responds by printing:
>

The exchange of answer-backs is initiated by the coast station. The answer-back code of the called station is printed:
0832 AUTOTX DK

followed by a go ahead indication and a traffic direction change:
GA+?

If direct connection with a land telex subscriber is wanted, type:
dirtlx54321+

where 54321 is the telex number of the subscriber. The coast station responds with:
MOM

Dialling follows automatically, and simultaneously the number selected is sent to the ship:
54321

When the connection is ready, the time, answer-back, "via Lyngby Radio" and "MSG+?" is sent:
97-10-5 12:46
54321 ZYXW VIA LYNGBY RADIO
MSG+?

Send own answer-back by pressing the *DE* key:
123456789 abcd x

The message is now transmitted by pressing carriage return (↵ Enter) followed by the message to be transmitted, either typed in directly from the keyboard, or recalled from the text memory by pressing the MESSAGE key:

 this message is typed in directly from the keyboard
 or recalled from the text memory.

Having completed the transmission, the answer-back code of the subscriber is requested by pressing the *WRU* key:

 ☒
 54321 ZYXW

and own answer-back is sent by pressing the *DE* key:
123456789 abcd x

To disconnect the land line type:
kkkk

The coast station responds with:
Time: 97-10-5 12:48
Ship: 123456789 ABCD X
Subscr: 54321
Duration: 1.3
GA+?

A new land line connection may be made or the radio connection terminated by pressing the *Break* key. After the end-of-communication procedure the transmission stops and the 'Tx' keyboard indicator goes off.

**SAILOR RT4822 VHF-DSC
OPERATING PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)



SAILOR RT4822 VHF-DSC Operating Instructions

Distress Calls, see page ii . Contents, see page 1.

DISTRESS Call

Quick DISTRESS Call



1. If off or UNIT OFF: press ON/OFF.



2. Open DISTRESS lid.

3. Press DISTRESS until RELEASE is displayed.

This takes 5 seconds, during which the indicator lamps TX and ALARM will flash



5 - 4 - 3 - 2 - 1 - RELEASE

Press the DISTRESS button
for **5** seconds to transmit
TYPE : Distress
MSG. : Undesignated
Pos : N:05°01E:009°54
Time : 18.12 UTC CANCEL



Waiting for
Distress
Acknowledgment **16**

Retransmit distress
call every 4 minutes CANCEL

Wait
for answer!

(The distress call is auto-
repeated every 3.5-4.5 minutes.)

**NB! DISTRESS is only to be used in case of
an emergency!**

Acknowledgment



Distress
acknowledgment received
FROM: 002191000 VIEW
Tx 1W US CALL ALARM



Read call contents.

4. Press VIEW.

Call contents
first page
Time: 18.22.06 19 Aug 97
TYPE : All station
FROM: 002191000
CAT : Distress
ACK : Call MORE



View next page.

Call contents
second page CONNECT
COMM: Distress ackn
SHIP : 123456789
MSG. : Undesignated
Pos : N:05°01E:009°54 AGAIN



View call again.

Mayday Procedure

5. Press "16".



16 25W
INT
MEM VOL SQ
2 13 06

6. Lift handset.



Press PTT and say:

"MAYDAY"

"This is"

- the 9-digit identity and the call sign or
other identification of the ship,

- The ship's position,

- The nature of distress and
assistance wanted,

- any other information which might
facilitate the rescue.

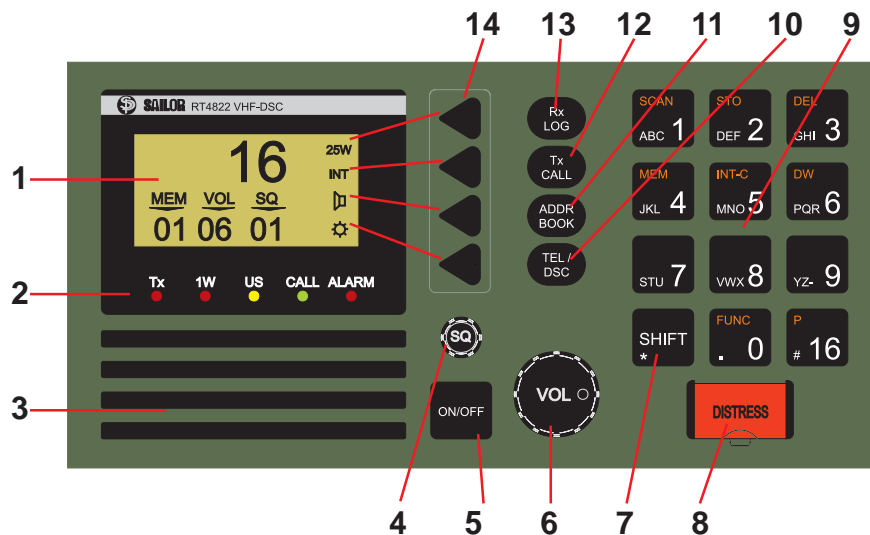
"OVER."

Release PTT and
listen for answer.

Release



What is What?



1. Display.
2. Indicator lamps. Condition when lit:
Tx: Transmitting.
1W: 1 watt transmission mode.
US: US channel system activated.
(For information on the BI version, see page 11)
CALL: DSC (see button 10) call for you received.
ALARM: Alarm call received.
3. Loudspeaker.
4. Squelch control. Adjust to silent when no station is received.
5. ON/OFF push button.
6. Volume control.
7. Shift key. Press and hold for yellow functions.
8. DISTRESS button, protected by shield. To use, lift the shield and press for 3 seconds, guided by the text displayed.
9. Keyboard.
10. TEL/DSC function switch.
In TEL mode radiotelephone parameters are shown and selected.
In DSC mode DSC parameters are shown and selected.
11. Open the ADDR BOOK in DSC mode.
12. Tx CALL: Press to start creating a DSC call.
13. Open the Rx log of received calls in DSC mode.
14. Display keys. The function of each key is described in its respective line on the right side of the display.

Abbreviations Used in this Manual

| | |
|-------|--|
| ADDR | Address |
| ATIS | Automatic Transmitter Identification System |
| BI | Channel mode used when sailing on European rivers (more details on p. 11) |
| DSC | Digital Selective Calling |
| DUP | Duplex |
| DW | Dual Watch |
| GMDSS | Global Maritime Distress and Safety System |
| GPS | Global Positioning System |
| LF | Low Frequency |
| MEM | Memory |
| MMSI | Maritime Mobile Ship Identification |
| MSG | Message |
| PTT | Push-To-Talk |
| RX | Receive(r) |
| SQ | Squelch |
| STN | Station |
| TEL | Telephony |
| TX | Transmit(ter) |
| UTC | Coordinated Universal Time |

Introduction

S. P. Radio A/S

For more than half a century S. P. Radio A/S has been the market leader within maritime radio communication.

Sailor

The communication products and systems of S. P. Radio are recognized under the brand name Sailor. The Sailor name has become a guarantee of reliable and technologically superior radio equipment, ranging from basic VHF units to satellite systems and complete compact GMDSS solutions.

Products

The SAILOR COMPACT 2000 GMDSS is based on the well proven range of Sailor products specifically developed to meet the GMDSS requirements and supported by a world-wide Certified GMDSS service concept, giving several hundred reasons for shipping companies to choose equipment manufactured by S. P. Radio A/S. Today S. P. Radio A/S is recognized as the world's leading supplier of GMDSS solutions.

The SAILOR COMPACT 2000 GMDSS has already been and still is constantly supplied to a large number of the world's leading shipping companies and national naval fleets. It is a complete GMDSS solution which matches communication and safety needs exactly - regardless of whether you operate with A1, A2, A3 or A4. The System 4000 GMDSS sets new standards. It is constructed on the basis of our comprehensive experience developing GMDSS equipment. It satisfies all the relevant requirements regarding safety and efficiency. The System 4000 presents a large number of attractive convenience and safety facilities, either as a complete solution or as a series of stand-alone products.

Sailor has a long history as a satellite communications supplier offering a full programme of satellite systems which includes Mini M, SAT-C and a number of stationary satellite systems. Our SAT-B is a breakthrough in maritime aerial technology and reliability. The SAT-B is the best possible choice when high quality speech transmission, top level security and the capacity to deal with large volumes of telex, fax, data and high-speed data (HSD) transmissions are required.

Training certification

Training of deck officers to meet the requirements within the concept of GMDSS, as to operation of equipment and basic understanding of the systems, is an extremely important factor for the overall successful implementation of GMDSS. As a unique initiative for GMDSS solutions, we can supply a complete software training programme for on-board training, to be used as preparation in order to fulfil the GMDSS requirements for obtaining the General Operation Certificate.

Service

A world-wide Sailor GMDSS certified service concept has been established in order to provide the shipping industry with a highly professional and uniform level of service. The Sailor GMDSS Certified Service Centre concept, which is constantly monitored, ensures that replacement units and spare parts are available at all the Sailor Certified Service Centres around the world. Service centres which are in position along all the major shipping routes. Furthermore the Certified Service Centres ensure that technicians with an annually updated training are ready to provide service 24 hours a day, 365 days a year.

Maintenance

Because of the fact that GMDSS equipment has been installed on board ships in order to meet the SOLAS (Safety of Life At Sea) convention, manufacturers and suppliers of GMDSS equipment have a certain responsibility to secure reliable supplies of equipment and spares in the years to come.

Therefore shipowners operating ships both locally and internationally should be fully aware of the importance of fitting GMDSS solutions which will be fully supported by the manufacturer.

It is a firm policy of S. P. Radio A/S, as the world's major manufacturer and supplier of GMDSS solutions, that for both the present GMDSS solutions and for future, alternative product solutions, all Sailor GMDSS systems will be entering the next century in fully parallel production.

About this Manual

This manual is for the daily user of the system. The manual includes two main sections, "basic" operation and "full" operation. The basic part offers a short easily-read description of the main functions; the full part offers elaborate descriptions of the functions of the product.

Please note

Any responsibility or liability for loss or damage in connection with the use of this product and the accompanying documentation is disclaimed. The information in this manual is furnished for informational use only, is subject to change without notice, may contain errors or inaccuracies, and represents no commitment whatsoever. This agreement is governed by the laws of Denmark.

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VHF Fundamental Info

The VHF Channel System

The VHF radio telephony system uses a limited number of frequencies called channels. The public system has 57 channels, numbered CH 1 to 28 and 60 to 88, each of which has a certain purpose: intership, ship-to-port, or ship-to shore (public). You can have private channels, too. In **US** waters, the channels are different. Therefore you need to set the system to “US” channels there. Other waters like the Rhine have their own different systems, too.

Four channels have special purposes:

- 16: To be used for **verbal distress calls** and for **calling** “all stations” **only**. All large ships are obliged to monitor it constantly. **Never to be used for chatting, etc.!**
- 70: The DSC channel, see below.
- 75-76: Used as Guard Band for distress channel 16.

Verbal VHF Communication

All channels except channel 70 are used for verbal communication.

There are two types of channels, **simplex** and **duplex**:

- On a **simplex** channel, both parties transmit and receive on the same frequency. Therefore you cannot talk and listen at the same time. When you have finished talking, say “over”, and release the handset’s PTT key.
- On a **duplex** channel, you talk and listen on two different frequencies. You can therefore speak and listen at the same time. To save power, release the handset’s PTT key except when talking.

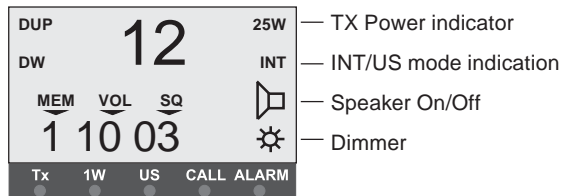
Note that everybody with a VHF receiver can listen to your conversation, but it is forbidden to use or pass on what is heard.

DSC Digital Communication

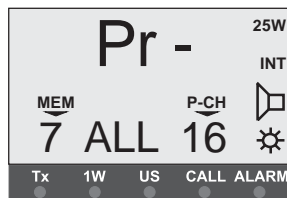
DSC is a digital data transfer system using VHF CH 70. The transmitter waits until the channel is free and then sends its data, either to a designated address, or to “all stations” for example for a DSC distress call. It is mainly used for getting in contact in order to establish verbal communication.

Telephony display

Normal display



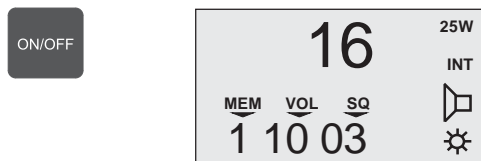
Scanning display



Basic Operation

Switching ON/OFF

1. Press the ON/OFF button.

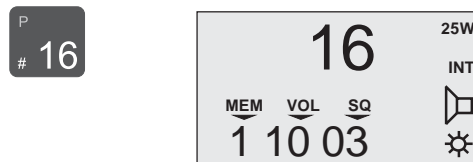


In **UNIT OFF** mode, the VHF set is remote controlled.
To activate the panel, press ON/OFF.

Listening for Telephony Calls

According to international rules, all ships shall monitor channel 16 constantly:

1. Select channel 16 by pressing:



2. Set the squelch level by means of the button



- a. Step down squelch level until noise is heard on free channel.
- b. Then step up to the first level where just silent.

(To listen for calls on other channels, select the channel number or use the scanning facility.)

Basic Telephony Operation

To activate the VHF functions if not active press the key TEL/DSC or the key "16".



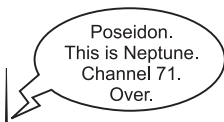
Receiving a Telephony Call

When a call comes in and your call name is heard in the loud-speaker:

1. Hook off the handset.
2. Press the PTT key on the handset.



3. To answer the call, say:
“<The name of the calling station>
This is <Your station name>”



4. To suggest channel, say:
“Channel” <suggested channel number>”

5. Say “over” and release the PTT key to let the caller accept the proposed channel number.



6. Switch to the channel agreed upon (for example channel 71) and communicate:



Press the PTT key when talking only. If on a simplex channel, say “over” every time you have completed talking.

Making a Telephony Call

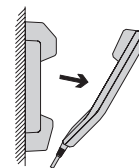
In telephony mode:



1. Select channel 16 or another channel specified or agreed upon:



2. Hook off the handset.

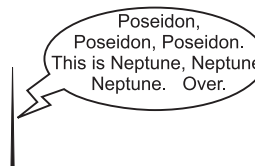


3. When speaking, press the handset PTT key.



Make the call:

1. <Called station name (3 times)>
2. “This is “
<Your station name (3 times)>
3. “Over”



4. Release the PTT key to listen.



5. When answered, agree upon a channel, switch to the channel (for example channel 6) and communicate.



Press the PTT key when talking only. If on a simplex channel, say “over” every time you have completed talking.

Channel Control

Setting the VHF channel can be done in two ways by means of the numeric input keys or by using the quick select key "16":

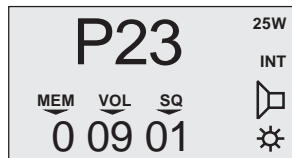
Numeric keys:

Press the numeric input keys until the desired channel number is shown on the display:



If private channels are available in your VHF system, a private channel number is selected by pushing the buttons:

Ex: Private channel 23



Quick select key:

Press the key



Squelch Control

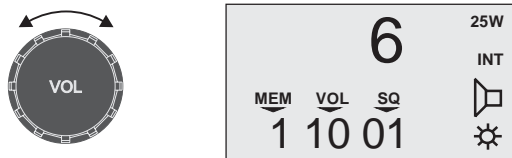
Set the squelch sensitivity of the receiver by the button



The squelch setting is shown on the display below the "SQ" symbol.

Setting the Volume Level

To change the volume setting use



The volume setting is shown on the display below "VOL".

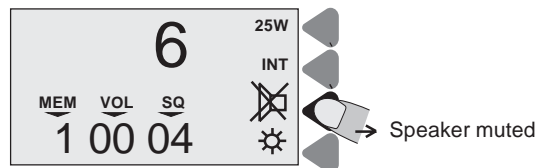
Muting the Speaker

If the speaker is active, it is automatically muted when the PTT is pressed, and then reactivated when the PTT is released.

The speaker icon on the display shows the speaker state.

Speaker active:

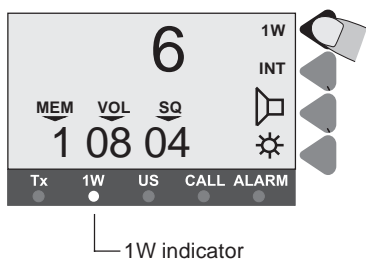
To mute or unmute the speaker, press the soft key



Setting Transmitter Power Level

The VHF set can control the transmitter power level, which can be set to either 1W or 25W.

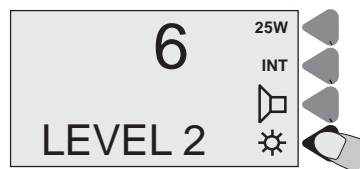
Low power 1W is indicated by the indicator lamp on the display. Some channels may be programmed to operate at 1W level only. To change the TX power level press the soft key.



Dimmer Function

The VHF set features display backlight, keyboard backlight and light in the indicator lamps (TX, 1W, US, CALL and ALARM). The light can be set in four steps 0-3.

To change the dimmer level press the soft key

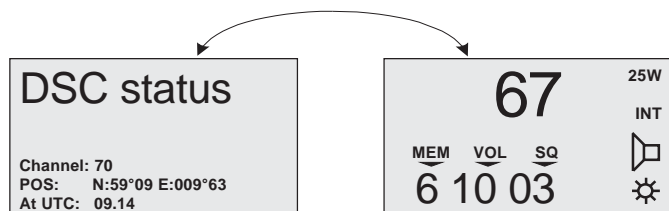


When the key is being pressed the dimmer level will change every second.

Basic DSC Operation

DSC Main Buttons

To switch between the TEL and DSC screens, press TEL/DSC.



DSC status display or previously used DSC display

Telephony Display



The **Rx LOG** button opens the screen menu where all DSC calls are stored, for up to 48 hours. In this menu CALLS or ALARM CALLS can be read separately and sorted according to time of reception.



The **Tx CALL** button opens the DSC transmitter menu. From here it is possible to make simple calls (SHORE, SHIP, ALL SHIP) and more complicated calls including special category and telecommands. (EXTENDED)



The **ADDR BOOK** button opens the address book menu. An ADDR BOOK call is a complete DSC call incl. a name. It is possible to transmit, add or delete calls from here.



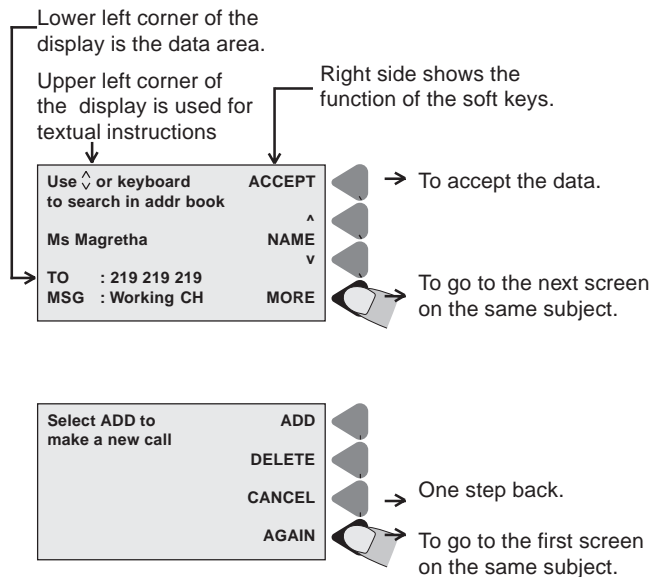
The **TEL / DSC** button switches between the TEL and the DSC screen.

DSC Display Operation

Featuring a self-explanatory menu-driven system, the display guides the user by textual instructions. Also, the function of each soft key placed to the right of the display is shown.



Opens the address book menu.



Calling a SHIP

Press TX CALL

Tx
CALL

| | |
|----------------------|-----------|
| Select type of call: | SHORE |
| | SHIP |
| | LAST CALL |
| | MORE |



To select a SHIP call.

| | | |
|---------------|----------------|--------------|
| SCAN ABC 1 | STO DEF 2 | DEL GHI 3 |
| MEM JKL 4 | INT-C MNO 5 | DW PQR 6 |
| STU 7 | VWX 8 | YZ 9 |
| FUNC . 0 | | |

Key in the nine digit MMSI number of the wanted ship.

| | |
|-------------------------------------|--------|
| Key in the ship station MMSI number | ACCEPT |
| < | |
| DIRECTORY | |
| TYPE : Individual | |
| TO : 219000016 | CANCEL |



To accept the number.

→ A submenu where a pre-programmed ship can be selected.

A free international ship channel is suggested.

| | |
|----------------------------|--------|
| Key in the working channel | ACCEPT |
| | |
| TYPE : Individual | |
| TO : 219000016 | |
| AD : Working CH 08 | CANCEL |



To accept the channel.

| | |
|-------------------------|--------|
| Select send to transmit | SEND |
| TYPE : Individual | |
| TO : 219000016 | |
| AD : Working CH 8 | |
| ACKN : Request | CANCEL |



To transmit the call

You see the flashing messages "Call in progress" and "Waiting for acknowledgment"

Wait for answer

Receiving an Individual Call

When switched on, your VHF set is constantly monitoring channel 70 for incoming DSC calls.

| | |
|---|------|
| Lift HANDSET TO CONNECT | |
| Individual acknowledgment received | |
| FROM:219000016 | VIEW |
| Tx 1W US CALL ALARM | |



Lift the handset to connect to the caller.

or



Press VIEW to read out the call.

| | |
|---------------------------|------|
| Call contents | |
| First page | |
| Time : 12:26:47 16 Sep 97 | |
| TYPE : Individual | |
| FROM : 219000016 | |
| CAT : Routine | |
| ACKN : Reply | MORE |



To view the second part of call.

| | |
|-------------------|---------|
| Call contents | CONNECT |
| Second page | |
| COMM: Simplex | |
| TEL2. : No info | |
| AD : Working CH 8 | CANCEL |
| | AGAIN |



To change to telephony mode and set channel.

| | |
|------------|-----|
| 8 | 25W |
| MEM VOL SQ | INT |
| 2 13 07 | 📢 |
| | ⚙️ |

Lift handset and start talking.

Calling a SHORE Station

Press TX CALL



| | | |
|----------------------|--------------|-------------------------|
| Select type of call: | SHORE | To select a SHORE call. |
| | SHIP | |
| | ALL STATIONS | |
| | MORE | |

| | | |
|---------------|----------------|--------------|
| SCAN ABC 1 | STO DEF 2 | DEL GHI 3 |
| MEM JKL 4 | INT-C MNO 5 | DW PQR 6 |
| STU 7 | VWX 8 | YZ- 9 |
| FUNC 0 | | |

Key in the nine digit MMSI number of the coast station.

| | | | |
|--------------------------------------|-----------|-----------------------|---|
| Key in the coast station MMSI number | ACCEPT | To accept the number. | |
| | < | | |
| | DIRECTORY | | A submenu where a pre-programmed coast station can be selected. |
| | CANCEL | | |
| TYPE : Individual TO : 002191000 | | | |

| | | | |
|--|---------|--|-----------------------------|
| Key in the phone number | ACCEPT | To make an automatic phone station call. | |
| | < | | |
| | WITHOUT | | To delete the phone number. |
| | CANCEL | | |
| TYPE : Phone call TO : Lyngby Radio 98180809 | | | |

| | | |
|--|--------|-----------------------|
| Select send to transmit | SEND | To transmit the call. |
| | < | |
| | CANCEL | |
| | CANCEL | |
| TYPE : Individual TO : Lyngby Radio AD : No info ACKN : Request | | |

The messages "Call in progress" and "Waiting for acknowledgment" will flash.

Wait for answer.

Calling a PHONE NUMBER Directly

Press TX CALL



| | | |
|----------------------|--------------|-------------------------|
| Select type of call: | SHORE | To select a SHORE call. |
| | SHIP | |
| | ALL STATIONS | |
| | MORE | |

| | | | |
|--------------------------------------|-----------|-----------------------|---|
| Key in the coast station MMSI number | ACCEPT | To accept the number. | |
| | < | | |
| | DIRECTORY | | A submenu where a pre-programmed coast station can be selected. |
| | CANCEL | | |
| TYPE : Individual TO : 002191000 | | | |

| | | |
|---------------|----------------|--------------|
| SCAN ABC 1 | STO DEF 2 | DEL GHI 3 |
| MEM JKL 4 | INT-C MNO 5 | DW PQR 6 |
| STU 7 | VWX 8 | YZ- 9 |
| FUNC 0 | | |

Key in the phone number.

| | | |
|--|---------|-----------------------|
| Key in the phone number | ACCEPT | To accept the number. |
| | < | |
| | WITHOUT | |
| | CANCEL | |
| TYPE : Phone call TO : Lyngby Radio 98180809 | | |

| | | |
|--|--------|-----------------------|
| Select send to transmit | ACCEPT | To transmit the call. |
| | < | |
| | CANCEL | |
| | CANCEL | |
| TYPE : Phone call TO : Lyngby Radio TEL : 98180809 ACKN : Request | | |

The messages "Call in progress" and "Waiting for acknowledgment" will flash.

Wait for answer.

The ADDR BOOK

Press ADDR BOOK to open the address book menu.

ADDR
BOOK

| | | | |
|--|--------|--|---|
| Use \uparrow or keyboard to search in addr book | ACCEPT | | To accept the call, and go to the SEND menu. |
| Ms Magretha | NAME | | |
| TO : 219 219 219 | | | |
| MSG : Working CH 6 | MORE | | To go to the next page. |

| | | | |
|----------------------------------|--------|--|--|
| Select ADD to make a new call | ADD | | To store a new call in address book register. |
| | DELETE | | To delete calls. |
| | CANCEL | | To return to telephony operation. |
| | AGAIN | | |

The Rx LOG

Press RX LOG

Rx
LOG

| | | | |
|-----------------------------------|-------------|--|-------------------------|
| Select type of message to view | CALLS | | To view ordinary calls. |
| | ALARM CALLS | | To view alarm calls. |
| | CANCEL | | |

ALARM CALLS buffer contains:

Distress calls, distress acknowledgment, distress relay, and calls of category distress and urgency.

CALLS buffer contains:

All other types of calls

| | | | |
|--------------------------|------|--|---------------------------|
| Call contents | | | |
| first page | | | |
| TIME : 8:57:52 19 Aug 97 | MSG | | To scroll in the buffer. |
| TYPE : Individual | | | |
| FROM : 219000330 | MORE | | To go to the next screen. |
| CAT : Routine | | | |
| ACKN : Request | | | |

| | | | |
|---------------------------------|---------|--|--------------------------------------|
| Select CONNECT to reply call | CONNECT | | To reply to call and set channel. |
| COMM : Simplex | CHANGE | | To change reply. |
| TEL2 : No info | CANCEL | | |
| AD : Working CH 8 | AGAIN | | To view first page again. |

Full Operation

Full VHF Telephony Operation

Setting Channel Mode

Some VHF radios offer a choice between two sets of channels, called channel modes. If your VHF features two modes, you can either switch between international/US channels, or between international/BI channels.

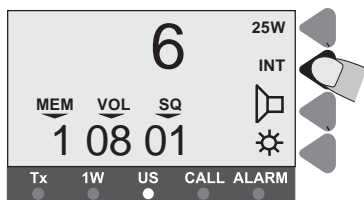
International mode is used when sailing on any sea in the world, except in US waters.

US mode is used when sailing in US waters.

BI mode is used when sailing on the rivers of Europe.

Setting International/US Channel Mode

If your VHF features the choice of international/US mode, switching between those two sets of channels is done by pressing the soft key:

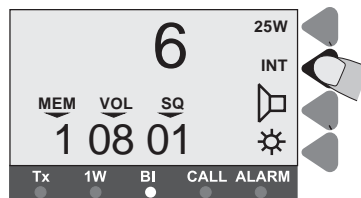


Channel mode indication

When US mode is selected, the yellow US indicator lamp is lit. Otherwise, the radio is in international mode.

Setting International/BI Channel Mode

If your VHF features the choice of international/BI mode, switching between those two sets of channels is done by pressing the soft key:



Channel mode indication

When BI mode is selected, the yellow BI indicator lamp is lit. Otherwise, the radio is in international mode.

When BI mode is selected, ATIS is activated automatically.

25W Transmitter Power Level

NB! For US channels 13 and 67.

If the VHF is programmed with the set of US channels, some of those channels are specified to be used only with the limited transmitter power level of 1W. This means that the TX power level cannot be changed to 25W as described.

However, it is still possible to set the TX power level to 25W by using:



When the key has been pushed for 1 second the TX power level will change if allowed.

Setting Memory Scan Table

The VHF 4000 system has eight independent sets of memory tables to save channels for making scanning sessions. Each memory table may contain all channels available in the system.

To distinguish between the tables, each table has a number (0-7) and to each number can be attached a name of maximum seven characters.

To attach a name to a scan table, enter the function menu.

The scan table number selected is shown in the left corner of the display.



Pre-programmed memory tables for scanning of channels:

Table 6: Channels for intership communication.

Table 7: All channels in system.

It is recommended not to alter the pre-programmed channels in scanning tables 6 and 7. These scanning tables are used to search for channels for intership DSC communication, and altering the channels may exclude you from performing intership communication on certain channels.

Setting the selected scan table:

To set the selected scan table to be number 0:

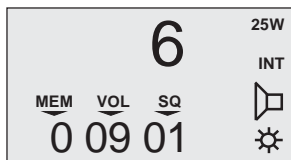
1. Press  



The VHF set display shows the message "SEL"ect and the MEM symbol. The lower part of the display shows the scan table's number and name.

2. Press 

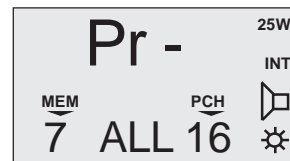
The VHF display now shows the new scan table number 0.



Scanning of Channels

To start scanning:

Press  



The lower part of the display shows from left to right: scan table number, scan table name and priority channel of scan table.

If scan table contains no channels, no scanning will be started, and the display will show the following message:



To stop scanning:

Scanning in progress can be terminated in the following ways:

1. Press  

The system resumes normal VHF operation on the channel selected before the scanning session was initiated.

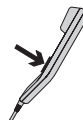
2. Press 

The system resumes normal VHF operation on quick select channel 16.

3. Hook off the handset.

The system resumes normal VHF operation on the channel selected before the scanning session was initiated.

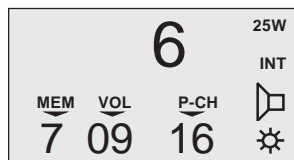
4. Push the PTT



If no signal has been detected on any channel, the system resumes normal VHF operation on the channel selected before the scanning session was initiated. If a signal has been detected on a channel, the system resumes normal VHF on the last channel where signal was detected.

If scanning is in progress and a signal is detected on eg. channel 6, the display changes to show the selected channel number and volume level.

When a priority scanning is in progress, channel 16 is scanned once for every channel scanned in the scan table. Channel 16 cannot be deleted or excluded while a scanning is in progress.



To add a channel to a scan table:

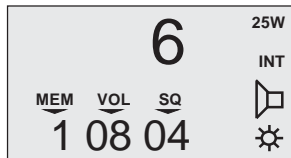
Select channel number (shown on the display), and then press



Ex: To add channel 6 to scan table number 1:



Channel 6 is selected.



The message “stores channel” is shown for two seconds.



To delete a channel from a scan table:

Select channel number (shown on the display), and then



Ex: To delete channel 6 from scan table number 1:



Channel 6 is selected.



The message “delete channel” is shown for one second.



Then the display will show the next channel in the scan table.



If there are no more channels in the scan table and deletion is attempted, the display will show the message “mem empty”.



To view contents of channels in a scan table:

Viewing which channels a specific scan table contains, can be done in two ways:

While key is being pressed down, the VHF display will step through the channels of the scan table selected.

1. Press  , the latter for 1 second.

OR

2. Press  , the latter for 1 second.



Dual Watch

The VHF set may perform a dual watch of channels, a priority channel and the selected channel being monitored simultaneously.

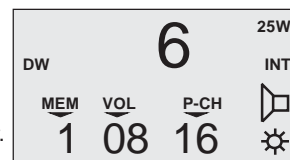
To start a dual watch of channel 6 and priority channel 16:

Select channel 6.

Then press



When a dual watch is in progress, "DW" appears on the display and the priority channel is shown in the lower right corner of the display.

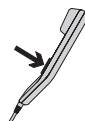


To stop a dual watch: When a dual watch is in progress it can be terminated in three ways.

1. Press  



2. Push PTT



The system resumes VHF on the selected channel 6 and starts transmitting.

3. Push 



The system resumes VHF on the quick select channel (normally 16).

Intercom

If your VHF system has more than one control unit, it is possible to carry out an intercom between two control units.

When the intercom feature is used the VHF will perform as follows:

Initiating an intercom from the VHF set to another control unit:

To call another control unit:

1. Press  



IC
SELECT NO

This display indicates that the unit expects an input of the location number to be called.

2. Press a numeric key to choose location to be called



Ex: 

3. If location 2 is NOT available, the display shows

and no dialling is carried out.



IC2
NOT AVAIL

If location 2 is available the display shows

and a ringing tone is heard in the speaker/earpiece.



IC2
CALLING

This indicates that a dial-up is in progress to the control unit with location number 2. The lower part of the display now toggles the message CALLING and the NAME of the called control unit. During the dialling time of 30 seconds it is possible to hook off the handset and speak into the microphone. As LF is activated in the called control unit during dialling, the receiver of the call can hear you in the speaker without hooking off. This makes it possible to use the VHF system as a sort of paging system.

4. If the intercom attempt is answered:

When the receiver of the call hooks off his handset, the intercom is established.



If the intercom attempt is not answered within 30 seconds, the unit automatically hangs up and reenters normal VHF operation.



Receiving an intercom attempt from another control unit:

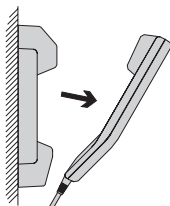
When an intercom is attempted from another control unit, the following will happen (the caller has location number 3).

1. Receiving an intercom

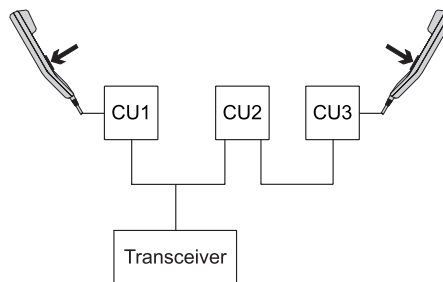
The display toggles CALLING and the NAME of the caller. A ringing tone is heard in the speaker.



2. To answer the intercom, hook off handset.



The intercom connection is now established; to communicate, simply press PTT and speak into the microphone.



During intercom the unit is able to:

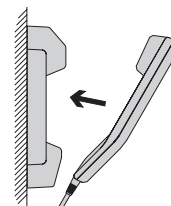
1. Adjust volume level
2. Mute/unmute speaker
3. Adjust squelch level
4. Adjust dimmer level

Terminating an intercom session:

The intercom connection can be terminated by either of the control units.

To end an intercom:

1. Place handset on hook.
The VHF set resumes in VHF mode.



2. Key  

The VHF set resumes in VHF mode.

3. Key 

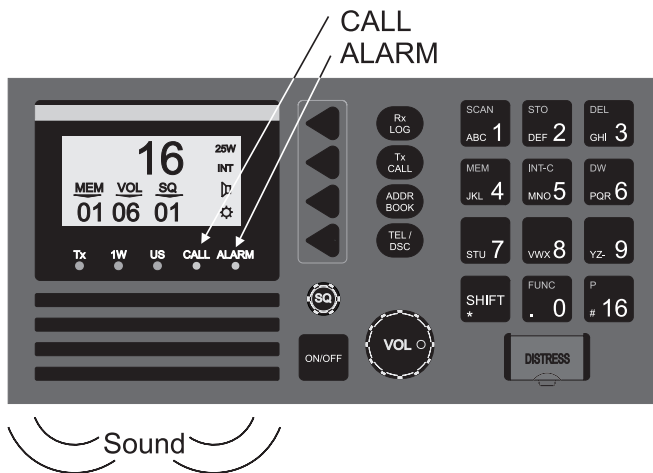
The VHF set resumes in VHF mode selecting channel 16.

Full DSC Operation

Receiving DSC Calls

When a DSC call is received, the user will be advised by the unit. This is done in different ways, depending on the type of DSC call and the unit operation mode:

Sound,
CALL indicator lamp or
CALL and ALARM indicator lamps.



Furthermore the unit does as follows:

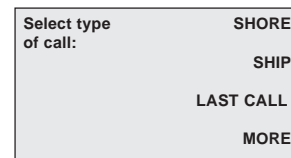
1. If on hook:

A. If VHF mode active:



The unit automatically changes to DSC mode.


B. If DSC mode or function menu active, the unit continues the function in progress.



2. If hooked off:

A. If VHF mode active:


The unit continues in VHF mode, for your VHF control.

Press  to view the limited call contents as in 1 A.

B. If DSC mode or function menu active:

The unit continues the function in progress.

In all cases, to view all DSC call contents:

Press  and view all call contents by entering the RX LOG menu.

TX CALL Menu

An extended DSC call makes it possible for you to control the call completely within international rules, including the possibility of sending data or fax from optional equipment connected to your VHF set.

To start an extended call, select EXTENDED as the "Type of call" in the TX menu below, and then continue in the extended calls menu on next page.

Press TX CALL



| | | |
|----------------------|-----------|---------------------------|
| Select type of call: | SHORE | → To return to last call. |
| | SHIP | |
| | LAST CALL | |
| | MORE | |

| | | |
|----------------------|-----------|------------------------------|
| Select type of call: | ALL SHIPS | → All ships safety call. |
| | DISTRESS | → To complete distress call. |
| | EXTENDED | → Extended calls. |
| | MORE | |

| | | |
|------------------------------|------------|--|
| Select type of extended call | INDIVIDUAL | To go to the second page in EXTENDED menu. |
| | GROUP | |
| | G.AREA | |
| | MORE | |
| TYPE: | | |

| | |
|------------------------------|----------------|
| Select type of extended call | ALL SHIPS |
| | DISTRESS RELAY |
| | CANCEL |
| | AGAIN |
| TYPE: | |

TX CALL menu. Enter correct data instead of examples:

| Type of call | Address | Options | Other data transmitted | Add. MSG. | Ackn. |
|--------------|-----------------------------------|--|--|---------------|-------|
| SHORE | Shore: 001234567 | No info: Call shore station | Routine - Simplex | No info | Yes |
| | Shore -->Phone: or from ADDR.BOOK | 98765432: Call Phone No. | Routine - Simplex - <Phone number> | No info | Yes |
| SHIP | 123456789 | (none) | Routine - Simplex - No Info | Working ch xx | Yes |
| LAST CALL | Repeat the last call made. | | | | |
| ALL SHIPS | All ships | (none) | Safety - Simplex - No Info | Working ch xx | No |
| DISTRESS | | COLLISION SINKING PIRACY UNDESIGNATED GROUNDING MAN OVER BOARD ABANDONING SHIP FLOODING FIRE LISTING (CAPSIZING) DISABLED AND ADRIFT | Position UTC time for position ... to be entered manually if not obtained from e.g. a GPS. | | No |
| EXTENDED | (See next page) | | | | |
| VTS CALL | (Reserved for future use) | | | | |

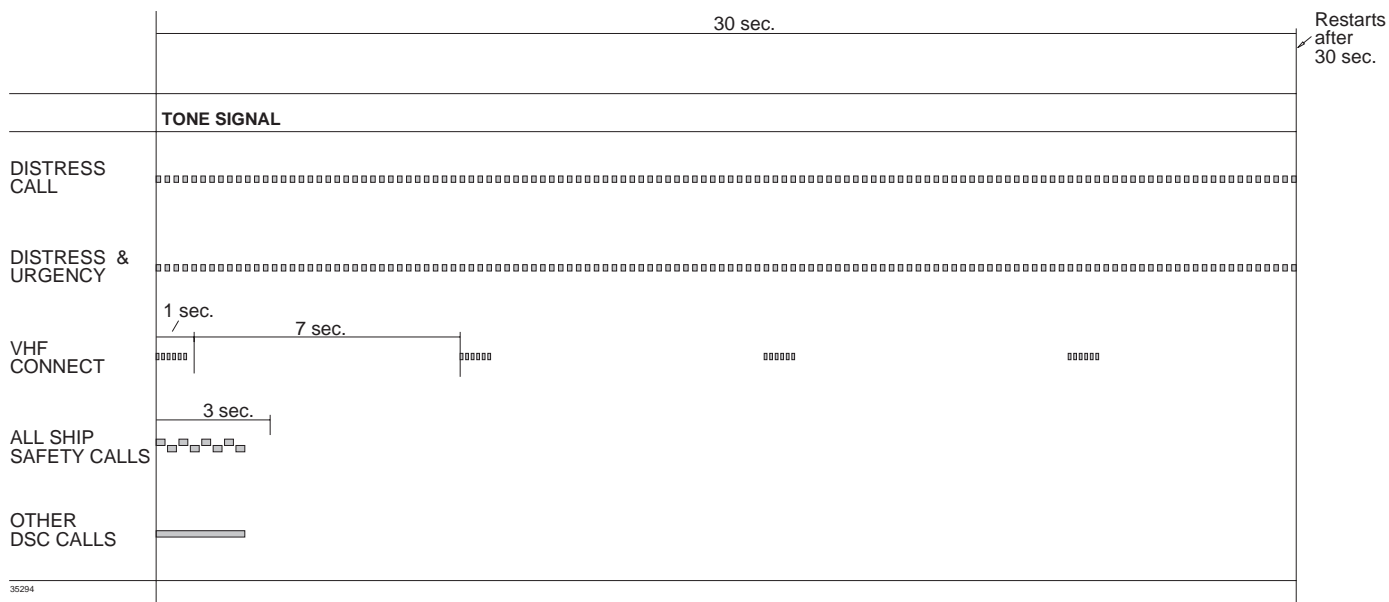
EXTENDED TX call started from "EXTENDED" in the table on the previous page. Enter correct data instead of examples:

| Type of call | Address | | Options | | Category | Telecom 1 | Telecom 2 | Add. MSG. | Ackn. |
|------------------|---|-----------|------------------|------------------------|----------|------------------|---------------------------------------|-----------|-------|
| INDIVIDUAL Phone | 001234567 | | Phone number | | Routine | Simplex | No info | No info | Yes |
| Shore: | 001234567 | | | | | SIMPLEX | No info | | |
| Ship: | 123456789 | | | | | POLLING | MEDICAL | | |
| GROUP | 012345678 | | | | | POSITION | NEUTRAL | | |
| G.AREA | N:57° d02° W:009° d03° | | | | | NO INFO | No info | | |
| | The data in the example gives the area: N:57..55° W:9..6° | | | | | FAX | | | |
| | | | | | | ARQ | | | |
| | | | | | | DATA | No info | | |
| | | | | | | ROUTINE | V.21 | | |
| | | | | | | URGENCY | V.22 | | |
| | | | | | | DISTRESS | V.22 bis | | |
| | | | | | | SAFETY | V.23 | | |
| | | | | | | BUSINESS | V.26 bis | | |
| | | | | | | | V.26 ter | | |
| | | | | | | | V.27 ter | | |
| | | | | | | | V.32 | No info | Yes |
| | | | | | | Unable to comply | No reason | Position | No |
| | | | | | | | Congestion | Working | |
| | | | | | | | Busy | ch xx | |
| | | | | | | | Queue | | |
| | | | | | | | Station barred | | |
| | | | | | | | No operator | | |
| | | | | | | | Temporarily engaged | | |
| | | | | | | | Equipment disabled | | |
| | | | | | | | Bad channel | | |
| | | | | | | | Bad mode | | |
| | | | | | | | No info | | |
| ALL SHIPS | | | | | DISTRESS | Simplex | No info | Working | No |
| | | | | | URGENCY | No info | | ch xx | |
| | | | | | SAFETY | FAX | | | |
| | | | | | | ARQ | | | |
| | | | | | | DATA | As for DATA above | | |
| DISTRESS RELAY | Type of address | Address | Ship in distress | Distressed ship's MMSI | Distress | | As for DISTRESS in table Tx Call menu | Position | |
| | ALL SHIPS | All ships | UNKNOWN | | | | | | |
| | INDIVIDUAL | 001234567 | KNOWN | 123456789 | | | | | |

MMSI address rule:

Shore station numbers start with 00, group numbers start with 0, ship numbers start with a digit 1-9.

Tone signalling when receiving DSC Calls



The tone signalling sequence is repeated every 30 seconds or until the DSC call is either read or answered. When handset is hooked off, there is a short tone every 30 seconds until call is read.

Please note that if the radio receive a distress call when the speaker volume is less than 10, the volume will be 10 until you change it back again.

Function Menu

Changing a Function

There are a large number of function settings available, selectable from a functions tree, see next page. This chapter only deals with the principles of how to use the functions tree.

Example used: Changing the display contrast.

Press SHIFT and FUNC to enter function menu.



| | | | |
|--------------------------------------|-----------|--|------------------------------|
| Select function or group of settings | USER | | To select the USER function. |
| | TELEPHONY | | |
| | DSC | | |
| | MORE | | |

| | | | |
|---------------------------------------|---------|--|---------------------------|
| Select type of general user functions | DISPLAY | | To open display settings. |
| | SOUND | | |
| | VERSION | | |
| | MORE | | |

| | | | |
|---------------------------------|-----------|--|------------------------|
| Select type of display settings | CONTRAST | | To open contrast menu. |
| | BACKLIGHT | | |
| | MODE | | |
| | AGAIN | | |

| | | | |
|----------------------|--------------|--------|---|
| Use to change value | ACCEPT | | ACCEPT stores the selected value in memory. |
| | ^ | | ^ To change contrast value (up = darker) v To change contrast value (down = lighter) |
| | v | | |
| | Contrast : 4 | CANCEL | |

Functions Tree

| Menu | Submenu Level 1 | Submenu Level 2 | Parameters |
|---------------|-----------------|--------------------------------------|--|
| USER | DISPLAY | CONTRAST | 0 to 7. High contrast = 7. |
| | | BACKLIGHT | Settings for each of the "Level 0..3" backlight levels on the TEL display. Display: Backlight (0..7, no light = 0) Keyboard: Backlight. ON/OFF. |
| | | MODE | Dimmer mode: To minimum / To centre, To maximum. |
| | SOUND | EARPIECE | EARPIECE level : 0 to 15. |
| | | ALARM | Loudspeaker ALARM level: 0 to 15. |
| | | SPEAKER | Selects if the loudspeaker is to be active with handset OFF. |
| | VERSION | | Software version. Your apparatus' serial number. |
| | PRINT SETUP | | Printer: ON/OFF / Codes. Paper width: 80 or 24 char. |
| | LANGUAGE | The languages selectable | Selects the language of the display texts. Only active if allowed. |
| TELEPHONY | CHANNELS | | Read out VHF channel information |
| | SCANNER | | Setup/edit name of scan tables |
| | ATIS | | Your station's ATIS number |
| DSC | MMSI | | Your station's MMSI number. |
| | POSITION * | | Automatic if connected to a GPS or equiv., otherwise enter here. |
| | TIME | CHANGE Displays time and date | Automatic if connected to a GPS or equiv., otherwise set here. Local time zone: -12 to + 12 (-12 to +12). Time hh mm ss: (0-23:59:59h). Date: dd-mm-yy. |
| | TEST | | DSC TEST CALLS |
| | AUTO ACKN | | Auto acknowledgment on request: ON/OFF. With position data: ON/OFF. |
| | DIRECTORY | ADD | |
| DELETE | | | Deletes an entry. |
| VIEW | | | Views the contents of the DIRECTORY. |
| Key in "9876" | UNIT | LOCATION | 1 to 7 unique number of control unit. |
| | | NAME | Unit name, e.g. "BRIDGE". |
| | | SPEAKER | Must be set to 1. Not to be changed for future use. |

*) Note: If time of position is different from current time:
 1. Select 'Time' and key in the time of position.
 2. Select 'Position' and key in the position.

VHF System Description

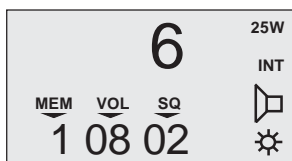
To the VHF system can be connected up to 7 control units. Each control unit has a unique location (1-7). If a control unit wants to control the transceiver, it has to be master of the system. The following describes the display read-outs shown in connection with different system priorities of the control units:

The control unit assigned location number 1 has the highest priority in the VHF system and is able to become master of the system at any time needed.

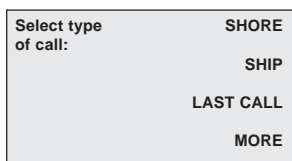
When more control units are connected to the VHF system, the main control unit has to be assigned location number 1.

When the system is free:

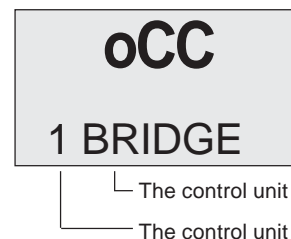
If a control unit is in VHF mode, it shows the VHF display.



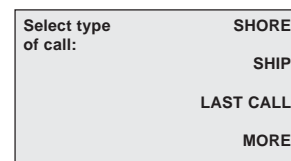
If a control unit in DSC mode or the function menu is active, the display shows the menu item.



When a control unit is master of the system, the other control units, if in VHF mode, show the following display to indicate that the transceiver is in use by another control unit:



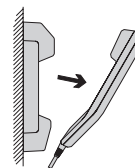
If the other control units are in DSC mode or the function menu is active, the display will show the menu item as usual.



Getting the MASTER priority in the system:

To operate the transmitter, the control unit has to be master of the system. To become master of the system, simply hook off the handset.

When the control unit becomes master of the system, the display will not change.



If the control unit does not become master of the system and it is operated in VHF mode, the display will show the message:



If the system is occupied by another control unit, hang up and wait for the system to become free.

International Channels

| Channels | TX MHz | RX MHz | SIMPLEX | | DUPLEX | |
|----------|-----------|-----------|----------------------|------|--------|--------|
| | | | Intership | Port | Port | Public |
| 1 | 156,050 | 160,650 | | | ● | ● |
| 2 | 156,100 | 160,700 | | | ● | ● |
| 3 | 156,150 | 160,750 | | | ● | ● |
| 4 | 156,200 | 160,800 | | | ● | ● |
| 5 | 156,250 | 160,850 | | | ● | ● |
| 6 | 156,300 | 156,300 | ● | | | |
| 7 | 156,350 | 160,950 | | | ● | ● |
| 8 | 156,400 | 156,400 | ● | | | |
| 9 | 156,450 | 156,450 | ● | ● | | |
| 10 | 156,500 | 156,500 | ● | ● | | |
| 11 | 156,550 | 156,550 | | ● | | |
| 12 | 156,600 | 156,600 | | ● | | |
| 13 | 156,650 | 156,650 | ● | ● | | |
| 14 | 156,700 | 156,700 | | ● | | |
| 15 | 156,750 | 156,750 | ● | ● | | |
| 16 | 156,800 | 156,800 | Distress and calling | | | |
| 17 | 156,850 | 156,850 | ● | ● | | |
| 18 | 156,900 | 161,500 | | | ● | ● |
| 19 | 156,950 | 161,550 | | | ● | ● |
| 20 | 157,000 | 161,600 | | | ● | ● |
| 21 | 157,050 | 161,650 | | | ● | ● |
| 22 | 157,100 | 161,700 | | | ● | ● |
| 23 | 157,150 | 161,750 | | | ● | ● |
| 24 | 157,200 | 161,800 | | | ● | ● |
| 25 | 157,250 | 161,850 | | | ● | ● |
| 26 | 157,300 | 161,900 | | | ● | ● |
| 27 | 157,350 | 161,950 | | | ● | ● |
| 28 | 157,400 | 162,000 | | | ● | ● |

| Channels | TX MHz | RX MHz | SIMPLEX | | DUPLEX | |
|----------|-----------|-----------|-----------|------|--------|--------|
| | | | Intership | Port | Port | Public |
| 60 | 156,025 | 160,625 | | | ● | ● |
| 61 | 156,075 | 160,675 | | | ● | ● |
| 62 | 156,125 | 160,725 | | | ● | ● |
| 63 | 156,175 | 160,775 | | | ● | ● |
| 64 | 156,225 | 160,825 | | | ● | ● |
| 65 | 156,275 | 160,875 | | | ● | ● |
| 66 | 156,325 | 160,925 | | | ● | ● |
| 67 | 156,375 | 156,375 | ● | ● | | |
| 68 | 156,425 | 156,425 | | ● | | |
| 69 | 156,475 | 156,475 | ● | ● | | |
| 70 | 156,525 | 156,525 | DSC | DSC | | |
| 71 | 156,575 | 156,575 | | ● | | |
| 72 | 156,625 | 156,625 | ● | | | |
| 73 | 156,675 | 156,675 | ● | ● | | |
| 74 | 156,725 | 156,725 | | ● | | |
| 75 | 156,775 | 156,775 | | ● L) | | |
| 76 | 156,825 | 156,825 | | ● L) | | |
| 77 | 156,875 | 156,875 | ● | | | |
| 78 | 156,925 | 161,525 | | | ● | ● |
| 79 | 156,975 | 161,575 | | | ● | ● |
| 80 | 157,025 | 161,625 | | | ● | ● |
| 81 | 157,075 | 161,675 | | | ● | ● |
| 82 | 157,125 | 161,725 | | | ● | ● |
| 83 | 157,175 | 161,775 | | | ● | ● |
| 84 | 157,225 | 161,825 | | | ● | ● |
| 85 | 157,275 | 161,875 | | | ● | ● |
| 86 | 157,325 | 161,925 | | | ● | ● |
| 87 | 157,375 | 157,375 | | ● *) | | |
| 88 | 157,425 | 157,425 | | ● *) | | |

Notes:

L) 1 W TX power.

