MOTOROLA

MT 2000™, MTS 2000™,
MTX 838™, MTX 8000™,
and MTX 9000™
(MTSX)
Radio Service Software
User's Guide

Software Part Number: RVN-4097

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SECTION 1. INTRODUCTION

Welcome to the world of two-way radio programming from Motorola's Radio Products Group.

1.1 INTRODUCING THE MT 2000™, **MTS 2000™, MTX 838™, MTX 8000™**, **AND MTX 9000™ (MTSX) RADIO SERVICE SOFTWARE**

This Radio Service Software (RSS) manual is targeted for anyone who wants to program features into the MT 2000, MTS 2000, MTX 838, MTX 8000, and MTX 9000 radios or align a radio. This feature programming, or customizing, personalizes a radio for the needs of individual customers, resulting in radios with unique personalities.

This series of portable radios has a unique set of features, including unique PL/DPL codes for each channel, a variety of signalling abilities with channel scan, and the convenience of maintenance-free tuning, due to the wideband capability.

This feature set makes these radios ideal for commercial businesses and police and fire protection services that typically utilize radios in their vehicles.

So how can Motorola design radios with such a wide range of features and still offer a variety of radio services with the ability to customize and personalize radios? The answer is embedded in modern microprocessor chip technology in the radio and the development of the MTSX RSS - a computer program that, when interfaced with a radio, electronically programs and personalizes a radio with a unique set of features for each individual customer. No tools are needed. This RSS computer program resides on the diskettes you received in the package with this manual (package RVN4097I).

Here are just some of the features and functions available using the RSS.

Table 1-1. Types of RSS Programmable Features and Functions

MTSX RSS Programmable Features	MTSX RSS Service Functions
Transmit (Tx) frequencies	Reference oscillator alignment
Receive (Rx) frequencies	Transmit deviation alignment
PL/DPL codes	Transmit power alignment
Signalling system parameters	Replaced power amplifier calibration
Scan lists and scan options	Replaced logic board calibration
FLASHport Upgrade (requires FLASHport	Replaced RF board calibration
upgrade package)	

This radio's customization and servicing is accomplished by using an IBM® Personal System/2® model 30 or higher computer.

NOTE

We recommend you test any computer's RSS compatibility before purchasing by taking the computer to your shop, connecting all the hardware, installing the software, starting the RSS and reading and writing data to and from a radio. If problems occur, call the phone number on the front cover for help - do this prior to purchasing your computer.

1.2 PREREQUISITES

To use the RSS to program the radios, we recommend a basic working knowledge of the following:

    1.   Microcomputers.

    2.   MS-DOS operating system, version 5.0 or later.

This application requires:

        80386 or 80486
        DOS 5.0 or later
        4 Megabytes of RAM or greater.

The powerful features and extensive flexibility of these new radio families require much more codeplug data validation than in the past. For complex configurations, it is recommended that the RSS be executed from a RAM disk. This will reduce execution time significantly (an order of magnitude).

    3.   The radio's available features (see the appropriate radio Operator's Manual).

    4.   Your customers' needs.

For computer beginners, we'll teach some computer and MS-DOS basics. However, this manual is written for both beginners and advanced users, so the primary prerequisite for using the RSS is the desire to program and deliver an excellent radio to a ready customer.

1.3   INTRODUCTION OF NEW RELEASE

This release of the MTSX RSS utilizes the extended memory capability of the 386 and 486 PCs. To take advantage of these performance enhancements your machine must be a 386 or 486 based machine with 4M of memory (1M lower + 3M or more extended). This application is compatible with DOS 6.0, but cannot be run as a Double Space file.

With extended memory, the application will now run with less than 100K of conventional memory available! Resident programs and TSR (Terminate & Stay Resident) utilities no longer have to be disabled. This has also permitted the installation procedure to be significantly improved and simplified. The CONFIG.SYS modifications required to run the application have been automated, and are described in the rest of this introduction.

A new Tutorial section (Chapter 3) has been added to the manual to discuss programming requirements of some of the specific MT2000, MTX8000, MTX9000, and MTS2000 models. This release added support for Secure MTS2000 radio models, and also corrected some defects of the previous release.

1.3.1 EXTENDED MEMORY OPERATION

Previous versions of this application recommended the usage of extended memory for a RAMDrive to reduce the disk I/O access time. (The application however, only used conventional memory for actual execution.) This version does not require the use of a RAMDrive or a SMARTDrive.

The new install program will determine if your system has an adequate amount of memory available (3M) and a 286, 386 (or 486) CPU for extended memory operation. If present, the RSS will be installed.

The following line should be added to the CONFIG.SYS file if necessary:

> device = c:\dos\HIMEM.SYS
> device =c: \dos\EMM386.EXE OFF
> Files = 30

NOTE

The DOS MEM command may be used to determine the amount of available memory in your machine (i.e. type c:\dos\mem. The location of MEM.EXE may differ on your machine.) If the command reports 3000K or more of available extended memory, you can take full advantage of these enhancements.

1.4 SUBSCRIPTION INFORMATION

Your RSS is part of a subscription. We'll keep you advised of changes and automatically mail revisions throughout the life of the subscription.

A subscription is good for one site. Under the terms of your subscription, you may install the RSS on as many personal computers as desired at that one site. Another site location requires another subscription.

1.5 USING THIS MANUAL

This manual is designed to teach basic feature programming and to speed up access to technical reference information. It is intended for both beginners and advanced users of computers and the RSS. This manual describes how to connect the radio to your computer and how to install the software. The operation of the software is described, including how to read the screens, the keyboard commands, and how the screens are organized.

The MAIN MENU and all available RSS functions are described in detail. The operation of the SERVICE functions, the GETTING and SAVING of radio codeplug data, and the CHANGING and VIEWING of codeplug data are described also.

All RSS function screens are depicted in this manual and the operation of each one is described. A description of each data field is also given.

The GLOSSARY defines terms and abbreviations used within this manual.

The INDEX provides a quick way of locating particular items.

NOTES, CAUTIONS, and WARNINGS are used throughout this manual. The following definitions apply to the these statements,

NOTE

An operating procedure or condition which is essential to highlight.

CAUTION

An operating procedure or practice which, if not strictly observed, might result in damage or destruction of equipment.

WARNING

AN OPERATING PROCEDURE OR PRACTICE WHICH MIGHT RESULT IN PERSONAL INJURY OR LOSS OF LIFE IF NOT CORRECTLY FOLLOWED.

NOTES

SECTION 2. GETTING STARTED AND INITIAL SETUP
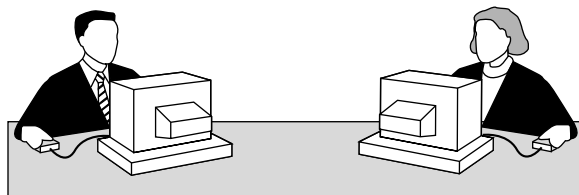
Introductions accomplished, it's time to get started. In the GETTING STARTED subsection we'll guide you through identifying, installing and learning the necessary hardware and software to run the RSS, which will be used to service and program a radio. In the GETTING STARTED subsection, we'll also familiarize you with the computer, the keyboard, and the RSS menus, screens, and fields. The INITIAL SETUP subsection prepares you for SECTION 2 through SECTION 8, which describe how to service and program a radio, and maintain your radio service files.

