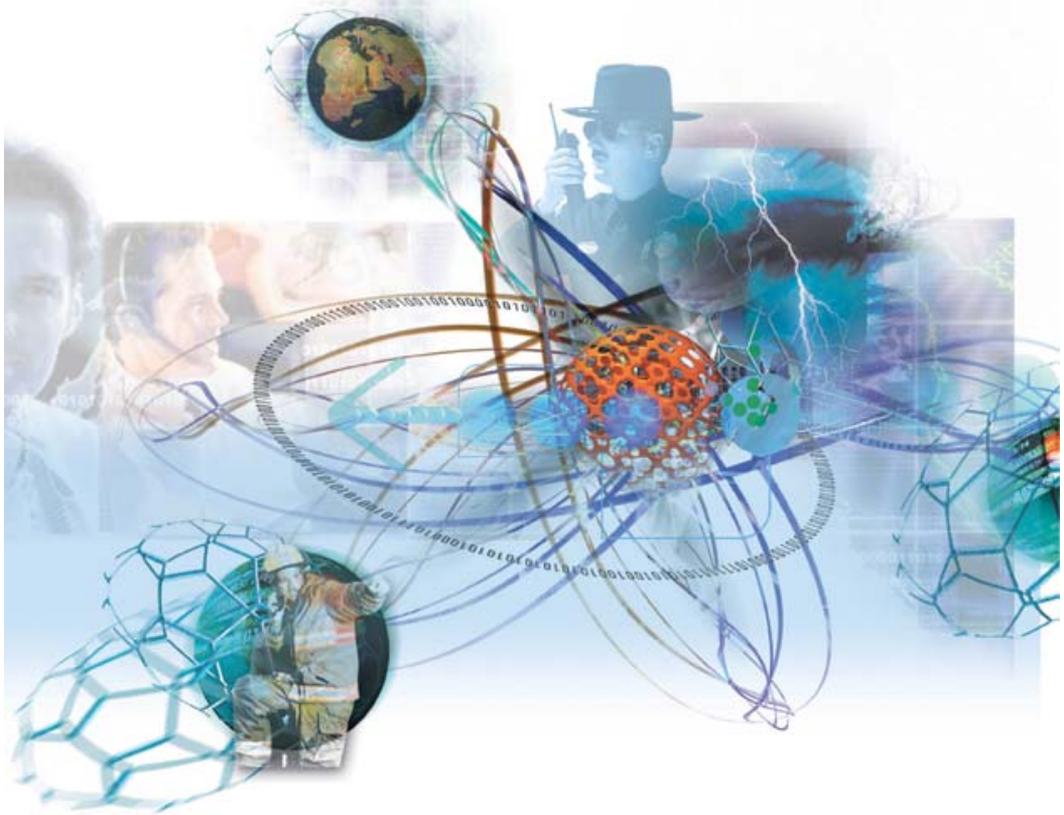


Programming Guide

MS102518V1

Rev. U, Jun-05

future
The Future of Mobile Radio



MASTR® IIe & III
Control Shelf

TQS3353

tyco
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MACOM

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TABLE OF CONTENTS

CHAPTER 1 BEFORE YOU BEGIN	1-1
ABOUT THIS MANUAL	1-1
IMPORTANT TERMS	1-3
HOW TO USE WORK SHEETS	1-4
HOW SCREENS WORK	1-5
SCREEN/WINDOW LAYOUT	1-6
USING THE KEYBOARD	1-12
Function Keys	1-13
Character Keys	1-16
Editing Keys	1-16
Movement Keys	1-18
Special Usage Keys	1-19
CHAPTER 2 INSTALLATION	2-1
UNPACKING	2-1
PROGRAMMING SOFTWARE REQUIREMENTS	2-1
SYSTEM HOOK-UP	2-1
Installation	2-3
Starting The Application	2-4
CHAPTER 3 GETTING STARTED	3-1
CHAPTER 4 RUNNING THE PROGRAM	4-1
INITIALIZATION	4-1
SETTING UP THE PROGRAM	4-4
Station Control	4-4
CREATE A PERSONALITY	4-6
Simulcast Data Screen	4-6
Trunked Data Screen	4-15
System Alarm Options	4-25
Multiple Receiver Data Screen	4-29
Potentiometer Settings (Multiple Receiver)	4-32
Control Shelf Options (Multiple Receiver)	4-34
Remote DTMF Options	4-39

MS102518V1, Rev. U

Select GETC Reset	4-41
Channel Data Screen	4-42
PTT Options	4-58
Potentiometer Settings	4-60
Text Window	4-67
Morse Code Options	4-69
Control Shelf Options	4-75
Scan Options Window	4-93
DC Remote Options	4-98
Tone Remote Options	4-106
DTMF Options	4-115
Tone Remote Timers	4-119
Programming the Radio Within the Change	4-123
Saving a Personality	4-124
CHANGE/EDIT A PERSONALITY	4-126
PROGRAMMING THE PERSONALITY INTO	
THE RADIO	4-127
READING THE PERSONALITY OUT OF	
THE RADIO	4-129
SELECTING ROM DEFAULTS	4-131
VHF TX AND RX SYNTHESIZERS	4-132
CHAPTER 5 USING THE UTILITIES	5-1
UTILITY WINDOW	5-1
CHANGING THE COMMUNICATIONS PORT	5-3
CHANGE DIRECTORIES	5-5
DELETE PERSONALITY	5-7
PRINT PERSONALITY	5-9
CHANGE EXTENSIONS	5-12
CHAPTER 6 WHEN PROBLEMS ARISE	6-1

APPENDICES

APPENDIX A GLOSSARY A-1

APPENDIX B FUNCTION KEYS B-1

APPENDIX C ACCEPTABLE VALUES C-1

APPENDIX D PRIMARY & EQUIVALENT
DIGITAL CODES D-1

APPENDIX E CHANNEL GUARD TONE
FREQUENCIES E-1

APPENDIX F WORK SHEETS F-1

INTRODUCTION

M/A-COM, Inc. welcomes you to the world of mobile communications. We believe there is no equal to our products and have made a commitment to our customers to ensure that product satisfaction and reliable service is our number one priority.

Quality built and dependable, the Control Shelf is designed with your radio needs in mind. An unparalleled level of flexibility and user friendliness is present.

To support you in programming the MASTR IIe/III Control Shelf, this manual will cover:

- the steps necessary to install the program,
- the procedures to actually program the personality,
- answers to some of your questions.

Whether you are a technician experienced in programming radios or a first time radio programmer, this manual has been written to give you a clear and concise understanding of programming for this equipment.

CHAPTER 1

BEFORE YOU BEGIN

ABOUT THIS MANUAL

This manual is designed to present you with all the necessary information required to connect the MASTR IIe/III Control Shelf to the computer and program the control shelf with a unique personality.

It is organized to support you in programming any MASTR IIe/III Control Shelf and will cover:

- the steps necessary to install the program.
- the procedures to actually program the control shelf.
- explanations of error messages.

Chapter 1 - provides information you will need to know prior to running the software. It describes keyboard layout, commonly used terms, and screen/window functionality.

Chapter 2 - contains a list of the contents of this package and instructions for installing the software.

Chapter 3 - is a tutorial that will lead you through the basic operations of the MASTR IIe/III Control Shelf Programmer. If you are not familiar with programming procedures, it is recommended that you take the time to complete the tutorial.

Chapter 4 - will instruct you in the creation of a MASTR IIe/III Control Shelf personality. The purpose of each screen/window is discussed, and the available function keys are described.

Chapter 5 - provides you with instructions on file management options such as changing directories, changing file extensions, and deleting files.

Chapter 6 - is devoted to problem solving. It identifies some of the error messages that you might encounter and provides solutions and alternatives for them.

Appendices - The Appendices contain the following reference materials:

- A. Glossary - Definitions of frequently used words.
- B. Function Keys - A listing of what function keys you will run across and a definition of what function the key will perform.
- C. Acceptable Values - A range of values the MASTR IIe/III programmer will accept for a specific field.
- D. Primary & Equivalent Digital Codes - A table indicating usable Digital Channel Guard codes.
- E. Channel Guard Tone Frequencies - A table indicating standard EIA Channel Guard tone frequencies.
- F. Work sheets - Prepared forms to assist you in organizing data prior to entering it in the program.

Screen diagrams are used throughout this manual to help clarify section discussions. Each item being discussed is denoted by a number for easy identification.

Occasionally, the information describing programming procedures will only pertain to a particular MASTR IIe/III control station. When an entire section is devoted to only one or two types of control stations, a NOTE will indicate such at the beginning of the section. When a particular field does not apply to a specific MASTR IIe/III setup, the field description will explain which type of control station is not affected.

Please pay particular attention to NOTES as they contain important information.

IMPORTANT TERMS

Default Value - The MASTR IIe/III Control Shelf Programming Software provides predetermined (default) values in a majority of the data entry fields within the program. Exceptions to this rule are fields requiring personality file names and transmit and receive Channel Guard values. The default values assume that the control shelf will be used without optional features. Before changing these default values, we recommend that you be familiar with the operational implications of adding a particular feature or option to the control shelf being programmed.

Error Messages - Each time data is entered in the program a validity check is made to ensure that reasonable values were entered. In the event that the data does not fall within the acceptable range of values, an error message will be displayed in the center of the screen indicating such.

Field - Refers to the area of the screen/window which allows data entry. When moving the cursor across the screen, this area is readily identifiable by a reverse video bar.

Help - Throughout the MASTR IIe/III Control Shelf Programmer, "Help" denotes or refers to on-line assistance. This can be accessed by pressing the **F9 Help** key from any field or **Shift F9 Help** from any window.

Personality - Used generically to refer to information that is stored in the control shelf that makes a control station perform differently from other control stations. This information can be created, deleted, modified, and stored on a disk for later use or reference.

Prompt Line - Text located in the bottom of a window that changes as the cursor moves from field to field; it provides directions for entering data.

HOW TO USE WORK SHEETS

Work sheets can be found in Appendix F. They are pre-printed forms to assist you in organizing personality information prior to the actual programming of the control shelf. You are encouraged to make copies of these work sheets and fill them in before beginning programming. Doing so can prevent costly and time consuming mistakes. These work sheets can then also be used for future reference.

Empty blocks in the work sheets are provided for you to fill in the desired values. Blocks with information already typed in represent toggle fields in the program where the appropriate response should be circled.

Control Station - Work Sheets A1 and A2 in the Work Sheet Folder. These work sheets will assist you in defining the control station type and frequency capacity. Work Sheet A1 allows you to define default values associated with each newly created personality. Work Sheet A2 allows you to define control station type and frequency capacity associated with a selected personality only.

Channel Data - Work Sheet B in the Work Sheet Folder. This work sheet will assist you in defining the control shelf personality for the selected station control. This work sheet allows you to define transmit and receive Channel Guard settings, determine values for the carrier control timer and drop out delay timer, and set squelch tail elimination, repeater, and oscillator shift functionality.

PTT Options - Work Sheet C in the Work Sheet Folder. This work sheet allows you to identify which push-to-talk options are to be enabled on the control shelf.

Potentiometer Settings - Work Sheet D in the Work Sheet Folder. This work sheet allows you to determine desired potentiometer settings previous to personality programming.

Morse Code Options - Work Sheet E in the Work Sheet Folder. This work sheet allows you to define options associated with morse code operation relating to the current personality.

Control Shelf Options - Work Sheets F1 and F2 in the Work Sheet Folder. These work sheets allow you to define additional options associated with the current personality when Tone Remote (Work Sheet F1) or DTMF (Work Sheet F2) is the selected control station type.

HOW SCREENS WORK

Each screen is divided into three areas: (1) screen title, (2) screen windows, and (3) active function keys. The title tells you where you are in the program hierarchy. Windows provide for input of data to the screen. Active function keys provide access to commands (or actions) available for a particular screen. The function key commands are labeled along the bottom of the screen. Only the labeled function keys are enabled.

A window is a section of a screen that displays previously stored information, enables programming alternatives, or accepts data currently being entered. There may be more than one window within a particular screen. Each window is outlined within the screen presentation.

There are two types of windows: active and passive. The active window is available for data entry or revision. The passive window is displayed but is unavailable for program execution. If windows have overlapping borders, the active window is presented in the foreground.

Like the screen, windows are divided into three distinct sections. They are: (1) window title, (2) work area, (3) prompt line. The window title describes the function currently being performed. The work area is the space provided for your input to the window. The prompt line is printed information in the lower portion of the window defining in further detail the action to be taken in the work area.

This program uses a series of screens to guide you through the programming of a control shelf. There are two major categories of data entry screens:

- Current Personalities Screen
- Channel Data Screen

Current Personalities Screen - The Current Personalities Screen lists the file names of all stored control shelf personalities presently maintained in this directory. From this screen you can create a new personality (file) or make changes to existing personalities. You then have the option of initiating one of the actions indicated by the function keys at the bottom of the screen.

Channel Data Screen - Data defining the control shelf personality is entered into the Channel Data Screen which can be accessed from the Current Personalities Screen by pressing **F2 Change** or **F4 New**. Within this screen you can define the operational characteristics of the unit. This includes Channel Guard frequencies, PTT options, and special control shelf options.

SCREEN/WINDOW LAYOUT

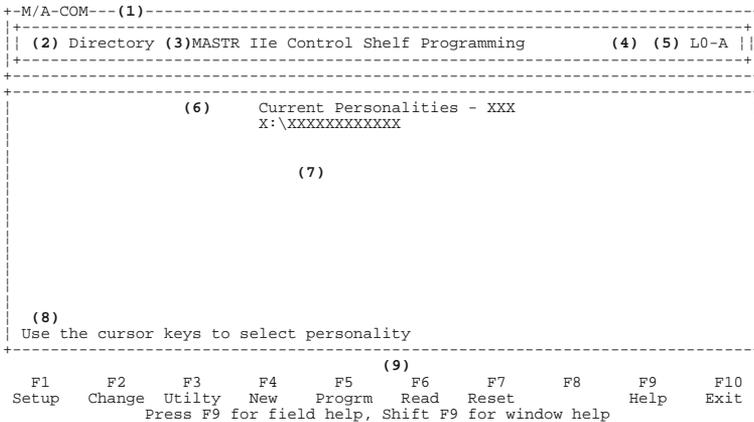


Figure 1-1 - Screen/Window Layout

- | | |
|---------------------|--------------------------------------|
| (1) Division | - indicates M/A-COM division |
| (2) Function | - indicates current function |
| (3) Product Title | - identifies product |
| (4) Level Indicator | - screen/window location in software |
| (5) Title | - screen/window title |
| (6) Work Area | - screen/window field area |
| (7) Prompt Line | - current field instruction line |
| (8) Function Keys | - provides programming options |

All screens and windows will have some basic fields that are consistent throughout this document. The overall layout will be the same as shown in Figure 1-1.

Division (1) The **M/A-COM, Inc.** field indicates the MASTR IIe/III Control Shelf manufacturer.

This is a "Display Only" field which is always displayed at the top of the screen.

Function (2) The **Function** field is used to indicate which programming function is currently active.

This is a "Display Only" field.

Product Title (3) The **Product Title** field is used to specify the product name and will identify which type of control shelf in the program it is intended to be used with.

This is a "Display Only" field which is always displayed in the screen title.

Level Indicator (4) The **Level Indicator** field is used to indicate the screen/window location in the program.

This is a "Display Only" field indicating the current hierarchy level within the program.

(5) Current Personalities - XXX
X:\XXXXXXXXXXXXXX

(6)

Window Title (5) The **Window Title** field is used to indicate the title of a particular screen/window.

This is a "Display Only" field consistently displayed at the top of each window. This field will vary to indicate which window is being displayed.

Work Area (6) The **Work Area** is the area of a screen or window where input fields are defined. Each window is unique in its available fields and each of these fields are identified in the window descriptions.

Entry to these fields will be determined by the purpose and content of each window. In most windows, you can move between fields by using the arrow keys, **Home** and **End** keys, **TAB** and **<enter>** keys. Within a field you can use the arrow keys, space bar, **Delete Backspace**, **Ctrl Backspace**, and alphanumeric keys. Sometimes the field will be toggle only where the **TAB** key is the only active key in the field and the **<enter>** key will move you between fields. Normal cursor progression is usually left to right, top to bottom.

NOTE

Throughout this document, the terms screen and window are used interchangeably.

Prompt Line (7) The **Prompt Line** field is used to guide you in the proper course of action for a particular screen/window.

This is a "Display Only" field displayed at the bottom of a window. As you move from field to field, the prompt line will direct you for input in the particular field.

Function Keys (8) The **Function Keys** are used to provide access to other options pertaining to the screen/window currently being displayed.

Pressing the desired function key will cause the program to perform the indicated function for that particular key. A brief description of the operational function keys follow each window definition.

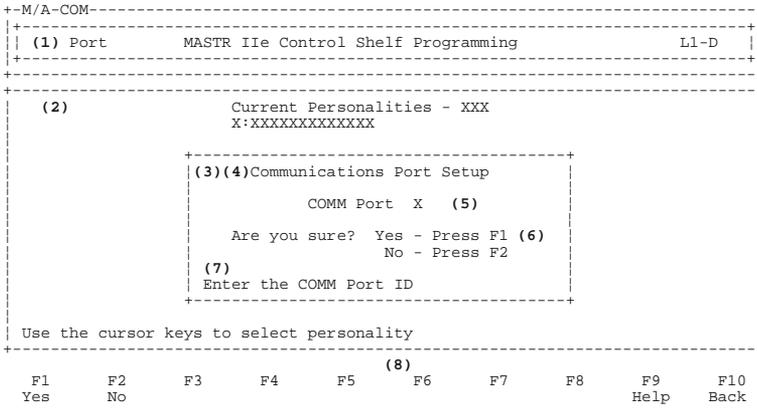


Figure 1-2 - "Pop-Up" Window

- (1) Function - indicates current function
- (2) Main - indicates the main screen/window
- (3) Pop-up - indicates pop-up window
- (4) Title - window title
- (5) Work Area - area for specific field(s)
- (6) Continue Prompt - continue or abort option
- (7) Prompt Line - current field instruction line
- (8) Function Keys - provides programming options

Occasionally, a screen or window will have a subordinate window that performs related functions. This window will be smaller in size and is referred to as a "pop-up" window. Figure 1-2 illustrates a "pop-up" window overlying a main screen. The double border identifies the "pop-up" window as being active and all data entry occurs within this window. Pressing **F10 Back** will always return you to the original window.

Main (2) The **Main Screen/Window** is shown as a backdrop to the preceding "pop-up" window.

To return to this screen, you must press the **F10 Back** function key.

Pop-up (3) The "**Pop-Up**" **Window** is shown as the front window. This window is laid out the in the same manner as the main window. The title is displayed at the top, fields are in the center and, where appropriate, the prompt line is displayed in the lower left corner.

Access is granted to this window as it is displayed.

Continue Prompt (6) The **Continue Prompt** field allows you to continue with a selection or exit.

By pressing **F1 Yes**, the field selection will be confirmed and the programmer will continue with the operation selected. Selecting **F2 No** indicates that the operation should not be performed and will return you to the previous window.

USING THE KEYBOARD

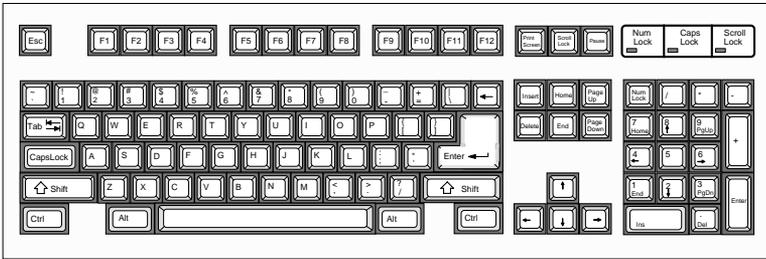


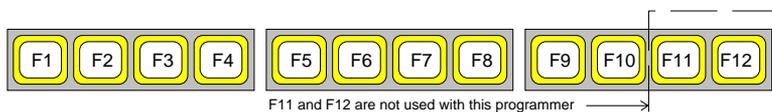
Figure 1-3 - Keyboard

It is important that you be familiar with the keyboard of your computer system. Each keyboard is different in relation to the placement of some of the keys. In the PC Programming Software package there are the following operational categories of keys:

- Function
- Character
- Editing
- Movement
- Special Usage

The following sections give an overview of which keys are included in these categories and what their uses are. However, in some screens, such as the Current Personalities Screen, only the use of cursor keys is allowed because selection operation is all that is needed.

Function Keys



The purpose of a particular function key is dependent upon which screen or window is currently active at any given point in the program. In other words, a function key may be labeled differently from one screen or window to the next. Be sure that you fully understand the purpose of any function key prior to pressing it. The command or action associated with a particular function key is labeled on the lower portion of your screen. There are two types of function keys: Inactive and Active.

Inactive function keys have no operational function during the execution of a given screen and are not labeled.

Active function keys are labeled with a key word denoting the type of action it will initiate. These keys perform specific functions, depending upon which screen/window they appear in. The following Function Key Table represents their functionality in the MASTR IIe/III Control Shelf Programming Software.

FUNCTION KEY TABLE

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
A.	Setup	Change	Utility	New	Progrm	Read	Reset		Help	Exit
B.							Capcty		Help	Back
C.	Port	Maint	Dir		Delete	Print	Ext		Help	Back
D.	Statn	PTTs	Pots	Text	Progrm	Morse	Option		Help	Back
E.	Statn	PTTs	Pots	Text	Progrm	Morse	Option	More	Help	Back
F.		Insert	Remove		Copy	Global		More	Help	Back
G.	Statn	PTTs	Pots	Text	Progrm	Morse			Help	Back
H.	Statn	PTTs	Pots	Text	Progrm	Morse	Remote		Help	Back
I.	Statn	PTTs	Pots	Text	Progrm	Morse	DTMF		Help	Back
J.	Yes	No							Help	Back
K.									Help	Back

- A. Current Personalities Screen
- B. Control Station Window
- C. Utility Window
- D. Channel Data Screen (for Control Stations with the Frequency Capacity set to 1)
- E. Channel Data Screens (for Control Stations with the Frequency Capacity set to 2, 3, or 4)
- F. Channel Data "More" Screen (for Control Stations with the Frequency Capacity set to 2, 3, or 4)
- G. Control Shelf Options Window (for Repeater, DC Remote, or T90 Control Stations with the Frequency Capacity set to 1)

- H. Control Shelf Options Window (for Tone Remote Control Stations)
- I. Control Shelf Options Window (for DTMF Control Stations)
- J. Program Radio Windows, Copy Channel Window (for Control Stations with the Frequency Capacity set to 2, 3, or 4), Save Personality Window, Change/edit File Window, Read Radio into File Window, Select ROM Defaults Window, Print Personality Window, Change Extension Window
- K. PTT Options (Windows), Potentiometer Settings Windows, Text Windows, Morse Code Options Windows, DC Remote Control Options Window, Remote Control Options Window (for Tone Remote Control Stations), DTMF Options Window (for DTMF Control Stations)

NOTE

The "More" function is available **ONLY** when the current personality is of Control Station type Repeater, DC Remote, Tone Remote, or DTMF with a Frequency Capacity value greater than 1.

Editing keys manipulate the data within a field. These keys are:

Left and Right Arrows: Each time one of these arrows is pressed it moves the cursor one character to the left or right until the left or right most position is reached.

Backspace: As the cursor moves to the left the character immediately to the left of the cursor is deleted.

Insert: This key toggles the insert operation on and off. The insert operation enables you to insert a character or a string of characters without overwriting any previously typed information.

Delete: This key enables you to delete a character or a string of characters.

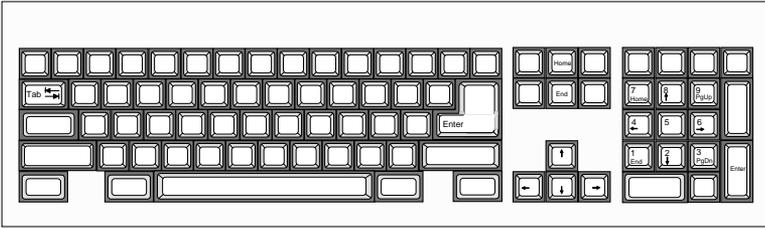
Shift/Caps Lock: Enabled, the Shift and Caps Lock key writes all alphabetic characters in capitalized letters.

Ctrl/Left Arrow: When both keys are simultaneously pressed the cursor is moved to the left most character in the field.

Ctrl/Right Arrow: When both keys are simultaneously pressed the cursor is moved to the right most character in the field.

Ctrl Backspace: By simultaneously pressing both keys all characters to the left of the cursor are deleted.

Movement Keys



These keys enable the movement of cursor positioning on the screen. They are also used to indicate an end of input in the current field.

Enter: The data typed into the present field is accepted and cursor is advanced to the next field.

Up Arrow: The data typed into the present field is accepted and the cursor is returned to the previous field.

Down Arrow: The data typed into the present field is accepted and the cursor is advanced to the next field.

Home: Moves the cursor to the first field in the window.

End: Moves the cursor to the final field in the window.

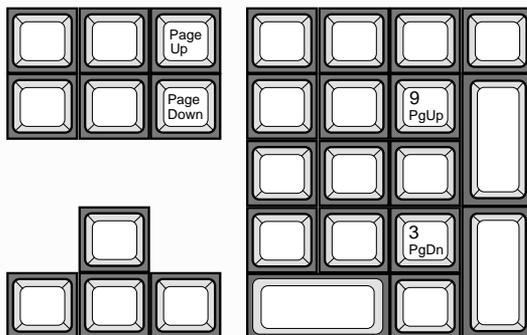
Tab: Toggles a predetermined field between selections such as "yes" and "no". May also move the cursor into the next field.

Shift/Tab: Like the Tab key, pressing the Shift and Tab keys simultaneously toggles a predetermined field between selections, but in this case it toggles in the opposite direction.

Delete: Erases or deletes the character the cursor is presently on.

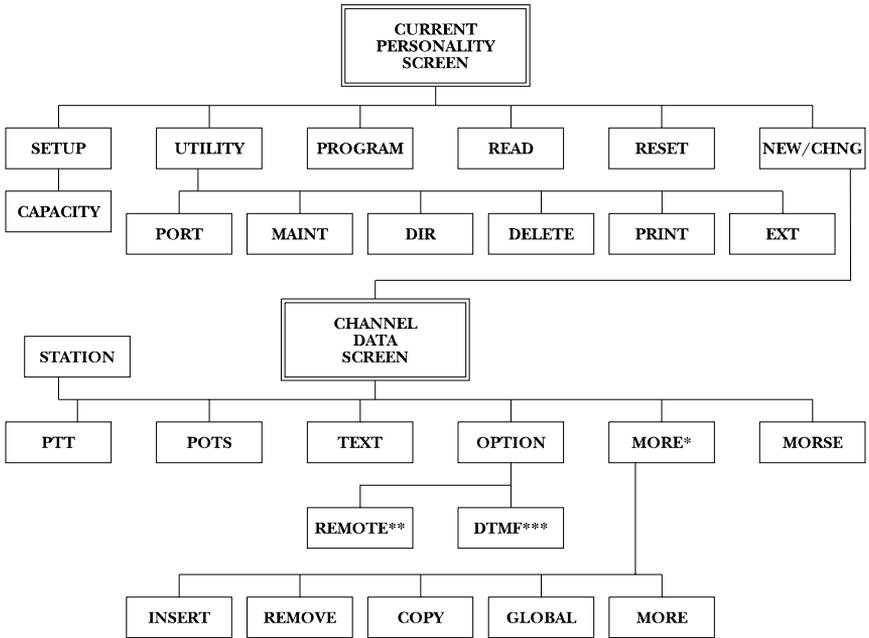
Special Usage Keys

Two keys are represented in this category:



Page Up (Pg Up): Is used to return you to a previous page in some of the windows. The screen will advance a page at a time until the starting page is presented.

Page Down (Pg Dn): Is used to take you to the following page in some of the windows. The screen will retreat a page at a time until the last page is reached.



* More functions are available only when Channel Capacity is greater than 1.

** Remote Option is available only when Station Control type is set to "Tone Remote".

*** DTMF Option is available only when Station Control type is set to "DTMF".

Figure 1-4 - MASTR IIe/III Control Shelf
Radio Programming Flow Chart

CHAPTER 2 INSTALLATION

UNPACKING

Upon unpacking this package you should be sure you have received the following:

- MASTR IIe/III Programmer(TQS3353), including:
 - One CD-ROM
 - One Programming Guide

PROGRAMMING SOFTWARE REQUIREMENTS

The following hardware and software is required to install the MASTR IIe/III Programmer

- A. A Windows NT 4.0 or later or Windows 2000 compatible PC:
 1. CD-ROM drive.
 2. 640K Internal RAM.
 3. Serial Port.
 4. Parallel Port (recommended) for connection to a printer.
- B. Special programming cable (TQ3356).
- C. MASTR IIe/III (TQS3353) Programmer installation CD.
- D. Printer (optional, but recommended).

SYSTEM HOOK-UP

Connect all peripheral equipment to your computer prior to configuring the MASTR IIe/III programming software items. Remem-

ber to refer to the operating manuals of each device for correct installation procedures.

If your system is already established, check to see that you have all the equipment necessary to execute the program. Isolate all cables connecting the computer to devices to prevent tangling, interference and damage.

Step One:

Refer to Figure 2-1, Programming System Hook-up, and then look at your computer to locate a serial port. This port will usually be located at the rear of the computer, however, since this is dependent upon the design of your computer, refer to the computer operator's manual for directions.

The PC supports up to two serial ports. There are two physical standards for the serial port configurations of personal computers. One standard is a 25 pin RS-232 output that has a DB-25 male connector at the computer. The other standard is a DB-9 male connector at the computer (used on the IBM-AT and many portable lap-top computers). The programming cable uses a standard RS-232, DB-9, female connector. If your computer uses a DB-25 adapter, you will need to purchase a DB-9/DB-25 interface cable from your local computer dealer.

Please note at this point that the MASTR IIc/III Programmer software only communicates with the control shelf through the cable connected to the serial port designated as COM1 or COM2. Your computer references will assist you in determining which serial port is which. Once located, examine the keyed plug on the RS-232 cable for the correct keyed end and insert it carefully into the appropriate serial port on the computer.

Step Two:

Connect the Programming Cable (TQ3356) as depicted in Figure 2-1. The programming cable is inserted into the receptacle on the back of the control shelf. Check carefully to ensure that the plug is fully seated in the receptacle and, if retaining screws are included, that they are carefully tightened to firmly hold the plug in place. Should the plug not seat correctly to its receptacle, remove the plug and examine the pins to determine if the proper plug was inserted and that the pins are aligned and undamaged. Damaged pins and broken connections will cause the programming software to fail.