*) Due to the introduction of the channels AIS1 at 161.975 MHz and AIS2 at 162.025 MHz for Automatic Identification System, channels 87 and 88 became simplex channels as of 1 January 1999.

NB! The RX and TX frequencies can be read out on the control unit handset by pressing (for more than one second) and holding the CH key.
At a front-operated VHF radio, the RX and TX frequencies can be displayed on a menu.

US Channels

| Channels | TX MHz | RX MHz | SIMPLEX | DUPLEX |
|----------|---------|---------|----------------------|--------|
| 1 | 156,050 | 156,050 | ● | |
| 2 | | | | B) |
| 3 | 156,150 | 156,150 | ● !) | |
| 4 | | | | B) |
| 5 | 156,250 | 156,250 | ● | |
| 6 | 156,300 | 156,300 | ● | |
| 7 | 156,350 | 156,350 | ● | |
| 8 | 156,400 | 156,400 | ● | |
| 9 | 156,450 | 156,450 | ● | |
| 10 | 156,500 | 156,500 | ● | |
| 11 | 156,550 | 156,550 | ● | |
| 12 | 156,600 | 156,600 | ● | |
| 13 | 156,650 | 156,650 | ● L) | |
| 14 | 156,700 | 156,700 | ● | |
| 15 | | 156,750 | ● RX) | |
| 16 | 156,800 | 156,800 | Distress and calling | |
| 17 | 156,850 | 156,850 | ● | |
| 18 | 156,900 | 156,900 | ● | |
| 19 | 156,950 | 156,950 | ● | |
| 20 | 157,000 | 157,000 | ● | |
| 21 | 157,050 | 157,050 | ● !) | |
| 22 | 157,100 | 157,100 | ● | |
| 23 | 157,150 | 157,150 | ● !) | |
| 24 | 157,200 | 161,800 | | ● |
| 25 | 157,250 | 161,850 | | ● |
| 26 | 157,300 | 161,900 | | ● |
| 27 | 157,350 | 161,950 | | ● |
| 28 | 157,400 | 162,000 | | ● |

| Channels | TX MHz | RX MHz | SIMPLEX | DUPLEX |
|----------|---------|---------|---------|--------|
| 60 | | | | B) |
| 61 | 156,075 | 156,075 | ● !) | |
| 62 | | | | B) |
| 63 | 156,175 | 156,175 | ● | |
| 64 | 156,225 | 156,225 | ● !) | |
| 65 | 156,275 | 156,275 | ● | |
| 66 | 156,325 | 156,325 | ● | |
| 67 | 156,375 | 156,375 | ● L) | |
| 68 | 156,425 | 156,425 | ● | |
| 69 | 156,475 | 156,475 | ● | |
| 70 | 156,525 | 156,525 | DSC | |
| 71 | 156,575 | 156,575 | ● | |
| 72 | 156,625 | 156,625 | ● | |
| 73 | 156,675 | 156,675 | ● | |
| 74 | 156,725 | 156,725 | ● | |
| 75 | | | B) | |
| 76 | | | B) | |
| 77 | 156,875 | 156,875 | ● L) | |
| 78 | 156,925 | 156,925 | ● | |
| 79 | 156,975 | 156,975 | ● | |
| 80 | 157,025 | 157,025 | ● | |
| 81 | 157,075 | 157,075 | ● !) | |
| 82 | 157,125 | 157,125 | ● !) | |
| 83 | 157,175 | 157,175 | ● !) | |
| 84 | 157,225 | 161,825 | | ● |
| 85 | 157,275 | 161,875 | | ● |
| 86 | 157,325 | 161,925 | | ● |
| 87 | 157,375 | 161,975 | | ● |
| 88 | 157,425 | 157,425 | ● | |

| Channels | WX | RX MHz |
|----------|------|---------|
| P1 | WX1 | 162,550 |
| P2 | WX2 | 162,400 |
| P3 | WX3 | 162,475 |
| P4 | WX4 | 162,425 |
| P5 | WX5 | 162,450 |
| P6 | WX6 | 162,500 |
| P7 | WX7 | 162,525 |
| P8 | WX8 | 161,650 |
| P9 | WX9 | 161,775 |
| P10 | WX10 | 163,275 |

Notes:

- L) 1W TX power. By pressing the 25W button in the US hook, the transmitter will transmit 25W on channels 13 and 67, which are normally limited to 1W transmission.
- B) Channels 2, 4, 60, 62, 75 and 76 cannot be selected in US mode.
- !) Channels 3, 21, 23, 61, 64, 81, 82 and 83 may be legally used in certain instances, but they are not for use by the general public in US waters.
- RX) Only RX. Transmitter is blocked.
- NB! The RX and TX frequencies can be read out on the control unit handset by pressing (for more than one second) and holding the CH key.
At a front-operated VHF radio, the RX and TX frequencies can be displayed on a menu.

BI Channels

| Channels | TX MHz | RX MHz | SIMPLEX | | DUPLEX | | |
|----------|-----------|-----------|----------------------|------|--------|--------|--|
| | | | Intership | Port | Port | Public | |
| 1 | 156,050 | 160,650 | | | ● | ● | |
| 2 | 156,100 | 160,700 | | | ● | ● | |
| 3 | 156,150 | 160,750 | | | ● | ● | |
| 4 | 156,200 | 160,800 | | | ● | ● | |
| 5 | 156,250 | 160,850 | | | ● | ● | |
| 6 | 156,300 | 156,300 | ● L) | | | | |
| 7 | 156,350 | 160,950 | | | ● | ● | |
| 8 | 156,400 | 156,400 | ● L) | | | | |
| 9 | 156,450 | 156,450 | ● | ● | | | |
| 10 | 156,500 | 156,500 | ● L) | ● L) | | | |
| 11 | 156,550 | 156,550 | | ● L) | | | |
| 12 | 156,600 | 156,600 | | ● L) | | | |
| 13 | 156,650 | 156,650 | ● L) | ● L) | | | |
| 14 | 156,700 | 156,700 | | ● L) | | | |
| 15 | 156,750 | 156,750 | ● L) | ● L) | | | |
| 16 | 156,800 | 156,800 | Distress and calling | | | | |
| 17 | 156,850 | 156,850 | ● L) | ● L) | | | |
| 18 | 156,900 | 161,500 | | | ● | ● | |
| 19 | 156,950 | 161,550 | | | ● | ● | |
| 20 | 157,000 | 161,600 | | | ● | ● | |
| 21 | 157,050 | 161,650 | | | ● | ● | |
| 22 | 157,100 | 161,700 | | | ● | ● | |
| 23 | 157,150 | 161,750 | | | ● | ● | |
| 24 | 157,200 | 161,800 | | | ● | ● | |
| 25 | 157,250 | 161,850 | | | ● | ● | |
| 26 | 157,300 | 161,900 | | | ● | ● | |
| 27 | 157,350 | 161,950 | | | ● | ● | |
| 28 | 157,400 | 162,000 | | | ● | ● | |

| Channels | TX MHz | RX MHz | SIMPLEX | | DUPLEX | |
|----------|-----------|-----------|-----------|------|--------|--------|
| | | | Intership | Port | Port | Public |
| 60 | 156,025 | 160,625 | | | ● | ● |
| 61 | 156,075 | 160,675 | | | ● | ● |
| 62 | 156,125 | 160,725 | | | ● | ● |
| 63 | 156,175 | 160,775 | | | ● | ● |
| 64 | 156,225 | 160,825 | | | ● | ● |
| 65 | 156,275 | 160,875 | | | ● | ● |
| 66 | 156,325 | 160,925 | | | ● | ● |
| 67 | 156,375 | 156,375 | ● | ● | | |
| 68 | 156,425 | 156,425 | | ● | | |
| 69 | 156,475 | 156,475 | ● | ● | | |
| 70 | 156,525 | 156,525 | DSC | DSC | | |
| 71 | 156,575 | 156,575 | | ● L) | | |
| 72 | 156,625 | 156,625 | ● L) | | | |
| 73 | 156,675 | 156,675 | ● | ● | | |
| 74 | 156,725 | 156,725 | | ● L) | | |
| 75 | 156,775 | 156,775 | | B) | | |
| 76 | 156,825 | 156,825 | | B) | | |
| 77 | 156,875 | 156,875 | ● L) | | | |
| 78 | 156,925 | 161,525 | | | ● | ● |
| 79 | 156,975 | 161,575 | | | ● | ● |
| 80 | 157,025 | 161,625 | | | ● | ● |
| 81 | 157,075 | 161,675 | | | ● | ● |
| 82 | 157,125 | 161,725 | | | ● | ● |
| 83 | 157,175 | 161,775 | | | ● | ● |
| 84 | 157,225 | 161,825 | | | ● | ● |
| 85 | 157,275 | 161,875 | | | ● | ● |
| 86 | 157,325 | 161,925 | | | ● | ● |
| 87 | 157,375 | 157,375 | | ● *) | | |
| 88 | 157,425 | 157,425 | | ● *) | | |

Notes:

- B)** Channels 75 and 76 cannot be selected in BI mode.
- L)** 1W TX power on channels 6, 8, 10, 11, 12, 13, 14, 15, 17, 71, 72, 74, and 77.
- *)** Due to the introduction of the channels AIS1 at 161.975 Mhz and AIS2 at 162.025 MHz for Automatic Identification System, channels 87 and 88 became simplex channels as of 1 January 1999.
- NB!** - The ATIS function is enabled on all channels.
 - The RX and TX frequencies can be read out on the control unit handset pressing (for more than one second) and holding the CH key.
 At a front-operated VHF radio, the RX and TX frequencies can be displayed on a menu.

**TT-10202 MESSAGE HANDLING SOFTWARE
OPERATING PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)

Thrane & Thrane

TT-10202 Message Handling Software

Operators Guide

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1 About This Manual

This manual describes how to operate the TT-10202 Message Handling Software for the Capsat system. The program comes as a DOS program for IBM compatible Personal Computers or as a built in program in the dedicated TT-3606E Message Terminal. Information in this manual applies to both types unless otherwise noted.

The functionality of the Inmarsat-C system in general is not discussed.

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2 Getting Started

2.1 Personal Computer Operation

This chapter describes the installation and start-up of the Capsat Message Handling program on a PC. This chapter is not relevant if you have a Message Terminal for your transceiver.

The program is delivered on a 3½" floppy disk. The disk contains the files: CAPSAT.EXE, MACRO.DAT and ISP.DAT.

The program can be executed immediately from the floppy disk, but if your PC has a hard disk, you should install the program there. It is recommended, that you create a separate directory to hold the Capsat program and the associated files.

Note. The CAPSAT.EXE file holds all configuration information within the file itself. If you are using a virus scanner which check on execute files size or check-sums changes, it will inform that the CAPSAT.EXE have changed from time to time.

2.1.1 Starting Up from a Hard Disk

In the following a step-by-step guide on how to install the program on a hard disk is given.

Insert the floppy disk with the TT-10202 Message Handling program in your drive A.

1. Type `c:` and press Enter to get drive C as your current drive.
2. Type `cd \` and press Enter to change to the root directory of C.

3. Type `md capsat` and press Enter to create a directory named Capsat.
4. Type `cd capsat` and press Enter to change to the newly created directory.
5. Type `copy a:capsat.exe` and press Enter to copy the program on to the hard disk.
6. Type `copy a:macro.dat` and press Enter to copy the macro key configuration to the hard disk.
7. Type `copy a:isp.dat` and press Enter to copy the internet service provider configuration to the hard disk.
8. Type `md messages` and press Enter to create a sub directory to hold incoming messages routed to disk.
9. Type `md egc` and press Enter to create a sub directory to hold incoming EGC messages routed to disk.
10. Type `capsat` and press Enter to start up the program.

Note. Please keep the original disk as a backup copy.

2.1.2 Starting Up from a Floppy Disk

1. Boot your PC with DOS.
2. Insert the floppy disk with the TT-10202 Message Handling program in drive A and close the drive.
3. Type `A:` and press Enter to make sure your current drive is A.
4. Type `capsat` and press Enter to start the program.

Note. Please make a copy of the original disk and keep it as backup.

2.1.3 Demonstration Mode

The program may be operated in a special demo mode, which allows you to simulate operation without connecting a Capsat Transceiver. This mode is invoked by typing `capsat /d` when loading the program.

2.1.4 Terminating the Program

1. Choose *File, Exit* (Alt, F, X) in the Capsat window.

or

2. Press F10 to get the System window and choose *Exit*.

2.1.5 Temporary Files

The program creates some temporary files during execution. If you have a RAM drive installed, you can get a considerable speed up by specifying the path of the RAM drive in an environment variable called TMP. For instance if you have a RAM drive as drive E:, you should include 'SET TMP=E:\' in your AUTOEXEC.BAT file.

2.2 Basic Concepts

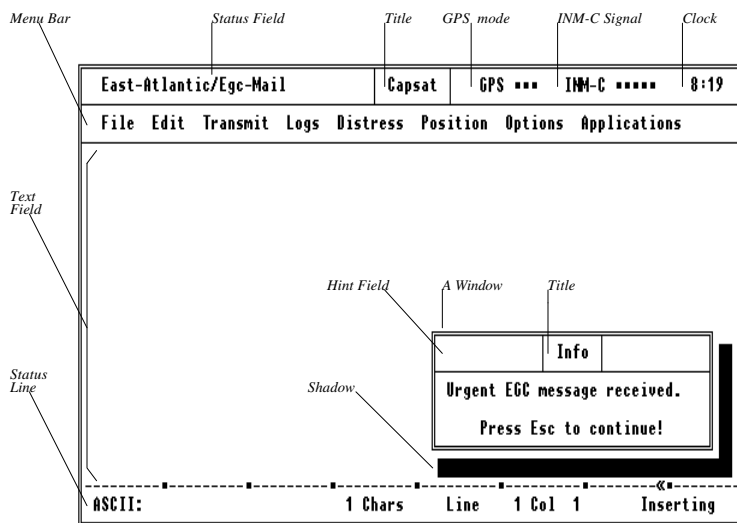


Figure 1 Basic Concept

A Window Is an area of the screen delimited by a double line border. Several windows may be displayed on the screen at the same time overlapping each other. The window being on top will have a shadow. This indicates that the next keystroke on the keyboard will be directed to this window .

Title Shows the name of the window.

Menu Bar Holds the menus of a window. Not all windows have a menu.

Text Field Is the part of the Capsat window, where you may type in text.

Status Field Is a combined field showing the current ocean region and status information. When the transceiver is logged in

and not performing a Scan, Login, Logout or a Link Test, the current ocean region is displayed.

GPS Mode Indicates the mode of the GPS; Acquisition, 2-D or 3-D mode. See page 5-28 for further information.

INM-C Signal Meter Indicates the signal strength 0-5 using square boxes. The scale is indicated by 5 small dots. 3 boxes or more is needed to do reliable communication.

Clock Shows the system local time.

Hint Field May show miscellaneous status information or hints about which key to press. This will be '<Space>' for Spacebar and '<Enter>' for the Enter key.

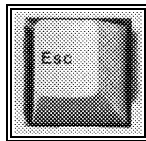
Shadow Points out the window on top. When you type on the keyboard, the keystrokes will be given to that window.

2.2.1 Special Keys on the Keyboard

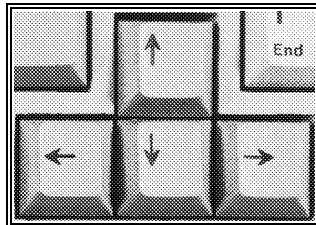
To operate the Capsat Message Handling program you need to know which keys to press. In this chapter we will explain the functionality of the special keys on your keyboard.

Esc Pressing Esc will always take you one step back.

| Previous Action | Hitting Esc will... |
|-----------------------------|--|
| Just had a window displayed | Remove the window |
| Revising a value in a field | Cancel revise and restore the original content |

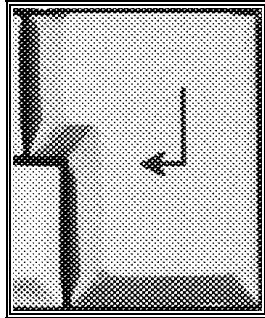


Arrow Keys Moves the highlight or the insertion point. Both are known as the cursor.



There are 4 arrow keys; Up, Down, Left and Right.

Enter Is used to do the following operations:



- Choosing the command currently highlighted.
- Make a new line in the Text Field of the Editor.
- To validate values, names, etc. that you have typed in.

Alt The Alt key is usually used together with another key. You press down the Alt key continuously while you then press the second key once.

| You have... | You want to... | Press... |
|-------------------------------|--|---|
| Flashing cursor in Text Field | Get Highlight in the Menu Bar | Alt |
| Highlight in the Menu Bar | Flashing cursor in the Text Field | Alt |
| Flashing cursor in Text Field | Choose a command from the Menu Bar. I.e. Transmit. | Alt, T (Press Alt first and keep holding it down while hitting T. Release Alt) |

Spacebar Is used to do the following operations:

- Insert blank characters in the Text Field of the Editor.
- Change the value of a field, that cannot be changed otherwise. This applies to fields on the screen like:

(•) ()

[X] []

Hitting Spacebar, when the highlight is positioned on such a field, will reverse the value, e.g. if you have '()', you will get '(•)' and vice versa. When the Spacebar has this functionality, the upper left corner of the current window (The Hint Field) will normally show '<Space>'.
•

- Have additional information presented, when you are filling in a field. When the Spacebar has this functionality, the upper left corner of the current window will normally show '<Space>'.
- Marking items in some lists. This can be used in Directory and in the Address Book.

2.3 First Time with Capsat

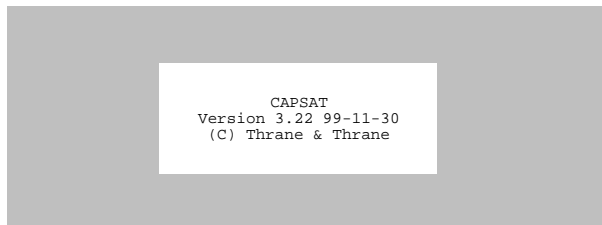
In this chapter it is first described what happens when your turn on your Capsat system for the first time. Then we will explain how to send your very first message.

2.3.1 Power On

Before doing the following steps, you should check that communication port 1 (Com 1) of your PC or Message Terminal is connected to the transceiver.

Message Terminal Turn on the power to have the start-up screen presented.

PC Load the Capsat program as described in the chapter Personal Computer Operation on page 2-1.



1. Wait for start-up screen to disappear within 5 seconds and the Capsat window is shown. The upper left corner of the screen (Status Field) will show "Transceiver not connected".
2. Turn on the power of the transceiver and wait approximately 25 seconds until the power-on sequence has been com-

pleted. The upper left corner of the screen will now show 'Logged out', if this is the very first power-on of the unit.

3. Continue with the next chapter Commissioning.

2.3.2 Commissioning

When your system is going to be used for the first time, the following steps must be done.

Login Make a login by choosing *Options, Login* (Alt, O, L) and select the desired Ocean Region.

West Atlantic East Atlantic Pacific Indian

The Status Field will now indicate '<LOGIN>'. Wait until the Status Field shows the desired Ocean Region.

Link Test The first time a transceiver performs a login to the Inmarsat-C Network, the transceiver is commanded to carry out a Link Test, also known as Automatic Commissioning. This may take up to 15 minutes and is indicated by '<LINK TEST>' in the Status Field.

During the Link Test the message:

Automatic test mode: Normal communication disabled. Do not press any distress buttons unless you are in distress

will be displayed.

When the link test is completed, the 'Link Test Finished' message is displayed/printed along with the results of the test. Your system is now ready to use.

2.3.3 Sending a Test Message

A quick guide of how to send a message through the Inmarsat-C Network and back to yourself is presented in the following. This is known as a loop back test.

1. Type in a short message in the Text Field as if you were using a typewriter.
2. Choose *Transmit* (Alt, T) to open the Transmit window. The highlight will be positioned on the address field.
3. Activate the Address Book by pressing Spacebar.
4. Choose *New* to insert an entry in the empty Address Book. The highlight will be positioned on the Name field.
5. Type in the name 'My mobile' and press Enter. The highlight moves to the Number field.
6. Identify your Ocean Region by looking at the Status Field in the upper left corner of the Capsat window. Type in the 3 digit Ocean Region Id corresponding to this.

| |
|---------------------|
| 581 - East Atlantic |
| 582 - Pacific |
| 583 - Indian |
| 584 - West Atlantic |

7. Complete the number by adding your mobile number to the Ocean Region already typed in. Your mobile number is displayed in the upper right corner of the Transmit window. Press Enter to validate the number. A valid number could be 581 492380049. The highlight moves to the Answer back field.
8. Press Arrow-Down twice to move the highlight to '() Mobile'. Press Spacebar to get '(•) Mobile'.

9. Pressing Enter moves the highlight to '< OK >'.
10. Press Enter once on '< OK >' to validate the entry. The highlight will now be on New in the menu bar.
11. Choose *Select* to copy the entry to the Transmit window. The highlight will now be positioned at the Land Station field.
12. Press Spacebar to get a list of Land Stations. The Select field and the first Land Station will both be highlighted.
13. Choose *Select* to copy the first Land Station to the Transmit window.
14. Press Enter to move the highlight to the '< SEND >' field.
15. Press Enter once on '< SEND >' to transmit the message. The Transmit window is now removed and you are back in the Text Field.
16. After approx. 5 minutes you will receive the message. The mail lamp will start flashing. When the lamp stops flashing, your message is received and will be printed.

3 Capsat Text Editor

The integrated text editor makes it very simple to create messages for later transmission. It is designed to be used as a tool for editing small messages and not for managing large documents.

3.1 The Editor Window

The following illustration shows the important parts of the editor window, followed by a brief description of each part.

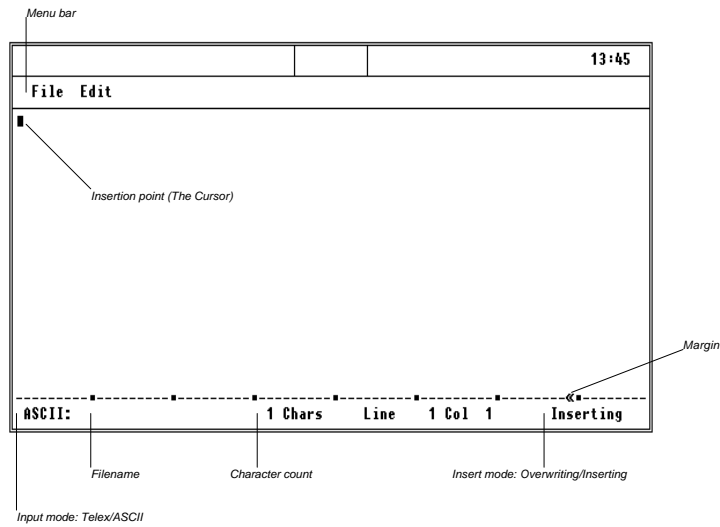


Figure 2 The Editor Window

Menu bar Contains menus. Open the menus and choose the appropriate command.

Insertion Point. Shows where text will be inserted when you type. Are also called the cursor.

Input Mode Shows which input mode you currently are using. The field will either be Telex or ASCII. In Telex the editor will only allow you to insert characters that are represented in the Baudot alphabet.

Filename Shows the name of the file on disk holding the present text. When starting out on a new message this field will be empty until you have saved your message for the first time.

Character count Indicates the number of characters in your message at any time. Please note that a new line is only counted as **one** character. When saving the message, a new line will be saved as **two** characters, CR LF (Carriage Return Line Feed).

Insert mode Shows whether you will be inserting or overwriting characters when you type. The mode is toggled by pressing **Ins** on the numeric keypad. Make sure that Num Lock is off.

Margin Shows the position of the right margin of your message. The default setting is at 69, which is the maximum line length, that can be transmitted through the Telex Network.

3.2 Creating a Message

1. Choose *File* (Alt, F) and *New Telex* or *New ASCII*.

If you are going to send the message to a telex destination, you should select New Telex to prevent you from using characters, that cannot be transmitted through the Telex network. In all other cases it will be most convenient to use the ASCII mode.

3.2.1 Typing in Text

As the position point (the cursor) is already positioned at the start of the message, you just type in your message as if you were using a typewriter. If you want to create some blank lines before typing, press the Enter key to insert blank lines.

As you type the insertion point advances to the right. When the insertion point gets to the right margin a new line is automatically inserted and the word, that you were typing will be moved to the next line. This is called word-wrap.

3.2.2 Moving the Insertion Point (Cursor)

If you are using the numeric keypad, make sure that NUM LOCK is off.

| To move | Press this key |
|----------------------------|------------------|
| Up one line | UP ARROW |
| Down one line | DOWN ARROW |
| One character to the left | LEFT ARROW |
| One character to the right | RIGHT ARROW |
| One word to the left | CTRL+LEFT ARROW |
| One word to the right | CTRL+RIGHT ARROW |
| Beginning of the line | HOME |
| End of the line | END |
| Top of the window | CTRL+HOME |
| Bottom of the window | END |
| Beginning of the message | CTRL+PAGE UP |
| End of the message | CTRL+PAGE DOWN |
| Up one window | PAGE UP |
| Down one window | PAGE DOWN |

Note. The cursor can only be moved to positions holding a character or a space. The blank portions of the window does not hold spaces unless you have typed them.

3.3 Saving Your Work

1. Choose *File, Save* (Alt, F, S).
2. Type in the name of the file. The name may consist of 1 to 8 characters. The editor will append *.TXT* to the name. This is called an extension.
3. Press Enter to actually save the file.

Before saving the message, the Editor checks if there already is file of that name on the disk. If that is the case, you are given the opportunity to cancel the operation. If you choose to replace the existing file, the existing file will be given the extension *.BAK* and still be available on the disk.

Tip. Give all your messages sequential names such as *OUT.000*, *OUT.001*, ... and keep them in a separate directory or on a separate disk.

3.4 Opening an Existing Message

1. Choose *File, Load file* (Alt, F, L).

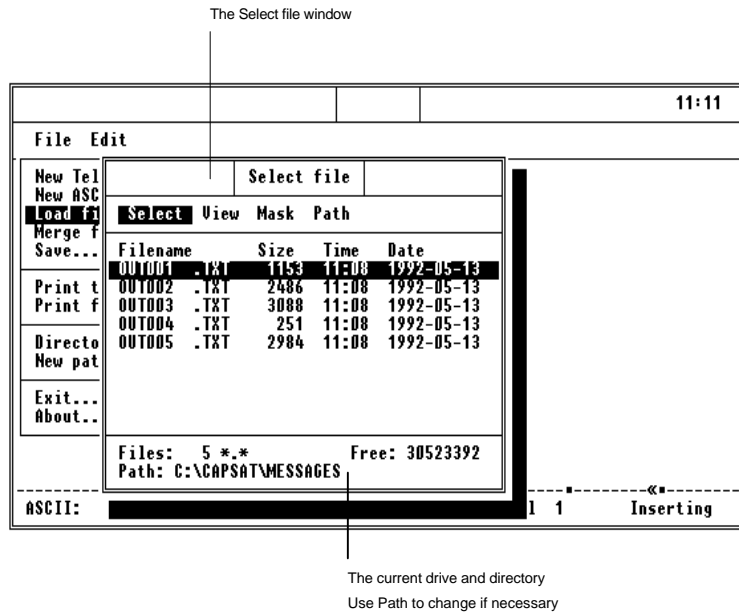


Figure 3 Opening an Existing Message

2. Select the desired file from the Select File window.

3.5 Revising a Message

You can delete, copy and move text in the message. If you want to copy or move text, you must indicate which text you want to change by selecting it. When doing minor deletions you do not need to select the text.

| To delete a | Press this key |
|------------------------------|----------------|
| Character left of the cursor | BACKSPACE |
| Character under the cursor | DEL |
| Line | ALT+F4 |
| Word | ALT+F3 |

3.5.1 Typing over Text

Normally the Editor is operating in Insert mode, which means that if you type a character, the existing characters are pushed forward. However you can operate the Editor in Overwrite mode too, where the characters that you type will replace the existing ones.

1. Press Ins key to toggle between Overwrite and Insert mode.

3.5.2 Selecting a Block of Text

1. Position the cursor at the beginning of the text you want to select.

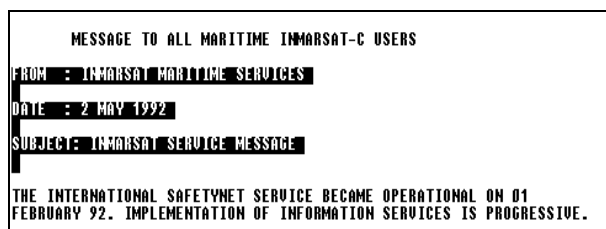


Figure 4 Selecting a Block of Text

2. Hold down the SHIFT key while you move the cursor to where you want the selection to end.

To cancel a selection move the cursor without holding the SHIFT key down.

3.5.3 Moving Text

Moving text from one place to another is known as cutting and pasting.

1. Select the text you want to move.
2. Choose *Edit, Cut* (Alt, E, T). The selected text is then removed from your message and placed in a temporary storage area. The text will reside there until you choose the Cut or the Copy command again.
3. Position the cursor where you want to move the text.
4. Choose *Edit, Paste* (Alt, E, P). The Editor now inserts the text from the temporary storage area. You can choose Paste as many times as you want inserting the same text at other locations in your message.

3.5.4 Copying Text

1. Select the text you want to copy.
2. Choose *Edit, Copy* (Alt, E, C). The selected text is then copied from your message and placed in a temporary storage area. The text will reside there until you choose the Cut or the Copy command again.
3. Position the cursor where you want to insert the text.
4. Choose *Edit, Paste* (Alt, E, P). The Editor now inserts the text from the temporary storage area. You can choose Paste as many times as you want to insert the same text at other locations in your message.

3.5.5 Deleting Selected Text

1. Select the text you want to delete.
2. Choose *Edit, Clear* (Alt, E, E).

3.6 Finding and Replacing Text

The Editor allows you to find and replace text patterns in your message. The search is always performed from the cursor and onwards.

3.6.1 Finding Text

1. Choose *Edit, Search* (Alt, E, S).
2. Type in the text, that you want to find. The Editor searches for the exact pattern, so please watch your upper- and lowercase letters.

If the text is found the cursor is positioned immediately after the pattern. If the pattern is not found, an error message is displayed.

3.6.2 Replacing Text

1. Choose *Edit, Replace* (Alt, E, R).
2. Type in the text, that you want to replace and press Enter.
3. Type in the replacement text and press Enter.

When an instance of the pattern is found, the Editor highlights the text, and you are asked whether this particular instance should be replaced or not.

3.7 Printing

1. Choose *File, Print text* (Alt, F, T) to print the text shown in the Editor.

or

2. Choose *File, Print file* (Alt, F, P) to print a message from the disk.

3.8 Customising the Editor

1. Choose *Edit, Setup* (Alt, E, U).

In the Setup window the following parameters can be changed:

- The right margin of your message can be changed from 69 to any value in the range 5-77.
- The status line can be turned Off and On.
- The Insert mode can be toggled.
- The Input mode may be set to either ASCII or Telex.
- The 'Save with CR/LF' (Save with Carriage Return and Line-feed) can be toggled to instruct the editor to save the current message with the wordwrapping facility turned off. This will allow other programs to read your message files.

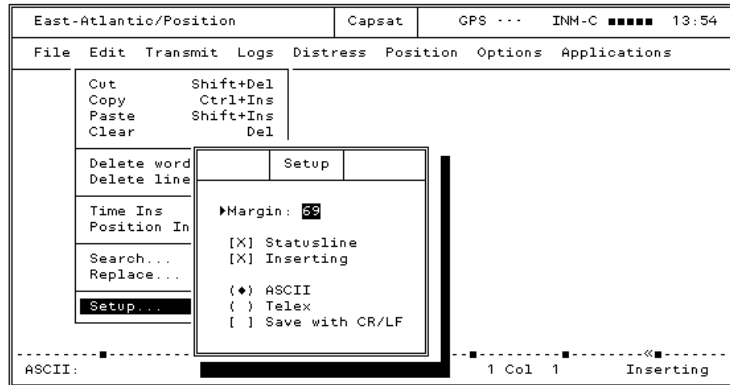


Figure 5 Customising the Editor

In addition to this the colour set-up of the editor may be changed from the System application. Press F10 and open the Paint menu.

4 Capsat Address Book

The Address Book conveniently stores the details of all your destinations. Up to 100 destinations can be stored.

1. Press F3 to access the Address Book

or

2. In Capsat choose *Transmit* and press Spacebar in the address field (Alt, T, Spacebar).

4.1 Address Book Window

| Addressbook | | | | | |
|----------------|------|-----|-------------------------|-------|--------------|
| Select | Mark | New | Revise | Erase | Options |
| JH 5bit | | | < > Telex | | < > 5 bit |
| JH 7bit | | | < > Mobile | | <•> 7 bit |
| JH 8bit | | | < > X.25 | | < > 8 bit |
| T&I Fax | | | < > Fax | | |
| X25 CapManager | | | < > PSTN | | [] Position |
| T&I email | | | < > Special | | |
| X25 Gateway | | | < > DNID | | |
| | | | <•> E-mail | | < OK > |
| Address: | | | ▶ MarineMarketing@tt.dk | | |

Figure 6 Address Book Window

Menu bar Contains menus. Open the menus and choose the appropriate command.

Names of Destinations Holds the names of all your destinations. You can move the highlight by pressing Arrow Up/Down, Page Up/Down and Home/End.

Destination data Holds the data of the highlighted Destination Name. When you move the highlight to another name, this field is updated with the data corresponding to this name. **Tip.** To move highlight to 'T&T Fax' press Alt+T.

Type of destination Allows you to select different network types. Not all of the listed types may be available at a particular Land Station. Press Spacebar on the desired type.

Presentation Enables you to select whether your transmission should be done using either 5, 7 or 8 bit presentation. The 7 bit option is supported by all Land Stations. The 5 bit presentation can be used with all Destination types and will reduce the transmission costs approximately 33%. Press Spacebar on the desired presentation.

Special Options You can specify that you want your message to always include the latest position and time (if available) when the message is sent. Capsat automatically inserts this information as text in front of your message text, if you check the *Position* box. The information that Capsat inserts has the same format as what you will get if you had manually used *Edit, Position Ins* from the menu. If the position is not available from a built-in GPS, Capsat will ask you if you want to send the message anyway. The latest available position will then be inserted instead.

The *Prefixed* box allows you to use the 'prefixed store-and-forward' service found at selected Land Stations. If you check this box you will need to type a two digit code in the appropriate field. This two digit code will be put in front (prefixed) of your destination address when the message is sent. You should contact the LES operator of the selected LES to find out which prefix codes are available at that station.

4.2 Address Book Facilities

The following facilities are presented on the menu bar:

| | |
|-----------------------|--|
| Select | Selects one or several entries to be used for a transmission. |
| Mark | Marks up to 10 destinations by placing a mark to the left of the entry. When Select is chosen afterwards, all 10 destinations are selected. To unmark an entry choose Mark once again. Instead of using Mark, you can use the Spacebar. |
| New | Creates a new entry in the Address Book. First time you access the Address Book, it will be empty and you must select New and fill in a destination in order to use the Address Book. |
| Revise | Enables you to change the contents of a particular entry. |
| Erase | Erases an entry from the Address Book. |
| Options - Find | Searches for a name or a part thereof. The search is sensitive to upper- and lower-case letters. |
| Options - Save | Saves the contents of the Address Book in a file on the disk. Give the file a name of up to 8 characters. The file will be appended the extension '.DST'. I.e. if you specify the name to be myfile, the name will actually be myfile.dst. |
| Options - Load | Clears the present contents of the Address Book and reads in the contents of the selected file. |

- Options - Print** Prints the contents of the Address Book.
- Options - Password** Enables you to protect the contents of the Address Book with a password. To clear password protection, choose this menu again and re-enter your password twice.

4.2.1 Inserting a New Destination

1. Choose *New* from the menu bar and type in the name of your new destination and press Enter to move the highlight to the Destination type fields.
2. The default destination type is telex as marked by: '(●) telex'. If you want another type than telex, then move the highlight to the desired destination type by pressing Arrow Down and press the Spacebar to move the '●' to this field; i.e. to make the selection.
3. Move the highlight to the Number field by pressing Enter and type in the destination preceded by the country code. When addressing another Inmarsat-C mobile unit, remember to specify the Ocean Region. See table below.
4. If you want to change the default presentation of 7 bit, move the highlight with the Arrow keys to the desired field and press Spacebar to move the '●' to this field.
5. Press Enter to move the highlight to the OK field and press Enter once more.

4.2.2 Accessing the Different Networks.

| Type | Format of number | Presentation |
|---|---|---------------|
| Telex | Country code + Subscriber No | 5 or 7 bit |
| Mobile | Ocean Region + Mobile No 581 - East Atlantic 582 - Pacific 583 - Indian 584 - West Atlantic | 5 or 7 bit |
| Mobile | Ocean Region + Mobile No 1111 - East Atlantic 1112 - Pacific 1113 - Indian 1114 - West Atlantic | 8 bit |
| X.25 | DNIC + Subscriber No | 5, 7 or 8 bit |
| Fax | Country code + Subscriber No | 5, 7 or 8 bit |
| PSTN (Telephone) | Country code + Subscriber No | 5, 7 or 8 bit |
| Special (Pre- defined GMDSS services) | Pre-defined codes: 32 - Medical Advice 33 - Technical Assistance 38 - Medical Assistance 39 - Maritime Assistance 41 - Meteorological Reports 42 - Navigational Hazards and Warnings 43 - Ship Position and Sail Plan Reports | 5, 7 or 8 bit |
| DNID | DNID number and Member number. See your DNID Table for valid entries | 5, 7 or 8 bit |
| E-mail | Standard email address | 5, 7 or 8 bit |

This page is intentionally left blank

5 Capsat

1. Press F2 to access Capsat.

or

2. Press Esc a number of times until all overlaying windows are removed.

5.1 Transmission

The Inmarsat-C Network is a Store-And-Forward system. This means that when a message is sent off, it is stored within the system for a period of time before the message is forwarded to the final destination. A message can be sent to several destinations at the same time (Multi-addressing. Maximum is 10).

| Destinations |
|--------------------|
| Telex |
| Inmarsat-C Mobiles |
| E-mail addresses |
| X.25 |
| Telefax |
| Telephone modems |

5.1.1 Destinations

In the table is shown the destinations that can be reached from your mobile unit. Not all Land Stations supports all types, as only Telex and Inmarsat-C mobile are mandatory. Addressing the different destination types is thoroughly discussed in the chapter Capsat Address Book on page 4-1.

5.1.2 Presentation

The message can be sent in 3 different formats known as 5 bit, 7 bit and 8 bit presentation.

- 5 bit** Is also known as the Baudot or Telex presentation (ITA2). Reduces the transmission costs approximately 33%, but only valid Telex characters will be transmitted transparently.
- 7 bit** Is supported by all Land Stations and is also known as the ASCII presentation. All characters represented by values from 0 to 127 is sent transparently to the Land Station. Values above 127 are truncated.
- 8 bit** Is known as data. All characters are transmitted transparently over the satellite link. When the Land Station forwards the message this will also be done transparently if possible.
Note. Some Land Stations inserts a header in the message, which the recipient must remove before being able to use the message, if the message for instance was a spread-sheet data file.

5.1.3 The Transmit Window

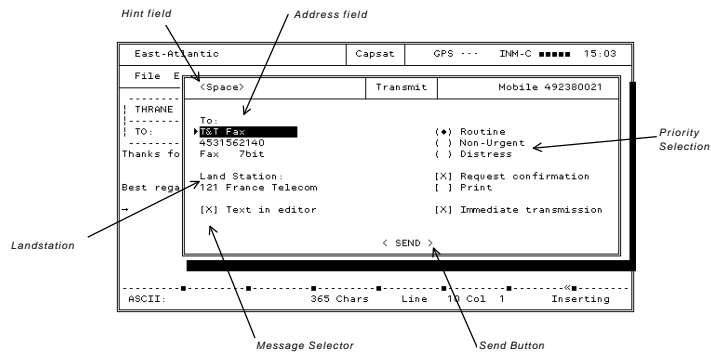


Figure 7 The Transmit Window

Hint Field Shows here the key to press in order to have the list of Land Stations presented as the highlight is placed on that field.

Address Field Holds the address information of your destination. Place highlight on the field and press Spacebar to access the Address Book.

Tip. To select the destination 'Thrane & Thrane' from the Address Book, type 'Th' in the address field and press Enter. The Address Book is then searched for an entry starting with these letters and if found, the data of this entry is copied to the Transmit window.

Priority Selection Allows the user to give a message a special priority, to be used when handled by the Land Station.

| Priority | Available on System | Explanation |
|------------|---------------------|------------------------|
| Distress | Maritime | Routed directly to SAR |
| Routine | Maritime/Landmobile | Forwarded immediately |
| Non-Urgent | Maritime/Landmobile | Delayed forwarding |

Table 1 Message Priority

Land Station Is the station to use for the transmission.

Message Selector Selects whether the text in the editor or a file on the disk should be transmitted.

Send Button Sends the message when pressing Enter here.

5.1.4 Transmitting a Message

1. Choose *Transmit* (Alt, T) to open the Transmit window. The highlight will be positioned on the address field.
2. Activate the Address Book by pressing Spacebar.
3. Position the highlight on the desired destination and choose *Select*. See also the chapter Capsat Address Book on page 4-1.
4. Press Spacebar to get a list of Land Stations.

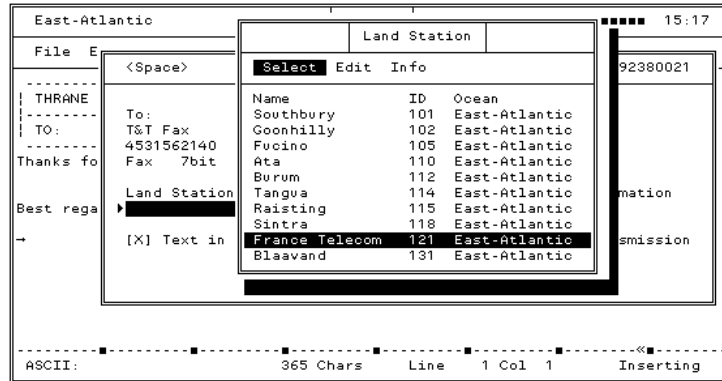


Figure 8 Transmitting a Message

5. Position the highlight on the desired Land Station and choose *Select*.
6. Press Enter to move the highlight to the '< SEND >' field.
7. Press Enter once on '< SEND >' to transmit the message. The Transmit window is now removed and you are back in the Text Field. The message is saved in the message log on the disk along with addressing information allowing you to send the message again if necessary.

5.1.5 Transmitting an Email

1. Choose *Transmit* (Alt, T) to open the Transmit window. The highlight will be positioned on the address field.
2. Activate the Address Book by pressing Spacebar.
3. Position the highlight on the desired email destination and choose *Select*. See also the chapter Capsat Address Book on page 4-1.

4. Press Spacebar to get a list of Land Stations/Internet Service Providers. Please notice that only stations that are configured to support Internet Email will be on the list (please see section 5.8.13).
5. Position the highlight on the desired Land Earth Station / Internet Service Provider and choose *Select*.
6. Press the arrows to move the highlight to the '<MORE E-mail >' field.

| More E-mail | |
|-------------|-----------------------|
| To : | MarineMarketing@tt.dk |
| Cc : | |
| Bcc : | |
| Subject:▶ | Purchase order |
| < OK > | |

Figure 9 Transmit Email Window

7. In the <More E-mail> window standard additional email entries as “Cc”, “Bcc” and “Subject” can be available. Only entries supported by the selected Internet Service Provider will be present.
8. Fill in the necessary extra information using the arrow key to move between the different fields.
9. Press Enter once on '< OK >' to return to the normal transmit window
10. Press Enter once on '< SEND >' to transmit the message. The Transmit window is now removed and you are back in the Text Field. The message is saved in the message log on the disk along with addressing information allowing you to send the message again if necessary.

5.1.6 Selecting a File for Transmission

1. Move the highlight in the Transmit window to '[X] Text in editor' and press Spacebar to remove the 'X'. This reveals the field 'File' immediately below.
2. Press Arrow Down to move highlight to the File field and press Spacebar to have the Select File window presented.
3. Select the desired file by choosing *Select*.

Note. The size of the file must not exceed 32 Kb, which is the absolute maximum message length.

5.1.7 Scheduling a File for later Transmission

1. Move the highlight in the Transmit window to '[X] Immediate transmission' and press Spacebar to remove the 'X'. This reveals the field 'Time' immediately below.
2. Press Arrow Down to move highlight to the Time field and enter the time of the transmission.

5.1.8 Printing a Message on Transmission

1. Move the highlight in the Transmit window to '[] Print' and press Spacebar to insert an 'X'.

5.1.9 Password Protection

Transmissions can be password protected to avoid unauthorised use. Distress priority transmissions are not affected.

1. Choose Options, Configuration, Password (Alt, O, W).

Capsat

Transmission

2. Type in your password and press Enter.
3. Type in your password again for verification and press Enter.

Note. To clear password protection, choose this menu again and re-enter your password twice.

5.1.10 Transmit Log

The transmit log keeps track of all outgoing messages. All transmitted messages are recorded in a message log file on the disk together with all received messages. The transmit log is automatically updated every time the status of a message is changed.

1. Choose *Logs, Transmit log* (Alt, L, T).

| Transmit log | | | | |
|--------------|-------|---------------|--------------|----------------------|
| Date | Time | Destination | Status | Expanded Information |
| 01-Dec-92 | 14:41 | T&T Telex | Failed | |
| 01-Dec-92 | 14:41 | T&T Telex | Failed | Msg : 00T.091 |
| 01-Dec-92 | 16:28 | T&T Telex | Failed | No : 5519298 |
| 01-Dec-92 | 16:31 | T&T Telex | ConfOK | Type : Telex 7bit |
| 03-Dec-92 | 13:09 | T+T this unit | ConfReq | Kbits : 0.16 |
| 03-Dec-92 | 13:12 | T+T Fax | Failed | Size : 21 symbols |
| 03-Dec-92 | 12:02 | 581492380021 | Failed | Ref : 404935 |
| 03-Dec-92 | 12:16 | 581492380021 | Acknowledged | LES : 131 Blaavand |

Figure 10 Transmit Log

Message Name (Msg) Is assigned by the transceiver at the time of transmission. The numbering will be sequential starting with '000'. Note. If you don't do a Logout before turning off you transceiver, the current number will not be saved - So always do a logout...

Kbits Specifies how many kilobits actually sent. You will be charged per kilobit by the Land Station.

Ref is the message reference number of the message as given by the Land Station.

Status Shows the current status of the message. On the next page is shown the possible values of this field.

| Status Field | Explanation |
|--------------|---|
| Waiting | The message has not yet been scheduled for transmission. |
| Sending | The message is scheduled for transmission |
| Acknowledged | The message has been successfully received at the Land Station. Confirmation was not requested. |
| ConfReq | The message has been successfully received by the Land Station, but so far the delivery to the final destination hasn't been done. |
| ConfOK | The message has been delivered to final destination. You will only see ConfOk if you have requested confirmation in the Transmit window. Otherwise you will only get 'Acknowlg'. |
| Failed | The Land Station failed to deliver a message on which confirmation had been requested or the transmission protocol failed. The failure code will be printed out. |
| Pending | The Land Station has postponed the transmission for a short time. The transmission will be done when the Land Station tells the transceiver to go ahead. |
| Rejected | The transmission was rejected by the Land Station. I.e. nothing was sent. |
| NotDeliv | Will only be shown, if you explicitly try to get a confirmation on a message by selecting <i>Confirm</i> from the Txlog menu. It indicates that the Land Station has not yet been able to deliver the message, but is still trying. When giving up, the status will change to 'Failed'. |
| Unknown | The message is no longer recorded in the transceiver and the final status is not known. |

Table 2 Message Transmission Status

5.1.11 The Transmit Log Facilities

The following facilities are presented on the menu bar:

| | |
|-----------------|---|
| View | View a message. |
| Resubmit | Send a message again. |
| Confirm | Explicitly requests confirmation status at the Land Station of a particular entry. |
| Erase | Deletes an entry from the log. You cannot delete an entry which has status 'Sending'. |
| Print | Prints out the log. |

5.1.12 Sending a Message Again

Any outgoing message can be send again with the Resubmit facility of the Transmit Log.

1. Choose *Logs, Transmit log* (Alt, L, T).
2. Place the highlight on the message, you want to send again, by using the Arrow Up/Down keys.
3. Choose *Resubmit* (R) to have the Resubmit window presented. You now have the option to change the Land Station or the destination.
4. Press Enter to move the highlight to the '< SEND >' field.
5. Press Enter once on '< SEND >' to transmit the message.

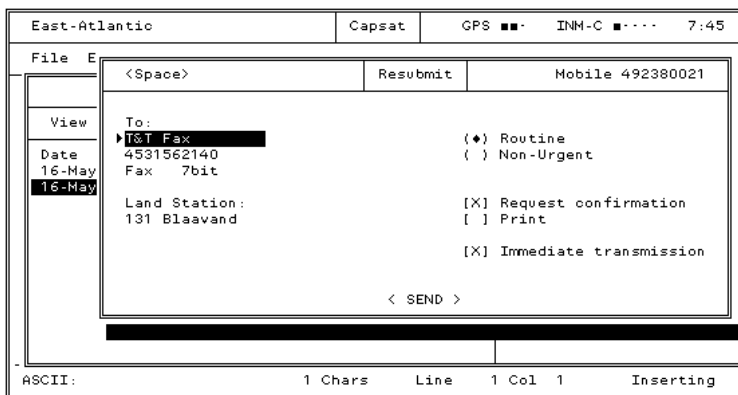


Figure 11 Resubmit Message

5.2 Reception

By default all incoming messages are saved in the log files on the disk. In addition to this you may choose to have the messages printed on a local printer or a remote printer. The messages may also be saved in separate files on the disk. When a new message has been transferred to disk, this is indicated in the Status Field of the Capsat window with either "Mail" or "Egc-Mail".