2.1 ASSEMBLING THE HARDWARE

The figure below shows the required and optional equipment to program a radio. The computer recommended is an IBM® Personal System/2® model 30 or higher computer, with 640K of RAM, one diskette drive, and one hard disk drive.
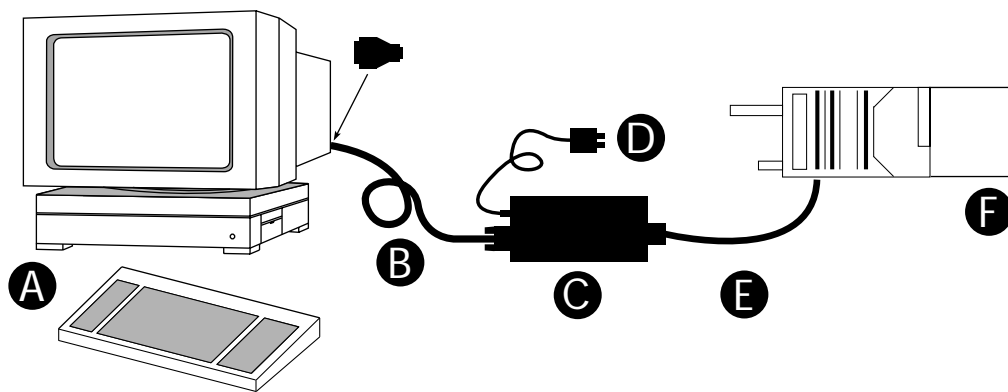
Figure 2-1. Equipment Setup

Ⓐ **Computer**
An IBM® Personal Computer XT™ (or compatible) may be used, but we recommend as a minimum a 386 based computer is required to improve throughput (a 80386 based computer or higher is preferred),
or IBM® Personal System/2® (model 30 or higher)
Computer should have 640k of RAM, one diskette drive, and one hard drive; computer should run DOS 5.0.
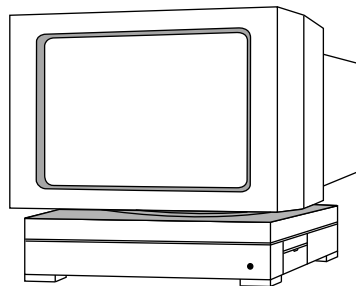
Ⓑ **Radio Interface Box (RIB) to Computer Cable**
30-80369B72 cable for IBM® Personal Computer AT® or compatible computer (9-pin end and a 15-pin end)
or 30-80369B71 cable for computers requiring a 25-pin serial port connection (25-pin end and a 15-pin end)
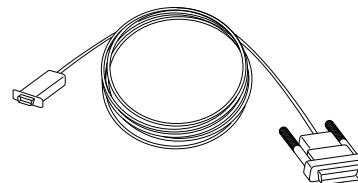
Smart Radio Interface Box (SRIB) to Computer Cable
30-80390B49 cable for IBM® Personal Computer AT® or compatible computer (9-pin end and a 15-pin end)

See Appendix A for connection details.

Ⓒ **Radio Interface Box (RIB)**
RLN4008B RIB
For laptop computer and on-the-road use only; omit item D below and use a 9V battery (not included).
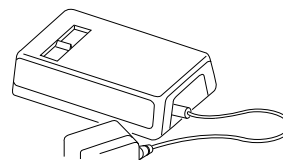
or **Smart Radio Interface Box (SRIB) for FLASHport Only**
RLN1015A RIB (required for FLASHport upgrade)
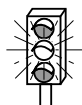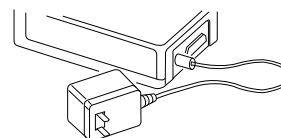
CAUTION: Use a fresh, 9V battery. LED remains lit with a weak battery - this may cause certain errors on screen.

Ⓓ **RIB Power Supply**
01-80357A57 (110 Vac) Power Supply
or 01-80358A56 (220 Vac) Power Supply

SRIB Power Supply
01-80302E27 (120 Vac) Power Supply
For FLASHport Only
Using the power supply is more reliable than using a weak battery.
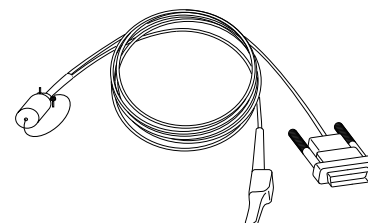
Ⓔ **RIB-to-Radio Cable**
RKN4035A Cable

Ⓕ **Radio**
MT 2000, MTS 2000, MTX 838, MTX 8000
or MTX 9000 Portable Radio.
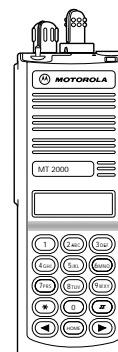
Table 2-1. Steps to Connect Hardware

Steps to Connect the Hardware	
1. **Connect A and C with B.** First, plug the 9-pin end of B into the communications port of A. Then connect the 15-pin end to C. *If your computer has a 25-pin connections port connector, you will need the cable 30-80369B71 to insert between A and B.*	2. **Connect F and C with E.** The 25-pin end of E goes into C, and the modular telephone connector end plugs into the side connector on the front of F. 3. Plug D into the wall outlet, and connect the other end to C.

After you connect the hardware, turn on the radio by turning the volume control clockwise. You will hear one of the following types of tones.

Table 2-2. Installation Tone Identification

This tone	Means this....
Higher-pitched, short tone	Hardware is connected correctly and the radio's internal firmware is operating correctly. Note: This tone may be disabled in the codeplug and may not be heard.
Continuous, low tone	Critical failure - a radio's internal software malfunction.

You can install, start or explore the RSS using just the diskettes and your computer if you don't have all the hardware. You can even update existing radio archive files stored on disk. What you cannot do without the hardware is read from or save to an actual radio.
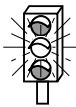
CAUTION: When programming or calibrating a radio , DO NOT disconnect the radio from the RIB when the computer is communicating with the radio - it may leave the radio in an inoperable state. The only recommended time to disconnect the radio is at the MAIN MENU or GET/SAVE/PROGRAM screens.

NOTE
If you are using a laptop computer and you plan to use the RSS while the computer is in battery mode, you may need to set the serial/parallel adapter to run on battery power. This can be done with the application diskette supplied by the computer manufacturer. If this is not done, you will receive serial bus errors.

NOTE
If your RIB has a switch and LED, be sure to turn on the switch before each programming session.

2.2 UNDERSTANDING COMPUTER BASICS

If you are already familiar with computers, skip this section and proceed to "STARTING THE RSS" section.

Your computer can be compared to both an electronics technician and a file cabinet. A file cabinet provides easy handling, storage, and retrieval of written data. Your computer provides the same. The technician can, with tools, manually and physically alter the radio's features and functionality. Similarly, the computer provides the same with the RSS - a radio dealer or employee can give a radio unique features, save those features for future reference, copy, or service a radio internally. This can all be achieved without opening a drawer, thumbing through papers, picking up a tool, or disassembling the radio.

Let's learn some of the types of computers used for programming radios, the major parts of a computer, and the ways and places to store your desired radio personality data.

The RSS is designed to run on the following IBM computers and their compatibles: IBM Personal Computer AT, and IBM Personal System/2 model 30 and higher.

> **The RSS is not a Windows or OS/2 program. You must not have Windows or OS/2 loaded or the RSS program will not operate correctly.**

2.2.1 Identifying Major Computer Parts

Computers range in complexity and size from ones that easily and lightly fit on your lap to ones the size of a car that require air-conditioned, smoke and dust-free environments. Falling between this range is the microcomputer, which is common in many households and businesses today. Whatever their size, most microcomputers (hereafter referred to as computers) consist of a monitor, a system unit, and a keyboard.

2.2.1.1 Monitor

Monitors perform like a window into the computer, allowing us to see on a display the data inside the computer. Monitors come in a variety of sizes and colors. Some can be bigger than a 19-inch diagonal television, though a common size is 12 inches diagonally. Monochrome monitors have only one color behind the words and pictures on the display, which in many cases is either green, amber, white or black. Color monitors can display two or more colors on the display at a time, but with color monitors a slight decrease in picture sharpness or text legibility may be experienced. Colors on the RSS screen can be selected or changed by the user by using the RSS. To help users quickly find their place on the display before typing, a flashing underscore, called a cursor, typically serves as a visual place indicator.

Besides the display, a monitor usually has a power cord, an on/off switch, brightness and contrast dials, and a cable connection to the system unit.

The RSS can function with either monochrome, CGA, EGA or VGA-based monitors.

2.2.1.2 System Unit

The system unit contains a special chip that is the brain of the computer, one or more diskette drives, a hard-disk drive, a cable connection to the keyboard, one or more communications ports and an on/off switch. The system unit should be treated with care, as jarring and hot temperatures could internally damage the unit.

2.2.1.3 Keyboard

A user instructs the computer what to do by typing commands on the keyboard. The display shows the commands as they are typed. Most keyboards have letter keys, numeric keys, and a number of special keys that perform special functions. The "NAVIGATING THROUGH THE RSS MENU" section describes some of these special keys and how they perform with the RSS.

