Operator's Manual

Dual Format PCS™
Portable Radio

ERICSSON ⋛

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INTRODUCTION

*The Dual Format PCS™ Portable Radio provides reliable trunked communication in the 800 MHz band. Advanced **Dual Format** technology allows the radio to operate within the EDACS Trunked system and the GE-MARC Trunked system. The radio will also operate in a Conventional system.*

*The radio is housed in a molded Lexan front and an aluminum rear casting. The unit is lightweight and easy to carry. A backlit numeric display provides clear visibility for night-time operation. There are two models available, a 3-button **Scan** and a 12-button **System.** Both models are capable of Dual Format operation.*

*This manual provides instructions for operating both the Scan and the System model radio in either of the 3 systems (EDACS, GE-MARC and Conventional). A separate section is provided for each System (EDACS, GE-MARC and Conventional), with a complete set of instructions for operating the radio within that system. The **DESCRIPTION** section which follows and the Battery information at the back of the manual, is applicable to all users.*

NOTE

This radio allows the operator to switch between an EDACS system, a GE-MARC system and a Conventional system. Special attention should be given to the system selected and the operating characteristics of the PCS radio working within that system.
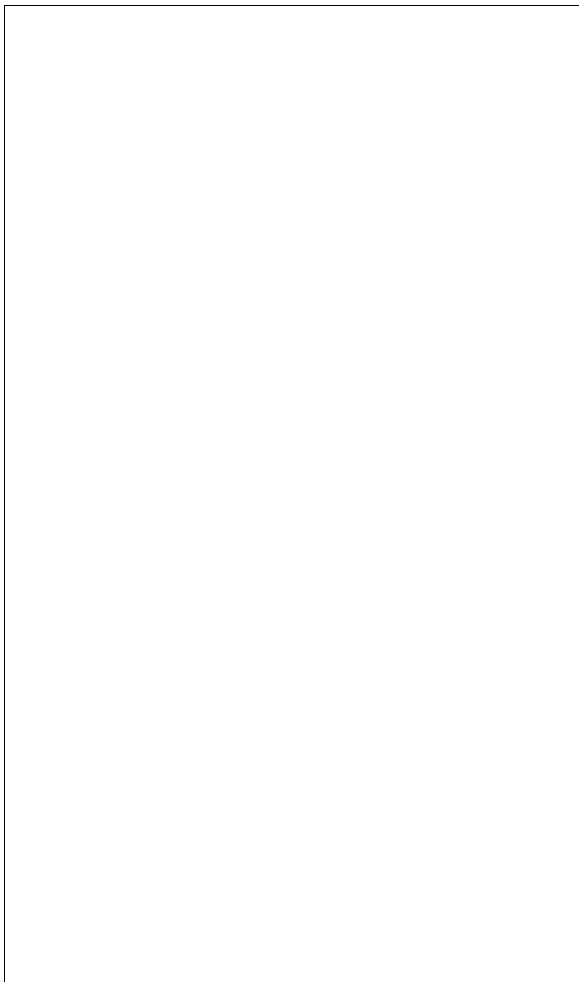
Figure 1 - Dual Format PCS™ Radio (SCAN Model)
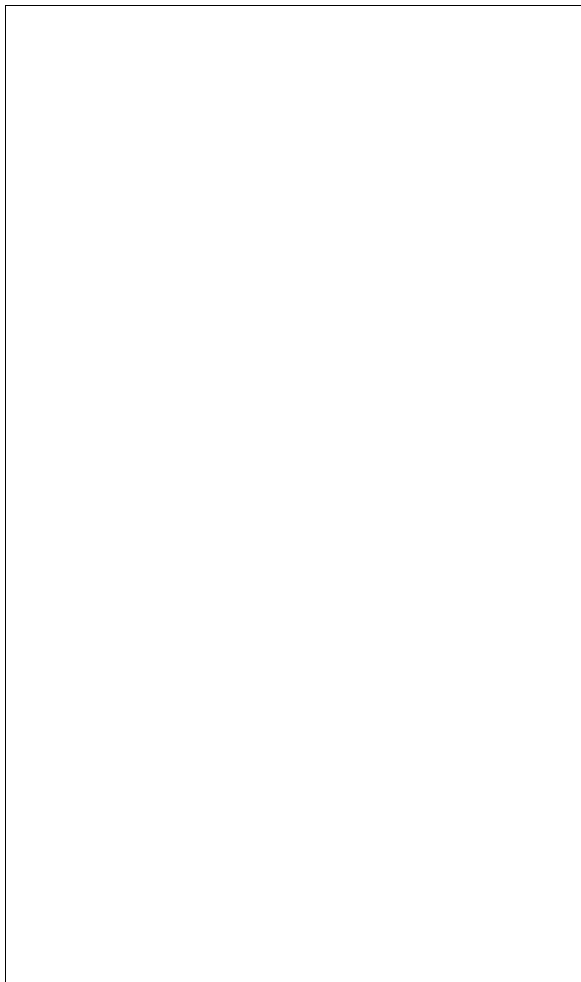
Figure 2 - Dual Format PCS™ Radio (SYSTEM Model)

DESCRIPTION

CONTROLS

**ON/OFF
SWITCH**

The **ON/OFF Switch** is located on the battery pack.
Sliding this switch up to the **ON** position will supply
power to the radio from the battery pack. The radio
can be programmed to beep once after power is
applied, indicating it is ready for use.

**PTT BUTTON
Push-To-Talk**

Pressing the **PTT** button (located on the side of the
radio) will key the radio's transmitter and perform
the necessary steps to acquire a communication
channel.

SHIFT/CLR

All alternate key functions are accessed by press-
ing the **SHIFT/CLR** button and then pressing the
desired function key.

Trunked - Pressing the **SHIFT/CLR** button twice
("double click") will invoke the CLEAR function
which is used to exit the Special Call mode and
return to the normal System/Group display.

Conventional - Pressing the **SHIFT/CLR** button
twice ("double click") will enable MONITORING the
channel for activity by unsquelching the receiver.
All transmissions will be heard, even if Channel
Guard protected.
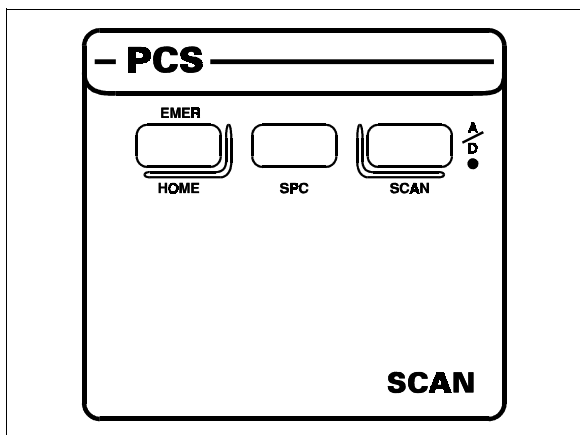
Figure 3 - SCAN Model Keypad
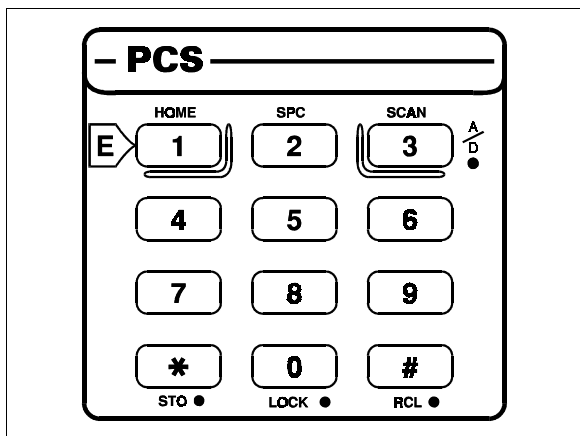
Figure 4 - SYSTEM Model Keypad
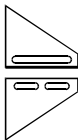
S	The **Select** buttons are two momentary (auto ramping) switches used to increment or decrement the current Group/Channel selection. Pressing the shift button and then the **S** buttons will increment or decrement the System selection. The **Select** buttons are also used to increment or decrement the Special Call selection while in the Special Call mode.
V	The **Volume** buttons are two momentary (auto ramping switches) used to increment or decrement the volume level from the speaker. A tone sounds each time the **Volume** buttons are pressed, except when a call is in process.
HOME/E	The **HOME/Emergency** key is used to automatically select a desired Group and/or System by pressing and holding the key for a programmed duration. The **HOME/Emergency** key is also used to declare emergencies by pressing and holding the key for a preprogrammed duration. Emergency messages may only be issued on EDACS systems.
SPC	Pressing the **SPC** (Special) key will put the radio in the Special Call mode. From the Special Call mode the radio is able to make individual and interconnect calls. This key is active with trunked systems only.
SCAN-A/D	The **SCAN-Add/Delete** key is used to enable the Scan mode and to add or delete Groups/Channels to the scan list.
STO	The **STO**re key in combination with the **SHIFT/CLR** button is used to store individual call numbers and interconnect calls. This key is available on System Model radios and is active with trunked systems only.
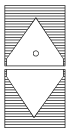
LOCK	The **LOCK** key in combination with the **SHIFT/CLR** key is used to lock the key pad. All buttons and keys will be locked except the VOLUME, PTT, HOME/E, SHIFT/CLR and the **LOCK** (shifted 0). This key is available on System Model radios only.
RCL	The **RCL** (Recall) key (shifted #) can be used to recall manually entered individual and interconnect calls in the EDACS and GE-MARC systems. This key is available on System Model radios and is active with trunked systems only.