5.2.1 Message Routing

1. Choose Options, Configuration, Routing (Alt, O, C, R).

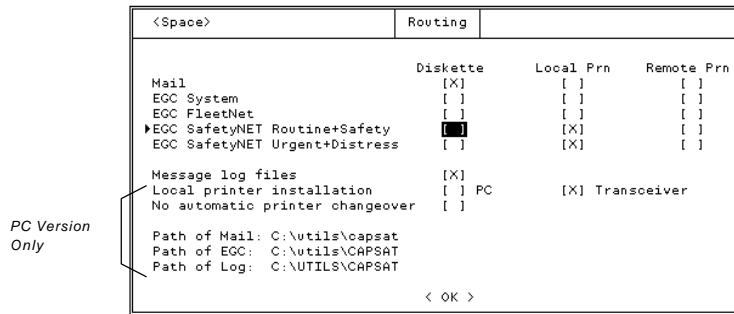


Figure 12 Message Routing

Capsat**Reception**

| | |
|--|---|
| Mail | Normal business mail. |
| EGC System | - |
| EGC FleetNet | Maritime Systems: Must be routed to at least one of the media. If you have '[X]' in Message Log files, the messages will be saved on disk in the log file, which is OK. |
| EGC SafetyNET Routine and Safety Priority | Maritime Systems: Must be routed to at least one of the media. If you have '[X]' in Message Log files, the messages will be saved on disk in the log file, which is OK. |
| EGC SafetyNET Urgent and Distress Priority | Maritime Systems: Must at least be routed to one of the printers. |
| Local printer installation¹ | The local printer may be connected either to the PC or the transceiver. |
| No automatic printer switchover¹ | The Capsat program will normally change printer port to its own port (on the PC or the TT-3606) in case the Transceiver does not have a printer. By checking this box you can disable this automatic feature. The Transceiver will from then on wait for you to attach a printer to its port. |
| Path of Mail¹ | Save incoming business mail here as separate files (IN.000, IN.001, ...). |
| Path of EGC¹ | Save incoming EGC mail of all categories here as separate files (EGC.000, EGC.001, ...). |
| Path of Log¹ | The message log files will be saved here. |

¹ These fields does not exist on TT-3606 Message Terminal. The local printer must be connected to the transceiver.

Change the routing to suit your needs by setting/removing the 'X' in the brackets.

The Capsat program will change your routing selections if they conflict with the Inmarsat specifications:

Maritime Systems:

If the *Message Log files* box has no checkmark, and none of the 3 boxes for *Mail* has a checkmark then the program will put a mark in *Local Prn* for you.

The same goes for the 4 EGC Message types.

If none of the printer boxes for *EGC SafetyNET* messages have checkmarks then the program will put a mark in *Local Prn* for you.

The *Local Printer Installation* will always have a checkmark in the *Transceiver* box.

Landmobile Systems:

If the *Message Log files* box has no checkmark, and none of the 3 boxes for *Mail* has a checkmark then the program will put a mark in *Diskette* for you.

The same goes for the 4 EGC Message types.

5.2.2 Receive Log

The receive log holds information concerning the incoming mail. By default all received messages are stored in the log files on the disk. The receive log is automatically updated every time the status of a message is changed.

1. Choose *Logs, Receive log* (Alt, L, R).

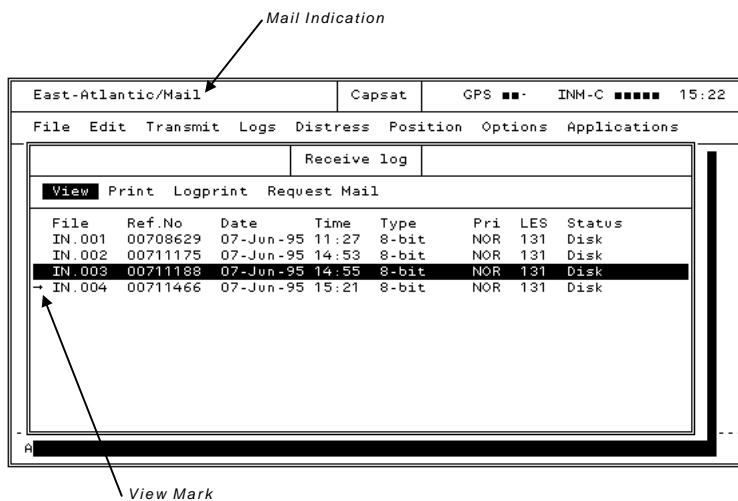


Figure 13 Receive Log

Mail Indicator Indicates the reception of a message on the disk since the last inspection of the receive log. Viewing the log clears this field.

View Mark Is set on messages on the disk, which haven't been viewed with the View function. Will be cleared after viewing.

File Is assigned by the transceiver at the time of reception. The numbering will be sequential starting with '000'. **Note.** If you don't do a Logout before turning off you transceiver, the current number will not be saved - So always do a logout...

Type Indicates the type; DATA (8 bit), ASCII (7 bit) or PACKED (5 bit).

Priority Is usually NOR for normal, but can be SOS in case a message with distress priority is received.

Status Indicates whether the message has been routed to local printer (Prn), diskette (Disk), remote printer (Rmt) or a combination thereof.

5.2.3 The Receive Log Facilities

The following facilities are presented on the menu bar:

- View** Views a message stored on disk.
- Print** Prints a message stored on disk.
- Logprint** Prints out the log.
- Mail Request** Send a request for mail to a Capsat Gateway.

5.2.3.1 Requesting Mail

If you normally receive your mail from a Company Mail System on a computer network (that connects to a Land Earth Station via a Capsat Gateway), you can use the *Request Mail* menu function to tell the Gateway to forward your mail to you.

When people on the Mail Network send messages to you, the messages will not be sent directly, but will instead be stored in the Gateways mailbox until you call in and request them with the *Request Mail* command

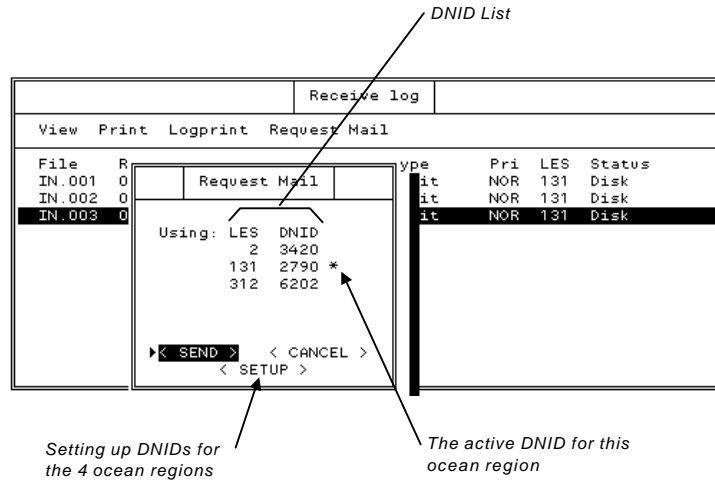


Figure 14 Requesting Mail

Your Transceiver must be registered at the Capsat Gateway for “Using Mailbox Service” if you want to be able to use this facility.

The request is sent as a datareport to a DNID. You must set-up which DNID to use before you can send any requests. The Capsat program can have one DNID for each ocean region.

5.3 Enhanced Group Call (EGC)

The Enhanced Group Call (EGC) facility enables your system to receive messages from different information providers. EGC messages will normally be printed, but you are able to route the messages to disk as well. Please consult the chapter Message Routing on page 5-13.

The EGC messages can be divided in 3 major categories.

Enhanced Group Call (EGC)

Capsat

| | |
|------------------|--|
| SafetyNET | Maritime Safety Information (MSI) from Information Providers registered by IMO for GMDSS purposes. |
| FleetNet | Information from authorised commercial Information Providers. |
| System | Supplied by Inmarsat. |

Table 3 gives a quick view of the different EGC services.

| Service | Abbreviated | Addressing | Type |
|---|--------------------|----------------------------|-------------|
| General Call | GENERAL | All mobiles | System |
| Group call | GROUP | ENID | FleetNET |
| Navigational Warnings to Rectangular areas. | NAV_WARN | Position | SafetyNET |
| Meteorological and navigational Warnings to circular areas | NAV_WARN | Position | SafetyNET |
| Inmarsat system messages | INMARSAT | All or all in Ocean Region | System |
| Coastal Warning (NAVTEX). | COASTAL | Navarea, subarea (A-Z) | SafetyNET |
| Shore-ship Distress alert to circular area | DISTRESS | Position | SafetyNET |
| EGC system message | SYSTEM | Mobile number | System |
| Meteorological or Navarea warning or Meteorological Forecast. | MET_WARN | Navarea | SafetyNET |
| Download Group Identity | ENID | Mobile number | System |
| Search and Rescue Co-ordination to rectangular area | SAR | Position | SafetyNET |
| Search and Rescue Co-ordination to circular area | SAR | Position | SafetyNET |
| Chart correction service | CHART | Enid | FleetNET |
| Chart Correction Service for fixed areas | CHART | Area | SafetyNET |

Table 3 Enhanced Group Call (EGC)

Note. If your position has the status INVALID in the Position window (Alt, P), the transceiver will receive all EGCs addressed by position.

5.3.1 The EGC Window

1. Choose *Options, Configuration, EGC* (Alt, O, C, E) to get the EGC window.

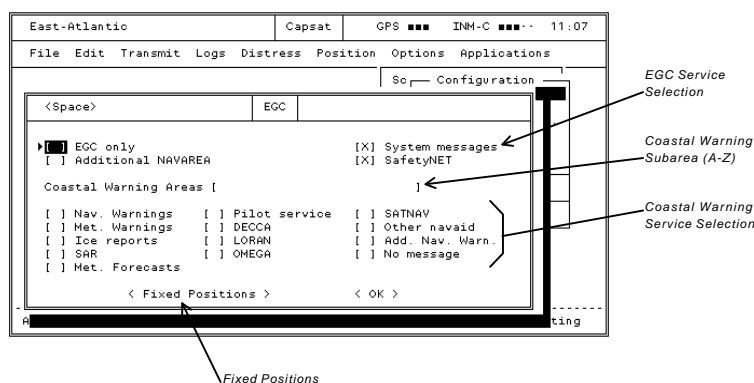


Figure 15 The EGC Window

EGC Service Selection Makes it possible to choose whether you want to receive a particular service type or not. FleetNET messages cannot be blocked. On maritime units this also applies to SafetyNET messages.

Coastal Warning Subarea (A-Z) Allows you to specify reception of messages addressed to one or several subareas within a NAVAREA. For instance you specify subarea A,C,E by typing 'ACE' in the field.

Coastal Warning Service Selection Allows you to mark 'X' the desired types of services for reception.

Fixed Positions Allows you to type in 5 additional positions in order to receive EGCs addressed to geographic areas including these.

Additional NAVAREA Allows you to receive EGCs addressed to one additional area besides the one currently given by your position in the Position window.

EGC only Will instruct the transceiver to stay tuned to the NCS-channel at all times intercepting all EGCs. The transceiver will not be able to do normal message reception and transmission. When choosing '< OK >' after specifying EGC only, you will be asked to confirm a logout. When turning 'EGC only' off again, you must manually initiate a login by choosing *Options, Login* in the Capsat window.

5.3.2 EGC Log

The EGC log holds information concerning the received EGC messages. The layout and the facilities strongly resembles those of the Receive Log, which we kindly ask you to consult. All EGC messages are named EGC.000, EGC.001 and so on. The priority field in the log may show the following codes.

| Short | Type | Remarks |
|-------|----------|---|
| NOR | Normal | |
| SAF | Safety | |
| URG | Urgent | A message box will be displayed on the screen and a Beep will issued at regular intervals until you remove the box by pressing Esc. In addition the Distress Msg LED and the audio alarm on the Remote Alarm Box will be activated. The audio alarm is stopped by pressing the buzzer reset button on the Remote Alarm Box. The Distress Msg LED is turned off by pressing Esc at the Message Terminal or by pressing the Stop button on the transceiver. |
| SOS | Distress | A message box will be displayed on the screen and a Beep will issued at regular intervals until you remove the box by pressing Esc. In addition the Distress Msg LED and the audio alarm on the Remote Alarm Box will be activated. The audio alarm is stopped by pressing the buzzer reset button on the Remote Alarm Box. The Distress Msg LED is turned off by pressing Esc at the Message Terminal or by pressing the Stop button on the transceiver. |

Table 4 EGC priority

5.3.3 ENID - EGC Network ID

The ENIDs are downloaded to your transceiver by the Download Group Identity service. When you have a particular ENID stored, you can receive EGCs addressed to this ENID. To check your ENIDs:

1. Choose Options, Configuration, ENIDs (Alt, O, C, I).

By Disabling an ENID, you will subsequently not receive EGCs addressed to this ENID. You can make an ENID active again by selecting *Enable* from the menu of the ENID window.

5.4 Distress

When you select Distress from the menu, different things will happen depending on whether you have a Maritime or a Land-mobile System.

5.4.1 Maritime Distress

You cannot send a Distress Alert from the Capsat Program, but you can set the Distress Message via the Distress Menu:

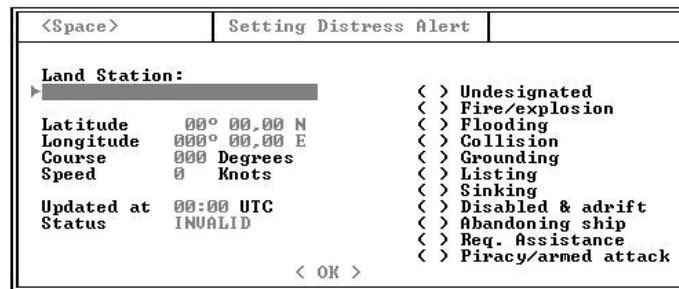


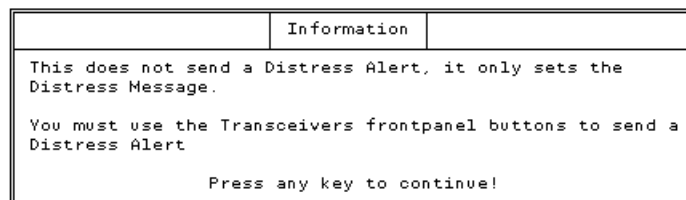
Figure 16 Setting Distress Message Window

Land Station Will normally be filled in with the station, that you used for your latest transmission. You may edit the field by pressing Spacebar.

Position Field Allows you to enter your current position.

Nature of Distress Shows here the types available for Maritime Distress.

The Maritime Distress Alert parameters set-up in the Distress Menu are transferred to the transceiver. The parameters are valid in the transceiver for an hour or until a distress acknowledgement is received. You **don't** send a Maritime Distress Alert from the Distress Menu. You will get a warning about this when you leave the Distress Menu:



To actually send a Maritime Distress Alert you must press the **Stop** and **Alarm** buttons on the transceiver simultaneously for at least 5 seconds until the Alarm indicator starts flashing.

After you have sent a Maritime Distress Alert you may then send a Detailed Distress Message (see later).

5.4.2 Landmobile Alert

Sending a Distress Alert on landmobile terminals is not allowed. You can instead send a Landmobile Alert.

If you want your landmobile system to be able to do landmobile alert, you must contact a Land Station to have your mobile reg-

istered. In addition you must program the transceiver to support it, by entering Terminal mode (Alt, O, C, T) and enter the following line:

```
set -z MOBAlert=ON
```

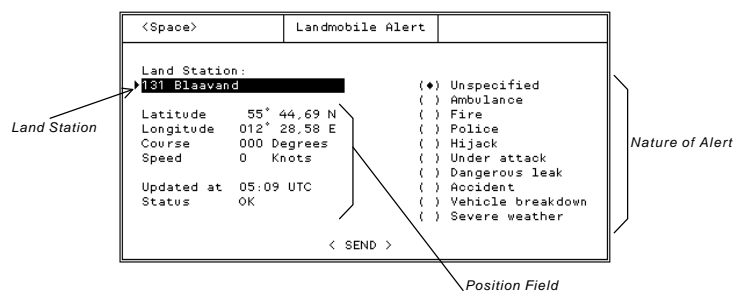


Figure 17 Land Mobile Alert

Land Station Will normally be filled in with the station, that you used for your latest transmission. You may edit the field by pressing Spacebar.

Position Field Allows you to enter your current position. If the status is INVALID, you should type in your position if at all possible.

Nature of Alert Shows here the types available for Landmobile Alert.

5.4.2.1 Sending a Landmobile Alert

1. Choose *Distress* (Alt, D). The highlight will be placed on the Land Station field.

2. If the Land Station field is empty, press Spacebar to choose a station from the Land Station list.
3. If the Position field status shows INVALID, type in the correct position if known.
4. Mark the appropriate Nature of Alert if you have got the time.
5. Press the Arrow Keys to move the highlight to '< SEND >' and press Enter.
6. You will be asked to confirm the transmission. Press Enter to confirm.

5.4.3 Sending a detailed Distress Message.

1. Type in the message in the Text Field of the Editor.
2. Choose *Transmit* (Alt, T).
3. Press the Tabulation Key to move the highlight one position to the right to the priority field '(●) Routine'.

Note. The Address Book may pop up when doing this, if the address field is empty. Just select the first destination as the address won't be used.

4. Press Arrow Down twice to move to '() Distress' and press Spacebar to select. This causes the address field to show 'SEARCH & RESCUE'.
5. Press Enter to move the highlight to '< SEND >' and press Enter again to transmit.

Note. If the Land Station field is empty, the highlight will be positioned there instead. Press Spacebar to get the Land Station list and select a station. Press Enter to move to '< SEND >'.

6. Confirm the distress priority transmission by pressing Enter.

Note. This applies only to Maritime Units.

5.5 Position & GPS

Your geographical position is a key element in a maritime system. It is used in EGC reception to selectively receive the messages addressed to certain areas. Also, a correct position is vital when sending Distress in case of emergency.

The transceiver may have a built-in GPS unit, which ensures that your equipment knows the correct position. If your transceiver has a built-in GPS, this will be indicated in the main Capsat window as shown below.

```
GPS ■■■ IMM-C ■■■■■ 11:33
```

The mode of the GPS is displayed using small boxes. See Table 5.

| GPS | Mode | Comment |
|-------|-------------|--|
| ••• | Acquisition | The GPS module is trying to acquire the correct position. To ease the acquisition, the approximate position and time could be entered. Upon power-up the GPS module will always enter this mode. If the transceiver has a valid position stored in non-volatile memory, this will be fed to the GPS. |
| ■ ■ • | 2-D | The time, latitude and longitude are known. The number of small boxes indicates the quality of the GPS signal. |
| ■ ■ ■ | 3-D | The time, latitude, longitude are known. |

Table 5 GPS Status

The time supplied by the GPS will be used as the system time. This also includes the PC or Message Terminal. When the GPS is in 2-D or 3-D mode, you are not able to change the time or the position. If you do not have the correct local time, please check your time-zone. (Press F10, Select Options and Clock).

Maritime Units Only. If the position hasn't been updated in 4 hours an 'Update Position' warning is shown. This warning is acknowledged using the Esc key. In addition the Status Field of the main Capsat window will show 'Position' next to the Ocean Region. This indication is removed when the position has been updated. If it isn't updated within 12 hours, the position will become invalid.

5.5.1 Setting the Position

1. Choose *Position* (Alt, P)
2. Type in the position; Longitude: degrees, minutes and hundreds of a minute and so on.
3. Press Enter on the OK button to actually set the position.

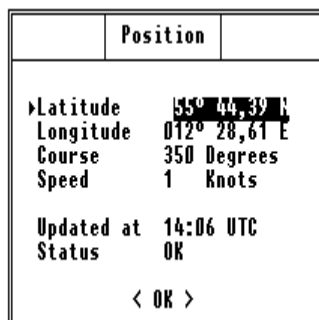


Figure 18 Setting the Position

When the position is shown on the screen, the values shown will be updated by the program allowing you to monitor the position generated by a the GPS module.

5.5.2 Position Reporting

This facility allows you to program the Transceiver to send position reports unattended. The reports are sent as Data Reports to a DNID-mailbox in a compressed format.

This makes the reporting inexpensive compare to sending a text message containing a position and time like explained in the section about Special Options on page 4-2.

A brief description of DNIDs is given on page 5-40.

The transceiver may also be commanded remotely to send position reports. This is done by Polling. You need to contact the LES Operator on the LES you want to use for instruction on how to use polling.

The Transceiver can control up to four *connections*, numbered from 0 to 3. Each of these connections can hold one reporting program, but only one of the connections can be *local*. This is the one that you can program from the Capsat program. The other 3 connections must be set up from a remote site via polling.

Below is a example of the status of connection 0 and 1 when they are un-programmed (closed). If you want to see connection 2 and 3 you can select *More* on the menu.

| | | Data Reporting | | | |
|------|-------------------------|----------------|------|--------|--|
| More | | Print | Save | Change | |
| 0 | Datareporting Closed | LES | DNID | Member | |
| 1 | Datareporting Closed | LES | DNID | Member | |

← Connection 0 Information Area

← Connection 1 Information Area

Figure 19 Data Reporting

5.5.3 Setting up Position Reports

Important: Before you start to set up a program you should make sure that your Transceiver has a good satellite signal, as the transceiver needs the timing information from the Inmarsat-C System to be able to set up the program.

To set up a Position Report program on your Transceiver, you must proceed as below:

1. Choose *Options, Configuration, Position Report* (Alt, O, C P) to get the Position Report window.
2. Select *Change, Open* from the menu.

| Data Reporting | | |
|---------------------------|--|--------------------|
| More | Print | Save Change |
| Datareporting 0 Closed | Status Open Program Start Stop Close | DNID Member |
| Datareporting 1 Closed | | DNID Member |

Figure 20 Setting up Data Reporting

You will now see a list of available DNIDs. You can mark one or more from the list, but the DNIDs must be from different ocean regions.

You can find out which ocean region the DNID belongs to by looking at it's LES ID. The first digit of the (3 digit) LES ID is the ocean region number:

- 0: Atlantic West
- 1: Atlantic East
- 2: Pacific
- 3: Indian

| Use SPACE to mark | | DNID | | | |
|-------------------|-----|-------|--------|---------|---------------------------|
| Select | | Mark | | | |
| Provider | LES | DNID | Member | Status | |
| t&t x.25 | 131 | 2540 | 21 | Enabled | } List of available DNIDs |
| t&t pstn | 131 | 2550 | 21 | Enabled | |
| t&t x.25 | 312 | 6202 | 21 | Enabled | |
| spare dnid | 1 | 10001 | 21 | Enabled | |

Two marked DNID's

Figure 21 Setting Ocean Area on Data Reporting

You can use Spacebar or choose *Mark* to mark entries. When you choose *Select* and press ENTER you will be returned back to the Position Window and the Transceiver will now open the connection for you.

| Data Reporting | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|--|---------------|--------|--------|--------|------------|------|------|----|-------------|---------|------|----|----------------|-------|--|--|--|------|--|--|--|-------|--|--|
| More | Print Save Change | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | <table border="0"> <tr> <td>Datereporting</td> <td>Status</td> <td>DNID</td> <td>Member</td> </tr> <tr> <td>Type: Loca</td> <td>Open</td> <td>2540</td> <td>21</td> </tr> <tr> <td>State: Stop</td> <td>Program</td> <td>6202</td> <td>21</td> </tr> <tr> <td>Contents: None</td> <td>Start</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Stop</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Close</td> <td></td> <td></td> </tr> </table> | Datereporting | Status | DNID | Member | Type: Loca | Open | 2540 | 21 | State: Stop | Program | 6202 | 21 | Contents: None | Start | | | | Stop | | | | Close | | |
| Datereporting | Status | DNID | Member | | | | | | | | | | | | | | | | | | | | | | |
| Type: Loca | Open | 2540 | 21 | | | | | | | | | | | | | | | | | | | | | | |
| State: Stop | Program | 6202 | 21 | | | | | | | | | | | | | | | | | | | | | | |
| Contents: None | Start | | | | | | | | | | | | | | | | | | | | | | | | |
| | Stop | | | | | | | | | | | | | | | | | | | | | | | | |
| | Close | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <table border="0"> <tr> <td>Datereporting</td> <td>DNID</td> <td>Member</td> </tr> <tr> <td>Closed</td> <td></td> <td></td> </tr> </table> | Datereporting | DNID | Member | Closed | | | | | | | | | | | | | | | | | | | | |
| Datereporting | DNID | Member | | | | | | | | | | | | | | | | | | | | | | | |
| Closed | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 22 Changing Status on Data Reporting

You can see that the Connection Area for Connection 0 has now been filled with information about the Position Report program.

3. Select *Program* from the menu.

You can now specify how often you want your reports to be sent. The default is 60 minutes between each report.

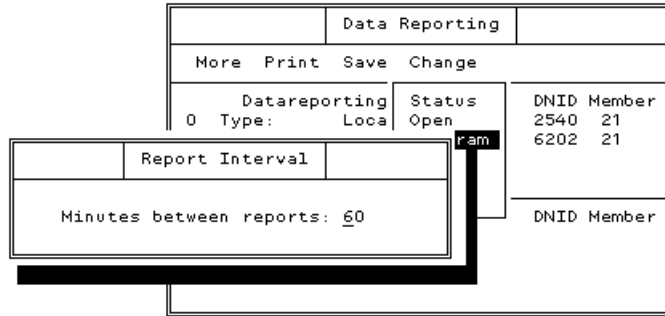


Figure 23 Reporting Interval

- To finally start the reporting choose *Start* from the menu, and you will see a result like the one below:

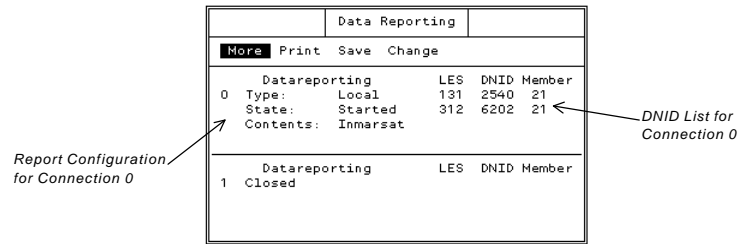


Figure 24 Starting Data Reporting

You now have an active Position Report Program!

The Report Configuration shows you the details of the current program:

Type: Can be *Local* or *Remote*. This tells you if the connection is one that you have made via the Capsat Program or if it has been set up via polling from a remote site. One of the 4 connections can be local.

State: Can be *Started* or *Stopped*. This informs you if the connection is currently sending any reports.

Contents: Can be *None*, *ADS* or *Inmarsat*. The indication is *None* as long as the connection has not been programmed, *ADS* if the connection sends Position Reports in the *RTCA DO-212 Automatic Dependent Surveillance* data format, and *Inmarsat* if the position reports are sent in the Inmarsat specified Landmobile or Maritime format. If this field is blank the connection is either not programmed or sends reports without positions.

5.5.4 Checking the Reporting Functions

By selecting *Status* from the menu you can see the technical details of the local connection. The menu will be unavailable if you do not have a local connection open.

Below is an example:

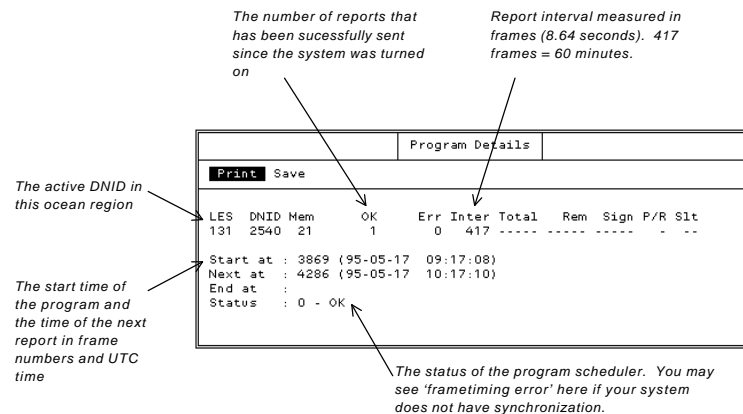


Figure 25 Data Reporting Program Details

5.5.5 Position Report Format

The Transceiver will as default send locally programmed position reports in the Inmarsat defined Landmobile and Maritime position report format, but you can change this if you have the need to work with the newer and more advanced RTCA DO-212 ADS format.

You must change the format setting before you open your local connection as the setting will only be checked by the Transceiver when a connection is opened.

If you want your system to send position reports in the RTCA DO-212 ADS format, you must program the Transceiver to support it, by entering Terminal Mode (ALT, O, C, T) and enter the following line:

```
set -z POSFORMAT=ADS
```

This will not affect the format of the existing connections. It only specifies which format will be used when you open a new local connection.

5.6 Ocean Region Management

The coverage area of neighbouring satellites overlap. In many areas you will be able to use more than one ocean region.

5.6.1 Scan

The transceiver scans the satellite frequencies in order to find the strongest signal. When the best signal is found, a login will be issued if need be. A scan may be performed within the limits of one Ocean Region or in all regions. You control this by:

1. Choose *Options, Scan* (Alt, O, S) to get the Scan menu.

2. Initiate a scan by selecting a specific Ocean Region or selecting an All ocean-scan. The '•' marks your selection.

5.6.2 Login

The transceiver will automatically perform a login if necessary when you turn on the power. This is true in all cases, but one. A Landmobile unit will do nothing, if it's not commissioned. In that case you must manually perform a login.

1. Choose *Options, Login* and select the desired Ocean Region. A '•' will mark your selection and the Status Field of the Capsat window will show '<LOGIN>' until the login is completed.

You may force the transceiver to login on a specific satellite channel by choosing *Channel...* from the Login menu.

Do Manual Login when...

- You have logged out and you haven't turned off your equipment in the meantime.
- You have turned on your system for the first time.
- You want to operate in another Ocean Region.

5.6.3 Logout

Before turning off your system you should perform a logout. This will instruct the transceiver to save certain system parameters (Numbers of EGC-, IN- and OUT-files). Also the Inmarsat-C system will be able to notify any calling parties, that your transceiver at the moment cannot be reached.

1. Choose *Options, Logout* (Alt, O, O) and confirm the Logout. The Status Field of the Capsat window will show '<LOGOUT>'.

2. When the Status Field have changed to 'Logged Out', you are welcome to turn off your equipment.

5.7 Secondary Serial Port

The Capsat supports interface to two serial com ports. The first port is connected to the transceiver and the secondary serial port is offered as an additional interface to the Inmarsat-C system. The normal use of the interface is to connect an external PC and then use the PC to send specific messages. Please refer to section 7.9 for a description of the interface.

To switch the status of the com port please:

1. Choose Options, Secondary Serial Port (Alt, O, P) to get the window presented.
2. Choose status of the port by using the space and arrow buttons.



Figure 26 Open/Close Secondary Com Port

When the transceiver is off or not connected the status bar on the upper right corner will display "Idle-Mode". When the transceiver powers up, the status bar will display "Term-mode". If the secondary Com port is connected to a Mini-M in a Dual Mode Transceiver configuration the status bar will display "Dual-mode"

It is a requirement that any secondary com port is disconnected in distress situations. If your initiate a Distress Alert from the Inmarsat-C system you will find that the secondary com port is disconnected. To make the port work again you must either clear

the distress situation by pressing the stop/set button on the equipment or you must enter the secondary serial port menu and open the port manually there.

Please notice: The port is always closed and can not be opened during initialisation (*Idle-mode*) or while the CAPSAT displays the “*Sending Distress Alert*” message.

5.8 Miscellaneous

In this chapter we will briefly describe some of the rarely used facilities in the user interface.

5.8.1 Link Test

The Link Test checks if your equipment meets the specifications set out by Inmarsat. As previously described, a Link Test will be carried out when performing a login for the first time. The test is then regarded as a commissioning procedure. You may do a Link Test at any time if you want to check your system again.

1. Choose *Options, Link test* (Alt, O, I) to have the Link Test window displayed. If a test has been carried out, the results will be shown. Each item will have the verdict OK or FAIL. If no test have been done with this unit, no results will be available.
2. Do a Link Test by choosing *Activate* from the menu bar. The Status Field of the Capsat window will show '<LINK TEST>' until the test have been completed.
3. During the Link Test the message:

**Automatic test mode: Normal communication disabled.
Do not press any distress buttons unless you are in dis-
tress**

will be displayed.

4. When the link test is completed, the 'Link Test Finished' message is displayed/printed along with the results of the test. This may take up to 15 minutes!

5.8.2 Polling

A "Poll" is a message, but it differs from normal messages in the way that it can only be sent in the direction from a terrestrial user (telex, x.25 or telephone modem) towards the mobile unit and in the way that it may simultaneously be received by several mobile units.

A Poll can be addressed to:

- One specific mobile.
- A group of mobiles.
- A group of mobiles within a specified geographic or navigational area.

The reception of a poll can initiate the transmission of a position report or trigger some other pre-defined event. As shipped your system only supports transmission of position reports in return to a poll. When a Capsat mobile unit responds to a Poll, the response is either forwarded to the terrestrial user at once, or it is stored at the Land Station for later retrieval. When receiving a poll the transceiver will generate a file containing the data of the poll. These files named POLLFILE.000, POLLFILE.001,... will be transferred to disk. On PCs, the files will be placed in the start-up directory. No further action will be taken.

5.8.3 DNID - The Data Network ID

The DNID is a unique number, which serves as a link between the terrestrial user and the mobile unit(s), i.e. the DNID is used when the terrestrial user issues a Poll and also when the mobile responds. A user may very well have several DNIDs. This is also the case for the mobile.

When several mobiles have the same DNID, this is called a group. Each mobile in the group is also designated a member number, which enables the terrestrial user to differentiate between the mobiles in the group. This is especially important, when responses from the mobiles are processed at the premises of the terrestrial user.

The user interface allows you to enable or disable DNIDs. If a DNID is disabled you will not receive any poll with this DNID or be able to use it for position reporting.

To change the status of a DNID:

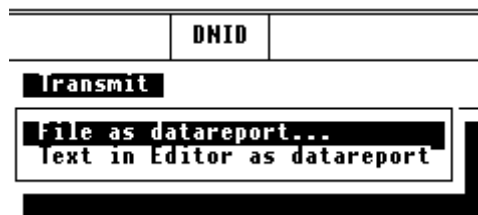
1. Choose *Options, Configuration, DNIDs* (Alt, O, C, D) to have the DNID window displayed.
2. Choose *Enable* or *Disable* to change the status of a DNID entry.

The entries can have the status *Enabled, Disabled, T&TPos on* and *T&TPos off*. The last two types will only appear if you have set this DNID to use the old T&T type position reporting.

The user interface also allows you to send a data report directly to a DNID:

1. Choose *Options, Configuration, DNIDs* (Alt, O, C, D) to have the DNID window displayed.
2. Move the highlight to the DNID, that you want to send to.

3. Choose *Transmit* and select either the current content of the editor or a disk file to be transmitted as a data report. Please note that the size of the data report is limited to 120 bytes. If your message/file is too big, only the first 120 bytes are transmitted.



5.8.4 NCS Channels

The system comes with 4 pre-programmed NCS channels. Upon receiving information from Inmarsat you may insert new channels in this table.

1. Choose *Options, Configuration, NCS-channels* (Alt, O, C, N) to have the NCS window displayed.
2. Choose *Insert* to insert a new NCS-channel.

5.8.5 Transceiver Status Information

General information of the transceiver is available. The given information is discussed in detail in the *Installation and Service Manual*. Only in case of problems, you may need to see this information.

1. Choose *Options, Transceiver status* (Alt, O, T) to have the Status window displayed.

2. Choose *Update* just once to have the window updated automatically every 5 seconds.

5.8.6 GPS Status Information

1. Choose *Options, GPS status* (Alt, O, G) to have the Status window displayed.
2. Choose *Update* just once to have the window updated automatically every 5 seconds.

5.8.7 Password

5.8.7.1 Capsat Application

The Capsat applications has two passwords: One for message transmission and one for the program configuration.

Choose *Options, Configuration, Password* for entering passwords for the Configuration and Transmit Window.

You will be asked for the password in the following places:

Configuration Password:

The EGC Window when you select OK and press Enter.
The Routing Window when you select OK and press Enter.
The Open, Program, Start, Stop and Close menu selections in the Change Menu of the Position Report Window.
The DNID and ENID Windows when you select Enable or Disable and press ENTER.

Transmit Password:

The Transmit Window when you select OK and press Enter.

You can remove the passwords again if you choose *Password* again and re-enter your password twice.

5.8.7.2 The Capsat Transceiver

The Transceivers own configuration can also be protected by a password. If this feature is enabled you may see an error message like the one below when you start the Capsat program.

| | | |
|--|------|--|
| | Info | |
| You need a Transceiver Configuration password to use this command | | |
| Press Esc to continue! | | |

You can ignore this message if you do not need to change any Transceiver configuration (like message routing, printer settings etc.)

If you do need to change the Transceivers configuration you must enter the password in the Transceiver, by selecting the Terminal mode (Alt, O, C, T) and enter the following lines:

```
set -d <Enter>
```

```
password<Enter>
```

where you must type your Transceivers configuration password instead of the word *password*. Please note that the Transceiver will display stars instead of the letters in your password.

When you have set the Transceiver password you will see the following response:

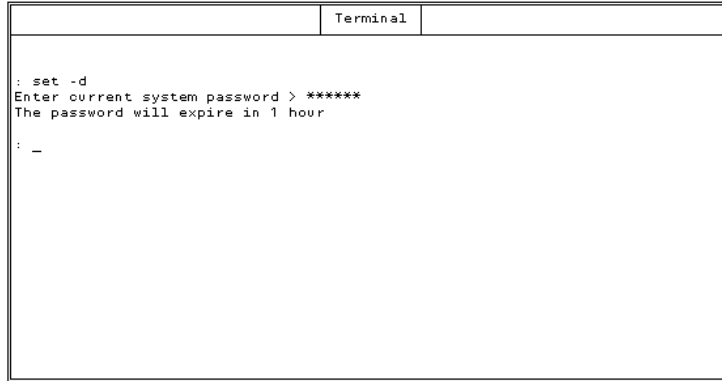


Figure 27 Terminal Mode

You will then have 60 minutes to make your changes.

5.8.8 Test Mode

The Distress Test Mode facility (Alt, O, E) allows test of the Distress Buttons, Distress LED's and wiring. When Distress Test Mode option is selected the Distress Test Mode message is displayed:

| | | |
|---|------------------|--|
| | Cancel Test Mode | |
| Yes | No | |
| Distress buttons are under test. Cancel the test mode if a real distress alert needs to be sent. Cancel? | | |

Figure 28 Test Mode

In Distress Test Mode the Distress Buttons can be activated and tested without issuing Distress Alerts. Distress Test Mode is terminated by pressing the Esc key. After Distress Test Mode is terminated activating the Distress Buttons will again result in a Distress Alert being sent.

5.8.9 Terminal Mode

The Terminal Mode is available for users wanting to customise their system to a degree not available from the windows of the Message Handling software.

In Terminal Mode you are in direct contact with the transceiver and you are able to issue commands by typing them from the keyboard.

1. Choose *Options, Configuration, Terminal mode* (Alt, O, C, T) and wait for the blinking cursor to appear. This may take a while if the transceiver and the Message Handling program is communicating.
2. Press Enter to see the prompt ':' on the screen.
3. Type '?' and Enter to get a list of the available commands.
4. Type in a command followed by '?' and press Enter to get detailed information.

Note. Always leave the Terminal Mode (Press Esc) when you're done to ensure the functionality of your system.

5.8.10 Message Log

All in- and outgoing messages are recorded in special log files on disk. Each log file may hold as many as 50 messages. The name of the log files have a special layout such as:

LOG09-97.001 LOG10-97.001 LOG10-97.002

where 09 and 10 is September and October respectively. 97 is the year. 001 and 002 is a sequential number within each month. A new log file is generated when a new month begins or when the size of the file gets larger than 100 Kb.

The information shown in the Transmit log, the Receive log and the EGC log is that of the 2 latest log files. This means, that the information in these log will show a maximum of 100 messages all together.

When the free disk space gets well below 150Kb, the program will ask you to insert an empty disk. A new log file is then generated on the new disk and you will be asked to insert the previous disk to have the program copy the latest log file on to the new disk. In this way you get continuity in the logs.

When using floppy diskettes, you may need to remove the message log disk from time to time in order to retrieve files on other disks. If the program needs the log file during this, you will be asked to insert the disk with the log files again.

5.8.11 Inspecting Old Message Logs

Old message log files may be inspected and messages may be retrieved. This is done by:

1. Choose *Logs, Old log files* (Alt, L, O) to have a list of the log files presented.
2. Move the highlight to the log file, you want to see and choose *Select* which then presents a window as shown below.
3. Move the highlight to a message. You may now View, Print or even Copy the message to a separate file.

| East-Atlantic | | Capsat | GPS *** | INM-C ***** | 13:11 |
|--|-------|--------------|---------------|-------------|--------------|
| File Edit Transmit Logs Distress Position Options Applications | | | | | |
| | | LOG12-92.002 | | | |
| View Print Copy | | | | | |
| Date | Time | Message | | | Status |
| 01-Dec-92 | 14:41 | OUT.008 | T&T Telex | | Failed |
| 01-Dec-92 | 14:41 | OUT.009 | T&T Telex | | Failed |
| 01-Dec-92 | 14:49 | IN.073 | | | Disk+Prn+Amt |
| 01-Dec-92 | 15:14 | IN.074 | | | Disk+Amt |
| 01-Dec-92 | 15:16 | IN.075 | | | Disk+Amt |
| 01-Dec-92 | 16:28 | OUT.090 | T&T Telex | | Failed |
| 01-Dec-92 | 16:31 | OUT.091 | T&T Telex | | ConfOK |
| 03-Dec-92 | 13:09 | OUT.001 | T+T This unit | | ConfReq |
| 03-Dec-92 | 13:12 | OUT.002 | T+T Fax | | Failed |
| 03-Dec-92 | 12:22 | IN.080 | | | Disk |
| 03-Dec-92 | 12:02 | OUT.097 | 581492380021 | | Failed |
| 03-Dec-92 | 12:16 | OUT.098 | 581492380021 | | Acknowledged |

-----<<-----
Inserting

Figure 29 Old Message Logs

5.8.12 About...

The About window gives you a summary information of your system, such as the program version, serial number, mobile number and type.

1. Choose *File, About* (Alt, F, B)

5.8.13 Internet Mail

When the Inmarsat-C network was launched the Internet Email facility was not commonly used and the Inmarsat-C protocols are therefore not prepared for sending Internet emails.

This problem has been solved such that the different Internet Email fields like address, CC address, Subject etc. are written into the normal Inmarsat-C mail as separate lines with a keyword and the corresponding text. An example could be

TO: MarineMarketing@tt.dk

Where the "TO:" is the keyword and the rest of the text line is the Email recipient.

The different Inmarsat-C service providers does unfortunately not use the same keywords causing the email transmission to be somehow confusing.

In the InternetMail menu (please see Figure 30) the configuration for each service provider can be entered. When the parameters are correctly configured the Capsat program will automatically enter the service provider depending keywords and corresponding text in the Inmarsat-C message causing Internet Email message transmission to be as easy as all other message formats in the Inmarsat-C network.

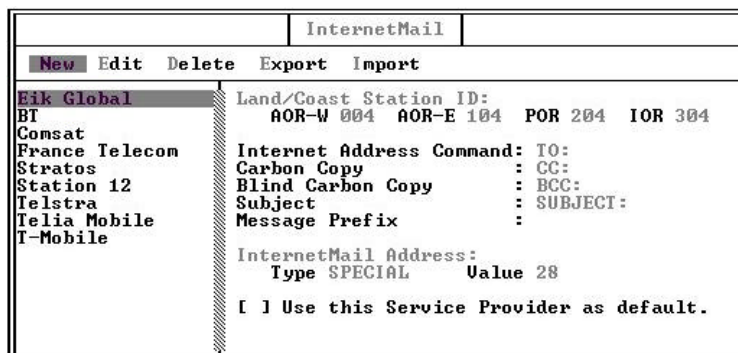


Figure 30 InternetMail Configuration Menu

When the Capsat is delivered all known service provider configurations are pre-entered, and it should therefore only be necessary to use this menu if additional service operators offer Inmarsat-C email facilities.

If a new service provider has to be configured please use the following guidelines:

1. Chose Options, Configuration, InternetMail (Alt, O, C, M) to have the configuration menu presented.
2. Select New from the Menu bar and start with entering the service providers name.
3. For each ocean area where the Operator is present the Inmarsat-C LES ID has to be entered. Leave unsupported ocean area fields empty.
4. For each of the items: "Internet Address Command", "Carbon Copy", "Blind Carbon Copy", "Subject" and "Message Prefix" the corresponding text has to be entered. Please refer to information given by the Operator. Unused fields are left empty and will therefore not be available when transmitting the email (please see section 5.1.5).

5. Depending on service provider configuration the Internet Email message is either transferred using Special Access Code (Special) or using X.25. Please select the correct format using the space button on the type field. The corresponding value field must be entered afterwards. Please refer to service provider information on type and value.
6. Finally it can be chosen that the service provider is used as default email operator causing all emails be transmitted using this provider. This is done by checking the "Use this Service Provider as default". Obviously only one operator can be selected as default.

Capsat

Miscellaneous

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6 Directory

The Directory is a tool, that you can use to organise and work with your files stored on disk.

1. Press F9 to access the Directory.

or

1. In Capsat choose *File, Directory* (Alt, F, D).
2. Press Esc to return.

6.1 The Directory Window

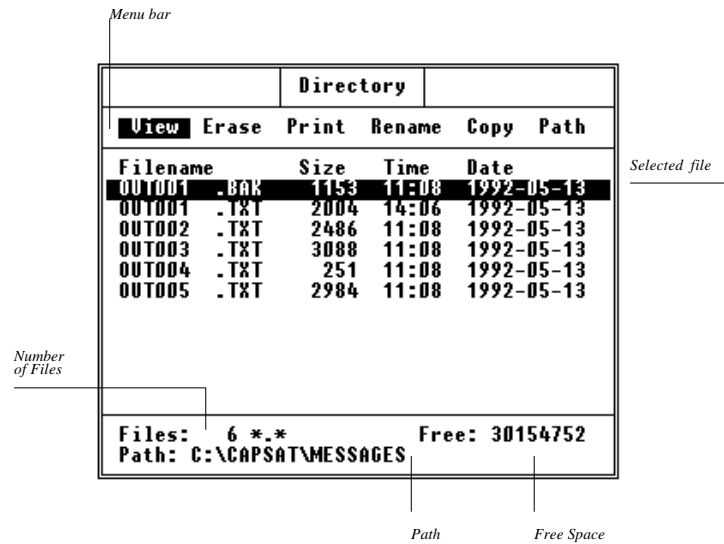


Figure 31 Directory Window

Menu bar Contains menus.

Selected File Is the file on which an operation is going to take place. Use Arrow Up/Down to select another file.

Path Indicates the name of disk and directory in which the presented files are located. On TT-3606 Message Terminal directories are not supported.

Free Space Is the space, that's free to use on the disk.

Number of Files Is the number of files located on the disk or in the directory. Note. On the TT-3606 Message Terminal no more than 112 files can reside on a disk. Normally there will Free Space left on the disk, but if the disk holds 112 files, you will not be able to store anymore files on the disk.

6.2 The Directory Facilities

The following facilities are presented on the menu bar:

View Allows you to inspect the contents of a file. You cannot change the contents of the file.

Erase Deletes the selected file from the disk. You will be asked to confirm the deletion. **Tip.** To delete a number of files, mark the files by pressing Spacebar when they are selected one by one. Erase is then able to delete all the marked files in one operation.

Print Prints the selected file.

Rename Enables you to change the name of a file.

Copy Makes a copy of the selected file.

Tip. To copy a number of files, mark the files by pressing Spacebar when they are selected one by one. When selecting

Copy, you must then specify the path to which you want copy, i.e. C:\CAPSAT or A:

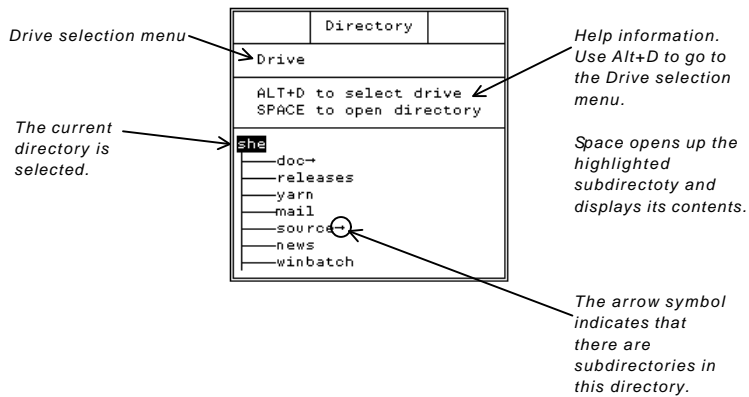
Path

Changes the path of Directory making it possible to have files from a different drive/directory presented.

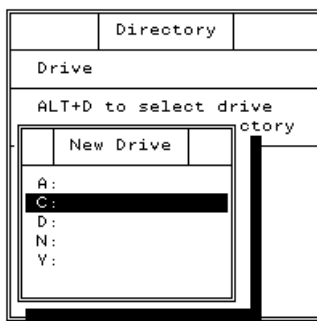
Note. Changing the path of the Directory does not affect the current path (Working directory) of Capsat and the Address Book.

The following is only available in the PC version of the Capsat Program:

When you select path you will see a graphical representation of the structure of your disk. You can now use the arrow keys to move the highlight to another directory.



- Up arrow:** Goes up the directory tree. If you move above the top of the window, you will be move one level up in the tree.
- Down arrow:** Goes down the tree.
- Left and right arrows:** Scrolls the display left and right.
- Space:** Opens the highlighted directory and shows its contents. Directories with small arrows after their name contains other subdirectories.
- ALT+D:** Goes to the Drive selection menu. You can select a new drive to be displayed in the window.



- Enter:** Selects the highlighted directory and returns you to the Directory Window.

7 System

System is a tool, that you allows you to change certain system settings.

1. Press F10 to access the System window.

or

1. In Capsat choose Applications, *System* (Alt, A, S).

7.1 Moving Windows

The Capsat Message Handling program is divided in 4 (5) major parts:

Capsat

Address Book

Directory

System

At any time there will be at least one window active for each part. This is true, even if you cannot see a certain of the above mentioned parts. The windows within each part are positioned relative to each other. Moving one window will also move all other connected windows. E.g. moving a window in the Address Book will affect all windows in that part, but not in any other part.

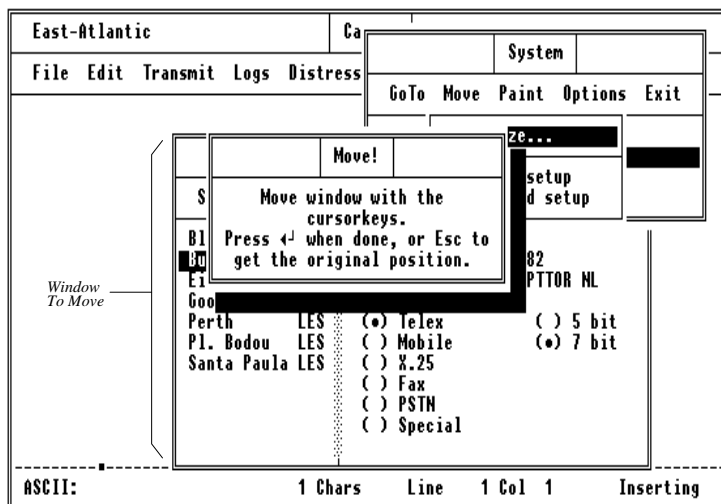


Figure 32 Moving Windows

1. Get the window, that you want to move, on top of the screen (I.e. with a shadow).
2. Press F10 to access the System window.
3. Choose *Move, Customize* (M, C).
4. Move the window(s) with the Arrow Keys and press Enter when you are satisfied. A beep while moving a window indicates, that it cannot be moved any further in this direction.
5. Press Esc twice to return to the now moved window.

If you want the default setting back, choose *Standard setup* from the *Move* menu.