2.3 UNDERSTANDING COMPUTER STORAGE SYSTEMS

The computer can store amazing amounts of data (software programs, code, data, files) in several places. Some of these places are:

- the random-access memory (RAM),
- the read-only memory (ROM),
- the hard-disk drives, and
- the diskettes

The RAM, ROM, hard disks and diskettes all vary in function and all have certain size limits (memory). They all store data in terms of bytes, a byte equalling approximately one character as typed on the keyboard. 1,024 bytes equals one kilobyte, or 1K. For comparison purposes, one page of double-spaced, typed text equals approximately 2K.

2.3.1 Random Access Memory (RAM)

Random Access Memory (RAM) is a storage place in the system unit used to run programs and operating systems. The amount of RAM varies from computer to computer, and it directly affects which programs will run on your computer. With more RAM you can run larger programs. Most programs indicate how much RAM is required to run the RSS. You must have at least 200k of free RAM to execute this RSS.

2.3.2 Read Only Memory (ROM)

Read Only Memory (ROM) is a storage place in the system unit that is used by the computer for start-up, booting and Power-On Self-Test (POST) purposes. The ROM is "read-only," which means a user cannot write or save data to it, over it, delete it, or in any other way destroy it by using the keyboard keys. The program in the ROM is hard-coded into the ROM chip, and as such is protected from user errors.

2.3.3 Hard-Disk Drive

The hard-disk drive stores a user's programs and files (data). The data can originate from data the user generates at the keyboard, or from data that is copied from a diskette in a diskette drive, explained below. The memory capacity of hard-disk drives varies from computer to computer and can be increased with the purchase and installation of a memory upgrade. Many hard-disk drives can store 20 megabytes (20MB = 20 million bytes), 30MB, or more than 40MB of data. Most hard disks are labeled as the "C" drive.

2.3.4 Diskettes

Diskettes also store users' programs and files but are different from hard disks because of their transportable, small size and packaging. A diskette must be "formatted" before storing your files and programs on it. After a diskette is inserted into a diskette drive, data on the magnetic diskette can be retrieved, stored, manipulated or erased.

Diskettes come in 3-1/2 inch and 5-1/4 inch sizes, and their memory capacity varies from 360K (low density) to 1.44MB (high density). The RSS is distributed to you on a 3-1/2" low density diskette and two 5-1/4" low density diskettes so that it may be easily loaded onto any appropriate computer, regardless of the type of diskette drive that is available. Handle the diskettes carefully - avoid contact with the shiny, brown, magnetic disk surface under the protective plastic cover on the 5-1/4" diskette and the magnetic disk surface under the sliding metal plate on the 3-1/2" diskette. Such contact could damage the data or make it unreadable by the drive.

Diskette drives come in two sizes; one to accommodate the 5-1/4" diskettes. With the 5-1/4" diskette drives, after a diskette is inserted as far as it will gently go, you must close or push down the "drive door" located on the outside of the drive or else the computer will not read the data on the diskette. This drive door generally swings down and locks into place when firmly pressed, and it releases when gently pressed back the other direction when you want to remove your diskette.

Most diskette drives are labeled "A" or "B," "A" generally being the topmost (or highest) one. The drives are labeled by the computer dealer before delivery to the customer.

Instructions, steps, tables and procedures that apply to computers with only diskette drives (no hard disk drive) will be displayed in a shaded box.

NOTE

To learn more about computer basics, read "The Personal Computer Book" by Peter McWilliams, Prelude Press, Los Angeles, CA. Call 1-800-LIFE-101 to order or secure further information.

2.4 UNDERSTANDING THE DISK OPERATING SYSTEM (DOS)

- A computer user operates, communicates with and commands the computer using the computer's Disk Operating System (DOS). The DOS commands have special meanings to the computer.

- Before you can use DOS commands, they must be installed on your hard disk.

- **MS-DOS version 5.0 or later is required to run the RSS**.

- DOS commands can be entered either in upper case or lower case letters. This manual shows shows all DOS commands in upper case letters.

- Next is a table of DOS commands that you may use now or in the future for RSS work. Words in italics mean you should substitute that word for the word that is appropriate for your specific situation.

Table 2-3. Some DOS Commands

DOS Command	What it means...
A:	Go to drive "A."
B:	Go to drive "B."
C:	Go to drive "C."
CD	Return to the Root Directory. **CHDIR** is the same as CD.
CD *DIRNAME*	Change directory to the directory named "dirname." Maximum directory length is 8 characters. cd used alone will display the current working path name.
COPY B:*.* A:	Makes an identical copy of all files. The ***.*** means all files within the directory specified. You can also copy files in the same directory giving the file a different name as the second argument to copy command, and you can combine several files into one file or append files. In all cases, the first argument is the source file (the one to copy from) and the last argument is the target file (the one to copy to).
DEL Filename	Deletes the filename in the current directory
DEL *.*	**CAUTION: Files cannot be recovered after executing this command. Delete all files in current directory**
DIR	Lists the files in the current working directory. You can list files in other directories also by specifying a path name following the command. If you have more files than will fit on the display, you can type **DIR/P,** which will make DOS pause when the display is full. Pressing any key resumes the listing. **DIR/W** specifies a wide display (5 columns) of file names.
DISKCOPY B: A:	Copies the contents of the disk in drive B to the disk in drive A. Drives must be of the same size and density. If your drives are not the same size and density, use the same drive name twice, such as DISKCOPY A: A:.
FORMAT A:	Format an unused, new or old diskette in drive A of the computer so it will accept MS-DOS files.
MD *DIRNAME*	Makes a new subdirectory called "dirname" of 8 characters or less. You substitute your directory name for the italicized word dirname. **MKDIR** is the same as MD.
PROMPT $P $G	Change the display's prompt to include the current working directory's drive and path name, followed by the "**>**" sign. This sign is typically seen in the AUTOEXEC.BAT file.
PATH	Set a command search path (such as **PATH=C:\MRSS\MTSX\ARCHIVE).** This tells the computer to search this directory after the working directory when a command is entered. This sign is typically seen in the AUTOEXEC.BAT file.
RD DIRNAME	Remove a subdirectory called "dirname". Removal of the subdirectory requires that it be empty. Files can be deleted by the **DEL** command. **RMDIR** is the same as **RD.**
VER	Prints MS-DOS version installed on the computer, such as MS-DOS Version 5.0.
XCOPY	Copies files and directories, including all subdirectories. This command uses disk space more efficiently and can speed up file access time.

For further information on these and other commands, consult your MS-DOS User's Manual.

You may have noticed some special characters in the preceding table (*). Certain keyboard characters mean special things to DOS. Some of these are:

Table 2-4. Special DOS Command Characters

Special DOS Character	What it means...
*	Wildcard character. You can substitute this character for any type or quantity of characters/digits that follow (not precede) it.
\	Backslash. A special character to separate directories when specifying path names. By itself, it also represents the root directory.
?	Wildcard character meaning you can substitute/match it for any single-digit or character.
/	Front slash. Used for setting options of commands.

There are a couple limitations you may want to know about DOS, RSS files, and directories.

1)   First, DOS only allows file names to be 8 characters long. However, file names can have an optional 1, 2 or 3-character extension after the file name. The extension must be separated from the file name by a period (sometimes called a dot).

2)   Second, DOS allows only 111 files under the root directory (topmost) on any diskette or hard disk. We highly recommend that you further subdivide your files into more directories before you accumulate this many files in any directory, not just the root directory. It's very confusing and time-consuming to work with or view this many files at once.

3)   Last, the maximum number of files allowed by the RSS in any non-root directory, whether diskette or hard disk, is approximately 400. This is an RSS limitation, not a DOS or computer limitation. If you have more than 400 files, create another directory.

The RSS is not a Microsoft Windows program. The RSS can be executed only from the DOS prompt on computers which are not running Microsoft Windows.

2.5 WHAT'S ON THE RSS DISKETTES

Below are the files located on the diskettes you received with this manual.

File Name	File Type	Description
These files are in the top ROOT directory		
DISK #1		
INSTALL.EXE	installation file	RSS Installation program. Change to the floppy drive & type install to begin.
INSTALL.DAT	installation file	Installation Data
MTSXINS.001	executable files	This is a compressed version of the file that the install program uncompresses during installation to your hard disk.
DISK.ID	installation file	Installation Data
DISK #2		
DISK.ID	installation file	Installation Data
MTSXINS.002	executable files	This is a compressed version of the file that the install program uncompresses during installation to your hard disk.