Step Three:

Position the control shelf in a convenient place in your work area. In order to program the unit, you must first connect the control shelf to a DC power supply and turn it ON.

Installation

1. Insert the **MASTR IIe/III Programmer (TQS3353)** installation CD into the CD-ROM drive.
2. Select the **Start** button, then select **Programs, Accessories, Command Prompt**.
3. Type the corresponding CD-ROM drive letter, : (example: **D:**) and press **ENTER**.
4. Type **SETUP** and the letter of the drive where the MASTR IIe/ III Programmer will install (example: **SETUP C**).
5. The MASTR IIe/ III Programmer installer will display "COPY-ING FILES TO DRIVE x. Press ANY KEY TO CONTINUE" (x = selected drive letter) message, **press any key**.
6. The MASTR IIe/ III Programmer installer will display "PLEASE MODIFY BAT FILES m2e, m3 and mastrutl TO SPECIFY DRIVE x ON WHICH FILES ARE INSTALLED. PRESS ANY KEY TO END INSTALLATION." message, **press any key**.

7. Eject the MASTR IIe/III Programmer (TQS3353) installation CD.
8. Type **EXIT**, to close the Command Prompt.
9. If the drive selected for the copied files was the **C:** drive, proceed to the Starting The Application procedure. If the drive selected for the copied files was a drive other than the C: drive, use Windows Explorer to navigate to the **X:\ma-com** folder (X: is the drive letter selected in Step 4).
10. Right-click on the **M2E.BAT** file and select **Edit** from the menu.
11. In the M2E.BAT - Notepad file, replace all occurrences of **C:** with the drive letter specified in Step 4 (example: **D:**).
12. Repeat Steps 10 and 11 for the M3.BAT and MASTRUTL.BAT files.
13. Proceed to the Starting The Application procedure.

Starting The Application

1. To start the MASTR IIe Control Shelf Programmer, the MASTR III Control Shelf programmer or the MASTR Utility Programmer (TQ0619), open Windows Explorer, navigate the X:\ma-com folder (X: is the drive letter selected in Step 4 of the Installation procedure).
2. Double-click on the appropriate **.BAT** file.
 - M2E.BAT - MASTR IIe Control Shelf Programmer
 - M3.BAT - MASTR III Control Shelf Programmer
 - MASTRUTL.BAT - MASTR Utility Programmer (TQ0619)
3. Wait for the application to initialize.

NOTE

The MASTR Utility Programmer (TQ0619) Programming Guide is included on the MASTR IIe/III Programmer (TQS3353) installation CD. Insert the MASTR IIe/III Programmer (TQS3353) installation CD-ROM, navigate to the CD-ROM drive letter and double-click on the TQ0619.pdf file.

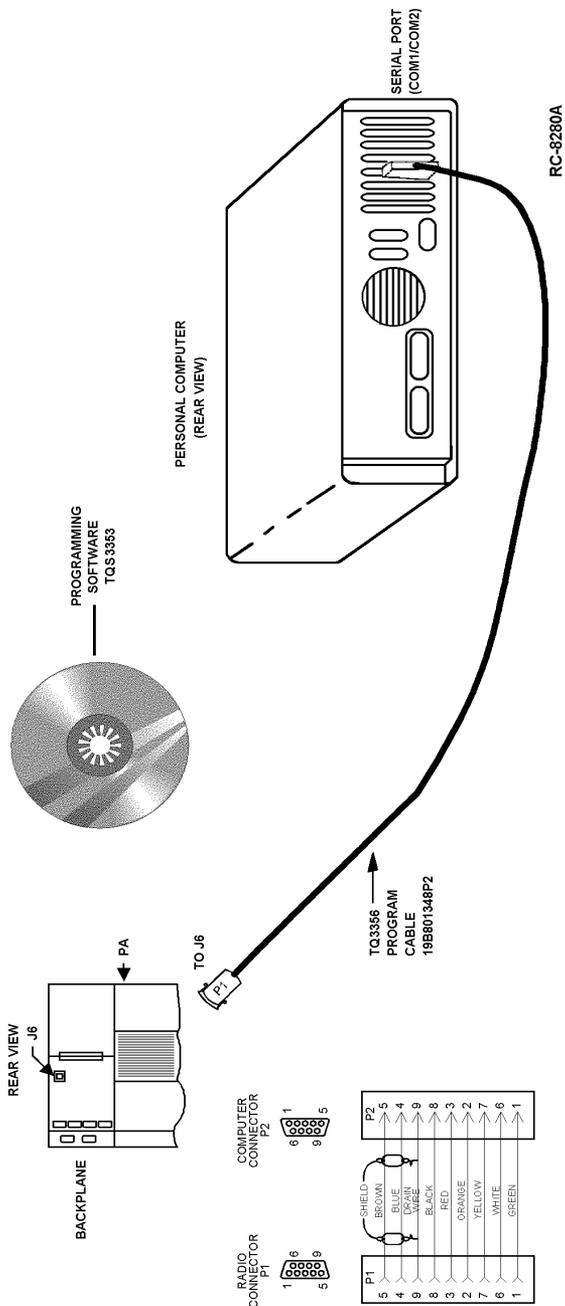


Figure 2-1 - Programming System Hook-up

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CHAPTER 3

GETTING STARTED

The following brief tutorial is designed to give you an understanding of how the program operates and to also give you some hands on experience before you begin actual programming. We encourage you to explore the program and view all screens and windows during this tutorial. If you need on-line assistance at any point in this program, press **F9 Help** and a help message for the field you are in will appear. You can also press **Shift F9 Help** and a help message regarding the window you are in will appear.

Before you start the tutorial, refer to your hardware set up and ensure that the control shelf has been set up according to the installation procedures in Chapter 2. Once the PC has been initialized, software installed and configured and the corresponding application selected and started, you are now ready to begin this tutorial.

When programming a control shelf, it is advised that you first fill out work sheets (located in Appendix F of this manual). The work sheets will assist you while you are programming the control shelf and serve as reference material should questions arise during control shelf operation. Work sheets for this tutorial have already been filled out and precede the window you will be working in.

From the Current Personalities Screen, press **F1 Setup**.

Before you can create a personality, the type of synthesizer (Old/New), the type of station control and number of channels (frequency capacity) must be selected. The Old synthesizer refers to the 19D902780 Transmit and 19D902781 Receive modules. The New synthesizer refers to the EA101685 Transmit and EA101684 Receive modules. Frequency capacity should be modified after first selecting the Synthesizer. For the purpose of this tutorial, we will demonstrate programming a DC Remote controlled station with a frequency capacity of 2.

Position your cursor on **DC Remote** and press the **F7 Chan+** key to toggle the Frequency Capacity field to 2.

MS102518V1, Rev. U

Press **F10 Back** to return to the Current Personalities Screen.

Press **F4 New** to enter the Channel Data Screen.

Reference the data entered in the following work sheet before continuing on with the tutorial.

APPENDIX F WORK SHEET FOLDER
Work Sheet B - Channel Data
Part 1

PERSONALITY **PERS1**

Circle the desired value or fill in blank fields where appropriate.

Station Control: **DC Remote** Number of Channels: **2**

CH	TRANSMIT CHANNEL GUARD	STE	CCT	DODT	RECEIVE CHANNEL GUARD
	74.4	Yes <input checked="" type="radio"/> No	180	4.90	74.4
		Yes No			

CH	CG LEVEL	CG POT	RF SIMPLEX	RPT	SCAN	AUX RF SIMPLEX
	<input checked="" type="radio"/> High Low	16	Yes <input checked="" type="radio"/> No	<input checked="" type="radio"/> Yes No	Yes No	Yes No
	High Low		Yes No	Yes No	Yes No	Yes No

The cursor should be on the Tx CG field. There are two types of Channel Guard decoding available for a MASTR IIe/III Control Shelf: digital and tone. Tone Channel Guard decoding is identified by the placement of a decimal point within the entered value. Available Tone Channel Guard codes are listed in Appendix E. Digital Channel Guard decoding is identified by the absence of a decimal point within the entered value. Available Digital Channel Guard codes are listed in Appendix D. This tutorial will use Tone Channel Guard codes.

Type **74.4** in the Tx CG field. Press **<enter>** to accept the value and advance to the STE (Squelch Tail Elimination) field.

When you entered the Tone Channel Guard in the Tx CG field, the STE field automatically defaulted to "Yes". Since your work sheet indicates you do not want the STE function, you must change the entry.

Using the **TAB** key as a toggle switch, change this field to display **No**. Press **<enter>** to accept the entry and advance to the CCT (Carrier Control Timer) field.

The CCT field allows you to specify the channel's carrier control time. This ensures that the transmitter will not continuously transmit beyond the indicated time. The work sheet indicates 180 as the setting. Since this is the program default for the CCT field, no entry is necessary at this time.

Press **<enter>** to accept the value of **180** and advance to the DODT (Drop Out Delay Timer) field.

The DODT field indicates the time the transmitter will stay keyed after the push-to-talk unkeys. This field is to be set at 4.9 seconds.

Type **4.9** in the DODT field. Press **<enter>** to advance to the Rx CG (Receive Channel Guard) field.

The Rx CG field is to be set at the same Tone Channel Guard decoding frequency as the Tx CG field.

Type **74.4** and press **<enter>**.

Once the receive Channel Guard has been set, the program allows you to select a slower or faster Channel Guard select time.

In the CG Lvl field, use the **TAB** key as a toggle switch and select **High**. Press **<enter>** to advance to the CG Pot (Channel Guard Potentiometer) field.

MS102518V1, Rev. U

The CG Pot setting is used to set the Channel Guard deviation level. The field is to be set at 16.

Type 16 into the CG Pot field. Press **<enter>** to advance to the RF Simplex field.

The RF Simplex is to be set according to the default value.

Press **<enter>** to advance into the Rpt (repeater) field.

The Rpt field allows you to specify whether or not this channel should act as a repeater.

Using the **TAB** key as a toggle switch, select **Yes**.

No selections were made in the work sheet for the Scan and Aux RF Simplex fields, because they are not required for this personality.

All of the required channel data has been entered for this control station. In the work sheet, no entries were made for Channel 2. For the purpose of this tutorial, the following instructions are to help you become more familiar with some of the functions available to you while defining the personality.

Press **F8 More** to display additional editing choices.

NOTE

The "More" function is displayed/available **ONLY** when the current personality being defined has a control station with a frequency capacity set to a value greater than one.

With the cursor in any of the fields in Channel 1, press **F2 Insert**.

All field values for Channel 1 now appear in Channel 2 and Channel 1 becomes an undefined channel.

Move the cursor into the Tx CG field of Channel 1, type **67.0** and press **<enter>**.

Now press **F3 Remove**.

Data for Channel 1 disappears and data for Channel 2 is moved back into Channel 1.

Because there is only one channel needed for this personality, we will change the frequency capacity to reflect one channel. To do this we will need to enter the Station Control Window, by going back to the Current Personalities Window and pressing **F1 Setup**.

With cursor set on the Synth. Part No field press Tab key to select the Synthesizer(Old/New). With the cursor highlighting the **DC Remote** field, toggle **F7 Chan+** to cause the Freq Capacity field to indicate **1**. Press **F10 Back**. Then **F4 New** to return to the previous screen.

There are option windows associated with the Channel Data Screen which we will briefly cover in the following portion of this tutorial.

The Option Windows associated with the Channel Data Screen are discussed briefly below. For the purpose of this tutorial, the field values in these windows should remain set according to their default value.

Press **F2 PTTs**.

The PTT Options Window allows the Carrier Control Timer, Drop Out Delay Timer, and Channel Guard Encode to be enabled, or disabled, for particular types of push-to-talk keys. Values can be changed by pressing the **TAB** and **<enter>** keys in the appropriate field.

Select **F10 Back** to return to the Channel Data Screen. Press **F3 Pots**.

This window allows you to determine potentiometer settings as detailed in Chapter 4. Take some time to look over the fields and read the associated helps to become somewhat familiar with their functions.

Select **F10 Back** to return to the Channel Data Screen. Press **F6 Morse**.

The Morse Code Options Window allows you to enter information for the morse code identification for the control station. When Morse Code is set to Disable, the station's Morse Code ID will not be transmitted. If it is set to Enabled, Morse Code options can be defined for each channel as desired.

Select **F10 Back** to return to the Channel Data Screen. Press **F7 Option**.

The Control Shelf Options Window allows you to select several options for a particular control shelf personality.

NOTE

The display of various field(s) are determined by the type of Station Control selected.

The Battery Alarm field determines whether or not a battery alarm will be used. When this field is enabled, two more fields will be displayed. These fields allow you to define how long the alarm will sound and how often.

The Logic Standby field is used to select whether or not functions selected by the remote will be restored upon power up of the station.

Below the Logic Standby field, when there is only one control station selected and the Rpt field enabled, is the Back to Back Repeater field. This field is to be enabled when connecting repeaters in a back to back configuration.

The DSP Compressor field allows DSP compression to be enabled if desired.

The Voting System field will either enable the Voting Tone field or the Control Line field. Below these fields is the 2 Rcvrs field which indicates that a second receiver can be used.

Press **F10 Back** to return to the Channel Data Screen.

When all options are set as desired, personality creation is complete.

You can now save your selections and name the personality.

To do so, press **F10 Back**.

The Save Personality Window will appear. This window is where you name the personality and save it to disk.

Type **PERS1**. Select **F1 Yes**.

The new personality name will appear in the Current Personalities Screen.

The next step is to program the personality into the control shelf.

NOTE

Do not attempt the next sequence without ensuring that the computer and control shelf are properly connected. Failure to connect the equipment correctly prior to a read or program operation may result in system lock-up. Should this occur, refer to Chapter 6 of this manual.

Select **F5 Program** and the Program Radio Window will appear.

Select **F1 Yes**.

A message will appear on the screen indicating that the personality is being downloaded into the control shelf. The program operation is finished when the program window disappears from the screen.

Select **F7 Reset**.

The Select ROM Defaults Window will appear. This allows you to reset the control shelf's EEPROM to the default state.

For now, select **F2 No** to return to the Current Personalities Screen.

Select **F6 Read** and type **PERS2**. Press **F1 Yes**.

MS102518V1, Rev. U

The program will then handshake with the control shelf and read the personality out of the control shelf into the file PERS2. When the operation is finished, the window will disappear and the Current Personalities Screen will reappear showing newly created personalities PERS1 and PERS2.

You have now completed the tutorial. You can delete the personality if you like or keep it in your program for future reference.

To delete the personality, position your cursor on **PERS1**. Select **F3 Utility**, press **F5 Delete**, press **F1 Yes**.

A message window will appear asking you to press "Y" if you are sure you want to delete the personality, or "N" to abort the operation. Remember that deleting a personality will remove it permanently from the data base.

Press **Y** to delete.

The selected personality will be deleted from the disk and will no longer appear in the Current Personalities Screen.

CHAPTER 4

RUNNING THE PROGRAM

INITIALIZATION

Once the PC is initialized, an application has been selected and started a brief introductory screen the Current Personalities Screen will appear.

NOTE

A Channel Guard tone (CTCSS) should be programmed on the receive frequency to keep a user from hearing any digital noise or a popping sound when the base station switches from analog to digital.

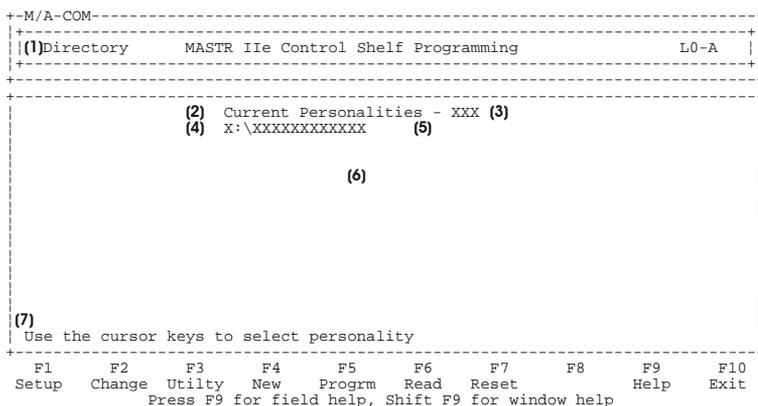


Figure 4-1 - Current Personalities Screen

- | | |
|-----------------------|--------------------------------------|
| (1) Function | - indicates directory function |
| (2) Screen Title | - current personalities screen |
| (3) Default Extension | - designated default extension |
| (4) Current Drive | - designated drive |
| (5) Current Directory | - designated directory name |
| (6) Personality Area | - personalities in current directory |
| (7) Prompt Line | - current field instruction line |

The Current Personalities Screen, shown in Figure 4-1, is the main screen for the MASTR IIe Programming Software. From this screen you will be able to create personalities, program control shelves, and read personalities out of control shelves. To access a personality, move the cursor (reverse video bar) across the screen using the arrow keys. There is room available for up to 70 personalities on the screen. If you completed the tutorial and did not delete the files you created, one or two personality file names will already be displayed. Once the screen is full, additional personalities may be accessed by pressing the **Pg Dn** key.

NOTES

- 1) Throughout this document the term personality is used. Personality is used generically to refer to the information stored in one radio causing it to operate differently from another radio.
- 2) Whenever the program is initiated, the extension will default to the extension used when the program was last run. Only personalities with the extension identified are listed in this screen.

From the Current Personalities Screen, function key options are:

- | | |
|---------------------|--|
| F1 - Setup | Select this option if you want to:
Select the type of station control and the type of the synthesizer. |
| F2 - Change | Select this option if you want to:
Change or edit an existing personality. |
| F3 - Utility | Select this option if you want to:
Change the communication port entry, change the directory, delete a personality, print a personality, or change the extension. |
| F4 - New | Select this option if you want to:
Create a new personality. |
| F5 - Progrm | Select this option if you want to:
Program a unit with the personality selected. |
| F6 - Read | Select this option if you want to:
Read the personality out of a control shelf into the computer. |
| F7 - Reset | Select this option if you want to:
Reset the control shelf's EEPROM to the default state. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Exit | Select this option if you want to:
Terminate the program and return to the control of DOS. |

SETTING UP THE PROGRAM

Before creating a personality you need to specify how the control shelf is to be controlled by setting up the program. Select the **F1 Setup** key while in the Current Personalities Screen.

The set up portion of this program consists of the Station Control Window. This window allows you to establish the type of control shelf personality that is to be created, modified, and programmed.

Station Control



Figure 4-2 - Station Control Window

- | | |
|---------------------|---------------------------------------|
| (1) Function | - indicates setup function |
| (2) Window Title | - station control window |
| (3) Station Control | - determines control type |
| (4) Synth. Part No | - determines the type of synthesizer. |
| (5) Freq Capacity | - indicates number of channels |
| (6) Prompt Line | - current field instruction line |

The Station Control Window, shown in Figure 4-2, is accessed by selecting **F1 Setup** while in the Current Personalities Screen. This window is used to select the desired station control, synthesizer and if, appropriate the number of frequencies to be assigned.

- | | |
|-----------------|--|
| Station Control | (3) The Station Control fields allow you to select the default station control for programming a control shelf. |
|-----------------|--|

To specify the desired station control, use the cursor keys to move the highlighted video bar over the station desired.

Synth. Part No (4) The **Synth. Part No** field allows you to select the Synthesizer being used. With the highlighted bar on the selected field press the Tab key to select the Old or New synthesizer.

Freq Capacity (5) The **Frequency Capacity** field is used to select the number of frequencies to be assigned to a Station Control.

With the highlighted video bar on the selected Station Control, use the **F6 Chan -** and **F7 Chan +** keys to select the desired frequency capacity.

Allowable settings are:

Station Control	Frequency Capacity		
	MASTR IIc	MASTR III (w/old synth.)	MASTR III (w/new synth.)
No Remote	1-4	1-16	1-12
DC Remote	1 or 2	1-16	1-12
Tone Remote	1-4	1-16	1-12
T90	Not Active		
DTMF	1-4	1-16	1-12
Simulcast	Not Active		
Trunked	Not Active		
Mult Receiver		1-8	1-8

From the Station Control Window, function key options are:

F6 - Chan - Select this option if you want to:
Decrease the frequency capacity for the selected Station Control.

F7 - Chan + Select this option if you want to:
Increase the frequency capacity for the selected Station Control.

F9 - Help Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Current Personalities Screen.

CREATE A PERSONALITY

Simulcast Data Screen



Figure 4-3 - Simulcast Data Window

- | | |
|-------------------------------|---|
| (1) Function | - indicates directory function |
| (2) Screen Title | - Simulcast data screen |
| (3) Line Out Pot | - sets line out level |
| (4) DSP Line In | - adjusts signal level entering the DSP |
| (5) Tx Audio Pot | - sets transmitter deviation |
| (6) DSP Compressor Pot | - adjusts the gain on the DSP line input |
| (7) PA Power | - sets the PA power output |
| (8) Repeater Gain | - sets the transmitter deviation |
| (9) CG Pot | - sets the CG deviation level |
| (10) DSP Compressor Threshold | - adjusts the maximum output of the compressor |
| (11) Line In Pot | - adjusts the gain on the line input |
| (12) Squelch Pot | - indicates "manual" or "digital" pot |
| (13) Circulator | - enables station to detect Circulator faults |
| (14) Value | - indicates squelch pot value |
| (15) Tx Freq | - sets channel transmit frequency |
| (16) Voting Sys | - indicates voting system enabled |
| (17) Rx Freq | - sets channel receive frequency |
| (18) Level | - determines level of voting tone |
| (19) Reference Freq | - indicates source of reference frequency |
| (20) Tone | - indicates frequency of the voting tone |
| (21) Synth. Part No | - enables selection of appropriate Synthesizer. |
| (22) Reference | - indicates external reference frequency |
| (23) Cont Running Osc | - enables the transmit synthesizer |
| (24) Bandwidth | - sets the receiver bandwidth |
| (25) Prompt Line | - current field instruction line |

The Simulcast Data Screen, shown in Figure 4-3, is accessed by selecting **Simulcast** from the Station Control Window and then selecting **F4 New** or **F2 Change** while in the Current Personalities Screen. From this window you can determine the Simulcast data for programming the personality.

A Simulcast Station is programmed as a voting system with a 1950 Hz voting tone. Only one channel is allowed. In addition, the station is programmed so audio will be routed as a four-wire DC remote station (with DSP Compressor enabled). In general, all other options normally programmable for other stations such as Morse code, Battery Alarm, etc., are disabled.

NOTE

Some of the fields in the Simulcast Data Window, shown in Figure 4-3, will only appear when creating a personality for a MASTR III control station. These fields are marked by a ♦ in the following section.

Line Out Pot (3) The **Line Out Pot** is used to adjust the line out level.

Enter a value in the range of 0-255. A low value corresponds to a low line out level, and a high value corresponds to a high line out level. In non-remote systems, this is set to zero. In remote systems, this is set so that 3 kHz of unscelched receiver audio results in 0 dBm of line output audio.

DSP Line In (4) The **DSP Line In** field is used to specify the DSP line in pot setting which will adjust the signal level in the DSP.

Enter a value in the range of 0 - 255. A low value corresponds to a low gain on the line input, and a high value corresponds to a high gain. For non-remote systems, this should be set to zero. In MASTR IIe DC Remote systems with the DSP Compressor disabled, this field should be set to zero. For other remote systems, this field should be set so that under all operating conditions, the level does not override the ana-

- DSP Line In (Con't) (4) log-to-digital converter on the DSP board (U5). Normally, this pot should be set as follows:

MAX AUDIO IN LINE		DSP LINE IN POT
-10 dBm	=>	56
0 dBm	=>	16
+10 dBm	=>	5

The value entered here is reflected as a percentage to the right of this entry.

- Tx Audio Pot (5) The **Transmit Audio Pot** field is used to specify the transmitter deviation audio potentiometer level.

Enter a value in the range of 0 - 255. A low value corresponds to a low deviation, while a high value corresponds to a high deviation. In MASTR IIe systems that repeat, this field is normally set so that 3 kHz of unquelled receiver audio results in 3 kHz of transmitter audio. In other systems, it will be necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. In MASTR III systems, this value is normally set such that maximum input results in 4.5 kHz of transmitter audio. The value entered here is reflected as a percentage to the right of this entry.

- DSP Compressor Pot (6) The **DSP Compressor Pot** field is used to indicate the setting which determines the level of line input voltage which will lead to compression. This pot is a gain in the linear region of the compressor which determines the level of line input voltage which will lead to compression.

- DSP Compressor Pot (Cont'd) (6) Enter a value in the range of 0 - 32767. A low value corresponds to a low gain, and a high value corresponds to a high gain. For remote systems using the DSP Compressor (all tone remote systems use the DSP Compressor), this field should be set so that nominal line input audio results in output audio which is at 3 kHz deviation. For other systems, this pot should be set to zero. The value entered here is reflected as a percentage to the right of this entry.
- ◆ PA Power (7) The **PA Power** field is used to set the PA output power.
- Enter a value in the range of 0 and 99. A level of 99 corresponds to full power.
- ◆ Repeater Gain (8) The **Repeater Gain** field is used to set the transmitter deviation.
- Enter a value in the range of 0 and 32767. A low value corresponds to a low deviation, and a high value corresponds to a high deviation. In systems that repeat, this field is normally set so that 3 kHz of unsquelched receiver audio results in 3 kHz of transmitter audio. In other systems, it is necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. The value entered here is reflected as a percentage to the right of this entry.
- ◆ CG Pot (9) The **Channel Guard Pot** field is used to set the CG deviation.
- Enter a value in the range of 0-255. A low value corresponds to a low deviation and a high value corresponds to a high deviation. This value will be the CG potentiometer setting while this channel is active.

DSP Compressor Threshold (10) The **DSP Compressor Threshold** field is used to adjust the signal level appearing at the output of the compressor.

Enter a value in the range of 0-32767. This pot is set to this value for channels with Channel Guard. To disable the compressor, enter 32767.

Line In Pot (11) The **Line In** field is used to specify the setting to adjust the gain on the line input.

Enter a value in the range of 0 - 255. A low value corresponds to less gain, and a high value corresponds to high gain. In MASTR IIe DC Remote systems, with the DSP Compression field disabled (in the Remote Options Window), set this pot so that nominal line input audio results in output audio. In MASTR III or other systems, set this pot to zero because the line audio is either non-existent or is processed through a different DSP board path. The value entered here is reflected as a percentage to the right of this entry.

◆ Squelch Pot (12) The **Squelch Pot** field is used to indicate how the squelch will be controlled.

Using the **TAB** key as a toggle switch, select between "Manual" and "Digital". If the manual pot on the front of the station is to be used to set the squelch, set this field to "Manual". If the digital pot on the Interface Board is to be used, set this field to "Digital".

NOTE

1. This field applies to System Module firmware version 12.00 and above.
2. The Interface Board must be at least a **REV. A** board before this field can be set to "Digital".

- ◆ Circulator (13) The **Circulator** field determines whether or not the station is to detect Circulator faults (Interface Board P108).
Using the TAB key as a toggle switch, select between "Enabled" or "Disabled". If the station is to detect Circulator faults, set this field to "Enabled". Otherwise, set this field to "Disabled".
NOTE: This field only applies to System Module Firmware Version 12 and above.
- ◆ Value (14) The **Value** field is used to set the digital squelch pot.
Enter a value in the range of 0 and 99. Increasing this number has the same affect as turning the manual pot clockwise which tends to close squelch. Decreasing this number tends to open squelch.
This field will only appear when the Squelch Pot field is set to "Digital".
- ◆ Tx Freq (15) The **Tx Frequency** field is used to set the frequency at which the radio will transmit while on this channel.
Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be evenly divisible by 0.00125 MHz.
Exception: Synthesizer 19D902780 (Old) supports division by 0.00625 or 0.005 MHz only.
Valid frequencies for UHF - Values in the range 378-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.
Exception: Synthesizer 19D902780 (Old) supports division by 0.00625 or 0.005 MHz only.
Valid frequencies for 800 - Values in the range 851-870 MHz. The entry must be evenly divisible by 0.0125 MHz.
Exception: Synthesizer 19D902780 (Old) supports division by 0.125 MHz only.

- ◆ Tx Freq (Con't) (15) When a channel is programmed to repeat in VHF or UHF, the value entered here may not be the same as the Receive Frequency. In addition, non-repeating channels with the same Transmit and Receive Frequencies will have the RF Simplex field set to "Yes", and access to RF Simplex will be denied.

- Voting Sys (16) The **Voting Sys** field is used to indicate whether the station is to be in a voting system.

This field is "Display Only" and set to enable the voting tone field.

- ◆ Rx Freq (17) The **Rx Frequency** field is used to set the frequency at which the radio receives while on this channel.

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

Valid frequencies for UHF - Values in the range of 370-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.00625 or 0.005 MHz only.

Valid frequencies for 800 - Values in the range 806-825 MHz. The entry must be evenly divisible by 0.0125 MHz.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Transmit Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

◆ Rx Freq (17) Exception: Synthesizer 19D902781 (Old) (Con't) supports division by 0.125 MHz only.

Level (18) The **Voting Level** field determines the level of the voting tone.
Enter a value in the range of 0 and 127.

◆ Reference(19) The **Reference Frequency** field is used to Freq indicate whether an external or internal reference source is to be used.

Using the **TAB** key as a toggle switch, select between "External" and "Internal". If an external reference frequency is to be used, select "External", otherwise set this field to "Internal".

Tone (20) The **Voting Tone** field is used to indicate the frequency of the voting tone.

This field is "Display Only" and the tone is set at 1950 Hz.

Synth. Part (21) The **Synth. Part No.** field is used to select No. the Synthesizer used(Old/New).

The Old synthesizer refers to the 19D902780 Transmit and 19D902781 Receive modules. The New synthesizer refers to the EA101685 Transmit and EA101684 Receive modules.

◆ Reference(22) The **Reference** field is used to indicate the "External Reference" frequency.

Enter a reference frequency between 5.0 and 17.975 for the 19D90278x synthesizer (old) or between 5.0 and 19.2 for the EA10168x synthesizer (new).

For the 19D90278x synthesizer (old) this number must be divisible by 0.00125, 0.005 or 0.00625. For the EA10168x synthesizer (new) this number must be divisible by 0.005 or 0.00625 for VHF or UHF and must be divisible by 0.00625 for 800 MHz.

- ◆ **Cont Running Osc** (23) The **Continuous Running Oscillator** field is used to enable the transmit synthesizer (not the PA) to be operational as soon as the station is powered up or reset. This also prevents the synthesizer from being loaded at the beginning of each call.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled".