INDICATORS

The 4-digit LIQUID CRYSTAL DISPLAY (LCD) uses the two digits on the left side to indicate the System number and the two digits on the right side to indicate the Group/Channel number. In addition there are 9 status indicators that are described on the following pages.

*The LCD backlighting can be programmed to turn on anytime a button or key is pressed. It will remain on for a programmable length of time after the button or key is released. Backlighting is programmed on a per Group/Channel basis or it may be programmed to remain off at all times. Each radio that is programmed with backlighting may also be programmed to remain on or off when the **PTT** bar is pressed.*
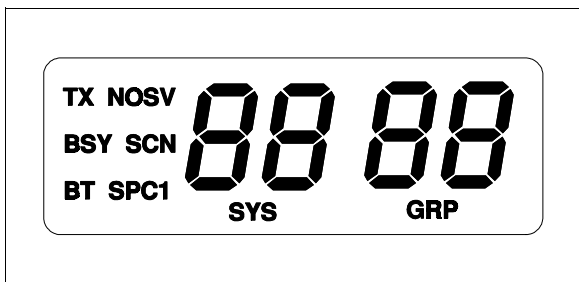
Figure 5 - Dual Format PCS™ Display

System And Group/Channel Indicators

88 SYS

The SYStem display indicates the number of the current EDACS, GE-MARC or Conventional system selected.

88 GRP

The GRP (Group) display indicates the number of the current Group in an EDACS or GE-MARC System. The GRP icon is surpressed while operating from a Conventional System, but the field is still used to display the Channel selected.

Status Indicators

TX
The Transmitter flag is on when the radio is transmitting.

BSY
The Channel Busy flag is on when the radio receives a call or when a conventional channel is in use. The flag is also on when transmitting on a trunked channel. This flag flashes when a call is queued on a trunked system.

BT
The Battery flag is on when the battery power is low and needs charging.

NO
EDACS - The NO Service flag is used in conjunction with the Service flag to indicate no service. The illumination of both the NO and the SV flag indicates a no service condition.

GE-MARC - The NO flag is used in conjunction with the Service flag to indicate an unsuccessful attempt to access a GE-MARC System. The illumination of both the NO and the SV flag indicates a failed attempt to access a GE-MARC system.

CONVENTIONAL - The NO flag remains off at all times while operating in Conventional mode.

SV	*EDACS - The **Service** flag is normally on to indicate service. If a no service condition occurs the **SV** flag and the **No** Service flag will be illuminated.*
	*GE-MARC - The **Service** flag is normally off. If an unsuccessful attempt is made to access a GE-MARC System, both the **SV** and the **NO** flags will turn on.*
	*CONVENTIONAL - The **Service** flag remains off at all times while operating in Conventional mode.*
SCN	*The **Scan** flag is on when Scan is activated.*
S	*The **"S"** flag is used to indicate two conditions. The **"S"** flag is used in conjunction with the **"PC"** flag to indicate the radio is in the Special Call mode. The **"S"** flag is also used to indicate when a trunked group is scan enabled.*
PC	*The **"PC"** flag is illuminated with the **"S"** flag to indicate the radio is in the Special Call mode. When the **"PC"** flag is illuminated without the **"S"** flag, the radio is in the Program mode.*
1	*The **"1"** flag is used only for radio logical ID display. When receiving a call, the most significant digit (0 or 1) of the originating radio's ID will be displayed by the **"1"** flag. When on, the ID of the originating radio begins with a 1.*

ALERT TONES

The Dual Format PCS™ radio generates a number of alert tones to indicate various events. The following section describes the alert tones for the Dual Format PCS™ radio.

Standard Tones

Power-Up

If programmed, a tone will sound on power-up after the radio passes the self-test.

Low Battery

A low pitch tone will sound every 130 seconds when the battery is low and needs charging.

Carrier Control Timer

The Carrier Control Timer (CCT) alert is a pulsed tone signal that sounds whenever the PTT button is continuously pressed for a preprogrammed length of time. After nine seconds of pulsing the transmitter shuts down and communications is interrupted. To maintain communications, release and re-key the PTT switch. This resets the timer and turns the transmitter back on. The CCT is a built-in precaution against inadvertent use of the system.

Tones For Trunked Operation Only

Call Originate

EDACS - If programmed, a short tone is sounded whenever the Push-To-Talk (PTT) button is keyed and the radio has acquired a channel. This tone indicates the user may proceed to talk.

GE-MARC - If programmed, a three tone alert is sounded whenever the Push-To-Talk (PTT) button is keyed and the radio has acquired a channel. This tone indicates the user may proceed to talk.

Call Received

If programmed, a single alert tone sounds when a group call is received and a two tone alert (one high followed by one low tone) is sounded for an individual call.

Call Queued (EDACS Only)

If one short, high pitched tone sounds after the transmitter is keyed, this indicates that the system has placed the request in a queue. This tone sounds at both the transmitting unit and the receiving unit(s), indicating to the user on the receiving end that they will receive a call shortly. If the PTT is unkeyed while in the queue, the radio will autokey (automatically key the PTT) when a channel becomes available (see AUTOKEY below).

Autokey (EDACS Only)

When the PTT is keyed to place a call on the system, but the PTT is released before getting to the channel (e.g. a queued call), the radio automatically keys on the channel when it gets the assignment. The radio generates a long beep and holds the transmitter keyed for two seconds. Pressing the PTT button keeps the channel and sends the message before this two second time-out has expired.

System Busy

EDACS - If you key the PTT bar and hear three short, medium pitched tones, this indicates that the receiving party is already engaged in another call or the system is busy and its queue is full. You must rekey later to access the system.

GE-MARC - If you key the PTT bar and hear a low frequency tone for 1 second this indicates all channels are busy.

Call Denied (EDACS Only)

A single low pitch beep will sound when the PTT switch is keyed and the request is denied by the system. This happens if the unit is an invalid user or if the unit is requesting an unavailable service.

Out Of Range/System Inoperative

> *EDACS - A single low pitched tone will sound immediately after the PTT switch is keyed indicating the radio is out of range of the repeater. The radio tries to place the call for a short period (3 seconds) after the initial attempt. The radio generates a second low pitched tone when it gives up trying to place the call. The system is off the air or the radio needs servicing when the radio is within calling range, and these tones are heard.*

> *GE-MARC - Five beeps will sound shortly after the PTT switch is keyed when the radio is out of range of the repeater or the radio is inoperative. If the "Call Retry is active, the radio will try the channel at twenty second intervals for five minutes.*

ERROR MESSAGES

E3 - *If at anytime the Synthesizer is unable to load and lock on the channel properly an "E3" message will be displayed in the System field and the Group/Channel field will be blanked. If the "E3" message is displayed on all systems, the radio has failed or has not been programmed properly. The radio's buttons and keys will still operate with an "E3" message displayed.*

E9 - *"E9" message indicates the Personality has not been programmed into the radio.*

INTRINSICALLY SAFE USAGE

Selected portable radios with appropriate factory installed F4 Options are certified as Intrinsically Safe by the Factory Mutual Research Corporation. Intrinsically Safe approval includes Class I, II, III, Division 1 hazardous locations in the presence of Groups C, D, E, F and G atmospheres. Non-Incendive approval includes Class I, Division 2 hazardous locations in the presence of Groups A, B, C and D atmospheres.