A file can be a program (a set of commands to tell the computer what to do), or a collection of data or information. As mentioned in the DOS section, DOS files generally have two parts - a file name followed by a file extension, which is optional. The extension provides an easy way to, at a glance, identify or tag files for easy grouping or categorizing. In the computer world, some file extension naming conventions have evolved, and Motorola uses these conventions in the RSS, as you may have noticed.

Now you know what's on the RSS diskettes we supply. Next you'll learn how to organize your own disk and diskettes that you'll use to store your radio archive files. We suggest that frequent RSS users and computer pros skip the "ORGANIZING YOUR HARD DISK AND DISKETTES" section and join us back in the "STARTING THE RSS" section. New users should read all sections.

2.6 ORGANIZING YOUR HARD DISK AND DISKETTES

When you first start using computers you typically do not have a lot of files to organize. But after a while it gets increasingly difficult to distinguish between file types, to pick out a specific file in a long list, to keep track of what's in which file, or to remember which files are similar in content. Therefore, it's important to spend some time now deciding which types or groups of files should be located together in a common place, called a directory.

You can make directories using the DOS **MD** or **MKDIR** commands (or inside the RSS via the FILE MAINTENANCE MENU).

You may want to organize your directories first by customer area, then by customer name, and finally by radio model type, or perhaps in the reverse order. Consider the different ways in which you operate your business - do you separate radio files by customer location, by sales revenue, by fiscal year, or perhaps by date of purchase? When deciding how to organize your files and directories, we suggest a few things:

- First, we advise you to put as few directories as possible near the top, or root, of your directory tree, considering your future growth too. (For example, if you have 100 customers within 4 geographical areas, we suggest your first level of sub directories be the areas that encompass the customer. The next level of directories would be the *customer names* within each of those areas.) The idea is to make the root system spread out wider the deeper you grow, similar to a pyramid shape.

- Keep the RSS diskette contents in one directory and your archive files in a different directory.

- Keep archive files in separate directories according to radio model type (MT, MTX, MTS, etc). It is not possible to know a file's model type by looking at the file name. Have a separate directory name for each radio model, then store the archive files for that specific model within the appropriate model directory. This way archive files for multiple model types are not located in the same directory.

- The last point we recommend is to dedicate and create a separate diskette for your backup files; *always make backup copies of your files*. If you routinely store archive files on your hard disk, make backup copies of your files on a diskette.

2.6.1 Organizing Your Hard Disk

Below is a sample directory tree for storing your radio archive files on your computer's hard disk. Though your hard disk directory tree may be a little different based upon your way of doing business, this setup may be a starting point for you. The install program will automatically create the MRSS and MTSX directories for you if they do not exist.

We suggest that you execute the following command before starting. If you place it in your autoexec.bat file, it will be executed every time the computer is started. PROMPT PG. The prompt will the show your current location in the directory tree. Note how the prompt changes when the following commands are typed to change directories. The prompt is shown in bold face.

C> prompt PG
C:\> CD\mrss
C:\mrss\>
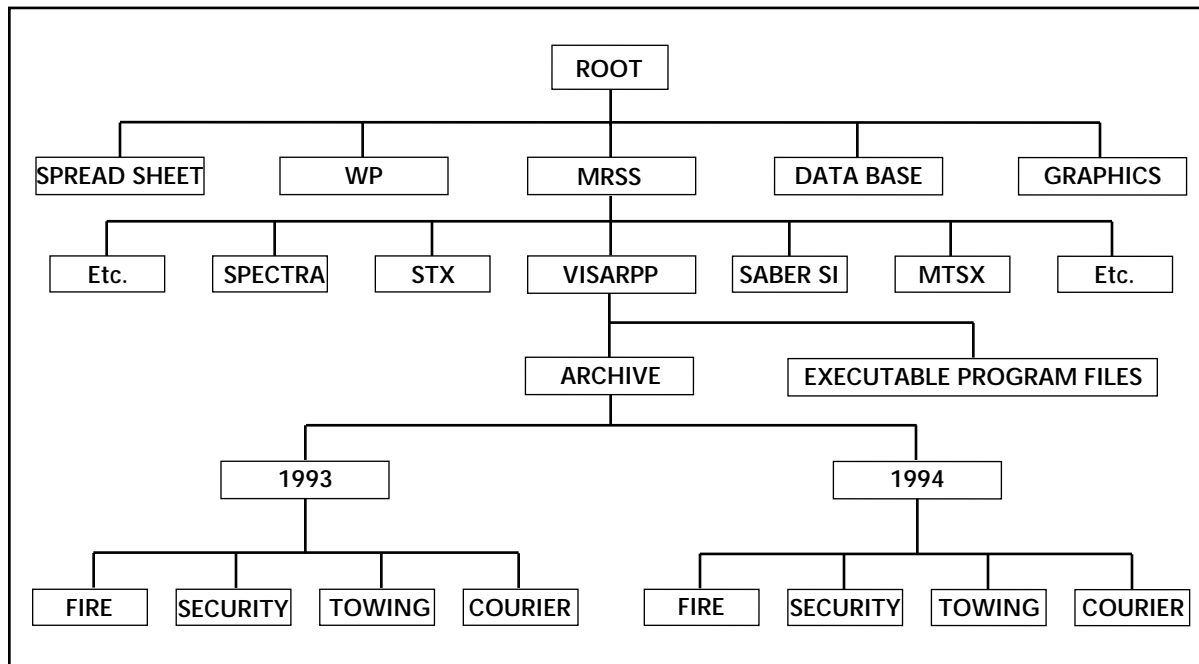
Figure 2-2. Hard Disk Directory Tree

2.6.2 Organizing Your Archive File Diskettes

Below is a sample diskette directory tree for storing your radio archive files on a diskette.

Organizing a diskette is easier due to smaller space on a diskette. Though your tree may be different based upon your way of doing business, this set-up may be a starting point for you. Be sure to label your diskettes accurately, such as "1993 MTSX Archive Files". Depending on the size of your business, you may even have a separate diskette for FIRE, one for SECURITY, etc.

To create the directory tree shown in Figure 2-3 on your diskette, follow the steps on table 2-6. After each command, press **Return** or **Enter**. This exercise assumes you are using drive A and the diskette contains only MTSX archive files (not RSS files and not backup files).

```
                            ┌──────────┐
                            │   ROOT   │
                            └────┬─────┘
        ┌────────────┬───────────┴──────────┬────────────┐
   ┌────┴────┐  ┌────┴─────┐          ┌──────┴───┐   ┌─────┴─────┐
   │  FIRE   │  │ SECURITY │          │  TOWING  │   │  COURIER  │
   └─────────┘  └──────────┘          └──────────┘   └───────────┘
```
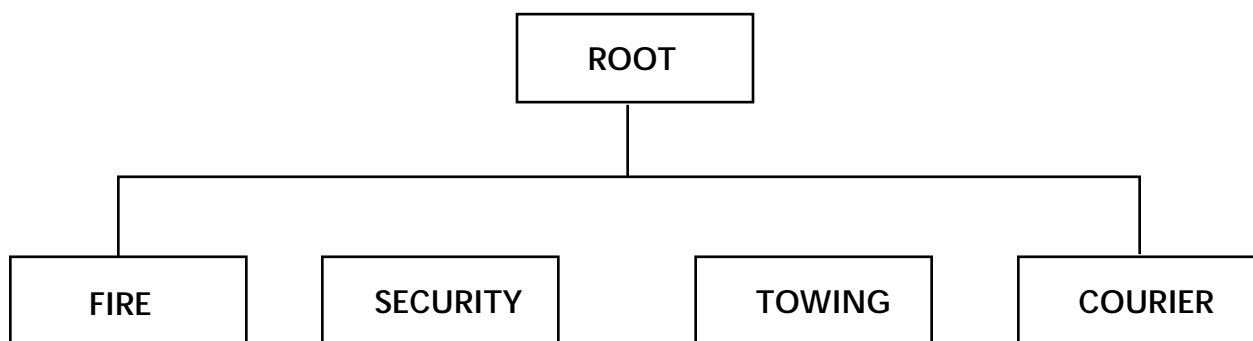
Figure 2-3. Diskette Directory Tree

Table 2-6. Steps to Create Diskette Directory Tree

Instruction	What to Type	Explanation
1. Create diskette label		Label formatted diskette to correspond to the contents of the diskette such as "MTXS Archive Files". Don't apply it to the diskette yet.
2. If no hard disk, load DOS		See Table 2-3 to load DOS using drive A. Remove DOS diskettes after loading. If not at the root directory of drive A, type: **A:cd**
3. Put new diskette in A		Insert a new diskette into A. Close the drive door.
4. Format diskette	**FORMAT A:**	Format the new diskette in drive A. Discard diskette if errors occur.
5. Label diskette		Remove formatted diskette; apply label without covering the exposed magnetic area.
6. Insert diskette again		Insert diskette into drive A again. Close door.
7. Start at root	**CD **	Move (change directory) to the root (uppermost) directory of the diskette. Omit if already at root level.
8. Make FIRE directory	**MD FIRE**	Make a directory under Root called "FIRE".
9. Make SECURITY directory	**MD SECURITY**	Make a directory under Root called "SECURITY".
10. Make a TOWING directory	**MD TOWING**	Make a directory under Root called "TOWING".
11. Make a COURIER directory	**MD COURIER**	Make a directory under Root called "COURIER".
12. Create other directories		Make more directories for each additional category you may need.