- ◆ **Bandwidth** (24) The **Bandwidth** field is used to select the receiver bandwidth.
Select between "25 kHz" and "12.5 kHz".

NOTE

This feature is only available for Group 18 or higher System Module code and Group 7, Group 9 or Goup 11 IF Module code.

From the Simulcast Data Screen, function key options are:

- ◆ **F3 - Alarm** Select this option if you want to:
Set options for the system alarm.
- F5 - Progrm** Select this option if you want to:
Program the radio.
- F7 - Text** Select this option if you want to:
Create lines of text to be stored in the disk file.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

Trunked Data Screen

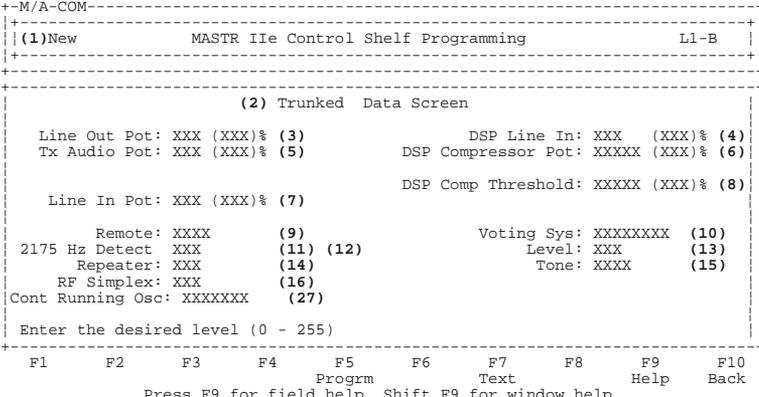


Figure 4-4 - Trunked Data Window (MASTR IIE)

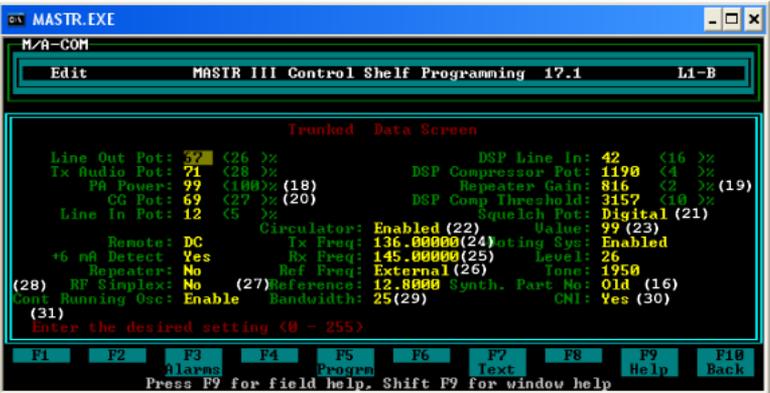


Figure 4-5 - Trunked Data Window (MASTR III)

- (1) Function - indicates directory function
- (2) Screen Title - Trunked Data Screen
- (3) Line Out Pot - sets line out level
- (4) DSP Line In - adjusts signal level entering the DSP
- (5) Tx Audio Pot - sets transmitter deviation
- (6) DSP Compressor Pot - adjusts the gain on the DSP line input
- (7) Line In Pot - adjusts the gain of the line input
- (8) DSP Comp Threshold - adjusts the maximum output of the compressor
- (9) Remote - indicates type of remote

- | | |
|-----------------------|---|
| (10) Voting System | - indicates if the station is in a voting system |
| (11) 2175 Hz Detect | - indicates if the station's tone detector is to be used |
| (12) +6 mA Detect | - indicates if the station's current detector is to be used |
| (13) Level | - determines level of voting |
| (14) Repeater | - indicates if channel acts as a repeater |
| (15) Tone | - sets frequency of voting tone |
| (16) Synth. Part No | - determines the type of synthesizer. |
| (17) RF Simplex | - indicates if channel is simplex or duplex |
| (18) PA Power | - sets the PA power output |
| (19) Repeater Gain | - sets the transmitter deviation |
| (20) CG Pot | - sets the CG deviation level |
| (21) Squelch Pot | - indicates "manual" or "digital" pot |
| (22) Circulator | - enables stations to detect circulator faults |
| (22) Value | - indicates squelch pot value |
| (23) Tx Freq | - sets channel transmit frequency |
| (24) Rx Freq | - sets channel receive frequency |
| (25) Ref Freq | - indicates source of reference frequency |
| (26) Reference | - indicates external reference frequency |
| (27) Cont Running Osc | - enables the transmit synthesizer |
| (28) Bandwidth | - sets receiver bandwidth |
| (29) CNI | - enables routing CG to and from GETC |
| (30) Prompt Line | - current field instruction line |

The Trunked Data Screen, shown in Figure 4-4 and 4-5, is accessed by selecting **Trunked** from the Station Control window and then selecting **F4 New** or **F2 Change** while in the Current Personalities Screen. From this window you can determine the GETC data for programming the personality.

A GETC Station is programmed as a single channel repeating station. In addition, the station is programmed as a four-wire remote with the type of remote selectable by a field one the Trunked screen. Also, the DSP Compressor is always enabled whether tone or DC remotes are used. In general, all other options normally programmable for other stations (ie. Morse code, Battery Alarm) are disabled.

NOTE

Some of the fields in the Trunked Data Window, shown in Figure 4-5, will only appear when creating a personality for a MASTR III control station. These fields are marked by a **◆** in the following section.

- Line Out Pot (3) The **Line Out Pot** is used to adjust the line out level.

Enter a value in the range of 0-255. A low value corresponds to a low line out level, and a high value corresponds to a high line out level. In non-remote systems, this is set to zero. In remote systems this is set so that 3 kHz of unsquelched receiver audio results in 0 dBm of line output audio.

- DSP Line In (4) The **DSP Line In** field is used to specify the DSP line in pot setting which will adjust the signal level in the DSP.

Enter a value in the range of 0-255. A low value corresponds to a low gain on the line input, and a high value corresponds to a high gain. For non-remote systems, this should be set to zero. In MASTR IIe DC Remote systems with the DSP Compressor disabled, this field should be set to zero. For other remote systems, this field should be set so that under all operating conditions, the level does not override the analog to digital converter on the DSP board (U5). Normally, this pot should be set as follows:

MAX AUDIO IN LINE		DSP LINE IN POT
-10 dBm	=>	56
0 dBm	=>	16
+10 dBm	=>	5

The value entered here is reflected as a percentage to the right of this entry.

- Tx Audio Pot (5) The **Transmit Audio Pot** field is used to specify the transmitter deviation audio potentiometer level.

Tx Audio Pot (Con't) (5) Enter a value in the range of 0-255. A low value corresponds to a low deviation while a high value corresponds to a high deviation. In MASTR IIe systems that repeat, this field is normally set so that 3 kHz of unquelled receiver audio results in 3 kHz of transmitter audio. In other systems, it will be necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. In MASTR III systems, this value is normally set such that maximum input results in 4.5 kHz of transmitter audio. The value entered here is reflected as a percentage to the right of this entry.

DSP Compressor Pot (6) The **DSP Compressor Pot** field is used to indicate the setting which determines the level of line input voltage which will lead to compression. This pot is a gain in the linear region of the compressor which determines the level of line input voltage which will lead to compression.

Enter a value in the range of 0 - 32767. A low value corresponds to a low gain, and a high value corresponds to a high gain. For remote systems using the DSP Compressor (all tone remote systems use the DSP Compressor), this field should be set so that nominal line input audio results in output audio which is at 3 kHz deviation. For other systems, this pot should be set to zero. The value entered here is reflected as a percentage to the right of this entry.

DSP Compressor Threshold (7) The **DSP Compressor Threshold** field is used to adjust the signal level appearing at the output of the compressor.

Enter a value in the range of 0-32767. This pot is set to this value for channels with Channel Guard. To disable the compressor, enter 32767.

- Line In Pot (8) The **Line In Pot** is used to adjust the gain on the line input.
 Enter a value in the range of 0 and 255. A low value corresponds to a low gain; a high value corresponds to high gain. In DC Remote systems with the DSP compression field (on the Remote Options Screen) set to "Disabled", this pot is set so that nominal line input audio results in output audio which is at 3 kHz deviation. In other systems this pot is set to zero because the line audio is either non-existent or is processed through a different DSP board path.
- Remote (9) The **Remote** field indicates the type of remote system used with your system.
 Using the **TAB** key as a toggle switch, select between "Tone", "Type 1" or "DC".
- Voting System (10) The **Voting System** field is used to indicate whether the station is in a voting system.
 Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". If the station is to be in a voting system, set this field to "Enabled".
- 2175 Hz Detect (11) The 2175 Hz Detect field is used to indicate if the base station's tone detector is to be used.
 Using the **TAB** key as a toggle switch, select between "Yes" and "No". If the base station's 2175 Hz tone detector is required to keep a channel open, select "Yes". If some other mechanism other than the base station's detector is being used, set this field to "No".
- +6 mA Detect (12) The **+6 mA Detect** field is to indicate if the base station's current detector is to be used.

- +6 mA Detect (Con't) (12) Using the **TAB** key as a toggle switch, select between "Yes" and "No". If the base station's +6 mA current detector is required to keep a channel open, select "Yes". If some other mechanism other than the base station's detector is being used, set this field to "No".
- Level (13) The **Level** field determines the level of the voting tone.
Enter a value in the range of 0 and 127.
- Repeater (14) The **Repeater** field indicates if the channel should act as a repeater.
Using the **TAB** key as a toggle switch, select between "Yes" and "No". If the channel should act as a repeater, select "Yes".
- Tone (15) The **Tone** field indicates the voting tone frequency to be used.
Using the **TAB** key as toggle switch, select between "1950 Hz" and "2175 Hz".
- Synth. Part No. (16) The **Synth. Part No.** field allows you to select the Synthesizer being used. With the highlighted bar on the selected field press the Tab key to select the Old or New synthesizer. The Old synthesizer refers to the 19D902780 Transmit and 19D902781 Receive modules. The New synthesizer refers to the EA101685 Transmit and EA101684 Receive modules.
- RF Simplex (17) The **RF Simplex** field is used to indicate whether the channel will be a simplex channel.
Using the **TAB** key as a toggle switch, select between "Yes" and "No". If this is a simplex channel, set this field to "Yes". A "No" will mean that this is a full duplex channel. The only time this needs to be set to Simplex is when the RF transmit and receive frequencies are the same.

- ◆ PA Power (18) The **PA Power** field is used to set the PA output power.
Enter a value in the range of 0 and 99. A level of 99 corresponds to full power.
- ◆ Repeater Gain (19) The **Repeater Gain** field is used to set the transmitter deviation.
Enter a value in the range of 0 and 32767. A low value corresponds to a low deviation, and a high value corresponds to a high deviation. In systems that repeat, this field is normally set so that 3 kHz of unsquelched receiver audio results in 3 kHz of transmitter audio. In other systems, it is necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. The value entered here is reflected as a percentage to the right of this entry.
- ◆ CG Pot (20) The **Channel Guard Pot** field is used to set the CG deviation.
Enter a value in the range of 0-255. A low value corresponds to a low deviation and a high value corresponds to a high deviation. This value will be the CG potentiometer setting while this channel is active.
- ◆ Squelch Pot (21) The **Squelch Pot** field is used to indicate how the squelch will be set.
Using the **TAB** key as a toggle switch, select between "Manual" and "Digital". If the manual pot on the front of the station is to be used to set the squelch, set this field to "Manual". If the digital pot on the Interface Board is to be used, set this field to "Digital".

NOTE

1. This field applies to System Module firmware version 12.00 and above.
2. The Interface Board must be at least a **REV. A** board before this field can be set to "Digital".

- ◆ Circulator (22) The **Circulator** field determines whether or not the station is to detect Circulator faults.

Using the **TAB** key as a toggle switch, select between "Enabled" or "Disabled". If the station is to detect Circulator faults, set this field to "Enabled". Otherwise, set this field to "Disabled".

NOTE

This field only applies to System Module Firmware Version 12 and above.

- ◆ Value (23) The **Value** field is used to set the digital squelch pot.

Enter a value in the range of 0 and 99. Increasing this number has the same affect as turning the manual pot clockwise which tends to close squelch. Decreasing this number tends to open squelch.

This field will only appear when the Squelch Pot field is set to "Digital".

- ◆ Tx Freq (24) The **Tx Frequency** field is used to set the frequency at which the radio will transmit while on this channel.

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902780 (Old) supports division by 0.00625 or 0.005 MHz only.

Valid frequencies for UHF - Values in the range 378-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902780 (Old) supports division by 0.00625 or 0.005 MHz only.

- ◆ Tx Freq (Con't) (24) Valid frequencies for 800 - Values in the range 851-870 MHz. The entry must be evenly divisible by 0.0125 MHz.

Exception: Synthesizer 19D902780 (Old) supports division by 0.125 MHz only.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Receive Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

- ◆ Rx Freq (25) The **Rx Frequency** field is used to set the frequency at which the radio receives while on this channel.

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

Valid frequencies for UHF - Values in the range of 370-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.00625 or 0.005 MHz only.

Valid frequencies for 800 - Values in the range 806-825 MHz. The entry must be evenly divisible by 0.0125 MHz.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Transmit Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

- ◆ Rx Freq (25) Exception: Synthesizer 19D902781 (Old) (Con't) supports division by 0.125 MHz only.

- ◆ Reference(26) The **Reference Frequency** field is used to indicate whether an external or internal reference source is to be used.

Using the **TAB** key as a toggle switch, select between "External" and "Internal". If an external reference frequency is to be used, select "External". Otherwise, set this field to "Internal".

- ◆ Reference(27) The **Reference** field is used to indicate the "External Reference" frequency.

Enter a reference frequency between 5.0 and 17.975 for the 19D90278x synthesizer (old) or between 5.0 and 19.2 for the EA10168x synthesizer (new).

For the 19D90278x synthesizer (old) this number must be divisible by 0.00125, 0.005 or 0.00625. For the EA10168x synthesizer (new) this number must be divisible by 0.005 or 0.00625 for VHF or UHF and must be divisible by 0.00625 for 800 MHz.

- Cont Running Osc (28) The **Continuous Running Oscillator** field is used to enable the transmit synthesizer (not the PA) to be operational as soon as the station is powered up or reset. This also prevents the synthesizer from being loaded at the beginning of each call.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled".

- ◆ Bandwidth (29) The **Bandwidth** field is used to select the receiver bandwidth.

Select between "25 kHz" and "12.5 kHz".

- ◆ CNI (30) Select "Yes" and the CNI (Conventional Network Interface) field will disable High Speed Data audio routing, and route Channel Guard to and from the GETC.

NOTE

This feature is only available for Group 18 or higher System Module code and Group 7, Group 9 or Group 11 IF Module code.

From the GETC Data Screen, function key options are:

- ◆ **F3 - Alarm** Select this option if you want to:
Set options for the system alarm.
- F5 - Progrm** Select this option if you want to:
Program the radio.
- F7 - Text** Select this option if you want to:
Create lines of text to be stored in the disk file.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

System Alarm Options

```

+-----M/A-COM-----+
| (1)New           MASTR III Control Shelf Programming  11.3           L1-B |
+-----+-----+
|                                     (2) System Alarm Options                                     |
| Line                                     (3)                                                                 |
| Tx Au                                     Low PA Power Alarm: XXX   Tx Meter On Level: XXX (4) |
| P                                         Tx Meter Off Level: XXX (5) |
|                                     Module Fault Alarm: XXX (6) |
| Line                                     Backup Ref Osc Alarm: XXX (7)   Audible Alarm: XXX (8) |
| 2175 Hz                                     RF                                     |
| R                                         |
| Enter t                                     (9)                                     |
| Press TAB to toggle, F9 for Help |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| F1   F2   F3   F4   F5   F6   F7   F8   F9   F10 |
|                                     Help   Back |
|                                     Press F9 for field help, Shift F9 for window help |

```

Figure 4-6 - System Alarm Options Window (MASTR III)

MS102518V1, Rev. U

- | | |
|--------------------------|---|
| (1) Function | - indicates the directory function |
| (2) Screen Title | - System Alarm Options window |
| (3) Low PA Power Alarm | - allows station to monitor PA output power |
| (4) Tx Meter On Level | - determines if PA output power is "good" |
| (5) Tx Meter Off Level | - determines if PA output power is "failed" |
| (6) Module Fault Alarm | - allows station to monitor the RF Module |
| (7) Backup Ref Osc Alarm | - allows station to use internal reference oscillator (Trunked Data Only) |
| (8) Audible Alarm | - enables station to transmit an audible alarm (Trunked Data Only) |

The System Alarm Options Window, shown in Figure 4-6, provides access to the alarm options associated with the MASTR III station. Access the System Alarm Options Window by selecting **F3 Alarms** from the Simulcast or Trunked Data Screens.

- Low PA Power Alarm (3) The **Low PA Power Alarm** field allows the MASTR III station to monitor PA output power.

The station reports the status of this fault to the GETC. Low PA output power will cause the channel to be taken out of service. The L6 LED on the GETC will blink when the channel is out of service. The EDACS channel then checks periodically to see if the fault is gone. Once the fault is gone, the channel is put back on-line automatically. Select "Yes" to allow the station to monitor PA output power. Select "No" to disable this feature.

- Tx Meter On Level (4) The **TX Meter On Level** field is used with the *TX Meter Off Level* to report a Power Amplifier output power failure to the GETC.

The output power is considered "good" when the TX Meter reads a value higher

than the **On** value. The output power will be considered "failed" when the Tx Meter reads a value lower than the **Off** value. The Tx Meter can be read on the Utility Handset, the MASTRUTL or MSEDIT. Enter a valid entry in the range of 0-255. Access to this field is denied if the *Low PA Power Alarm* field is set to "No".

- TX Meter Off Level (5) The **TX Meter Off Level** field is used with the *TX Meter On Level* to report a Power Amplifier output power failure to the GETC.

The output power will be considered "failed" when the Tx Meter reads a value lower than the **Off** value. The output power is considered "good" when the TX Meter reads a value higher than the **On** value. The Tx Meter can be read on the Utility Handset, the MASTRUTL or MSEDIT. Enter a valid entry in the range of 0-255. Access to this field is denied if the *Low PA Power Alarm* field is set to "No".

- Module Fault Alarm (6) The **Module Fault Alarm** field allows the station to monitor the RF Module and report a fault status to the GETC.

An RF module fault will cause the EDACS channel to be taken out of service. The L7 LED on the GETC will blink when the channel is out of service. The EDACS channel checks periodically to see if the fault is gone. When the fault is gone, the channel is put back on-line automatically. Select "Yes" to enable this feature and select "No" to disable this feature.

- Backup Ref Osc Alarm (7) The **Backup Ref Osc Alarm** field enables the MASTR III station to revert back to its internal reference oscillator under synthesizer alarm conditions.

Backup Ref (7) Select "Yes" and the Station will attempt to
Osc Alarm use the Internal Reference Oscillator when
(Con't) the RX synthesizer goes out of lock. The
station will continue to use the internal
reference until the alarm condition is cor-
rected and the station is reset. Select "No"
to disable this feature. The *Ref Frequency*
field in the Trunked Data Screen must be
set to "External" to have access to this field.

Audible (8) The **Audible Alarm** field enables the sta-
Alarm tion to transmit an audible alarm tone over
the air on the working channel(s).

This feature can be used to alert the system
operator that the channel/site is in an
alarm condition. Select "Yes" to enable this
feature. Access to this field is denied if the
Backup Ref Osc Alarm field is set to "No".

From the System Alarm Options Window, your options are:

F9 - Help Select this option if you want:
Further information pertaining to a field.

F10 - Back Select this option if you want to:
Return to the Trunked Data Screen.

- Rx CG (4) The **Rx CG** field indicates whether there will be receive Channel Guard, the type and frequency, or Digital CG code.

To disable receive Channel Guard while this channel is active, leave this space blank. Otherwise, for tone channel guard, enter a value in the range of 67.0 and 210.7 Hz (there must be a decimal point) to represent the CG frequency. Or, for digital channel guard, enter one of the valid CG codes (no decimal point). Examples of CG codes are 023, 047, 315. A complete list of the Channel Guard codes is located in the Appendix of this manual.

- Rx Freq (5) The **Rx Frequency field** is used to set the frequency the station will receive while on this channel. Valid frequencies are:

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

Valid frequencies for UHF - Values in the range of 370-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

Valid frequencies for 800 - Values in the range 806-825 MHz. The entry must be evenly divisible by 0.0125 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.125 MHz only.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Transmit Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

- CG Level (6) The **CG Level** field is used to set the Channel Guard detect time.

Select "High" to allow a slower detect time, with less chance of falsing. Select "Low" to allow a faster detect time.

From the Multiple Receiver Data Screen, your options are:

- F3 - Pots** Select this option if you want to:
Set potentiometer settings.
- F4 - Text** Select this option if you want to:
Create lines of text to be stored in the personality file.
- F5 - Program** Select this option if you want to:
Download the personality on the screen into the Control Shelf.

F7 - Option Select this option if you want to:
Define the options associated with this personality.

F8 - RstGTC Select this option if you want to:
Reset the GETC unit.

F9 - Help Select this option if you want to:
Further information pertaining to a field.

F10 - Back Select this option if you want to:
Return to the Current Personality Screen.

Potentiometer Settings (Multiple Receiver)

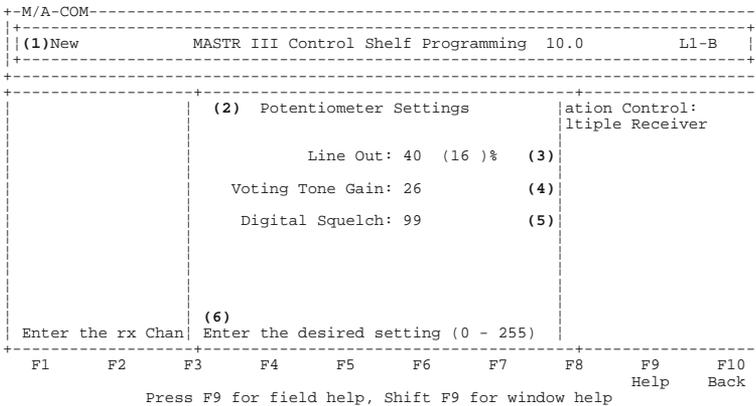


Figure 4-8 - Potentiometer Settings (Multiple Receiver)

- (1) Function - indicates new personality
- (2) Window Title - potentiometer settings
- (3) Line Out - sets the line out level
- (4) Voting Tone Gain - sets level of voting tone
- (5) Digital Squelch - determines squelch setting
- (6) Prompt Line - current field instruction line

The Potentiometer Settings Screen (Multiple Receiver) shown in Figure 4-8, is accessed by selecting **F3 Pots** from the Multiple Receiver Channel Data screen. This window is used to adjust potentiometer settings for line out, voting tone level and digital squelch pot.

Line Out (3) The **Line Out** field is used to adjust the line out level.

A low value corresponds to a low line (out level), and a high value corresponds to a high line (out level). Select a value in the range of 0 and 255.

Normally, in non-remote systems, this is set to zero. In remote systems, this is set such that 3 KHz of unscelched receiver audio results in 0 dBm of line output audio.

Voting Tone Gain (4) The **Voting Tone Gain** field determines the level of the voting tone. Enter a value in the range of 0 and 127.

Digital Squelch (5) The **Digital Squelch** field sets the value of the digital squelch pot.

Increasing this number has the same affect as turning a manual squelch pot clockwise or closing squelch. Decreasing this number opens squelch.

F9 - Help Select this option if you want to:
Further information pertaining to a field.

F10 - Back Select this option if you want to:
Return to the Multiple Receiver Channel Data Screen.

Control Shelf Options (Multiple Receiver)

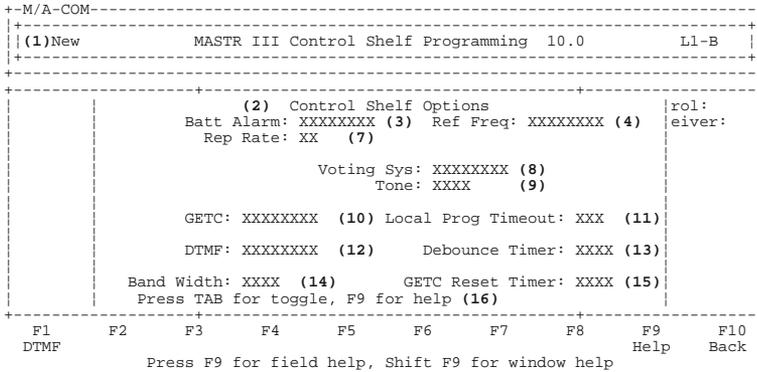


Figure 4-9 - Control Shelf Options (Multiple Receiver)

- | | |
|----------------------------|---|
| (1) Function | - indicates new personality |
| (2) Window Title | - control shelf options |
| (3) Batt Alarm | - enables alarm during battery power |
| (4) Ref Freq | - indicates source of reference frequency |
| (5) On Time | - secs for battery standby alarm tone |
| (6) Reference | - indicates external reference frequency |
| (7) Rep Rate | - secs for battery standby alert tone |
| (8) Voting Sys | - selects how system is controlled |
| (9) Voting Tone | - sets frequency of voting tone |
| (10) GETC | - enable if GETC unit attached |
| (11) Local Program Timeout | - sets the Multiple Receiver local programming timeout period |
| (12) DTMF | - enables DTMF tones to control the station |
| (13) Debounce Timer | - sets delay between FUT_IN line detection and System Module change |
| (14) Band Width | - selects the receiver band width |
| (15) GETC Reset Timer | - sets length of the GETC reset pulse |
| (16) Prompt Line | - current field instruction line |

The Control Shelf Options (Multiple Receiver) screen, shown in figure 4-9, is accessed by selecting **F7 Option** from the Multiple Receiver Channel Data Screen. This window is used to define control shelf options associated with the selected station control.

NOTE

Various fields in this window will not be displayed without a specific entry in a related field.

- Batt Alarm (3) The **Batt Alarm** field is used to indicate whether or not the battery alarm will be enabled when the station is operating on battery power.

Select "Enabled" to enable the battery alarm when the station is operating on battery power. Select "Disabled" to disable the battery alarm.

The state of this field directly controls the appearance of the Battery Alarm On Time and Battery Rep Rate fields. When this field is set to "Enabled", these two fields will appear allowing data entry. When "Disabled" is selected here, the two fields will not appear.

- Ref Freq (4) The **Reference Frequency** field is used to indicate whether an external reference source is to be used.

Using the **TAB** key as a toggle switch, if an external reference frequency is to be used, select "External". Otherwise, set this field to "Internal".

- On Time (5) The **Battery Alarm on Time** field is used to indicate the length of time for battery standby alarm tone operation.

Enter the desired amount of time, in the range of 0 - 1.0 in tenths of a second.

This field will only appear when the Battery Alarm field is set to "Enabled".

- Reference (6) The **Reference** field is used to indicate the "External Reference" frequency.
- Enter a reference frequency between 5.0 and 18.0 for old synthesizers:
- 19D902781 (RX)
 - 19D902780 (TX).
- Enter a reference frequency between 5.0 and 19.2 for new synthesizers:
- EA101684 (RX)
 - EA101685 (TX).
- This field will only appear when the Ref Freq. field is set to "External".
- The referenced frequency must be evenly divisible by the channel separation of the transmit frequency and the channel separation of the receive frequency. See the help screens for transmit and receive frequencies.
- Rep Rate (7) The **Battery Repetition Rate** field is used to specify the battery standby alert tone repetition rate.
- Enter the desired number of seconds, in the range of 0 - 25, to indicate the repetition rate.
- This field will only appear when the Battery Alarm field is set to "Enabled".
- Voting Sys (8) The **Voting System** field is used to indicate how the station will be controlled.
- Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". "Enabled" indicates that this system is to be a voting system. "Disabled" indicates the station will be controlled by the control line.
- This field, also, appears whenever DC Remote or Tone Remote is the station control type. The value entered here directly controls access into the Voting Tone field, the Voting Level Field, the Control Line field and the Sidetone field. Whenever this field

is set to "Enabled", the Voting Tone and Voting Level fields will appear allowing data selection. Whenever "Disabled" is selected, the Voting Tone and Voting Level fields disappear and the Sidetone field will reappear. If the Control Line field is set to 2 wire, the Sidetone field will not appear.

Voting Tone (9) The **Voting Tone** field allows you to specify the station control's voting tone value.

Using the **TAB** key as a toggle switch, select between "1950" and "2175". The selected value represents the station control voting tone.

Access into this field is dependent upon the value entered in the Voting System field. When the Voting System field is set to "Enabled", this field will appear allowing data selection. When the Voting System field is set to "Disabled", the Voting Tone field will not appear.

GETC (10) The **GETC** field determines whether or not the Multiple Receiver has a GETC Unit attached; and if it does, which mode of operation it will use.

If the Multiple Receiver has a GETC Unit attached, use the **TAB** key as a toggle switch to select between "Trunked" and "Conv VG". "Trunked" indicates that the mode of operation will be EDACS. "Conv VG" indicates that the mode of operation will be Conventional (Non-Trunked) Voice Guard.

If the Multiple Receiver does not have a GETC Unit attached, use the **TAB** key as a toggle switch to select "None" for a Conventional Station.

Local Prog Timeout (11) The **Local Prog Timeout** field defines the time period the Multiple Receiver will wait before returning to the Remote Programming Mode.

Local Prog Timeout (Con't) (11) Enter a time period from 5 to 720 minutes. If the time period from this field is exceeded without any activity on the data port, then the Multiple Receiver will return to the Remote Programming Mode (rear port). If activity is detected, the timer will reset.

DTMF (12) The **DTMF** field is used to indicate whether DTMF tones will be used to control the station.

In addition to using your remote, you may control the station by sending DTMF tones on the line to the station. Using the **TAB** key as a toggle switch, select between "Enable" and "Disable". Setting this field to "Enabled" will cause a function key to appear named "DTMF". A DTMF screen may be accessed through this function key where you may specify the DTMF codes to control the station. Setting this field to "Disable" will not allow control of the station through DTMF tones.

Debounce Timer (13) The **Debounce Timer** field is the delay between the time a change in the FUT_IN line is detected and the time the System Module acts on that change.

Enter a value from 10-2000 milliseconds. This delay must be entered in 10 millisecond increments. This debounce is used to ignore momentary changes on the FUT_IN line.

Band Width (14) The **Band Width** field is used to select the receiver band width. This feature is only available for Group 18.0 or higher System Module Code and Group 7, 9, or 11 IF Modules.

Use the **TAB** key as a toggle switch and select between "12.5" kHz and "25" kHz.

GETC Reset (15) The **GETC Reset Timer** field is used to set the length of the GETC Reset Pulse.