Hazardous locations are defined in the National Electrical Code. Useful standards NFPA 437A and NFPA 437M for the classifications of hazardous areas can be ordered from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

OPTIONS AND ACCESSORIES

OPTION #	DESCRIPTION
PCAC1C	Earphone UDC Connector Only (FM APPROVED)
PCAC1J	Earphone Without UDC Connector (FM APPROVED)
PCAE1X	Speaker MIC (FM APPROVED)
PCZM1A*	Earphone With UDC Connector (FM APPROVED)
PCHC1C*	Belt Clip (FM APPROVED)
PCHC1D*	Swivel Plate (FM APPROVED)
PCHCSS*	Case With Top Short Battery (FM APPROVED)
PCHCST	Case With Strap Short Battery (FM APPROVED)
PCHCSU	Case With Top Long Battery (FM APPROVED)
PCHCSV	Case With Strap Long Battery (FM APPROVED)
PCNC3L*	Antenna Whip 806-870 MHz
PCPA1J*	High Capacity Battery Pack
PCPA1K*	Extra High Capacity Battery Pack
PCPA1L	Extra High Capacity Battery Pack (FM APPROVED)
PCPS1K	Mobile Charger (Sleeve)
CH1SS1*	Desk Charger 50/60Hz, 120V, 14HR
CH1SS2	Desk Charger 50/60Hz, 230V, 14HR
CH1RS1*	Rapid Desk Charger 50/60Hz, 120V, 1HR
CH1RS2	Rapid Desk Charger 50/60Hz, 230V, 1HR
CH6SS1	Multicharger 50/60Hz, 120V, 14HR
CH6SS2	Multicharger 50/60Hz, 230V, 14HR
CH6RS1	Rapid Multicharger 50/60Hz, 120V, 1HR
CH6RS2	Rapid Multicharger 50/60Hz, 230V, 1HR

Pictured on page 18.
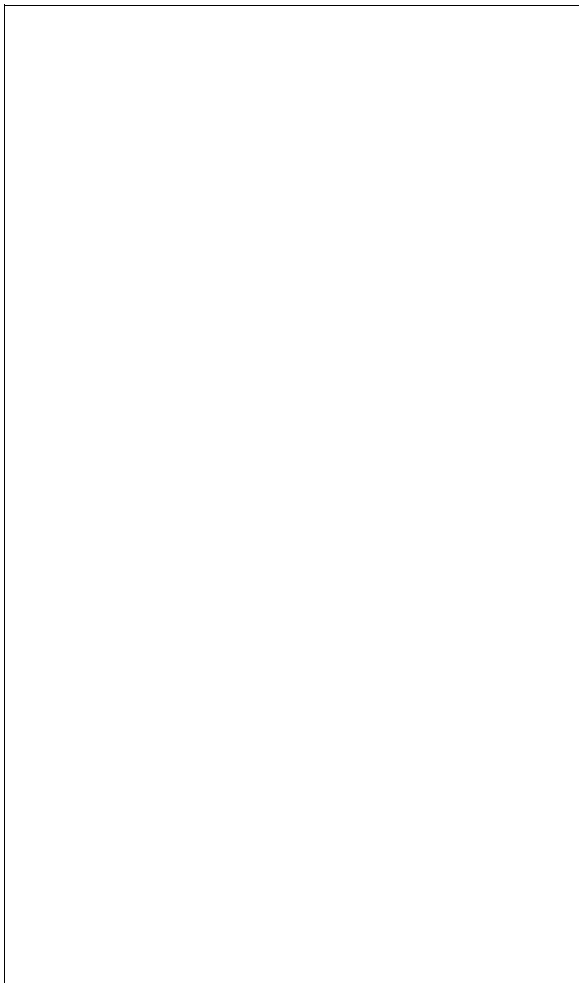
Figure 6 - Options And Accessories

BATTERY PACKS

The following battery pack are available for use with the Dual Format PCS™ radio:

PCPA1J   Rechargeable Battery Pack, High Capacity
(19A705293P1)

PCPA1K   Rechargeable Battery Pack, Extra High Capacity
(19A705293P2)

BATTERY PACKS (FM APPROVED)

Only battery packs identified with a green latch shall be used with a portable radio that is rated and labeled as Factory Mutual Intrinsically Safe. Use of nonspecified battery packs voids Factory Mutual approval. The following battery pack option is approved for use in intrinsically safe radios.

PCPA1L   Rechargeable Battery Pack
Extra High Capacity (Tall Case)

CAUTION

Battery packs used with the PCS radio must be supplied by Ericsson Inc.

INSTALLING THE BATTERY PACK

1. *Ensure the ON/OFF switch on the battery pack is in the off position.*

2. *Hold the radio and battery pack with the back of them facing you. See Figure 7.*

3. *Align the grooves on the top of the battery pack with the grooves on the bottom of the radio.*

4. *Slide the battery pack fully into the radio until the battery release latch clicks into place.*

REMOVING THE BATTERY PACK

1.   Ensure the ON/OFF switch on the battery pack is in the off position.

2.   Press down on the battery release latch and slide the battery pack out
      in the direction of the release latch. See Figure 8.

CHARGING THE BATTERY PACKS

New batteries or batteries that have been stored for a long period of
time, should be fully charged before placing into service. When the battery
pack requires charging the "BT" indicator in the LCD will turn on and the radio
will sound a low pitch tone every 130 seconds.

Rechargeable batteries in some applications can develop a condition
of reduced capacity, sometimes called "Memory Effect". This condition may
occur when:

1.   The battery is continuously overcharged for long periods of time.

2.   A regularly performed duty cycle allows the battery to expend only a
      limited portion of its capacity.

If the rechargeable battery is only sparingly or seldom used and is left
on continuous charge for one or two months at a time, it could experience
reduced capacity. This would severely reduce the life of the battery between
charges.

The most common method of producing this limited capacity is regu-
larly performing short duty cycles; when the battery is operated so that only
a portion (<50%) of its capacity is expended. This type of operation can cause
the battery to become temporarily inactive and show severe decrease in the
ability to deliver at full rated capacity.

Any rechargeable battery showing signs of reduced capacity, should
be taken to a qualified Service Technician to be carefully checked before
being returned under warranty or scrapped.

Figure 7 - Installing the Battery Pack
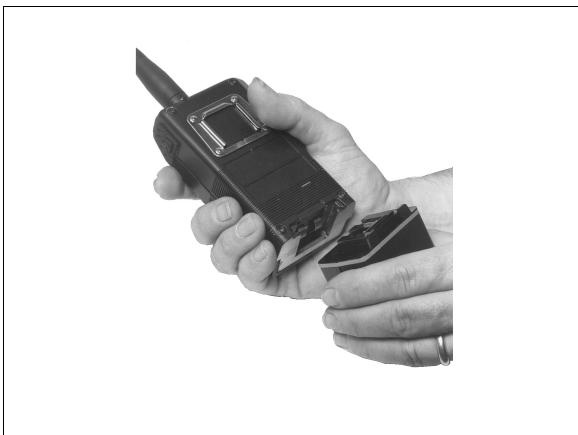
Figure 8 - Removing the Battery Pack

RECHARGEABLE BATTERY PACK DISPOSAL

The product that you have purchased contains a re-chargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the munici-pal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal. Call Toll Free 1-800-8BATTERY for

information and/or procedures for returning rechargeable batteries in your state.

SWIVEL MOUNT REMOVAL AND REPLACEMENT

To remove the swivel mount, slide a flat blade screwdriver underneath the spring retainer and twist. While twisting, slide the swivel mount out from under the holder. See Figure 9.

To replace the swivel mount, place the end of the swivel in the grooves in the back of the radio and slide the mount up until it snaps in place.

Figure 9 - Swivel Mount Removal And Replacement

OPERATING TIPS

The following conditions tend to reduce the effective range of two-way radios and should be avoided whenever possible.

- Operating the radio in low terrain areas or while under power lines or bridges.

- Operating the radio inside of a vehicle or inside metal or steel framed building unless using an outside antenna.

- Obstructions such as mountains or buildings between the person sending and the person receiving the message.

In areas where transmission or reception is poor, some improvements may be obtained by insuring that the antenna is vertical. Moving a few yards in another direction or moving to a higher elevation may also improve communication.

OPERATING PROCEDURES

Two-way FM radio systems must be operated in accordance with the rules and regulations of the Federal Communications Commission (FCC). As an operator of two-way radio equipment, you must be thoroughly familiar with the rules that apply to your particular type of radio operation. Following these rules will help eliminate confusion and will assure the most efficient use of existing radio channels. This will provide a smooth operating radio network.

When using two-way radios, remember the following rules:

1. It is a violation of FCC rules to interrupt any distress or emergency messages. As the radio operates in much the same way as a telephone "party line", always listen and/or observe the absence of the **"BSY"** flag to make sure that the line is clear. If someone is sending an emergency message, such as reporting a fire or asking for help in an accident; KEEP OFF THE AIR! Emergency calls have priority over all other messages.

2. Use of profane or obscene language is prohibited by federal law.

3. *It is against the law to send false call letters and false distress or emergency messages.*

4. *The FCC requires that conversations be kept brief and confined to business. To save time, use coded messages whenever possible.*

5. *Using the radio to send personal messages (except in an emergency) is a violation of FCC rules. Send only those messages that are essential for the operation of your business.*

6. *It is against federal law to repeat or otherwise make known anything overheard on the radio. Conversations between others sharing your channel must be regarded as confidential.*

NICKEL-CADMIUM BATTERY WARRANTY

A. Ericsson Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that nickel-cadmium batteries supplied by Seller shall be free from defects in material and workmanship, and shall conform to its published specifications for a period of twelve (12) months from the date of purchase.

B. For purposes of this warranty, batteries shall be deemed defective if (1) the battery capacity is less than 80% of rated capacity, or (2) the battery develops leakage.

C. If any battery fails to meet the foregoing warranty, Seller shall correct the failure by issuing a replacement battery upon receipt of the defective battery at an Authorized Service Center (ASC).. To obtain the name and address of a ASC, ask your salesperson, consult the Yellow Pages, or call the number printed at the bottom of this page.

D. Replacement batteries shall be warranted only for the remaining unexpired warranty period of the original battery. This warranty becomes void if:
   (1) The battery has been subjected to any kind of misuse, detrimental exposure, or has been involved in an accident.
   (2) The battery is used in equipment or service other than the radio equipment for which it is specified.