2.7 STARTING THE RSS

You have accomplished a lot so far - you have identified and assembled the hardware, you acquired knowledge of basic computer and DOS concepts, and how to organize disks. You are now ready to start the RSS on your computer. This section, approximately 30 minutes long, will explain when to install, reinstall, or discard the RSS diskettes. It will guide you through installation process of the RSS on a hard disk, and finally, it lists how to start the RSS with the appropriate executable command.

2.7.1 Making a Backup Copy of RSS Diskette(s)

As with any program, it is important to make a backup copy of the RSS diskette before you begin to use it. Whenever you receive a new version of the RSS, you should make a backup copy.

We recommend a backup copy of your RSS, even if you have a hard disk. To make a backup copy, follow the steps below. These steps assume you have one diskette drive named A or you have two diskette drives that are not the same size and density, and that DOS is loaded.

Note

DISKCOPY will not copy from one drive to another if the drives are not the exact same size and density.

Table 2-7. Steps to Backup the RSS Diskette(s)

Instruction	What to Type	Explanation
1. Insert RSS diskette		Put supplied RSS diskette into drive A; close the door
2. Make the backup copy	**DISKCOPY A: A:**	This copies the data on the source diskette in drive A (supplied RSS diskette) to the target diskette (the newly formatted diskette). **Caution: accidentally reversing the insertion order of the diskettes will erase the contents of the RSS diskette**. DOS will tell you when to insert the source diskette (RSS one) and when to insert the target diskette (the newly formatted one). When the diskcopy is complete, use the target diskette as the new working copy.
3. Keep originals safe		Store the original RSS diskettes in a safe place away from magnets, moisture, heat and possible damage.

2.7.2 What To Do with Previous Versions of RSS Diskettes

After you have created a backup copy of the new RSS diskettes, you may wonder what to do with the previous RSS versions you may have accumulated. We recommend discarding the older versions so that you do not accidently program the radio with outdated data.

2.7.3 Starting the RSS From the Hard Disk

A hard-disk drive installation program is on the RSS diskettes. After installing the RSS on your hard disk, follow the startup procedure.

2.7.4 Installing the RSS on Your Hard Disk

Install the latest RSS version as soon as you receive it. Using the install program on the diskettes you received with this manual assures that you have the latest and greatest version of the RSS. It also keeps important files in a consistent place for cross-referencing and future use. The software installation takes approximately three minutes.

The install program will:

- Create the MRSS, MTSX and ARCHIVE directories, if they are not already there.
- Write over the old version's program files with the same name, if present.

The install program will *not*:

- Write over your archive files.

Before doing the installation steps that follow, be sure you have made a backup copy of the RSS, explained in the "Making a Backup Copy of RSS Diskette(s)" section and Table 2-7 "Steps to Backup the RSS Diskette(s)."

The steps below install the RSS on your computer. After each "What to Type" step below, press **Return** or **Enter.**

Table 2-8. RSS Hard Disk Installation Procedure

Instruction	What to Type	Explanation
1. Put RSS diskette in drive A.		Insert the RSS Diskette into Drive A (close the door), later you will be instructed to insert the other one.
2. Go to drive A.	**A:**	This tells the computer to work from drive A.
3. Start the installation.	**INSTALL**	This transfers the RSS to your hard disk. Follow directions and answer questions on the display when they appear. You will be instructed to switch diskettes in the diskette drive (for example, "INSERT DISK CONTAINING FILE ..."). When the prompt returns, you may start the RSS (see next section).
4. Store diskettes in safe place		Keep the RSS diskettes in a safe place and start RSS from the hard disk from now on.

After installing the RSS on a hard disk, you may notice a .BAT extension and a .ODB extension. These types of files are explained briefly below. Do not delete or move these files from the C:\MRSS\MTSX directory.

.BAT A batch file. The INSTALL command file creates a file called MTSX.BAT in the top level directory of the hard drive.

.CFG Created and modified by the RSS, the configuration file (.CFG) contains the PC port choice, the default pathnames, and the display-type data.

.ODB Used by the RUNTIME.EXE file to properly configure your radio.

2.7.5 Installing the RSS on Multiple Computers or Networks

You may install the RSS on several personal computers and laptop computers at a single site, according to your license. If you have additional sites (a second shop, etc.) then you should purchase additional subscriptions.

Now that you have a backup and working copy of the RSS, you will start the RSS in the next section.

2.7.6 Hard Disk RSS Startup Procedure

To start the RSS from your hard disk, follow the steps in the table below. After each "What to type" step, press **Return** or **Enter**.

Table 2-9. Hard Disk Startup Procedures

Instruction	What to Type	How to do it/What it Means
1. Move to C drive.	**C**:	Work from hard disk, the C drive. If you have a hard disk and you bring up your computer with no diskettes in the diskette drives, you will already be at the C drive.
2. Start the RSS	**MTSX**	This command starts the RSS. If it does not start correctly, you may hear a tone or see an error message or error code printed on the display.

After you start the RSS from the hard disk, you will see the BANNER screen.

2.7.7 The Banner Screen

When the program correctly loads, you will see a "BANNER" screen with the Motorola logo and copyright information.

Once the program is loaded, press any key. You will then see the MAIN MENU.

MOTOROLA

RADIO SERVICE SOFTWARE
for the
MT2000, MTX8000, MTX9000 and MTS2000
Radios

<Version>   **<DATE>**

(C) Copyright MOTOROLA Inc. 1994-1996. All rights reserved.
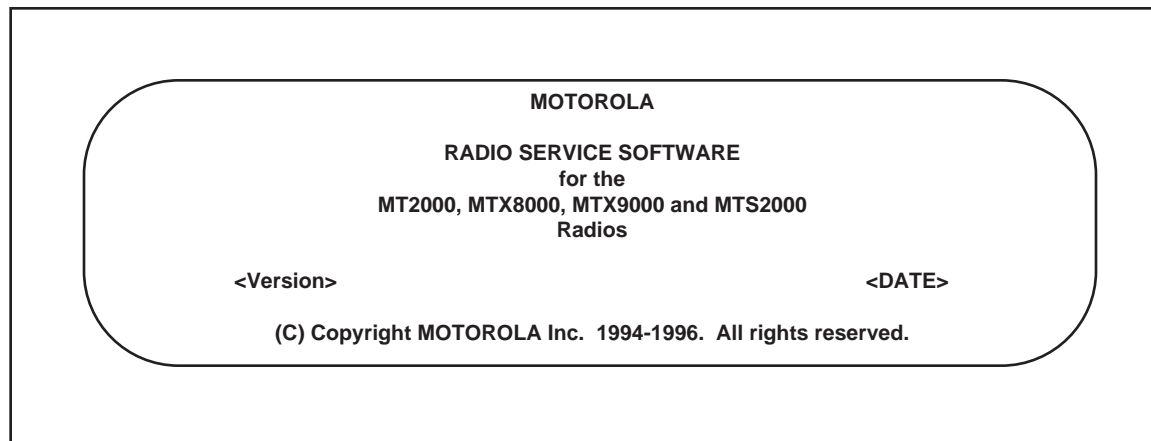
Figure 2-4. The Banner Screen