Enter a value from 10-2000 milliseconds.

From the Multiple Receiver Control Shelf Options Screen, function key options are:

F1 - DTMF Select this option if you want to:
Define the Remote DTMF options.

F9 - Help Select this option if you want to:
Receive further information pertaining to a field.

F10 - Back Select this option if you want to:
Return to the Multiple Receiver Channel Data Screen.

Remote DTMF Options

```

+-----M/A-COM-----+
+-----+-----+-----+
| (1)New           MASTR III Control Shelf Programming           LI-B |
+-----+-----+-----+
+-----+-----+-----+
|                                     (2) Remote DTMF Options |
|                                     (3)                       |
| Enable Repeater: XXXXXXXX           Disable Repeater: XXXXXXXX |
|                                     (4)                       |
|                                     (5)                       |
| Enable Scan: XXXXXXXX               Disable Scan: XXXXXXXX     |
|                                     (6)                       |
|                                     (7)                       |
| Fl TX: XXXXXXXXX                   VSQ CG Detect: XXXXXXXX     |
|                                     (7A)                      |
|                                     (8)                       |
|                                     Channels                    |
| 1 XXXXXXXX  2 XXXXXXXX  3 XXXXXXXX  4 XXXXXXXX |
| 5 XXXXXXXX  6 XXXXXXXX  7 XXXXXXXX  8 XXXXXXXX |
| 9 XXXXXXXX 10 XXXXXXXX 11 XXXXXXXX 12 XXXXXXXX |
|13 XXXXXXXX 14 XXXXXXXX 15 XXXXXXXX 16 XXXXXXXX |
|                                     (9)                       |
| Press T Enter desired DTMF digits |
+-----+-----+-----+
| F1           F2           F3           F4           F5           F6           F7           F8           F9           F10 |
|                                     Press F9 for field help, Shift F9 for window help |
+-----+-----+-----+

```

Figure 4-10 - Remote DTMF Options Window

- (1) Function - indicates directory function
- (2) Window Title - Remote DTMF options window
- (3) Enable Repeater - sets DTMF code to enable repeater
- (4) Disable Repeater - sets DTMF code to disable repeater
- (5) Enable Scan - sets DTMF code to enable scan
- (6) Disable Scan - sets DTMF code to disable scan

- (7) F1 TX - enables selecting and transmitting on any channel with DTMF
- (7A) VSQ CG Detect - enables decoding DTMF and CG
- (8) Channel - sets DTMF code to receive on Chan
- (9) Prompt Line - current field instruction line

The Remote DTMF Options Window, shown in Figure 4-10, is accessed by selecting **F1 DTMF** from the Control Shelf Options Window when the selected control station is DC Remote, Tone Remote, or Multiple Receiver. This window allows you to set DTMF codes for scan and channel fields.

NOTE

Various fields in this window may or may not appear depending upon the frequency capacity selected in the Control Station Window and settings in the Control Shelf Options Window.

- Enable Repeater (3) The **Enable Repeater** field is used to determine the DTMF code to be used when enabling the repeater function.

Enter the desired DTMF code to enable the repeater function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rpt field (in the Channel Data Screen) being set to "Yes".

- Disable Repeater (4) The **Disable Repeater** field is used to determine the DTMF code to be used when disabling the repeater function.

Enter the desired DTMF code to disable the repeater function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rpt field (in the Channel Data Screen) being set to "Yes".

Enable Scan (5) The **Enable Scan** field is used to determine the DTMF code to be used when enabling the scan function.

Enter the desired DTMF code to enable the scan function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rx Option field (in the Control Shelf Options Window) being set to "Scan" and the Frequency Capacity field (in the Control Station Window) being set to a value greater than 1.

Disable Scan (6) The **Disable Scan** field is used to determine the DTMF code to be used when disabling the scan function.

Enter the desired DTMF code to disable the scan function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rx Option field (in the Control Shelf Options Window) being set to "Scan" and the Frequency Capacity field (in the Control Station Window) being set to a value greater than 1.

F1 TX (7) The **F1 TX** field allows one to select any channel with DTMF and then transmit on it.

F1 TX (7) Using the **TAB** key as a toggle switch select (Con't) between "Channel 1" and "Selected". Ordinarily, transmitting on channel 1 from a remote will cause the station to switch to channel 1 before transmitting (unless already on channel 1). The station will behave in this manner with this field set to "Channel 1". However, with this field set to "Selected", a command to transmit on channel 1 will cause a transmit on the current channel without automatically switching to channel 1. This mode allows one to select any channel with DTMF and then transmit on it.

VSQ CG (7A) The **VSQ CG Detect** field is used to enable Detect decoding DTMF and Channel Guard simultaneously.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". Select "Enabled" to allow simultaneous decoding of DTMF and Channel Guard.

Channel (8) The **Channel** fields are used to determine the DTMF code to be used when accessing the channel.

Enter the desired DTMF code to allow access to the selected channel. These fields will accept up to seven numeric characters , as well as # and * characters.

A separate channel field will appear for each channel, depending upon the frequency capacity selected in the Control Station Window.

From the Remote DTMF Options Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Control Shelf Options Window.

Select GETC Reset

```

+-M/A-COM-
| (1)GETC Reset      MASTR III Control Shelf Programming      L1-E
|
+-----+-----+
|                                     Channel Data Screen      Station Control:
|                                     +-----+             +-----+
|                                     | (2) Select GETC Reset |             | Multiple Receiver |
|                                     |                         |             |                   |
|                                     | Are you sure? Yes - Press F1 (3) |             |                   |
|                                     |           No  - Press F2           |             |                   |
|                                     | (4)                               |             |                   |
|                                     | This option will cause the station |             |                   |
|                                     | to send a hardware reset to the    |             |                   |
|                                     | GETC. Please be sure the control    |             |                   |
|                                     | shelf is connected to COM1 and that  |             |                   |
|                                     | the control shelf is turned on before|             |                   |
|                                     | pressing F1 'Yes'.                  |             |                   |
|                                     +-----+             +-----+
| Enter the rx Chan+-----+
|
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
| Yes     No                                     Help     Back
|
|                                     Press F9 for field help, Shift F9 for window help

```

Figure 4-11 - Select GETC Reset

- (1) Function - indicates GETC reset function
- (2) Window Title - select GETC reset window
- (3) Continue Prompt - continue or abort option
- (4) Prompt Line - current field instruction line

This Select GETC Reset window, shown in Figure 4-11, is accessed from the Multiple Receiver Data Screen by selecting **F8 RstGETC**. This window is used to execute a hardware reset on the GETC unit.

From the Select GETC Reset Window, function key options are:

- F1 - Yes** Select this option if you want to:
Reset the GETC unit.
- F2 - No** Select this option if you want to:
Cancel the operation.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

Channel Data Screen

```

+--M/A-COM--
+-----+
|(1)New           MASTR IIe Control Shelf Programming           LI-B|
+-----+
+-----+
|          (2) Channel Data Screen          Station Control:   |
|          (3) XXXXXXXXXXXXX                |
|(4)  (5)  (6)  (7)  (8)  (9)  (10)      (12) (13) (14) (15)  |
| Ch  Tx CG  STE  CCT  DODT  Rx CG  CG Lvl  Pot  Simplex Rpt  Scan  |
| 1   XXXXX  XXX  XXX  XXXX  XXXXX  XXX    XXX  XXX  XXX  XXX  |
| 2   XXXXX  XXX  XXX  XXXX  XXXXX  XXX    XXX  XXX  XXX  XXX  |
| 3                                         |
| 4                                         |
| 5                                         |
| 6                                         |
| 7                                         |
| 8                                         |
|(16)                                         |
|Enter the tx Channel Guard for this channel|
+-----+
F1          F2          F3          F4          F5          F6          F7          F8          F9          F10
           PTTs       Pots                Progrm  Morse    Option  More     Help     Back

```

Figure 4-12 - Channel Data Screen (MASTR IIe)

- (1) Function - indicates directory function
- (2) Screen Title - channel data screen
- (3) Station Control - current personality station control
- (4) Ch - positional channel indicator
- (5) Tx CG - indicates transmit Channel Guard
- (6) STE - enables squelch tail elimination
- (7) CCT - sets carrier control timer value
- (8) DODT - sets drop out delay timer value
- (9) Rx CG - indicates receive Channel Guard
- (10) CG Lvl - specifies receive Channel Guard level
- (12) CG Pot - sets Channel Guard deviation level
- (13) RF Simplex - enables field as simplex
- (14) Rpt - allows channel to act as repeater
- (15) Scan - includes channel in scan list
- (15*) Aux RF Simplex - enables 2nd receiver on trans freq
- (16) Prompt Line - current field instruction line

```

+-M/A-COM-
|-----|
| New                MASTR III Control Shelf Programming                L1-B |
|-----|
|-----|
| Channel Data Screen                Station Control:                    |
|                                     XXXXXXXXXXXXX                    |
|                                     (20)                               |
|                                     Pa                               |
| (17) Tx CG Tx Freq                (18) Tx CG Rx Freq Pot Pot RF      Rpt Pwr |
| Ch  Tx CG Tx Freq                Rx CG Rx Freq Pot Pot Simplex Rpt Pwr |
| 1   XXXXX XXXXXXXXX                XXXXX XXXXXXXXX XXX XXX   XXX  XXX XXX |
| 2   XXXXX XXXXXXXXX                XXXXX XXXXXXXXX XXX XXX   XXX  XXX XXX |
|                                     (21)                               |
| Enter the tx Channel Guard for this channel                          |
|-----|
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10   |
|         PTTs    Pots    Addtnl  Progrm  Morse   Option  More    Help    Back  |

```

Figure 4-13 - Channel Data Screen (MASTR III)

- (17) Tx Freq - sets channel transmit frequency
- (18) Rx Freq - sets channel receive frequency
- (19) Tx Audio Pot - used to set the transmitter deviation limit
- (20) PA Power - sets the PA power output
- (21) Prompt Line - current field instruction line

The Channel Data Screen, shown in Figure 4-12 and 4-13, is accessed by selecting **F4 New** or **F2 Change** while in the Current Personalities Screen. From this window you can determine channel data for programming the personality.

NOTE

- 1) Some of the fields in the Channel Data Screen may only appear or accept data depending upon the selection made in the Station Control Window. The RF Simplex and Rpt fields will not allow data entry whenever T90 is the selected Station Control.
- 2) Fields 17-20, shown in Figure 4-13, are for MASTR III only. Use the **F4 Addtnl** key to access the remaining channel parameters.
- 3) The **F8 More** key will function only when the station control type selected has a frequency capacity greater than one.
- 4) Digital Channel Guard cannot be used in a low band (30-50 MHz) station.

Station Control (3) The **Station Control** field is used to indicate the type of station control to be used for programming the current personality.

This field is "Display Only", displaying the station control selected in the Station Control Window.

Channel (4) The **Channel** field is used as a positional indicator reflecting the frequency capacity for the selected station control.

This field is "Display Only", displaying the selected number of channels determined in the Frequency Capacity field of the Station Control Window.

To change the number of channels displayed, go back to the Current Personalities Window and press **F1 Setup** to enter the Station Control Screen.

- Tx CG (5) The **Transmit Channel Guard** field is a numeric field used to enter the transmit Channel Guard for this channel. This field accepts Tone and Digital Channel Guard codes.

Enter the desired transmit Channel Guard code for this channel using either Tone or Digital Channel Guard codes. To specify no Channel Guard, leave the field blank.

- Tone Channel Guards are identified by the placement of a decimal point within the field. For example: 67.0 identifies a Tone Channel Guard of 67 Hz. Valid Tone Channel Guard codes are in the range of 67.0 to 210.7 Hz. Standard Tone Channel Guards appear in Appendix E.
- Digital Channel Guards do not have a decimal point within the field. Valid Digital Channel Guard codes appear in Appendix D.

The value entered here directly controls access into the STE field. When this field is left blank, the STE field will default to "No" and entry into that field will be denied. When the transmit Channel Guard is set to a Digital Channel Guard, the STE field will default to "Yes" and entry into that field will be denied. When the transmit Channel Guard is set to a Tone Channel Guard, the STE field will allow entry.

- STE (6) The **Squelch Tail Elimination** field indicates whether or not squelch tail elimination is to be enabled for this channel.

Using the **TAB** key as a toggle switch, select "Yes" or "No". "Yes" indicates that squelch tail elimination is enabled while the unit is set to this channel. "No" disables squelch tail elimination.

Access into this field is dependent upon the value entered in the Tx CG field. When the Tx CG field is left blank, this field will default to "No" and access will be denied. When the Tx CG field is set to a Digital Channel Guard, this field will default to "Yes" and access will be denied. When the Tx CG field is set to a Tone Channel Guard, this field will allow access and data selection.

- CCT (7) The **Carrier Control Timer** field specifies how long continuous transmission is allowed to occur on the channel. Once this amount of time is reached the unit will no longer transmit.

Enter a value in the range of 0 to 600 seconds. This value causes the unit to automatically drop the channel if the transmission period exceeds the period specified.

To disable the Carrier Control Timer, leave the field blank or enter a "0" in this field.

- DODT (8) The **Drop Out Delay Timer** field specifies the time the transmitter stays keyed after push-to-talk unkeys.

Enter a value in the range of 0 to 10.00 seconds. This value allows the transmitter to stay keyed for the period of time specified after the push-to-talk unkeys.

To disable the Drop Out Delay Timer, leave the field blank or enter a "0" in this field.

- Rx CG (9) The **Receive Channel Guard** field is used to enter the receive Channel Guard for this channel. This field accepts Tone and Digital Channel Guard codes.

Enter the desired receive Channel Guard code for this channel using either Tone or Digital Channel Guard codes. To specify no Channel Guard, leave the field blank.

- Tone Channel Guards are identified by the placement of a decimal point within the field. For example: 67.0 identifies a Tone Channel Guard of 67 Hz. Valid Tone Channel Guard codes are in the range of 67.0 to 210.7 Hz. Standard Tone Channel Guards appear in Appendix E.
- Digital Channel Guards do not have a decimal point within the field. Valid Digital Channel Guard codes appear in Appendix D.

Rx CG (Con't) (9) The value entered here directly controls access into the CG Lvl field. When this field is left blank or is set to a Digital Channel Guard, the CG Lvl field will default to "Low" and entry into that field will be denied. When the receive Channel Guard is set to a Tone Channel Guard, the CG Lvl field will allow entry.

CG Lvl (10) The **Channel Guard Level** field is used to select the receive Channel Guard level setting.

Using the TAB key as a toggle switch, select between "High" and "Low" values. "High" indicates a slow detect time with less chance of falsing. "Low" indicates a faster select time.

Access into this field is dependent upon the value entered in the Rx CG field. When the Rx CG field is left blank or is set to a Digital Channel Guard code, this field will default to "Low" and access will be denied. When the Rx CG field is set to a Tone Channel Guard, this field will allow access and data selection.

CG Pot (12) The **Channel Guard Potentiometer** field is used to set the Channel Guard potentiometer deviation level for each channel.

Enter a value in the range of 0 to 255. A small value corresponds to a low deviation level and a high value corresponds to a high deviation level.

RF Simplex (13) The **RF Simplex** field is used to specify whether this channel is to be used as a simplex or duplex channel.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selecting "Yes" causes the channel to act as a simplex channel where the RF transmit and receive frequencies are always the same. Simplex transmissions are one-way, i.e., only one party can talk and be heard at a time. "No" causes the channel to act as a full duplex channel where both parties can talk and be heard at the same time.

When this field is set to "Yes", the Rpt field automatically defaults to "No". If the Rpt field is set to "Yes", this field will default to "No". Both fields however, can be set to "No" which will take the channel off line.

NOTE

Whenever the Station Control field is set to "T90", this field automatically defaults to "No" and entry into the field is denied.

Rpt (14) The **Repeater** field is used to indicate whether or not this channel will act as a repeater.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" causes the channel to act as a repeater, or full duplex channel. "No" will prevent this channel from acting as the repeater.

- Rpt
(Con't)
- (14) When this field is set to "Yes", the RF Simplex field automatically defaults to "No". If the RF Simplex field is set to "Yes", this field will default to "No". Both fields however, can be set to "No" which will take the channel off line.

The state of this field, in conjunction with the 2 Rcvrs, Rx Option, or Scan field values (in the Control Shelf Options Window), may affect field value appearance/acceptance in the DC Remote Control Options Window, the Remote Control Options Window, and the DTMF Options Window.

NOTE

Whenever the Station Control field is set to "T90", this field automatically defaults to "Yes" and entry into the field is denied.

- Scan
- (15) The **Scan** field is used to specify whether or not this channel is to be included in the scan list.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" causes the channel to be included in the scan list. "No" will prevent the channel from being included in the scan list.

Scan (Con't) (15) The appearance of this field is dependent upon the following:

Station Control:	Frequency Capacity:
No Remote	2, 3, or 4
DC Remote	2
Tone Remote	2, 3, or 4
DTMF	2, 3, or 4

Depending upon which field is present in the Control Shelf Options Window, the Rx Option field must be set to "Scan", or the Scan field must be set to "Yes".

Aux RF Simplex (15*) The **Aux RF Simplex** field is used to specify whether or not the second receiver will be on the same frequency as the transmitter.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" causes the second receiver to be on the same frequency as the transmitter.

The appearance of this field is dependent upon the following:

Station Control:	Frequency Capacity:
DC Remote	1, 2
Tone Remote	1, 2, 3, or 4

Depending upon which field is present in the Control Shelf Options Window, the Rx Option field must be set to "2 Rcvrs", or the 2 Rcvrs field must be set to "Yes".

NOTE

The value entered here is only meaningful for System Module firmware version 6.00 and above.

- ◆ Tx Freq (17) The **Tx Frequency** field is used to set the frequency at which the radio will transmit while on this channel.

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902780 (Old) supports division by 0.00625 or 0.005 MHz only.

Valid frequencies for UHF - Values in the range 380-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.00625 or 0.005 MHz only.

Valid frequencies for 800 - Values in the range 851-870 MHz. The entry must be evenly divisible by 0.0125 MHz.

Exception: Synthesizer 19D902780 (Old) supports division by 0.125 MHz only.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Receive Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

- ◆ Rx Freq (18) The **Rx Frequency** field is used to set the frequency at which the radio receives while on this channel.

Valid frequencies for VHF - Values in the range of 136-174 MHz. The entry must be Evenly divisible by 0.00125 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

- ◆ Rx Freq (18) Valid frequencies for UHF - Values in the range of 370-512 MHz. The entry must be evenly divisible by 0.005 or 0.00625 MHz.

Exception: Synthesizer 19D902781 (Old) supports division by 0.005 or 0.00625 MHz only.

Valid frequencies for 800 - Values in the range 806-825 MHz. The entry must be evenly divisible by 0.0125 MHz.

When a channel is programmed to repeat in VHF or UHF, you will not be able to enter the same value here as the Transmit Frequency. In addition, entering the same transmit and receive frequencies on non-repeating channels will automatically set the Simplex field to "Yes" and access to the RF Simplex field will be denied.

Exception: Synthesizer 19D902781 (Old) supports division by 0.125 MHz only.

- ◆ Tx Audio (19) Pot The **Transmit Audio Pot** field is used to specify the transmitter deviation audio potentiometer level.

- ◆ Tx Audio (19) Enter a value in the range of 0 - 255. A low value corresponds to a low deviation while a high value corresponds to a high deviation. In MASTR IIe systems, this field is normally set so that RF signal with 3 kHz of FM deviation results in 3 kHz of transmitter audio. In MASTR III Base Station systems, it will be necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired limited transmitter deviation.

- ◆ PA Power(20) The **PA Power** field is used to set the PA output power.

Enter a value in the range of 0 and 99. A level of 99 corresponds to full power.

From the Channel Data Screen, function key options are:

- F2 - PTTs** Select this option if you want to:
Set options for different types of push-to-talk keying.

- F3 - Pots** Select this option if you want to:
Set potentiometer settings.

- F4 - Addtnl** Select this option if you want to:
Define additional channel parameters. (MASTR III only)

- F5 - Program** Select this option if you want to:
Download the personality on the screen into the control shelf.

- F6 - Morse** Select this option if you want to:
Set the Morse Code ID and interval.
- F7 - Option** Select this option if you want to:
Define the options associated with this personality.
- F8 - More** Select this option if you want to:
Access commands that will simplify channel data
entry pertaining to multiple frequency station con-
trols.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

```

+--M/A-COM--
| (1)New                MASTR IIe Control Shelf Programming                L1-B
|-----|-----|
| (2) Channel Data Screen                Station Control:
| (3) XXXXXXXXXXXXX
| (4) (5) (6) (7) (8) (9) (10) (12) (13) (14) (15)
| Ch Tx CG STE CCT DODT Rx CG CG Lvl CG RF Pot Simplex Rpt Scan
| 1 XXXXX XXX XXX XXXX XXXXX XXX XXX XXX XXX XXX
| 2 XXXXX XXX XXX XXXX XXXXX XXX XXX XXX XXX XXX
| 3
| 4
| 5
| 6
| 7
| 8
| (16)
| Enter the tx Channel Guard for this channel
|-----|-----|
F1          F2          F3          F4          F5          F6          F7          F8          F9          F10
            Insert    Remove
                    Text          More          Help          Back

```

Figure 4-14 - Channel Data "More" Screen

- (1) Function - indicates directory function
- (2) Screen Title - channel data "more" screen
- (3) Station Control - current personality station control
- (4) Ch - positional channel indicator
- (5) Tx CG - indicates transmit Channel Guard
- (6) STE - enables squelch tail elimination
- (7) CCT - sets carrier control timer value
- (8) DODT - sets drop out delay timer value
- (9) Rx CG - indicates receive Channel Guard
- (10) CG Lvl - specifies receive Channel Guard level
- (12) CG Pot - sets Channel Guard deviation level
- (13) RF Simplex - enables field as simplex
- (14) Rpt - allows channel to act as repeater
- (15) Scan - includes channel in scan list
- (15*) Aux RF Simplex - enables 2nd receiver on trans freq
- (16) Prompt Line - current field instruction line

The Channel Data "More" Screen, shown in Figure 4-14, is accessed by selecting **F8 More** from a Channel Data Screen having the selected station control frequency capacity setting greater than one. This screen is identical to the original Channel Data Screen with the exception of the function key labels and their functions.

You can easily insert or remove channel definitions by using the **F2 Insert** and **F3 Remove** keys. To insert a channel definition, place the cursor on the line where the new channel definition is to appear and press **F2 Insert**. An empty channel definition line will emerge shifting all the following lines to the next higher channel number. To delete a channel definition line, place the cursor anywhere on the channel definition to be deleted and press **F3 Remove**. The line the cursor is on will disappear and the line that was just below it will now occupy the space of the deleted line. Thus, all lines below the deleted line will become one channel number less than before.

The **F4 Addtnl** key will only appear when creating a personality for a MASTR III Control Shelf. The MASTR III Channel Data Screen requires two displays to access all of the channel parameters. The **F4 Addtnl** key is used to toggle between the two displays.

From the Channel Data "More" Screen, function key options are:

- | | |
|--------------------|---|
| F2 - Insert | Select this option if you want to:
Insert a channel. |
| F3 - Remove | Select this option if you want to:
Remove a channel. |
| F4 - Addtnl | Select this option if you want to:
Define additional channel parameters (MASTR III only) |
| F7 - Text | Select this option if you want to:
Create lines of text to be stored in the disk file. |
| F8 - More | Select this option if you want to:
Return to the original Channel Data Screen. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Current Personalities Screen. |

PTT Options

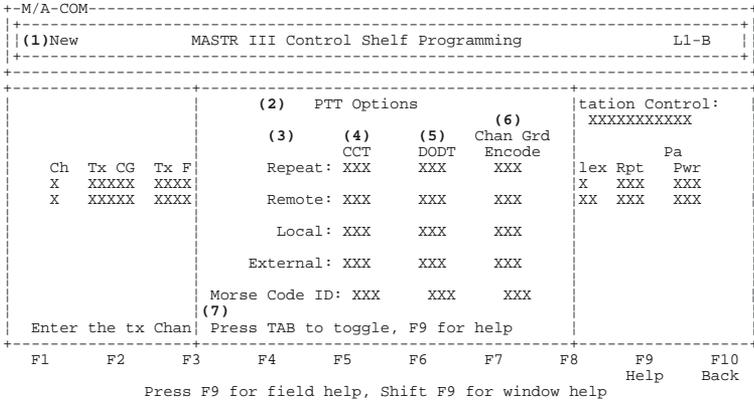


Figure 4-15 - PTT options Window

- (1) Function - indicates directory function
- (2) Window Title - PTT options window
- (3) PTT Keys - indicates PTT keys to be programmed
- (4) CCT - enables carrier control timer for key
- (5) DODT - enables drop out delay timer for key
- (6) Chan Grd Encode - enables Channel Guard for key
- (7) Prompt Line - current field instruction line

The PTT Options Window, shown in Figure 4-15, is accessed by selecting **F2 PTTs** while in the Channel Data Screen. This window is used to enable/disable specific functions associated with various push-to-talk keys for all control shelf channels in the current personality.

PTT Keys (3) The **Push-to-Talk Keys** fields are used to indicate control shelf push-to-talk keys.

These fields are "Display Only" and cannot be accessed. They are positional indicators indicating the control shelf push-to-talk key currently being defined.

- CCT (4) The **Carrier Control Timer** fields are used to determine whether or not the carrier control timer will be enabled while the associated key is active.
- Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" enables the carrier control timeout provided the active key and channel allows it. A "No" value disables CCT for the selected push-to-talk key.
- DODT (5) The **Drop Out Delay Timer** fields are used to determine whether or not the drop out delay timer will be enabled while the associated key is active.
- Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. A "Yes" value indicates that the drop out delay timer will be enabled when the associated key is active. A "No" value disables DODT for the particular push-to-talk key.
- Chan Guard Encode (6) The **Channel Guard Encode** fields are used to indicate whether or not Channel Guard is to be enabled while the associated key is active.
- Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. A "Yes" value indicates that Channel Guard will be enabled when the associated key is active. A "No" value disables Channel Guard encode for the particular push-to-talk key.

From the PTT Options Window, function key options are:

- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Channel Data Screen.

Potentiometer Settings

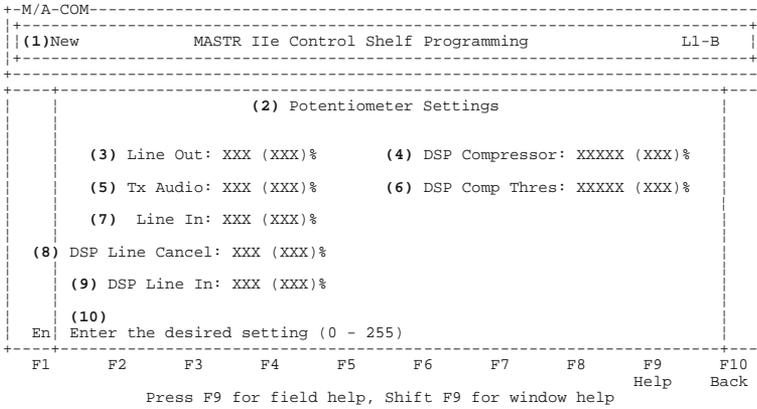


Figure 4-16 - Potentiometer Settings Window (MASTR IIe)

- | | |
|------------------------|--|
| (1) Function | - indicates directory function |
| (2) Window Title | - potentiometer settings window |
| (3) Line Out | - sets line out setting |
| (4) DSP Compressor | - indicates compression setting |
| (5) Tx Audio | - sets transmitter deviation |
| (6) DSP Comp Threshold | - adjusts the maximum output of the compressor |
| (7) Line In | - sets gain on line and comp threshold |
| (8) DSP Line Cancel | - cancels control shelf's line output |
| (9) DSP Line In | - adjusts DSP signal level |
| (10) Prompt Line | - current field instruction line |

```

+-----M/A-COM-----+
| New                MASTR III Control Shelf Programming                L1-B |
+-----+-----+
|                               Potentiometer Settings                               |
|                                                                              |
|          Line Out: XXX (XXX)%          DSP Compressor: XXXXX (XXX)%          |
| Repeater Gain: XXXXX (XXX)% (11)      DSP Comp Thres: XXXXX (XXX)%          |
|          Line In: XXX (XXX)%          Squelch Pot: XXXXXXXX (12)          |
| DSP Line Cancel: XXX (XXX)%          Value: XX (13)                        |
| DSP Line In: XXX (XXX)%                                                       |
|                                                                              |
| (14)                                                                              |
| En Enter the desired setting (0 - 255)                                         |
+-----+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
                Help Back
                Press F9 for field help, Shift F9 for window help

```

Figure 4-17 - Potentiometer Settings Window (MASTR III)

- (11) Repeater Gain - sets the transmitter deviation
 (12) Squelch Pot - indicates "manual" or "digital" pot
 (13) Value - indicates squelch pot value
 (14) Prompt Line - current field instruction line

The Potentiometer Settings Window, shown in Figure 4-16 and Figure 4-17, is accessed by selecting **F3 Pots** while in the Channel Data Screen. This window is used to select potentiometer settings for line out, transmit audio, line in, and DSP line in, line cancellation, and compressor pot.

NOTE

Some of the fields in the Potentiometer Settings Window, shown in Figure 4-17, will only appear when creating a personality for a MASTR III control station. These fields are marked by a **u** in the following section.

- Line Out (3) The **Line Out** field is used to specify the potentiometer line out level.

Enter a value in the range of 0-255. A low value corresponds to a low line out value, a high value corresponds to a high line out value. In non-remote systems, this field is

Line Out (Con't) (3) normally set to zero. In remote systems, this field is normally set so that 3 kHz of unquelled receiver audio results in 0 dBm of line output audio. The value entered here is reflected as a percentage to the right of this entry.

DSP Compressor (4) The **DSP Compressor** field is used to indicate the setting which determines the level of line input voltage which will lead to compression.

Enter a value in the range of 0 - 32767. A low value corresponds to a low gain, and a high value corresponds to a high gain. For remote systems (using the DSP Compressor in MASTR IIe systems), this field should be set so that nominal line input audio results in output audio. For other systems, this pot should be set to zero. The value entered here is reflected as a percentage to the right of this entry.

Tx Audio (5) The **Transmit Audio** field is used to specify the transmitter deviation audio potentiometer level.

Enter a value in the range of 0 - 255. A low value corresponds to a low deviation while a high value corresponds to a high deviation. In MASTR IIe systems that repeat, this field is normally set so that 3 kHz of unquelled receiver audio results in 3 kHz of transmitter audio. In other systems, it will be necessary to send nominal audio into a fixed gain input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. In MASTR III systems, this value is normally set such that maximum input results in 4.5 kHz of transmitter audio. The value entered here is reflected as a percentage to the right of this entry.