E. The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or non-conformity of any battery, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether oral, written, expressed, implied or statutory. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES.

This warranty applies only within the United States.
1-800-528-7711 (Outside USA, 804-528-7711).

ECX-841C

EDACS OPERATION

RECEIVING A MESSAGE

1. Turn the radio on by sliding the **ON/OFF** switch on the battery pack, to the **ON** position. A yellow area will be visible on the battery. After the radio has passed the power-up self test an optional tone will sound and the current System and Group will be displayed. If the unit does not pass the test, an error message will be displayed (see **ERROR MESSAGES** section) or the display will be blank.

2. Press the **SHIFT/CLR** button and then use the **SELECT** buttons ▲ or ▼ to select an EDACS system. The SYStem display will indicate the current System selected.

3. Use the **SELECT** buttons ▲ or ▼ to select the desired Group. The GRP display will indicate the current Group selected. The radio is now ready to receive messages.

4. <u>INDIVIDUAL CALL</u> - If an individual call (call directed only to your radio) is received, the radio unsquelches on the assigned channel and the **"BSY"** flag lights. If programmed on, the individual call received tones (one high followed by one low) will sound and the originator's ID or just **"id"** (dependent upon programming) is displayed in the GRP and SYS fields.

   <u>GROUP CALL</u> - When the radio receives a group call, it unsquelches on the assigned channel and lights the **"BSY"** flag. If programmed on, the group call received tone (single tone) will sound. The radio can also be programmed to display the Group name orginators ID in the GRP and SYS fields.

   <u>INTERCONNECT CALL</u> - If an interconnect call (telephone call directed to your radio) is received, the radio unsquelches on the assigned channel and the **"BSY"** flag turns on. If programmed on, the interconnect call received tones (one high followed by one low) will sound. A **"ph"** will be displayed in the GRP field.

NOTE

The optional call received tones are programmed off by default.

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5. Using the **VOLUME** buttons, adjust the volume as necessary.

SENDING A MESSAGE

1. Turn the radio on and set the desired System and Group as described under **RECEIVE A MESSAGE** steps 1-3.

2. Observe the display for the presence of the **"SV"** flag for service and the absence of the **"BSY"** indicator to ensure that no one is transmitting on the selected Group.

3. Press and hold the **PTT** bar. The radio will perform the necessary signalling required to obtain a communication channel. If the signalling is unsuccessful, the radio will sound the appropriate alert tone(s).

4. When the channel has been acquired, the **"TX"** and **"BSY"** flags are illuminated and if programmed, the Call Originate tone will sound.

5. Hold the radio about 3 inches from your mouth and speak as you would normally into the microphone.

6. Release the **PTT** bar when the transmission is complete and listen for any reply.

SQUELCH ADJUSTMENT

In normal operation the squelch is automatically set by the radio and does not need adjusting. If it becomes necessary to adjust the squelch, the squelch may be adjusted using the following procedure:

NOTE

The radio must be on a Conventional System or an EDACS working Channel (i.e. receiving a voice call) to adjust the squelch. It is recommended to adjust squelch from a Conventional System.

---

1. *Press and __hold__ the **SHFT/CLR** button.*

2. *Use the **VOLUME** ▲ or ▼ buttons to adjust the squelch. Pressing the **VOLUME** s will open the squelch and pressing the **VOLUME** ▼ will close the squelch.*

SENDING A SPECIAL CALL

SCAN Model Radio

1. *Press the **SPC** key to put the radio into Special Call mode and provide access to a preprogrammed special call list. Each selection from the list is preprogrammed with either an individual number or an interconnect number. The SYStem field will display **"SP"** and the GRP (Group) field will display the current selection number from the special call list. The **"S"** and **"PC"** icons will also be illuminated while in the Special Call mode.*

2. *Press the **SELECT** ▲ or ▼ buttons to increment or decrement through the special call list.*

> *—————— NOTE ——————*
>
> *To display the last four digits of the individual or interconnect number currently selected, press and hold the **SHFT/CLR** button and then press the **SPC** key.*

3. *Individual - Once the desired individual special call number is displayed in the GRP (Group) field, press and hold the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

   *Interconnect - Once the desired interconnect special call number is displayed in the GRP (Group) field, press and release the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

4. *Individual - When the signalling is successfully completed the **"TX"** and **"BSY"** flags turn on and the Call Originate tone sounds. Speak directly into the microphone. Release the **PTT** bar as soon as you stop talking and wait for a reply.*

Interconnect - *When the signalling is successfully completed the* **"BSY"** *flag turns on and the proper DTMF tones will be sent and heard at the speaker. When someone answers, press the* **PTT** *bar and speak directly into the microphone. Release the* **PTT** *bar as soon as you stop talking. Messages cannot be received when the* **PTT** *bar is pressed.*

If the signalling is unsuccessful, the radio will remain in the the Special Call Mode and sound the appropriate alert tone(s).

5. *When the call is complete, double click the* **SHIFT/CLR** *button to exit the Special Call mode and return to the normal System/Group display.*

SYSTEM Model Radio

The System radio may also initiate a call from the Special Call selection as described in the SCAN Model Radio *section. In addition, the System radio is capable of the following from the Special Call Mode:*

- *Storing and/or recalling up to 10 individual and 10 interconnect numbers in 2 separate storage locations. These numbers are manually entered from the keypad.*

- *Initiating individual and interconnect calls that are manually entered from the keypad.*

    Each of these features are discussed in detail in the following sections.

Sending A Manually Entered Individual Call

SPC   DIGITS ─────────────────────── PTT

1. *Press the* **SPC** *key to put the radio into Special Call mode. The SYStem field will display* **"SP"** *and the GRP (Group) field will display the last accessed Special call number from the preprogrammed Special Call selection. The* **"S"** *and* **"PC"** *icons will also be illuminated while in the Special Call Mode.*

2. *Enter the ID number of the radio to be called. The first digit entered will cause the System field and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group display. Any previously entered digits will scroll left. Only four*

characters will be visible at a time with the leading character scrolling off the display upon each new key entry.

3.   *Press and hold the **PTT** bar to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

4.   *When the signalling is successfully completed the **"TX"** and **"BSY"** flags turn on and the Call Originate tone sounds. Speak directly into the microphone. Release the **PTT** bar as soon as you stop talking and wait for a reply. Messages cannot be received when the **PTT** bar is pressed.*

     If the signalling is unsuccessful, the radio will remain in the the Special Call Mode and sound the appropriate alert tone(s).

5.   *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal System/Group display.*

Sending A Manually Entered Interconnect Call

`SPC` `DIGITS` `*` ————————————— `PTT`

1. Press the **SPC** key to put the radio into Special Call mode. The SYStem field will display **"SP"** and the GRP (Group) field will display the last accessed call number from the preprogrammed Special Call selection. The **"S" "PC"** icons will also be illuminated while in the Special Call Mode.

2. Enter the telephone number to be called. The first digit entered will cause the System field and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group field. Any previously entered digits will scroll left. Only four characters will be visible at a time with the leading character scrolling off the display upon each new key entry.

> **NOTE**
>
> To recall the last interconnect number entered manually from the key pad, press and hold the **SHFT/CLR** button and then press the **RCL** key.

3. Complete the telephone entry by pressing the ***** key. The ***** key indicates the digits are for an interconnect call. This will not be displayed but a tone will sound.

4. Press and release the **PTT** bar to initiate the call. The radio performs the necessary signalling required to obtain a working channel. When the signalling is successfully completed the **"BSY"** flag lights and the proper DTMF tones will be sent and heard at the speaker.

    If the interconnect signalling is unsuccessful, the radio will remain in the the Special Call Mode and sound the appropriate alert tone(s).

5. When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.

6. *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal system/group display.*

Storing Individual And Interconnect Numbers

SPC → DIGITS → # → 0-9 → STO   **TO STORE AN INDIVIDUAL CALL**

SPC → DIGITS → * → 0-9 → STO   **TO STORE AN INTERCONNECT CALL**

1. *Press the **SPC** key to put the radio into Special Call mode. The SYStem field will display **"SP"** and the GRP (Group) field will display the last accessed call number from the preprogrammed Special Call list. The **"S"** and **"PC"** icons will also be illuminated while in the Special Call mode.*

2. *Enter the ID number or telephone number of the radio to be stored. The first digit entered will cause System display and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group field. Any previously entered digits will scroll left. Only four characters will be visible at a time with the leading character scrolling off the display upon each new key entry.*

NOTE

*To recall the last individual or interconnect number entered manually from the key pad, press and hold the **SHFT/CLR** button and then press the **RCL** key.*

---

3. *Complete the entry by pressing the # key for individual numbers and the * key for telephone interconnect numbers. The # key indicates the digits entered are for an individual call and * key indicates the digits are for an interconnect call. They will not be displayed but a tone will sound.*

4. *Enter a digit between 0 and 9 to select a storage location. The storage location will not be displayed, but a tone will sound. There are 10 storage locations for individual numbers and 10 storage locations for interconnect numbers.*

5. Press the __STO__ key (shifted *) to complete the storage procedure.

*6. Double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal System/Group display.*

Recalling Manually Stored Individual And Interconnect Numbers

| # | 0-9 | RCL | PTT | TO RECALL AND PLACE AN INDIVIDUAL CALL |

| * | 0-9 | RCL | PTT | TO RECALL AND PLACE AN INTERCONNECT CALL |
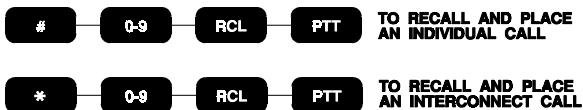
1. Press the # key to recall the individual call list or the * key to specify the interconnect call list. The screen will blank and a tone will sound.