2.7.8 The Main Menu

After pressing any key at the BANNER screen, the MAIN MENU appears.

```
┌──────────────────────────────────────────┬─────────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Select Function F1 -  F10.           │
│ MTSX                Model:                 │                                     │
│                                            │                                     │
│ MAIN                                       │                                     │
├──────────────────────────────────────────┴─────────────────────────────────────┤
│                                                                                 │
│                               MAIN MENU                                         │
│                                                                                 │
│     F1    -    HELP                                                             │
│     F2    -    SERVICE: Alignment (Requires RIB)                               │
│     F3    -    GET/SAVE/PROGRAM/CLONE Codeplug Data From/to Disk/Radio         │
│     F4    -    CHANGE//VIEW Radio Codeplug Data                                 │
│     F5    -    PRINT Radio Codeplug Data                                        │
│     F6    -    FILE Maintenance                                                 │
│     F7    -                                                                     │
│     F8    -    FLASHport Upgrade                                                │
│     F9    -    SETUP Computer Configuration                                     │
│     F10   -    EXIT Radio Service Software, Return to DOS                       │
│                                                                                 │
└─────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	SERVICE MENU	GET SAVE	CHANGE VIEW	PRINT MENU	FILE MAINT		FLASHPORT UPGRADE	SETUP MENU	EXIT TO DOS

Figure 2-5. The Main Menu

From here you can begin to program a radio, but first we will explain how to move around within the menus and screens of the RSS with the keyboard keys. The parts of the menu are described in the "Anatomy of a Menu" section.

2.8 NAVIGATING THROUGH THE RSS MENUS

You have successfully started the RSS and are ready to learn just what it is you see on the display, how to move around, how the RSS is organized, how to change the feature choices, and finally, how to exit.

Now that the RSS MAIN MENU is on your display, to proceed any further you may want to know about the keyboard keys and what they do. Below is a picture of a typical computer keyboard.
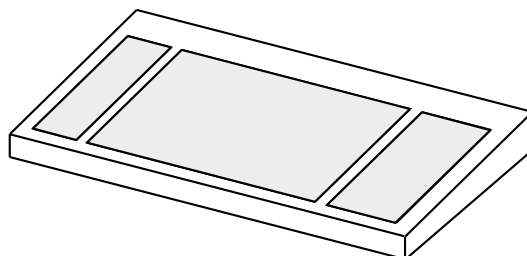
Figure 2-6. The Computer Keyboard

2.8.1 The Keyboard Keys and Their Functions

Every action of the RSS is controlled by you through the use of formatted displays and function keys. The function keys are the ten keys labeled **F1** to **F10** grouped on the left hand side of the keyboard, but be aware that some other keyboards may have twelve keys labeled **F1** to **F12** across the top of the keyboard.
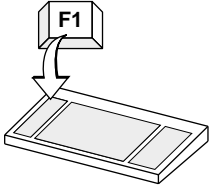
F1 - Displays help information on every screen and menu. This on-line help provides information on how to use the currently displayed menu, screen, line or field. You may also find system setup information. In many cases the help provided is for the specific line currently highlighted on the screen.
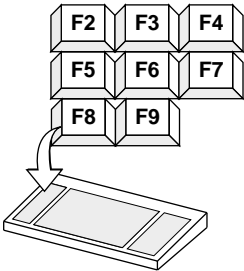
F2 - **F9** - The **F2** through **F9** keys perform special functions and actions which can vary from menu to menu and screen to screen. *On some screens*, **F5** will print the current screen to your printer, and **F8** will save the data and options currently displayed.
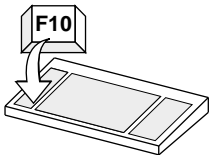
F10 - Exit to previous menu or screen. The **F10** key moves the display backward in the RSS tree, one screen or menu at a time. **F10** performs this function on *every* menu and screen. At the MAIN MENU, **F10** exits the RSS program.
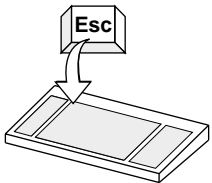
Esc - Exit to MAIN MENU. **Esc** performs this function on every menu and screen.
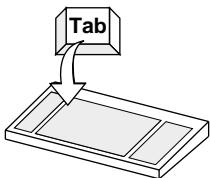
Tab - Accepts data currently in a field then moves the prompt forward one field. If entry is not accepted, an error beep will sound. This key performs exactly like the **Enter** or **Return** key.
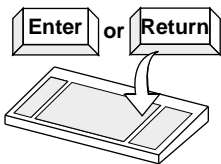
Enter or **Return** - Accepts data currently in a field then moves the prompt forward one field. If the entry is not accepted, an error beep will sound. This key is usually two or four times as large as the letter keys on the keyboard. This key performs exactly like the **Tab** key.
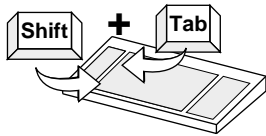
Back Tab (Shift + Tab) - Accepts data currently in field then moves prompt backward one field at a time. To back tab, press and hold **Shift** key and press the **Tab** key.
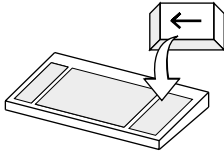
Left Arrow - Moves cursor left one space. The **Backspace** key will also move the cursor backward (left) one space at a time. **Num Lock** key must be off.
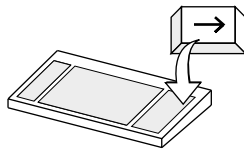
Right Arrow - Moves cursor right one space. **Num Lock** key must be off.
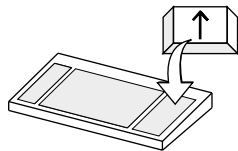
Up Arrow - Scrolls through selections, or increases the current relative value. On some keyboards, the **Num Lock** key must be off.
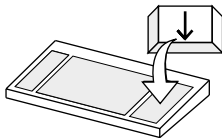
Down Arrow - Scrolls through selections, or decreases the current relative value. On some keyboards, the **Num Lock** key must be off.
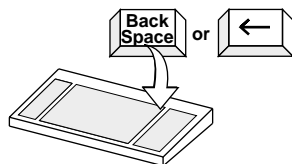
Back Space - Erases the current character in the field and moves cursor one space backward (left). The backspace key on some keyboards is a left arrow. On some keyboards, the **Num Lock** key must be off.
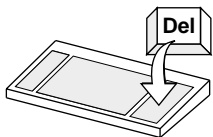
Del - Erases current character in field.
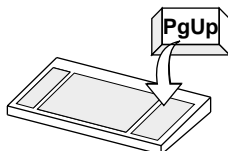
PgUp - Displays the previous page information on the screen. This is on the numeric keypad on the right side of the keyboard. On some keyboards, the **Num Lock** key must be off.
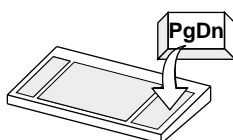
PgDn - Displays the next page of information on the screen. This is on the numeric keypad. On some keyboards, the **Num Lock** key must be off.

2.8.2 Anatomy of a Menu

Within the RSS, there are menus that will take you to screens where you can change the choice or value of a field. The only difference between a menu and a screen is the information shown in the *working area*, shown as C in the figure below. A menu or screen has four areas, labeled below as A, B, C and D.