- DSP Comp Thres (6) The **DSP Compressor Threshold** field is used to adjust the signal level appearing at the output of the compressor.
- Enter a value in the range of 0-32767. This pot is set to this value for channels with Channel Guard. To disable the compressor, enter 32767. The value entered here is reflected as a percentage to the right of this entry.
- Line In (7) The **Line In** field is used to specify the setting to adjust the gain on the line input. This pot is a gain in the linear region of the compressor which determines the level of line input voltage which will lead to compression.
- Enter a value in the range of 0 - 255. A low value corresponds to less gain, and a high value corresponds to high gain. In MASTR IIe DC Remote systems, with the DSP Compression field disabled (in the Remote Options Window), this pot is set so that nominal line input audio results in output audio. In MASTR III or other systems, set this pot to zero because the line audio is either non-existent or is processed through a different DSP board path. The value entered here is reflected as a percentage to the right of this entry.
- DSP Line Cancel (8) The **DSP Line Cancellation** field is used to specify 2-wire system settings used to cancel the control shelf's line output audio from the line input audio.
- Enter a value in the range of 0 - 255. A low value corresponds to a low gain, and a high value corresponds to a high gain. Before being subtracted from the contended 2-wire line, the line output audio is attenuated according to this value. For any MASTR IIe system that does not use a DSP Compressor, this pot will never be used and should be set to zero.

DSP Line Cancel (Cont'd) (8) For 2-wire tone remote MASTR III systems, set this pot to 75. Otherwise this value should be set to zero. The value entered here is reflected as a percentage to the right of this entry.

DSP Line In (9) The **DSP Line In** field is used to specify the DSP line in pot setting which will adjust the signal level in the DSP.

Enter a value in the range of 0 - 255. A low value corresponds to a low gain on the line input, and a high value corresponds to a high gain. For non-remote systems, this should be set to zero. In MASTR IIe DC Remote systems with the DSP Compressor disabled, this field should be set to zero. For other remote systems, this field should be set so that under all operating conditions, the level does not override the analog-to-digital converter on the DSP board (U5). Normally, this pot should be set as follows:

MAX AUDIO IN LINE		DSP LINE IN POT
-10 dBm	=>	56
0 dBm	=>	16
+10 dBm	=>	5

The value entered here is reflected as a percentage to the right of this entry.

u Repeater Gain (11) The Repeater Gain field is used to set the transmitter deviation.

Enter a value in the range of 0 and 32767. A low value corresponds to a low deviation, and a high value corresponds to a high deviation. In systems that repeat, this field is normally set so the 3 kHz of unscelched receiver audio results in 3 kHz of transmitter audio. In other systems, it is necessary to send nominal audio into a fixed gain

input path like the local microphone. This potentiometer is then used to set the desired nominal transmitter deviation. The value entered here is reflected as a percentage to the right of this entry.

- u Squelch Pot (12) The Squelch Pot field is used to indicate how the squelch will be set.

Using the **TAB** key as a toggle switch, select between "Manual" and "Digital". If the manual pot on the front of the station is to be used to set the squelch, set this field to "Manual". If the digital pot on the Interface Board is to be used, set this field to "Digital".

NOTE

1. This field applies to System Module firmware version 12.00 and above.
2. The Interface Board must be at least a **REV. A** board before this field can be set to "Digital".

- u Value (13) The **Value** field is used to set the digital squelch pot.

Enter a value in the range of 0 and 99. Increasing this number has the same affect as turning the manual pot clockwise which tends to close squelch. Decreasing this number tends to open squelch.

This field will only appear when the Squelch Pot field is set to "Digital".

MS102518V1, Rev. U

From the Potentiometer Settings Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field
area.

F10 - Back Select this option if you want to:
Return to the Channel Data Screen.

Text Window

```

+-----M/A-COM-----+
+-----+-----+
| (1)New                MASTR III Control Shelf Programming                L1-B |
+-----+-----+
+-----+-----+
| (2)  Text Window                                           Station Control: |
|                                           XXXXXXXXXXXXX |
| Software Version:  XX      (3) |
| EEPROM Version:   XX      (4) |
| Last Programmed:  XXXXXXXX (5) |
| Ch  Tx  CG  Tx  F |
| X   XXXXX XXXX |
| X   XXXXX XXXX |
| (6)  User Defined Text: |
| XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
| (7)  Enter desired text |
+-----+-----+
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10 |
|                                     Help  Back |
+-----+-----+
Press F9 for field help, Shift F9 for window help

```

Figure 4-18 - Text Window

- | | |
|-----------------------|----------------------------------|
| (1) Function | - indicates directory function |
| (2) Window Title | - text window |
| (3) Software Version | - current radio software version |
| (4) EEPROM Version | - EEPROM version number |
| (5) Last Programmed | - last date personality written |
| (6) User Defined Text | - allows user defined text entry |
| (7) Prompt Line | - current field instruction line |

The Text Window, shown in Figure 4-18, is accessed by selecting **F7 Text** while in the Channel Data "More" Screen. This window is used to store information regarding the personality being created and also displays the current software version number, EEPROM version number and the last date programming took place.

- | | |
|------------------|---|
| Software Version | (3) The Software Version field is used to display the version number of the programming software currently installed in your PC. This field is established during the programming process. |
|------------------|---|

This is a "Display Only" field and cannot be accessed. It is automatically updated when the personality is programmed from the Current Personalities Screen and the write is successful.

EEPROM Version (4) The **EPPROM** version field is used to display the software version number that last reset the control shelf to ROM defaults.

This is a "Display Only" field and cannot be accessed. It is automatically updated when the personality is programmed from the Current Personalities Screen and the write is successful.

Last Programmed (5) The **Last Programmed** field is used to indicate the last date that the current personality was used to program a control shelf. When a personality is programmed from the Current Personalities Screen, the programmer will capture the system date and store that date in this field.

This is a "Display Only" field and cannot be accessed. It is automatically updated when the personality is programmed from the Current Personalities Screen and the write is successful.

User Defined Text (6) The **User Defined Text** field is used to enter a line of user defined text that will be stored with the personality on disk. Any line of text you want to enter will be saved.

Enter desired text. You can enter up to seven lines of text using any alphanumeric character combination.

From the Text Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Channel Data Screen.

Morse Code Options

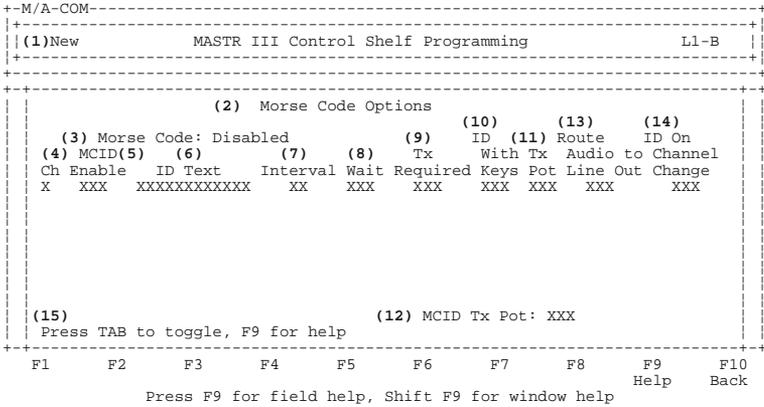


Figure 4-19 - Morse Code Options Window

- (1) Function - indicates directory function
- (2) Window Title - morse code options window
- (3) Morse Code - enables morse code function
- (4) Ch - positional channel indicator
- (5) MCID Enable - enables morse code ID on channel
- (6) ID Text - identifies morse code ID
- (7) Interval - time between morse code ID transmits
- (8) Wait - time after PTT before ID transmits
- (9) Tx Required - lets ID transmit after transmission
- (10) ID With Keys - indicates when ID transmits
- (11) Tx Pot - enables Tx pot morse code ID transmit
- (12) MCID Tx Pot - sets Tx pot morse code ID
- (13) Route Audio to Line Out - enables sending ID on line out
- (14) ID On Channel Change - enables ID transmit on channel change
- (15) Prompt Line - current field instruction line

The Morse Code Options Window, shown in Figure 4-19, is accessed by selecting **F6 Morse** while in the Channel Data Screen. This window is used to define morse code options for the current control station.

- Morse Code (3) The **Morse Code Enable** field is used to specify whether or not morse code options will be enabled for this personality.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". Selection of "Enabled" enables the morse code function and allows morse code options to be defined. "Disabled" will prevent any option definition. This field allows data entry if any of the channel definitions indicate Tx Pot is enabled.

- MCID Enable (5) The **Morse Code ID Channel Enable** field is used to determine whether or not the Morse Code ID will transmit while this channel is active.

Using the **TAB** key as a toggle switch, select between "Yes" and "No". Selection of "Yes" allows morse code identification to be transmitted while this channel is active. "No" prevents morse code identification on this channel. The MCID Tx Pot field will remain active provided any Tx Pot field has been set to "Yes".

- ID Text (6) The **Identification Text** field is used to specify the morse code identification to be used while this channel is active.

Enter the desired morse code identification for the channel. This field will accept up to twelve characters in any alphabetic and/or numeric combination. A forward-slash character (/) is also valid in this field. Alphabetic characters should be entered in lower case and will appear as upper case.

Interval (7) The **Morse Code Interval** field is used to indicate the number of minutes between morse code ID transmissions while this channel is active.

Enter the desired number of minutes, in the range of 5 - 30, to be used as the morse code ID interval.

Wait (8) The **Morse Code Wait** field is used to enter the number of seconds that the controller will wait after the push-to-talk unkeys and before the morse code ID transmits.

Enter the desired number of seconds, in the range of 0 - 10 (using tenths of a second), to be used as the morse code waiting period.

Tx Required (9) The **Transmit Required** field is used to indicate whether or not to transmit the ID after a transmission has occurred.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" allows the ID to transmit again after there has been an ID transmission and a push-to-talk transmission. "No" indicates the ID will not be retransmitted.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

ID With Keys (10) The **Identification With Keys** field is used to specify if morse code identification will be transmitted immediately after the interval timer expires or if it will wait until any active push-to-talk unkeys.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selection of "Yes" indicates that the morse code identification will be transmitted immediately upon interval timer expiration even if a push-to-talk key is keyed. "No" causes the controller to wait until any active push-to-talk key unkeys before transmitting.

The value entered here directly controls access into the Tx Pot field. When this field is set to "Yes", the Tx Pot field will default to "No" and entry into that field will be denied. When the ID With Keys field is set to "No", the Tx Pot field will allow entry.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

Tx
Pot

- (11) The **Transmit Potentiometer** field indicates whether or not the transmit potentiometer will be enabled for this channel.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates the transmit potentiometer will be set according to the value entered in the MCID Tx Pot field during morse code ID transmission. "No" prevents transmit potentiometer operation.

- Tx
Pot
(Cont'd)
- (11) Access into this field is dependent upon the value entered in the ID Over Keys field. When the ID Over Keys field is set to "Yes", this field will default to "No" and access will be denied. When the ID Over Keys field is set to "No", this field will allow access.

The value entered in this field directly controls access into the MCID Tx Pot field. When this field is set to "Yes", the MCID Tx Pot field will appear so that the appropriate value can be entered. When the Tx Pot field is set to "No", the MCID Tx Pot field will not appear.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

- MCID
Tx Pot
- (12) The **Morse Code ID Transmit Potentiometer** field is used to specify Morse Code identification for the transmit potentiometer when it is enabled.

Enter the desired transmit potentiometer setting, in the range of 0 - 255.

Access into this field is dependent upon the selection made in the Tx Pot field. When the Tx Pot field is set to "Yes", this field will appear allowing data entry. When the Tx Pot field is set to "No", this field will not appear.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

Route
Audio to
Line Out

- (13) The **Route Audio to Line Out** field is used to allow or prevent sending the morse code identification on line out.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" enables the ID to be sent on line out. This routing is done in addition to the regular transmit. A "No" selection will cause regular transmit of morse code identification only.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

ID On
Channel
Change

- (14) The **Identification on Channel Change** is used to indicate whether or not the morse code identification will be transmitted when the channel changes.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selection of "Yes" causes morse code ID to be transmitted at every channel change. The ID is transmitted on the channel changed to.

NOTE

This field is only valid for System Module firmware version 6.00 and above.

- (17) Type 90 Tone - establishes type 90 tone
- (18) Dsp Compressor - enables DSP compressor
- (19) 2 Rcvrs - enables two receiver option
- (20) Rx Option - sets the receive option
- (21) Scan - enables scan functions
- (22) Voting Level - determines level of voting tone
- (23) Aux Rx CAS - indicates how Aux Rx audio will be routed
- (24) Voting Tone - sets frequency of voting tone
- (25) DTMF - enables DTMF tones to control the station
- (25A) E&M Signalling - enables E&M keying of the station
- (25B) 2nd Receiver - indicates which type connected to the base station
- (25C) Digital Pager - enabled with a digital pager
- (26) Prompt Line - current field instruction line



Figure 4-21 - Control Shelf Options Window (MASTR III)

- (27) Bandwidth - sets receiver band width
- (27A) Circulator - not available, should be disabled
- (28) Reference Freq - indicates source of reference frequency
- (29) Reference - indicates external reference frequency
- (30) Cont Running Osc - enables the transmit synthesizer
- (31) P25 - enables P25 system operation
- (32) Prompt Line - current field instruction line

The Control Shelf Options Window, shown in Figure 4-20 and 4-21, is accessed by selecting **F7 Option** from the Channel Data Screen. This window allows you to define control shelf options associated with the selected control station.

NOTE

All of the fields in the Control Shelf Options Window may or may not be operational depending upon the Control Station and its selected frequency capacity. Various operational fields in this window will not be displayed without a specific entry in a related field.

- Station Control (3) The **Station Control** field is used to indicate the station control type being programmed in this personality.

This field is "Display Only", showing the control station currently selected in the Control Station Window.

NOTES

Any changes made to this field while in the current personality will be reflected in this personality only

Additional options can be defined by selected the F7 key when the selected station control type is DC Remote with 2 receivers, Tone Remote, or DTMF.

- Battery Alarm (4) The **Battery Alarm** field is used to indicate whether or not the battery alarm will be enabled when the station is operating on battery power.

Using the **TAB** key as a toggle switch, select "Enabled" or "Disabled". "Enabled" allows the battery alarm to be operable whenever the station is operating on battery power. "Disabled" prevents battery alarm operation.

The state of this field directly controls the appearance of the Battery Alarm On Time and Battery Rep Rate fields. When this field is set to "Enabled" these two fields will appear allowing data entry. When "Disabled" is selected here, the two fields will not appear.

- Logic Standby (5) The **Logic Standby** field is used to indicate whether or not functions selected by the remote will be restored upon power up.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". "Enabled" allows functions selected by the remote to be restored upon power up. "Disabled" prevents the logic standby function.

- Intercom (6) The **Intercom** field is used to determine whether or not to allow default audio routing between the remote and the station.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selection of "Yes" will allow default audio routing between the remote and the station.

NOTES

To enable Intercom, the Intercom Modifications in the Maintenance portion of the program must be completed.

This field is only valid for System Module firmware version 6.00 and above.

- Battery Alarm On Time (7) The **Battery Alarm on Time** field is used to indicate the length of time for battery standby alarm tone operation.

Enter the desired amount of time, in the range of 0 - 1.0 in tenths of a second.

This field will only appear when the Battery Alarm field is set to "Enabled".

- Repeater Option (8) The **Repeater Option** field is used to set the repeater configuration of the station.

Using the **TAB** key as a toggle switch, select between "Back-to-Back", "Community" and "None" values. Select:

- "Back-to-Back" if you are connecting repeaters in a Back-to Back configuration. Radio Control Base Stations use this type of connection.

Note: To get Drop Out Delay Timeouts with a Back-to-Back repeater, DODTs must be enabled with External PTTs (see PTT Options screen).

- "Community" if your station is set up with a Community Repeater Panel.
- "None" if your station is set up with no Repeater Option.

The appearance of this field is contingent upon the setting in the Frequency Capacity field of the selected Station Control. The Frequency Capacity field must be set to "1" before this field will appear.

- No Key (9) The **No Key** field determines what will be heard on the local speaker when a remote is not keyed. Receiver audio will always be heard when it is present, but this field determines what will be heard in the absence of receiver audio.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selecting "Yes" will allow audio from Line In to be heard. This allows the use of the Intercom button present on some remotes. Selecting "No" will only allow receiver audio to be heard on the local speaker.

- Battery Rep Rate (10) The **Battery Repetition Rate** field is used to specify the battery standby alert tone repetition rate.

Enter the desired number of seconds, in the range of 0 - 25, to indicate the repetition rate.

This field will only appear when the Battery Alarm field is set to "Enabled".

- Voice Guard (11) The **Voice Guard** field is used to select the type of Voice Guard or no Voice Guard.

Using the **TAB** key as a toggle switch, select "ENC/DEC", "END/END" or none. If this field is set to "ENC/DEC" or "END/END", the Control Line field is set to "4-Wire" and access to the field is denied. In addition, for a two channel station, the AUX Function is not available.

- REM/LOC (12) The **REM/LOC** field is used to select Remote and Local Intercom.

Using the **TAB** as a toggle switch, select between "REM/LOC", "REM", "LOC" or "None".

REM/LOC (12) When Remote Intercom is enabled, audio from Line In during a Remote PTT will be heard on the local speaker unless receiver audio is present. When present, receiver audio is always heard on the local speaker. If Remote Intercom is disabled, receiver audio is the only thing heard on the local speaker during Remote PTTs.

When Local Intercom is enabled, the audio from a person keying the local mic will be routed to Line Out. Therefore, the person will be heard at a remote. When Local Intercom is disabled, a person at the local mic cannot communicate with a person at a remote.

Synth. Part No. (13) The **Synth. Part No.** field allows you to select the Synthesizer being used. With the highlighted bar on the selected field press the Tab key to select the Old or New synthesizer.

Control Line (14) The **Control Line** field is used to indicate whether the remote control line setting will be two-wire or four-wire.

Using the **TAB** key as a toggle switch, select between "2 Wire" and "4 Wire". Select "2 Wire" if your remote is two-wire. Otherwise set this field to "4 Wire". Loop-back, or sidetone, can be enabled whenever the control line is four-wire.

Access into this field is dependent upon the value entered in the Voting System field. When the Voting System field is set to "Disabled", this field will appear allowing data selection. When the Voting System field is set to "Enabled", the Control Line field will not appear.

Control Line (Cont'd) (14) The value entered here controls access into the Sidetone field. Whenever the Control Line field is set to "4 Wire" and the Voting System is "Disabled", the Sidetone field will appear allowing data selection. Whenever "2 Wire" is selected and the Voting System is "Disabled", the Sidetone field disappears.

Sidetone (15) The **Sidetone** field is used to allow several remotes connected in parallel to hear each other.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. Selection of "Yes" will enable the sidetone feature. "No" disables sidetone.

Access into this field is dependent upon the values entered in the Voting System and Control Line fields. When the Voting System field is set to "Disabled" and the Control Line field is set to "4 Wire", this field will appear allowing data selection. If the Voting System field is set to "Enabled", the Sidetone field will disappear and access will be denied.

Voting System (16) The **Voting System** field is used to indicate how the station will be controlled.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". "Enabled" indicates that this system is to be a voting system. The control line will default to four-wire. "Disabled" indicates the station will be controlled by the control line.

This field appears whenever DC Remote or Tone Remote is the station control type.

- Voting System (Cont'd) (16) The value entered here directly controls access into the Voting Tone field, the Voting Level field, the Control Line field and the Sidetone field. Whenever this field is set to "Enabled", the Voting Tone field will appear allowing data selection. Whenever "Disabled" is selected, the Voting Tone and Voting Level fields disappear and the Sidetone field appears. If the Control Line field is set to 2 wire, the Sidetone field will not appear.
- Type 90 Tone (17) The **Type 90 Tone** field is used to determine which type 90 repeater tone will be used.
- Using the **TAB** key as a toggle switch, select the desired repeater tone. Valid selections are "1050", "1200", "1350", "1500", "1650", "1800", "1950", "2100", "2250", and "2400".
- The appearance of this field is contingent upon the selection of T90 in the Station Control Window.
- Dsp Compressor (18) The **DSP Compressor** field is used to indicate whether or not DSP compressor is to be used.
- Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". "Enabled" indicates DSP compression is desired. "Disabled" prevents DSP compression.
- This field will only appear in MASTR IIe when DC Remote is the selected station control and 1 channel is selected.

- 2 Rcvrs (19) The **2 Rcvrs** field is used to specify whether or not the second receiver is to be used.

Using the **TAB** key as a toggle switch, select between "Yes" and "No". "Yes" enables the second receiver function. Also, when this field is selected, an "Aux RF Simplex" field will appear in the Channel Data Screen allowing you to enable or disable the second receiver feature for a particular channel. "No" will disable the second receiver function.

The 2 Rcvrs field appears whenever the station control type is DC Remote with a frequency capacity of 1, or the station control type is Tone Remote with a frequency capacity of 1.

When DC Remote is displayed in the Station Control field, the state of the 2 Rcvrs field, in conjunction with the Rpt field in the Channel Data Screen, controls access into the DC Remote Control Options Window. When the 2 Rcvrs field is set to "Yes", and Rpt field is set to "Yes" or "No", the DC Remote Control Options Window can be accessed by pressing **F7 Remote**.

- When the 2 Rcvrs field is set to "Yes" and the Rpt field is set to "No", the +6 mA group fields, Main Rcvr and Aux Rcvr, can be accessed as well as the Aux Recvr field in the -2.5 mA group.
- When the 2 Rcvrs field is set to "Yes", and Rpt field is set to "Yes", the DC Remote Control Options Window allows additional access into the -6 mA and -11 mA fields.
- When the 2 Rcvrs field is set to "No", and Rpt field is set to "Yes" or "No", access into the DC Remote Control Options Window is not allowed.

2 Rcvrs
(Cont'd)

(19) When Tone Remote is displayed in the Station Control field, the state of the 2 Rcvrs field, in conjunction with the Rpt field in the Channel Data Screen, controls access into some of the fields in the Remote Control Options Window:

- When the 2 Rcvrs field is set to "Yes", and the Rpt field is set to "No", the Remote Control Options Window will display fields: CG On/Off group, Simul Monitor field, Aux Function group, CG Monitor field, and Rx Chan 1 and 2 fields.
- When the 2 Rcvrs field is set to "Yes", and the Rpt field is set to "Yes", the Remote Control Options Window will display fields: CG On/Off group or Repeat Ena/Dis group, Simul Monitor field, Aux Function group, CG Monitor field, and Rx Chan 1 and 2 fields.
- When the 2 Rcvrs field is set to "No", and the Rpt field is set to "No", the Remote Control Options Window will display fields: CG On/Off group, Aux Function group, CG Monitor field.
- When the 2 Rcvrs field is set to "No", and the Rpt field is set to "Yes", the Remote Control Options Window will display fields: CG On/Off group, Repeat Ena/Dis group, Aux Function group, CG Monitor field.

Rx Option (20) The **Receive Option** field is used to specify special receiver options such as scan or the presence of two receivers.

Using the **TAB** key as a toggle switch, select between "Scan", "2 Rcvrs", and "None".

- "Scan" will scan through all receive channels. When this value is selected, the **F4 Scan** will be accessible to allow you to enter the Scan Option screen. Also when this field is selected, a "Scan" field will appear in the Channel Data Screen allowing you to enable or disable the scan feature for a particular channel.
- "2 Rcvrs" will use the second receiver in addition to one main receiver frequency. When this value is selected, an Aux RX CAS field will appear directly below the RX Option field allowing the Auxiliary Receiver CAS to be enabled and an "Aux RF Simplex" field will appear in the Channel Data Screen allowing you to enable or disable the second receiver function for a particular channel. Also, when this value is selected, **F7 Remote** is accessible to enter the Remote Control Options screen.
- "None" indicates that no receive options are present.

The Rx Option field appears whenever the station control type is DC Remote with a frequency capacity of 2, or the station control type is Tone Remote with a frequency capacity of 2, 3, or 4.

When DC Remote is displayed in the Station Control field, the state of the Rx Option field controls access into the DC Remote Control Options Window. When this field is set to "2 Rcvrs", the DC Remote Control Options Window can be accessed by pressing **F7 Remote**. When "None" or

Rx Option (20) "Scan" is selected in the Rx Option field, (Cont'd) access into the DC Remote Control Window is not allowed.

When Tone Remote is displayed in the Station Control field, the state of the Rx Option field, in conjunction with the Rpt field in the Channel Data Screen, controls access to some of the fields in the Remote Control Options Window:

- When "None" is selected here, and the Rpt field is set to "No", the Remote Control Options Window will display fields: CG On/Off group, CG Monitor field, and Rx Chan 1 and 2 fields.
- When "None" is selected here, and the Rpt field is set to "Yes", the Remote Control Options Window will display fields: CG On/Off group, Repeat Ena/Dis group, CG Monitor field, and Rx Chan 1 and 2 fields.
- When "Scan" is selected here, and the Rpt field is set to "No", the Remote Control Options Window will display fields: CG On/Off group, Scan Ena/Dis group, CG Monitor field, and Rx Chan 1 and 2 fields.
- When "Scan" is selected here, and the Rpt field is set to "Yes", the Remote Control Options Window will display fields: CG On/Off group or Repeat Ena/Dis group, Scan Ena/Dis group, CG Monitor field, and Rx Chan 1 and 2 fields.

NOTE

Though "Scan" is selected in these 2 cases, "Yes" must be selected for the Scan field in the Channel Data Screen for the channel to be in the scan list.

- When "2 Rcvrs" is selected here, and the Rpt field is set to "No", the Remote Control Options Window will display fields: CG On/Off group, Simul Monitor field, CG Monitor field, and Rx Chan 1 and 2 fields.
- When "2 Rcvrs" is selected here, and the Rpt field is set to "Yes", the Remote Control Options Window will display fields: CG On/Off group or Repeat Ena/Dis group, Simul Monitor field, CG Monitor field, and Rx Chan 1 and 2 fields.

Scan

(21) The **Scan** field is used to specify whether or not the scan function should be enabled.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values.

- "Yes" enables the scan function. When this field is selected, a "Scan" field will appear in the Channel Data Screen allowing you to enable or disable the scan feature for a particular channel. Selecting "Yes" will also cause **F4 Scan** to be accessible to allow you to enter the Scan Option screen.
- "No" disables the scan option.

NOTE

Though "Yes" is selected here, "Yes" must also be selected for the Scan field in the Channel Data Screen for the channel to be in the scan list.

The Scan field appears whenever the station control type is No Remote or DTMF with a frequency capacity of 2, 3, or 4.

When DTMF is the selected Control Station, the state of this field directly controls

the appearance of some of the fields in the DTMF Options Window. When this field is set to "Yes", the Enable Scan and the Disable Scan fields will appear allowing data entry.

- Voting Level (22) The **Voting Level** field is used to determine the level of the voting time.

Enter a value in the range of 0-127.

- Aux Rx Cas (23) The **Aux Rx CAS** field is used to indicate how the Aux Rx audio will be routed.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". The latest harness for the Auxiliary Receiver connects the Aux Receiver's CAS to the System Module's input called RUS IN. If this field is set to "Enabled", the Aux Rx audio will be routed to Line Out, only when the Aux Rx is enabled and CAS is active. If this field is set to "Disabled", CAS will have no effect, and the Aux Rx audio will always be routed to Line Out when the Aux Rx is enabled.

NOTE

This field only applies to System Board Firmware Version 13 and above.

- Voting Tone (24) The **Voting Tone** field allows you to specify the station control's voting tone value.

Using the **TAB** key as a toggle switch, select between "1950" and "2175". The selected value represents the control station voting tone.

Access into this field is dependent upon the value entered in the Voting System field. When the Voting System field is set to "Enabled", this field will appear allowing data selection. When the Voting System field is set to "Disabled" the Voting Tone field will not appear.

DTMF (25) The **DTMF** field is used to indicate whether DTMF tones will be used to control the station.

In addition to using your remote, you may control the station by sending DTMF tones on the line to the station. Using the **TAB** key as a toggle switch select between "Enable" and "Disable". Setting this field to "Enabled" will cause a function key to appear named "DTMF". A DTMF screen may be accessed through this function key where you may specify the DTMF codes to control the station. Setting this field to "Disable" will not allow control of the station through DTMF tones.

E & M Signalling (25A) The **E & M Signalling** field allows E & M keying of the station.

Select "Yes" to enable E & M signalling. An E&M (+48 V) signal on the DC control lines will key the station as a remote. The DC Current Detection Circuit detects the presence of +48 V signalling as a +11 mA current. When this option is enabled, the station then executes a "Channel 1 - Remote PTT" which then normally keys the transmitter and routes the audio from the Line Input to the transmitter.

2nd Receiver (25B) The **2nd Receiver** field is used to indicate which type of second receiver is connected to the base station.

Using the **TAB** key as a toggle switch, select between "MII" or "MIII".

Digital Pager (25C) The **Digital Pager** field is used to indicate whether or not a Digital Pager is to be used with this station.

Select "Enabled" if a digital pager is to be used with this station. To use the Digital Pager, the station must have System Board firmware group 12 or above.

- ◆ **Band Width** (27) The **Band Width** field is used to select the receiver bandwidth.
Select between "25 kHz" and "12.5 kHz".

NOTE

This feature is only available for Group 18 or higher System Module code and Group 7, Group 9, or Group 11 IF Module code.

- ◆ **Circulator(27A)** The **Circulator** field determines whether or not the station is to detect Circulator faults.
Using the **TAB** key as a toggle switch, select between "Enabled" or "Disabled". If the station is to detect Circulator faults, set this field to "Enabled". Otherwise, set this field to "Disabled".
NOTE: This field only applies to System Module Firmware Version 12 and above.
- ◆ **Reference(28) Freq.** The **Reference Frequency** field is used to indicate whether an external reference source is to be used.
Using the **TAB** key as a toggle switch, if an external reference frequency is to be used, select "External", otherwise set this field to "Internal".
- ◆ **Reference(29)** The **Reference** field is used to indicate the "External Reference" frequency.
Enter a reference frequency between 5.0 and 17.975 for the 19D90278x synthesizer (old) or between 5.0 and 19.2 for the EA10168x synthesizer (new).
For the 19D90278x synthesizer (old) this number must be divisible by 0.00125, 0.005 or 0.00625. For the EA10168x synthesizer (new) this number must be divisible by 0.005 or 0.00625 for VHF or UHF and must be divisible by 0.00625 for 800 MHz.