7.2 Changing Colours

The Capsat Message Handling program is divided in 4 (5) major parts:

Capsat

Address Book

Directory

System

The Capsat part is furthermore divided in 3 sub parts. Each part has a different colour set-up. Each part or sub part has up to seven colour fields. The names of the colour fields allow easy identification. However 3 names are standard:

| | |
|-----------------|--|
| General | The colour of the major parts of the window. |
| Cursor | The colour of the highlight or cursor found in all menus. |
| Standout | The colour of the window title and the short-cut character of the menus. |

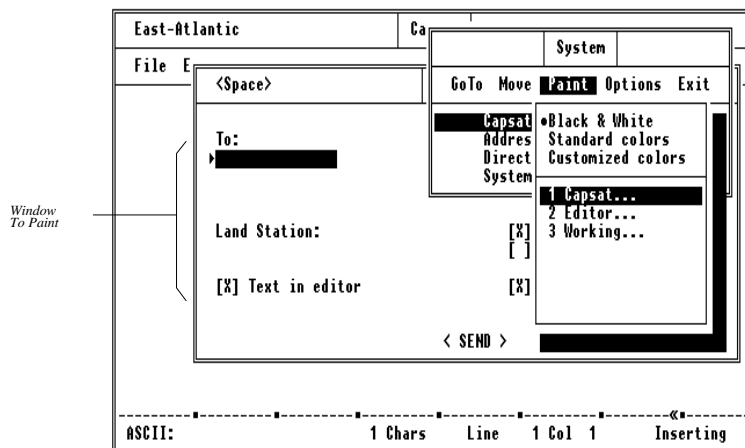


Figure 33 Changing Colours

To change the colours of a window do the following:

1. Get the window, that you want to paint, on top of the screen (i.e. with a shadow).
2. Press F10 to access the System window.
3. Choose *Paint, Customise (P, C)*.
4. In case of sub parts, choose the appropriate part.
5. Select the colour field, you want change.
6. Choose the new colour from the presented colour palette. All windows having the chosen colour field is updated immediately upon pressing Enter, allowing you to inspect the result right away.
7. Press Esc twice to return to the now painted window or select another colour field.

If you want the default setting back, choose *Standard setup* from the Paint menu.

Note. When the program detects a colour CGA screen, the 'Black & White' setting is not entirely black and white. This is because some LCD displays on portable PC's needs special colours in order to function correctly.

7.3 Setting Display Options

1. Press F10 to access the System window.
2. Choose *Options, Display (O, D)* to get the Display window presented.

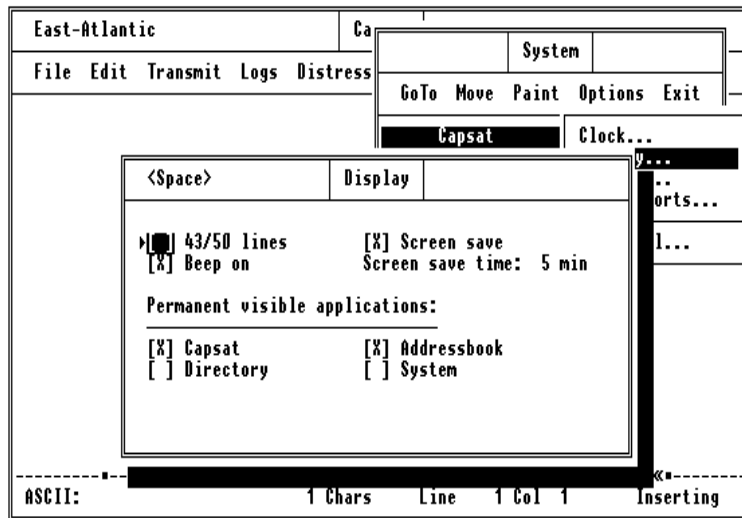


Figure 34 Setting Display Options

In the Display window you edit the following items:

System

Setting Display Options

43/50 lines You can get 43 lines on the screen with an EGA adapter and 50 lines with an VGA. Default is 25 lines.

Beep You may set beep off. This applies only to invalid keystrokes. Default is On.

Screen save This facility shows a blank screen after a period of inactivity. On the blank screen the current ocean region, signal strength and time will be shown at different positions, e.g.:

East Atlantic ■■■■■ 12:15

Pressing a key on the keyboard will show the windows on the screen again. This is also the case, if a new window is displayed by the program. Screen save may be disabled. Default is Off.

Visibility Controls the presentation of all the major parts of the program. Each part, called an **Application**, may be set to be shown at all times indicated by a '[X]' or only to be shown when you're actually using this part. Default is that Capsat and the Address Book are shown at all times. Directory and System are only shown, when you're actually using them.

The following is only available on the TT-3606E Message Terminal.

Brightness You can adjust the display- and softkey-backlight through the brightness level, which goes from 0 (no light) to 100 (maximum light).

The brightness level is not just the level of the display- and softkey-backlight, but also of the color setup of the display. Above a certain brightness level the program uses the colors chosen by you (b&w, standard or customized) and below a certain level the night setup is used (red characters on black background).

The brightness control can be configured to manual or automatic. If the automatic brightness control is turned on the brightness level is based on the light level around the terminal. The user can still change the brightness level, but the automatic control will begin to adjust the brightness level again after 2 minutes. If the automatic brightness control is turned off, the chosen brightness level is never changed.

The brightness level can also be changed manually via the keyboard by pressing <Ctrl+u> to increase the level or <Ctrl+d> to decrease the level.

7.4 Configuring the Serial Port

1. Press F10 to access the System window.
2. Choose *Options, Serial ports* (O, S) to get the Serial port window presented.

Please notice that it is not possible to select other than <Default>, while the transceiver is connected (Power ON). Therefore turn OFF the transceiver and wait for "Transceiver not connected!" to be displayed in the Status Field.

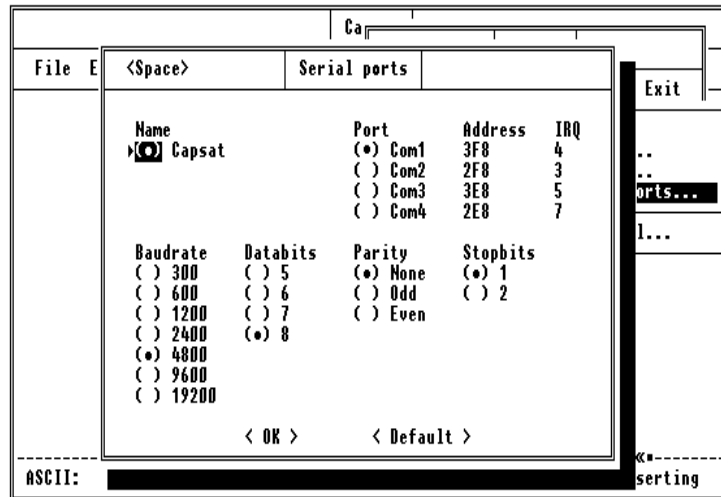


Figure 35 Configuring the Serial Port

Normally you should not change this set-up, unless you want to use another port instead of Com1. To restore the default set-up move the highlight to '< Default >' and press Enter. Press Enter once more on '< OK >' to actually load the values.

7.4.1 Using Com2

1. Press F10 to access the System window.
2. Choose *Options, Serial ports* (O, S) to get the Serial port window presented.
3. Move the highlight to the Com2-field by pressing Arrow-Right and Arrow-Down.
4. Press Spacebar to get ' Com2'.

5. Press Enter to move highlight to '< OK >', and press Enter once more.

7.4.2 Using Com3 or Com4 (PC only)

It is very important that the address and the IRQ is correct. This depends on the type of PC, that you are using. The default set-up matches a PC/AT type computer. We recommend that you use the addresses and IRQs listed in the table below. Take care that the set-up matches the set-up of your serial card. On some serial cards it is not possible to specify IRQ 2, 5 or 7. It is possible to use IRQ 3 or 4, if no other port uses this IRQ simultaneously!

| | Com3 IRQ | Com3 Addr | Com4 IRQ | Com4 Addr |
|-------|-------------|--------------|-------------|--------------|
| PC/XT | 2 | 3E8 | 7 | 2E8 |
| PC/AT | 5 | 3E8 | 7 | 2E8 |
| PS2 | 3 | 3220 | 3 | 3228 |

Table 6 COM Port Settings

7.5 Configuring the Printer

1. Press F10 to access the System window.
2. Choose *Options, Printer* (O, P) to get the Printer window presented.

In the Printer window, you can control the following parameters.

Full page always If set On, a full page is always printed no matter how short the message may be. If you are using a laser-printer you must set this On. Default is Off. In the Off position, a line '----' is printed between each printout.

| | |
|-----------------------|---|
| Use Formfeed | If set On, a Formfeed character will be sent to the printer after every page printed. If you are using a laser-printer you must set this On. Default is Off. |
| Compressed | If set On, the characters are printed in compressed form allowing up to 132 characters per line. Only relevant for PC's having a local printer connected. Default is Off. |
| Header/Footer | If set On, a header and a footer is printed on every page. Only relevant for PC's having a local printer connected. Default is On. |
| Lines per page | Specify the maximum number of lines on a page. Default is 64. |
| Left margin | You may specify a number of characters for the left margin. Default is 5. |
| Printer Filter | This can have one of 3 settings: |
| None: | There is no filtering |
| Normal: | The program filters (removes) printer control characters from both the high and the low part of the ASCII table. |
| Low: | The program filters printer control characters only from the low part of the ASCII table. |

The filter setting should remain at *normal* unless you need to print graphic data (set it to *none*), or print special language characters such as Cyrillic (set it to *Low*).

The setting applies to systems having the printer connected to the transceiver as well as systems having it connected to the PC/Message Terminal. Refer to the chapter Message Routing on page 5-13 for more information concerning this.

Important. Maritime systems must have the printer connected to the transceiver.

7.6 Setting the System Clock

1. Press F10 to access the System window.
2. Choose *Options, Clock* (O, C) to get the Clock window presented.

In the Clock window, you can change the current date and time of the system, i.e. both the transceiver and the PC/Message Terminal. You may also specify your time-zone, whether you're East, West or right on UTC. If you're East or West, you can specify the hours and minutes of your time-zone.

7.7 Formatting a Floppy Disk

If you are using a Message Terminal, it is possible to format 3½" 720 KB floppy disk within the program. PC users must format their disks using the DOS format command.

1. Press F10 to select the System window.
2. Choose *Options, Format disk* (O, F).
3. Confirm that you want to format the floppy disk. **Warning.** All data on the disk will be erased!

7.8 Configuring the Macro Key's

Please notice that this option only is relevant for the TT-3606E Message Terminal.

On each side of the TT-3606E Message Terminal display is a column with six softkeys. These softkeys are pre-programmed with a default macro from factory and this setting can be viewed by pressing and holding a softkey for more than two seconds.

The default setting of the softkey macro's can also be viewed or altered by entering the softkey menu.

1. Press F10 to access the System window
2. Choose Options, Macro (O, M) to get the Macro window presented.

| | | Macro |
|------------|---------------------------|--|
| Run | Record | Stop Edit Delete Copy Exchange Export Import |
| Softkey : | Text <Help> : | Size: |
| SOFIKEY-01 | *ESC | 1 |
| SOFIKEY-02 | *Arrow UP | 1 |
| SOFIKEY-03 | *Arrow DOWN | 1 |
| SOFIKEY-04 | *ENTER | 1 |
| SOFIKEY-05 | *Arrow LEFT | 1 |
| SOFIKEY-06 | *Arrow RIGHT | 1 |
| SOFIKEY-07 | View latest EGC mail | 10 |
| SOFIKEY-08 | View EGC-log | 8 |
| SOFIKEY-09 | View latest received mail | 9 |
| SOFIKEY-10 | View receive-log | 7 |
| SOFIKEY-11 | | 0 |
| SOFIKEY-12 | | 0 |

Figure 36 Macro Configuration Menu

The Macro keys are numbered with the first key on the upper left corner the sixth key on the lower left corner, the seventh key on the upper right corner and the twelfth key on the lower right corner.

When working with macro's the current Macro status will be flashing in the lower left corner of the CAPSAT display (i.e. "running", "recording" ...).

If you for some reason want to stop the execution of a macro you can always press <Ctrl-S>. This will stop all macro execution.

A macro can hold a maximum of 494 keystrokes.

The following facilities are presented on the menu bar

| | |
|-----------------|--|
| Run | Run the selected macro |
| Record | Start recording a new macro |
| Stop | Stop recording the macro |
| Edit | Edit the explaining text connected to a macro. Please notice that it is not possible to edit the actual macro functionality. |
| Delete | Delete a macro |
| Copy | Copy a macro |
| Exchange | Exchange on macro with another. This option is used when a macro should be assigned to another softkey |
| Export | Macro configuration can be exported to a floppy disk for later import in (another) Message Terminal |
| Import | Import of prior stored macro configuration. |

7.8.1 Record a Macro

A new macro can be recorded with the Record facility of the Macro window.

1. Press F10 to access the System window

2. Choose Options, Macro (O, M) to get the Macro window presented.
3. Place the highlight on the macro key, you want to assign to a new macro.
4. Choose Record to start recording a new macro and confirm by pressing <enter> that you will continue this action causing any prior recorded macro to be deleted.
5. Enter a text that describes the macro functionality. Please notice that if the first character is a "*" the macro will be executed from the current window. All other macros are executed starting in the Capsat main window. If the first character is a "#" the macro will be executed with a delay of approximately half a second between each keystrokes.
6. Press any key, when you are ready to start recording the macro. Please see Figure 37.

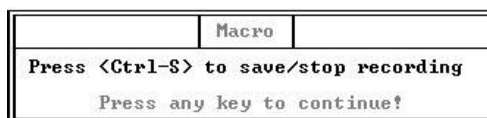


Figure 37 Start Recording Macro

7. You are now transferred to the main Capsat window and any keystroke you perform will be entered into the macro. Please notice that the text RECORDING is flashing in the lower left corner of the display.
8. When you have completed the actions you want to have included in the Macro press <Ctrl-S> to save/stop recording. The new macro is now saved and ready to be executed from the selected softkey or from the macro menu.

7.8.2 Deleting a Macro

A macro can be deleted with the Delete facility of the Macro window.

1. Press F10 to access the System window
2. Choose Options, Macro (O, M) to get the Macro window presented.
3. Place the highlight on the macro key, you want to delete.
4. Choose Delete to delete the macro. You are requested to confirm the deletion. Please press <enter> to confirm.

7.9 Secondary Com Port Interface

The Capsat program has a second interface to the Inmarsat-C system through the secondary com port on the either the PC or the TT-3606E Message Terminal. Through this interface it is possible to send and receive messages.

7.9.1 Startup Screen

When the secondary port is opened/initialised the following text is dumped on the port.

```

CAPSAT
Version 3.22 1999-11-30
(C) Thrane & Thrane

```

```

*****
* This additional communication interface cannot *
* be used for any distress related purposes.   *
*****

```

:

At this point the secondary port (interface) is ready to accept any valid command

7.9.2 Help Screen

At any time the help screen can be recalled by typing HELP followed by <CR>

: help <CR>

```

STATUS -R ..... Show the receive log
STATUS -T ..... Show the transmit log
STATUS -N ..... Show list of available les
SET -P ..... Show navigation information
TYPE _ABOOK ..... Show addressbook
TYPE XMODEM <filename> ..... Receive a file
TRANSFER XMODEM <filename> ..... Transfer file to MT
TX <filename> -C<LesId> -T<addr-entry> . Transmit a file
HELP ..... This menu

```

:

This screen shows all available for this interface.

For all commands longer than 2 characters, the interface will accept the first 2 characters as the full command.

7.9.3 Show the transmit log

This command is a subcommand of the general *status* command (**Status <option>**) used to display Inmarsat-C related information that the user can not directly change.

Purpose: Show contents of the transmit log.

Command: **STatus <option>** or **st <option>**

Option: -t

Example: This is an example of the contents of the transmit log:

```
: st -t <CR>
TX log at 1999-04-12 12:25
LES Sv P L Time          Bytes Destination      MTCA  Status File/Ref
-----
002 - - 0 1999-04-12 07:09  128                67 0610 ConfOK OUT.011
002 - - 0 1999-04-12 07:46  128                67 0610 ConfOK OUT.012
002 - - 0 1999-04-12 10:03  128                67 0610 ConfOK OUT.013
002 - - 0 1999-04-12 10:04  128                67 0610 ConfOK OUT.014
002 - - 0 1999-04-12 10:06  144 584492380389 0010 ConfOK OUT.015
5 Entries listed
:
```

7.9.4 Show the Receive-log

This command is a subcommand of the general *status* command (**Status <option>**) used to display Inmarsat-C related information that the user can not directly change.

Purpose: Show contents of the receive log.

Command: **STatus<option>** or **st <option>**

Option: -r

Example: This is an example of the contents of the receive log:

```
: st -r
RX log at 1999-04-12 12:28
LES Sv P L Time          Bytes Mess.no S Status      File
-----
002 0 0 0 1999-04-12 08:53  360 00235541 -          Disk IN.011
002 0 0 0 1999-04-12 10:11  187 00237489 -          Disk IN.012
002 0 0 0 1999-04-12 11:14  310 00238963 -          Disk IN.013
  3 Entries listed
:
```

7.9.5 Show list of available LES.

This command shows the land station network table entry by entry. This table is downloaded from the current NCS from time to time.

Purpose: Show list of available land station network entries.

Command: status <option> or st <option>

Option: -n

Example:

```
: st -n <CR>
Land Station Network version number: 136
Total number of LES: 6
Choose a LES id from this list
  1  2  3  4 12 22
>
:
```

7.9.6 Get navigation information

This command is a subcommand of the general transceiver command *set*. It is used to retrieve navigation information. When

the GPS has fix this is the position retrieved from the GPS. If the GPS does not have fix it is the last position known by the transceiver or the position as entered by the user for the distress and EGC reception purpose.

Purpose: Show position and heading values.

Command: **SEt** <options> or **se** <options>

Options: **-p**

Example: This is an example of a set command:

```
: se -p <CR>

Position : 55 44 38 N 012 28 62 E at 12:30:24 UTC Valid
Course   : 139 deg/true north
Speed    : 000 knots : 0000 kmph : 0000 mph

:
```

7.9.7 Show the address book

This command shows the contents of the address book. The address book is only located in the Capsat program and it is only possible to change the contents of this address book using the normal Capsat method (please refer to section 4). The external PC selects an address book entry by using the matching name in the address book. If two entries have the same name only the first entry is used.

Purpose: Show/type contents of the address book.

Command: **TYpe _ABOOK** or **ty _ABOOK**

Option: none.

Example: This is an example of the contents of the receive log:

```

: ty _ABOOK <CR>
Address Book at 1999-04-12 12:35
Names          Network type  Prefix  Pos  Number
-----
Internet BT    Spec. 7bit  --     NO   67
myself         Mobil 7bit  --     NO   584492380389
      2 Entries listed
:

```

7.9.8 Transfer a message file

This command is a subcommand of the general transceiver command *transfer*. It is used to transfer a message file from the external equipment to the Capsat application. A Xmodem file transfer protocol is used to secure an error-free file transfer.

Purpose: Initiates a transfer of a message file from the external PC (DTE).

Command: TRansfer XMODEM <filename> or tr XMODEM <filename>

Example: This is an example of a binary file transfer command:

```

:tr xmodem send.txt <CR>
cc

```

< At this point the 3606E is waiting for the sender to initiate the file transfer. Select **Transfer-menu** and use the XMODEM protocol and type in the filename to send. Finally press the send button. >

7.9.9 Receive a message file

This command is a subcommand of the general transceiver command *type*. It is used to transfer a message file from the

Capsat application to the external equipment. A Xmodem file transfer protocol is used to secure an error-free file transfer.

Purpose: Receive a message file with data

Command: TYPe XMODEM <filename> <option>

Example: This is an example of a type/receive message file command:

```
: ty xmodem receive.fil <CR>
```

< At this point the 3606E is waiting for the receiver initiate the file transfer. Select **Transfer-menu** and use the XMODEM protocol and type in the filename for the file to receive. Finally press OK to receive. >

7.9.10 Transmit a message file

This command initiates a transmission of a message file already transferred to the Capsat application.

Purpose: Transmit a message file to a destination defined in the address book.

Command: TX <filename> <options>

Options:

-C <coast station number >

Specifies which coast station to route your message. An integer from in the range 1-63, 100-163, 200-263 or 300-363.

-T<"entry name to the address book ">

The entry name has to be enclosed by the character ("), if it contains any spaces

-K

By default the file is deleted when transmitted. The **-K** option **keeps** the file on disk. This can be used for multiple transmission of the same file.

Example: This is an example of a transmit command:

The file TEST.TXT is transmitted to a destination referenced in the address book as 102 (John Smith) using the default values for LES (303).

```
: tx TEST.TXT -c303 -t"John Smith" <CR>  
:
```

NB! At this point it is possible to use the "ST -T" command to show the transmit log.

8 Troubleshooting

8.1 Personal Computer Requirements

The following applies to PC users only!

The Capsat Message Handling program TT-10202 for Personal Computers executes under MS or PC DOS from version 2.00.

To run the Capsat Message Handling software, the Personal Computer must be IBM compatible. The following two demands are particularly important.

- **Video Hardware:** The hardware must support direct memory access to the video buffer. For monochrome (MDA) at address B000:0000 and colour (CGA/EGA/VGA) at address B800:0000.
- **Interrupt and Serial Port Hardware.** The Personal Computer must support the INTEL 8259A Programmable Interrupt Controller (PIC) and the National Semiconductor 8250, 16450 or 16550 Universal Asynchronous Receiver Transmitter (UART) chips as documented in the IBM Technical Reference manual.

| |
|-----------------------------|
| Com1: Address=3F8 and IRQ 4 |
|-----------------------------|

| |
|-----------------------------|
| Com2: Address=2F8 and IRQ 3 |
|-----------------------------|

8.2 CAPSAT.EXE and Microsoft Windows

The Capsat Message Handling program may be executed under Microsoft Windows version 3.0 or later. We recommend the following steps in order to ensure trouble free execution.

1. Start-up the PIF Editor.
2. Create a PIF-file for CAPSAT.EXE. See the following pictures for set-up in 386 mode.

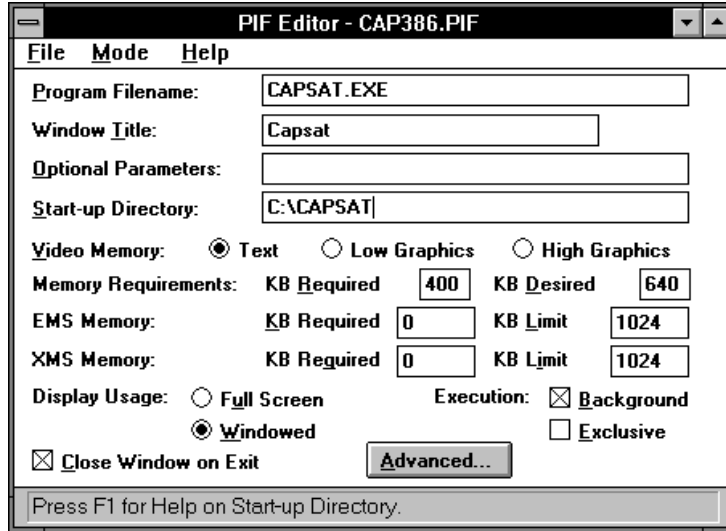


Figure 38 PIF Editor Screen - 386 Mode

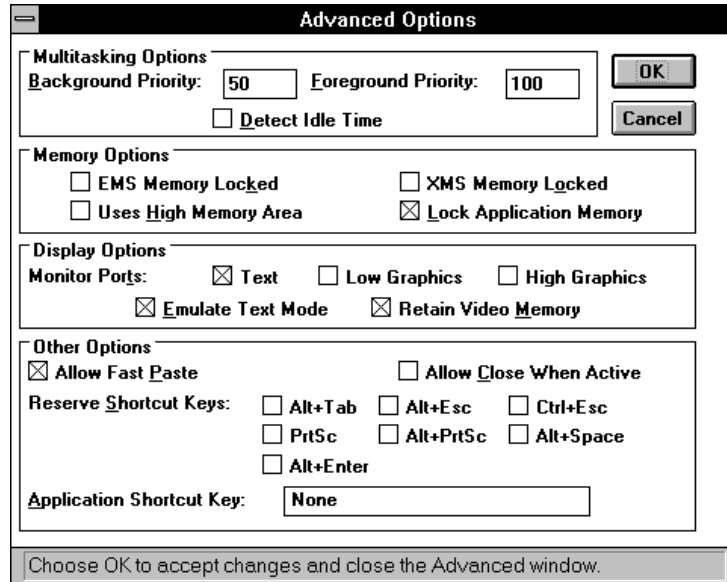


Figure 39 PIF Editor Screen - Advanced 386 Mode

3. Save the PIF-file.
4. Make a new program item in the Program Manager.

Still there may be problems with the serial communication between the PC and the transceiver. Even at 4800 Baud characters may be lost depending on the speed of your PC. If characters are lost this way, you will be advised by the program to communicate at a lower speed, e.g. 2400 or 1200. Please refer to the chapter Configuring the Serial Port on page 7-7. If at all possible use serial boards with the National 16550 UART, as this provides at 16 byte receive FIFO.

8.3 Serial Communication

The serial communication between the PC/Message Terminal and the transceiver is vital. If characters are lost, the program will perform poorly and report 'Transceiver not connected' from time to time. If you experience this, please check the following:

1. Hardware flow control is used. If you are using a cable, that hasn't been supplied from Thrane & Thrane, please check that your cable has the connections listed below. The PC/Message Terminal is a DTE and the transceiver is a DCE.

| Name | Signal description | 9-Pin DCE | 9-Pin DTE | 25-Pin DTE |
|------|---------------------|-----------|-----------|------------|
| RxD | Received Data | 2 | 2 | 3 |
| TxD | Transmitted Data | 3 | 3 | 2 |
| DTR | Data Terminal Ready | 4 | 4 | 20 |
| GND | Ground | 5 | 5 | 7 |
| CTS | Clear To Send | 8 | 8 | 5 |

Table 7 Serial Communication Cable

2. Resident programs loaded in your AUTOEXEC.BAT may cause characters to be lost, if they disable interrupts too long. This may be true for some keyboard drivers and energy management programs on portable PCs. Remove the resident programs one by one until the problem disappears. This problem is most likely to appear when running on a very slow PC or when running the program in a DOS-window under Microsoft Windows.

8.4 The Address Book is not Saved (PC only)

The Address Book is saved, when you quit the program. If you turn off your PC without quitting, the Address Book is not saved. If you have terminated the program the correct way and the Address Book still is not saved, then there's a problem with your TMP-environment variable in your AUTOEXEC.BAT file. If the TMP-variable is set to an invalid path, you will not be able to retrieve the Address Book. Correct this and try again.

8.5 Codepages and Funny Characters

If the corners and junctions of the window frames appear as funny characters, your PC is probably set-up to use a set of characters not supporting the corners and junctions. This is the case, if you are using codepage 850. To solve the problem use for instance codepage 437. To use codepage 437 in Denmark, requires the following lines in CONFIG.SYS and AUTOEXEC.BAT:

| | |
|--------------|---|
| CONFIG.SYS: | COUNTRY=045,437,C:\DOS\COUNTRY.SYS DEVICE=C:\DOS\DISPLAY.SYS CON=(EGA,437,1) |
| AUTOEXEC.BAT | MODE CON CODEPAGE PREPARE=((437) C:\DOS\EGA.CPI) MODE CON CODEPAGE SELECT=437 KEYB DK,,C:\DOS\KEYBOARD.SYS |

8.6 8 Bit Transmission is not Transparent

When you send or receive messages as 8 bit messages you would expect them to be identical to the original message. This

may not be true as the Land Station may add a header to the message. This facility is configurable at the Thrane & Thrane supplied Land Stations, so you may or may not get this problem.

8.7 Transmission Error Codes

| Code | Comment |
|------|---|
| ACB | Access barred |
| ADR | Addressee refuses |
| ATD | Attempting to deliver the message |
| BUS | Busy |
| CCD | Call cut or disconnected |
| CIE | The LES ran out of processing/communications capacity to process your message |
| CNS | Call not started |
| FAU | Faulty |
| FSA | Fast select acceptance not subscribed |
| IAM | Was unable to process the address information in the following message: |
| IDS | Invalid data from ship |
| IDT | Input data timeout |
| IFR | Invalid facility request |
| IMS | Message size is invalid |
| IND | Incompatible destination |
| INH | Was unable to establish the type of message from the header |
| ISR | Invalid ship request |
| LEF | Local equipment failure |
| LPE | Local procedure error |
| MBB | Message broken by higher priority |
| MCC | Message channel congestion |
| MCF | Message channel failure |
| MKO | Message killed by operator |
| MSO | Machine switched off |
| NAL | No address line was present |

Table 8 Transmission Error Codes A-N

| Code | Comment |
|------|---|
| NDA | There was no delivery attempt |
| NFA | No final answerback |
| NIA | No initial answerback |
| NOB | Not obtainable |
| NOC | No connection |
| NP | No party |
| NTC | Network congestion |
| OAB | Operator aborted |
| OCC | Telex occupied |
| OOO | Out of order |
| PRC | Premature clearing |
| PRF | Protocol failure |
| RCA | Reverse charging acceptance not subscribed |
| REF | There was a failure in the remote equipment |
| RLE | Resource limit exceeded |
| RPE | Remote protocol error |
| RPO | RPOA (Recognised Private Operating Agency) out of order |
| SCC | Call completed successfully |
| SHE | Mobile unit hardware error |
| SNF | The satellite network has failed |
| SPE | Mobile unit protocol error |
| SUC | Test results being delivered |
| TBY | Trunks busy |
| TGR | TDM group reset |
| TIM | Timeout |
| WFA | Wrong final answerback |
| WIA | Wrong initial answerback |

Table 9 Transmission Error Codes N-W

8.8 Telex Country Destinations Codes (F69)

| Country Name | Code | Answerback |
|----------------------|------|------------|
| AFGHANISTAN | 79 | AF |
| ALASKA | 200 | UA |
| ALBANIA | 604 | AB |
| ALGERIA | 408 | DZ |
| ANGOLA | 991 | AN |
| ANGUILLA | 391 | LA |
| ANTIGUA & BARBUDA | 393 | AK |
| ARAB UNITED EMIRATES | 893 | EM |
| ARGENTINE | 33 | AR |
| ARMENIA | 684 | AM |
| ARUBA | 303 | AW |
| ATLANTIC EAST OCEAN | 581 | X |
| ATLANTIC WEST OCEAN | 584 | X |
| ASCENSION ISLAND | 939 | AV |
| AUSTRALIA | 71 | AA |
| AUSTRIA | 47 | A |
| AZERBAIJAN | 784 | AI |
| BAHAMAS | 297 | BS |
| BAHRAIN | 490 | BN |
| BANGLADESH | 780 | BJ |
| BARBADOS | 392 | WB |
| BELARUS | 681 | BY |
| BELGIUM | 46 | B |
| BELIZE | 371 | BZ |
| BENIN | 972 | BC |
| BERMUDA | 290 | BA |
| BHUTAN | 890 | BT |
| BOLIVIA | 309 | BV |

Table 10 Telex Country Destination A-B

| Country Name | Code | Answerback |
|----------------------|------|------------|
| BOSNIA/HERZEGOVINA | 600 | BH |
| BOTSWANA | 962 | BD |
| BRAZIL | 38 | BR |
| BRUNEI | 809 | BU |
| BULGARIA | 67 | BG |
| BURKINA FASO | 978 | BF |
| BURMA | 83 | BM |
| BURUNDI | 903 | UU |
| CAMEROON | 970 | KN |
| CANADA | 21 | CA |
| CAPE VERDE | 993 | CV |
| CAYMAN ISLANDS | 293 | CP |
| CENTRAL AFRICAN REP. | 971 | RC |
| CHAD | 976 | KD |
| CHILE (TELEX CHILE) | 342 | CL |
| CHILE (VTR) | 343 | CK |
| CHILE (VTR/CM) | 344 | CZ |
| CHILE (ENTEL) | 345 | CB |
| CHILE (TEXCOM) | 346 | CT |
| CHINA | 85 | CN |
| CHRISTMAS ISLAND | 766 | |
| COCOS KEELING ISLAND | 766 | IO, KL |
| COLOMBIA | 35 | CO |
| COMOROS | 994 | KO |
| CONGO | 981 | KG |
| COOK ISLANDS | 772 | RG |
| COSTA RICA | 376 | CR |
| CROATIA | 599 | RH |
| CUBA | 28 | CU |
| CYPRUS | 605 | CY |
| CZECH REPL. | 66 | C |
| DENMARK | 55 | DK |

Table 11 Telex Country Destination B-D

| Country Name | Code | Answerback |
|--------------------------|------|------------|
| DIEGO GARCIA | 938 | DG |
| DJIBOUTI | 979 | DJ |
| DOMINICA | 394 | DO |
| DOMINICAN REP. (CDT) | 201 | DR |
| DOMINICAN REP. (AACR) | 202 | DI |
| DOMINICAN REP. (MIRADOR) | 241 | DA |
| ECUADOR | 308 | ED |
| EGYPT | 91 | UN |
| EL SALVADOR | 373 | SR |
| EQUATORIAL GUINEA | 999 | EG |
| ERITREA | 920 | ER |
| ESTONIA | 537 | EE |
| ETHIOPIA | 980 | ET |
| FALKLAND ISLANDS | 306 | FK |
| FAROE ISLANDS | 502 | FA |
| FIJI | 701 | FJ |
| FINLAND | 57 | SF |
| FRANCE | 42 | F |
| FRENCH GUIANA | 300 | |
| FRENCH POLYNESIA | 702 | FP |
| GABONESE REP. | 973 | GO |
| GAMBIA | 996 | GV |
| GEORGIA | 683 | GI |
| GERMANY (WAS EAST) | 69 | DD |
| GERMANY (WAS WEST) | 41 | D |
| GREECE | 601 | GR |
| GHANA | 94 | GH |
| GIBRALTAR | 405 | GH |
| GREENLAND | 503 | GD |
| GRENADA | 395 | GA |
| GUADALOUPE | 299 | GL |

Table 12 Telex Country Destination D-G

| Country Name | Code | Answerback |
|------------------------|------|------------|
| GUAM | 700 | GM |
| GUATEMALA | 372 | GU |
| GUIANA FRENCH | 300 | FG |
| GUINEA | 995 | GE |
| GUINEA-BISSAU | 969 | BI |
| GUYANA | 295 | GY |
| HAITI | 203 | HN |
| HAWAII (MCI/WUI) | 704 | HR |
| HAWAII (MCI/WUI) | 705 | |
| HAWAII (MCI/WUI) | 708 | HW |
| HAWAII (WUH) | 709 | |
| HAWAII (DATATEL) | 773 | |
| HONDURAS | 374 | HO |
| HONGKONG | 802 | HX |
| HUNGARY | 61 | H |
| ICELAND | 501 | IS |
| INDIA | 81 | IN |
| INDIAN OCEAN | 583 | X |
| INDONESIA | 73 | IA |
| INMARSAT ATLANTIC EAST | 581 | X |
| INMARSAT PACIFIC | 582 | X |
| INMARSAT INDIAN | 583 | X |
| INMARSAT ATLANTIC WEST | 584 | X |
| IRAN | 88 | IR |
| IRAQ | 491 | IK |
| IRELAND | 500 | EI |
| ISREAL | 606 | IL |
| ITALY | 43 | I |
| IVORY COAST | 983 | CI |
| JAMAICA | 291 | JA |
| JAPAN | 72 | J |

Table 13 Telex Country Destination G-J

| Country Name | Code | Answerback |
|-------------------|------|------------|
| JORDAN | 493 | JO |
| KAMPUCHEA | 807 | KA |
| KAZAKHSTAN | 785 | KZ |
| KENYA | 987 | KE |
| KIRIBATI | 761 | KI |
| KOREA REP. | 801 | K |
| KOREA, DEM. REP. | 899 | KP |
| KUWAIT | 496 | KT |
| KYRGYZ | 788 | KH |
| LAOS | 804 | LS |
| LATVIA | 538 | LV |
| LEBANON | 494 | LE |
| LESOTHO | 963 | LO |
| LIBERIA | 997 | LI |
| LIBYA | 901 | LY |
| LIECHTENSTEIN | 45 | FL |
| LITHUANIA | 539 | LT |
| LUXEMBOURG | 402 | LU |
| MACAO | 808 | OM |
| MACEDONIA | 597 | MB |
| MADAGASCAR | 986 | MG |
| MALAWI | 904 | MI |
| MALAYSIA | 84 | MA |
| MALDIVES | 896 | MF |
| MALI | 985 | MJ |
| MALTA (GTC) | 403 | MT |
| MALTA (TELEMALTA) | 406 | MW |
| MARSHALL ISLANDS | 765 | MS |
| MARTINIQUE | 298 | MR |
| MAURITANIA | 974 | MQ |
| MAURITIUS | 966 | IW |
| MEXICO | 22 | ME |

Table 14 Telex Country Destination J-M

| Country Name | Code | Answerback |
|-----------------------|------|------------|
| MICRONESIA | 764 | FM |
| MOLDOVA | 682 | MD |
| MONACO | 42 | MC |
| MONGOLIA | 800 | MH |
| MONTSERRAT | 396 | MK |
| MOROCCO | 407 | M |
| MOZAMBIQUE | 992 | MO |
| NAMIBIA | 908 | WK |
| NEPAL | 891 | NP |
| NETHERLANDS | 44 | NL |
| NETHERLANDS ANTILLES | 390 | NA |
| NEW CALEDONIA | 706 | NM |
| NEW ZEALAND | 74 | NZ |
| NICARAGUA | 375 | NU |
| NIGER | 975 | NI |
| NIGERIA | 905 | NG |
| NIUE | 776 | NF |
| NORTHERN MARIANA | 760 | MN |
| NORWAY | 56 | N |
| OMAN | 498 | ON |
| PACIFIC OCEAN | 582 | X |
| PAKISTAN | 82 | PK |
| PALAU | 763 | PW |
| PANAMA | 379 | PG |
| PAPUA NEW GUINEA | 703 | NE |
| PARAGUAY | 305 | PY |
| PERU | 36 | PE |
| PHILIPPINES | 75 | |
| PHILIPPINES (CAPWIRE) | 751 | PS |
| PHILIPPINES (PHILCOM) | 752 | PH |
| PHILIPPINES (GMCR) | 754 | PM |
| PHILIPPINES (ETPI) | 756 | PN |

Table 15 Telex Country Destination M-P

| Country Name | Code | Answerback |
|-------------------------|------|------------|
| PHILIPPINES (RCPI) | 757 | PI |
| PHILIPPINES (PTT) | 758 | PU |
| POLAND | 63 | PL |
| PORTUGAL | 404 | P |
| PUERTO RICO (MCI/WUI) | 205 | PT |
| PUERTO RICO (AACR) | 206 | PD |
| QATAR | 497 | DH |
| REUNION | 961 | RE |
| ROMANIA | 65 | R |
| RWANDA | 909 | RW |
| SAINT HELENA | 960 | HL |
| SAINT KITTS AND NEVIS | 397 | KC |
| SAINT LUCIA | 398 | LC |
| SAINT PIERRE / MIQUELON | 204 | QN |
| SAINT VINCENT | 399 | VQ |
| SAN MARINO | 505 | SO |
| SOLOMON ISLANDS | 778 | HQ |
| SAMOA, AMERICAN | 770 | SB |
| SAMOA, WESTERN | 779 | SX |
| SAO TOME AND PRINCIPE | 967 | ST |
| SAUDI ARABIA | 495 | SJ |
| SENEGAL | 906 | SG |
| SEYCHELLES | 965 | SZ |
| SIERRE LEONE | 998 | SL |
| SINGAPORE | 87 | RS |
| SLOVAK REPL. | 66 | SK |
| SLOVENIA | 598 | SI |
| SOMALIA | 900 | SM |
| SOUTH AFRICA | 95 | SA |
| SPAIN | 52 | E |
| SRI LANKA | 803 | CE |

Table 16 Telex Country Destination P-S

| Country Name | Code | Answerback |
|-------------------|------|------------|
| SUDAN | 984 | SD |
| SURIMANE | 304 | SN |
| SWAZILAND | 964 | WD |
| SWEDEN | 54 | S |
| SWITZERLAND | 45 | CH |
| SYRIA | 492 | SY |
| TAJKISTAN | 787 | TJ |
| TAIWAN | 855 | TW |
| TANZANIA | 989 | TZ |
| TELEMALTA | 406 | MW |
| THAILAND | 86 | TH |
| TOGOLESE | 977 | TG |
| TOKELAU | 762 | |
| TONGA | 777 | TS |
| TRANSKEI | 968 | TT |
| TRINIDAD & TABAGO | 294 | WG |
| TUNESIA | 409 | TN |
| TURKEY | 607 | TR |
| TURKMENISTAN | 789 | TM |
| TURKS ISLANDS | 296 | TQ |
| TUVALU | 774 | TV |
| RUSSIA/U.S.S.R. | 64 | RU/SU |
| UGANDA | 988 | UG |
| UKRAINE | 680 | UX |
| UNITED KINGDOM | 51 | G |
| URUGUAY | 32 | UY |
| USA (AT&T) | 230 | UD |
| USA (TRT) | 231 | UT |
| USA (MCI/WUI) | 232 | UR |
| USA (GRAPHNET) | 233 | UB |
| USA (AT&T) | 234 | UI |

Table 17 Telex Country Destination S-U

| Country Name | Code | Answerback |
|------------------------|------|------------|
| USA (AT&T) | 235 | |
| USA (MCI) | 236 | UW |
| USA (CCI) | 237 | UC |
| USA (TRT) | 238 | UF |
| USA (TELENET) | 239 | UE |
| USA (MMR) | 246 | UJ |
| USA | 247 | |
| USA | 248 | |
| USA | 249 | |
| UZBEKISTAN | 786 | UZ |
| VANUATU | 771 | NH |
| VATICAN CITY STATE | 504 | VA |
| VENDA | 95 | SA, CX, VM |
| VENEZUELA | 31 | VC |
| VIETNAM | 805 | VT |
| VIRGIN, S. CROIX (USA) | 208 | VN |
| VIRGIN (BRITISH) | 292 | VB |
| WALLIS AND FUTUNA | 707 | WF |
| YEMEN | 895 | YE |
| YUGOSLAVIA | 62 | YU |
| ZAIRE | 982 | ZR |
| ZAMBIA | 902 | ZA |
| ZANZIBAR | 990 | TA |
| ZIMBABWE | 907 | ZW |

Table 18 Telex Country Destination U-Z

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**ML280 ELITE PRINTER
OPERATING PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)

ML280 ELITE

••••• USER'S GUIDE



OKI

Every effort has been made to ensure that the information in this document is complete, accurate, and up-to-date. The manufacturer assumes no responsibility for the results of errors beyond its control. The manufacturer also cannot guarantee that changes in software and equipment made by other manufacturers and referred to in this Guide will not affect the applicability of the information in it. Mention of software products manufactured by other companies does not necessarily constitute endorsement by the manufacturer.

While all reasonable efforts have been made to make this document as accurate and helpful as possible, we make no warranty of any kind, expressed or implied, as to the accuracy or completeness of the information contained herein.

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As an Energy Star Program Participant, the manufacturer has determined that this product meets the Energy Star guidelines for energy efficiency.



This product complies with the requirements of the Council Directives 89/336/EEC (EMC) and 73/23/EEC (LVD) as amended where applicable on the approximation of the laws of the member states relating to electromagnetic compatibility and low voltage.

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NOTES, CAUTIONS AND WARNINGS

CAUTION!

A caution appears in this manual like this. A caution provides additional information which, if ignored, may result in equipment malfunction or damage.

WARNING!

A warning appears in this manual like this. A warning provides additional information which, if ignored, may result in a risk of personal injury.

NOTE

A note appears like this. A note provides additional information to supplement the main text.

INTRODUCTION

Congratulations on purchasing this Oki printer!

In this chapter you will find a summary of the main features of your printer followed by some advice on how to use this User's Guide to get the most from your printer.

The ML280 Elite is an entry level 9 pin dot-matrix printer. It is fast, robust, compact and light. Outstanding reliability, compact size and ease of use make it ideal for industrial workstation applications, as well as customer service points in wholesale, retail and service environments.

USING THIS MANUAL

This manual will lead you logically through the unpacking, setting up and operation of your printer to help you to make the best use of its many advanced features. Also included are guidelines for troubleshooting and maintenance to ensure that it continues to perform at its best. Instructions are also provided for adding optional accessories as your needs evolve.

- ❖ The User's Guide has been written using one printer as a model, and the illustrations/screenshots reflect this. What you see will be appropriate to the model you are installing.
- ❖ The User's Guide has been designed to provide you with a clear presentation on the installation and maintenance of your new printer. This information is compiled in the logical sequence required to result in a successful installation.

NOTE

- ❖ *The information in this manual is supplemented by the extensive online help facility associated with the printer driver software.*
 - ❖ *In addition, we provide a Technical Reference Guide for those users requiring more in-depth Technical information. This is available in English only.*
-

ONLINE USAGE

This manual is intended to be read on screen using Adobe Acrobat Reader. Use the navigation and viewing tools provided in Acrobat.

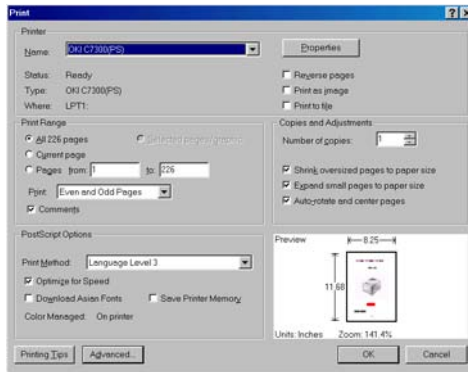
You can access specific information in two ways:

- ❖ In the list of bookmarks down the left hand side of your screen, click on the topic of interest to jump to the required topic. (If the bookmarks are not available, use the Table of Contents.)
- ❖ In the list of bookmarks click on Index to jump to the Index. (If the bookmarks are not available, use the Table of Contents.) Find the term of interest in the alphabetically arranged index and click on the associated page number to jump to the page containing the subject.

PRINTING PAGES

The whole book, individual pages, or sections may be printed. The procedure is:

1. From the toolbar, select [File], then [Print] (or press the Ctrl + P keys).
2. Choose which pages you wish to print:
 - (a) **All pages**, for the entire manual.
 - (b) **Current page** for the page at which you are looking.



- (c) **Pages from and to** for the range of pages you specify by entering their page numbers.



3. Click on **OK**.

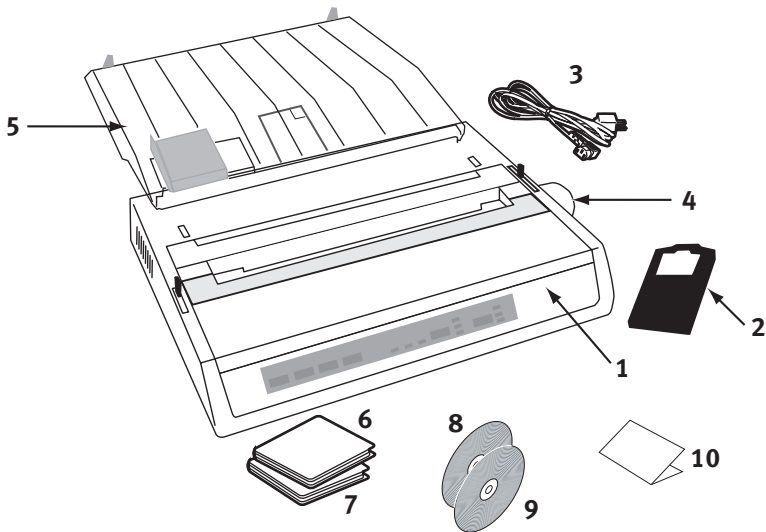
GETTING STARTED

LOCATION

- ...❖ Select a firm, solid surface on which to site your printer.
- ...❖ Allow enough space around the printer to easily access the platen knob and the various paper feed paths.
- ...❖ Make sure a suitable grounded power outlet is available nearby.
- ...❖ Read the Installation Safety Booklet.

CONTENTS AND UNPACKING

- ...❖ If any items are missing, contact your dealer immediately.
- ...❖ Keep your packing materials and carton in case you ever need to ship or transport the printer.

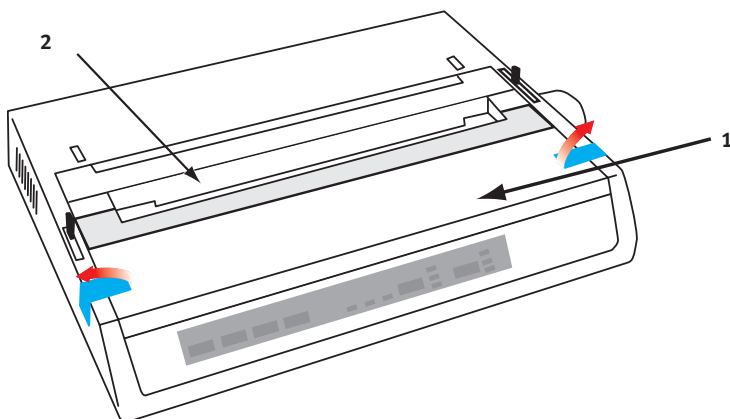


- | | |
|---------------------|----------------------------------|
| 1. Printer | 6. Installation Safety booklet |
| 2. Ribbon Cartridge | 7. Pan European limited Warranty |
| 3. Power Cord(s) | 8. Manual CD |
| 4. Platen Knob | 9. Driver CD |
| 5. Sheet Separator | 10. Setup Guide |

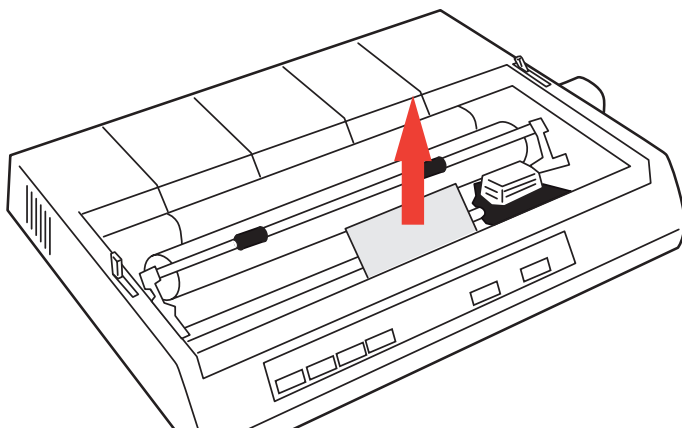
Do not plug the printer into the AC supply until the following steps have been completed:

REMOVING THE SHIPPING RESTRAINT

1. Remove any packing tape. Insert your hand in the top cover slot (2) and remove the **access cover** (1) by lifting it.



2. Remove the **printhead shipping restraint**. Keep shipping restraint for future use.



3. Reinstall the **access cover**.

INSTALLING/REPLACING THE RIBBON CARTRIDGE

CAUTION!

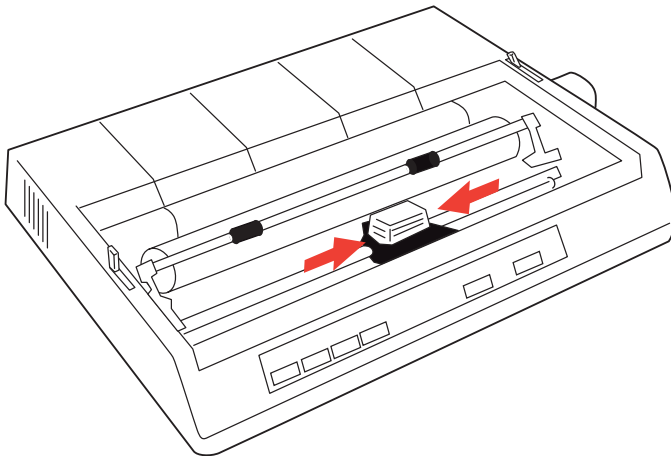
When replacing a Ribbon Cartridge, make sure you have the correct replacement ribbon for your printer. The wrong ribbon will not print when installed in your printer.