2. Enter the desired storage location number (0-9).

3. Press the __RCL__ (shifted #) key and the radio will switch to the Special Call mode. If the number is from the individual call list the ID number will be displayed. If the number is from the interconnect call list, the last four digits of the telephone number will be displayed.

   If the memory location is blank the radio will sound a low pitch tone after the __RCL__ is pressed.

*4. __Individual__ - Once the desired individual call number is displayed in the GRP (Group) field, press and hold the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

   *__Interconnect__ - Once the desired interconnect special call number is displayed in the GRP (Group) field, press and release the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

*5. __Individual__ - When the signalling is successfully completed the **"TX"** and **"BSY"** flags turn on and the Call Originate tone sounds. Speak directly into the microphone. Release the **PTT** bar as soon as you stop talking and wait for a reply.*

Interconnect - When the signalling is successfully completed the **"BSY"** flag turns on and the proper DTMF tones will be sent and heard at the speaker. When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.

If the signalling is unsuccessful, the radio will remain in the the Special Call Mode and sound the appropriate alert tone(s).

6.   *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal System/Group display.*
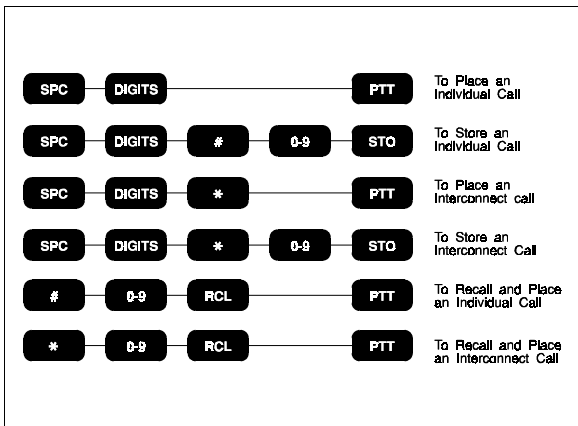
Figure 10 - EDACS Special Call Flowchart

SCAN OPERATION

Enable/Disable SCAN

To enable Group scanning, press and release the **SCAN** key. The **"SCN"** icon will illuminate to indicate scan is active. When scan is on, press and release the **SCAN** key to disable scan operation. The **"SCN"** icon will be extinguished when scan is turned off.

Add/Delete Groups

Groups can be added or deleted from the scan list as necessary. To add Groups to the scan list:

1. Select the desired Group to be added. If the current group is already included in the scan list, the **"S"** icon will be illuminated.

2. To add the group to the scan list, press the **SHIFT/CLR** key and then press the **SCAN** key. The **"S"** icon will illuminate and the group will be included.

NOTE

Scan must be disabled to add a Group to the scan list.

To delete Groups from the scan list:

1. Select the desired Group to be deleted. If the current group is already included in the scan list, the **"S"** icon will be illuminated.

2. To delete the group from the scan list, press the **SHIFT/CLR** button and then press the **SCAN** key. The **"S"** icon will turn off and the group will be removed from the scan list.

Wide Area And Priority System Scanning (Optional)

Dual Format PCS™ radios operating within an EDACS system may be programmed for Wide Area Scan operation for multi-site applications. Upon the loss of the currently selected system's control channel, radios may be programmed to automatically scan other systems. If a new control

channel is found, the radio will switch to the new system and sound an alert tone. Group selection may change upon switching to the new system.

The radio may also be programmed for priority wide area system scan. A priority system may be assigned to each system programmed into the radio. Radios programmed in this manner will scan the priority trunked system's control channel once every one, two, three or four minutes (programmable). This priority scan timer is reset each time the PTT bar is pressed.

ProSound™

The radio may be programmed for ProSound system scan operation for multi-site applications. ProSound scanning is an enhanced replacement for wide area system scanning. This algorithm insures that the radio continually receives high quality audio. When the selected system degrades to a preprogrammed level, the radio begins searching for the best adjacent system on a part time basis. Once a better system is found the radio changes to the new system and sounds a tone. Should the control channel be lost completely, the radio will scan the adjacent systems until a suitable one is found.

DYNAMIC REGROUPING (Optional)

*Dynamic Regrouping is a feature which allows the System Manager to dynamically program new groups into selected radios. Upon development of the regrouping plan, the site controller sends each radio the regroup plan number, "group position", and activate/deactivate commands. When the radio is regrouped, it will alert the user and the Group field will will display the regroup number **"nn"** (nn = 01-08).*

NOTE

The regroup is identified by the leading zero in the 10's digit of the Group field. This zero is normally surpressed in Groups 1-8.

DTMF OVERDIAL

After the radio has acquired a working channel to make a message trunked call, DTMF tones can be sent by:

*1. Pressing and holding the **PTT** bar.*

2. Manually entering the desired numbers from the keypad.

In the same manner, stored interconnect numbers (tones) may be sent by:

*1. Recalling the desired storage location as described previously in the **Recalling Manually Stored Individual and Interconnect Numbers** section.*

*2. Pressing the **PTT** bar to send the tones.*

HOME/EMERGENCY KEY DEFINITION

*The **Home/Emergency** key can be programmed in one of the following configurations:*

1. Emergency Enabled and Home Enabled - the radio will switch to the programmed home System and/or Group, and send an emergency transmission.

2. Emergency Enabled and Home Disabled - the radio will send an emergency transmission on the current System/Group.

3. Emergency Disabled and Home Enabled - the radio will switch to the home System and/or Group.

4. Emergency Disabled and Home Disabled - the key is not active.

EMERGENCY OPERATION (Optional)

Receiving An Emergency Call

*If the radio receives an Emergency Channel Assignment, an alert tone will sound and the 10's digit in the System field will alternate between displaying the digit and an **"E"**.*

Sending An Emergency Call

To enable an Emergency transmission:

1. Press and hold the Emergency key for the programmed duration. If programmed, an **"E"** will replace the 10's digit in the System field and a alert tone will sound.

NOTE

*The radio may be programmed for both **Quiet** and/or **Blind** mode in which case no alert tone is heard and/or the display does not change respectively. If programmed to display an "E", the radio's display will return to normal operation once the PTT is pressed.*

---

2. The radio transmits an emergency message until an Emergency Channel Assignment is received.

3. Upon receipt, the radio begins operation on the programmed System/Group (see the **Home/Emergency Key Definitions** section above).

4. Press the **PTT** bar and speak directly into the microphone in a normal voice.

5. Release the **PTT** bar when the transmission is complete and listen for a reply.

HOME

The radio can be programmed to automatically switch to a home System and/or Group by pressing and holding the **Home/Emergency** key for the programmed duration. The radio will also transmit an emergency message on the home System and/or Group if programmed (see the **EMERGENCY OPERATION** section).

KEYPAD LOCK (SYSTEM Model Only)

The keypad can be locked at any time to prevent undesired key presses. To lock the keypad when it is in the unlocked state, press and release the **LOCK** (shifted 0) key. All buttons and keys except the **VOLUME**, **PTT**, **HOME/EMER**, **SHIFT/CLR** and **LOCK** (shifted 0) will now be inhibited. If the Emergency function of the **HOME/EMER** key is disabled, the

HOME/EMER key will also be inhibited. If the key is programmed for Emergency or Emergency/Home, then the key is not inhibited and an emergency can still be declared on the Home System/Group or the current System/Group (however programmed).

GE-MARC OPERATION

RECEIVING A MESSAGE

1. Turn the radio on by sliding the ON/OFF switch on the battery pack, to the **ON** position. A yellow area will be visible on the battery. After the radio has passed the power-up self test an optional tone will sound and the current System and Channel will be displayed. If the unit does not pass the test, an error message will be displayed (see the **ERROR MESSAGES** section), or the display will be blank.

2. Press the **SHIFT/CLR** button and then use the **SELECT** buttons s or t to select a GE-MARC system. The SYStem display will indicate the current System selected. If the GRP/SYS icons are lit when a system is selected, this indicates the default mode for that system is Group mode. However, if the SPC icon is lit then this indicates that no groups are programmed for that system and therefore the default mode is the Special Call mode.

3. Use the **SELECT** buttons s or t to select the desired Group or Special Call Item. The Group or Special Call items will be displayed in the right field. If the radio is in the Special Call but no Special Call Items are programmed for that system then the left field will show SP while the right field will be blank. The radio is now ready to receive messages.