- ◆ Reference(29) (Cont'd) The referenced frequency must be evenly divisible by the channel separation of the transmit frequency and the channel separation of the receive frequency. See the help screens for transmit and receive frequencies.

- ◆ Cont Running Osc (30) The **Continuous Running Oscillator** field is used to enable the transmit synthesizer (not the PA) to be operational as soon as the station is powered up or reset. This also prevents the synthesizer from being loaded at the beginning of each call.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled".

- ◆ P25 (31) The **P25** field is used to enable the DSP Module to control transmit operation. Allowing the station to become a P25 system.

Using the **TAB** key as a toggle switch, select between "YES" and "NO".

From the Control Shelf Options Window, function key options are:

- F1 - DTMF** Select this option if you want to:
Specify the DTMF codes to control the station.

- F2 - PTTs** Select this option if you want to:
Set options for different types of push-to-talk keying.

- F3 - Pots** Select this option if you want to:
Set potentiometer settings.

- F4 - Scan** Select this option if you want to:
Set Scan parameters.

- F5 - Progrm** Select this option if you want to:
Download the personality on the screen into the control shelf

- F6 - Morse** Select this option if you want to:
Set morse code options.

- F7 - Remote** Select this option if you want to:
Define options associated with a DC Remote or Tone Remote control station.

NOTE

The label on the F7 key depends upon the control station selection made before entering the Control Shelf Options Window.

- F8 - Timers** Select this option if you want to:
Define the times for detecting the SECURIT tones. This window applies to Tone Remote Control Stations only.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Channel Data Screen.

Scan Options Window

```

+-----M/A-COM-----+
| (1)New                MASTR III Control Shelf Programming                L1-B |
+-----+-----+
| (2) Scan Options                                           te |
| Batt Alarm: Enable      Revert to Last Ch: XXXXXXXX (3)      ntercom: Yes |
|   On Time: 0.5         Scan on Power Up: XXX (4)           No Key: Yes |
|   Rep Rate: 5          Rx Hang Delay: X (5)                REM/LOC: REM/LOC |
| Voting Sys: Disabl     Resume After Dis: XXX (6)          Option: Scan |
|   Level: 26            Disable Length: XXX (7)           Rx CAS: Disabled |
|   Tone: 1950          Priority Scan: XXXXXXXX (8)         calling: No |
| DTMF: Disabl          Priority Chan: X (9) |
| (10) |
| Press TAB to togg     Enter the desired length (30 - 360) |
+-----+-----+
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10 |
|                               Help      Back |

```

Figure 4-22 - Scan Option Window

- | | |
|-----------------------|---|
| (1) Function | - indicates directory function |
| (2) Screen Title | - Scan Options Window |
| (3) Revert to Last Ch | - channel station reverts to after scan |
| (4) Scan on Power Up | - enables scan on power up |
| (5) Rx Hang Delay | - determines receiver hang delay |
| (6) Resume After Dis | - disabling of scan will be temporary |

- (7) Disable Length - length of time scan is disabled
- (8) Priority Scan - enables priority scan function
- (9) Priority Chan - sets the priority scan channel
- (10) Prompt Line - current field instruction line

The Scan Options Window, shown in Figure 4-22, is assessed by selecting **F4 Scan** while in the Control Options Window. This window is used to set the Scan options.

- Revert To (3) The **Revert to Last Channel** field determines the channel the station stays on immediately after scan is disabled.

Using the **TAB** key as a toggle switch, select between "Used " and "Selected".

Used - Station switches to the last channel that was used to receive a scanned call. If no scanned call was received since the channel was changed with a remote or other form of control, the station will stay on the channel selected by remote.

Selected - Station always go to the last channel that was selected by a remote or other form of control.

- Scan On (4) The **Scan On Power Up** field indicates whether the station should begin scanning on reset or power up.

Using the **TAB** key as a toggle switch, select between "Yes" and "No". Selecting "Yes" indicates the station will begin scanning on reset or power up.

- Rx Hang (5) The **Rx Hang Delay** field determines the Receiver Hang Delay.

Enter a value between 0 and 5 seconds. With a hang delay, the station will delay scanning after receiving a scanned call or after transmitting. The station will stay on the last receiver and will not scan other

receivers until the delay is over. However, there is one exception to this rule. If Priority Scan is enabled, the priority receiver is periodically checked for activity during the delay.

NOTE: This field only applies to System Module Firmware Version 12 and above.

- Resume After Disable (6) The **Resume After Disable** field determines if disabling scan will be temporary.

Using the **TAB** key as a toggle switch, select between "Yes" and "No". With this field set to "Yes", any disabling of scan will be temporary. The length of time scan is disabled, is set by the Disable Length field that appears when this field is set to "Yes". At the end of the delay, the station automatically starts scanning again.

If this field is set to "No" and scan is ever disabled, the station will keep it disabled until told to enable it.

NOTE: This field only applies to System Module Firmware Version 12 and above.

- Disable Length (7) The **Disable Length** field specifies the length of time in seconds that scan will be disabled when the station is told to disable it.

Enter a number between 30 and 360 in increments of 30 (seconds). At the end of the delay, the station will automatically start scanning again.

NOTE: This field only applies to System Module Firmware Version 12 and above.

- Priority Scan (8) The **Priority Scan** field is used to determine whether or not Priority Scan will be enabled.

Using the **TAB** key as a toggle switch, select between "Fixed", "Selected" or "Disabled".

Fixed - Priority Scan is enabled with a fixed priority channel. The priority channel is set to the channel entered in the Priority Chan field and does not change.

Selected - Priority Scan is enabled with a selectable priority channel. Initially, the priority channel is set to the channel entered in the Priority Chan field. However, when a remote or some other means of control selects a channel, that channel becomes the priority channel.

NOTE: This field only applies to MASTR IIe stations with System Module Firmware Version 12 and above. A modified PSLM (Priority Search-Lock Monitor) card is also needed.

- Priority Chan (9) The **Priority Chan** field is used to determine the priority channel when priority scan is enabled.

Enter a channel number between 1 and 4. The channel entered in this field will be the priority channel when Priority scan is enabled.

The appearance of this field is contingent upon the selection of "Fixed" or "Selected" in the Priority Scan field.

NOTE: This field only applies to MASTR IIe stations with System Module Firmware Version 12 and above.

From the Scan Options Window, your options are:

- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Control Shelf Options Window.

DC Remote Options

```

+-M/A-COM-----+
| (1)New          MASTR III Control Shelf Programming          L1-B |
+-----+
|                (2) DC Remote Control Options                |
|                                                            |
| Batt (3)+ 6 mA: Tx Ch 1 (9)+ 11 mA: Tx Ch 2 (15)-2.5 mA: CG Mon |
| O (4)Main Recvr: XXX (10)Main Recvr: Off (16)Main Recvr: On  |
| Re (5)Aux Recvr: XXX (11)Aux Recvr: XXX (17)Aux Recvr: XXX  |
|                                                            |
| Voti (6)- 6 mA: XXXXXXXX(12)- 11 mA: XXXXXXXXXXXX(18)0 mA: Simul Mon |
| (7)Main Recvr: On (13)Main Recvr: XXX (19)Main Recvr: On  |
| (8)Aux Recvr: XXX (14)Aux Recvr: XXX (20)Aux Recvr: On    |
|                                                            |
| (21)                                                     |
| Pre Press TAB to toggle, F9 for help                    |
+-----+
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10 |
|                                         Help      Back |
|                                         Press F9 for field help, Shift F9 for window help |

```

Figure 4-23 - DC Remote Control Options Window

- (1) Function - indicates directory function
- (2) Window Title - DC remote control options window
- (3) +6 mA - indicates +6 mA control current
- (4) Main Recvr - main receiver setting for +6 mA
- (5) Aux Recvr - auxiliary receiver setting for +6 mA
- (6) -6 mA - indicates -6 mA control current
- (7) Main Recvr - main receiver setting for -6 mA
- (8) Aux Recvr - auxiliary receiver setting for -6 mA
- (9) +11 mA - indicates +11 mA control current
- (10) Main Recvr - main receiver setting for +11 mA
- (11) Aux Recvr - auxiliary receiver setting for +11 mA

(12) -11 mA	- indicates -11 mA control current
(13) Main Recvr	- main receiver setting for -11 mA
(14) Aux Recvr	- auxiliary receiver setting for -11 mA
(15) -2.5 mA	- indicates -2.5 mA control current
(16) Main Recvr	- main receiver setting for -2.5 mA
(17) Aux Recvr	- aux receiver setting for -2.5 mA
(18) -0 mA	- indicates 0 mA control current
(19) Main Recvr	- main receiver setting for 0 mA
(20) Aux Recvr	- auxiliary receiver setting for 0 mA
(21) Prompt Line	- current field instruction line

The DC Remote Control Options Window, shown in Figure 4-23, is accessed by selecting **F7 Remote** from the Control Shelf Options Window. In order for this window to appear, the Rx Option field must be set to "2 Rcvrs", or the 2 Rcvrs field must be set to "Yes", and the Station Control must be set to DC Remote. This window allows you to define additional options associated with a DC Remote control station.

- + 6 mA (3) The **+ 6 mA** field indicates where the +6 mA control current is to be active.

This is a "Display Only" field and indicates that the +6 mA control current is transmit channel 1.

- Main Recvr (4) The **Main Receiver** field is used to indicate whether or not the main receiver will be active when the +6 mA control current is active.

Using the **TAB** key as a toggle switch, select between "On" and "Off". Selection of "On" indicates that the main receiver will be active when the +6 mA control current is active. "No" will disable the main receiver.

- Aux Recvr (5) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the +6 mA control current is active.

Using the **TAB** key as a toggle switch, select between "On", "Off", or "NC". If the second receiver is to be unmuted when this control current is active, set this field to "On". If the second receiver is to be muted, set this field to "Off". If the control current is not to change the second receiver, select "NC" (no change).

- 6 mA (6) The **- 6 mA** field indicates where the -6 mA control current is to be active.

Using the **TAB** key as a toggle switch, select between "Main Recvr" and "Rep Dis". Selecting "Main Recvr" will cause audio to only come from channel 1 of the main receiver. Selecting "Rep Dis" will cause audio from channel 1 of the main receiver to be received but not repeated. When "Rep Dis" is selected, the Rpt field (in the Channel Data Screen) must be set to "Yes" for at least one channel.

The setting in this field directly controls accessibility into the Aux Recvr field. When this field is set to "Main Recvr" the Aux Recvr field automatically defaults to "Off" and entry is denied. When this field is set to "Rep Dis" access into the Aux Recvr field is allowed.

- Main Recvr (7) The **Main Receiver** field is used to indicate whether or not the main receiver will be active when the -6 mA control current is active.

This is a "Display Only" field and defaults to "On" indicating the main receiver will be active when the -6 mA control current is active.

- Aux Recvr (8) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the -6 mA control current is active.

When the -6 mA control current is set to "Rep Dis" this field will allow entry. Using the **TAB** key as a toggle switch, select between "On", "Off", or "NC". If the second receiver is to be unmuted when this control current is active, set this field to "On". If the second receiver is to be muted, set this field to "Off". If the control current is not to change the second receiver, select "NC" (no change).

When the -6 mA control current is set to "Main Recvr" this field will not allow entry and will automatically default to "Off".

- + 11 mA (9) The **+ 11 mA** field indicates where the +11 mA control current will be active.

This is a "Display Only" field and indicates that the +11 mA control current is transmit channel 2.

This field will only appear when the control station is set to DC Remote with a frequency capacity of 2.

- Main Recvr (10) The **Main Receiver** field is used to indicate the main receiver setting when the +11 mA control current is active.

This field is a "Display Only" field and automatically defaults to "Off" disabling the main receiver function for the +11 mA control current.

- Aux Recvr (11) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the +11 mA control current is active.

Using the **TAB** key as a toggle switch, select between "On", "Off", or "NC". If the second receiver is to be unmuted when this control current is active, set this field to "On". If the second receiver is to be muted, set this field to "Off". If the control current is not to change the second receiver, select "NC" (no change).

- 11 mA (12) The **- 11 mA** field indicates where the -11 mA control current will be active.

Using the **TAB** key as a toggle switch, select between "Aux Recvr" and "Rep Dis/CG Mon". Selecting "Aux Recvr" will cause audio to come from the second receiver only. Selecting "Rep Dis/CG Mon" will cause audio from channel 1 of the main receiver to be received but not repeated and cause the Channel Guard monitor to be active. When "Rep Dis/CG Mon" is selected, the Rpt field (in the Channel Data Screen) must be set to "Yes" for at least one channel.

The setting in this field directly controls the setting in the Main Recvr field and access into the Aux Recvr field. When this field is set to "Aux Recvr" the Main Recvr field automatically defaults to "Off" and the Aux Recvr field automatically defaults to "On". Entry into both fields is denied. When the -11 mA field is set to "Rep Dis/CG Mon" the Main Recvr field defaults to "On" and entry is denied. The Aux Recvr field, however, will allow access.

Main
Recvr

- (13) The **Main Receiver** field is used to indicate whether or not the main receiver will be active when the -11 mA control current is active.

This is a "Display Only" field which will automatically default to "On" whenever the -11 mA field is set to "Rep Dis/CG Mon". "On" indicates the main receiver will be active when the -11 mA control current is active. This field will automatically default to "Off" whenever the -11 mA field is set to "Aux Recvr". "Off" indicates the main receiver will not be active when the -11 mA control current is active.

Aux
Recvr

- (14) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the -11 mA control current is active.

When the -11 mA control current is set to "Rep Dis/CG Mon" this field will allow entry. Using the **TAB** key as a toggle switch, select between "On", "Off", or "NC". If the second receiver is to be unmuted when this control current is active, set this field to "On". If the second receiver is to be muted, set this field to "Off". If the control current is not to change the second receiver, select "NC" (no change).

Aux Recvr (Cont'd) (14) When the -11 mA control current is set to "Aux Recvr" this field will not allow entry and will automatically default to "On".

-2.5 mA (15) The **-2.5 mA** field indicates where the -2.5 mA control current will be active.

This is a "Display Only" field and indicates that the -2.5 mA control current is CG Mon.

Main Recvr (16) The **Main Receiver** field is used to indicate the main receiver setting when the -2.5 mA control current is active.

This field is a "Display Only" field and automatically defaults to "On" enabling the main receiver function for the -2.5 mA control current.

Aux Recvr (17) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the -2.5 mA control current is active.

Using the **TAB** key as a toggle switch, select between "On", "Off", or "NC". If the second receiver is to be unmuted when this control current is active, set this field to "On". If the second receiver is to be muted, set this field to "Off". If the control current is not to change the second receiver, select "NC" (no change).

0 mA (18) The **0 mA** field indicates where the 0 mA control current is to be active.

This is a "Display Only" field and indicates that the 0 mA control current is Simul Mon.

Main Recvr (19) The **Main Receiver** field is used to indicate whether or not the main receiver is to be active when the 0 mA control current is active.

This field is a "Display Only" field and automatically defaults to "On" enabling the main receiver function for the 0 mA control current.

Aux Recvr (20) The **Auxiliary Receiver** field is used to indicate how the second receiver will be set when the 0 mA control current is active.

This field is a "Display Only" field and automatically defaults to "On" causing the second receiver to be unmuted when this control current is active.

From the DC Remote Control Options Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Channel Data Screen.

Tone Remote Options

+M/A-COM-										
(1)New MASTR III Control Shelf Programming LI-B										
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+										
(2) DC Remote Control Options										
Batt	(3)+ 6 mA: Tx Ch 1	(9)+ 11 mA: Tx Ch 2	(15)-2.5 mA: CG Mon							
O	(4)Main Recvr: XXX	(10)Main Recvr: Off	(16)Main Recvr: On							
Re	(5)Aux Recvr: XXX	(11)Aux Recvr: XXX	(17)Aux Recvr: XXX							
Voti	(6)- 6 mA: XXXXXXXX	(12)- 11 mA: XXXXXXXXXXXX	(18)0 mA: Simul Mon							
	(7)Main Recvr: On	(13)Main Recvr: XXX	(19)Main Recvr: On							bled
	(8)Aux Recvr: XXX	(14)Aux Recvr: XXX	(20)Aux Recvr: On							
Pre	(21) Press TAB to toggle, F9 for help									
F1	F2	F3	F4	F5	F6	F7	F8	F9 Help	F10 Back	
Press F9 for field help, Shift F9 for window help										

Figure 4-24 - Remote Control Options Window

- | | |
|-----------------------|--|
| (1) Function | - indicates directory function |
| (2) Window Title | - remote control options window |
| (3) CG On/Off | - enables latched tone Channel Guard |
| (4) Repeat Ena/Dis | - enables repeater function |
| (5) Scan Ena/Dis | - enables scan function |
| (5*) Simul Monitor | - enables simultaneous monitor |
| (6) Aux Function | - enables auxiliary functions |
| (7) Aux Defaults Aux1 | - allows aux 1 relay on after power up |
| (8) Aux Defaults Aux2 | - allows aux 2 relay on after power up |
| (9) CG Monitor | - enables remote to turn CG monitor on |
| (10) Rx F1 (1750) | - indicates remote has receive chan 1 |
| (11) Rx F2 (1650) | - indicates remote has receive chan 2 |
| (12) Prompt Line | - current field instruction line |

The Remote Control Options Window, shown in Figure 4-24, is accessed by selecting **F7 Remote** from the Control Shelf Options Window when the selected control station is Tone Remote. This window allows you to set additional control shelf options for Tone Remote control stations.

NOTE

Various fields in this window will not be displaced without a specific entry in a related field. Other fields may or may not appear depending upon the frequency capacity selected in the Control Station Window.

- CG On/Off (3) The **Channel Guard On/Off** field is used to specify whether or not you can turn Channel Guard Monitor Latch on and off with the remote.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that Channel Guard On/Off is present allowing you to select either 1450 Hz or 1550 Hz as the Channel Guard function tone. "No" prevents the Channel Guard On/Off operation.

The state of this field controls the appearance of the 1450 and 1550 fields:

- When Tone Remote has a Frequency Capacity setting of 1 or 2, and when this field is set to "Yes" these two fields will appear directly below this field. If the Rpt field in the Channel Data Screen is set to "Yes", and "No" is selected in the CG On/Off field, the 1450 and 1550 fields will appear in the Repeat Ena/Dis group. If the Rpt field is set to "No" in the Channel Data Screen and the CG On/Off field is also set to "No", the 1450 and 1550 fields will not appear.

- CG On/Off (Cont'd)
- (3) • When Tone Remote has a Frequency Capacity setting of 3 or 4 and this field is set to "Yes", the 1450 and 1550 fields will appear directly below this field. If the CG On/Off field is set to "No", the 1450 and 1550 fields will not appear. However, when the Rpt field is set to "Yes" in the Channel Data Screen and the Scan field is set to "Yes" in the Remote Control Options Window and this field is set to "No", the 1450 and 1550 fields will appear in the Repeat Ena/Dis group.

When "Yes" is selected in the CG On/Off field and the 1450 and 1550 fields appear directly below the CG On/Off field you can use the **TAB** key as a toggle switch in either field to set the CG Monitor Latch. Notice that when one field is set to "CG Mon Latch On", the other field automatically defaults to "CG Mon Latch Off".

- Repeat Ena/Dis
- (4) The **Repeat Enable/Disable** field is used to specify a remote means of repeater control.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that remote repeater control is present and allows you to select the repeater code. "No" prevents the repeater operation.

The appearance of this field is contingent upon settings made in the Tone Remote Frequency Capacity field of the Control Station Window, the Rpt field of the Channel Data Screen, and the Rx Option or Scan fields of the Control Shelf Options Window, and the CG On/Off field in the Remote Control Options Window.

- When Tone Remote Frequency Capacity is 1, the Rpt field set to "No", the CG On/Off field set to "Yes" or "No" - the Repeat Ena/Dis field and tone fields will not appear.
- When Tone Remote Frequency Capacity is 1, the Rpt field set to "Yes", the CG On/Off field set to "Yes" - the Repeat Ena/Dis field and 1050 and 1150 tone fields will appear allowing data selection. However, when the CG On/Off field is set to "No", the Repeat Ena/Dis field will again appear but with 1450 and 1550 as tone fields.
- When Tone Remote Frequency Capacity is 2, 3, or 4, the Rpt fields set to "No", Rx Option field set to "None", "Scan" or "2 Rcvrs" (or the Scan field set to "Yes" or "No"), and the CG On/Off field set to "Yes" or "No" - the Repeat Ena/Dis field and tone fields will not appear.
- When Tone Remote Frequency Capacity is 2, the Rpt fields set to "Yes", Rx Option field set to "None", and the CG On/Off field set to "Yes" - the Repeat Ena/Dis field will appear with 1050 and 1150 tone fields below. If the CG On/Off field is set to "No", the Repeat Ena/Dis field will appear with 1450 and 1550 fields below.

Repeat
Ena/Dis
(Cont'd)

- (4)
- When Tone Remote Frequency Capacity is 2, 3, or 4, the Rpt fields set to "Yes", Rx Option field set to "Scan" or "2 Rcvrs" (or the Scan field set to "Yes"), and the CG On/Off field set to "Yes" - the Repeat Ena/Dis field and tone fields will not appear. However, if the CG On/Off field is set to "No", the Repeat Ena/Dis field will appear with 1450 and 1550 tone fields below.
 - When Tone Remote Frequency Capacity is 3 or 4, the Rpt fields set to "Yes", Scan field set to "No", and the CG On/Off field set to "Yes" - the Repeat Ena/Dis field and tone fields will not appear. However, when the CG On/Off field is set to "No", the Repeat Ena/Dis field will appear with 1450 and 1550 fields below.

When "Yes" is selected in the Repeat Ena/Dis field and either the 1450 and 1550 tone fields or 1050 and 1150 tone fields appear you can use the **TAB** key as a toggle switch to indicate the desired repeater code. Notice that when one tone is enabled, the other automatically defaults to "Repeat Disable".

Scan
Ena/Dis

- (5) The **Scan Enable/Disable** field is used to indicate whether or not scan will be enabled.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that scan will be enabled at 1050 Hz tone. "No" indicates that scan will be disabled at 1150 Hz tone.

The appearance of this field is contingent upon settings made in the Tone Remote Frequency Capacity field of the Control Station Window, the Rpt field of the Channel Data Screen, and the Rx Option or Scan fields of the Control Shelf Options Window.

- When Tone Remote Frequency Capacity is 2, 3, or 4, the Rpt fields set to "Yes", Rx Option field set to "Scan" (or the Scan field set to "Yes") - the Scan Ena/Dis field will appear:

Simul
Monitor

- (5*) The **Simultaneous Monitor** field is used to indicate whether or not the remote has a simultaneous monitor button.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that the remote has a simultaneous monitor button. A 1050 Hz tone will enable the simultaneous monitor. "No" indicates the remote does not have a button.

This field will only appear when the Tone Remote frequency capacity (in the Control Station Window) is set to "2", the Rpt field (in the Channel Data Screen) is set to "Yes", and the Rx Option field (in the Control Shelf Options Window) is set to "2 Rcvrs".

Aux
Function

- (6) The **Auxiliary Function** field is used to specify whether or not you will be able to enable and disable an auxiliary relay by the remote.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" allows you to enable and disable an auxiliary relay by the remote.

- Aux Function (Cont'd)
- (6) This field will only appear when the Tone Remote frequency capacity (in the Control Station Window) is set to "1" or "2".

The state of the Aux Function field directly controls the appearance of the 1250 and 1350 fields as well as the Aux Default fields. Whenever "Yes" is selected, these fields will appear beneath the Aux Function field. When "No" is selected, these fields do not appear.

When "Yes" is selected in the Aux Function field, the fields 1250 and 1350 will appear below this field. Using the **TAB** key as a toggle switch, set the 1250 field to either "Aux1 Off" or "Aux1 Off/Aux2 On". In the 1350 field, set the field to either "Aux1 On" or "Aux1 On/Aux2 Off". Notice that whenever the 1250 field is set to "Aux1 Off", the 1350 field is set to "Aux1 On". And, whenever the 1250 field is set to "Aux1 Off/Aux2 On", the 1350 field automatically defaults to "Aux1 On/Aux2 Off".

- Aux Defaults Aux 1
- (7) The **Auxiliary Defaults Aux1** field is used to specify whether or not the Aux1 relay will be on after power up.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that the Aux1 relay will be on at power-up. "No" indicates the Aux1 relay must be turned on after power up.

The appearance of this field is contingent upon Control Station setting of Tone Remote with a frequency capacity of 1 or 2, and the Aux Function field set to "Yes" in the Remote Control Options Window.

- Aux Defaults Aux2 (8) The **Auxiliary Defaults Aux2** field is used to specify whether or not the Aux2 relay will be on after power up.

Using the **TAB** key as a toggle switch, select between "Yes" and "No" values. "Yes" indicates that the Aux2 relay will be on at power-up. "No" indicates the Aux2 relay must be turned on after power up.

The appearance of this field is contingent upon Control Station setting of Tone Remote with a frequency capacity of 1 or 2, the Aux Function field set to "Yes" and the "Aux1 Off/Aux2 On" setting toggled to in the 1250 field of the Remote Control Options Window.

- CG Monitor (9) The **CG Monitor** field is used to specify whether or not you will be able to turn Channel Guard Monitor on with a remote.

Using the **TAB** key as a toggle switch, select between "Yes" and "No". "Yes" indicates that a remote will be used to turn Channel Guard Monitor on. A 2050 Hz tone will be used. "No" indicates that a remote will not be used.

- Rx F1
(1750) (10) The **Rx F1** field is used to specify whether or not your remote has a receive channel 1 (Rx F1) button.

Using the **TAB** key as a toggle switch, select between "Enable" and "Disable". "Enable" indicates your remote has a receive channel 1 button. A 1750 Hz tone will be used with the receive channel 1 button. For a station that uses the 2nd receiver, pressing the receive channel 1 button selects the main receiver (channel 1) instead of the second receiver. Selection of "Disable" indicates that your receiver does not have a channel 1 button.

- Rx F2
(1650) (11) The **Rx F2** field is used to specify whether or not your remote has a receive channel 2 (Rx F2) button.

Using the **TAB** key as a toggle switch, select between "Enable" and "Disable". "Enable" indicates your remote has a receive channel 2 button. A 1650 Hz tone will be used with the receive channel 2 button. For a station that uses the 2nd receiver, pressing the receive channel 2 button selects the second receiver instead of the main receiver. Selection of "Disable" indicates that your receiver does not have a channel 2 button.

From the Remote Control Options Window, function key options are:

- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Control Shelf Options Window.

DTMF Options

```

+-----M/A-COM-----+
+-----+-----+-----+
| (1)New           MASTR III Control Shelf Programming           L1-B |
+-----+-----+-----+
+-----+-----+-----+
|                                     (2) DTMF Options           |
|                                     (3)                         |
| Enable Repeater: XXXXXXXX           Disable Repeater: XXXXXXXX |
|                                     (4)                         |
| Batt AL                               Enable Scan: XXXXXXXX     |
| On T                                 Disable Scan: XXXXXXXX     |
| Rep R                               (5)                         |
|                                     (6)                         |
|                                     VSQ CG Detect: XXXXXXXX    |
|                                     (7)                         |
|                                     (8)                         |
| Type 90                               Channels                 |
| 1 XXXXXXXX  2 XXXXXXXX  3 XXXXXXXX  4 XXXXXXXX             |
| 5 XXXXXXXX  6 XXXXXXXX  7 XXXXXXXX  8 XXXXXXXX             |
| 9 XXXXXXXX 10 XXXXXXXX 11 XXXXXXXX 12 XXXXXXXX             |
| 13 XXXXXXXX 14 XXXXXXXX 15 XXXXXXXX 16 XXXXXXXX            |
|                                     (9)                         |
| Press T Enter desired DTMF digits                               |
+-----+-----+-----+
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10 |
| Help   Help   Help   Help   Help   Help   Help   Help   Help   Back  |
|                                     Press F9 for field help, Shift F9 for window help |

```

Figure 4-25 - DTMF Options Window

- | | |
|----------------------|--------------------------------------|
| (1) Function | - indicates directory function |
| (2) Window Title | - DTMF options window |
| (3) Enable Repeater | - sets DTMF code to enable repeater |
| (4) Disable Repeater | - sets DTMF code to disable repeater |
| (5) Enable Scan | - sets DTMF code to enable scan |
| (6) Disable Scan | - sets DTMF code to disable scan |
| (7) VSQ CG Detect | - enables decoding DTMF and CG |
| (8) Channel | - sets DTMF code to receive on Chan |
| (9) Prompt Line | - current field instruction line |

The DTMF Options Window, shown in Figure 4-25, is accessed by selecting **F1 DTMF** from the Control Shelf Options Window when the selected control station is DTMF. This window allows you to set DTMF codes for scan and channel fields.

NOTE

Various fields in this window may or may not appear depending upon the frequency capacity selected in the Control Station Window and settings in the Control Shelf.

- Enable Repeater (3) The **Enable Repeater** field is used to determine the DTMF code to be used when enabling the repeater function.

Enter the desired DTMF code to enable the repeater function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rpt field (in the Channel Data Screen) being set to "Yes" and the DTMF Frequency Capacity field (in the Control Station Window) being set to 1, 2, 3, or 4.

- Disable Repeater (4) The **Disable Repeater** field is used to determine the DTMF code to be used when disabling the repeater function.

Enter the desired DTMF code to disable the repeater function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Rpt field (in the Channel Data Screen) being set to "Yes" and the DTMF Frequency Capacity field (in the Control Station Window) being set to 1, 2, 3, or 4.

- Enable Scan (5) The **Enable Scan** field is used to determine the DTMF code to be used when enabling the scan function.

Enter the desired DTMF code to enable the scan function. This field will accept up to seven numeric characters , as well as # and * characters.

The appearance of this field is contingent upon the Scan field (in the Control Shelf Options Window) being set to "Yes" and the DTMF Frequency Capacity field (in the Control Station Window) being set to 2, 3, or 4.

- Disable Scan (6) The **Disable Scan** field is used to determine the DTMF code to be used when disabling the scan function.

Enter the desired DTMF code to disable the scan function. This field will accept up to seven numeric characters, as well as # and * characters.

The appearance of this field is contingent upon the Scan field (in the Control Shelf Options Window) being set to "Yes" and the DTMF Frequency Capacity field (in the Control Station Window) being set to 2, 3, or 4.

- VSQ CG Detect (7) The **VSQ CG Detect** field is used to enable decoding DTMF and Channel Guard simultaneously.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". Select "Enabled" to allow simultaneous decoding of DTMF and Channel Guard.

- Channel (8) The **Channel** fields are used to determine the DTMF code to be used when accessing the channel.