```
┌─────────────────────────────────────────────┬─────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Select Function  F1 - F10.      │
│ MTSX            Model: H01WCF4DB5AN          │                                 │
│                                              │              B                  │
│ MAIN                          A              │                                 │
├──────────────────────────────────────────────────────────────────────────────┤
│                          MAIN MENU                                             │
│                                                                                │
│        F1    -    HELP                                                         │
│        F2    -    SERVICE: Alignment (Requires RIB)                            │
│        F3    -    GET/SAVE/PROGRAM/CLONE Codeplug Data from/to Disk/Radio      │
│        F4    -    CHANGE/CREATE/VIEW Radio Codeplug Data                       │
│        F5    -    PRINT Radio Codeplug Data                                    │
│        F6    -    FILE Maintenance                                             │
│        F7    -                      C                                          │
│        F8    -    FLASHport Upgrade                                            │
│        F9    -    SETUP Computer Configuration                                 │
│        F10   -    EXIT Radio Service Software, Return to DOS                   │
│                                                                                │
├──────────────────────────────────────────────────────────────────────────────┤
│  F1       F2       F3       F4       F5       F6      F7      F8      F9    F10 │
│  HELP   SERVICE   GET    CHANGE   PRINT    FILE   D  FLASHPORT SETUP  EXIT     │
│         MENU      SAVE    VIEW    DATA    MAINT      UPGRADE  MENU  TO DOS      │
└──────────────────────────────────────────────────────────────────────────────┘
```

Figure 2-7. An RSS Menu

A **RSS Location ID Area**. In this area you will find the words MOTOROLA Radio Service Software and a menu or screen pathname for the current menu or screen shown on the display. Each menu and screen name will be separated by a colon (:). For some examples of this pathname, glance ahead in this manual to see the menus and screens that are deeper into the RSS tree (past the MAIN MENU, the highest root level, which is the assumed, default starting point). If a radio is connected, the current radio model being read will also be displayed in this area.

B **Instruction Area**. This area tells you the allowable actions for the current menu or screen. It is divided into 4 lines; the first two lines are reserved for messages to the user, and the last two lines are status lines.

C **Working Area**. This area of a menu (not a screen) displays a list of functions (menu choices) you can execute from the current menu. Each menu-item is preceded by an F-number key (function key). Pressing an F-number key advances you to another menu or screen (see Figure 2-10).

D **F-Key (Function Key) ID Area**. This area displays the F-number keys and function names for the current menu or screen.

NOTE
All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

2.8.3 Anatomy of a Screen

As stated before, the only difference between a menu and a screen is the contents of the working area, shown as letter **C** in the previous menu figure, and shown below as the Working area. Screens list features (fields) that can be viewed or edited.

```
MOTOROLA Radio Service Software          Enter or Scroll to Select
MTSX            Model:                    Personality.

MAIN:CHANGE/VIEW:CONV:PERS


     Personality ................1        CONVENTIONAL PERSONALITY

     Receive Only ...............................Disabled    Signalling ...........................................MDC
     Direct / Talkaround ........................Enabled       MDC System # .....................................1
     Time Out Timer............................3 -    60       PTT ID.......................................Disabled
     Scan List .........................................None     Emergency.................................Enabled
     Hot Keypad...................................Disabled      Revert ..............................Selected Chan
     Phone Operation..........................Unlimited
                                      Receive              Transmit              Direct

     Frequency (MHz)          935.06250            896.01250             896.01250
     Signalling Type          CSQ                  PL                    DPL
        Code                                       67.0 Hz  XZ           023
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS		MDC OPTIONS	PHONE OPTIONS	MORE OPTIONS	EXIT

Figure 2-8. An RSS Screen

The working area of a screen contains a list of programmable features called "fields" that can be selected or changed using the arrow, tab or return keys described earlier. On some screens are features that can be selected for each *individual* channel (hereafter we will refer to a channel as a "mode"); these features are selected on a "per-mode" basis. On other screens are features that can be selected for *all* modes of the radio ("radio-wide" features).

And still other screens list those features that perform a certain RSS function, such as servicing the radio or printing the personality data.

2.8.4 A Complete Menu Mapping at a Glance

The screens are organized in a tree-root fashion (Figure 2-9). Though this tree-root system is shown sideways in the following picture, it shows how the whole system starts with a main root (MAIN MENU) at the left side and branches outward from the main root. This branching grows deeper as you get closer to the precise screen which contains the feature you want to program into the radio.

Traveling from one RSS menu or screen to another is similar to the way a car must use the road system to drive to the other side of a lake, instead of flying directly as a plane would. To move forward from one screen to another, use one of the F-keys until you've reached the menu that contains the other screen you want. To back up, use the **F10** key. Each time you press **F10** you retreat to the previous screen or menu, moving closer to the MAIN MENU.

MAIN MENU

F1 — HELP

F2 — SERVICE

F3 — GET/ SAVE/ PROGRAM

F4 — CHANGE/ VIEW

F5 — PRINT MENU

F6 — FILE MAINTENANCE

F7

F8 — FLASHPORT UPGRADE

F9 — SETUP

F10 — EXIT TO DOS

Refer to the following page.

F6 (FILE MAINTENANCE):
- **F2** - Create Directory Path
- **F5** - Delete Archive File

F3 (GET/SAVE/PROGRAM):
- **F2** - Reading Codeplug Data From the Radio
- **F3** - Reading Codeplug Data From an Archive File
- **F4** - TCMS Merge
- **F5** - Radio Cloning
- **F7** - Saving Codeplug Data to an Archive File
- **F8** - Programming the Radio's Codeplug
- **F9** - Programming History

F9 (SETUP):
- **F3** - PC Configuration
- **F7** - Screen Color Configuration

F8 (FLASHPORT UPGRADE):
- **F2** - View Radio Configuration
- **F3** - View FLASHkey Configuration
- **F8** - Upgrade Radio

F2 (SERVICE):
F2 - Transmit Alignment Menu
- **F2** - Reference Oscillator Alignment
- **F3** - Transmit Power Alignment
- **F4** - Transmit Deviation Balance (Compensation) Alignment
- **F5** - Transmit Deviation Limit Alignment
- **F6** - Transmit Deviation Limit Alignment: Reference Softpot
- **F7** - Transmit VCO Crossover Alignment
- **F8** - Secure Transmit Deviation

F3 - Receive Alignment Menu
- **F2** - Front End Filter Alignment
- **F3** - Rated Audio Alignment
- **F4** - Squelch Attenuator (12.5kHz) Alignment
- **F5** - Squelch Attenuator (20kHz) Alignment
- **F6** - Squelch Attenuator (25/30kHz) Alignment
- **F7** - RX VCO Crossover Frequency
- **F8** - Secure Receive Discriminator Level

F4 - Signalling Alignment Menu
- **F2** - DTMF Transmit Deviation
- **F3** - Transmit Signalling: High Speed
- **F4** - Transmit Signalling: MDC 1200

F4 (CHANGE/VIEW):
- **F3** - Radio Wide Buttons, Scan, Phone
- **F4** - Trunking Systems, Personalities, Options
- **F6** - Conventional Personalities
- **F8** - Zone Summary
- **F9** - Radio Codeplug Data Summary