RIBBON CARTRIDGE HANDLING

- ❖ Leave unused ribbon cartridges in their packages until needed.
- ❖ Careful; the ribbon ink may cause permanent stains.
- ❖ Ribbon ink on skin or clothing can usually be removed with soap and water.

Make sure the printer is turned OFF.

1. Open the access cover and center the printhead (1).

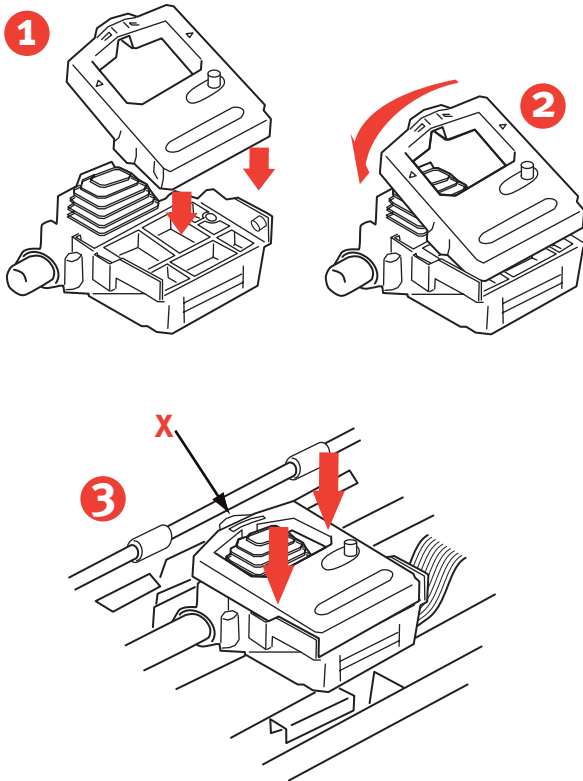


2. When replacing a Ribbon Cartridge, first remove the old one.

WARNING!

If you are replacing the ribbon Cartridge, the printhead may be HOT!

3. Unpack the ribbon cartridge and install it on the printhead.

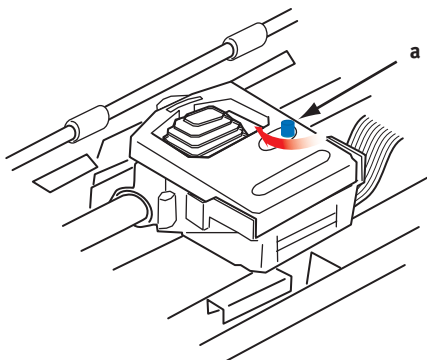


4. Press gently on the ribbon cartridge until you feel it click into place.

CAUTION!

Do not remove the ribbon shield (“X” in graphic above) from the ribbon!

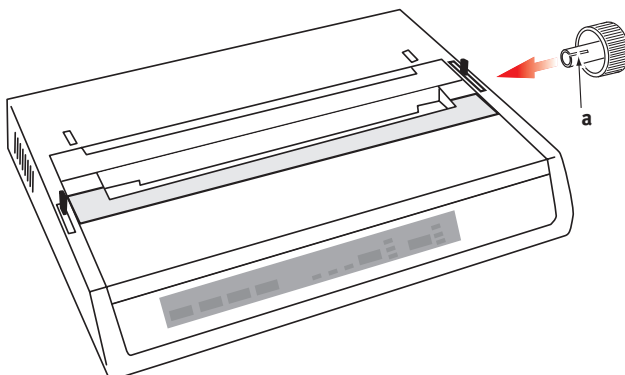
5. Turn the take-up knob (a) in the direction of the moulded arrow to take up any ribbon slack.



6. Replace the access cover.

INSTALLING THE PLATEN KNOB

If the Platen Knob is not already fitted, align the key way (a) correctly and push it firmly into place.



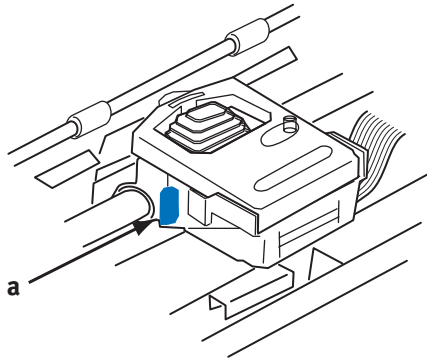
ADJUSTING THE HEAD GAP

The head gap is the distance between the print head and the platen roller. When you use envelopes or multi-part forms you will need to have a larger gap than when using plain paper. Use the recommended head gap to ensure the best print quality and easy paper feed.

CAUTION!

Incorrect setting of the print head gap can cause print head damage or ribbon jams. To avoid these problems set the print head gap for the type of stationery being used.

To adjust the print head gap, move the coloured lever located to the left of the ribbon cartridge (a), to the correct position for the type of stationery being used.....



.....as detailed in the following table:

| PAPER TYPE | WEIGHT | LEVER POSITION |
|-------------------|--|----------------|
| Single part paper | 14 - 20lb (52 - 75gm ²) | 1, 2 |
| Form | | |
| Two part | 9 - 11 lb. (35 - 40 gm ²) with a | 2 - 3 |
| Three part | maximum thickness of 0.28mm | 3 |
| Four part | | 3 |

FITTING THE PAPER SEPARATOR

The Paper Separator is utilised when using single sheets (no carbons) and when using continuous stationery to separate the ingoing/ outgoing paper to prevent paper jams. It is fitted as follows:

- 1.** Grasp the paper separator by either side, with the spring loaded stays to the rear of the printer.
- 2.** Locate the two hooked lugs on the edges of the paper separator into the two corresponding slots in the top of the printer.
- 3.** Release paper separator on to the top of the printer.

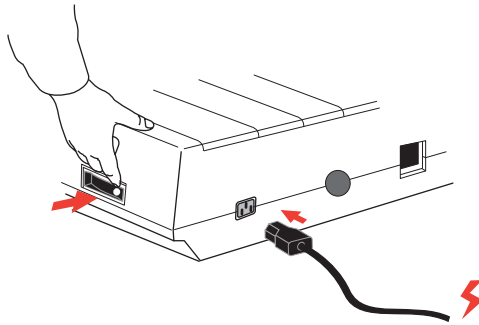
SETTING UP YOUR PRINTER

POWER CONNECTION

Make sure both the printer and the computer are switched OFF.

FOR AC MODELS:

1. Plug the power cord into the back of the printer, then into a grounded AC outlet.



2. Switch the Printer ON.

FOR DC MODELS:

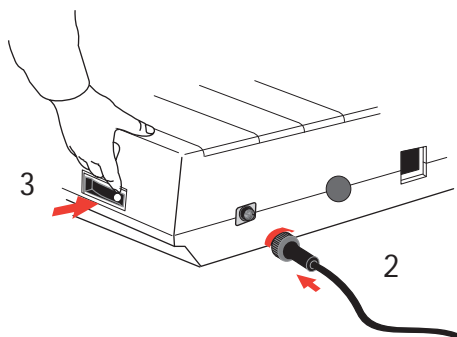
With the printer switched **OFF**.....

1. Terminate the free ends of the power cord with connector(s) appropriate for connection to your DC voltage source.

WARNING!

Observe polarity of connection!

2. Plug the power cord into the back of the printer and lock by twisting the collar of the connector clockwise.



3. Switch the Printer **ON**.

LOADING PAPER

Three types of paper can be used with your printer:

- ❖ Single sheet (with or without the optional cut sheet feeder)
- ❖ Roll paper (use the correct rollpaper stand)
- ❖ Fan-fold paper (with or without the optional tractor feed unit)

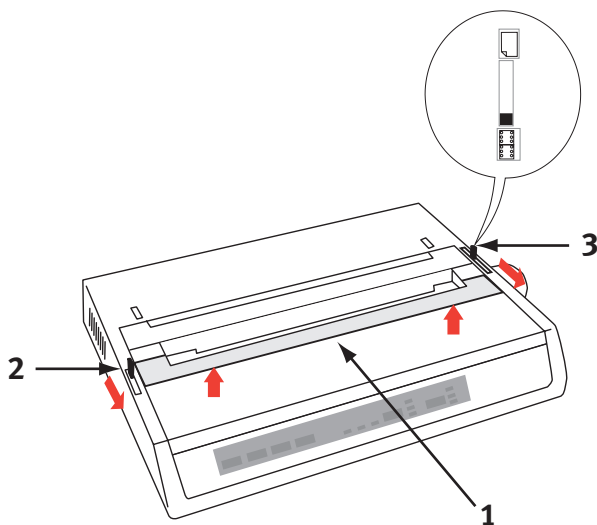
When using fan-fold paper, adjust the distance between the sprocket pins at the ends of the platen to the holes in the paper. Fan-fold paper can be fed from the rear of the printer, or, if a slotted stand is available, from underneath.

REAR FEED CONTINUOUS FORM FAN-FOLD PAPER

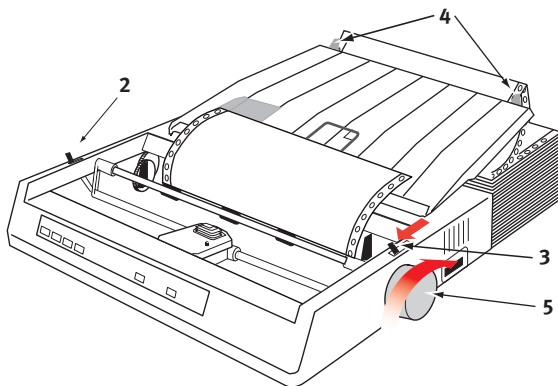
Ensure that the printer is switched **OFF** and the power supply lead removed.

1. Place a box of fan-fold paper behind the printer.

2. Remove the **Access cover** (1).



3. Move the **Bail arm lever** (2) (on the left-hand side of the printer) to the front of the machine to lift the **Bail bar**.
4. Move the **Paper lever** (3) (on the right-hand side of the printer) to the front of the machine, to the **fan-fold** symbol.
5. Insert the first sheet of paper between the separator paper guides (4).



Push the paper in just enough so that its sprocket holes engage the sprocket pins located on the platen ends.

6. Turn the **Platen knob** (5) to advance the paper until it appears in front of the platen.
7. Move the **Bail arm lever** (2) to the rear of the machine to lower the **Bail bar**.
8. Use the **Platen knob** (5) to advance the paper to the first printing line.
9. Replace the **Access cover** and switch the printer **ON**.

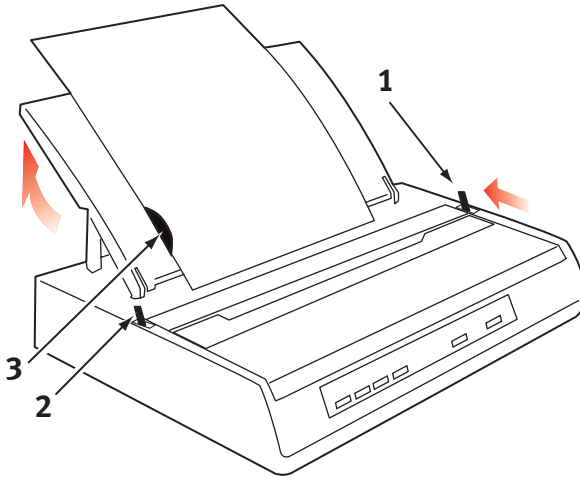
BOTTOM FEED CONTINUOUS FORM FAN-FOLD PAPER

Ensure that the printer is switched **OFF** and the power supply lead removed.

1. Place the printer on a slotted printer stand, carefully aligning the slot in the stand with the slot in the base of the printer.
2. Place a box of fan-fold paper under the printer stand.
3. Remove the **Access cover**.
4. Move the **Bail arm lever** (2) (on the left-hand side of the printer) to the front of the machine to lift the **Bail bar**.
5. Move the **Paper lever** (3) (on the right-hand side of the printer) to the front of the machine, to the **fan-fold** symbol.
6. Insert the first sheet of paper through the opening in the printer stand and the bottom of the printer.
7. Adjust the **Platen sprocket(s)** to align with the sprocket holes in the paper.
8. Use the **Platen knob** to gently pull the paper up until it appears in front of the platen, and above the Bail bar
9. Move the **Bail arm lever** to the rear of the machine to lower the **Bail bar** (6).
10. Use the **Platen knob** (5) to advance the paper to the first printing line.
11. Replace the **Access cover** and switch the printer **ON**.

TOP FEED SINGLE SHEET PAPER

Your printer can accommodate single sheets of 216mm width x 297 or 355mm length paper. Remove the Tractor Feed unit and any other accessories, then raise the **Paper Separator** into its upright position.



1. Switch the printer **ON**.
2. Move the **Paper lever** (1) (on the right-hand side of the printer) to the rear of the machine, to the **Blank sheet of paper** symbol.
3. Ensure that the printer is **OFF-LINE** (press the **SELECT** switch if necessary).
Make sure the **Bail arm lever** (2) is set to the rear of the machine (in its closed position).
4. Raise the paper separator as shown above.
5. Adjust the **Cut Sheet guide** (3) on the **Paper Separator** to position the left edge of the sheet.

NOTE

If letter size paper is used, set the cut sheet guide to the line mark on the paper separator. 80 character width text (10cpi) is then positioned centrally on the paper.

6. Insert a single sheet along the **Cut Sheet guide** until it reaches the pinch roller. Be sure to keep the paper inside the platen ends, otherwise the built-in sprocket rollers will tear it.
7. Move the **Bail arm lever** (2) towards the front of the machine, into the open position. The sheet of paper will be pulled around the platen.
8. Close the **Bail arm lever** (2) ensuring that the paper has been positioned correctly.
9. Press the **SELECT** button to bring the printer **ON-LINE**.
10. The sprockets can be released and moved out from the platen if required.

TESTING YOUR PRINTER

Your printer has a built-in test (self test) to make sure that your printer is set up and working correctly.

1. Firstly, load continuous forms paper into the printer (Please see the “Loading Paper” section of this Guide).
2. Hold down the **LINE FEED** button and turn the printer **ON**.
The printer will begin its test print.
3. To stop the test, press the **SELECT** button or turn the printer **OFF**.

Typical test print:

```
ML280 ELITE ME1                F/W XX.XX          42434401YR-00
                                CG XX.XX
HSD 10CPI
!"£$%^&*()0123456789:;<=>@aABCDEFGHIJKLMNopqrstuvwxyz[\]abcde
fghijklm
nopqrstuvwxyz
```

NOTE

The top of each print test contains information about your printer model. Be sure to have a copy of the printout handy if you have to call for service.

COMPUTER CONNECTIONS

NOTE

- ...✦ It is not recommended that you connect serial/USB and parallel cables to the printer simultaneously.
 - ...✦ For connection to a PC running Windows 98 or above (not Windows 95 upgraded to Windows 98) or Macintosh.
 - ...✦ The operation of a printer is not assured if a USB compatible device is connected concurrently with other USB compatible machines.
 - ...✦ Interface cables are not supplied with your printer.
-

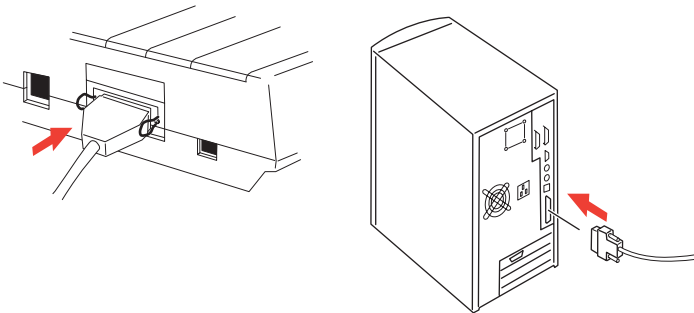
PARALLEL (LPT) CONNECTION, IEEE 1284

- ...✦ Requires a **bi-directional cable**, max. length 6 ft. (1.8 m), not supplied
- ...✦ The printer has a 36-pin Centronics type socket.

CAUTION!

Make sure the printer and computer are both turned OFF.

1. Switch both the computer and the printer **OFF**.
2. Attach a suitable **bi-directional cable** to the parallel connector on the back of the printer. Then attach and secure the cable to your computer.



3. Turn the printer and computer back **ON**.

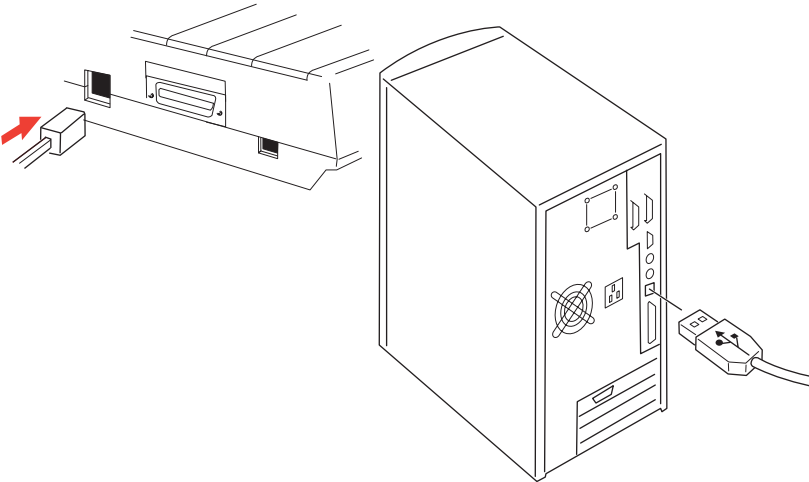
USB CONNECTION

- ❖ Requires a USB 1.1 cable, maximum length 19.7 ft. (5 m), not supplied.
 - ❖ Printer has a USB series “B” receptacle.
-

NOTES

- ❖ For connection to a PC running Windows 98 or above (not Windows 95 upgraded to Windows 98).
 - ❖ The operation of a printer is not assured if a USB compatible device is connected concurrently with other USB-compatible machines.
 - ❖ When connecting multiple printers of the same type, they appear as *****, ***** (2), ***** (3), etc. These numbers depend on the order of connecting or turning on each printer.
 - ❖ USB is a “hot-pluggable” protocol. This means that the printer and computer do not necessarily have to be switched **OFF**.
-

1. Attach a suitable USB cable to the printer. Then attach the cable to your computer.



2. If you have turned the computer and printer **OFF**, turn them back **ON**.

Follow any on-screen instructions.

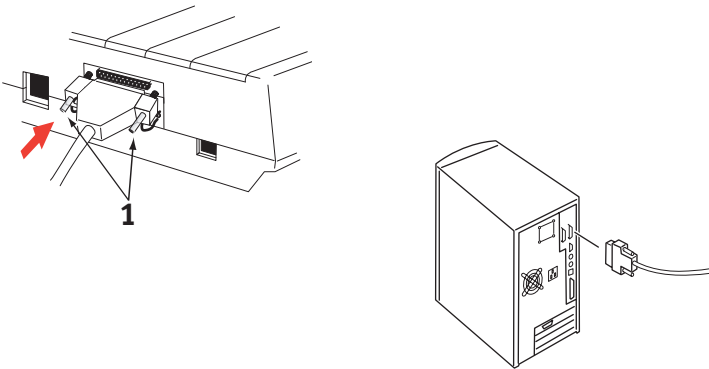
SERIAL CONNECTION

The Serial Interface Board is an option on this printer and is supplied with installation and setup instructions. Once this board has been installed, the serial interface settings will appear in the printer menu and may need to be adjusted to match your PC.

CAUTION!

Make sure the printer and computer are both turned OFF.

1. Switch both the computer and the printer **OFF**.
2. Plug the cable into the serial ports of both your PC and printer and tighten the thumbscrews (1).



The cable should comply with the RS232C Serial Interface Specification and have a maximum length of 15 metres (49ft).

3. Turn the printer and computer back **ON**.

PRINTER DRIVERS

Printer drivers enable your computer to communicate with the printer. As with most printer manufacturers, Oki creates printer drivers for use with popular types of software, such as Microsoft Windows operating systems, from Windows 95 onwards. Installing a printer driver is normally a simple process of making a selection within the software. If a driver is not available by name for your printer, contact the software manufacturer and ask if they can supply an updated version of their software with additional drivers. Alternatively, check the driver availability on the Oki Europe Web Site at:

www.okieurope.com

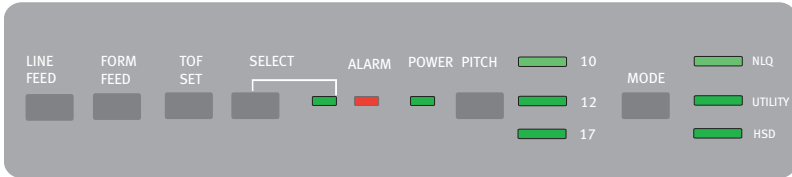
If you are using bespoke software or software created specifically for your company, it is unlikely that the CDs supplied with this software will include drivers for your printer. In this instance you will have to choose a driver as closely compatible as possible. Compatible drivers contain printing codes that will operate your printer. They may not offer the special features of an original driver, but they will allow you to perform normal printing tasks.

Oki's printers contain more than one printer emulation selectable via the menu system. See the table below for compatible drivers. However, please note that the emulations listed toward the bottom of this list are more basic and offer fewer of the printer's features.

| MICROLINE EMULATION | IBM EMULATION | EPSON LQ EMULATION |
|---------------------|----------------------|--------------------|
| ML280 Microline | ML280 IBM | ML280 Epson |
| | IBM Graphics Printer | Epson FX80 |
| | | Epson FX |

OPERATING YOUR PRINTER

FRONT PANEL OPERATION



The Front Panel has 9 indicators and 6 buttons. The function of each is as follows:

Indicators

| | |
|---------------|---|
| SELECT | Lit - Printer ON-LINE, unlit printer OFF-LINE. Flashes with ALARM on to indicate a fault has been detected. |
| ALARM | ...✚ If lit permanently and SELECT is not lit - it is indicating paper out or paper jam if a Cut Sheet Feeder is in use. ...✚ If lit permanently and SELECT is flashing - it is indicating that auto diagnostics have detected an error. ...✚ If flashing and SELECT is lit - it is indicating either printhead temperature protection circuit, firmware protection of line feed or space motor is operating. In any case, normal print operation will resume after a cooling period. |
| POWER | Indicates that the printer is connected to the supply and is switched ON . |
| PITCH | Indicates the current character pitch selected. |
| MODE | Indicates the current print mode selected - NLQ, Utility, HSD (HSD is SSD if 12cpi is selected). |

Buttons

| | |
|------------------|---|
| LINE FEED | Advances the paper one line for each press. |
| FORM FEED | Advances the paper to the next top of form (TOF) or ejects any single sheet paper from the printer. |
| TOF SET | Sets new top of form (TOF) position. |
| SELECT | Places printer ON or OFF line |
| PITCH | Changes the character pitch setting (cpi) |
| MODE | Changes the print style setting. |

Additional button functions if pressed at Power ON

| | |
|---------------------------------|--|
| LINE FEED | Initiates the printer self test. |
| SELECT and LINE FEED | Initiates the printer's continuous rolling ASCII test. |
| SELECT and FORM FEED | Places the printer into a Hex dump mode, printing all data and control commands received as HEX codes for fault finding. |
| SELECT | Enters the printer's Menu Mode. |
| TOF SET | Selects the print pitch as 17cpi. |

SETTING PRINTER DEFAULTS

The printer has an internal **MENU** containing a number of default conditions that can be set to enable your printer to match the parameters required by your computer.

ENTERING THE MENU MODE

1. Power on the printer while holding down the **SELECT** button. The **12** and **UTILITY** LEDs will flash.
2. Press the **SELECT** button to print the complete menu. This will detail the current default settings.
3. Press the **LINE FEED** button to select the relevant group that needs to be changed (the group is the left-hand column on the MENU printout).
4. Press the **FORM FEED** button to select the relevant item within the selected group (the Item is the centre column on the MENU printout).
5. Press the **TOF SET** button to cycle through the settings available for the item you want to change (the settings are the right-hand column on the MENU printout).
6. Once you have reached the setting that you want, press either the **LINE FEED** button (for the next group) or the **FORM FEED** button (for the next item) to be changed.

Follow steps to 3 to 5 until all your required settings have been changed.

7. On completion of the changes, press the **PITCH** and **MODE** buttons together to exit and save all the changes you have made.

NOTE

Important, do not exit the menu mode by switching off the printer, as this will not save any changes you have made.

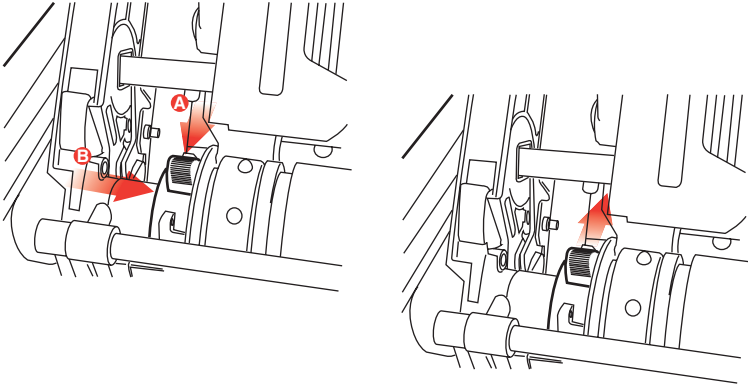
DEFAULT MENU SELECTIONS - AC

| GROUP | ITEM | SETTING |
|-------------------------|---|-----------------|
| Printer Control | See the Printer Driver section of this document for more information. | IBM |
| Font | Print Mode | Utility |
| | Draft Mode | SSD |
| | Pitch | 10 CPI |
| | Proportional Spacing | No |
| | Style | Normal |
| | Size | Single |
| Symbol Sets | Character Set | Set II |
| | Language Set | ASCII |
| | Zero Character | Unslashed |
| | Code Page | USA |
| | Slashed Letter O | No |
| Vertical Control | Line Spacing | 6 LPI |
| | Skip Over Perforation | No |
| | Page Length | 12" |
| Set-up | Graphics | Uni-directional |
| | Receive Buffer Size | 64K |
| | Paper out Override | No |
| | Print Registration | 0 |
| | Operator Panel Function | Semi Operation |
| | Reset Inhibit | No |
| | Printer Suppress Effective | Yes |
| | Auto LF | No |
| | Auto CR | Yes |
| | S1 Select Pitch (10 CPI) | 17.1 CPI |
| | S1 Select Pitch (12 CPI) | 20 CPI |
| | Time Out Print | Valid |
| | Auto Select | No |
| | ESC/S1 Pitch | 17.1 |
| | CSF/RPS Pitch | RPS |
| | Impact Mode | Normal |
| Parallel I/F | I - Prime | Buffer Print |
| | Pin 18 | +5V |
| | Bi - Direction | Enable |

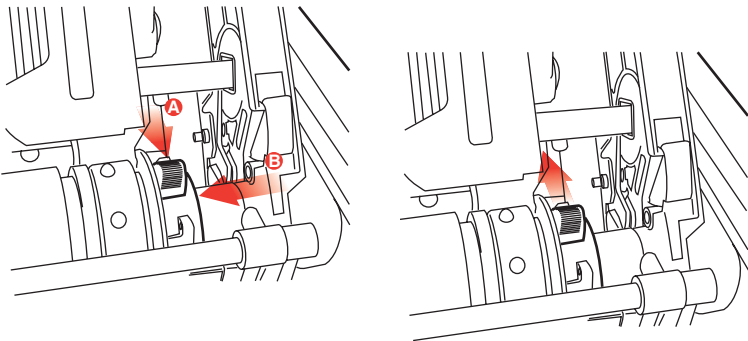
USING THE PULL TRACTOR UNIT (IF FITTED)

Paper can be loaded either from the rear of the printer or from the bottom if you have a slotted printer stand.

1. Remove the access cover.

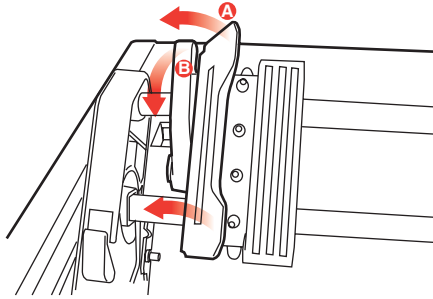


2. Adjust the left tractor if necessary, making sure that it is not more than 12.7mm (0.5 inch) from the left-hand end of the tractor unit. To move the tractor, pull the lock lever forward, slide the tractor to the desired position, then push the lock lever backward to lock it in place.



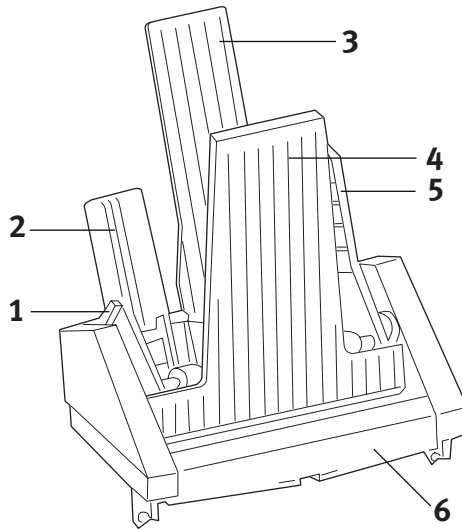
3. Adjust the right tractor to the paper width by pulling its lock lever forward, sliding the tractor to the desired position, then pushing the lock lever backward to lock it in place.

4. Pull the paper under the Bail bar and up to the level of the tractor unit.
5. Open the sprocket covers and slide the paper release lever forward.



6. Locate the sprocket holes in the paper over the sprockets on the tractor unit and close both sprocket covers (leave the paper release lever open).
7. Replace the access cover.

USING THE CUT-SHEET FEEDER (IF FITTED)



1. Paper set lever
2. Left paper guide
3. Rear sheet support
4. Front sheet support
5. Right paper guide
6. Front sheet guide

1. Place the **paper set lever** (1) in the RESET position.
2. Release the **paper guides** by pushing the **locking levers** downward.
3. Move the **left paper guide** (2) to the position where you wish to set the left-hand edge of the sheet, making sure that this paper guide is not set to the right of the **paper out sensor** (the groove in the platen).
4. “Flex” a paper stack (not more than 170 sheets of 60g/m² (16lb.) paper). Square the stack, turn over and repeat the bending. The stack of paper should not exceed 16mm thickness.

5. Insert the paper stack into the hopper and push it against the **left** paper guide, making sure that the paper fits under the corner separators.
6. Adjust the right paper guide to the paper width.
7. Push both **paper guide locking levers** upward into the locked position.
8. Push the **paper set lever** (1) gently backward into the set position.

MANUAL LOADING WITH THE CUT-SHEET FEEDER INSTALLED.

1. Gently insert the paper from directly above the **front sheet support**.
2. Use the **FORM FEED** button to feed the sheet.
3. Turn the Platen knob clockwise/anti-clockwise for fine adjustment.

NOTE

The manually set sheet is printed automatically, even when other sheets are loaded in the hopper. When the FORM FEED button is pressed, the manually inserted sheet will be fed from the cut-sheet feeder.

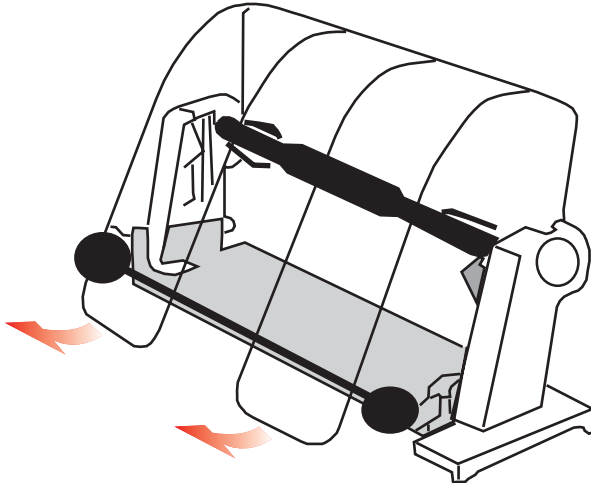
CAUTION!

- ❖ Do not manually feed paper if a sheet is being fed from the hopper. Simultaneous feeding of paper will result in a paper jam.
- ❖ To manually feed a sheet of paper, you must use the FORM FEED button to feed the paper. If the paper is being fed manually and is positioned using the platen knob rather than the FORM FEED button, it may be ejected just before printing begins (use the Platen Knob for fine adjustment *only*).

CUT-SHEET FEEDER CONTROLS

The printer's control switches also control the operation of the cut-sheet feeder. The control switches, however, function only when the printer is off-line or deselected (SELECT indicator is not lit).

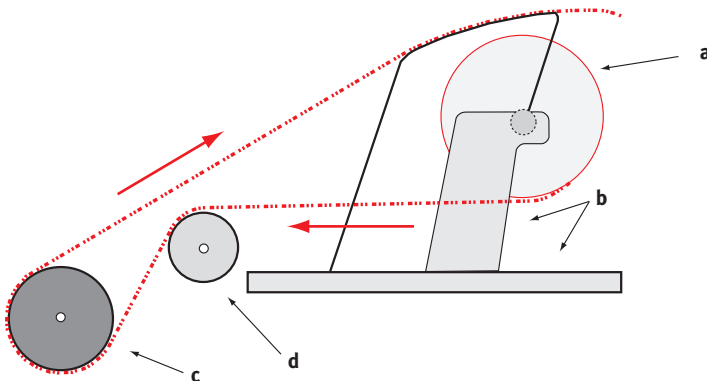
USING THE ROLL PAPER STAND (IF FITTED)



LOADING THE PAPER

1. Open the paper separator all the way.
2. Remove the paper roller.
Note that there is a disk on the left end of the roller.
3. Slide the roller into a tube of paper.
Ensure the disk is on the left side and paper must roll up from the bottom.
4. Replace the paper roller back into the stand, with the disc on the left side.
5. Feed the paper over the roller on the stand. **NOT UNDER!**
6. Adjust the round paper guides at either side to the paper width.

7. Feed the paper down behind the platen and use platen knob to bring paper through the printer.
Lift the bail arm as paper comes round to front of platen. (The paper release lever needs to be in the top position to perform this step.)
8. Continue to feed the paper through for approx. 4 inches.
9. Move the paper release lever toward the front of the machine. Align the paper so that the exit and entry paper edges align. Return the paper release lever to the rear position to re-apply pressure on platen.
10. Close the bail arm.
11. Replace the access cover. Fit the cover tabs into the slots at the printer front. Lower the cover carefully, making sure the paper fits through the front slot in the access cover.
12. Lower the paper separator so that paper enters the printer from under the separator and exits the printer going over the separator (see below).
13. Turn the platen knob to move the paper to the point where you want printing to start. (Many word processing packages automatically allow for a top margin of 25.4mm (1 inch)).



Correct paper path

- | | | | |
|---|------------|---|------------------|
| a | Paper roll | b | Roll Paper Stand |
| c | Platen | d | Paper Guide |

MAINTENANCE

REPLACING THE RIBBON CARTRIDGE

See [“Installing/replacing the ribbon cartridge”](#) on page 11.

ADJUSTING THE PRINTHEAD GAP

See [“Adjusting the head gap”](#) on page 14.

LOADING PAPER

See [“Loading paper”](#) on page 17.

TESTING YOUR PRINTER

See [“Testing your printer”](#) on page 22.

TROUBLESHOOTING

GENERAL INFORMATION

Here are some general things to check before proceeding with detailed troubleshooting.

- ...❖ Is the printer plugged in and turned ON?
- ...❖ Are the connections (power and interface) secure?
- ...❖ Is the product being operated under the proper ambient conditions?
- ...❖ Does the paper being used meet the specifications for this product?
- ...❖ Is the paper properly installed?
- ...❖ Is the ribbon properly installed?
- ...❖ Is an Oki ribbon being used?
- ...❖ Is the printhead gap correctly set?
- ...❖ Are the correct printer drivers being used for the printer?

NOTE

- ...❖ *Settings in your software application will normally override any settings in your printer driver.*
- ...❖ *Printer driver settings normally override settings from the printer menu or printer front panel.*

Problem

My word processor files do not print the way I have the menu and front panel set.

Solution

Remember: The note above!

Before sending a file to the printer, many word processors send either an “initialization string” or an **I-Prime** signal to the printer.

The initialization string contains codes that override the panel and menu settings. To change your printer to ignore the reset code, enter the **Menu Mode**, go to the **Set-Up** group and change the setting for **Reset Inhibit** to **Yes**.

The I-Prime signal will automatically override any front panel settings you have made. To eliminate this problem, enter the **Menu Mode**, go to the **Parallel Interface** group and change the setting for **I-Prime** to **Invalid**.

For more information on changing menu settings, see “Changing the Menu Settings” in Chapter 3.

Problem

Nothing happens when I turn ON the printer.

Solution

Check the power cord connection to the outlet and to the printer. If you are using a power strip, make sure it is turned ON, and that the fuse hasn't blown or that the circuit breaker hasn't tripped. If the solution is not obvious — call for service.

Problem

The printer does not print when the computer sends data.

Solutions

1. Is the **SEL** light on? If not, press the **SEL** key.
2. Check that the interface cable is securely connected to both the printer and the computer.
3. If you have the optional serial interface board installed, check to be sure that it is firmly seated in the printer and that the interface cable is securely connected to both the printer and the computer.

Problem

I'm getting strange symbols, incorrect fonts, etc., when I try to print a document.

Solutions

1. Check to be sure that the printer driver you have selected in your software matches the printer emulation.
2. Please refer to the **Printer Driver** section for details of emulations, then check the menu settings (see “Setting Printer Defaults” in the **Operating your Printer** section).
3. If you have embedded any printer commands in your software, check to be sure that you entered them correctly.

Problem

Ink smears on the paper when I print narrow columns.

Solutions

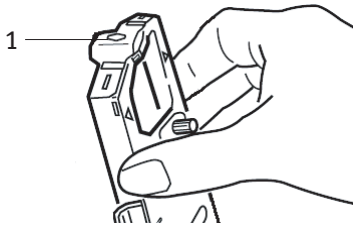
The head gap could be too close. Check that the head gap is set correctly (see the table in “Adjusting the head gap” in the **Getting Started** section).

Problem

I've installed a new ribbon and the printing is smeared and streaked.

Solution

The ribbon shield (1) is either loose or missing.



Remove the ribbon cartridge and check the ribbon shield.

If it is loose, secure it. If it is missing, find it and install it. If you cannot find it, replace the ribbon cartridge.

Tip: If you still have an old ribbon cartridge, remove the shield from it and install it on the ribbon cartridge on your printer.

Problem

There are dots missing in my printouts (typically, tops and /or bottom of characters missing).

Solution

The head gap may not be set correctly. Try moving the headgap lever to a lower setting. If that doesn't help, the printhead may be damaged; call for service.

Problem

*The **ALARM** light is flashing.*

Solution

Try turning the printer **OFF** and then back **ON** again. If the light still blinks, call for service.

Problem

The Print Quality and Character Pitch keys on the front panel don't work.

Solution

The Operator Panel Function in the printer menu can be used to disable these buttons (Limited Function). If the printer is part of a customized system or if it is used by a number of people, the system manager may have used this option to make sure the printer is always set properly.

Check with your system manager before changing any menu settings.

Problem

My printer keeps indicating "Paper out" when there is paper installed.

Solution

The most likely cause is that the paper sensor groove in the platen is not being covered by paper. Re-align paper to cover the sensor groove.

Problem

When I am using continuous feed paper, the sprocket holes are torn, causing alignment problems.

Solution

The most likely cause is that the paper lever is set to friction feed. Move the lever to “Fan-fold” (to the front of the printer).

CLEARING PAPER JAMS

REAR FEED JAMS

1. Turn the printer **OFF**.
2. Use the platen knob to back the paper all the way out of the printer.

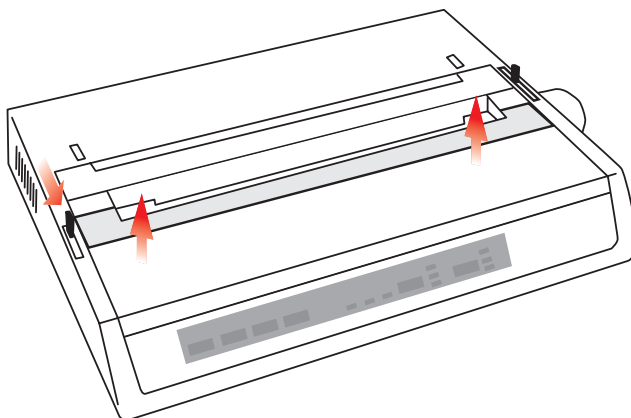
CAUTION!

Make sure the printer is turned OFF before you open the access cover.

WARNING!

The printhead may be HOT!

3. Open the **access cover**, move the **bail arm lever** toward the front of the printer and remove any torn paper.



4. Reload the paper (see section on “Maintenance”), move the bail arm lever towards the rear of the printer and close the access cover.
5. Turn the printer ON.

REAR FEED, REPEATING PAPER JAMS

If the paper keeps jamming, you may have:

- ...❖ defective paper
- ...❖ misaligned paper
- ...❖ bits of paper in the paper path

Defective Paper

Replace the defective paper with a fresh stack.

Misaligned Paper

1. Turn the printer **OFF**.
2. Use the platen knob to back the paper all the way out of the printer.
3. Tear off a couple of sheets of paper, leaving a new, clean, square-cut edge.
4. Reload the paper and turn the printer back **ON**.

Bits of paper in the paper path

Depending on which paper feed method you are using, remove any accessories, open the access cover and remove any debris from the paper path.

WARNING!

- ...❖ Always ensure that the printer is switched OFF and that the power supply lead is disconnected.
- ...❖ If the printer has been recently used, the printhead may be **HOT!**

SINGLE SHEET PAPER JAMS

- 1.** Turn off the printer.
- 2.** Use the platen knob to back the paper out.
- 3.** Open the access cover.
- 4.** Remove any torn pieces from around the carriage.
- 5.** Close the access cover.

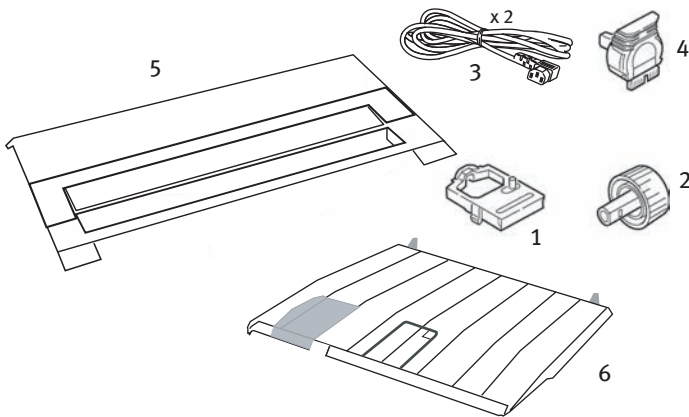
PARTS AND ACCESSORIES

PURCHASING PARTS AND ACCESSORIES

Before you purchase parts and accessories, make a note of your printer model name (see the front of the unit) and have the correct part number and description of the item you wish to purchase. Item descriptions and part numbers are provided in this section.

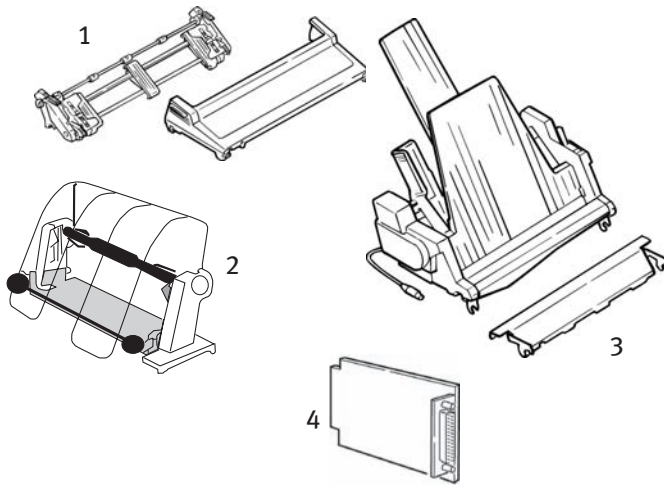
- ❖ Consult the dealer where you purchased your printer.
- ❖ Locate an Authorised Oki Data Reseller by visiting your local Oki web site. Links to all countries are provided on:

<http://www.okieurope.com>



| ITEM | PART NUMBER | COMMENT |
|---------------------------|------------------|-------------------------------|
| Ribbon Cartridge (1) | 09002303 | Life - 3 million characters |
| Platen Knob (2) | 40673402 | |
| Power Cord AC (3) - Euro | YS4011-1272P001 | |
| UK | YS4011-1273P001 | |
| Power Cord DC (not shown) | YS4100-1187P001 | |
| Printhead (4) | 4YA4025-1401G002 | Life - 200 million characters |
| Access Cover (5) | 42594601 | |
| Sheet Guide (6) | 42017901 | |

OPTIONS



| OPTION | PART NUMBER |
|--|-------------|
| Pull Tractor Assembly (1) | 09002363 |
| Roll Paper Stand (2) | 09002334 |
| Cut Sheet Feeder (3) | 09000689 |
| Serial Interface Card, RS232 (4) | 09002353 |
| Serial Interface Card, RS422 (not shown) | 09002357 |
| Current Loop Interface Card (not shown) | 09000685 |

All Accessories are supplied complete with an Installation Guide.

SPECIFICATIONS

| ITEM | SPECIFICATION |
|---------------------------|---|
| Print Method | Impact dot matrix |
| Printhead | 9 pins, 0.30 mm (0.0118") diameter, with thermal protection |
| Emulations (co-resident) | Epson FX IBM Graphics Oki MICROLINE |
| Print Speed | |
| High Speed Draft (HSD) | 333cps* |
| Utility (UTL) | 250cps* |
| Near Letter Quality (NLQ) | 62.5cps* |
| | * cps = characters per second |

Paper Specifications

| Type | Feed | Weight | Width (range) |
|--------------------------|-------------|---|-----------------|
| Cut Sheets | Top only | 16 to 21lb. (60 to 81g/m ²) | |
| Single part Continuous | Rear/Bottom | 14 to 20lb. (53 to 75g/m ²) | 3 to 9.5 inches |
| Multi Part Continuous | Rear/Bottom | 14 to 20lb. (53 to 75g/m ²) | 3 to 9.5 inches |
| Maximum thickness | | 0.28mm (0.11 inches) | |
| Maximum number of sheets | | 4 (original plus 3 copies) carbonless | |

Reliability

| | |
|---------------------|--|
| Ribbon Life (black) | 3 million characters, on average |
| Printhead Life | 200 million characters average in 10cpi utility mode |

| | |
|-----------------------------------|---|
| Mean Time Between Failures (MTBF) | 20,000 hours at 25% duty cycle and 35% page density |
| Mean Time to Repair (MTTR) | 15 minutes |

General Printer Characteristics

| | |
|--------------------|---|
| Dimensions | Height: 80mm (height) x 372mm (width) x 275mm (depth) |
| Weight | 4.5Kg |
| Buffer size | 128Kb |
| Noise level | <54dBA and <51dBA in Quiet Mode |
| Power requirements | 230VAC (+6%;-14%), 240VAC (±10%;) @ 50/60Hz (±2%) |
| Temperature | |
| Operating | 5 to 40°C |
| Storage | -40 to +70°C |
| Humidity | |
| Operating | 20 to 80% RH |
| Storage | 5 to 95% RH |

ITEM**SPECIFICATION****Interfaces:**

| | |
|------------------|---|
| Standard: | Centronics parallel, IEEE-1284 compliant USB 1.1 |
| Optional: | RS-232C Serial RS-422 Current Loop |

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| | |
|----------------------|----|
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|----------------------|----|

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78 Shenton Way, #09-01,
Singapore 079120

Tel : (65) 221 3722
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ML280 ELITE

OKI

Okī / Network Solutions
for a Global Society

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07051001 ISS.01

**OPERATION UNDER UNUSUAL CONDITIONS
PROCEDURES
FOR**

U.S. ARMY WATERCRAFT
GLOBAL MARITIME DISTRESS
AND
SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**

Seaman 88K

References

FM 3-11.4

FM 3-5

INTERIM NUCLEAR, BIOLOGICAL OR CHEMICAL (NBC) DECONTAMINATION PROCEDURES**WARNING**

In the event equipment has been exposed to nuclear, biological or chemical warfare, the equipment shall be handled with extreme caution and decontaminated in accordance with FM 3-5, NBC Decontamination. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If equipment is exposed to radioactive, biological or chemical agents, personnel must wear protective mask, hood, protective overgarments, chemical gloves and chemical boots in accordance with MOPP level prescribed by the OIC or NCOIC. MOPP analysis and levels are described in detail in FM 3-11.4, Multiservice Tactics, Techniques and Procedures for Nuclear, Biological and Chemical (NBC) Protection. Personnel should contact a Class A Army vessel which has the capabilities for freshwater washdown. The Class A vessel can also assist in the evacuation of soldiers who have been exposed and provide space and shelter for exchanging MOPP suits.

1. Decontaminate equipment per FM 3-5.
2. Perform operational check of all equipment after decontamination.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF CONTROL UNIT
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required
Seaman 88K

EMERGENCY PROCEDURES - SEND A QUICK DISTRESS USING THE MF/HF CONTROL UNIT

1. Press the ON/OFF button (figure 1, item 1) while the MF/HF control unit is off or in the standby mode.

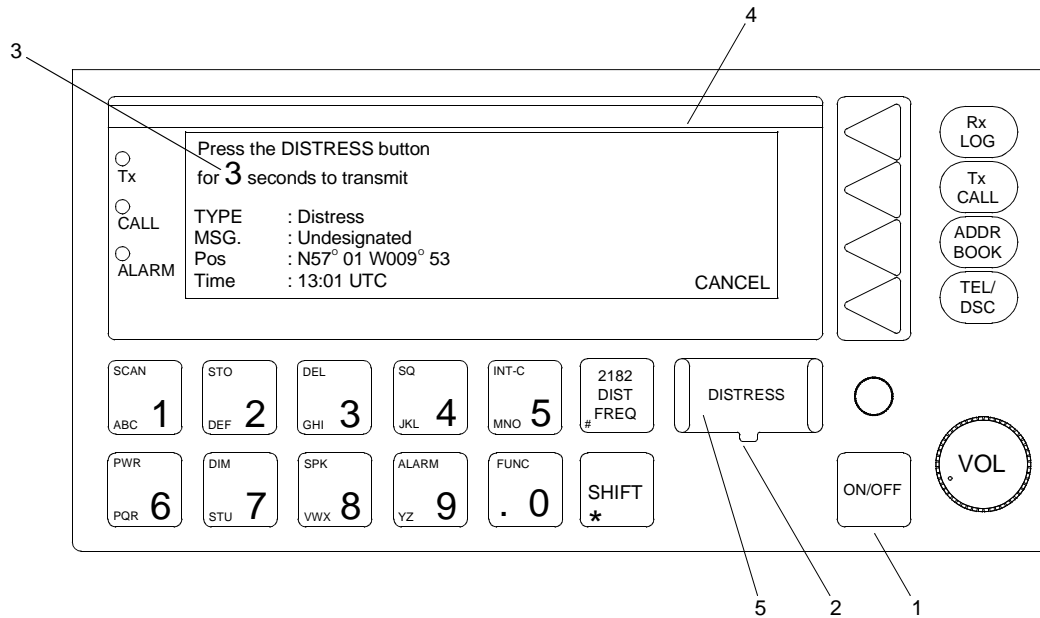


Figure 1. MF/HF Control Unit

2. Open the DISTRESS button cover (figure 1, item 2).

NOTE

A countdown indicator (figure 1, item 3) appears in the LCD display (figure 1, item 4) indicating the number of seconds remaining to press the DISTRESS button (figure 1, item 5). The control unit also prompts the user when to release the DISTRESS button (figure 1, item 5) to transmit the distress call.

3. Press the DISTRESS button (figure 1, item 5) for 3 seconds or wait for RELEASE (figure 2, item 1) to appear in the LCD display (figure 2, item 2).