Enter the desired DTMF code to allow access to the selected channel. These fields will accept up to seven numeric characters, as well as # and * characters.

A separate channel field will appear for each channel, depending upon the DTMF frequency capacity selected in the Control Station Window.

MS102518V1, Rev. U

From the DTMF Options Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field
area.

F10 - Back Select this option if you want to:
Return to the Control Shelf Options Window.

Tone Remote Timers

```

+-M/A-COM-
| (1)New           MASTR III Control Shelf Programming           L1-B
|-----|
| (2) DTMF Options
|
| Enable Repeater: XXXXXXXX           Disable Repeater: XXXXXXXX           (4)
|                                     (3)
| Enable Scan: XXXXXXXX             Disable Scan: XXXXXXXX           (6)
|                                     (5)
|                                     VSQ CG Detect: XXXXXXXX           (7)
|
| Batt Al
| On T
| Rep R
|
| Type 90
|
| (8) Channels
| 1 XXXXXXXX  2 XXXXXXXX  3 XXXXXXXX  4 XXXXXXXX
| 5 XXXXXXXX  6 XXXXXXXX  7 XXXXXXXX  8 XXXXXXXX
| 9 XXXXXXXX 10 XXXXXXXX 11 XXXXXXXX 12 XXXXXXXX
|13 XXXXXXXX 14 XXXXXXXX 15 XXXXXXXX 16 XXXXXXXX
|
| (9)
| Press T Enter desired DTMF digits
|-----|
| F1           F2           F3           F4           F5           F6           F7           F8           F9           F10
|                                     Help      Back
|
| Press F9 for field help, Shift F9 for window help

```

Figure 4-26 - Tone Remote Timers Window

- | | |
|---------------------------|--|
| (1) Function | - indicates directory function |
| (2) Window Title | - Tone Remote Timer window |
| (3) TX On Hold Tone | - enabled on Tone Remote Stations |
| (4) Timed Tone Remote | - allows user to set times for detecting tones |
| (5) Securit Tone Min Time | - minimum time allowed for detection |
| (6) Securit Tone Max Time | - maximum time allowed for detection |
| (7) Prompt Line | - current field instruction line |

The Tone Remote Timers Window, shown in Figure 4-26, is accessed by selecting **F8 Timers** from the Control Shelf Options Window when the selected Control Station is Tone Remote. This window is used to help eliminate tone falsing on a Tone Remote station by allowing the user to set the minimum and maximum times for detecting the SECURIT tones.

- | | |
|-----------------|---|
| TX On Hold Tone | (3) When the TX On Hold Tone field is enabled on Tone Remote stations, the presence of a HOLD tone following the FUNCTION tone is required before the transmitter is keyed. If this field is disabled, a REMOTE PTT will key the transmitter on a FUNCTION tone. |
|-----------------|---|

NOTE

This field applies to EPROM version 15.00 and above.

- Timed
Tone
Remote
- (4) The **Timed Tone Remote** field allows the user to input the minimum and maximum times for detecting SECURIT tones.

Using the **TAB** key as a toggle switch, select between "Enabled" and "Disabled". Selecting "Enabled" will allow access to the minimum and maximum SECURIT tone fields. This allows the user to input the minimum and maximum times for detecting the SECURIT tones.

By default, the Control Module firmware processes tones the moment that they are reported by the DSP. The timer establish a "window" in which the tones must be decoded. The SECURIT minimum timer is started when the DSP first reports it's presence. If a FUNCTION tone is reported before the SECURIT minimum time has elapsed, another SECURIT/FUNCTION sequence is required for an action to be taken. If the function tone is reported after the SECURIT maximum timer has elapsed, no action will be taken and a No tone is required before further processing of TONE REMOTE tones are permitted. If the FUNCTION tone falls within the "window" allowed by the SECURIT minimum and maximum times, the SECURIT tone function list is executed. If the SECURIT tone is followed by a valid function tone, the function list will be executed.

NOTE

This field applies to EPROM version 15.00 and above.

- Securit
Tone
Min Time
- (5) The **Securit Tone Min Time** field is used to determine the minimum time that a SECURIT tone must be present before it is consistently processed by the Control Shelf.

The DSP decode time for function tones (24 ms) is a factor in calculating the actual time decoded. For example, if the minimum timer is 100ms, a SECURIT tone will be consistently decoded as a valid SECURIT tone. A SECURIT tone which is between 76 to 100 ms will sometimes be decoded as a valid SECURIT tone. The level of SECURIT tone has a small effect on the timers operation.

NOTE

This field only applies to EPROM version 15.00 and above.

Access to this field is denied if the Timed Tone Remote field is disabled.

- Securit
Tone Max
Time
- (6) The **Securit Tone Max Time** field is used to determine the maximum time that a SECURIT tone must be present before it is consistently processed by the Control Shelf.

Securit (6) The DSP decode time for function tones
Tone Max (24 ms) is a factor in calculating the actual
Time decoded. For example, if the maxi-
(Cont'd) mum timer is 150ms, a SECURIT tone
whose duration is 150ms will be consis-
tently decoded as a valid SECURIT tone.
A SECURIT tone which is between 150 to
174 ms will sometimes be decoded as a
valid SECURIT tone: and a SECURIT
tone whose duration is more than 174 ms
will not be decoded as a valid SECURIT
tone; and a SECURIT tone whose dura-
tion is more than 174 ms will not be de-
coded as a valid SECURIT tone. The level
of SECURIT tone has a small effect on the
timers operation.

NOTE

This field only applies to EPROM ver-
sion 15.00 and above.

Access to this field is denied if the
Timed Tone Remote field is disabled.

From the Tone Remote Timers Window, function key options are:

F9 - Help Select this option if you want to:
Receive further information pertaining to a field
area.

F10 - Back Select this option if you want to:
Return to the Control Shelf Options Window.

Programming the Radio Within the Change

```

+-M/A-COM-
| (1)New          MASTR III Control Shelf Programming          LL-B
|
|
|-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     Channel Data Screen      Station Control:
|                                     (2) Program Radio        Tone Remote
|
| Ch  Tx  CG  Tx F1  Are you sure?  Yes - Press F1  (3)  lex Rpt  Pa
| 1                                     No - Press F2                                     No  99
| 2                                     (4)                                     No  99
| 3                                     Please be sure the radio is connected
| 4                                     to COM1 and that the radio is turned
| 5                                     on before pressing F1 'Yes'.
| 6                                     No  99
| 7                                     No  99
| 8                                     No  99
|
| Enter the tx Channel Guard for this channel
|
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
| Yes     No     No     No     No     No     No     No     Help   Back
|
| Press F9 for field help, Shift F9 for window help

```

Figure 4-27 - Program Radio Window

- (1) Function - indicates directory function
- (2) Window Title - program radio window
- (3) Continue Prompt - continue or abort option
- (4) Note Line - denotes steps necessary to continue

The Program Radio Window, shown in Figure 4-27, is accessed by selecting **F5 Program** while in the Channel Data Screen or the Control Shelf Options Window. This window is used to program the radio with the current personality.

From the Program Radio Window, function key options are:

- F1 - Yes** Select this option if you want to:
Program the unit specified.
- F2 - No** Select this option if you want to:
Discontinue with this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Channel Data Screen or Control
Shelf Options Window.

Saving a Personality

```

+-M/A-COM-+
| (1)New      MASTR III Control Shelf Programming      L1-B |
+-+-----+
|                                     Channel Data Screen      Station Control: |
|                                     (2) Save Personality      +XXXXXXX |
|                                     (3)                      Pa |
| Ch Tx CG (3) XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX      pt Pwr |
| 1 XXXXX                                XX XX |
| 2 XXXXX                                XX XX |
|                                     File Name: XXXXXXXX (4) |
|                                     Exit with save: Press F1 (5) |
|                                     Exit without save: Press F2 |
|                                     No Exit: Press F10 |
|                                     (6) |
| Enter the name of the file |
+-+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No                                     Help      Back
Press F9 for field help, Shift F9 for window help

```

Figure 4-28 - Save Personality Window

- (1) Function - indicates directory function
- (2) Window Title - save personality window
- (3) Path - indicates path for saving personality
- (4) File Name - indicates personality to be saved
- (5) Continue Prompt - continue or abort option
- (6) Prompt Line - current field instruction line

The Save Personality Window, shown in Figure 4-28 is accessed whenever you try to exit the Channel Data Screen. This window is used to select a personality name for identification when saving the personality.

- Path (3) The **Path** field is used to specify a new or target path under which the current personality will be saved.

To change the path, you must cursor up from the file name field. Enter the desired target path if different from the default path.

File Name (4) The **File Name** field is used to specify the name under which the current personality is to be saved.

Enter the destination file name. This field will accept up to eight characters in any alphanumeric combination. Alphabetic characters will automatically be converted to upper case. This field will not accept file names that are not acceptable to DOS.

From the Save Personality Window, function key options are:

F1 - Yes Select this option if you want to:
Exit the Channel Data Screen and save personality to disk.

F2 - No Select this option if you want to:
Exit the Channel Data Screen without saving the personality to disk.

F9 - Help Select this option if you want to:
Receive further information pertaining to a field area.

F10 - Back Select this option if you want to:
Return to the Channel Data Screen.

CHANGE/EDIT A PERSONALITY

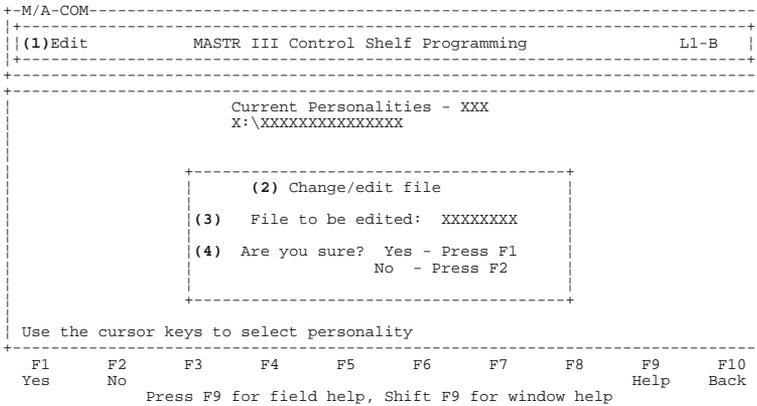


Figure 4-29 - Change/Edit File Window

- (1) Function - indicates edit function
- (2) Window Title - change/edit file window
- (3) File to be edited - personality name to be edited
- (4) Continue Prompt - continue or abort option

The Change/Edit File Window, shown in Figure 4-29, is accessed by selecting **F2 Change** while in the Current Personalities Screen. This window is used to solicit the personality name to be changed.

- File to be edited (3) The **File to be edited** field is used to specify the file name of the personality to be edited.

Enter the desired personality name. To be valid, this set must be a currently defined personality. You can use up to eight valid characters in any alphanumeric combination. This field is an upper case field, therefore all characters will be converted to upper case even if entered in lower case. This field will not accept file names that are not acceptable to DOS.

From the Change/Edit File Window, function key options are:

- F1 - Yes** Select this option if you want to:
Change the personality selected.
- F2 - No** Select this option if you want to:
Discontinue with this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

PROGRAMMING THE PERSONALITY INTO THE RADIO

```

+-M/A-COM-----+
| | (1)Directory      MASTR III Control Shelf Programming      |L1-E|
+-----+
|
|               Current Personalities - XXX
|               +-----+
|               (2) Program Radio
|               (3)Selected Filename:  XXXXXXXX
|               (4)Are you sure?  Yes - Press F1
|                           No  - Press F2
|               (5)
|               Please be sure the radio is connected
|               to COM1 and that the radio is turned
|               on before pressing F1 'Yes'.
|               +-----+
| Use the cursor keys to select personality
+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No
Press F9 for field help, Shift F9 for window help

```

Figure 4-30 - Program Radio Window

- | | |
|-----------------------|--|
| (1) Function | - indicates directory function |
| (2) Window Title | - program radio window |
| (3) Selected Filename | - name of personality to be programmed |
| (4) Continue Prompt | - continue or abort option |
| (5) Note Line | - denotes steps necessary to continue |

The Program Radio Window, shown in Figure 4-30, is accessed by selecting **F5 Program** while in the Current Personalities Screen. This window is used to enter the name of the personality to be used for programming the radio.

- Selected Filename (3) The **Selected File Name** field is used to specify the name of the personality to use for programming the radio.

Enter the name of the personality you want to use for the program operation. This field will accept up to eight characters in any alphanumeric combination. Alphabetic characters will automatically be converted to upper case. To be valid, the name here must correspond to a currently defined personality.

From the Program Radio Window, function key options are:

- F1 - Yes** Select this option if you want to:
Program the personality selected into the radio.
- F2 - No** Select this option if you want to:
Discontinue with this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field area.
- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

READING THE PERSONALITY OUT OF THE RADIO

```

+-M/A-COM-+
| (1)Directory      MASTR III Control Shelf Programming      L1-F |
+-+-----+
|
|           Current Personalities - XXX
|           +-----+
|           | (2) Read Radio into File
|           | (3) Enter Filename:  XXXXXXXX
|           | (4) Are you sure?  Yes - Press F1
|           |                   No  - Press F2
|           |
|           | Please be sure the radio is connected
|           | to COM1 and that the radio is turned
|           | on before pressing F1 'Yes'.
|           |
|           +-----+
|
| Use the cursor keys to select personality
|
| F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
| Yes    No      Help    Back
|
|           Press F9 for field help, Shift F9 for window help
+-----+

```

Figure 4-31 - Read Radio into File Window

- | | |
|---------------------|---------------------------------------|
| (1) Function | - indicates directory function |
| (2) Window Title | - read radio into file window |
| (3) Enter Filename | - name of personality be read |
| (4) Continue Prompt | - continue or abort option |
| (5) Note Line | - denotes steps necessary to continue |

The Read Radio into File Window, shown in Figure 4-31, is accessed by selecting **F6 Read** while in the Current Personalities Screen. This window is used to confirm the read operation selection.

- | | |
|-------------------|--|
| Enter
Filename | (3) The Enter File Name field is used to specify the name of the personality to use for the read operation. |
|-------------------|--|

Enter the name of the personality you want to use for the read operation. This field will accept up to eight characters in any alphanumeric combination. Alphabetic characters will automatically be converted to upper case. To be valid, the name here must correspond to a currently defined personality.

MS102518V1, Rev. U

From the Read Radio into File Window, function key options are:

- F1 - Yes** Select this option if you want to:
Read the radio personality and save under the
name selected.

- F2 - No** Select this option if you want to:
Discontinue with this procedure.

- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.

- F10 - Back** Select this option if you want to:
Return to the Current Personalities Screen.

SELECTING ROM DEFAULTS

```

+-M/A-COM-+
+-----+
+ (1)Default ROM   MASTR IIe Control Shelf Programming   Ll-E +
+-----+
+-----+
+ Channel Data Screen   Station Control: +
+-----+
+ (2) Select ROM Defaults   +Multiple Receiver +
+-----+
+ Are you sure? Yes - Press F1 (3) +
+ No - Press F2 +
+ (4) +
+ This option will reset the EEPROM to +
+ the default state. Please be sure +
+ the control shelf is connected to +
+ COM1 and that the control shelf is +
+ turned on before pressing F1 'Yes'. +
+-----+
+ Enter the rx Channel Guard for this channel +
+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No
Press F9 for field help, Shift F9 for window help

```

Figure 4-32 - Select ROM Defaults Window

- | | |
|---------------------|---------------------------------------|
| (1) Function | - indicates ROM default function |
| (2) Window Title | - select ROM defaults window |
| (3) Continue Prompt | - continue or abort option |
| (4) Note Line | - denotes steps necessary to continue |

The Select ROM Defaults Window, shown in Figure 4-32, is accessed by selecting **F7 Reset** while in the Current Personalities Screen. This window is used to reset the personality EEPROM to the default state stored in ROM. Select **F1 Yes** to reset the EEPROM to the default state.

From the Select ROM Defaults Window, function key options are:

- | | |
|-------------------|---|
| F1 - Yes | Select this option if you want to:
Reset the EEPROM to the default state. |
| F2 - No | Select this option if you want to:
Discontinue with this procedure. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field area. |
| F10 - Back | Select this option if you want to:
Return to the Current Personalities Screen. |

VHF TX AND RX SYNTHESIZERS

An alternative Synthesizer has been added for 4-level FM capability with interstitial frequency capability for this product.

This Synthesizer is ADF 4252 and can be used in the following control shelves:

- No Remote
- DC Remote
- DTMF
- Multiple Receiver
- DTMF T90
- Tone Remote
- Simulcast
- Trunk Control

A toggle switch is used to select either the old Synthesizer or the new Synthesizer on the following screens:

WINDOW SCREEN	TO DISPLAY SYNTHESIZER P/N SWITCH, PRESS
Current Personalities	F1 – Setup option
Channel Data Screen for No Remote, DC Remote, Tone Remote, DTMF, T90, and Multiple Receiver Control Shelves	F7 - Option
Data Screen for Simulcast and Trunked Control Shelves	None – Displays switch on opening personality

MS102518V1, Rev. U

From the Utility Window, function key options are:

- | | |
|--------------------|---|
| F1 - Port | Select this option if you want to:
Change the port to use for programming radios. |
| F2 - Maint | Select this option if you want to:
To perform the maintenance function. |
| F3 - Dir | Select this option if you want to:
Change your current directory. |
| F5 - Delete | Select this option if you want to:
Delete a personality from the disk. |
| F6 - Print | Select this option if you want to:
Print out the personality to the printer, screen, or
file. |
| F7 - Ext | Select this option if you want to:
Change the current extension. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field
area. |
| F10 - Back | Select this option if you want to:
Return to the Current Personalities Screen. |

CHANGING THE COMMUNICATIONS PORT

```

+--M/A-COM--
+-----+
| (1)Port          MASTR IIe Control Shelf Programming          L1-D |
+-----+
+-----+
|                                     |
| Current Personalities - XXX        |
| X:\XXXXXXXXXXXXXXX                |
|                                     |
| +-----+                          |
| | (2)Communications Port Setup      |
| |                                     |
| | COMM Port X (3)                   |
| |                                     |
| | Are you sure? Yes - Press F1 (4)  |
| |                               No - Press F2 |
| |                                     |
| | (5)                               |
| | Enter the COMM Port ID            |
| |                                     |
| +-----+                          |
|                                     |
| Use the cursor keys to select personality |
+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No                                     Help     Back
Press F9 for field help, Shift F9 for window help

```

Figure 5-2 - Communications Port Setup Window

- | | |
|---------------------|--|
| (1) Function | - indicates port function |
| (2) Window Title | - communications port setup window |
| (3) COMM Port | - indicates communications port ID no. |
| (4) Continue Prompt | - continue or abort option |
| (5) Prompt Line | - current field instruction line |

The Communications Port Setup Window, shown in Figure 5-2, is accessed by selecting **F1 Port** while in the Utility Window. This window allows you to select the communications port you want to use in programming the radio.

- | | |
|-----------|---|
| COMM Port | (3) The Communications Port Identification field is used to identify the communications port to use for programming the radio. There are only two ports available for this purpose: COM1 and COM2. |
|-----------|---|

Enter the desired port by selecting a "1" to indicate COM1 or a "2" to indicate COM2. No other numbers will be accepted in this field. After selection has been made, press **F1 Yes** to perform the change.

MS102518V1, Rev. U

From the Communications Port Setup Window, function key options are:

- F1 - Yes** Select this option if you want to:
Continue with this change.
- F2 - No** Select this option if you want to:
Cancel this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Utility Window.

NOTE

Once **F1 Yes** is selected, the Setup file is updated to reflect the new selection and that selection will become the default until another selection is made.

CHANGE DIRECTORIES

```

+-----+
|M/A-COM-
+-----+
|(1)Change Dir      MASTR IIe Control Shelf Programming      L1-E
+-----+
+-----+
|
|      Current Personalities - XXX
|      X:\XXXXXXXXXXXXXXXXXXXXXXXXX
|
|      (2) Change Directory
|      (3)
|      X:\XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
|
|      Are you sure?  Yes - Press F1 (4)
|                   No  - Press F2
|
|      (5)
|      Enter desired directory
|
+-----+
Use the cursor keys to select personality
+-----+
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No
Press F9 for field help, Shift F9 for window help

```

Figure 5-3 - Change Directory Window

- (1) Function - indicates change directory function
- (2) Window Title - change directory window
- (3) Change Directory Field - target path for change directory
- (4) Continue Prompt - continue or abort option
- (5) Prompt Line - current field instruction line

The Change Directory Window, shown in Figure 5-3, is accessed by selecting **F3 Dir** while in the Utility Window. This window allows you to change directories without leaving the program.

- Change Directory (3) The **Change Directory** field is used to specify a new target path.

Enter the desired target path. Any valid DOS path identifier with no more than 32 characters will be accepted. To perform the actual change, press **F1 Yes**.

MS102518V1, Rev. U

From the Change Directory Window, function key options are:

- F1 - Yes** Select this option if you want to:
Continue with this change.
- F2 - No** Select this option if you want to:
Cancel this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Utility Window.

NOTE

Pressing **F1 Yes** will return you to the Utility Window under the specified directory.

DELETE PERSONALITY

```

+-----M/A-COM-----+
| (1)Delete           MASTR IIe Control Shelf Programming           L1-F |
+-----+-----+
|
| Current Personalities - XXX
| X:\XXXXXXXXXXXXXX
|
| (2) Delete File
| Delete the file XXXXXXXX(3)
|
| Are you sure?  Yes - Press F1 (4)
|                No  - Press F2
|
+-----+-----+
Use the cursor keys to select personality
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No
Press F9 for field help, Shift F9 for window help

```

Figure 5-4 - Delete File Window

- (1) Function - indicates delete function
- (2) Window Title - delete file window
- (3) Delete the file - name of personality to be deleted
- (4) Continue Prompt - continue or abort option

The Delete Personality Window, shown in Figure 5-4, is accessed by selecting **F5 Delete** while in the Utility Window. This window allows you to delete a personality without leaving the program.

Delete the file (3) The **Delete the File** field is used to indicate the name of the personality to delete.

Enter the name of the existing personality you want to delete and press **F1 Yes**. The program will display a confirmation prompt before deletion occurs.

NOTE

Deleting a personality will remove it PERMANENTLY.

MS102518V1, Rev. U

From the Delete Personality Window, function key options are:

- F1 - Yes** Select this option if you want to:
Continue with this change.
- F2 - No** Select this option if you want to:
Cancel this procedure.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Utility Window.

NOTE

If **F1 Yes** is selected the personality named will be PERMANENTLY deleted. If you do not wish to delete the personality, select **F2 No**.

PRINT PERSONALITY

```

+-M/A-COM-
| (1)Print          MASTR IIe Control Shelf Programming          L2-F
|-----|-----|
|          (2) Print Personality
|          Personality: XXXXXXXXXXXX (3)
|          Output to:  XXXXXXXX   (4)
|          X:\XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (5)
|          Printer No: X (6)
|                   1 - LPT1      3 - COM1
|                   2 - LPT2      4 - COM2
|          Are you sure? Yes - Press F1 (7)
|                   No - Press F2
|          (8)
|          Use the cursor ke Press TAB to toggle, F9 for help
|-----|-----|
F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
Yes     No
Press F9 for field help, Shift F9 for window help

```

Figure 5-5 - Print Personality Window

- | | |
|--------------------|--|
| (1) Function | - indicates print function |
| (2) Window Title | - print personality window |
| (3) Personality | - identifies personality to print |
| (4) Output To | - indicates personality print location |
| (5) Destination | - destination file name to print to |
| (6) Printer Number | - identify printer number selection |
| (7) Print Que | - que to print option |
| (8) Prompt Line | - current field instruction line |

The Print Personality Window, shown in Figure 5-5, is accessed by selecting **F6 Print** while in the Utility Window. This window allows you to specify specific print options associated with a personality.

- Personality (3) The **Personality** field is used to identify the personality you wish to print. The default personality will be the current personality.

This field automatically defaults to the current personality. To change the file name simply cursor into the field and type in the desired personality.

```
Personality: XXXXXXXX
Output to: XXXXXXXX (4)
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX(5)

Printer No: 1 (6)
1 - LPT1      3 - COM1
2 - LPT2      4 - COM2
```

Output To (4) The **Output To** field is used to identify where you will print the personality.

Using the **TAB** key as a toggle switch, specify the desired printout destination.

- Selecting "Screen" will generate a print-out of the personality data to the screen allowing you to page through it.
- Selecting "Printer" will generate a hard copy printout.
- Selecting "File" allows you to set up the personality in an ASCII file format.

Destination (5) The **Destination** field is used to specify the destination file name for the printed output whenever "File" is selected in the "Output to" field.

Enter a valid destination. You can use up to 35 characters in this field.

Printer No (6) The **Printer Number** field is used to identify which printer port you will be printing to whenever "Printer" is selected in the "Output to" field.

Using the **TAB** key as a toggle switch, select the printer port for your printer:

- "1" for printer port LPT1.
- "2" for printer port LPT2.
- "3" for printer port COM1.
- "4" for printer port COM2.

After selecting the appropriate printer port, press **F1 Yes** to generate a hard copy printout.

From the Print Personality Window, function key options are:

- F1 - Yes** Select this option if you want to:
Print the selected personality.
- F2 - No** Select this option if you want to:
Cancel the print que and return to the window.
- F9 - Help** Select this option if you want to:
Receive further information pertaining to a field
area.
- F10 - Back** Select this option if you want to:
Return to the Utility Window.

NOTE

1. Whenever "Printer" is the selected Output To file and **F1 Yes** is pressed, the PC Programming Software will perform a final edit check notifying you if your printer is not on-line. When the printer is placed on-line the information will then print.
2. Whenever "File" is the selected Output To file and **F1 Yes** is pressed, the PC Programming Software will perform a final edit check to see that you are not overwriting a file with information already stored on it. If you are, a warning will appear to let you know. If no file is being overwritten, a message will indicate that the printout is being generated and return you to the Utility Window.

CHANGE EXTENSIONS

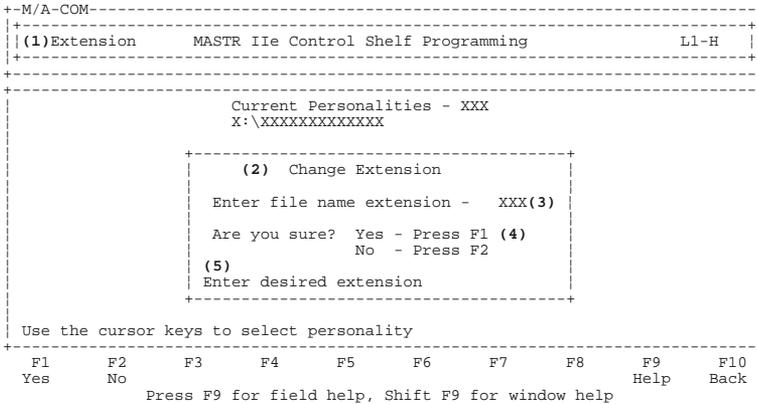


Figure 5-6 - Change Extension Window

- (1) Function - indicates extension function
- (2) Window Title - change extension window
- (3) Enter File Name Exten. - identifies desired extension
- (4) Continue Prompt - continue or abort option
- (5) Prompt Line - current field instruction line

The Change Extension Window, shown in Figure 5-6, is accessed by selecting **F7 Ext** while in the Utility Window. This window allows you to select the extension where personalities are displayed on the screen.

Enter File Name Extension (3) The **Enter File Name Extension** field is used to enter the new file extension to use as the default. This extension will be displayed at the top of the Current Personalities Screen.

Enter three alphanumeric characters as valid file extensions. After specifying the extension, press **F1 Yes** to perform the change.

From the Change Extension Window, function key options are:

- | | |
|-------------------|--|
| F1 - Yes | Select this option if you want to:
Continue with this change. |
| F2 - No | Select this option if you want to:
Cancel this procedure. |
| F9 - Help | Select this option if you want to:
Receive further information pertaining to a field
area. |
| F10 - Back | Select this option if you want to:
Return to the Utility Window. |

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CHAPTER 6

WHEN PROBLEMS ARISE

This chapter is devoted exclusively to explaining the error messages you might encounter and how to rectify the situation while programming a control shelf. However, should your program lock up and no error message appear, it is best to reboot the system by pressing the **Ctrl-Alt-Del** keys simultaneously. What you have previously programmed will probably be lost so don't do this unless the keyboard keys no longer function.

C

Problem: "Cannot execute read - disk full."

This message is an indication that your disk is running out of storage space. You cannot execute the read unless you have enough disk space in which to store the personality.

Solution: You will need to create disk space on your disk or get a new data disk. Refer to your DOS User's Guide for help in deleting files.

Problem: "Cannot save file - disk full."

This message is an indication that your disk is running out of storage space. You will not be able to save the personality unless you have enough disk space in which to store a personality.

Solution: You will need to create disk space on your disk or get a new data disk. Refer to your DOS User's Guide for help in deleting files.

Problem: "CCT range is 0 to 255 seconds."

An attempt was made to enter a Carrier Control Timer value that is outside of the acceptable range.

Solution: Enter a valid Carrier control Timer value.

Problem: "Could not delete file."

An attempt was made to delete a personality that could not be deleted because the file did not exist, the drive is write protected, or there is a problem with the diskette.

Solution: Ensure that the personality you are trying to delete actually exists. Next ensure that the diskette is not write protected.

Problem: "Could not open temporary file."

At various times, the Control Shelf PC Programmer creates temporary files for storage. This message is an indication that the program could not read one of the temporary files it created.

Solution: Please contact Com-Net Ericsson Critical Radio Systems Inc., if you receive this message.

D

Problem: "Directory does not exist."

This is an indication that the directory you tried to change has not been created yet.

Solution: Only specify a valid path/directory when attempting to change directories.

F

Problem: "Fail to read. Check connections and recycle radio power."

This message will appear whenever handshaking with the control shelf fails. There are several reasons for the program being unable to handshake with unit; power is not applied to the unit, cabling is not properly seated or connected, incorrect communications port has been specified, or the unit is turned off or malfunctioning.

Solution: The first step is to try and isolate the case of the problem. Is the unit malfunctioning? Replace the unit with a known good unit and attempt a read. If the message reappears, then the problem is not with the unit. Is your cabling connected and seated correctly? Refer to the hardware configuration in Chapter 2 for help in making this determination. Lastly, do you have the right port specified? Go into the Utility Window and change the port setup. If the problem still appears you should check your asynchronous card for functionality.

Problem: "File does not exist."

An attempt was made to change/delete or print a personality file that does not exist.

Solution: Correct the file name entry before further attempts are made.

Problem: "File is not correct type."