4. <u>INDIVIDUAL CALL</u> - If an individual call (call directed only to your radio) is received, the radio unsquelches on the assigned channel and the **"BSY"** flag lights. The individual call received tones (one high followed by one low) will sound and **"id"** (for individual call) is displayed in the GRP field. The call received tones may be programmed off.

    <u>GROUP CALL</u> - When the radio receives a group call, it unsquelches on the assigned channel and lights the **"BSY"** turns on. The group call received tone (single tone) will sound (unless programmed off).

    <u>INTERCONNECT CALL</u> - If an interconnect call (telephone call directed to your radio) is received, the radio unsquelches on the assigned channel and the **"BSY"** flag turns on. If the received tone set was the selected group tone set, then the radio will behave as it does when it receives a group call from another radio. If the tone set was the selected system's individual call tone set, the radio will behave as if it had received an individual call from another radio.

5.   Using the **VOLUME** buttons, adjust the volume as necessary.

SENDING A MESSAGE

1.   Turn the radio on and set the desired System and Group as described under **RECEIVE A MESSAGE** steps 1-3.

2.   Observe the display for the absence of the **"BSY"** indicator to ensure that no one is transmitting on the selected Group.

3.   Press and release the **PTT** bar. The radio will perform the necessary signalling required to obtain a communication channel.

     The radio is out of range or the radio is inoperative when the signalling is unsuccessful, the **"NO"** and **"SV"** indicators are illuminated and a sequence of five beeps are heard at the speaker. Any subsequent attempt to initiate a call within the next 20 seconds will be ignored. The radio can be cleared from this mode by double clicking the SHFT/CLR button.

     All channels are busy when the signalling is unsuccessful and a one second low frequency tone is heard at the speaker. The call will not be retried automatically.

NOTE

If the "Call Retry" option is active, the radio will try the channel at twenty second intervals for five minutes before returning to the normal System/Group display.

---

4.   When the channel has been acquired, the **"BSY"** flag is illuminated and the Call Originate tones (three tone alert) will sound.

5.   Press **PTT** bar. The **"TX"** flag will illuminate. Hold the radio about three inches from your mouth and speak as you would normally into the microphone.

6.   Release the **PTT** bar when the transmission is complete and listen for any reply.

SENDING A SPECIAL CALL

SCAN Model Radio

1. Press the **SPC** key to put the radio into Special Call mode and provide access to a preprogrammed special call list. Each selection from the list is programmed with either an individual number, an interconnect number or as a DTMF selection, which simply causes the radio to acquire a channel and request a interconnect line. The SYStem field will display **"SP"** and the GRP (Group) field will display the current selection number from the special call list, if no items are programmed in the special call list then the field will be blank. The **"S"** and **"PC"** icons will also be illuminated while in the Special Call mode.

2. Press the **SELECT** ▲ or ▼ buttons to increment or decrement through the special call list.

> **NOTE**
>
> To display the last four digits of the individual or interconnect number currently selected, press and hold the **SHFT/CLR** button and then press the **SPC** key.

3. *Individual Call* - Once the desired individual special call number is displayed in the GRP (Group) field, press and release the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.

   Interconnect Call - Once the desired interconnect special call number is displayed in the GRP (Group) field, press and release the **PTT** to initiate the call. The radio performs the necessary signalling required to obtain a working channel.

4. *Individual Call* - When the signalling is successfully completed the **"BSY"** flag turns on and the Call Originate tones (three tone alert) sound. Press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking and wait for a reply.

   Interconnect Call - When the signalling is successfully completed the **"BSY"** flag turns on and the proper DTMF tones will be sent and heard at the speaker. When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.

5. *The radio is out of range or the radio is inoperative when the signalling is unsuccessful, the **"NO"** and **"SV"** indicators are illuminated and a sequence of five beeps are heard at the speaker. Any subsequent attempt to initiate a call within the next 20 seconds will be ignored. The radio can be cleared from this mode by double clicking the SHFT/CL\R button.*

   All channels are busy when the signalling is unsuccessful and a one second low frequency tone is heard at the speaker. The call will not be retried automatically.

   --- *NOTE* ---

   If the "Call Retry" option is active, the radio will try the channel at twenty second intervals for five minutes before returning to the normal System/Group display.

6. *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal System/Group display.*

SYSTEM Model Radio

*The System radio may also initiate a call from the Special Call selection as described in the **SCAN Model Radio** section. In addition, the System radio is capable of the following from the Special Call Mode:*

- *Storing and/or recalling up to 10 individual and 10 interconnect numbers in 2 separate storage locations. These numbers are manually entered from the keypad.*

- *Initiating individual and interconnect calls that are manually entered from the keypad.*

   Each of these features are discussed in detail in the following sections.
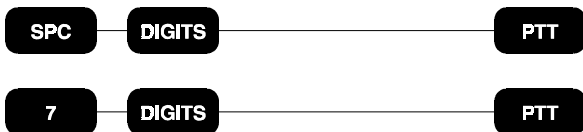
Sending A Preprogrammed Special Call In Conference Call

1. *Preprogrammed Special Calls can also be initiated using the selected group tone set. To initiate a special call in Conference Call mode, press 7 to put the radio into Conference Call mode, the SYStem field will*

display "SP" and the GRP (group) field will display the current selection number from the special call list, if no special calls are programmed then this field will be blank. Note this display is similar to the Special Call mode display except the "S" and "PC" icons are not illuminated.

2. *The programmed call may now be sent following the procedure described in the section for the **SCAN Model Radio.***

Sending A Manually Entered Individual Call

SPC	DIGITS	PTT

7	DIGITS	PTT

1. *Press the **SPC** key to put the radio into Special Call mode or "7" to put the radio into Conference Call mode. The SYStem field will display **"SP"** and the GRP (Group) field will display the last accessed call number from the preprogrammed Special Call selection. or will be blank if no Special Calls are programmed for this area. If the radio was put into Special Call mode the "S" and "PC" icons will be illuminated and if the radio was put into Conference Call mode the icons will be off.*

2. *Enter the tone set of the radio to be called. The first digit entered will cause the System field and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group display. Any previously entered digits will scroll left. Only four characters will be visible at a time with the leading character scrolling off the display upon each new key entry.*

NOTE

*To recall the last individual number entered manually from the key pad, press and hold the **SHFT/CLR** button and then press the **RCL** key.*

---

3. *Complete the tone set entry by pressing the **#** key. The **#** key indicates the digits entered are for an individual call. This will not be displayed but a tone will sound.*

4.   *Press and release the **PTT** bar to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

5.   *When the signalling is successfully completed the **"BSY"** flag turns on and the Call Originate tones (three tone alert) sound. Press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking and wait for a reply. Messages cannot be received when the **PTT** bar is pressed.*

*The radio is out of range or the radio is inoperative when the signalling is unsuccessful, the **"NO"** and **"SV"** indicators are illuminated and a sequence of five beeps are heard at the speaker. Any subsequent attempt to initiate a call within the next 20 seconds will be ignored. The radio can be cleared from this mode by double clicking the SHFT/CLR button.*

All channels are busy when the signalling is unsuccessful and a one second low frequency tone is heard at the speaker. The call will not be retried automatically.

NOTE

If the "Call Retry" option is active, the radio will try the channel at twenty second intervals for five minutes before returning to the normal System/Group display.

---

6.   *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode or Conference Call mode and return to the normal System/Group display.*

Sending A Manually Entered Interconnect Call

| SPC | DIGITS | * | PTT |

| 7 | DIGITS | * | PTT |

1.   *Press the **SPC** key to put the radio into Special Call mode. or "7" to put the radio into Conference Call mode. The SYStem field will display*

"SP" and the GRP (Group) field will display the last accessed call number from the preprogrammed Special Call selection or will be blank if no Special Calls are programmed for this area. If the radio was put into Special Call mode the "S" and "PC" icons will be illuminated and if the radio was put into Conference Call mode the icons will be off.

2. Enter the telephone number to be called. The first digit entered will cause the System field and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group field. Any previously entered digits will scroll left. Only four characters will be visible at a time with the leading character scrolling off the display upon each new key entry.

NOTE

*To recall the last interconnect number entered manually from the key pad, press and hold the **SHFT/CLR** button and then press the **RCL** key.*

---

3. Complete the telephone entry by pressing the* key. The* key indicates the digits are for an interconnect call. This will not be displayed but a tone will sound.

4. Press and release the **PTT** bar to initiate the call. The radio performs the necessary signalling required to obtain a working channel. When the signalling is successfully completed the *"BSY"* flag lights and the proper DTMF tones will be sent and heard at the speaker.

The radio is out of range or the radio is inoperative when the signalling is unsuccessful, the *"NO"* and *"SV"* indicators are illuminated and a sequence of five beeps are heard at the speaker. Any subsequent attempt to initiate a call within the next 20 seconds will be ignored. The radio can be cleared from this mode by double clicking the SHFT/CLR button.
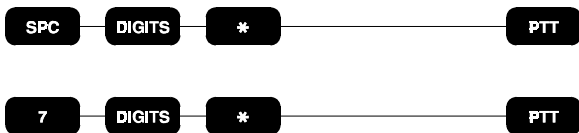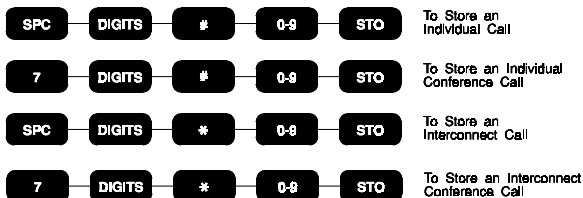
All channels are busy when the signalling is unsuccessful and a one second low frequency tone is heard at the speaker. The call will not be retried automatically.