SEND A QUICK DISTRESS USING THE MF/HF CONTROL UNIT - Continued

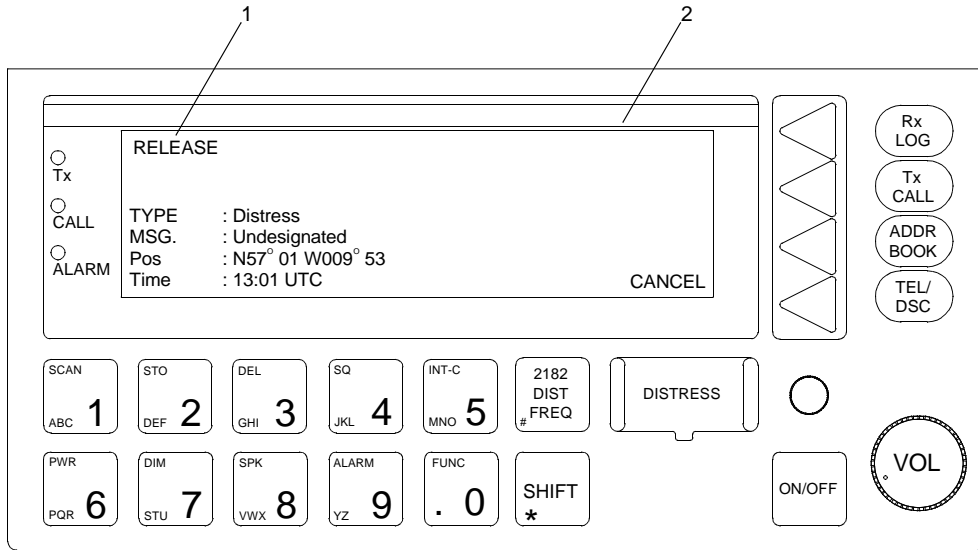


Figure 2. Release Distress Button Message

NOTE

If an acknowledgement is not received from a shore station within 2 minutes, the distress call will automatically repeat itself every 5 minutes with an updated position. The distress call will continue to rebroadcast every 5 minutes until the call is either acknowledged or cancelled.

Undesignated distress calls are sent on the default distress frequency 2187.5 kHz.

- Verify the Awaiting Automatic Repetition message (figure 3, item 1) appears in the LCD display (figure 3, item 2).

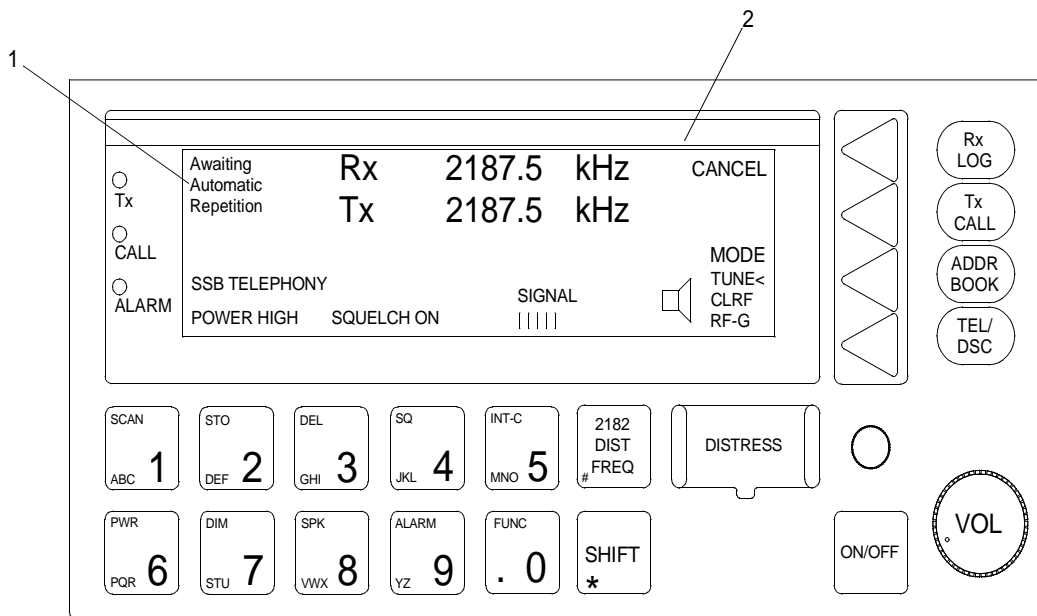


Figure 3. Awaiting Automatic Repetition Message

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF CONTROL UNIT
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**

Seaman 88K

EMERGENCY PROCEDURES - ACKNOWLEDGE A DISTRESS CALL USING THE MF/HF CONTROL UNIT**NOTE**

When an acknowledgement is received, the Distress acknowledgement received message (figure 1, item 1) appears in the LCD display (figure 1, item 2) and the distress call will automatically be cancelled.

1. Verify the Distress acknowledgement received message (figure 1, item 1) appears in the LCD display (figure 1, item 2).

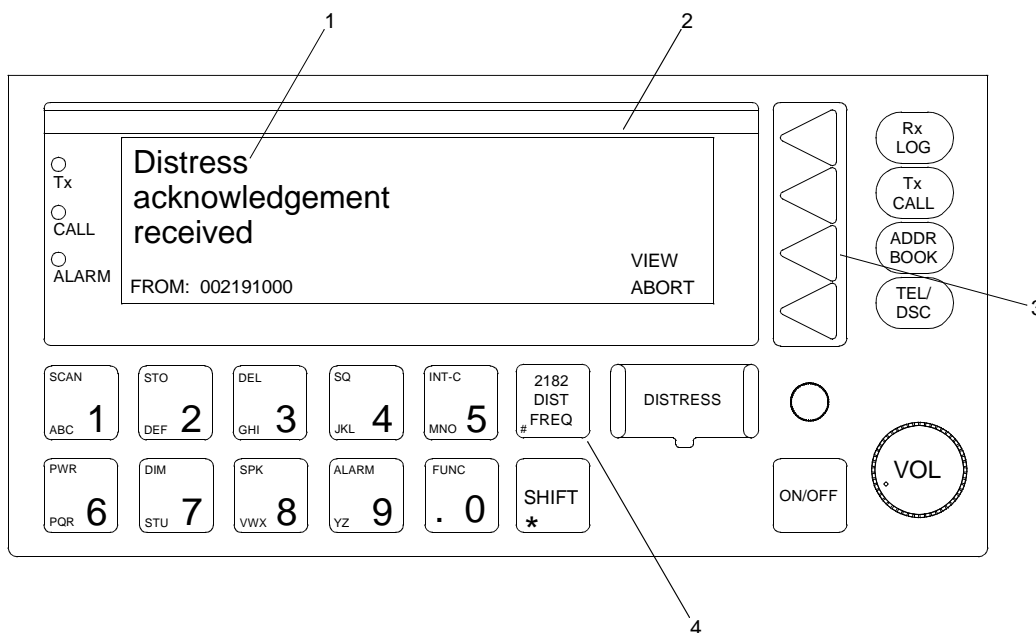


Figure 1. Distress Acknowledgement Received Message

1. Press the soft key (figure 1, item 3) to select VIEW and read the contents of the call.
2. Press the 2182 key (figure 1, item 4).
3. Verify the Rx/Tx message (figure 2, item 1) appears in the LCD display (figure 2, item 2).
4. Press the PTT button (figure 2, item 3) on the MF/HF control unit handset (figure 2, item 4) to acknowledge the distress call.
5. Release the PTT button (figure 2, item 3) on the MF/HF control unit handset (figure 2, item 4) to listen for a reply.

ACKNOWLEDGE A DISTRESS CALL USING THE MF/HF CONTROL UNIT - Continued

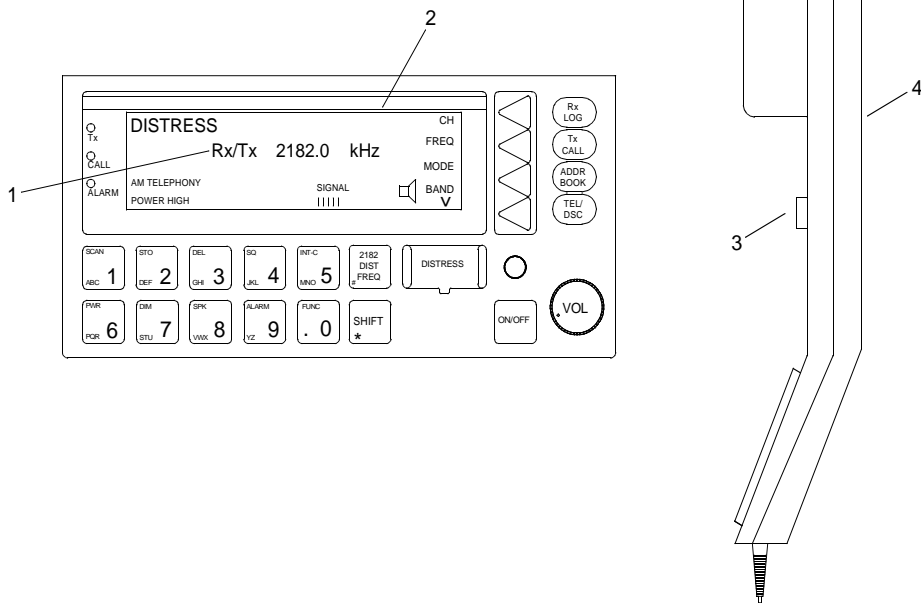


Figure 2. Rx/Tx Message

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
VHF-DSC TRANSCEIVER
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required

Seaman 88K

EMERGENCY PROCEDURES - SEND A QUICK DISTRESS USING THE VHF-DSC TRANSCEIVER

1. Press the ON/OFF button (figure 1, item 1) while the VHF-DSC transceiver (figure 1, item 2) is off or in the standby mode.

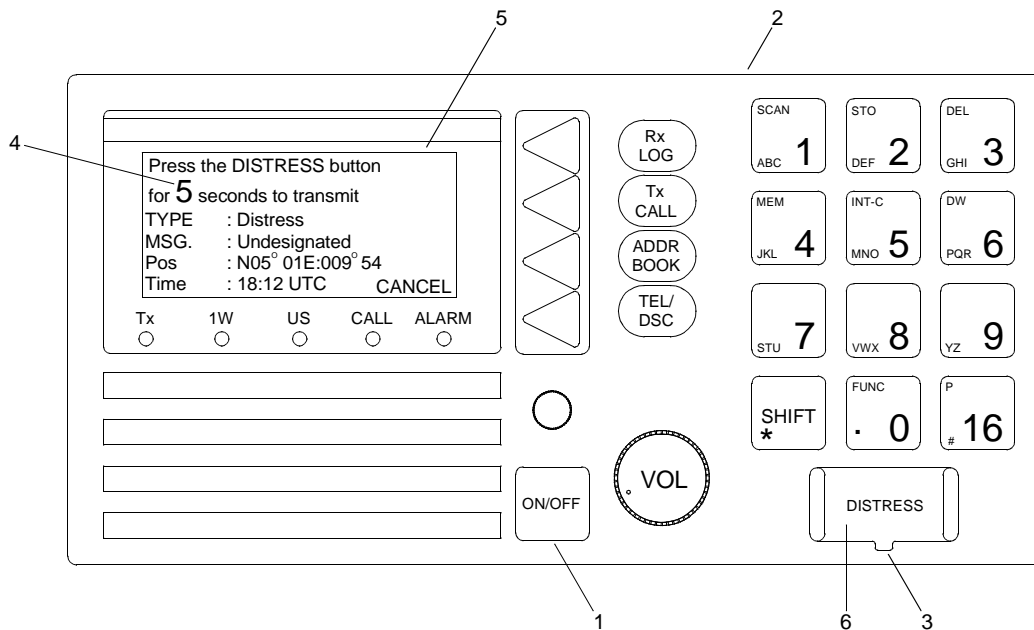


Figure 1. VHF-DSC Transceiver

2. Open the DISTRESS button cover (figure 1, item 3).

NOTE

A countdown indicator (figure 1, item 4) appears in the LCD display (figure 1, item 5) indicating the number of seconds remaining to press the DISTRESS button (figure 1, item 6). The control unit also prompts the user when to release the DISTRESS button (figure 1, item 6) to transmit the distress call.

3. Press the DISTRESS button (figure 1, item 6) for 5 seconds or wait for RELEASE (figure 2, item 1) to appear in the LCD display (figure 2, item 2).

SEND A QUICK DISTRESS USING THE VHF-DSC TRANSCEIVER - Continued

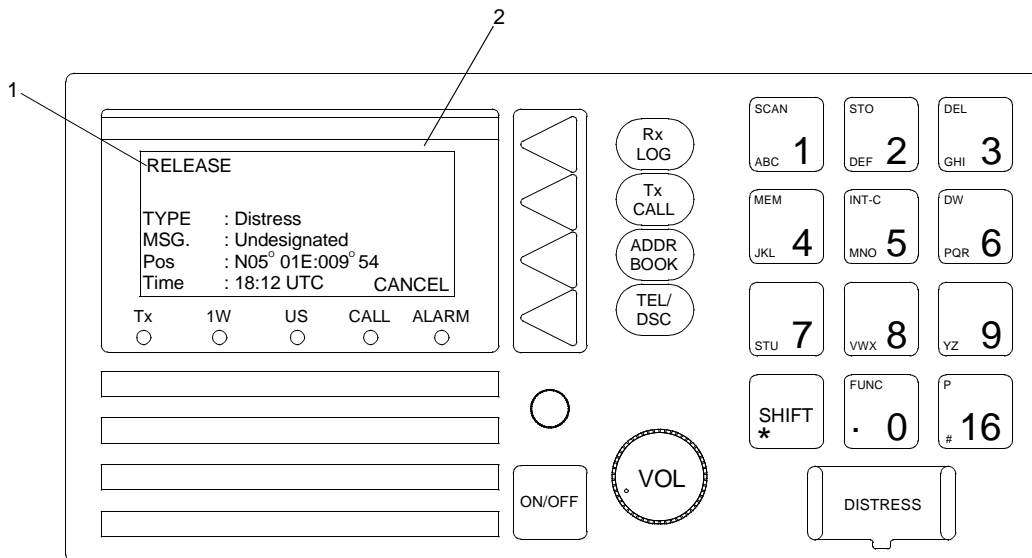


Figure 2. Release Distress Button Message

NOTE

If an acknowledgement is not received from a shore station within 2 minutes, the distress call will automatically repeat itself every 3.5–4.5 minutes with an updated position. The distress call will continue to rebroadcast every 3.5–4.5 minutes until the call is either acknowledged or cancelled.

Undesignated distress calls are sent on the default distress frequency 2187.5 kHz.

4. Verify the Waiting for Distress Acknowledgement message (figure 3, item 1) appears in the LCD display (figure 3, item 2).

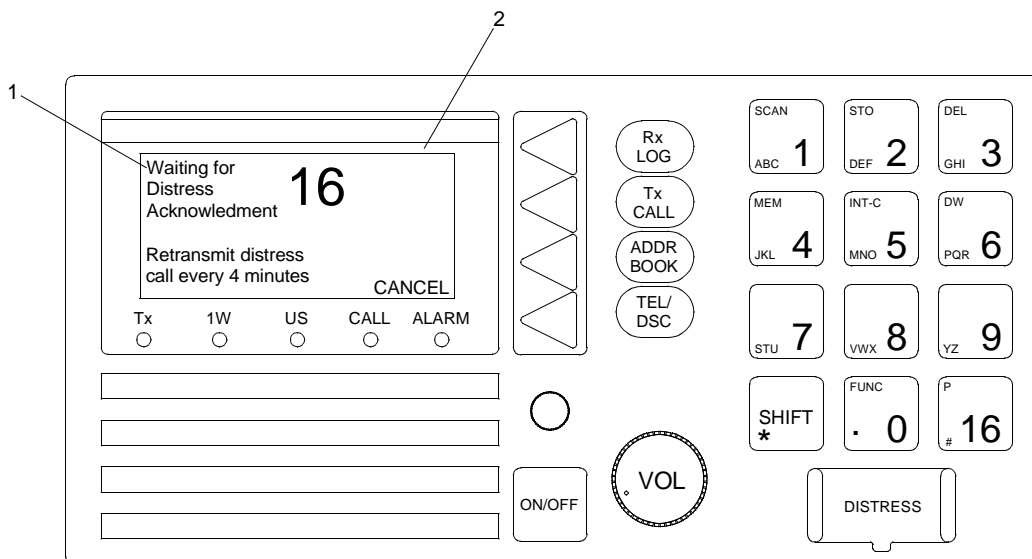


Figure 3. Waiting for Distress Acknowledgement Message

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
VHF-DSC TRANSCEIVER
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required

Seaman 88K

EMERGENCY PROCEDURES - ACKNOWLEDGE A DISTRESS USING THE VHF-DSC TRANSCEIVER

NOTE

When an acknowledgement is received, the Distress acknowledgement received message (figure 1, item 1) appears in the LCD display (figure 1, item 2) and the distress call will automatically be cancelled.

1. Verify the Distress acknowledgement received message (figure 1, item 1) appears in the LCD display (figure 1, item 2).

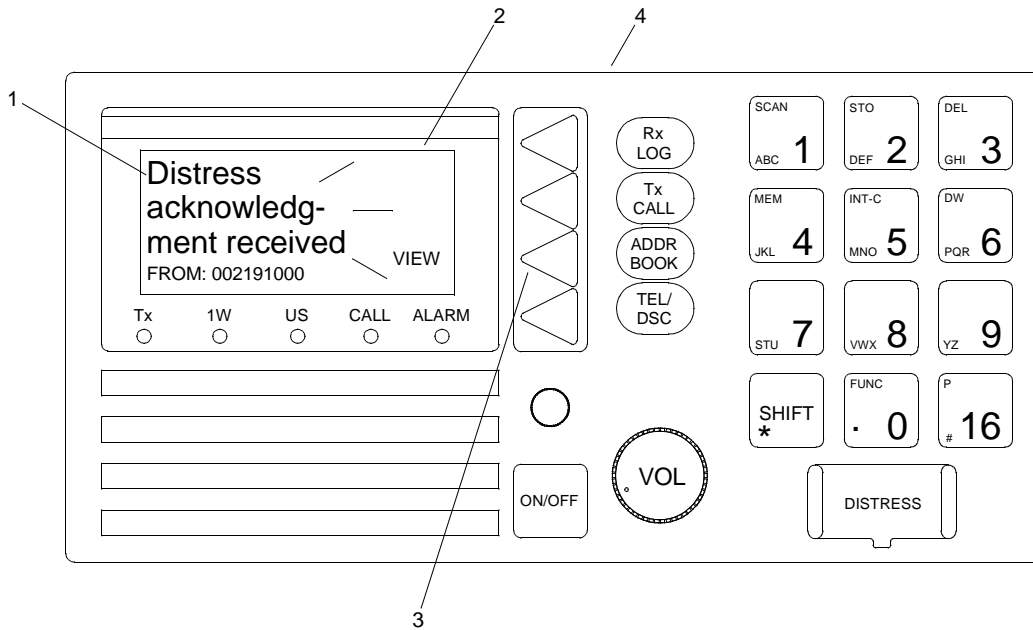


Figure 1. Distress Acknowledgement Received Message

2. Press the soft key (figure 1, item 3) to select VIEW on the VHF-DSC transceiver (figure 1, item 4).
3. Verify the Call contents first page screen (figure 2, item 1) appears in the LCD display (figure 2, item 2).
4. Press the soft key (figure 2, item 3) to select MORE on the VHF-DSC transceiver (figure 2, item 4).

ACKNOWLEDGE A DISTRESS USING THE VHF-DSC TRANSCEIVER - Continued

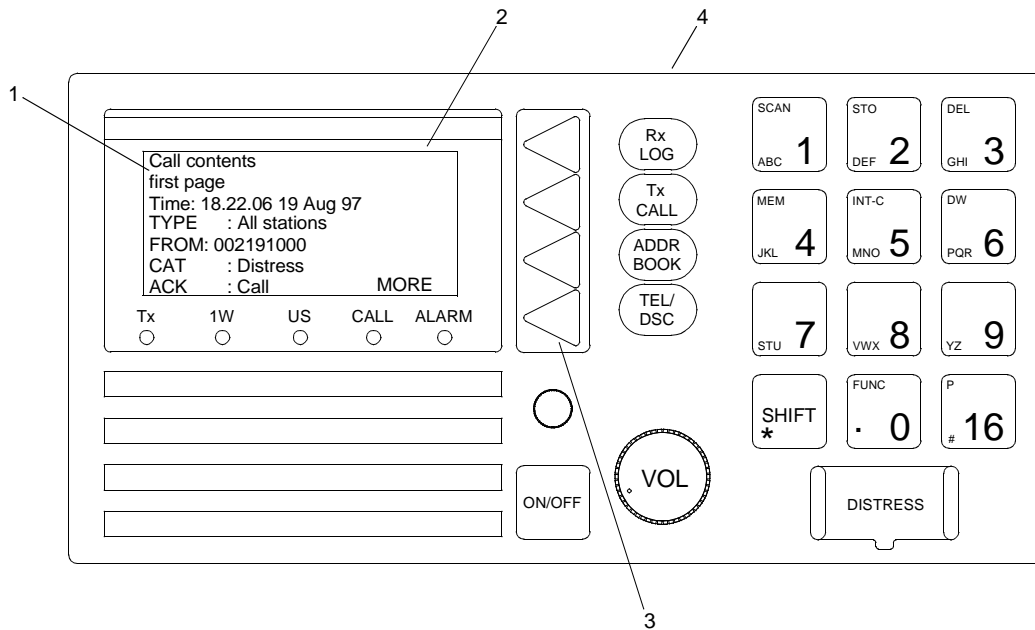


Figure 2. Call Contents First Page Screen

5. Verify the Call contents second page screen (figure 3, item 1) appears in the LCD display (figure 3, item 2).

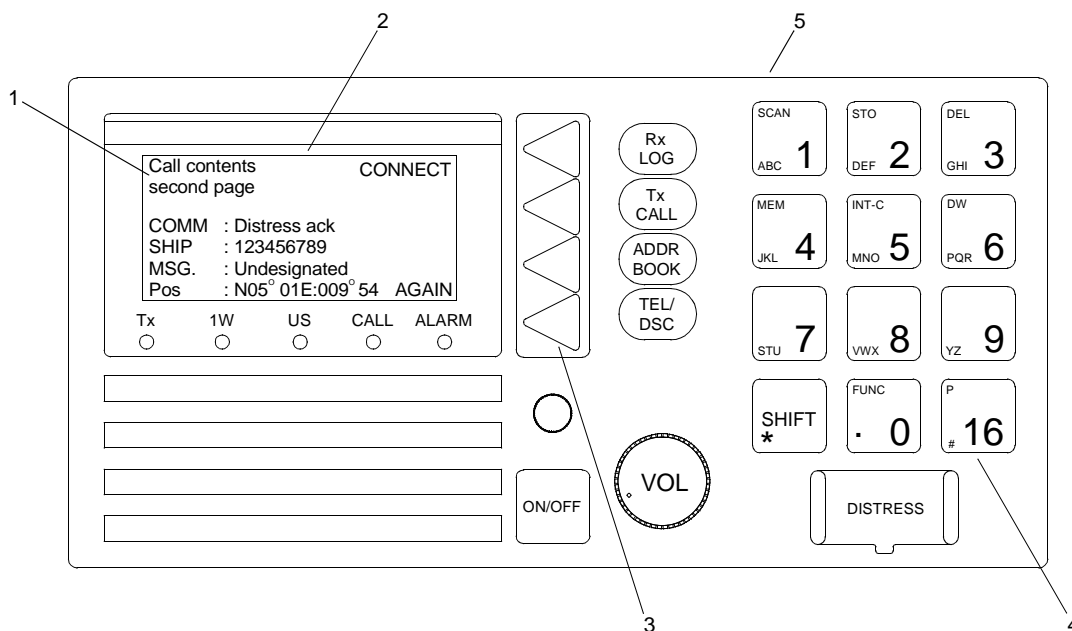


Figure 3. Call Contents Second Page Screen

6. Press the soft key (figure 3, item 3) to select AGAIN and return to the Call contents first page screen (figure 2, item 1).
7. Press the 16 key (figure 3, item 4) on the VHF-DSC transceiver (figure 3, item 5).
8. Press the PTT button (figure 4, item 1) on the VHF-DSC transceiver handset (figure 4, item 2) to acknowledge the distress call.
9. Release the PTT button (figure 4, item 1) on the VHF-DSC transceiver handset (figure 4, item 2) to listen for a reply.

ACKNOWLEDGE A DISTRESS USING THE VHF-DSC TRANSCEIVER - Continued

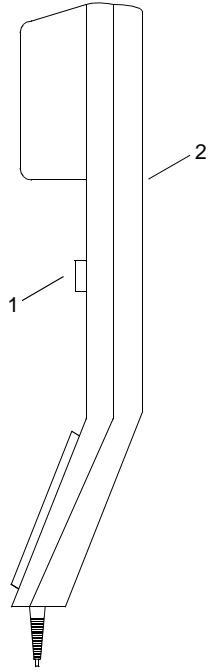
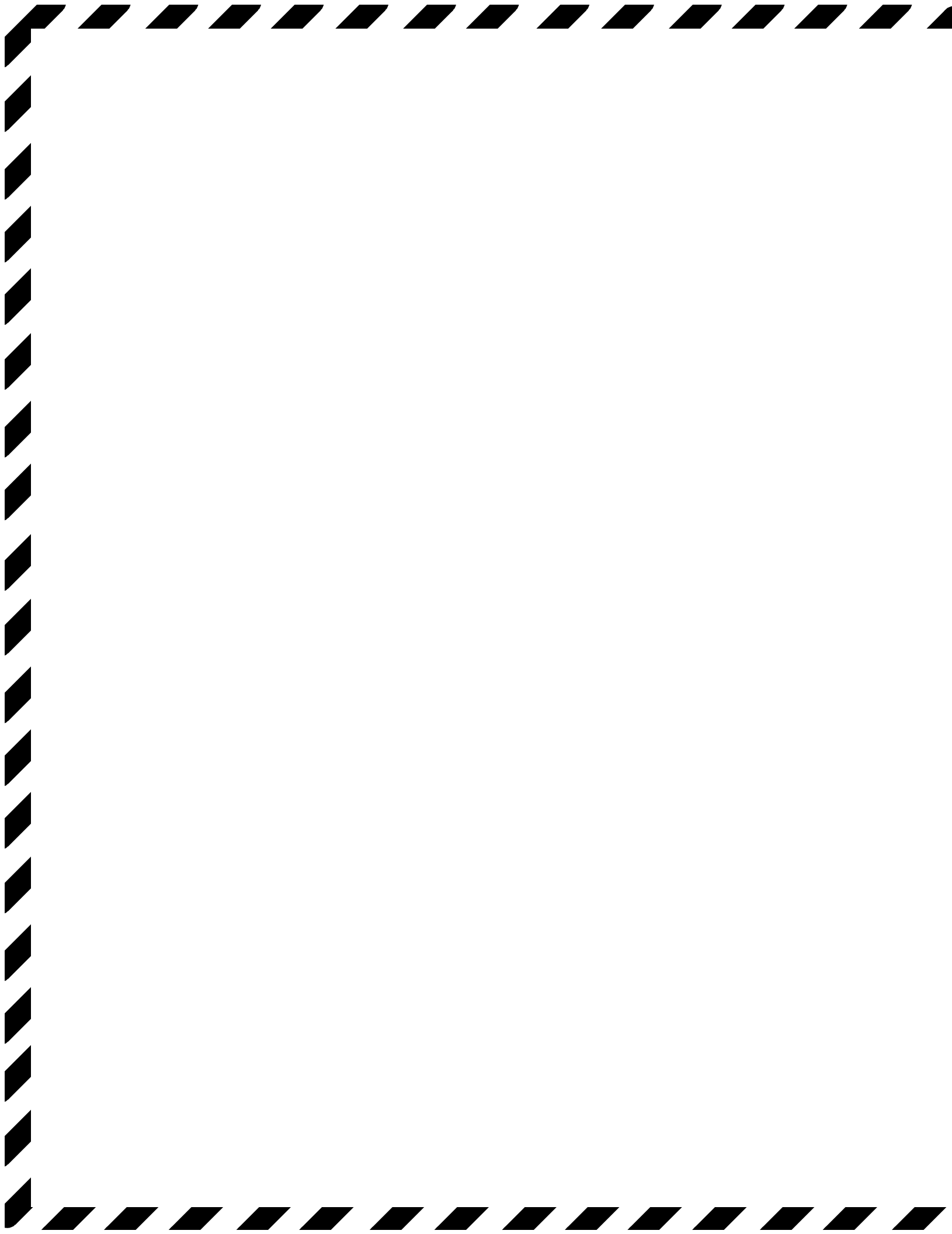


Figure 4. VHF-DSC Transceiver Handset

END OF WORK PACKAGE



**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:**Personnel Required**Seaman 88K

EMERGENCY PROCEDURES - SEND A DISTRESS USING THE CAPSAT TRANSCEIVER**SEND IMMEDIATE DISTRESS MESSAGE**

1. Press the Distress button (figure 1, item 1) on the transceiver to send an immediate maritime distress.

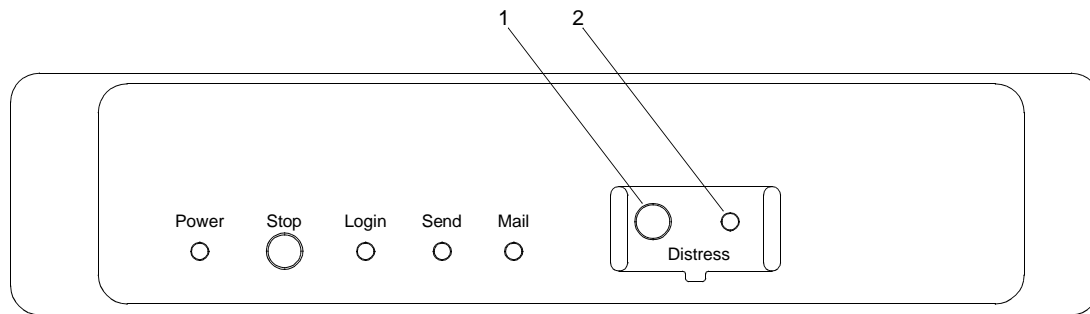


Figure 1. CAPSAT Transceiver

NOTE

After sending a maritime distress, the user may send a set or detailed distress message.

2. Hold the Distress button (figure 1, item 1) for at least 5 seconds until the LED indicator (figure 1, item 2) starts flashing.

SEND DETAILED DISTRESS MESSAGE

1. Type the message into the CAPSAT program TEXT field editor (figure 2).

SEND DETAILED DISTRESS MESSAGE - Continued

| | | | | | | | |
|----------------------------|------|----------|----------|----------|--------------------|---------|--------------|
| West Atlantic | | | | | INM-C - - - - 7 47 | | |
| File | Edit | Transmit | Logs | Distress | Position | Options | Applications |
| HELP!!!! WE'RE SINKING!!!! | | | | | | | |
| ----- | | | | | | | |
| ASCII: | | | 29 Chars | Line | 1 Col 29 | | << Inserting |

Figure 2. Distress Message

2. Select the Transmit menu by pressing the ALT and T keys.
3. Press the TAB key to move the highlight one position to the right to the priority field () Routine (figure 3).

| | | | | | | | |
|---------------|----|---|---------|----------|--------------------|--|--------------|
| West Atlantic | | | | | INM-C - - - - 6 03 | | |
| File | Ed | <Space> | | Transmit | | | |
| HELP!!!! W | | To: <input checked="" type="checkbox"/> internet (●) Routine INET () Non-Urgent Spec. 7bit () Distress Land Station: [X] Request confirmation [] Print [X] Text in editor [X] Immediate transmission <SEND> | | | | | |
| ----- | | | | | | | |
| ASCII: | | | 1 Chars | Line | 1 Col 1 | | << Inserting |

Figure 3. Transmit Menu

NOTE

The address book may pop up when doing this. If the address field is empty, just select the first destination, as the address won't be used.

4. Press the down arrow key twice to advance to the priority field () DISTRESS and press the spacebar to select.
5. Ensure the address field shows SEARCH & RESCUE (figure 4).

SEND DETAILED DISTRESS MESSAGE - Continued

| | | | | |
|---------------|----|--|----------|---|
| West Atlantic | | INM-C - - - - | | 12 15 |
| File | Ed | <Space> | Transmit | |
| HELP!!!! W | | To: SEARCH & RESCUE | | <input type="checkbox"/> Routine <input type="checkbox"/> Non-Urgent <input checked="" type="checkbox"/> Distress |
| | | Land Station: 001 Southbury | | <input checked="" type="checkbox"/> Request confirmation <input type="checkbox"/> Print |
| | | <input checked="" type="checkbox"/> Text in editor | | <input checked="" type="checkbox"/> Immediate transmission |
| | | | <SEND> | |
| ASCII: | | 31 Chars | Line | 1 Col 27 |
| | | | | << Inserting |

Figure 4. SEARCH & RESCUE Menu

- Press the ENTER key to move the highlight to SEND and press the ENTER key again to transmit (figure 5).

| | | | | |
|---------------|----|--|----------|---|
| West Atlantic | | INM-C - - - - | | 12 16 |
| File | Ed | <Space> | Transmit | |
| HELP!!!! W | | To: SEARCH & RESCUE | | <input type="checkbox"/> Routine <input type="checkbox"/> Non-Urgent <input checked="" type="checkbox"/> Distress |
| | | Land Station: 001 Southbury | | <input checked="" type="checkbox"/> Request confirmation <input type="checkbox"/> Print |
| | | <input checked="" type="checkbox"/> Text in editor | | <input checked="" type="checkbox"/> Immediate transmission |
| | | | ▶ <SEND> | |
| ASCII: | | 31 Chars | Line | 1 Col 27 |
| | | | | << Inserting |

Figure 5. SEND Option

NOTE

If the Land Station field is empty, the highlight will be positioned there instead.

- Press the spacebar to set the land station list and select a station.
- Once the station has been selected, press the right arrow key twice to send.
- Confirm the distress priority transmission by pressing the ENTER key.

SEND SET DISTRESS MESSAGE

1. Select the Distress menu (figure 6) by pressing the ALT and D keys.

| | | | | | | | |
|---|------|----------|------|---------------------|----------|-----------|--------------|
| West Atlantic | | | | INM-C - - - - 12 22 | | | |
| File | Edit | Transmit | Logs | Distress | Position | Options | Applications |
| HELP!!!! WE'RE SINKING!!!! | | | | | | | |
| | | | | Information | | | |
| This does not send a Distress Alert, it only sets the Distress Message. | | | | | | | |
| You must use the Transceivers front panel buttons to send a Distress Alert. | | | | | | | |
| Press any key to continue! | | | | | | | |
| ASCII: | | 32 Chars | | Line | | 2 Col 1 | |
| | | | | | | << | |
| AS | | | | | | Inserting | |

Figure 6. Distress Menu

2. Set the distress message using the Setting Distress Message dialog box (figure 7).

| | | | | | | | |
|---------------|---------------|--------------------------|------|---------------------|-------------------|-----------|--------------|
| West Atlantic | | | | INM-C - - - - 12 27 | | | |
| File | Edit | Transmit | Logs | Distress | Position | Options | Applications |
| HE | <Enter> | Setting Distress Message | | | | | |
| | Land Station: | 001 Southbury | | () | Unspecified | | |
| | | | | () | Explosion/fire | | |
| | Latitude | 37° 44,23 N | | () | Flooding | | |
| | Longitude | 076° 45,22 W | | () | Collision | | |
| | Course | 151 Degrees | | () | Grounding | | |
| | Speed | 2 Knots | | () | Listing | | |
| | | | | (*) | Sinking | | |
| | Updated at | 00:00 UTC | | () | Disabled & adrift | | |
| | Status | INVALID | | () | Abandoning ship | | |
| | | | | () | Req. Assistance | | |
| | | | | () | Piracy | | |
| AS | ▶ <OK> | | | | | | << |
| | | | | | | Inserting | |

Figure 7. Setting Distress Message Dialog Box

- a. Edit the Land Station field, which will normally be filled in with the station used for the latest transmission, by pressing the spacebar.
- b. Enter the current position using the Position field if the status is invalid.
- c. Press the TAB key to advance to the nature of distress field.
- d. Press the down arrow key until an arrow is to the left of the desired nature of the distress field.
- e. Press the spacebar to select the desired nature of distress field.
- f. Press the ENTER key to move the highlight to OK to accept the set distress message.

SEND SET DISTRESS MESSAGE - Continued

3. Press the Distress button (figure 8, item 1) on the transceiver for at least 5 seconds until the LED indicator (figure 8, item 2) starts flashing.

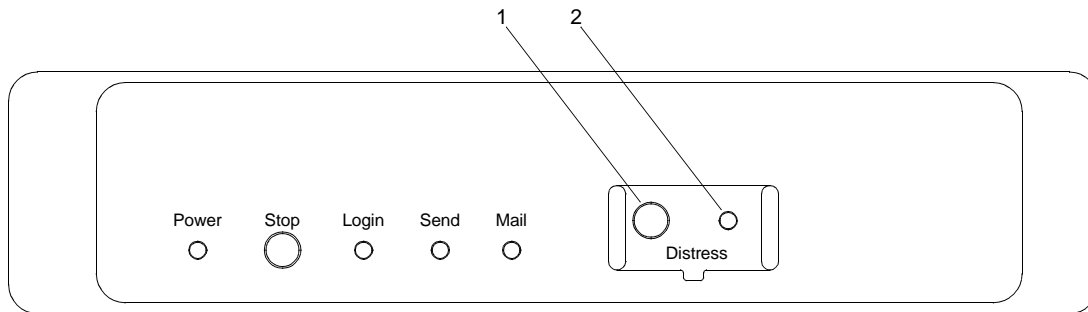
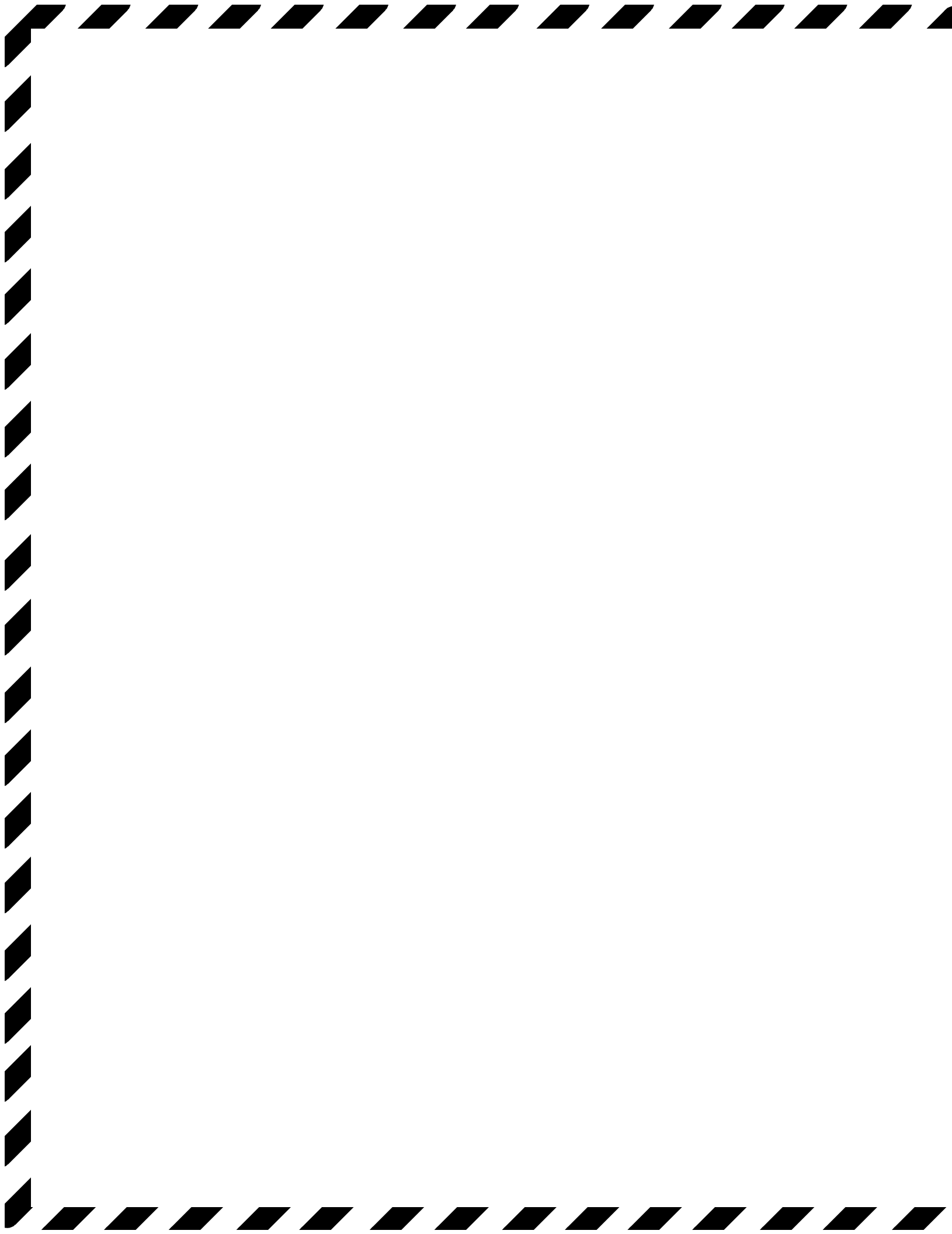


Figure 8. CAPSAT Transceiver

END OF WORK PACKAGE



**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required
Seaman 88K

EMERGENCY PROCEDURES - CANCEL A DISTRESS USING THE CAPSAT TRANSCEIVER

1. Type the distress cancellation message into the CAPSAT program TEXT field editor (figure 1).

| | | | | | | | |
|--|------|----------|------|--------------------|----------|----------------|--------------|
| West Atlantic | | | | INM-C - - - - 7 47 | | | |
| File | Edit | Transmit | Logs | Distress | Position | Options | Applications |
| NAME, CALL, SIGN, IDENTITY NUMBER, POSITION Cancel my INMARSAT-C distress alert of DATE, TIME UTC =Master+ | | | | | | | |
| ASCII: | | 29 Chars | | Line | | 1 Col 29 << | |
| Inserting | | | | | | | |

Figure 1. Distress Cancellation Message

2. Choose Transmit by pressing the ALT and T keys.
3. Press the TAB key to move the highlight one position to the right to the priority field () Routine (figure 2).

**EMERGENCY PROCEDURES - CANCEL DISTRESS USING THE CAPSAT
TRANSCEIVER - Continued**

| | | | |
|---------------|----|---|------------------------|
| West Atlantic | | INM-C - - - - 6 03 | |
| File | Ed | <Space> | Transmit |
| HELP!!!! W | | To: ► internet (●) Routine INET () Non-Urgent Spec. 7bit () Distress Land Station: [X] Request confirmation [] Print [X] Text in editor [X] Immediate transmission <SEND> | |
| ASCII: | | 1 Chars | Line 1 Col 1 Inserting |

Figure 2. Transmit Menu

NOTE

The address book may pop up when doing this. If the address field is empty, just select the first destination, as the address won't be used.

- Press the down arrow key twice to advance to the priority field () DISTRESS and press the spacebar to select.
- Ensure the address field shows SEARCH & RESCUE (figure 3).

| | | | |
|---------------|----|--|-------------------------|
| West Atlantic | | INM-C - - - - 12 15 | |
| File | Ed | <Space> | Transmit |
| HELP!!!! W | | To: SEARCH & RESCUE () Routine () Non-Urgent ► (●) Distress Land Station: [X] Request confirmation 001 Southbury [] Print [X] Text in editor [X] Immediate transmission <SEND> | |
| ASCII: | | 31 Chars | Line 1 Col 27 Inserting |

Figure 3. SEARCH & RESCUE Menu

- Press the ENTER key to move the highlight to SEND and press the ENTER key again to transmit (figure 4).

**EMERGENCY PROCEDURES - CANCEL DISTRESS USING THE CAPSAT
TRANSCIEVER - Continued**

| | | | |
|---------------|----|--|--|
| West Atlantic | | INM-C - - - - 12 16 | |
| File | Ed | <Space> | Transmit |
| HELP!!!! W | | To: SEARCH & RESCUE | |
| | | Land Station: 001 Southbury [X] Text in editor | () Routine () Non-Urgent (●) Distress [X] Request confirmation [] Print [X] Immediate transmission |
| | | ▶ <SEND> | |
| ASCII: | | 31 Chars | Line 1 Col 27 Inserting |

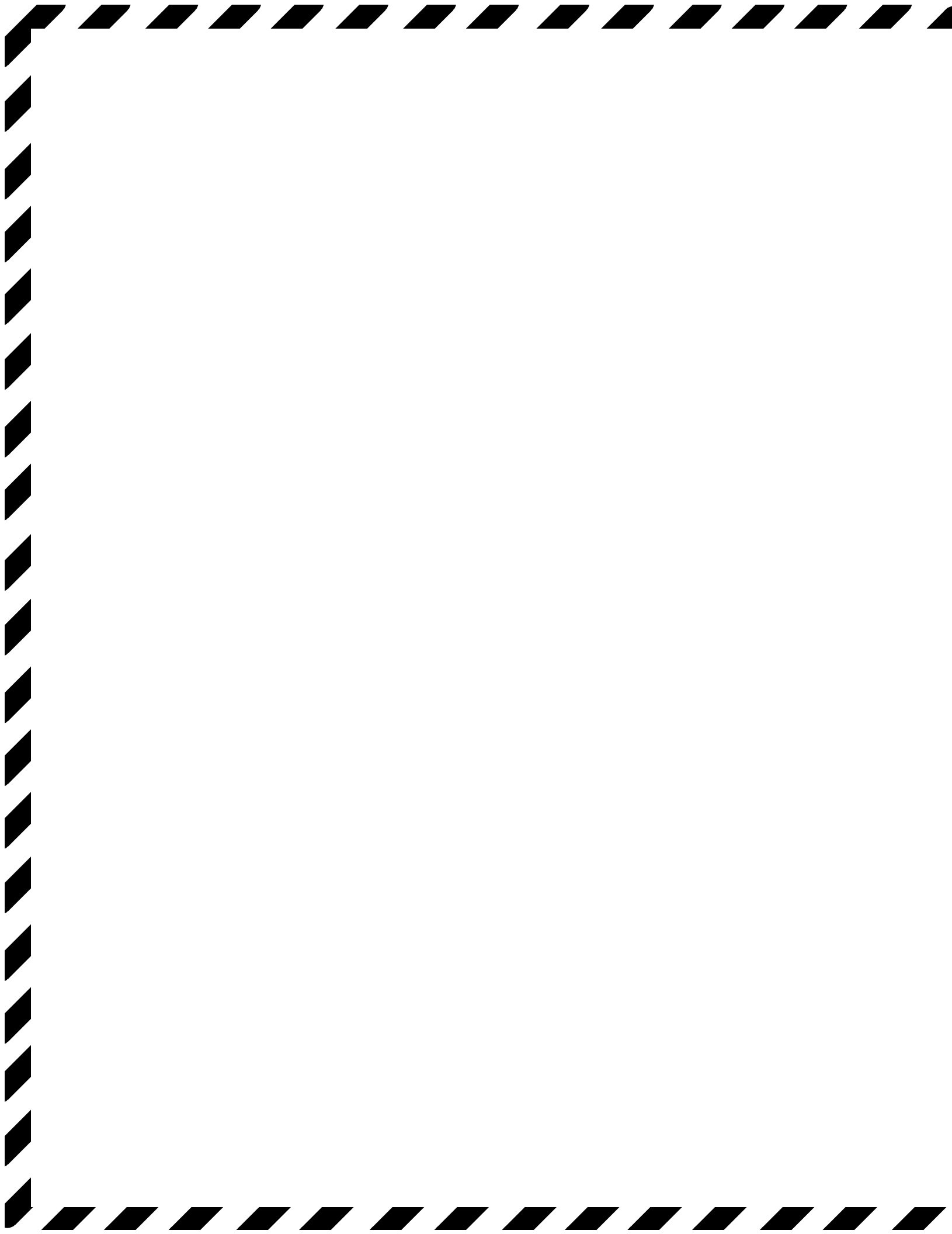
Figure 4. SEND Option

NOTE

If the Land Station field is empty, the highlight will be positioned there instead.

7. Press the spacebar to set the land station list and select a station.
8. Once the station has been selected, press the right arrow key twice to send.
9. Confirm the distress priority transmission by pressing the ENTER key.

END OF WORK PACKAGE



**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
SEARCH AND RESCUE TRANSPONDER (SART)
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required
Seaman 88K

**EMERGENCY PROCEDURES - OPERATE THE SEARCH AND RESCUE
TRANSPONDER (SART)**

WARNING



EXPLOSION



VAPOR



POISON

The lithium battery in the SART contains pressurized sulfur dioxide gas. The gas is toxic and the battery must not be abused in any way that might cause the battery to rupture.

Do not heat, short circuit, crush, puncture, mutilate or disassemble batteries.

Do not use any battery which shows signs of damage. Damage can appear as bulging, disfigurement, a brown liquid on the outside, etc.

Failure to follow these instructions could result in an explosion or production of toxic gases that may kill or injure personnel.

1. Carry the SART (figure 1, item 1) onto the survival craft.

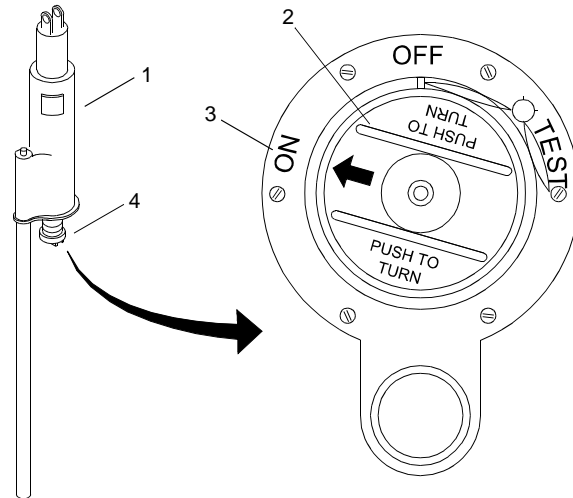


Figure 1. Search and Rescue Transponder (SART)

2. Activate the SART (figure 1, item 1).

OPERATE THE SEARCH AND RESCUE TRANSPONDER (SART) - Continued

- a. Push in on the lanyard spool (figure 1, item 2).

NOTE

The yellow and red indicator lights will flash twice and the buzzer will beep twice. Then the yellow light will flash slowly showing the SART is in the receive mode.

- b. Turn the lanyard spool (figure 1, item 2) in a counterclockwise direction, until the seal breaks, to the ON position (figure 1, item 3).
3. Mount the SART (figure 1, item 1) in the survival craft and secure with the lanyard (figure 1, item 4).

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
LIFEBOAT RADIO (LBR)
OPERATION UNDER UNUSUAL CONDITIONS**

INITIAL SETUP:

Personnel Required

Seaman 88K

Equipment Condition

Lifeboat radio removed (WP 0012 00).

EMERGENCY PROCEDURES - OPERATE THE LIFEBOAT RADIO (LBR)

OPERATE THE LIFEBOAT RADIO (LBR)

WARNING



EXPLOSION



VAPOR



POISON

The lithium battery in the lifeboat radio contains pressurized sulfur dioxide gas. The gas is toxic and the battery must not be abused in any way that might cause the battery to rupture.

Do not heat, short circuit, crush, puncture, mutilate or disassemble batteries.

Do not use any battery which shows signs of damage. Damage can appear as bulging, disfigurement, a brown liquid on the outside, etc.

Failure to follow these instructions could result in an explosion or production of toxic gases that may kill or injure personnel.