An attempt was made to change a personality and the file selected was not of the correct type.

Solution: Remove or do not use the questionable file.

Problem: "File name invalid, do not specify extension."

An attempt was made to specify a file extension from the change/edit or delete window.

Solution: These windows do not require the addition of a file extension when the file name is specified. Remove the file extension before further attempts are made.

Problem: "File name may not contain an extension."

An attempt was made to specify a file extension from the change/edit or delete window.

Solution: These windows do not require the addition of a file extension when the file name is specified. Remove the file extension before further attempts are made.

Problem: "File not found."

An attempt was made to change/delete a personality file that does not exist.

Solution: Correct the file name entry before further attempts are made.

I

Problem: "Incorrect file size/type."

An attempt was made to change a personality and the file selected was not of the correct type.

Solution: Remove or do not use the questionable file.

Problem: "Invalid channel guard entered."

An attempt was made to enter an invalid Digital Channel Guard value or a tone Channel Guard that is outside of the acceptable range.

Solution: Enter a tone Channel Guard value within the range of 67.0 to 210.7 Hz or refer to Appendix D for a valid Digital Channel Guard value.

Problem: "Invalid extension specified."

An attempt was made to specify an extension (from the Change Extension Window) that does not meet the conditions for a valid extension.

Solution: Ensure that the extension specified consists of only 3 alphanumeric characters.

Problem: "Invalid port entered."

An attempt was made to specify a communications port other than COM1 or COM2. The MASTR IIe Control Shelf PC Programmer software only supports COM1 or COM2.

Solution: Use either COM1 or COM2 for programming.

P

Problem: "Problem with Print."

An attempt was made to print a personality and the main program could not initiate the print task. There are three common reasons for the print initiate to fail. There is not enough memory available, the print executable is not in the right directory for the initiate, or you are using a version of DOS earlier than version 3.0.

Solution: First check to ensure that you are running the right version of DOS. Exit the program and at the DOS prompt, type **VER <enter>**. Typing this command will cause the DOS version to appear on the window. If this number is 1.XXX or 2.XXX you will need to upgrade to DOS 3.0 or higher. Next, check to ensure that the M2EPRINT.EXE file resides in the same directory as the M2E.EXE file. If the M2EPRINT.EXE file is not there, copy it from the distribution diskettes. However, if the print is there then you may be running out of memory. If you have any memory resident programs installed then remove them before continuing.

Problem: "Problem with Read."

An attempt was made to read the unit and the main program could not initiate the read task. There are three common reasons for the read initiate to fail. There is not enough memory available, the read executable is not in the right directory for the initiate, or you are using a version of DOS earlier than version 3.0.

Solution: First check to ensure that you are running the right version of DOS. Exit the program and at the DOS prompt, type **VER <enter>**. Typing this command will cause the DOS version to appear on the window. If this number is 1.XXX or 2.XXX you will need to upgrade to DOS 3.0 or higher. Next, check to ensure that the M2EREAD.EXE file resides in the same directory as the M2E.EXE file. If the M2EREAD.EXE file is not there, copy it from the distribution diskettes. However, if it is read there then you may be running out of memory. If you have any memory resident programs installed then remove them before continuing.

Problem: "Problem with Write."

An attempt was made to write a personality and the main program could not initiate the write task. There are three common reasons for the write initiate to fail. There is not enough memory available, the write executable is not in the right directory for the initiate, or you are using a version of DOS earlier than version 3.0.

Solution: First check to ensure that you are running the right version of DOS. Exit the program and at the DOS prompt, type **VER <enter>**. Typing this command will cause the DOS version to appear on the window. If this number is 1.XXX or 2.XXX you will need to upgrade to DOS 3.0 or higher. Next, check to ensure that the M2EWRITE.EXE file resides in the same directory as the M2E.EXE file. If the M2EWRITE.EXE file is not there, copy it from the distribution diskettes. However, if it is there then you may be running out of memory. If you have any memory resident programs installed then remove them before continuing.

APPENDIX A

GLOSSARY

Cursor Keys - Those keys on the right hand side of the keyboard marked arrow (Up Arrow, Right Arrow, Down Arrow, and Left Arrow keys). They are used to control the direction of the cursor.

Default Value - The Control Shelf PC Programming Software provides predetermined (default) value in a majority of the data entry fields within the program. Exceptions to this rule are fields requiring Channel Guard values and file names. The default values assume that the control shelf will be used without optional features. Before changing the default values, we recommend that you be familiar with the operational consequences of adding a particular feature or option to the control shelf being programmed.

Error Messages - Each time data is entered in the program a validity check is made to ensure that reasonable values were entered. In the event that the data does not fall within the acceptable range of values an error message will be displayed in the center of the screen indicating non-acceptance.

Field - Refers to the area of the screen or window which allows data entry. This area is readily identifiable by a reverse video bar when moving the cursor across the screen.

Function Keys - Function keys are the keys, often found on the left hand portion of your PC's keyboard, which begin with the prefix F. The function keys are used in the Control Shelf PC Programming Software to execute a particular command.

Help - Throughout the Control Shelf PC Programming software, Help denotes or refers to on-line assistance. This can be accessed by pressing the **F9 Help** key from any field.

Control Shelf PC Programming Software - This term is used to identify the programming software for the MASTR IIe Control Shelf.

Personality - Used generically to refer to information that is stored in the control shelf that makes one control shelf perform differently from all other control shelves. That information can be created, deleted, or modified and stored on a disk for later reference.

Prompt Line - Assistance text located on the last line of the window. This line provides directions for entering data and changes when moving from field to field.

Screen - Refers to a major or parent data entry process and is used to show position within the program. Each screen is divided into three distinct areas: (1) screen title, (2) screen window, and (3) active function keys. The title tells you where you are in the program hierarchy. The screen windows are provided for input of data to the screen. The active function keys provide access to the commands (or actions) available within that screen. Only the function keys with labels are enabled in a given screen or window.

Window - A window is a section of a screen that displays previously stored formation, enables programming alternatives, or accepts data currently being entered. There may be more than one window within a particular screen. Each window is outlined within the screen presentation.

There are two type of windows: active and passive. The active window is available for data entry or revision and can be identified by its highlighted border. The passive window is displayed but is unavailable for program execution. In the case that windows have overlapping borders, the active window is presented in the foreground.

Like the screen, windows are divided into three distinct sections. They are: (1) window title, (2) work area, and (3) prompt line. The window title describes the function currently being performed. The work area is the space provided for input to the window. The prompt line is printed information in the lower portion of the window defining in further detail the action to be taken in the work area.

APPENDIX B

FUNCTION KEYS

F1

F1 Port - From the Utility Window the Communications Port Setup key allow you to select a port on your personal computer to be used for communication with the control shelf.

F1 Setup - This key allows you to select the type of Control Shelf personality to be programmed and the Synthesizer being used.

F1 Yes - The selected operation will be executed. At numerous times during programming of the control shelf, the program may ask you if you want to complete an operation. When you press this key the selected operation will be completed.

F1 DTMF - This function is accessible from the Control Shelf Options Window and allows you to define further options for a DTMF control station.

F2

F2 Change - From the Current Personalities Screen this function key allows you to change or edit an existing personality. This key, along with the **F4 New** key, provides access to the Channel Data Screen.

F2 Insert - This key is used to insert a channel in the current list when in the Channel Data More Screen.

F2 No - The selected operation will be canceled. At numerous times during programming of the control shelf, the program will ask if you wish to complete an operation. When you press this key the selected operation will not be executed.

F2 PTTs - This key permits selecting options for different types of push-to-talk keying.

F3

F3 Alarms - The Alarms Key is used to access the Alarm Options.

F3 Dir - The change Directory Function Key command is available within the Utility Window and allows you to change directories without having to exit the program.

F3 Pots - The potentiometer key allows you to define potentiometer settings.

F3 Remove - This key is used to remove a channel from the current list when in the Channel Data More Screen.

F3 Utility - The Utility Function Key provides access to the Utility Window from the Current Personalities Screen. The Utility Window allows you to print a personality, change file extensions, select a communication port setup, change file directories, or delete personality files without exiting the program.

F4

F4 Addtnl - The Additional Key is used to access additional channel parameters from the Channel Data Screen. This key is for MASTR III only.

F4 New - From the Current Personalities Screen, this key allows you to create a new control shelf personality.

F4 Text - The Text Select Function Key enables use of the "Text" window within the Control Shelf Options Window. This window will automatically provide the software revision number, EEPROM revision number and date a MASTR IIe/III Control Shelf was last programmed with this personality. This window also accepts additional information (in text format) which you may wish to include about a particular control shelf personality.

F4 Scan - This function is accessible from the Control Shelf Options Window and allows you to define Scan Options for the station.

F5

F5 Delete - Used to delete or remove a personality from the data base.

F5 Program - The Program Function Key is enabled in both the Current Personalities Screen and the Channel Data Screen. In the Current Personalities Screen, this function writes a personality stored in memory to the control shelf. In the Channel Data Screen, this key will download the personality on the screen into a control shelf.

F6

F6 Chan - - This function key is accessed in the Station Control Window and allows you to select how many channels (frequencies) the selected control station will have by decreasing the value in increments of one.

F6 Morse - This function allows you to set Morse Code ID and other related options.

F6 Print - This function allows you to obtain a hard (paper) copy of the personality data stored in memory. This key is enabled in the Utility Window, and also provides the capability to print personality data to a file or to the screen.

F6 Read - The Read Select Function Key is accessed from the Current Personalities Screen. This key provides the capability to read a specific control shelf personality into a file.

F7

F7 Chan+ - This function key is accessed in the Station Control Window and allows you to select how many channels (frequencies) the selected control station will have by increasing the value in increments of one.

F7 Ext - The Extension Select Function Key is accessed in the Utility Window, and allows you to do define a new three letter default extension.

F7 Option - The Option Select Function Key provides the capability to create or modify channel data control shelf options.

F7 Remote - This function is accessible from the Control Shelf Options Window and allows you to define further options for a Tone Remote control station.

F7 RstCTC - This function is accessible from the Multiple Receiver Data Screen and allows you to reset the GETC unit.

F7 Reset - This key is accessed in the Current Personalities Screen and will allow the Control Shelf EEPROM to be reset to its default state.

F7 Text - The Text Select Function Key enables use of the "Text" window within the Channel Data "More" Screen. This window will automatically provide the software revision number, EEPROM revision number and date a MASTR IIe/III Control Shelf was last programmed with this personality. This window also accepts additional information (in text format) which you may wish to include about a particular control shelf personality.

F8

F8 More - From the Channel Data Screen, this key allows you to select other functions pertaining to control stations having more than one channel.

F8 RstGTC - This key is used to confirm the reset control shelf operation.

F8 Timers - This key is used to edit the Remote Timer Options.

F9

F9 Help - Used to provide assistance from any screen or window. Whenever you have a question about the execution of an operation, select this key. There are two levels of help messages:

Field Level Help messages are provided from any screen or any window by simply pressing **F9 Help** and provides additional information on the field in question.

Window Level Help messages are provided by pressing **Shift-F9 Help** and describe the purpose of the data presented in the window.

F10

10 Back - When this key is pressed you will return to a previous window, making it active again for further revision or data entry. In some cases, it will return control of the program to the Current Personalities Screen.

F10 Exit - When selected from the Current Personalities Screen, the program is terminated and you are returned to the control of your disk operating system (DOS).

APPENDIX C

ACCEPTABLE VALUES

Input Field	Acceptable Values	Default Value
SIMULCAST DATA		
Line Out Pot	0-255	67
DSP Line In	0-255	42
Tx Audio Pot	0-255	71
DSP Compressor Pot	0-32767	1023
PA Power	0-99	99
Repeater Gain	0-32767	1023
CG Pot	0-255	69
DSP Compressor Threshold	0-32767	32767
Line In Pot	0-255	Blank
Squelch Pot	Manual or Digital	Manual
Circulator	Enabled or Disabled	Disabled
Value	0-99	99
Tx Freq (MIII only)	VHF: 136-174 MHz UHF: 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800: 851-870 MHz	Blank
Voting Sys	Enabled	Enabled
Rx Freq (MIII only)	VHF: 136-174 MHz UHF: 370-380 MHz 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800: 851-870 MHz	Blank

MS102518V1, Rev. U

Input Field	Acceptable Values	Default Value
SIMULCAST DATA (Continued)		
Level	0-127	26
Reference Freq	Internal or External	Internal
Tone	1950	1950
Synth Part No.	Old/New	Old
Reference	5.0-17.6125	12.8000
Cont Running Osc	Enable or Disable	Disable
Bandwidth	25 or 12.5 MHz	25 MHz
GETC DATA SCREEN		
Line Out Pot	0-255	67
DSP Line In	0-255	42
Tx Audio Pot	0-255	71
DSP Compressor Pot	0-32767	1190
Line In Pot	0-255	Blank
DSP Comp Threshold	0-32767	3157
Remote	Tone, Type 1 or DC	Tone
Voting System	Enabled or Disabled	Disabled
2175 Hz Detect	Yes or No	Yes
+6 mA Detect	Yes or No	No
Level	0-127	26
Repeater	Yes or No	Yes
Tone	1950 or 2175	1950
RF Simplex	Yes or No	No
PA Power	0-99	99
Repeater Gain	0-32767	816
CG Pot	0-255	69
Squelch Pot	Manual or Digital	Manual
Circulator	Enabled or Disabled	Disabled

Value	0-99	99
Tx Freq (MIII only)	VHF: 136-174 MHz UHF: 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800: 851-870 MHz	Blank
Rx Freq (MIII only)	VHF: 136-174 MHz UHF: 370-380 MHz 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800: 806-825 MHz	Blank
RF Freq	External or Internal	Internal
Reference	5-17.6125	12.800
Cont Running Osc	Enable or Disable	Disable
Bandwidth	25 or 12.5 MHz	25 MHz
CNI	Yes or No	No

SYSTEM ALARM OPTIONS

Low PA Power	Yes or No	No
Tx Meter On	0-255	111
Tx Meter Off	0-255	110
Module Fault	Yes or No	No
Backup Ref Osc	Yes or No	No
Audible Alarm	Yes or No	No

MULTIPLE RECEIVER DATA SCREEN

Rx CG	67.0-210.7 Hz or valid Digital CG code	blank
RX Freq (MIII only)	VHF: 136-174 MHz UHF: 370-380 MHz 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800:806-825 MHz	blank
CG Level	Low or High	Low

Input Field	Acceptable Values	Default Value
-------------	-------------------	---------------

POTENTIOMETER SETTINGS (MULTIPLE RECEIVER)

Line Out	0-255	40
Voting Tone Gain	0-127	26
Digital Squelch	0-99	99

CONTROL SHELF OPTIONS (MULTIPLE RECEIVER)

Batt Alarm	Enabled or Disabled	Disabled
Ref Frequency	Internal or External	Internal
Battery Alarm On Time	0-1.0 seconds in .1 second increments	.5 second
Reference	5.0-17.6125	12.8000
Synth Part No.	Old/New	Old
Battery Alarm Rep Rate	0-25 seconds in 1 second increments	5 seconds
Voting Sys	Enabled or Disabled	Disabled
Tone	1950 Hz or 2175 Hz	1950 Hz
GETC	Trunked, Conv CG, or None	None
Local Prog Timeout	5-720 minutes	30 minutes
DTMF	Enabled or Disabled	Disabled
Debounce Timer	10-2000 milliseconds in 10ms increments	100 ms
Band Width	12.5 kHz or 25 kHz	25 kHz
GETC Reset Timer	10-2000 milliseconds in 10ms increments	10 ms

REMOTE DTMF OPTIONS

VSQ CG Detect	Enabled or Disabled	Disabled
1-16	0-9, A-D, *, #	<i>#(channel number)</i>

CHANNEL DATA

Tx CG	Tone - 67.0 to 210.7 Hz Digital - See Appendix D	Blank
-------	---	-------

STE	Yes or No	No
CCT	0 to 600 seconds	180
DODT	0 - 10.0 seconds	Blank
Rx CG	Tone - 67.0 to 210.7 Hz Digital - See Appendix D	Blank
CG Lvl	High or Low	Low
CG Pot	0 - 255	69
RF Simplex	Yes or No	No
Rpt	Yes or No	No
Scan	Yes or No	No
Aux RF Simplex	Yes or No	No
Tx Freq (MIII only)	VHF: 136-174 MHz UHF: 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800:851-870 MHz	Blank
Rx Freq (MIII only)	VHF: 136-174 MHz UHF: 370-380 MHz 380-400 MHz 403-425 MHz 425-470 MHz 450-512 MHz 800:806-825 MHz	Blank
TX Audio Pot	0-255	71
PA Power	0-99	99

PTT OPTIONS**Repeat**

CCT	Yes or No	Yes
DODT	Yes or No	Yes
Chan Grd Encode	Yes or No	Yes

MS102518V1, Rev. U

Input Field	Acceptable Values	Default Value
Remote		
CCT	Yes or No	Yes
DODT	Yes or No	No
Chan Grd Encode	Yes or No	Yes
Local		
CCT	Yes or No	Yes
DODT	Yes or No	No
Chan Grd Encode	Yes or No	Yes
External		
CCT	Yes or No	Yes
DODT	Yes or No	No
Chan Grd Encode	Yes or No	Yes
Morse Code		
ID CCT	Yes or No	No
DODT	Yes or No	No
Chan Grd Encode	Yes or No	No
POTENTIOMETER SETTINGS		
Line Out	0 - 255	42
Tx Audio	0 - 255	71
Line In	0 - 255	Blank
DSP Line Cancel	0 - 255	75
DSP Line In	0 - 255	42
DSP Compressor	0 - 32767	1190
DSP Compressor Threshold	0-32767	3157
Repeater Gain	0-32767	816
Squelch Pot Value	Manual or Digital 0-99	Manual 99

MORSE CODE OPTIONS

Morse Code	Enabled or Disabled	Disabled
MCID Enable	Yes or No	Yes
ID Text	up to 12 alphanumeric characters	EGEMASTR
Interval	5 - 30 minutes	30
Wait	0 - 10 seconds in 1/10 of a second	5.0
Tx Required	Yes or No	Yes
ID With Keys	Yes or No	No
Tx Pot	Yes or No	No
MCID Tx Pot	0 - 255	71
Route Audio to Line Out	Yes or No	No
ID On Channel Change	Yes or No	No

CONTROL SHELF OPTIONS

Battery Alarm	Enabled or Disabled	Disabled
Logic Standby	Enabled or Disabled	Disabled
Intercom	Yes or No	No
Battery Alarm On Time	0 - 1.0 seconds	0.5
Repeater Options	Back-to-Back, Community or None	None
No Key	Yes or No	No
Battery Rep Rate	0 - 25 seconds	5
Voice Guard	ENC/DEC, END/END or None	None
REM/LOC	REM/LOC, REM, LOC or None	None

MS102518V1, Rev. U

Input Field	Acceptable Values	Default Value
CONTROL SHELF OPTIONS (Continued)		
Control Line	2 Wire or 4 Wire	4 Wire
Sidetone	Yes or No	No
Voting System	Enabled or Disabled	Disabled
Type 90 Tone	1050, 1200, 1350, 1500 1650, 1800, 1950, 2100 2250, or 2400	1050
Dsp Compressor	Enabled or Disabled	Disabled
2 Rcvrs	Yes or No	No
Rx Option	None, Scan, 2 Rcvrs	None
Scan	Yes or No	Yes
Voting Level	0-127	26
Aux Rx Cas	Enabled or Disabled	Disabled
Voting Tone	1950 or 2175	1950
DTMF	Enabled or Disabled	Disabled
Circulator	Enabled or Disabled	Disabled
Band Width	12.5 or 25	25
Reference Frequency	Internal or External	Internal
2nd Receiver	MII or MIII	MII
Reference	5.0-17.6125 MHz	12.8000
DTMF	Enabled or Disabled	Disabled
Digital Pager	Enabled or Disabled	Disabled
E&M Signalling	Yes or No	No
Cont Running Osc	Enable or Disable	Disable
P25	Yes or No	No

Synth Part No.	Old/New	Old
----------------	---------	-----

SCAN OPTIONS WINDOW

Revert To Last Channel	Used or Selected	Used
Scan On Power Up	Yes or No	No
Rx Hang Delay	0-5	Blank
Resume After Dis	Yes or No	No
Disable Length	30-360 in 30 sec increments	Blank
Priority Scan	Enabled or Disabled	Disabled
Priority Chan	any valid frequency capacity for the selected control station	1

DC REMOTE CONTROL OPTIONS

+6 mA Main Recvr	On or Off	On
+6 mA Aux Recvr	On, Off, or NC	NC
-6 mA	Main Recvr or Rep Dis	Main Recvr
-6 mA Aux Recvr	On, Off, or NC	NC
+11 mA Aux Recvr	On, Off, or NC	NC
-11 mA	Aux Recvr or Rep Dis/CG Mon	Aux Recvr
-11 mA Aux Recvr	On, Off, or NC	NC
-2.5 mA Aux Recvr	On, Off, or NC	On

REMOTE CONTROL OPTIONS

CG On/Off	Yes or No	No
1450	CG Mon Latch On or CG Mon Latch Off	CG Mon Latch On
1550	CG Mon Latch On or CG Mon Latch Off	CG Mon Latch Off
Repeat Ena/Dis	Yes or No	Yes

MS102518V1, Rev. U

1450 or 1050	Repeat Enable or Repeat Disable	Repeat Disable
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Input Field	Acceptable Values	Default Value
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REMOTE CONTROL OPTIONS (Continued)

1550 or 1150	Repeat Enable or Repeat Disable	Repeat Enable
--------------	---------------------------------	---------------

Scan Ena/Dis	Yes or No	Yes
--------------	-----------	-----

Simul Monitor	Yes or No	Yes
---------------	-----------	-----

Aux Function	Yes or No	No
--------------	-----------	----

1250	Aux1 Off or Aux1 Off/Aux2 On	Aux1 Off
------	------------------------------	----------

1350	Aux1 On or Aux1 On/Aux2 Off	Aux1 On
------	-----------------------------	---------

Aux1	On or Off	Off
------	-----------	-----

Aux2	On or Off	Off
------	-----------	-----

CG Monitor	Yes or No	Yes
------------	-----------	-----

Rx F1 (1750)	Enable or Disable	Disable
--------------	-------------------	---------

Rx F2 (1650)	Enable or Disable	Disable
--------------	-------------------	---------

REMOTE DTMF OPTIONS ("F1 TX" is not an option for DTMF Options Screen)

Enable Repeater	any combination of numeric characters, A - D, # and *	*41
-----------------	---	-----

Disable Repeater	any combination of numeric characters, A - D, # and *	*40
------------------	---	-----

Enable Scan	any combination of numeric characters, A - D, # and *	*01
-------------	---	-----

Disable Scan	any combination of numeric characters, A - D, # and *	*00
--------------	---	-----

F1 TX	Channel 1 or Selected	Channel 1
-------	-----------------------	-----------

VSQ CG Detect	Enabled or Disabled	Disabled
Channel 1 - 16	any combination of numeric characters, A - D, # and *	Blank

PHONE REMOTE TIMERS

Tx On Hold Tone	Enabled or Disabled	Disabled
Timed Tone Remote	Enabled or Disabled	Disabled
Securit Tone Min Time	0-500 ms in 2 ms increments	100ms
Securit Tone Max Time	0-500 ms in 2 ms increments	150ms

COMMUNICATIONS PORT SETUP

COMM Port	1 or 2	1
-----------	--------	---

PRINT PERSONALITY

Personality	Currently defined personality name	Blank
Output to	File, Printer, Screen	Printer
Path	Up to 35 alphanumeric characters to define a valid path.	current path
Printer No	1, 2, 3, or 4	1

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APPENDIX D

PRIMARY & EQUIVALENT DIGITAL CODES

NOTE

Digital Channel Guard cannot be used in a low band (30-50 MHz) station.

PRIM. CODE	EQUIVALENT CODE	PRIM. CODE	EQUIVALENT CODE	PRIM. CODE	EQUIVALENT CODE
023	340,766	133	413,620	237	464,642,772
025		134	273	243	267,342
026	566	135	205,610	245	370,554
031	374,643	136	502,712	246	542,653
032		142	174,270	252	661
036	137	143	333	254	314,612,706
037	560,627	144	466,666	255	425
043	355	145	525	262	316,431,730
047	375,707	147	303,306,761	266	655
051	520,771	150	256,703	271	427,510,762
053		152	366,415	274	652
054	405,675	153	606,630	276	326,432
056	465,656	155	233,660	307	362,565
057	172	156	517,741	311	330,456,561
060	116,737	157	322,503	312	515,663,743
065	301	161	345,532	315	321,673
066	734	162	416	317	546,614,751
067	516,720	163	460,607,654	324	343,570
071	603,717,746	164	207,732	325	550,626
072	470,701	165	354	331	372,507
073	640	171	265,426	332	433,552
074	360,721	172		344	471,664,715
075	501,624	176	244,417	346	616,635,724
076	203,754	212	253	351	353,435
104	226,557	213	263,736	356	521
107	365	217	371,453,530	363	436,443,444,66
114	327,615	222	445,457,575	446	2
115	534,674	223	350,475,750	447	467,511,672
117	411,756	224	313,506,574	452	473,474,731,74
122	535	225	536	454	4 524,765
123	632,657	227	261,567	455	513,545,564
125	173	231	504,631,636,74	462	533,551
127	412,441,711	234	5	523	472,623,725
130	364,641	235	423,563,621	526	647,726
131	572,702	236	611,671,723		562,645
132	605,634,714		251,704,742		

MS102518V1, Rev. U

PRIM. CODE	INVERTED CODE	PRIM. CODE	INVERTED CODE	PRIM. CODE	INVERTED CODE
023	047	132	317	236	165
025	176	133	054	237	026
026	237	134	223	243	351
031	037	135	213	245	072
032	051	136	114	246	523
036	057	142	074	252	462
037	031	143	127	254	346
043	222	144	363	255	446
047	023	145	274	262	235
051	032	147	071	266	454
053	452	150	307	271	065
054	133	152	115	274	145
056	331	153	231	276	067
057	036	155	447	307	150
060	076	156	171	311	344
065	271	157	162	312	163
066	217	161	324	315	234
067	276	162	157	317	132
071	147	163	312	324	161
072	245	164	227	325	526
073	224	165	236	331	056
074	142	171	156	332	455
075	123	172	036	344	311
076	060	176	025	346	254
104	117	212	356	351	243
107	125	213	135	356	212
114	136	217	066	363	144
115	152	222	043	446	255
117	104	223	134	447	155
122	225	224	073	452	053
123	075	225	122	454	266
125	107	227	164	455	332
127	143	231	153	462	252
130	131	234	315	523	246
131	130	235	262	526	325

APPENDIX E

CHANNEL GUARD TONE FREQUENCIES

STANDARD TONE FREQUENCIES (Hz)				
67.0	88.5	107.2	131.8	167.9
71.9	91.5	110.9	136.5	173.8
74.4	94.8	114.8	141.3	179.9
77.0	97.4	118.8	146.2	186.2
79.7	100.0	123.0	151.4	192.8
82.5	103.5	127.3	156.7	203.5
85.4			162.2	210.7

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APPENDIX F

WORK SHEET FOLDER

Work Sheet B - Channel Data

NOTE

Digital Channel Guard cannot be used in a low band (30-50 MHz) station.

PERSONALITY: _____

Circle the desired value or fill in blank field where appropriate.

Control Station: _____ Number of Channels: ____

CH	TRANSMIT CHANNEL GUARD	STE	CCT	DODT	RECEIVE CHANNEL GUARD
		Yes No			

CH	CG LEVEL	CG POT	RF SIMPLEX	RPT	SCAN	AUX RF SIMPLEX
	High Low		Yes No	Yes No	Yes No	Yes No
	High Low		Yes No	Yes No	Yes No	Yes No
	High Low		Yes No	Yes No	Yes No	Yes No
	High Low		Yes No	Yes No	Yes No	Yes No

APPENDIX F
WORK SHEET FOLDER
 Work Sheet C - Push-To-Talk Options

Control Station: _____ Number of Channels: ____

	CARRIER CONTROL	DROP OUT DELAY TIMER	CHANNEL GUARD ENCODE
REPEAT	Yes No	Yes No	Yes No
REMOTE	Yes No	Yes No	Yes No
LOCAL	Yes No	Yes No	Yes No
EXTERNAL	Yes No	Yes No	Yes No
MORSE CODE ID	Yes No	Yes No	Yes No

APPENDIX F

WORK SHEET FOLDER

Work Sheet D - Potentiometer Settings

Control Station: _____ Number of Channels: ____

LINE OUT	TRANS. AUDIO	LINE IN	DSP LINE CANC	DSP LINE IN	DSP COMP.	DSP COMP. THRESHOLD
_____	_____	_____	_____	_____	_____	_____

APPENDIX F

WORK SHEET FOLDER

Work Sheet E - Morse Code Options

Control Station: _____ Number of Channels: ____

MORSE CODE: Enabled or Disabled

CH	MCID ENABLED	ID TEXT	INTERVAL	WAIT
	Yes No			

TX REQUIRED	ID WITH KEYS	TX POT	MCID TX POT	ROUTE AUDIO TO LINE OUT	ID ON CHAN CHANGE
Yes No	Yes No	Yes No		Yes No	Yes No
Yes No	Yes No	Yes No		Yes No	Yes No
Yes No	Yes No	Yes No		Yes No	Yes No
Yes No	Yes No	Yes No		Yes No	Yes No

APPENDIX F WORK SHEET FOLDER

Work Sheet F - Control Shelf Options

Control Station: _____ Number of Channels: ____

BATTERY ALARM	BATTERY ALARM ON TIME	BATTERY REP RATE	LOGIC STANDBY	INTERCOM
Enabled	_____	_____	Enabled	Yes
Disabled			Disabled	No

BACK TO BACK REPEATER: Yes or No

DSP COMPRESSOR	VOTING SYSTEM	VOTING TONE	CONTROL LINE	SIDETONE
Enabled	Enabled	1950	2 Wire	Yes
Disabled	Disabled	2175	4 Wire	No

2 RECEIVERS	RECEIVE OPTION	SCAN	PRIORITY SCAN	PRIORITY CHANNEL
Yes	None	Yes	Enabled	
No	Scan 2 Rcvrs	No	Disabled	

APPENDIX F

WORK SHEET FOLDER

Work Sheet F2 - Control Shelf Options - DTMF

Control Station: DTMF Number of Channels:

ENABLE REPEATER	DISABLE REPEATER	ENABLE SCAN	DISABLE SCAN

ENABLE CHANNEL 1	ENABLE CHANNEL 2	ENABLE CHANNEL 3	ENABLE CHANNEL 4

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