> *If the "Call Retry" option is active, the radio will try the channel at twenty second intervals for five minutes before returning to the normal System/Group display.*

5. *When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.*

6. *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal system/group display.*

Storing Individual And Interconnect Numbers

SPC	DIGITS	#	0-9	STO	To Store an Individual Call
7	DIGITS	#	0-9	STO	To Store an Individual Conference Call
SPC	DIGITS	*	0-9	STO	To Store an Interconnect Call
7	DIGITS	*	0-9	STO	To Store an Interconnect Conference Call

1. *Press the **SPC** key to put the radio into Special Call mode. or "7" to put the radio into Conference Call mode. The SYStem field will display **"SP"** and the GRP (Group) field will display the last accessed call number from the preprogrammed Special Call selection or will be blank if no Special Calls are programmed for this area. If the radio was put into Special Call mode the "S" and "PC" icons will be illuminated and if the radio was put into Conference Call mode the icons will be off.*

2. *Enter the tone set (individual call) or telephone number to be stored. The first digit entered will cause the System display and the 10's digit in the Group field to blank. The last digit entered will always be displayed in the 1's digit of the Group field. Any previously entered digits will scroll left. Only four characters will be visible at a time with the leading character scrolling off the display upon each new key entry.*

NOTE

*To recall the last individual or interconnect number entered manually from the key pad, press and hold the **SHFT/CLR** button and then press the **RCL** key.*

---

3.   *Complete the entry by pressing the # key for individual calls and the * key for telephone interconnect calls. The # key indicates the digits entered are for an individual call and * key indicates the digits are for an interconnect call. They will not be displayed but a tone will sound.*

4.   *Enter a digit between 0 and 9 to select a storage location. The storage location will not be displayed, but a tone will sound. There are 10 storage locations for individual numbers and 10 storage locations for interconnect numbers.*

5.   *Press the **STO** key (shifted *) to complete the storage procedure.*

6.   *Double click the **SHIFT/CLR** button to exit the Special Call mode and return to the normal System/Group display.*

Recalling Manually Stored Individual And Interconnect Numbers

SPC	#	0-9	RCL	PTT	To Recall and Place an Individual Call in Special Call Mode
7	#	0-9	RCL	PTT	To Recall and Place An Individual Call in Conference Call Mode
SPC	*	0-9	RCL	PTT	To Recall and Place an Interconnect Call in Special Call Mode
7	*	0-9	RCL	PTT	To Recall and Place an Interconnect Call in Conference Call Mode

1. *Press the SPC key to put the radio into Special Call mode to send the stored call using the programmed special call tone set, otherwise the call will be sent using the selected group tone set. Press the # key to recall the individual call list or the* key to recall the interconnect call list. The screen will blank and a tone will sound.*

2. *Enter the desired storage location number (0-9).*

3. *Press the __RCL__ (shifted #) key If the number is from the individual call list the last four digits of the tone set will be displayed. If the number is from the interconnect call list, the last four digits of the telephone number will be displayed.*

    If the memory location is blank the radio will sound a low pitch tone after the __RCL__ is pressed.

4. *__Individual__ - Once the desired individual call number is displayed , press and release the __PTT__ to initiate the call. The radio performs the necessary signalling required to obtain a working channel.*

    __Interconnect__ - Once the desired interconnect special call number is displayed,, press and release the __PTT__ to initiate the call. The radio performs the necessary signalling required to obtain a working channel.

5. *__Individual__ - When the signalling is successfully completed the __"BSY"__ flag turns on and the Call Originate tones (three alert tone) sound. Press the __PTT__ bar and speak directly into the microphone. Release the __PTT__ bar as soon as you stop talking and wait for a reply.*

    __Interconnect__ - When the signalling is successfully completed the __"BSY"__ flag turns on and the proper DTMF tones will be sent and heard at the speaker. When someone answers, press the __PTT__ bar and speak directly into the microphone. Release the __PTT__ bar as soon as you stop talking. Messages cannot be received when the __PTT__ bar is pressed.

6. *The radio is out of range or the radio is inoperative when the signalling is unsuccessful, the __"NO"__ and __"SV"__ indicators are illuminated and a sequence of five beeps are heard at the speaker. Any subsequent attempt to initiate a call within the next 20 seconds will be ignored. The radio can be cleared from this mode by double clicking the SHFT/CLR button.*

All channels are busy when the signalling is unsuccessful and a one second low frequency tone is heard at the speaker. The call will not be retried automatically.

NOTE

If the "Call Retry" option is active, the radio will try the channel at twenty second intervals for five minutes before returning to the normal System/Group display.

7. *When the call is complete, double click the **SHIFT/CLR** button to exit the Special Call mode an return to the normal System/Group display.*
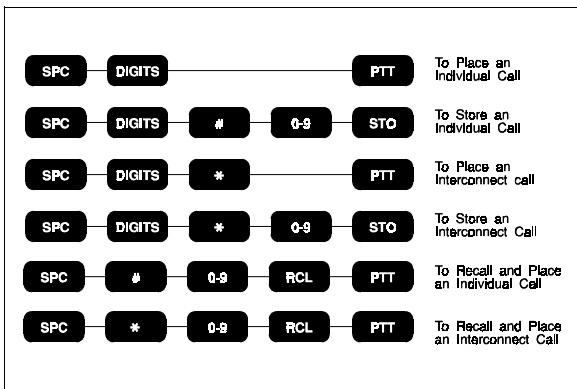

Figure 11 - GE-MARC Special Call Flowchart
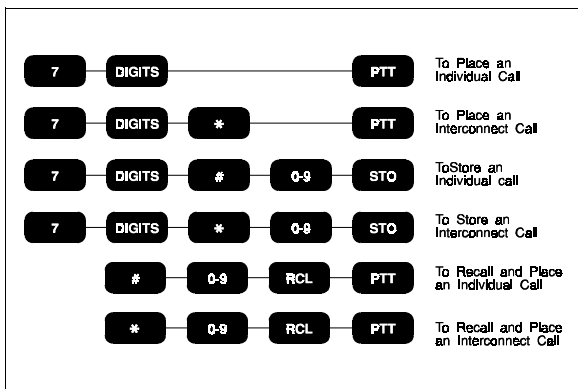
Figure 12 - GE-MARC Conference Call Flowchart

WIDE AREA SYSTEM SCAN

The Dual Format PCS™ radio operating within a GE-MARC system may be programmed to scan up to 20 channels from other GE-MARC systems. The radio will scan the channels in the selected system and if its programmed collect tone is not seen, then it will proceed to scan the channels of the systems in its wide area scan list. The group selection may change upon switching to the new system.

DIRECT MODE

The following section describes how to operate the radio within a Direct Mode System (radio-to-radio). Follow these procedures while operating on a Direct Mode channel.

Receiving A Message

1. Press the **SHIFT/CLR** button and then use the **SELECT** buttons ▲ or ▼ to select a Direct Mode System. The SYStem display will indicated the current System selected.

2. Use the **SELect** buttons ▲ or ▼ to select the desired Channel. The GRP icon will be surpressed, but the field will still display the current Channel selected. The radio is now ready to receive message.

3. Press the **SHIFT/CLR** button twice ("double click") to disable squelch and monitor the channel. Adjust the **VOLUME** buttons to the desired audio level.

4. When a message is received (and the correct Busy Tone signal is

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NOTE

Pressing the **SHIFT/CLR** twice ("double click") to monitor the channel, may affect Busy Tone signalling if programmed for the selected channel.

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decoded, if programmed and enabled) the receiver will unsquelch and the message will be heard.

SENDING A MESSAGE

1. Turn the radio on and set the desired System and Channel as described in the previous section.

2. Ensure no one is transmitting on the selected channel by pressing the **SHIFT/CLR** button twice ("double click") and/or observing the display for the absence of the "**BSY**" indicator to ensure that no one is transmitting on the selected Channel.

3. Holding the radio about 3 inches from your mouth, press the **PTT** bar and speak as you would normally into the microphone.

4. Release the **PTT** bar when the transmission is complete and listen for any reply.

SENDING A MANUALLY ENTERED INTERCONNECT CALL

1.	Select a channel in your radio system that has telephone interconnect capability. The radio should be programmed for DTMF operation on this channel.

2.	Press and hold the **PTT** bar to key the transmitter.

3.	While holding the **PTT** bar, press either the * key or the # key as required by the radio system to obtain a telephone line. The radio will transmit the selected tone.

4.	Release the **PTT** bar and listen for a dial tone. When the dial tone is received, press and hold the **PTT** bar and enter the desired telephone number. As you enter each digit, the DTMF sidetone will be heard in the speaker as the radio transmits the DTMF tone.