1. Carry the LBR (figure 1, item 1) onto the survival craft.

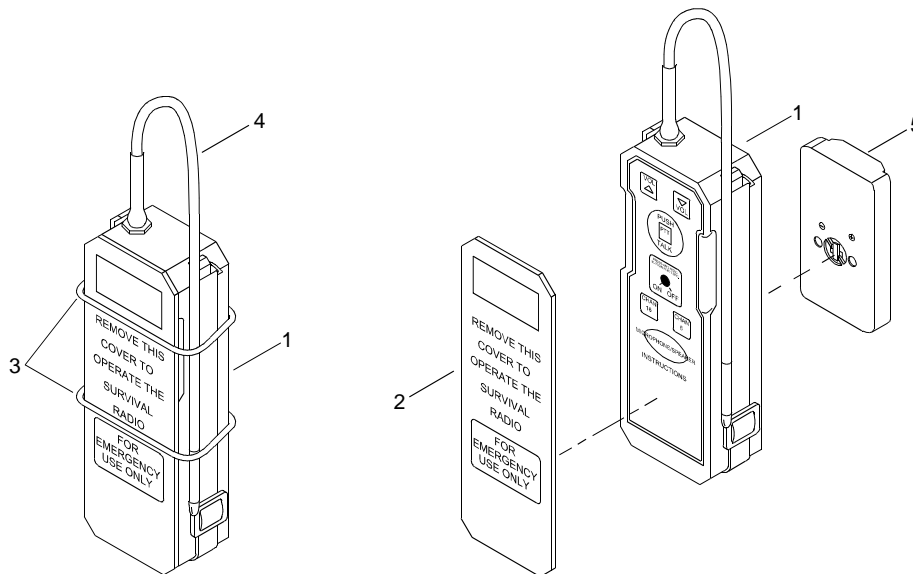


Figure 1. Lifeboat Radio (LBR)

OPERATE THE LIFEBOAT RADIO (LBR) - Continued

2. Remove the control panel protective cover (figure 1, item 2).
 - a. Slide o-rings (figure 1, item 3) down past end of antenna (figure 1, item 4) and lifeboat radio battery (figure 1, item 5).
 - b. Remove the control panel protective cover (figure 1, item 2).
3. Secure strap (figure 2, item 1) around wrist.

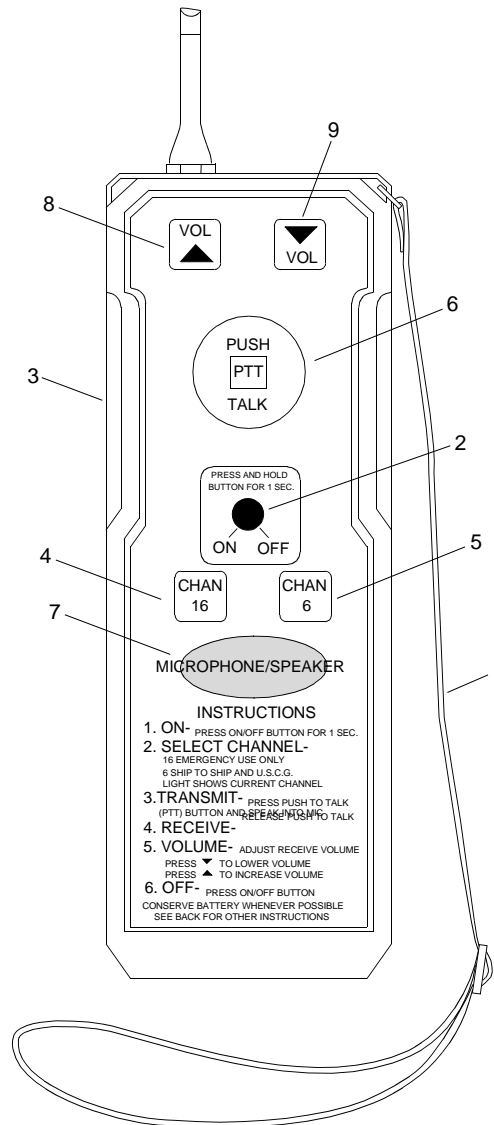


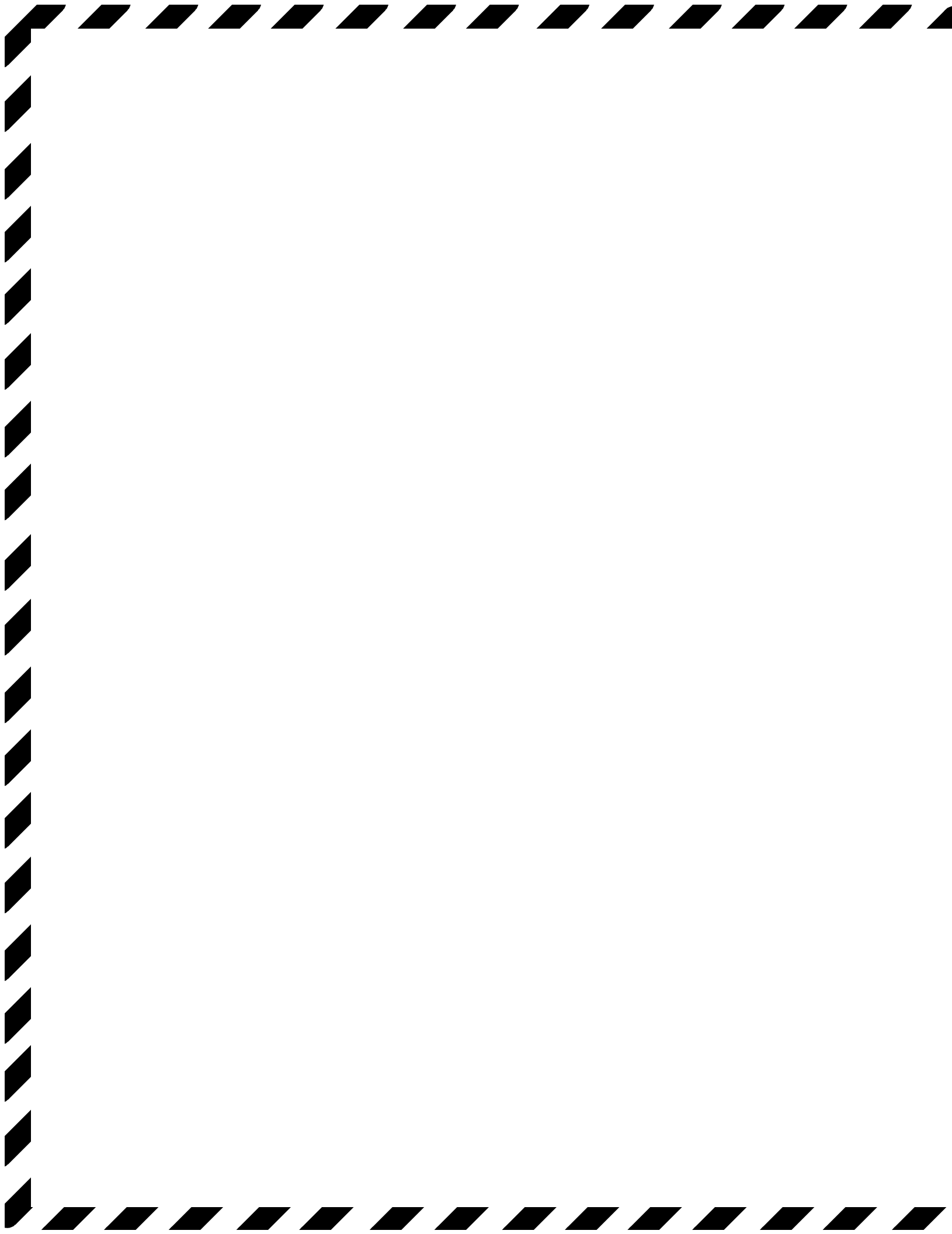
Figure 2. Lifeboat Radio (LBR)

4. Press the ON/OFF button (figure 2, item 2) for 1 second to turn the LBR (figure 2, item 3) on.
5. Repeat step 4 if the CHAN 16 button (figure 2, item 4) does not stay lit.
6. Listen for the tone and the squelch action 3 seconds after turning the unit on.
7. If channel 6 is desired, press CHAN 6 button (figure 2, item 5) to select.
8. Press the PUSH TO TALK (PTT) button (figure 2, item 6) to transmit.

OPERATE THE LIFEBOAT RADIO (LBR) - Continued

9. Speak loudly and clearly into the microphone/speaker (figure 2, item 7) from a distance of approximately 3–6 inches.
10. Both the up volume button (figure 2, item 8) and the down volume button (figure 2, item 9) will remain lit during transmission.
11. Release the PTT button (figure 2, item 6) to listen.
12. Adjust as required by pressing the up volume button (figure 2, item 8) to increase volume or by pressing the down volume button (figure 2, item 9) to decrease volume.
13. Keep transmissions to a minimum to conserve battery power.
14. Periodically verify that the CHAN 16 button (figure 2, item 4) is lit to guard against accidental selection of channel 6.
15. Press the ON/OFF button (figure 2, item 2) to turn the LBR (figure 2, item 3) off.

END OF WORK PACKAGE



CHAPTER 3

OPERATOR TROUBLESHOOTING PROCEDURES FOR

U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
TROUBLESHOOTING PROCEDURES INDEX**

| <u>MALFUNCTION/SYMP TOM</u> | <u>TROUBLESHOOTING PROCEDURE</u> |
|---|----------------------------------|
| Iridium Handset Has No Power | WP 0023 00 |
| MF/HF Control Unit Has No Power | WP 0024 00 |
| MF/HF Control Unit Will Not Transmit | WP 0025 00 |
| MF/HF Control Unit Will Not Receive | WP 0026 00 |
| MF/HF TELEX Data Terminal Has No Power | WP 0027 00 |
| MF/HF TELEX Printer Has No Power | WP 0028 00 |
| MF/HF TELEX Printer Will Not Print | WP 0029 00 |
| VHF-DSC Transceiver Has No Power | WP 0030 00 |
| VHF-DSC Transceiver Will Not Transmit | WP 0031 00 |
| VHF-DSC Transceiver Will Not Receive | WP 0032 00 |
| CAPSAT Transceiver Has No Power | WP 0033 00 |
| CAPSAT Transceiver Data Terminal Has No Power | WP 0034 00 |
| CAPSAT Transceiver Data Terminal Receives Error Message | WP 0035 00 |
| CAPSAT Transceiver Printer Has No Power | WP 0036 00 |
| CAPSAT Transceiver Printer Will Not Print | WP 0037 00 |
| Lifeboat Radio Has No Power | WP 0038 00 |
| Search and Rescue Transponder (SART) Will Not Pass Test | WP 0039 00 |

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
IRIDIUM HANDSET
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

IRIDIUM HANDSET HAS NO POWER

SYMPTOM

No indication of power displayed in handset display window.

MALFUNCTION

Handset is not turned on.

CORRECTIVE ACTION

Press the on/off button to turn handset power on (WP 0004 00).

MALFUNCTION

Still no indication of power to the handset displayed in the display window.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF CONTROL UNIT
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF CONTROL UNIT HAS NO POWER

SYMPTOM

No indication of power displayed in the control unit display window.

MALFUNCTION

MF/HF control unit is not turned on.

CORRECTIVE ACTION

Press the ON/OFF button to turn the MF/HF control unit on (WP 0004 00).

MALFUNCTION

GMDSS circuit breaker in the off position in electrical distribution panel EP103.

CORRECTIVE ACTION

Position the GMDSS circuit breaker to the on position (WP 0005 00).

MALFUNCTION

Still no indication of power in the control unit display window.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF CONTROL UNIT
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF CONTROL UNIT WILL NOT TRANSMIT

SYMPTOM

MF/HF control unit will not transmit.

MALFUNCTION

MF/HF control unit is not turned on.

CORRECTIVE ACTION

Press the ON/OFF button to turn the MF/HF control unit on (WP 0004 00).

MALFUNCTION

Antenna cable on back of the MF/HF control unit is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

Antenna cable on the MF/HF control unit antenna is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

MF/HF antenna is not transmitting.

CORRECTIVE ACTION

Contact unit maintenance to replace antenna as soon as possible.

MALFUNCTION

MF/HF control unit still will not transmit.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF CONTROL UNIT
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF CONTROL UNIT WILL NOT RECEIVE

SYMPTOM

MF/HF control unit will not receive.

MALFUNCTION

MF/HF control unit is not turned on.

CORRECTIVE ACTION

Press the ON/OFF button to turn the MF/HF control unit on (WP 0004 00).

MALFUNCTION

Antenna cable on back of the MF/HF control unit is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

Antenna cable on the MF/HF control unit antenna is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

MF/HF antenna is not receiving.

CORRECTIVE ACTION

Contact unit maintenance to replace antenna as soon as possible.

MALFUNCTION

MF/HF control unit still will not receive.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF TELEX DATA TERMINAL
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF TELEX DATA TERMINAL HAS NO POWER

SYMPTOM

No indication of power displayed in data terminal display window.

MALFUNCTION

GMDSS circuit breaker is in the off position on electrical distribution panel EP103.

CORRECTIVE ACTION

Position the GMDSS circuit breaker to the on position (WP 0005 00).

MALFUNCTION

Still no indication of power displayed in data terminal display window.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF TELEX PRINTER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF TELEX PRINTER HAS NO POWER

SYMPTOM

MF/HF TELEX printer has no power.

MALFUNCTION

MF/HF TELEX printer power switch is in the off position.

CORRECTIVE ACTION

Position the power switch to the on position (WP 0004 00).

MALFUNCTION

GMDSS circuit breaker is in the off position on electrical distribution panel EP103.

CORRECTIVE ACTION

Position the GMDSS circuit breaker to the on position (WP 0005 00).

MALFUNCTION

MF/HF TELEX printer still has no power.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF TELEX PRINTER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

MF/HF TELEX PRINTER WILL NOT PRINT

SYMPTOM

MF/HF TELEX printer will not print.

MALFUNCTION

MF/HF TELEX printer cables disconnected.

CORRECTIVE ACTION

Connect MF/HF TELEX printer cables.

MALFUNCTION

MF/HF TELEX printer paper not installed properly.

CORRECTIVE ACTION

Reinstall paper as necessary (WP 0042 00).

MALFUNCTION

MF/HF TELEX printer still will not print.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
VHF-DSC TRANSCEIVER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

VHF-DSC TRANSCEIVER HAS NO POWER

SYMPTOM

No indication of power displayed in the transceiver LCD.

MALFUNCTION

VHF-DSC transceiver is not turned on.

CORRECTIVE ACTION

Press the ON/OFF button to turn the VHF-DSC transceiver on (WP 0004 00).

MALFUNCTION

GMDSS circuit breaker is in the off position on electrical distribution panel EP103.

CORRECTIVE ACTION

Position the GMDSS circuit breaker to the on position (WP 0005 00).

MALFUNCTION

Still no indication of power displayed in the transceiver LCD.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
VHF-DSC TRANSCEIVER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

VHF-DSC TRANSCEIVER WILL NOT TRANSMIT

SYMPTOM

VHF-DSC transceiver will not transmit.

MALFUNCTION

VHF-DSC transceiver is not powered up.

CORRECTIVE ACTION

Press the ON/OFF button on the VHF-DSC transceiver (WP 0004 00).

MALFUNCTION

Antenna cable on the back of the VHF-DSC transceiver is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

Antenna cable on the VHF-DSC transceiver antenna is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

VHF-DSC transceiver antenna is not transmitting.

CORRECTIVE ACTION

Contact unit maintenance to replace antenna as soon as possible.

MALFUNCTION

VHF-DSC transceiver still will not transmit.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
VHF-DSC TRANSCEIVER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

VHF-DSC TRANSCEIVER WILL NOT RECEIVE

SYMPTOM

VHF-DSC transceiver will not receive.

MALFUNCTION

VHF-DSC transceiver is not powered up.

CORRECTIVE ACTION

Press the ON/OFF button on the VHF-DSC transceiver (WP 0004 00).

MALFUNCTION

Antenna cable on the back of the VHF-DSC transceiver is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

Antenna cable on the VHF-DSC transceiver antenna is loose or disconnected.

CORRECTIVE ACTION

Contact unit maintenance to connect or tighten antenna cable as necessary.

MALFUNCTION

VHF-DSC transceiver antenna is not receiving.

CORRECTIVE ACTION

Contact unit maintenance to replace antenna as soon as possible.

MALFUNCTION

VHF-DSC transceiver still will not receive.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

CAPSAT TRANSCEIVER HAS NO POWER

SYMPTOM

No power to the CAPSAT transceiver.

MALFUNCTION

CAPSAT transceiver is off.

CORRECTIVE ACTION

Press the CAPSAT transceiver On/Off switch to turn the power on to the transceiver (WP 0004 00).

MALFUNCTION

GMDSS circuit breaker in the off position in electrical distribution panel EP103.

CORRECTIVE ACTION

Position circuit breaker to the on position (WP 0005 00).

MALFUNCTION

There is still no power to the CAPSAT transceiver.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER DATA TERMINAL
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

CAPSAT TRANSCEIVER DATA TERMINAL HAS NO POWER

SYMPTOM

No indication of power displayed in data terminal display window.

MALFUNCTION

GMDSS circuit breaker in the off position in electrical distribution panel EP103.

CORRECTIVE ACTION

Position circuit breaker to the on position (WP 0005 00).

MALFUNCTION

Still no indication of power displayed in data terminal display window.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER DATA TERMINAL
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

CAPSAT TRANSCEIVER DATA TERMINAL RECEIVES ERROR MESSAGE

SYMPTOM

Message "TRANSCEIVER NOT CONNECTED" appears on CAPSAT transceiver data terminal screen.

MALFUNCTION

Initial setup of CAPSAT transceiver data terminal is wrong.

CORRECTIVE ACTION

Contact unit maintenance.

MALFUNCTION

Message "TRANSCEIVER NOT CONNECTED" still appears on CAPSAT transceiver data terminal screen.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER PRINTER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

CAPSAT TRANSCEIVER PRINTER HAS NO POWER

SYMPTOM

CAPSAT transceiver printer has no power.

MALFUNCTION

CAPSAT transceiver printer power switch is in the off position.

CORRECTIVE ACTION

Position the power switch to the on position (WP 0004 00).

MALFUNCTION

GMDSS circuit breaker in the off position in electrical distribution panel EP103.

CORRECTIVE ACTION

Position circuit breaker to the on position (WP 0005 00).

MALFUNCTION

CAPSAT transceiver printer still has no power.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
CAPSAT TRANSCEIVER PRINTER
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

CAPSAT TRANSCEIVER PRINTER WILL NOT PRINT

SYMPTOM

CAPSAT transceiver printer will not print.

MALFUNCTION

CAPSAT transceiver printer cables disconnected.

CORRECTIVE ACTION

Connect CAPSAT transceiver printer cables.

MALFUNCTION

CAPSAT transceiver printer paper not installed properly.

CORRECTIVE ACTION

Reinstall paper as necessary (WP 0042 00).

MALFUNCTION

CAPSAT transceiver printer still will not print.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
LIFEBOAT RADIO
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

LIFEBOAT RADIO HAS NO POWER

SYMPTOM

Radio has no power.

MALFUNCTION

Radio is not turned on.

CORRECTIVE ACTION

Press the ON/OFF button to turn on the radio (WP 0004 00).

SYMPTOM

No power after radio is turned on.

MALFUNCTION

Battery is dead.

CORRECTIVE ACTION

Contact unit maintenance to replace battery.

END OF WORK PACKAGE

**OPERATOR AND UNIT MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
SEARCH AND RESCUE TRANSPONDER (SART)
TROUBLESHOOTING PROCEDURES**

INITIAL SETUP:**Personnel Required**Seaman 88K

TROUBLESHOOTING PROCEDURE

SEARCH AND RESCUE TRANSPONDER (SART) WILL NOT PASS TEST

SYMPTOM

No indication of a flashing red light when the switch is rotated to the TEST position.

MALFUNCTION

Low or dead battery.

CORRECTIVE ACTION

Contact unit maintenance to replace battery.

MALFUNCTION

SART still will not pass test.

CORRECTIVE ACTION

Contact unit maintenance for immediate repair.

END OF WORK PACKAGE

CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS FOR

U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
PROCEDURES INTRODUCTION**

INTRODUCTION

General

Preventive Maintenance Checks and Services (PMCS) are performed to keep the GMDSS equipment in operating condition. The checks are used to find, correct or report problems. Crew members are to do the PMCS as shown in the PMCS table. Preventive maintenance checks and services are performed every day the equipment is operated, using the PMCS table. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be hurt. A CAUTION means equipment could be damaged.

Before you begin operating the equipment, do Before PMCS.

During operation, do During PMCS.

After operation, do After PMCS.

Do Monthly PMCS once a month. If the equipment has not been operated in a month, also do After PMCS at the same time.

If you are operating the equipment for the first time, do the Monthly PMCS the first time you do your Before PMCS.

If you find something wrong when performing PMCS, fix it, if you can, using troubleshooting procedures and/or maintenance procedures.

The right-hand column of the PMCS table list conditions that make the vessel not fully mission capable. Write up items not fixed on DA Form 2404 for unit maintenance. For further information on how to use this form, see DA PAM 750-8.

INSPECTION

Look for signs of a problem or trouble. Senses help here. You can feel, smell, hear or see many problems. Be alert when inspecting the equipment.

Inspect to see if items are in good condition. Are they clean, correctly assembled, stowed, secured, excessively worn or corroded? Correct any problems found or notify unit maintenance.

There are some common items to check all over the equipment. These include the following:

1. Bolts, clamps, nuts and screws: Continuously check for looseness. Look for chipped paint, bare metal, rust or corrosion around bolt and screw heads and nuts. Tighten them when you find them loose. If tools are not available, contact unit maintenance.
2. Electrical wires, connectors and harnesses: Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any are found, notify unit maintenance.
3. Antennas, antenna mounts, connectors and wires: Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any are found, notify unit maintenance.

CLEANING

CAUTION

Follow all cleaning instructions carefully. Failure to do so can result in damage to equipment.

1. Dust equipment thoroughly using a clean, soft brush.

CLEANING - Continued

2. Clean exterior housings and keypads, buttons and toggles with a sponge dampened with alcohol to remove all dirt and oils. Do not pour or spray fluid directly on equipment, always use a sponge or cloth. Wipe surface dry with a lint-free cloth.

CORROSION PREVENTION AND CONTROL (CPC)

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

Corrosion is typically associated with rusting of metals or galvanic corrosion, which produces a white powder. The category of corrosion also includes deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words, such as "corrosion", "rust", "deterioration" or "cracking", will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 750-8.

WARRANTY INFORMATION

For equipment under manufacturer's warranty, manufacturer service intervals shall be followed.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)
AND LUBRICATION PROCEDURES**

INITIAL SETUP:**Materials/Parts**

Applicator (item 1, WP 0047 00)
 Brush, cleaning (item 5, WP 0047 00)
 Cloth, cleaning (item 6, WP 0047 00)
 Gloves, rubber industrial (item 7, WP 0047 00)
 Goggles, industrial (item 8, WP 0047 00)
 Isopropyl alcohol, technical (item 9, WP 0047 00)

Personnel Required

Seaman 88K

- | | |
|---|---|
| 1. VHF ANT-AR-62 Antenna | 13. AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) |
| 2. VHF ANT-AV-40 Antenna | 14. GMDSS Console VHF-DSC Transceiver and Handset |
| 3. VHF ANT-AV-7 Antenna | 15. CAPSAT Transceiver |
| 4. GPS PLGR ANT-AT1665 Antenna | 16. CAPSAT Transceiver Printer |
| 5. Iridium ANT SA-4110 Antenna | 17. CAPSAT Transceiver Data Terminal and Keyboard |
| 6. INMARSAT-C ANT-AT-1606 Antenna | 18. MF/HF TELEX Data Terminal and Keyboard |
| 7. Port Lifeboat Radio (LBR) | 19. MF/HF TELEX Printer |
| 8. Bridge VHF-DSC Transceiver and Handset | 20. MF/HF Control Unit and Handset |
| 9. Starboard Lifeboat Radio (LBR) | 21. Battery Panel |
| 10. NAVTEX Receiver | 22. Iridium Handset |
| 11. 24 Volt Distribution Panel | 23. Search and Rescue Transponder (SART) |
| 12. Interface and Switchbox | 24. Electrical Distribution Panel EP103 |

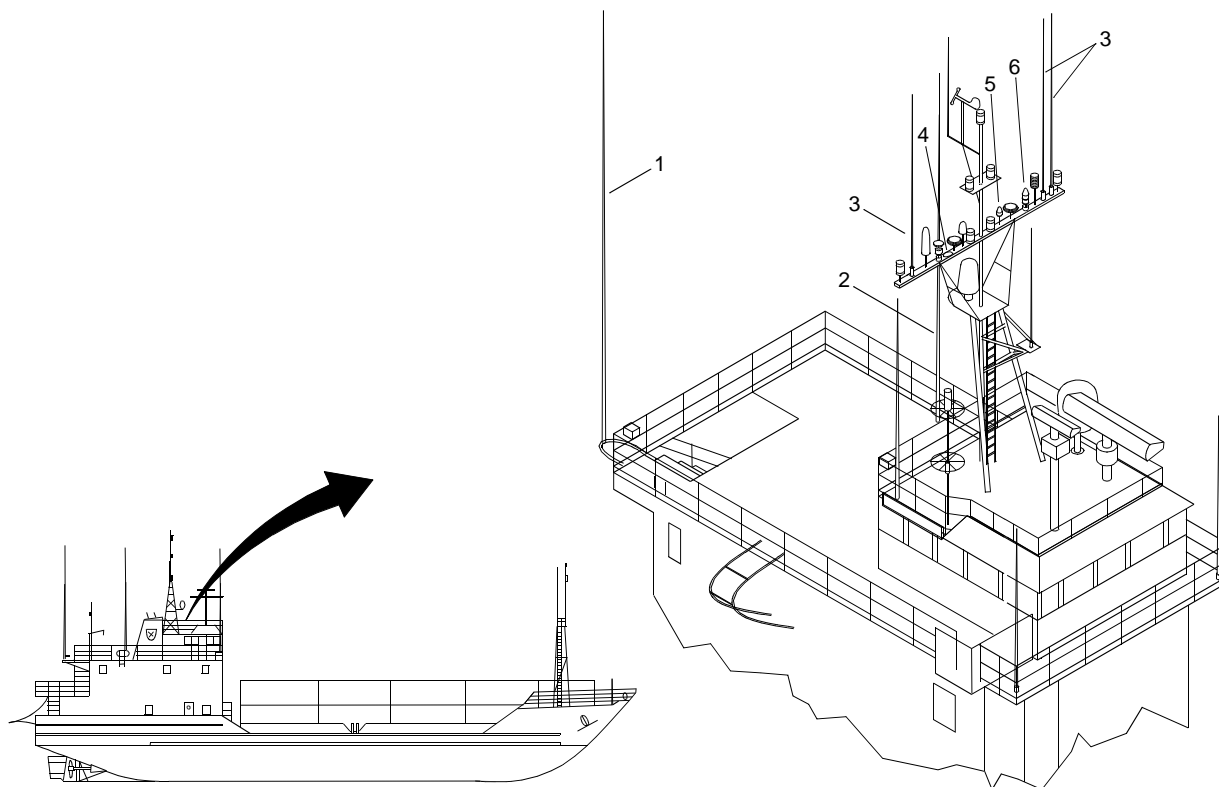


Figure 1. GMDSS Equipment Arrangement (Sheet 1 of 7)

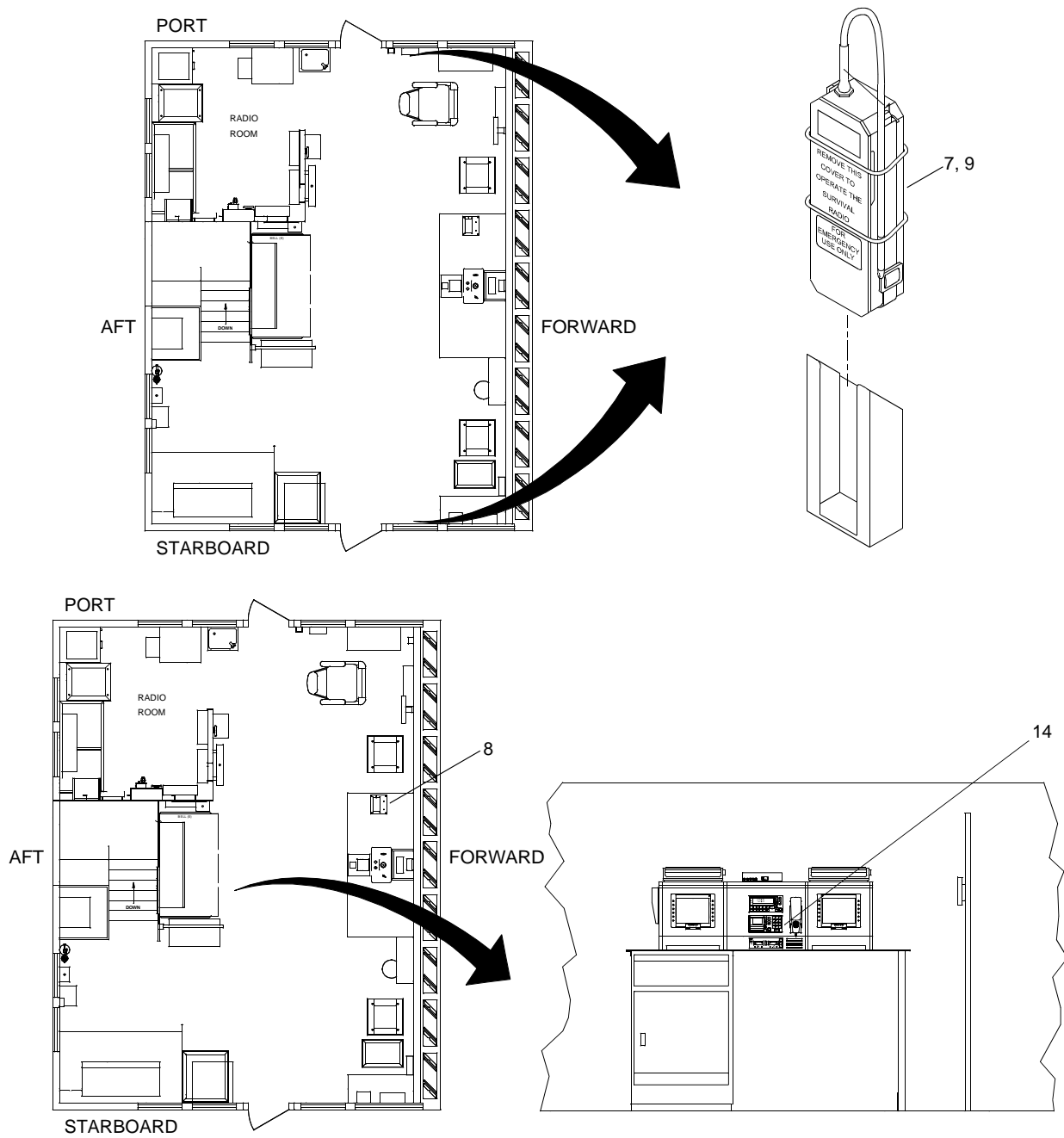


Figure 1. GMDSS Equipment Arrangement (Sheet 2 of 7)

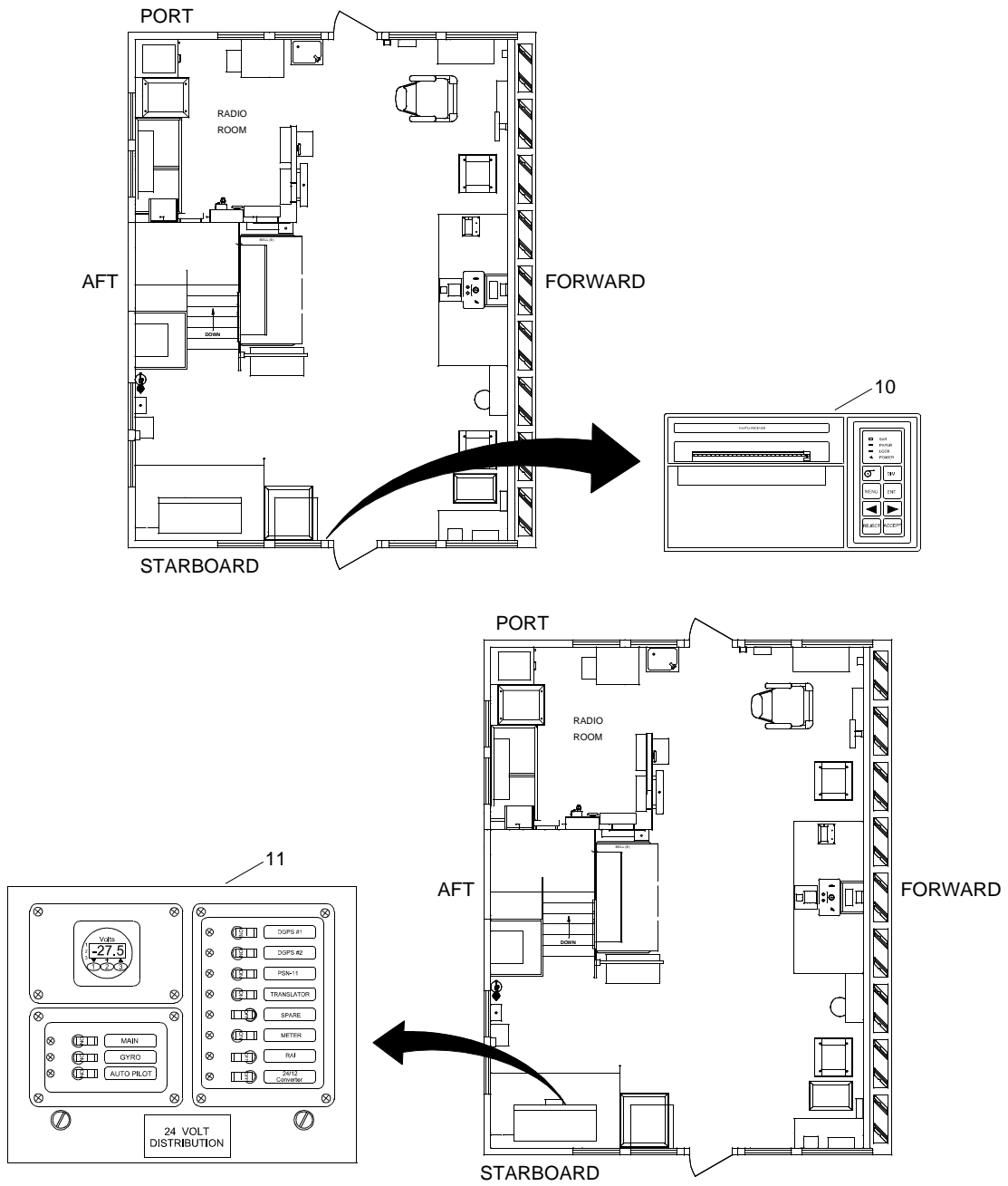


Figure 1. GMDSS Equipment Arrangement (Sheet 3 of 7)

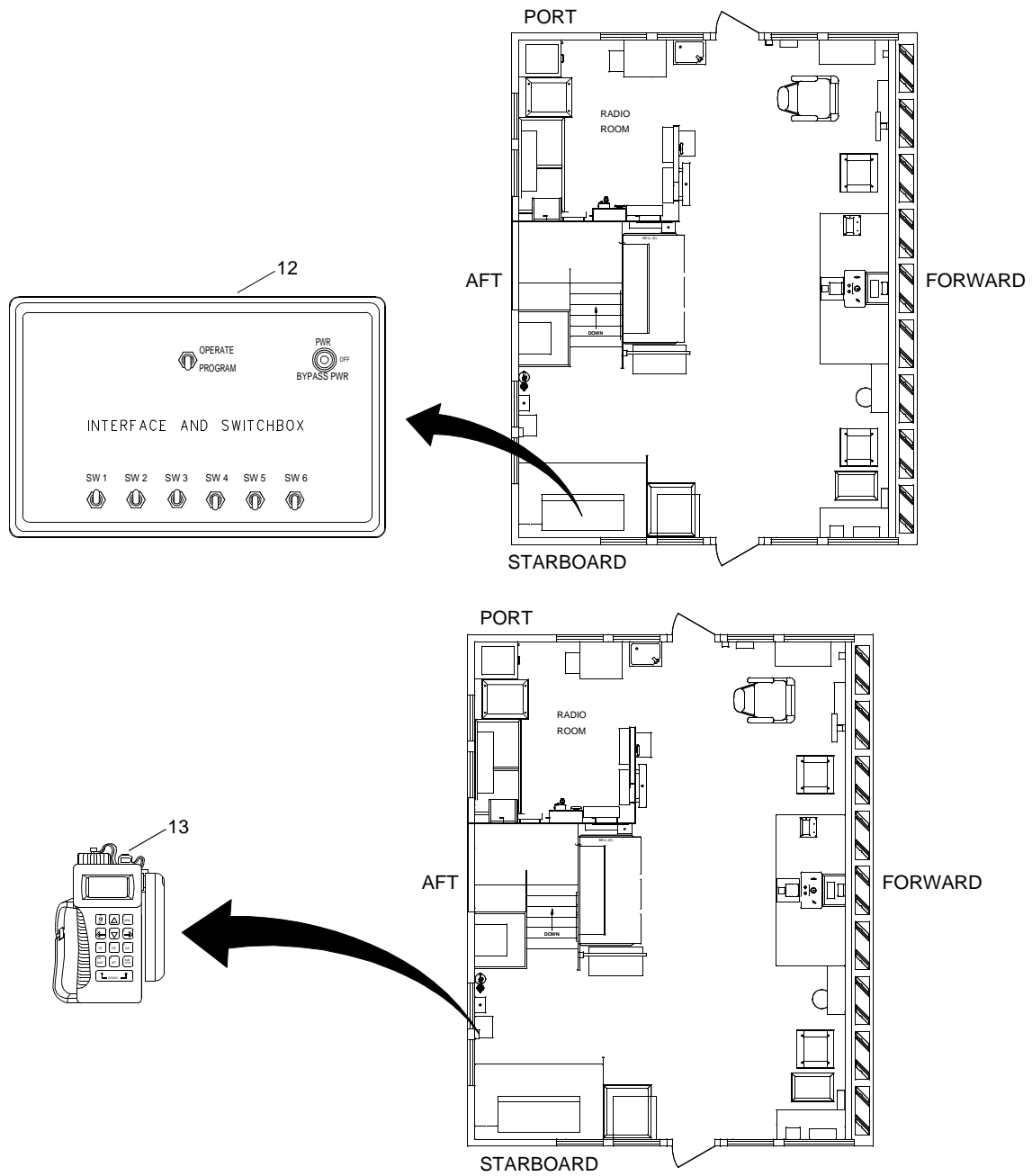


Figure 1. GMDSS Equipment Arrangement (Sheet 4 of 7)

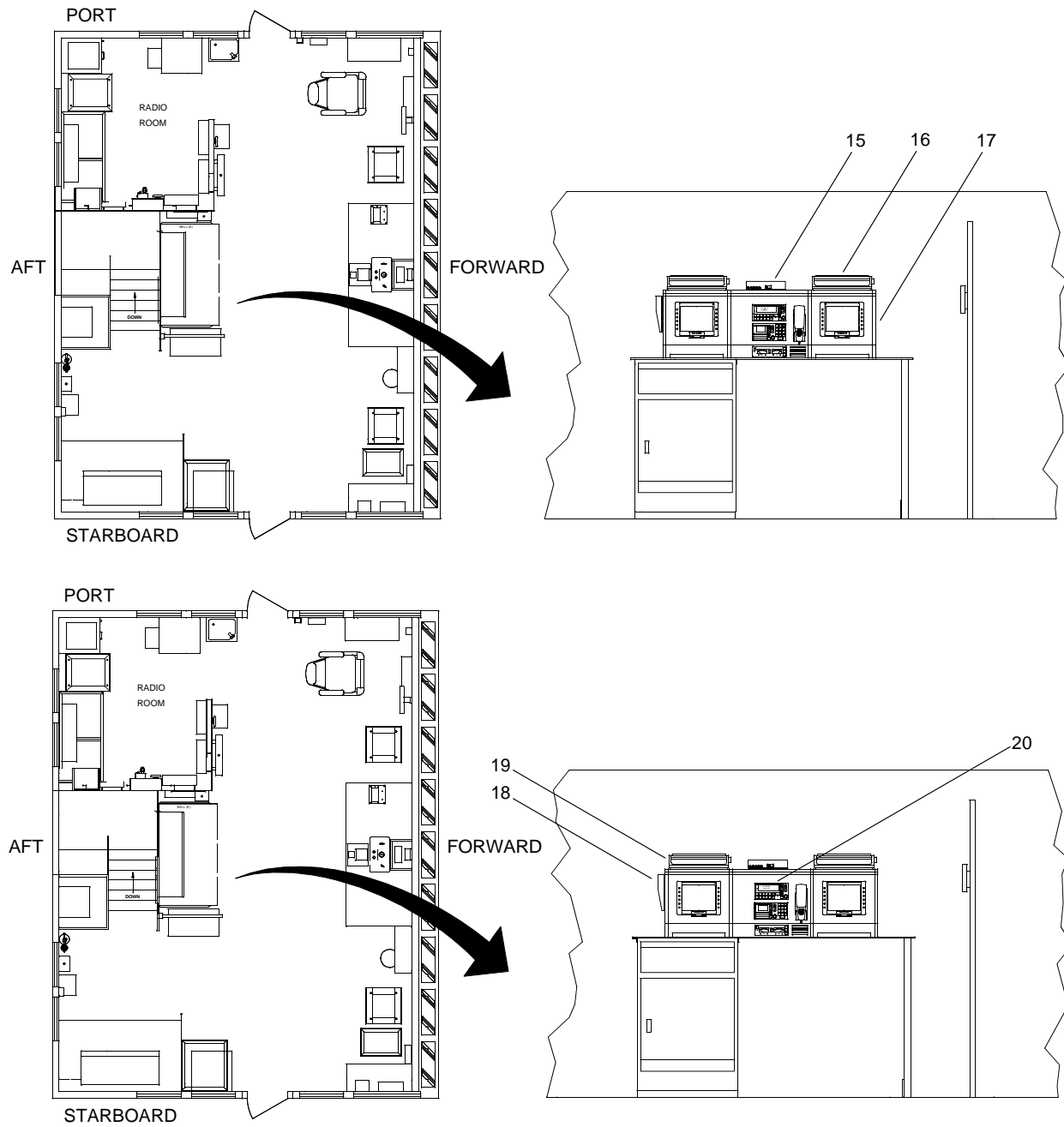


Figure 1. GMDSS Equipment Arrangement (Sheet 5 of 7)

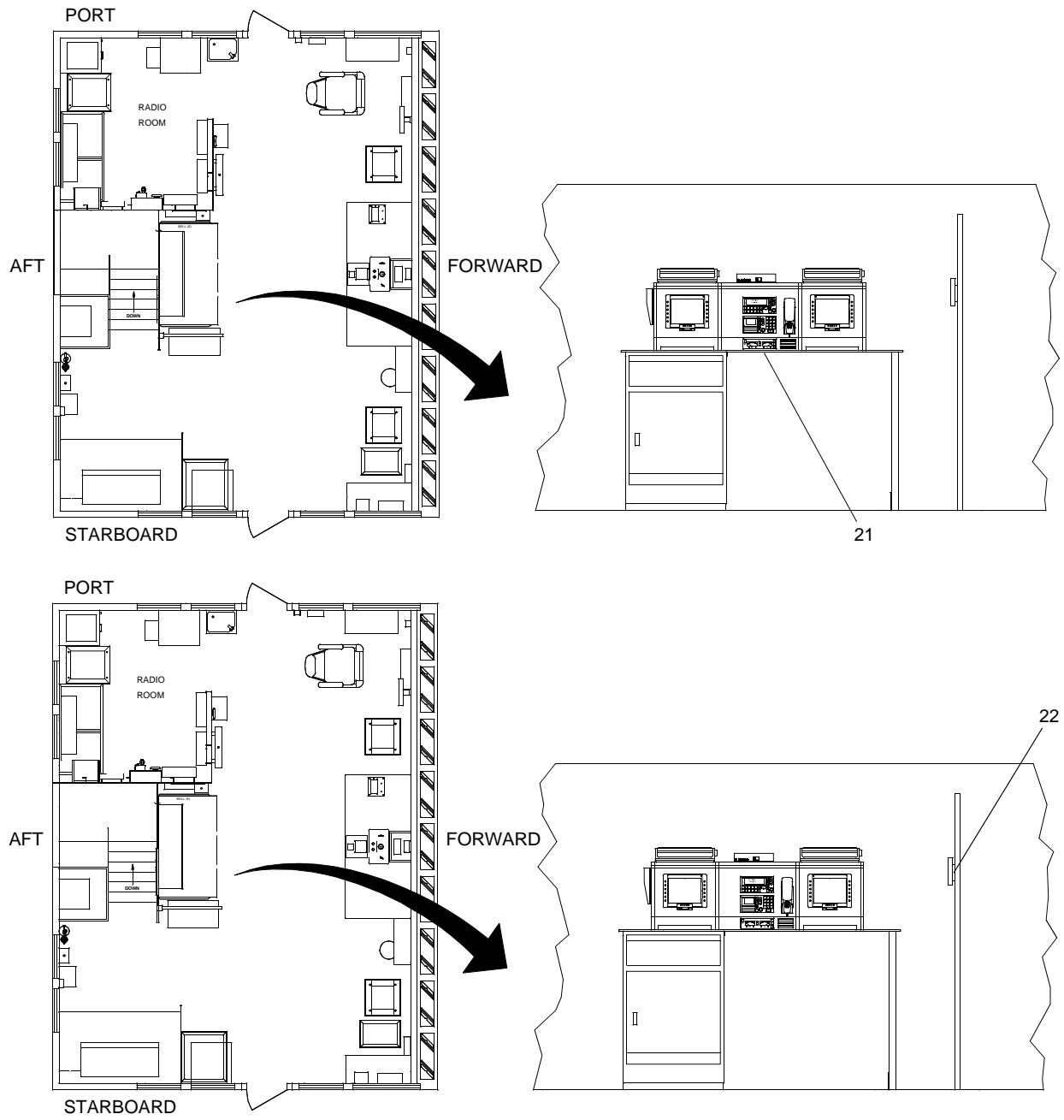


Figure 1. GMDSS Equipment Arrangement (Sheet 6 of 7)

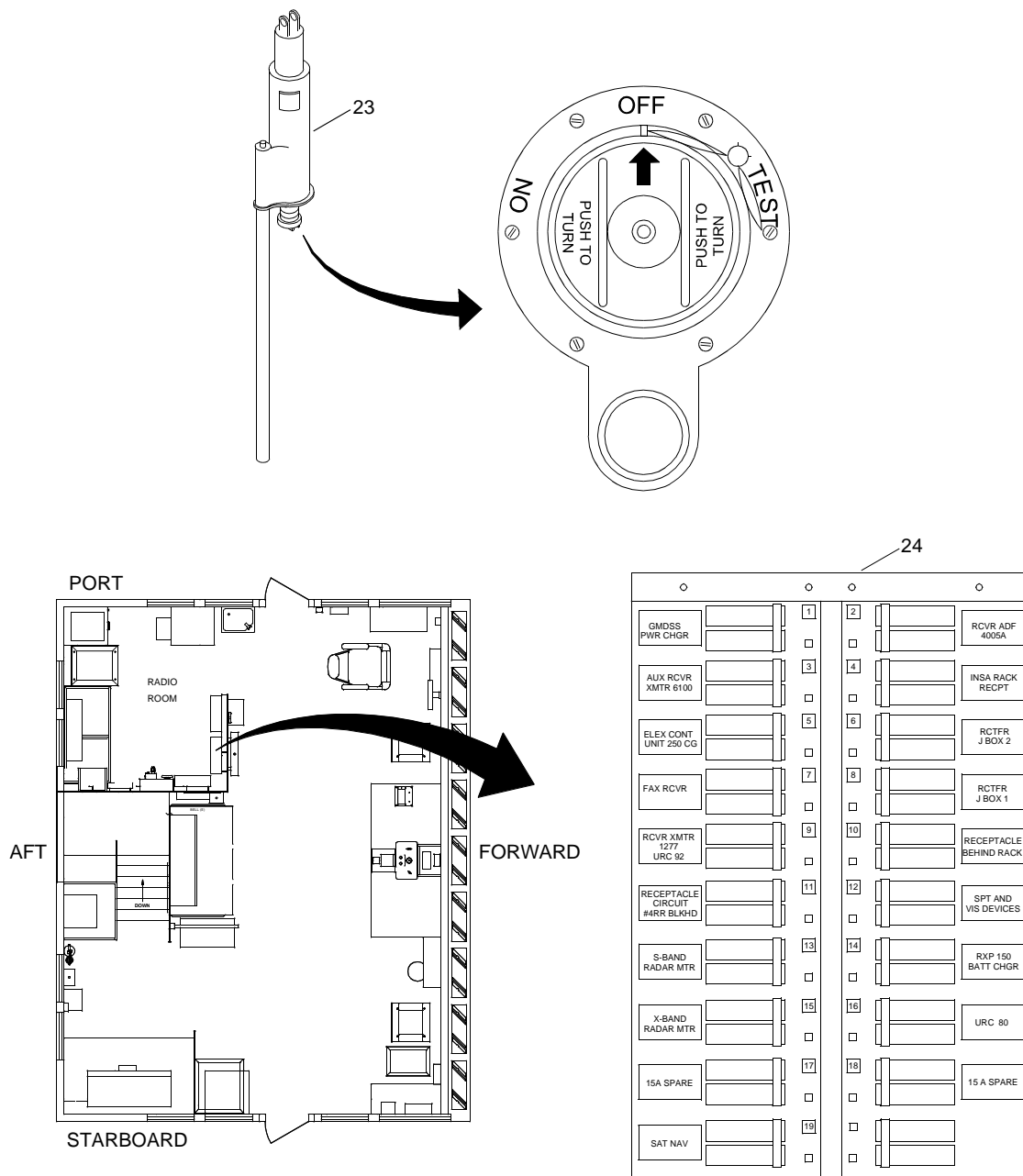


Figure 1. GMDSS Equipment Arrangement (Sheet 7 of 7)

Table 1. Preventive Maintenance Checks and Services (PMCS).


| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|---|----------|-----------|--------------------------------------|--|--|
| <p>WARNING</p>  <p>RADIATION</p> <p>Inspecting antennas with the INSA, radars, transceivers and receiver-transmitters turned on presents a radiation hazard. Ensure all transceivers and receiver-transmitters are turned off prior to inspecting antennas. Ensure appropriate circuit breaker has been secured, locked out, and tagged out (see WP 0005) in accordance with FM 55-502. Failure to comply could result in injury or death.</p> <p>Ensure a safety harness is worn when inspecting antennas. Failure to comply could result in injury or death.</p> | | | | | |
| 1 | Before | .2 | VHF ANT-AR-62 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 2 | Before | .2 | VHF ANT-AV-40 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 3 | Before | .2 | VHF ANT-AV-7 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 4 | Before | .2 | GPS PLGR ANT-AT1665 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 5 | Before | .2 | Iridium ANT SA-4110 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 6 | Before | .2 | INMARSAT-C ANT-AT-1606 Antenna | Check antenna for damage or loose connections. If damaged, contact unit maintenance. | Antenna is inoperative or is broken or damaged. |
| 7 | Before | .2 | Port Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check for damage that would affect operation of the radio. 2. Check battery expiration date. | <p>Lifeboat radio is inoperative.</p> <p>Battery is due for replacement.</p> |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|---|--|---|
| 8 | Before | .2 | Bridge VHF-DSC Transceiver and Handset | <ol style="list-style-type: none"> 1. Check for damaged buttons, inoperative LCD displays, inoperative indicator lights and loose connectors. If damaged, use the GMDSS console VHF-DSC transceiver. Contact unit maintenance. 2. Press the ON/OFF button to turn the transceiver on (WP 0004 00). | <p>VHF-DSC transceiver is inoperative.</p> <p>VHF-DSC transceiver is inoperative.</p> |
| 9 | Before | .2 | Starboard Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check for damage that would affect operation of the radio. 2. Check battery expiration date. | <p>Lifeboat radio is inoperative.</p> <p>Battery is due for replacement.</p> |
| 10 | Before | .3 | NAVTEX Receiver | Check for adequate paper supply, broken power switch, damaged buttons, inoperative indicator lights and loose connectors. | NAVTEX receiver is inoperative. |
| 11 | Before | .2 | 24 Volt Distribution Panel | Ensure all required breaker switches, except spares, are in the ON position (WP 0005 00). Check for damaged switches and loose connectors. If damaged, contact unit maintenance. | Breaker switch cannot be operated. |
| 12 | Before | .2 | Interface and Switchbox | Check for broken switches and loose connectors. If found, contact unit maintenance. | Interface and switchbox cannot be operated. |
| 13 | Before | .2 | AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) | Check for damaged keys, damaged or loose knobs or buttons, inoperative LCD display and loose connectors. If found, contact unit maintenance. | PLGR is inoperative. |
| 14 | Before | .2 | GMDSS Console VHF-DSC Transceiver and Handset | <ol style="list-style-type: none"> 1. Check for damaged buttons, inoperative LCD displays, inoperative indicator lights and loose connectors. If damaged, use the bridge VHF-DSC transceiver. Contact unit maintenance. 2. Press the ON/OFF button to turn the transceiver on (WP 0004 00). | <p>VHF-DSC transceiver is inoperative.</p> <p>VHF-DSC transceiver is inoperative.</p> |
| 15 | Before | .2 | CAPSAT Transceiver | <ol style="list-style-type: none"> 1. Check for damaged buttons, inoperative indicator lights and loose connectors. If found, contact unit maintenance. 2. Press the On/Off switch to turn the transceiver on (WP 0004 00). | <p>CAPSAT transceiver cannot be operated.</p> <p>CAPSAT transceiver is inoperative.</p> |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|--|--|---|
| 16 | Before | .2 | CAPSAT Transceiver Printer | <ol style="list-style-type: none"> 1. Check for adequate paper supply, damaged keys, buttons, levers and switches, inoperative indicator lights and loose connectors. If found, contact unit maintenance. 2. Press the power switch to turn the printer on (WP 0004 00). | <p>CAPSAT transceiver printer cannot be operated.</p> <p>CAPSAT transceiver printer is inoperative.</p> |
| 17 | Before | .2 | CAPSAT Data Terminal and Keyboard | Check for inoperative LCD monitor, damaged keys on keyboard, damaged buttons on data terminal and loose connectors. If found, contact unit maintenance. | LCD monitor is inoperative. |
| 18 | Before | .2 | MF/HF TELEX Data Terminal and Keyboard | Check for inoperative LCD monitor, damaged keys on keyboard, damaged buttons on data terminal and loose connectors. If found, contact unit maintenance. | LCD monitor is inoperative. |
| 19 | Before | .2 | MF/HF TELEX Printer | <ol style="list-style-type: none"> 1. Check for adequate paper supply, damaged keys, buttons, levers and switches, inoperative indicator lights and loose connectors. If found, contact unit maintenance. 2. Press the power switch to turn the printer on (WP 0004 00). | <p>MF/HF TELEX printer cannot be operated.</p> <p>MF/HF TELEX printer is inoperative.</p> |
| 20 | Before | .2 | MF/HF Control Unit and Handset | <ol style="list-style-type: none"> 1. Check for damaged buttons and knobs, inoperative LCD display, inoperative indicator lights and loose connectors. If found, contact unit maintenance. 2. Press the ON/OFF button to turn the MF/HF control unit on (WP 0004 00). | <p>MF/HF control unit cannot be operated.</p> <p>MF/HF control unit is inoperative.</p> |
| 21 | Before | .2 | Battery Panel | Check for damaged buttons, inoperative indicator lights, inoperative LCD displays and loose connectors. If found, contact unit maintenance. | Battery panel is inoperative. |
| 22 | Before | .2 | Iridium Handset | Check for damaged keys, inoperative indicator lights, inoperative LCD display and loose connectors. If found, contact unit maintenance. | Iridium handset is inoperative. |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|---|--|--|
| 23 | Before | .2 | Search and Rescue Transponder (SART) | 1. Check SARTs for damage that would prevent operation. 2. Check battery expiration date. | SARTs are damaged and will not operate. Battery is due for replacement. |
| 24 | Before | .2 | Electrical Distribution Panel EP103 | Ensure all required breaker switches, except spares, are in the on position (WP 0005 00). Check for damaged switches and loose connectors. If damaged, contact unit maintenance. | Breaker switch cannot be operated. |
| 8 | During | .2 | GMDSS VHF-DSC Transceiver and Handset | Check radio for proper operation. If VHF-DSC transceiver fails to operate, use the bridge VHF-DSC transceiver. | VHF-DSC transceiver is inoperative. |
| 10 | During | .2 | NAVTEX Receiver | Check NAVTEX receiver for proper operation. | NAVTEX receiver is inoperative. |
| 13 | During | .2 | AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) | Check PLGR for proper operation. If PLGR fails to operate, use the GMDSS PLGR. | PLGR is inoperative. |
| 14 | During | .2 | Bridge VHF-DSC Transceiver and Handset | Check radio for proper operation. If VHF-DSC transceiver fails to operate, use the GMDSS console VHF-DSC transceiver. | VHF-DSC transceiver is inoperative. |
| 15 | During | .2 | CAPSAT Transceiver | Check transceiver for proper operation. | CAPSAT transceiver is inoperative. |
| 16 | During | .2 | CAPSAT Transceiver Printer | Check printer for proper operation. | CAPSAT transceiver printer is inoperative. |
| 17 | During | .2 | CAPSAT Data Terminal and Keyboard | Check LCD monitor and keyboard for proper operation. | LCD monitor is inoperative. |
| 18 | During | .2 | MF/HF TELEX Data Terminal and Keyboard | Check LCD monitor and keyboard for proper operation. | LCD monitor is inoperative. |
| 19 | During | .2 | MF/HF TELEX Printer | Check printer for proper operation. | MF/HF TELEX printer is inoperative. |
| 20 | During | .2 | MF/HF Control Unit and Handset | Check control unit for proper operation. | MF/HF control unit is inoperative. |
| 21 | During | .2 | Battery Panel | Check battery panel for proper operation. | Battery panel is inoperative. |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)


| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|---|----------|-----------|-----------------------------------|--|--|
| 22 | During | .2 | Iridium Handset | Check handset for proper operation. | Iridium handset is inoperative. |
| <p>WARNING</p>  <p>RADIATION</p> <p>Inspecting antennas with the INSA, radars, transceivers and receiver-transmitters turned on presents a radiation hazard. Ensure all transceivers and receiver-transmitters are turned off prior to inspecting antennas. Ensure appropriate circuit breaker has been secured, locked out, and tagged out (see WP 0005) in accordance with FM 55-502. Failure to comply could result in injury or death.</p> <p>Ensure a safety harness is worn when inspecting antennas. Failure to comply could result in injury or death.</p> | | | | | |
| 1 | After | .2 | VHF ANT-AR-62 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 2 | After | .2 | VHF ANT-AV-40 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 3 | After | .2 | VHF ANT-AV-7 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 4 | After | .2 | GPS PLGR ANT-AT1665 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 5 | After | .2 | Iridium ANT SA-4110 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 6 | After | .2 | INMARSAT-C ANT-AT-1606 Antenna | Check antenna for any damage that may have occurred during mission. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 7 | After | .2 | Port Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check LBR for damage that would affect operation of the radio. 2. Check battery expiration date. | <p>Lifeboat radio is inoperative.</p> <p>Battery is due for replacement.</p> |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|---|--|---|
| 8 | After | .2 | Bridge VHF-DSC Transceiver and Handset | <ol style="list-style-type: none"> 1. Check transceiver for any damage that may have occurred during mission. If damaged, use the GMDSS console VHF-DSC transceiver and contact unit maintenance. 2. Press the ON/OFF button to turn the transceiver off (WP 0004 00). | <p>VHF-DSC transceiver is damaged or inoperative.</p> <p>VHF-DSC transceiver does not turn off.</p> |
| 9 | After | .2 | Starboard Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check LBR for damage that would affect operation of the radio. 2. Check battery expiration date. | <p>Lifeboat radio is inoperative.</p> <p>Battery is due for replacement.</p> |
| 10 | After | .3 | NAVTEX Receiver | Check for adequate paper supply, broken power switch and loose connectors. | NAVTEX receiver is inoperative. |
| 11 | After | .2 | 24 Volt Distribution Panel | Ensure all required breaker switches are in the off position (WP 0005 00). | Breaker switch does not stay in the off position. |
| 12 | After | .2 | Interface and Switchbox | Check interface and switchbox for damage that may have occurred during mission. | Interface and switchbox is damaged or inoperative. |
| 13 | After | .2 | AN/PSN-11(V)1 Precision Lightweight Global Positioning System Receiver (PLGR) | Check PLGR for any damage that may have occurred during mission. | PLGR is damaged or inoperative. |
| 14 | After | .2 | GMDSS Console VHF-DSC Transceiver and Handset | <ol style="list-style-type: none"> 1. Check transceiver for any damage that may have occurred during mission. If damaged, use the bridge VHF-DSC transceiver and contact unit maintenance. 2. Press the ON/OFF button to turn the transceiver off (WP 0004 00). | <p>VHF-DSC transceiver is damaged or inoperative.</p> <p>VHF-DSC transceiver does not turn off.</p> |
| 15 | After | .2 | CAPSAT Transceiver | <ol style="list-style-type: none"> 1. Check CAPSAT transceiver for any damage that may have occurred during mission. 2. Press the On/Off switch to turn the transceiver off (WP 0004 00). | <p>CAPSAT transceiver is damaged or inoperative.</p> <p>CAPSAT transceiver does not turn off.</p> |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|--|--|---|
| 16 | After | .2 | CAPSAT Transceiver Printer | <ol style="list-style-type: none"> 1. Check printer for any damage that may have occurred during mission. 2. Press the power switch to turn the printer off (WP 0004 00). | <p>Printer is damaged or inoperative.</p> <p>Printer does not turn off.</p> |
| 17 | After | .2 | CAPSAT Data Terminal and Keyboard | Check LCD monitor and keyboard for any damage that may have occurred during mission. | LCD monitor is damaged or inoperative. |
| 18 | After | .2 | MF/HF TELEX Data Terminal and Keyboard | Check LCD monitor and keyboard for any damage that may have occurred during mission. | LCD monitor is damaged or inoperative. |
| 19 | After | .2 | MF/HF TELEX Printer | <ol style="list-style-type: none"> 1. Check printer for any damage that may have occurred during mission. 2. Press the power switch to turn the printer off (WP 0004 00). | <p>Printer is damaged or inoperative.</p> <p>Printer does not turn off.</p> |
| 20 | After | .2 | MF/HF Control Unit and Handset | <ol style="list-style-type: none"> 1. Check MF/HF control unit for any damage that may have occurred during mission. 2. Press the ON/OFF button to turn the control unit off (WP 0004 00). | <p>MF/HF control unit is damaged or inoperative.</p> <p>MF/HF control unit does not turn off.</p> |
| 21 | After | .2 | Battery Panel | Check battery panel for damage that may have occurred during mission. | Battery panel is damaged or inoperative. |
| 22 | After | .2 | Iridium Handset | Check handset for damage that may have occurred during mission. | Iridium handset is damaged or inoperative. |
| 23 | After | .2 | Search and Rescue Transponder (SART) | <ol style="list-style-type: none"> 1. Check SARTs for damage that would prevent operation. 2. Check battery expiration date. | <p>SARTs are damaged and will not operate.</p> <p>Battery is due for replacement.</p> |
| 24 | After | .2 | Electrical Distribution Panel EP103 | Ensure all required breaker switches are in the off position (WP 0005 00). | Breaker switch does not stay in the off position. |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)


| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|---|----------|-----------|--------------------------------|---|------------------------------------|
| <p>WARNING</p>  <p>RADIATION</p> <p>Inspecting antennas with the INSA, radars, transceivers and receiver-transmitters turned on presents a radiation hazard. Ensure all transceivers and receiver-transmitters are turned off prior to inspecting antennas. Ensure appropriate circuit breaker has been secured, locked out, and tagged out (see WP 0005) in accordance with FM 55-502. Failure to comply could result in injury or death.</p> <p>Ensure a safety harness is worn when inspecting antennas. Failure to comply could result in injury or death.</p> | | | | | |
| 1 | Weekly | .2 | VHF ANT-AR-62 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 2 | Weekly | .2 | VHF ANT-AV-40 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 3 | Weekly | .2 | VHF ANT-AV-7 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 4 | Weekly | .2 | GPS PLGR ANT-AT1665 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 5 | Weekly | .2 | Iridium ANT SA-4110 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |
| 6 | Weekly | .2 | INMARSAT-C ANT-AT-1606 Antenna | Check antenna for any damage, loose or missing connectors or loose or missing hardware. If damaged, contact unit maintenance. | Antenna is broken or missing. |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)



| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|---|----------|-----------|--|--|--|
| <p>WARNING</p> <div style="display: flex; justify-content: center; gap: 20px;">   </div> <p>CHEMICAL EYE PROTECTION</p> <p>Chemical products may cause injury or irritation to skin or eyes. Personnel are required to wear chemical resistant gloves and eye protection when using these products. Failure to observe these precautions could result in serious injury or death.</p> | | | | | |
| ALL | Weekly | .5 | Communications Equipment Connectors | <ol style="list-style-type: none"> 1. Visually inspect for corrosion. If found, clean with isopropyl alcohol and cotton swabs. 2. Visually inspect for damage. If found, contact unit maintenance. | Connectors are corroded or damaged. |
| ALL | Weekly | .5 | Communications Equipment Mounts and Shock Mounts | Check mounts and shock mounts for security and damage. If found, contact unit maintenance. | Connectors are corroded or damaged. Mounts or shock mounts are loose, collapsed or damaged. |
| <p>CAUTION</p> <p>Never clean communications equipment with detergents, ammonia, abrasive materials or aerosol cleaners. Failure to comply could result in damage to equipment.</p> | | | | | |
| ALL | Monthly | .3 | Communications and Data Equipment | <ol style="list-style-type: none"> 1. Remove dust and dirt using a brush. Use a cleaning cloth dampened with water to clean faces of all communications and data equipment. 2. Check that all cable connectors are tight. 3. Check all exposed cables for chafing, cuts and missing insulation. | Cables connectors are loose. Cables are cut or insulation is missing. |
| 7 | Monthly | .4 | Port Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check for secure mounting, damage and battery expiration date. 2. Test lifeboat radio (WP 0012 00). | Battery is due for replacement. |
| 9 | Monthly | .4 | Starboard Lifeboat Radio (LBR) | <ol style="list-style-type: none"> 1. Check for secure mounting, damage and battery expiration date. 2. Test lifeboat radio (WP 0012 00). | Battery is due for replacement. |

Table 1. Preventive Maintenance Checks and Services (PMCS). (Continued)

| ITEM NO. | INTERVAL | MAN-HOURS | ITEM TO BE CHECKED OR SERVICED | PROCEDURE | EQUIPMENT NOT READY/ AVAILABLE IF: |
|----------|----------|-----------|---------------------------------------|---|------------------------------------|
| 23 | Monthly | .4 | Search and Rescue Transponders (SART) | 1. Check for secure mounting, damage and battery expiration date. 2. Test transponders (WP 0011 00). | Battery is due for replacement. |
| 7 | 5 Years | .3 | Port Lifeboat Radio (LBR) | Replace battery pack. | Battery is due for replacement. |
| 9 | 5 Years | .3 | Starboard Lifeboat Radio (LBR) | Replace battery pack. | Battery is due for replacement. |

This work package includes a list of all mandatory replacement parts referenced in the PMCS procedures. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as miles, time, rounds fired, etc.

Table 2. 5 Years PMCS Mandatory Replacement Parts List. (MRPL)

| ITEM NO. | PART NUMBER | NSN | NOMENCLATURE | QTY |
|----------|--------------|-----|--------------|-----|
| 7, 9 | 1066 (18560) | | Battery | 2 |

END OF WORK PACKAGE

OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF TELEX PRINTER AND CAPSAT TRANSCEIVER PRINTER PAPER
REPLACEMENT

INITIAL SETUP:**Materials/Parts**

Paper, teletypewriter (item 10, WP 0047 00)

Personnel Required

Seaman 88K

REMOVE PRINTER PAPER

1. Ensure the power switch (figure 1, item 1) is in the off position.

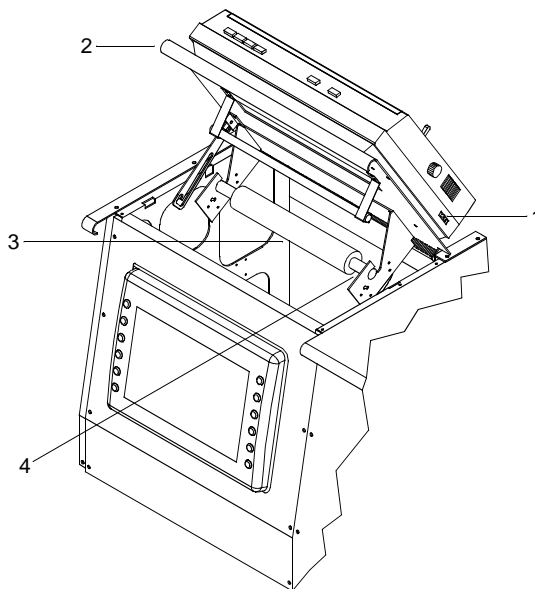


Figure 1. Printer

2. Lift the GMDSS access cover (figure 1, item 2) to the locked position.
3. Remove the empty paper roll (figure 1, item 3) and the paper roller (figure 1, item 4).

INSTALL PRINTER PAPER

1. Obtain a new paper roll (figure 2, item 1) and remove the metal inserts (figure 2, item 2) from the ends of the paper roll (figure 2, item 1).

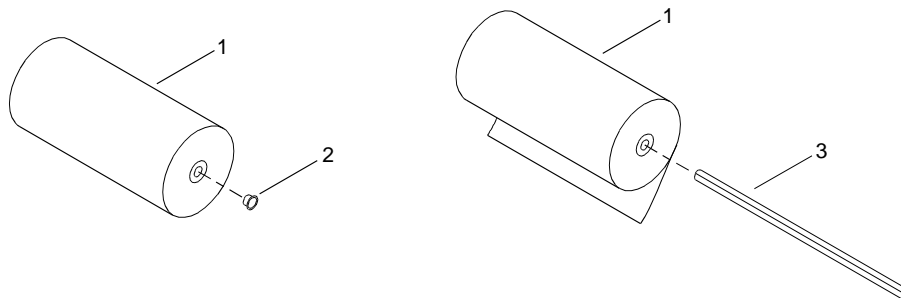


Figure 2. Paper Roll

INSTALL PRINTER PAPER - Continued

- Slide the paper roller (figure 2, item 3) into the roll of paper (figure 2, item 1).

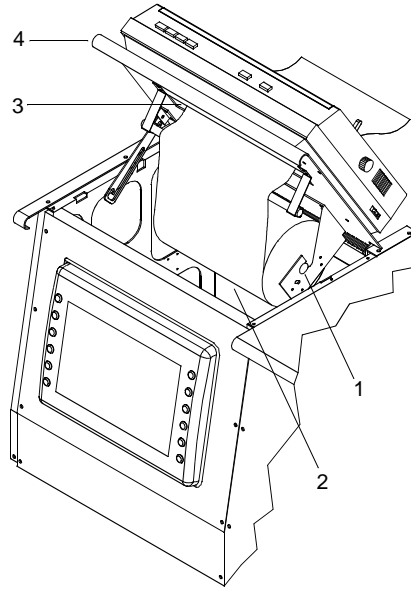


Figure 3. Printer

- Install the paper roller (figure 3, item 1) and paper (figure 3, item 2).
- Feed the paper (figure 3, item 2) through the bottom of the printer (figure 3, item 3).
- Close the GMDSS access cover (figure 3, item 4).
- Remove the printer access cover (figure 4, item 1) and raise the paper bail (figure 4, item 2) by moving the bail lever (figure 4, item 3) forward.
- Roll the paper (figure 4, item 4) forward by rotating the platen knob (figure 4, item 5) clockwise.
- Ensure the paper separator lever (figure 4, item 6) is in the aft (back) position.
- Lower the paper bail (figure 4, item 2) by placing the bail lever (figure 4, item 3) to the aft position and replace the printer access cover (figure 4, item 1).

INSTALL PRINTER PAPER - Continued

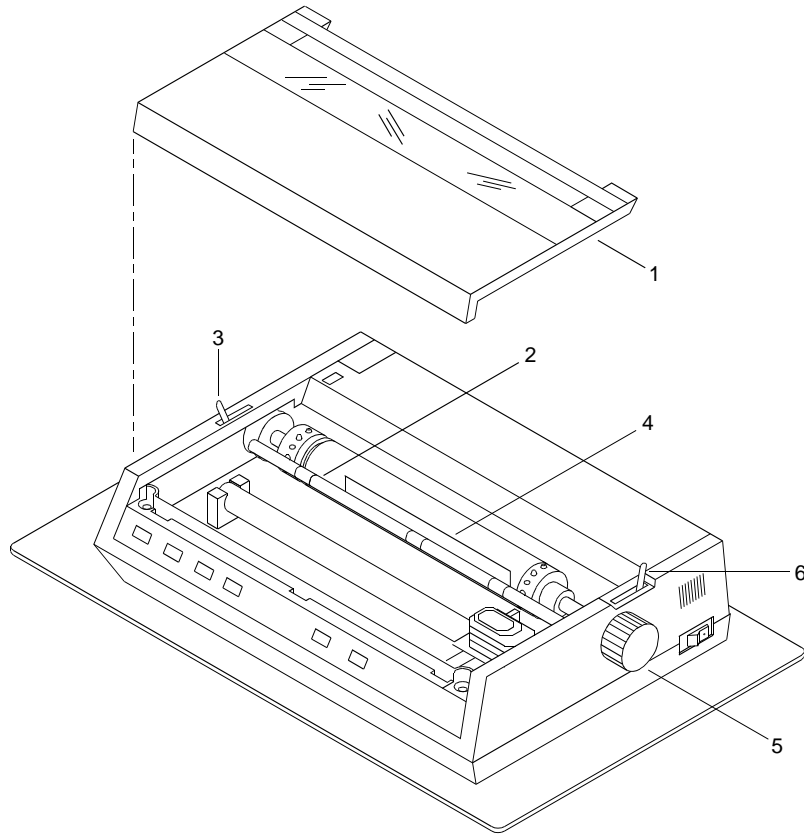


Figure 4. Printer Access Cover

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
MF/HF TELEX PRINTER AND CAPSAT TRANSCEIVER PRINTER INK CARTRIDGE
REPLACEMENT**

INITIAL SETUP:**Materials/Parts**

Ribbon, inking (item 11, WP 0047 00)

Personnel Required

Seaman 88K

REMOVE PRINTER INK CARTRIDGE

1. Make sure the power switch (figure 1, item 1) is in the off position.
2. Remove the printer access cover (figure 1, item 2).

WARNING**HOT AREA**

The printhead can get very hot during extended periods of printing. Be sure to let it cool off before touching it. Failure to do so could result in injury to personnel.

3. Center the printhead (figure 1, item 3) so that it is away from the bail rollers (figure 1, item 4).
4. Ensure the bail (figure 1, item 5) is closed and the bail lever (figure 1, item 6) is in the aft position.
5. Lift up on the ink cartridge (figure 1, item 7) closest to the bail (figure 1, item 5), tilt and slide the cartridge (figure 1, item 7) out of the printhead plate (figure 1, item 8) area closest to the front of the printer (figure 1, item 9).

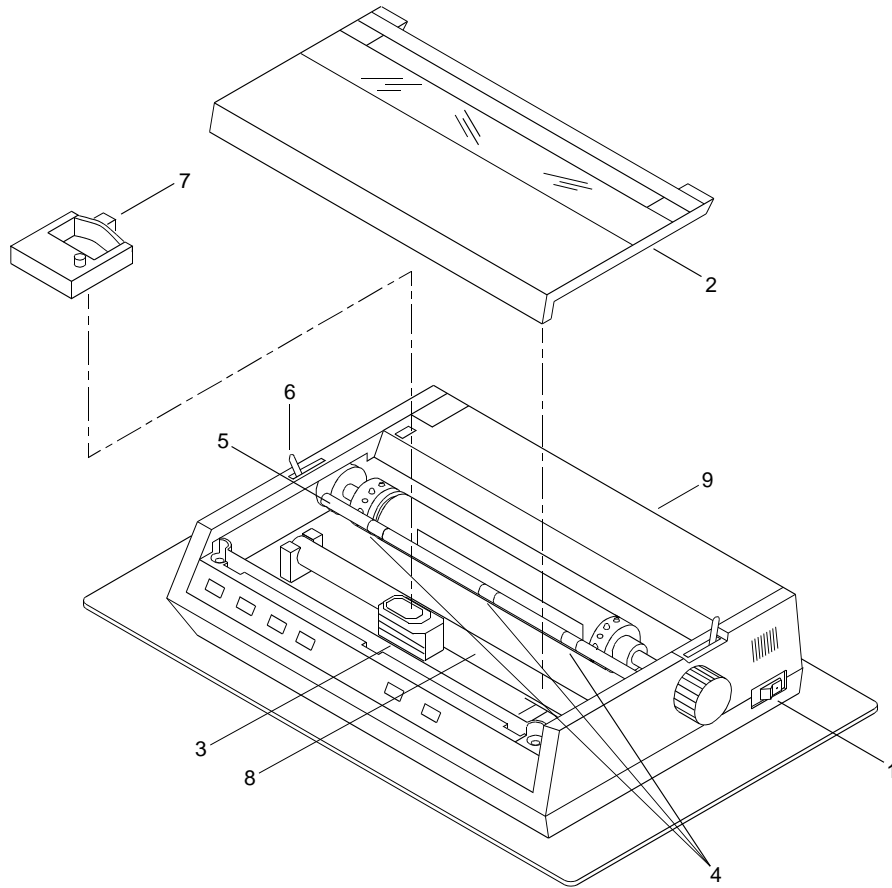
REMOVE PRINTER INK CARTRIDGE - Continued

Figure 1. Printer Ink Cartridge

INSTALL PRINTER INK CARTRIDGE

1. Obtain replacement ink cartridge (figure 1, item 7) and, with the knob side up, tilt the ink cartridge (figure 1, item 7) onto the printhead plate (figure 1, item 8) so that it slides into the area of the plate that is closest to the front of the printer (figure 1, item 9).

NOTE

If the ribbon will not load easily, turn the blue knob slightly until the x-shaped notch on the bottom of the ribbon cartridge aligns with the x-shaped insert on the ribbon plate.

2. Lower the ink cartridge (figure 1, item 7) over the printhead (figure 1, item 3), aligning the tabs with the inserts on the printhead plate (figure 1, item 8).

NOTE

Do not remove the clear plastic ribbon shield from the ribbon cartridge.

3. Press down on the ink cartridge until it snaps into place (figure 1, item 7).
4. Install the printer access cover (figure 1, item 2).
5. Turn the power switch (figure 1, item 1) to the on position.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
NAVTEX PAPER
REPLACEMENT**

INITIAL SETUP:**Materials/Parts**

Thermal paper, NAVTEX (item 12, WP 0047 00)

Personnel Required

Seaman 88K

REMOVE NAVTEX PAPER**NOTE**

Red marking will appear on paper when approximately 1 yard of paper remains. The paper light will activate when paper runs out. Messages received during paper outage will be saved. Printing will resume after paper is replaced.

1. On the NAVTEX receiver (figure 1, item 1), lower the paper cover (figure 1, item 2) to access the POWER switch (figure 1, item 3).

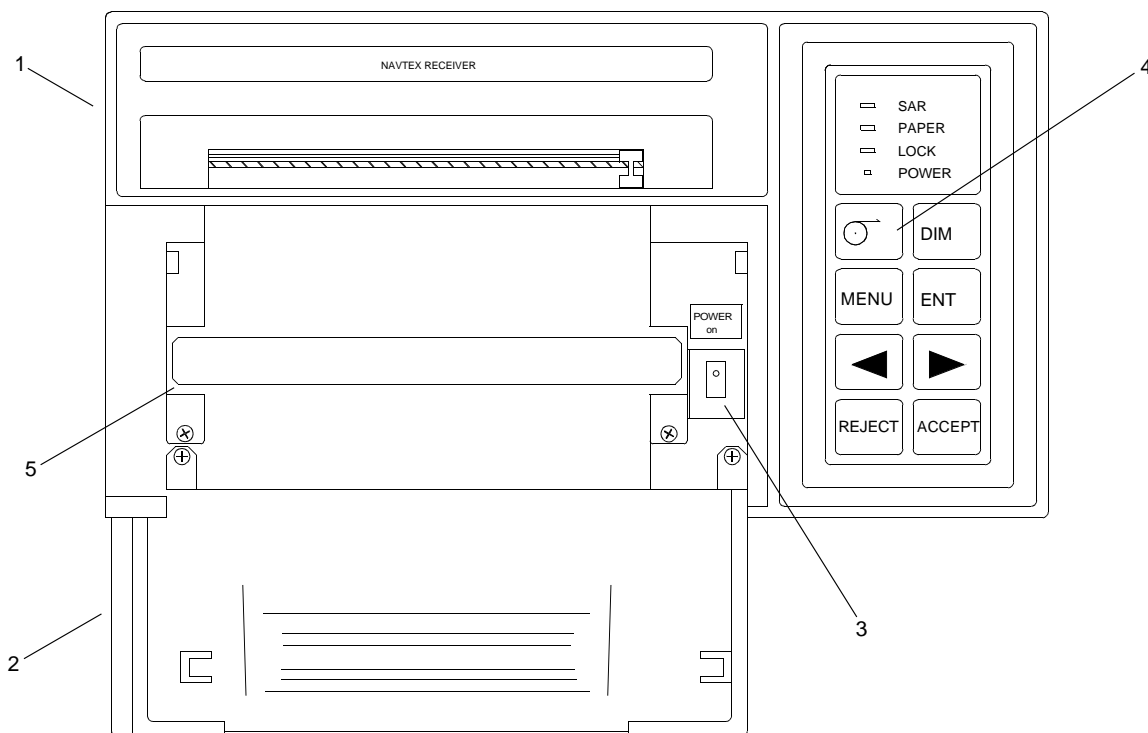


Figure 1. NAVTEX Receiver

2. Position the POWER switch (figure 1, item 3) to the on position.
3. Press the feed key (figure 1, item 4) to draw out the remaining paper.

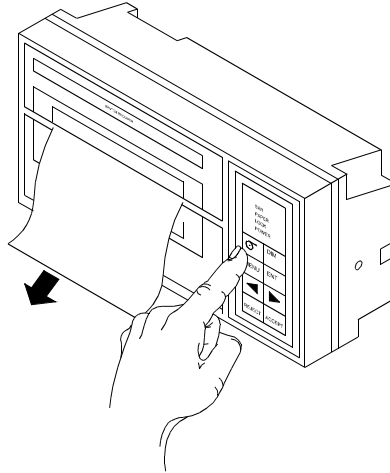
REMOVE NAVTEX PAPER - Continued


Figure 2. Feed Key

4. Remove the paper spool (figure 1, item 5) (figure 3).

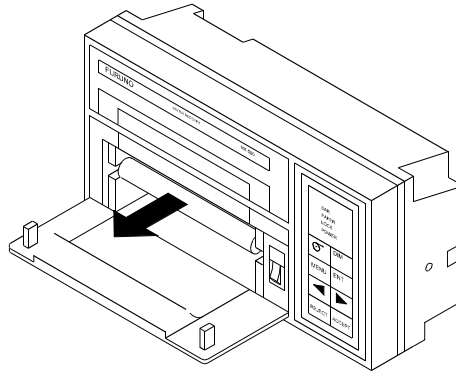


Figure 3. Paper Spool

INSTALL NAVTEX PAPER**NOTE**

To prevent paper jamming, trim end of new paper roll far enough to remove tape adhesive.

1. Obtain a new paper roll (figure 4, item 1).

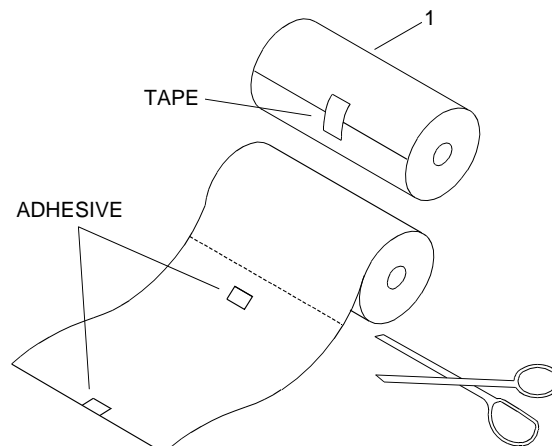


Figure 4. Paper Roll

INSTALL NAVTEX PAPER - Continued

2. Insert the paper spool (figure 5, item 1) through the center of the paper roll (figure 5, item 2) so that the paper unrolls from the bottom.

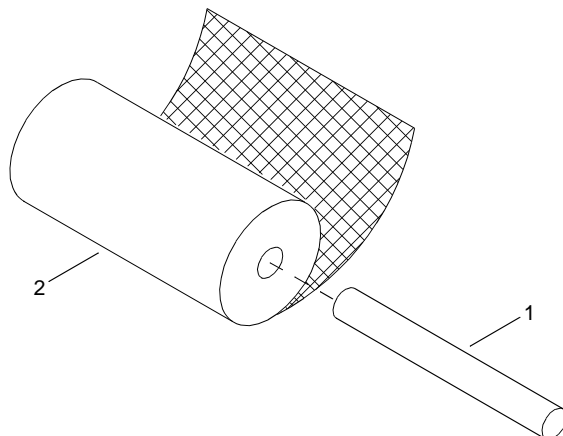


Figure 5. Paper Spool

3. Insert the paper into the paper insertion slot just above the paper container and press the feed key (figure 1, item 4) until the paper extends from the front of the feeder (figure 6).

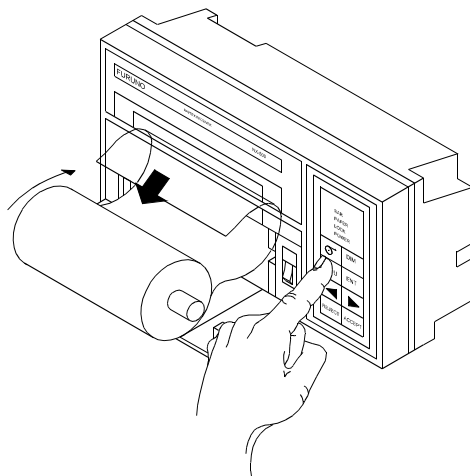


Figure 6. Paper Feed

4. Position the paper roll (figure 5, item 2) and spool (figure 5, item 1) in the NAVTEX receiver (figure 1, item 1).
5. Press the feed key (figure 1, item 4) until the paper is wrinkle free. Position alignment will be made automatically.
6. Close the paper cover (figure 7, item 1) on the NAVTEX receiver (figure 7, item 2).
7. Press the ENT key (figure 7, item 3) to complete paper replacement.
8. Verify that the PAPER indicator light (figure 7, item 4) is no longer illuminated.

INSTALL NAVTEX PAPER - Continued

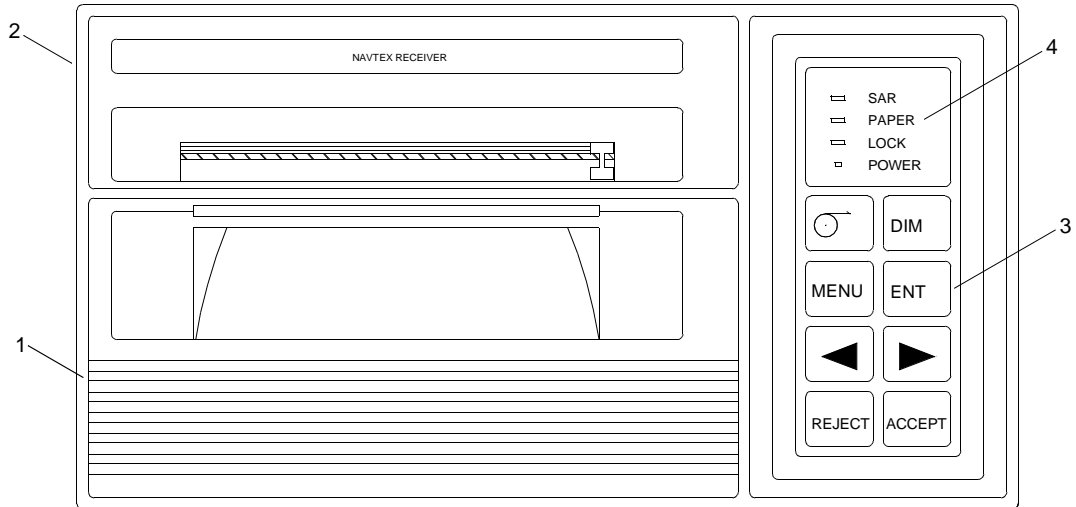


Figure 7. NAVTEX Receiver

END OF WORK PACKAGE

CHAPTER 5

SUPPORTING INFORMATION FOR

U.S. ARMY WATERCRAFT GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
REFERENCES**

SCOPE

This work package lists all field manuals, forms, technical manuals and miscellaneous publications referenced in this manual.

ARMY REGULATIONS

AR 700-138 Army Logistics Readiness and Sustainability

DA PAMPHLETS

DA PAM 750-8 The Army Maintenance Management System (TAMMS) Users Manual

FIELD MANUAL

FM 4-25.11 First Aid

FM 3-5 NBC Decontamination

FM 3-11.4 Multiservice Tactics, Techniques and Procedures for Nuclear, Biological and Chemical (NBC) Protection

FM 55-502 Army Watercraft Safety

FORMS

DA Form 2028 Recommended Changes to Publications and Blank Forms

DA Form 2404 Equipment Inspection and Maintenance Worksheet

SF 368 Product Quality Deficiency Report

MISCELLANEOUS

CTA 50-970 Common Table of Allowances, Expendable/Durable Items
(Except Medical, Class V Repair Parts, and Heraldic Items)

CTA 8-100 Army Medical Department Expendable/Durable Items.

TECHNICAL MANUALS

TM 750-244-6 Destruction of TACOM Equipment

TM 11-5825-291-13 Precision Lightweight Global Positioning System Receiver Operations and Maintenance Manual, AN/PSN-11 and AN/PSN-11(V)1

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS LIST (BII)**

COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS**INTRODUCTION****Scope**

This work package lists COEI and BII information for the Global Maritime Distress and Safety System (GMDSS) to help you inventory items for safe and efficient operation of the equipment.

General

The COEI and BII information is divided into the following lists:

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

Basic Issue Items (BII). These essential items are required to place the GMDSS in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the GMDSS during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

Explanation of Columns in the BII List

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

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

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

Column (4) Usable on Code. Usable on codes are not applicable.

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (2).

Column (6) Qty Rqr. Indicates the quantity required.

Table 1. Component of End Item (COEI).

| (1) ILLUS NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC AND PART NUMBER | (4) USABLE ON CODE | (5) U/I | (6) QTY RQR |
|------------------------|---------------------------------|---|--------------------------|------------|-------------------|
| ON-BOARD SPARES | | | | | |
| | 6665-99-760-9742 | BATTERY, NONRECHARGEABLE (U4596) 0442-0027 | | EA | 1 |
| | 6135-01-301-8776 | BATTERY, NONRECHARGEABLE (MEMORY) (OSUJ7) LS6 BA | | EA | 1 |
| | 6135-01-315-4328 | BATTERY, NONRECHARGEABLE, 3.5 V (81855) MAP-9095-2 | | EA | 2 |
| | 6135-01-036-3495 | BATTERY, NONRECHARGEABLE, BATTERY, PRIMARY, LITHIUM ORGANIC (80058) BA-5590/U | | EA | 1 |
| | 6135-01-461-5322 | CELL, BATTERY, SIZE C, 1.0 V, LITHIUM (14304) B41-0010-003 | | EA | 3 |
| | 7510-01-452-6538 | PRINTER CARTRIDGE (BLACK) (28480) 57645A | | EA | 2 |
| | 7510-01-476-1723 | PRINTER CARTRIDGE (COLOR) (28480) HP51645A | | EA | 2 |

Table 2. Basic Issue Items (BII).

| (1) ITEM NUMBER | (2) NATIONAL STOCK NUMBER | (3) DESCRIPTION, CAGEC AND PART NUMBER | (4) USABLE ON CODE | (5) U/I | (6) QTY RQR |
|-----------------------|---------------------------------|--|--------------------------|------------|-------------------|
| | | TM 55-5830-283-10 | | EA | 1 |

**OPERATOR MAINTENANCE
GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)
EXPENDABLE AND DURABLE ITEMS LIST (EDIL)**

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope

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

Explanation of Columns in the Expendable/Durable Items List

Column (1) Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use brake fluid (item 5, WP 0098 00).").

Column (2) Level. This column identifies the lowest level of maintenance that requires the listed item (C = Operator/Crew).

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

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

Column (5) Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (3).

EXPENDABLE AND DURABLE ITEMS LIST

Table 1. Expendable and Durable Items List (EDIL).

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER | (5) U/I |
|-----------------------|--------------|---------------------------------|---|------------|
| 1 | C | 6515-00-905-1473 | Applicator, disposable cotton swabs (81348) GGA616 | PG |
| 2 | C | 6665-99-760-9742 | Battery, nonrechargeable (18560) 1066 | EA |
| 3 | C | 6135-01-301-8776 | Battery, nonrechargeable (U4596) 0442-0027 | EA |
| 4 | C | 8020-00-062-5468 | Battery, nonrechargeable (memory) (OSUJ7) LS6 BA | EA |
| 5 | C | 7920-00-044-9281 | Brush, cleaning (72387) 2-305SBN | EA |
| 6 | C | 8415-00-266-8677 | Cloth, cleaning (51200) MIRACLEWIPEL001 | BX |
| 7 | C | 4240-00-816-3819 | Gloves, rubber industrial (81348) ZZ-G-381 | PR |
| 8 | C | | Goggles, industrial (74936) WA60-5H0746-0315 | EA |

Table 1. Expendable and Durable Items List (EDIL). (Continued)

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) ITEM NAME, DESCRIPTION, CAGEC AND PART NUMBER | (5) U/I |
|-----------------------|--------------|---------------------------------|---|------------|
| 9 | C | 6810-00-310-8303 | Isopropyl alcohol, technical (22527) A426P-4 | OZ |
| 10 | C | 7530-00-943-7076 | Paper, teletypewriter (83421) 7530-00-943-7076 | ROLL |
| 11 | C | 7510-01-235-0934 | Ribbon, inking (25405) 52102001 | BX |
| 12 | C | | Thermal paper, NAVTEX (1EE70) AYTP0340 | ROLL |

These are the instructions for sending an electronic 2028.

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

From: "Whoever" whoever@avma27.army.mil
To: whoever@avma27.army.mil
To: TACOM-TECH-PUBS@ria.army.mil

Subject:DA Form 2028

1. **From:** Joe Smith
2. **Unit:** home
3. **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub no:** 55-1915-200-10
9. **Pub Title:** TM
10. **Publication Date:** 11-APR-88
11. **Change Number:** 12
12. **Submitter Rank:** MSG
13. **Submitter Fname:** Joe
14. **Submitter Mname:** T
15. **Submitter Lname:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. **Page:** 1
19. **Paragraph:** 3
20. **Line:** 4
21. **NSN:** 5
22. **Reference:** 6
23. **Figure:** 7
24. **Table:** 8
25. **Item:** 9
26. **Total:** 123
27. **Text:**

This is the text for the problem below line 27.

| | | | | | | | |
|--|-----------------|-------------------|-----------------|---|------------------|---|--|
| RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center. | | | | | | Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM). | DATE: Date form is filled out. |
| TO: (Forward to proponent of publication or form) (Include ZIP Code) Mailing address found on title block page. | | | | | | FROM: (Activity and location) (Include ZIP Code) Your mailing address. | |
| PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS | | | | | | | |
| PUBLICATION/FORM NUMBER: TM X-XXXX-XXX-XXX | | | | | | DATE: Date of the TM. | TITLE: Title of TM. |
| ITEM NO. | PAGE NO. | PARA-GRAPH | LINE NO. | FIGURE NO. | TABLE NO. | RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given) | |
| | 0019 00 1 | 3 | 1 | 1 | | Step No. 2 says to secure doors open with locking bar or hooks from where to what? The bars or hooks are not identified. | |
| | 0019 00 4 | 4 | 1 | 1 | | Step No. 19 states to remove locking bars, pins or hooks from where to what? The bars, pins or hooks are not identified. Where are they stored? | |
| SAMPLE | | | | | | | |
| * Reference to line numbers within the paragraph or subparagraph. | | | | | | | |
| TYPED NAME, GRADE OR TITLE Doe, John, CPL | | | | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 755-1313 | | SIGNATURE <i>CPL John Doe</i> | |

| | | |
|---|---|--------------|
| TO: (Forward to proponent of publication or form) (Include ZIP Code) | FROM: (Activity and location) (Include ZIP Code) | DATE: |
|---|---|--------------|

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

| | | |
|--|---------------------------------|-------------------------------|
| PUBLICATION/FORM NUMBER: TM X-XXXX-XXX-XXX | DATE: Date of the TM. | TITLE: Title of TM. |
|--|---------------------------------|-------------------------------|

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

SAMPLE

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

* Reference to line numbers within the paragraph or subparagraph.

| | | |
|--|--|-------------------------------|
| TYPED NAME, GRADE OR TITLE Doe, John, CPL | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION 755-1313 | SIGNATURE CPL John Doe |
|--|--|-------------------------------|

| RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center. | | | | | | Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM). | DATE: |
|--|----------|------------|----------|---|-----------|---|---|
| To: Commander AMSTA-LC-LMIT / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630 | | | | | | FROM: | |
| PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS | | | | | | | |
| PUBLICATION/FORM NUMBER: TM 55-5830-283-10 | | | | | | DATE: 1 Dec 2005 | TITLE: Operator's Manual, U.S. Army Watercraft Global Maritime Distress and Safety System (GMDSS) |
| ITEM NO. | PAGE NO. | PARA-GRAPH | LINE NO. | FIGURE NO. | TABLE NO. | RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given) | |
| | | | | | | | |
| * Reference to line numbers within the paragraph or subparagraph. | | | | | | | |
| TYPED NAME, GRADE OR TITLE | | | | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | | SIGNATURE | |
| | | | | | | | |

| | | |
|---|---|--------------|
| TO: (Forward to proponent of publication or form) (Include ZIP Code) | FROM: (Activity and location) (Include ZIP Code) | DATE: |
|---|---|--------------|

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

| | | |
|---------------------------------|--------------|---------------|
| PUBLICATION/FORM NUMBER: | DATE: | TITLE: |
|---------------------------------|--------------|---------------|

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

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

* Reference to line numbers within the paragraph or subparagraph.

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

| RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center. | | | | | | Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM). | DATE: |
|--|----------|------------|----------|---|-----------|---|---|
| To: Commander AMSTA-LC-LMIT / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630 | | | | | | FROM: | |
| PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS | | | | | | | |
| PUBLICATION/FORM NUMBER: TM 55-5830-283-10 | | | | | | DATE: 1 Dec 2005 | TITLE: Operator's Manual, U.S. Army Watercraft Global Maritime Distress and Safety System (GMDSS) |
| ITEM NO. | PAGE NO. | PARA-GRAPH | LINE NO. | FIGURE NO. | TABLE NO. | RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given) | |
| | | | | | | | |
| * Reference to line numbers within the paragraph or subparagraph. | | | | | | | |
| TYPED NAME, GRADE OR TITLE | | | | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | | SIGNATURE | |
| | | | | | | | |

| | | |
|---|---|--------------|
| TO: (Forward to proponent of publication or form) (Include ZIP Code) | FROM: (Activity and location) (Include ZIP Code) | DATE: |
|---|---|--------------|

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

| | | |
|---------------------------------|--------------|---------------|
| PUBLICATION/FORM NUMBER: | DATE: | TITLE: |
|---------------------------------|--------------|---------------|

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

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

* Reference to line numbers within the paragraph or subparagraph.

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| TYPED NAME, GRADE OR TITLE | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | SIGNATURE |
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| RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 310-1; the proponent agency is the US Army Adjutant General Center. | | | | | | Use Part II (reverse) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM). | DATE: |
|--|----------|------------|----------|---|-----------|---|---|
| To: Commander AMSTA-LC-LMIT / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630 | | | | | | FROM: | |
| PART I - ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS | | | | | | | |
| PUBLICATION/FORM NUMBER: TM 55-5830-283-10 | | | | | | DATE: 1 Dec 2005 | TITLE: Operator's Manual, U.S. Army Watercraft Global Maritime Distress and Safety System (GMDSS) |
| ITEM NO. | PAGE NO. | PARA-GRAPH | LINE NO. | FIGURE NO. | TABLE NO. | RECOMMENDED CHANGES AND REASON (Exact wording of recommended change must be given) | |
| | | | | | | | |
| * Reference to line numbers within the paragraph or subparagraph. | | | | | | | |
| TYPED NAME, GRADE OR TITLE | | | | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | | SIGNATURE | |
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| TO: (Forward to proponent of publication or form) (Include ZIP Code) | FROM: (Activity and location) (Include ZIP Code) | DATE: |
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PART II- REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

| | | |
|--------------------------|-------|--------|
| PUBLICATION/FORM NUMBER: | DATE: | TITLE: |
|--------------------------|-------|--------|

| PAGE NO. | COLM NO. | LINE NO. | FEDERAL STOCK NUMBER | REFERENCE NO. | FIGURE NO. | ITEM NO. | TOTAL NO. OF MAJOR ITEMS SUPPORTED | RECOMMENDED ACTION |
|----------|----------|----------|----------------------|---------------|------------|----------|------------------------------------|--------------------|
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PART III - REMARKS (Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)

* Reference to line numbers within the paragraph or subparagraph.

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| TYPED NAME, GRADE OR TITLE | TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION | SIGNATURE |
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By Order of the Secretary of the Army:

Official:



SANDRA R. RILEY
*Administrative Assistant to the
Secretary of the Army*
0522903

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

DISTRIBUTION: To be distributed in accordance with the initial distribution requirements for IDN: 344829, requirements for TM 55-5830-283-10.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 dekagram = 10 grams = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46
 1 metric ton = 10 quintals = 1.1 short tons

Sqaure Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

| <i>To change</i> | <i>To</i> | <i>Multiply by</i> | <i>To change</i> | <i>To</i> | <i>Multiply by</i> |
|------------------|--------------------|--------------------|--------------------|---------------|--------------------|
| inches | centimeters | 2.540 | ounce-inches | newton-meters | .007062 |
| feet | meters | .305 | centimeters | inches | .394 |
| yards | meters | .914 | meters | feet | 3.280 |
| miles | kilometers | 1.609 | meters | yards | 1.094 |
| square inches | square centimeters | 6.451 | kilometers | miles | .621 |
| square feet | square meters | .093 | square centimeters | square inches | .155 |
| square yards | square meters | .836 | square meters | square feet | 10.764 |
| square miles | square kilometers | 2.590 | square meters | square yards | 1.196 |
| acres | square hectometers | .405 | square kilometers | square miles | .386 |
| cubic feet | cubic meters | .028 | square hectometers | acres | 2.471 |
| cubic yards | cubic meters | .765 | cubic meters | cubic feet | 35.315 |
| fluid ounces | milliliters | 29.573 | cubic meters | cubic yards | 1.308 |
| pints | liters | .473 | milliliters | fluid ounces | .034 |
| quarts | liters | .946 | liters | pints | 2.113 |
| gallons | liters | 3.785 | liters | quarts | 1.057 |
| ounces | grams | 28.349 | liters | gallons | .264 |
| pounds | kilograms | .454 | grams | ounces | .035 |
| short tons | metric tons | .907 | kilograms | pounds | 2.205 |
| pound-foot | newton-meters | 1.356 | metric tons | short tons | 1.102 |
| pounds-inches | newton meters | .11296 | | | |

Temperature (Exact)

° F Fahrenheit 5/9 (after Celsius ° C
 temperature subtracting 32) temperature