5.	After all the digits have been keyed in, release the **PTT** bar.

6.	When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.

7.	At the completion of the call, press and hold the **PTT** bar and then enter the * or # key as the telephone interconnect system requires. Release the **PTT** bar.

SCAN OPERATION

Enable/Disable SCAN

To enter Channel scanning, press and release the **SCAN** key. The "**SCN**" icon will illuminate to indicate scan is active. When scan is on, press and release the **SCAN** key to disable scan operation. The "**SCN**" icon will be extinguished when scan is turned off.

Add/Delete Channels

Channels can be added or deleted from the scan list as necessary. To add channels to the scan list:

1. *Select the desired channel to be added. If the current channel is already included in the scan list, the "S" icon will be illuminated.*

NOTE

Scan must be disabled to add a channel to the scan list.

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2. *To add the channel to the scan list, press the **SHIFT/CLR** key and then press the **SCAN** key. The "S" icon will illuminate and the channel will be included.*

To delete Channels from the scan list:

1. *Select the desired channel to be deleted. If the current channel is already included in the scan list, the "S" icon will be illuminated.*

2. *To delete the channel from the scan list, press the **SHIFT/CLR** button and then press the **SCAN** key. The "S" icon will turn off and the channel will be removed from the scan list.*

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CONVENTIONAL MODE OPERATION

The procedures in the following section describes Conventional Mode operation. Each conventional channel may be programmed with one or more features such as Channel Guard or telephone interconnect capability. Follow these procedures if operating in a conventional system.

RECEIVING A MESSAGE

1. *Turn the radio on by sliding the ON/OFF switch on the battery pack, to the **ON** position. A yellow area will be visible on the battery. After the radio has passed the power-up self test an optional tone will sound and the current System and Group/Channel will be displayed. If the unit does not pass the test, the display will be blank.*

2. *Press the **SHIFT/CLR** button and then use the **SELECT** buttons ▲ or ▼ to select a Conventional system. The SYStem display will indicate the current System selected.*

3. *Use the **SELECT** buttons ▲ or ▼ to select the desired Channel. The GRP icon will be surpressed but the field will still display the channel. The radio is now ready to receive messages.*

4. *Press the **SHIFT/CLR** button twice ("double click") to disable squelch and monitor the channel. Adjust the **VOLUME** buttons to the desired audio level.*

5. *When a message is received (and the correct Channel Guard signal is decoded, if programmed and enabled) the receiver will unsquelch and the message will be heard.*

SENDING A MESSAGE

1. *Turn the radio on and set the desired System and Channel as described in the previous section.*

2. *Ensure no one is transmitting on the selected channel by pressing the* **SHIFT/CLR** *button twice ("double click") and/or observing the display for the absence of the* **"BSY"** *indicator to ensure that no one is transmitting on the selected Channel.*

3. *Holding the radio about 3 inches from your mouth, press the* **PTT** *bar and speak as you would normally into the microphone.*

4. *Release the* **PTT** *bar when the transmission is complete and listen for any reply.*

SQUELCH ADJUSTMENT

In normal operation the squelch is automatically set by the radio and does not need adjusting. If it becomes necessary to adjust the squelch, the squelch may be adjusted using the following procedure:

NOTE

The radio must be on a Conventional System or an EDACS working Channel (i.e. receiving a voice call) to adjust the squelch. It is recommended to adjust squelch from a Conventional System.

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1. *Press and **hold** the* **SHFT/CLR** *button.*

2. *Use the* **VOLUME ▲** *or* **▼** *buttons to adjust the squelch. Pressing the* **VOLUME ▲** *will open the squelch and pressing the* **VOLUME ▼** *will close the squelch.*

SENDING A MANUALLY ENTERED INTERCONNECT CALL

1. *Select a channel in your radio system that has telephone interconnect capability. The radio should be programmed for DTMF operation on this channel.*

2. Press and hold the **PTT** bar to key the transmitter.

3. While holding the **PTT** bar, press either the ***** key or the **#** key as required by the radio system to obtain a telephone line. The radio will transmit the selected tone.

4. Release the **PTT** bar and listen for a dial tone. When the dial tone is received, press and hold the **PTT** bar and enter the desired telephone number. As you enter each digit, the DTMF sidetone will be heard in the speaker as the radio transmits the DTMF tone.

5. After all the digits have been keyed in, release the **PTT** bar.

6. When someone answers, press the **PTT** bar and speak directly into the microphone. Release the **PTT** bar as soon as you stop talking. Messages cannot be received when the **PTT** bar is pressed.

7. At the completion of the call, press and hold the **PTT** bar and then enter the ***** or **#** key as the telephone interconnect system requires. Release the **PTT** bar.

SCAN OPERATION

Enable/Disable SCAN

To enable Channel scanning, press and release the **SCAN** key. The "**SCN**" icon will illuminate to indicate scan is active. When scan is on, press and release the **SCAN** key to disable scan operation. The "**SCN**" icon will be extinguished when scan is turned off.

Add/Delete Channels

Channels can be added or deleted from the scan list as necessary. To add channels to the scan list:

NOTE

Scan must be disabled to add a channel to the scan list.

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1. Select the desired channel to be added. If the current channel is already included in the scan list, the "**S**" icon will be illuminated.

2. To add the channel to the scan list, press the **SHIFT/CLR** key and then press the **SCAN** key. The "**S**" icon will illuminate and the channel will be included.

To delete Channels from the scan list:

1. Select the desired channel to be deleted. If the current channel is already included in the scan list, the "**S**" icon will be illuminated.

2. To delete the channel from the scan list, press the **SHIFT/CLR** button and then press the **SCAN** key. The "**S**" icon will turn off and the channel will be removed from the scan list.

OPERATOR'S RADIO SETUP

RADIO TYPE: _____

FREQUENCY BAND: _____

OPERATOR'S NAME: _____

EMERGENCY GROUP: _____

SYSTEM NUMBER	SYSTEM NAME	TRK/CNV	GRP/CHN NUMBER	GRP/CHN NAME	USE

SYSTEM NUMBER	SYSTEM NAME	TRK/CNV	GRP/CHN NUMBER	GRP/CHN NAME	USE

WARRANTY

A. Ericsson Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that Equipment manufactured by Seller shall be free from defects in material, workmanship and title, and shall conform to its published specifications. With respect to any Equipment not manufactured by Seller (except for integral parts of Seller's Equipment to which the warranties set forth above shall apply). Seller gives no warranty, and only the warranty, if any, given by the manufacturer shall apply. Batteries are excluded from this warranty but are warranted under a separate Nickel-Cadmium Battery Warranty.

B. Seller's obligations set forth in Paragraph C below shall apply only to failures to meet the above warranties (except as to title) occurring within the following periods of time from date of sale to the Buyer and are conditioned on Buyer's giving written notice to Seller within thirty (30) days of such occurrence:

　　1. for fuses, incandescent lamps, vacuum tubes and non-rechargeable batteries, operable on arrival only.

　　2. for parts and accessories (except as noted in B.1) sold by Seller's Service Parts Operation, ninety (90) days.

　　3. for all other Equipment of Seller's manufacture, one (1) year.

C. If any Equipment fails to meet the foregoing warranties, Seller shall correct the failure at its option (i) by repairing any defective or damaged part or parts thereof, or (ii) by making available at Seller's factory any necessary repaired or replacement parts. Any repaired or replacement part furnished hereunder shall be warranted for the remainder of the warranty period of the Equipment in which it is installed. Where such failure cannot be corrected by Seller's reasonable efforts, the parties will negotiate an equitable adjustment in price. Labor to perform warranty service will be provided at no change only for the Equipment covered under Paragraph B.3, and only during the first three (3) months following the date of sale to the Buyer. Thereafter, labor will be charged at prevailing rates. To be eligible for no-charge labor, service must be performed by an Authorized Service Center or other Servicer approved for these purposes either at its place of business during normal business hours, for mobile or personal equipment, or at the Buyer's location, for fixed location equipment. Service on fixed location equipment more than thirty (30) miles from the Service Center or other approved Servicer's place of business will include a charge for transportation. Equipment located off-shore is not eligible for no-charge labor.

D. Seller's obligations under Paragraph C shall not apply to any Equipment, or part thereof, which (i) has been modified or otherwise altered other than pursuant to Seller's written instructions or written approval or, (ii) is normally consumed in operation or, (iii) has a normal life inherently shorter than the warranty periods specified in Paragraph B, or (iv) is not properly stored, installed, used, maintained or repaired or, (v) has been subjected to any other kind of misuse or detrimental exposure, or has been involved in an accident.

E. The preceding paragraphs set forth the exclusive remedies for claims (except as to title) based upon defects in or nonconformity of the Equipment, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether oral, written, expressed, implied or statutory. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FIT-NESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEM-PLARY DAMAGES.

This warranty applies only within the United States.
1-800-528-7711 (Outside USA, 804-528-7711).

ECX-362S

EMERGENCY NUMBERS

Police

State Police

Fire

Poison Control

Ambulance

Life Saving and
Rescue Squad