Figure 2-9. RSS Menu Mapping at a Glance (page 1 of 2)

```
MAIN
MENU
        CHANGE/
F4       VIEW

        F3  -  Radio Wide Configuration Menu
             F2  -  Radio Wide Options
                  F6  -  Radio Wide Secure Options
                  F7  -  Radio Wide Emergency Options
                  F9  -  More Radio Wide Options
                  F3  -  Radio Wide Features Configuration Menu
                       F2  -  Radio Wide Button Configuration
                       F3  -  Radio Wide Switch Configuration
                       F4  -  Radio Wide Menu Item Configuration
                  F4  -  Phone Configuration
                       F8  -  DTMF Access/Deaccess Codes
                       F9  -  Dial Options
                  F5  -  Radio Wide Scan Lists And Options
                       F8  -  Radio Wide Scan Options
             F6  -  Radio Wide Display Options
        F4  -  Trunking Menu
             F2  -  Trunking Radio Wide Options
                  F2  -  SmartZone Environment
                  F3  -  Voice On Control
             F3  -  Trunking Systems
                  F6  -  Control Channel
                  F9  -  Trunking System Options
                       F5  -  One Touch
                       F6  -  Trunking Status Alias
                       F7  -  Trunking Message Alias
             F4  -  Trunking Personality
                  F7  -  Trunking Talkgroup
                  F8  -  Emergency Data Configuration
                  F9  -  Trunking Personality Options
                       F6  -  SmartZone Preferred Sites
             F5  -  Trunking Call List
        F6  -  Conventional Menu
             F2  -  Conventional Radio Wide Options
             F3  -  Conventional Personality Options
                  F6  -  Conventional Secure Personalities
                  F7  -  Personality MDC Options
                  F8  -  Conventional Personality Phone Options
                  F9  -  More Conventional Personality Options
             F4  -  MDC Configuration Menu
                  F3  -  MDC Systems
                       F9  -  More MDC System Options
             F7  -  Auxiliary Systems
                  F2  -  Singletone Systems
                  F3  -  Singletone List
                  F4  -  Quick Call II Systems
                  F5  -  GE Star Systems
        F8  -  Zone/Talkgroup (Channel) Assignment
```
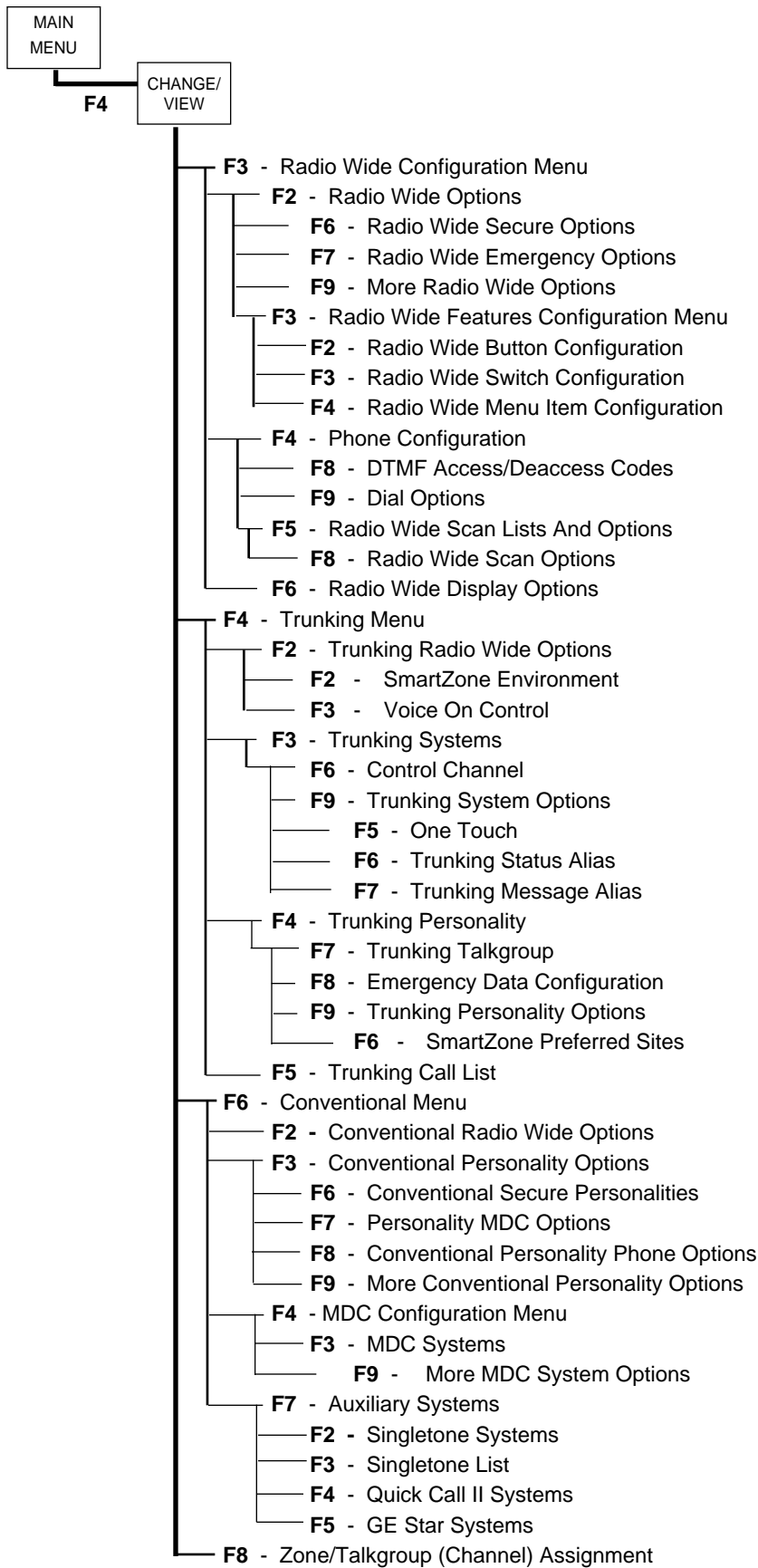
Figure 2-9. RSS Menu Mapping at a Glance (page 2 of 2)

2.8.5 The Relationship Between Screens

Some screens contain fields that require or take values from other screens and features, and thus are dependent upon each other. For example, the signalling system values specified on the CHANGE/VIEW:CONV:PER are "assigned" at the CHANGE/VIEW:CONV:MDC:SYSTEM screen.

```
┌─────────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software             │ Enter or Scroll to Select System.│
│ MTSX          Model:                        │                                  │
│                                             │                                  │
│ MAIN:CHANGE/VIEW:CONV:MDC:SYSTEM            │                                  │
├─────────────────────────────────────────────┴──────────────────────────────────┤
│        MDC System............1                                                  │
│                              MDC SYSTEM                                         │
│                                                                                 │
│        Primary ID (Hex) ...................0001   Emergency Type .........Enabled│
│        Secondary ID (Hex) .......00000000   Emergency Type ....Alarm Only      │
│        Variable ID (Hex) ..................000      PTT ID Sidetone.......Enabled│
│        Leading PTT-ID ...............Enabled     Acknowledge Alert Tone ...Enabled│
│          PTT-ID Sidetone .........Disabled             Revert Table            │
│        Trailing PTT-ID ..............Disabled                                   │
│        Radio Check ...................Disabled    Num    Zone    Channel        │
│                                                    1      1        1            │
│                                                    2      1        1            │
│                                                    3      1        1            │
├──────────────────────────────────────────────────────────────────────────────┤
│  F1        F2        F3        F4        F5     F6    F7    F8     F9      F10  │
│  HELP      ADD       PREV      NEXT      DELETE                   MORE     EXIT │
│            SYS       SYS       SYS       SYS                     OPTIONS        │
└──────────────────────────────────────────────────────────────────────────────┘
```

Figure 2-10. Relationship Between Screens

GETTING STARTED

GETTING STARTED

2.9 CHANGING A FIELD VALUE

Screen fields come in three basic types:

Information fields - non-editable fields which cannot be altered or changed.

Scrollable fields - to edit or change a choice, press the arrow key(s).

Direct-entry fields - to edit or change a choice, type in an acceptable value.

Changing a field's value is typically done by either scrolling through a list of options (in scrollable fields) or by typing in a correct value (in direct-entry fields). Scrolling is done with the arrow keys.

Press **Tab** or **Enter** to move to field, then type new value.

MOTOROLA Radio Service Software
MTSX   Model:

MAIN:CHANGE/VIEW:CONV:PERS

Enter or Scroll to Select
Personality.

Personality 1   CONVENTIONAL PERSONALITY

Receive Only ....Disabled   Signalling ....MDC
Direct / Talkaround ....Enabled   MDC System # 1
Time Out Timer.............................3 -   60   PTT ID..Disabled
Scan List ....None   Emergency................................Enabled
Hot Keypad ....Disabled   Revert ....Selected Chan
Phone Operation...........................Unlimited

	Receive	Transmit	Direct
Frequency (MHz)	935.06250	896.01250	896.01250
Signalling Type	CSQ	PL	DPL
Code		67.0 Hz XZ	023

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS		MDC OPTIONS	PHONE OPTIONS	MORE OPTIONS	EXIT

Figure 2-11. Changing a Field Value

Press ⬆ or ⬇ to change field, or type new value.
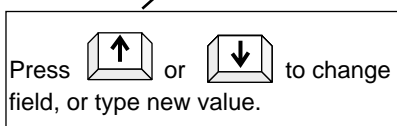
2.10 SETTING (CONFIGURING) THE RSS COMPUTER DEFAULTS

Now that you are aware of how fields, screens and menus relate to one another, this section introduces the concept of saving certain default computer information. Setting the computer defaults eliminates the need to specify them every time you enter the RSS or program a radio.

Read this section if you want to:

1. Set a default file path name so you won't have to specify it every time you save a radio archive file,

2. Set or change the default port used to interface with the radio and RIB,

3. Set the default colors you see on your RSS screen.

If you've been with us from the start, you should be at the MAIN MENU. If you've just joined us or got lost inside the RSS screens, press **Esc** to get to the MAIN MENU. From the MAIN MENU, press **F9** to get to the SERVICE SOFTWARE CONFIGURATION MENU.

From the SERVICE SOFTWARE CONFIGURATION MENU you can either read the on-line help, set some default computer values, or exit. Pressing **F3** on the SERVICE SOFTWARE CONFIGURATION MENU will display the CONFIGURE COMPUTER screen, where you can specify the default drive and path names for future archive files. Pressing **F7** on the SERVICE SOFTWARE CONFIGURATION MENU displays CONFIGURE SCREEN where you can specify the colors for your screen's text, lines, background and highlighted fields.
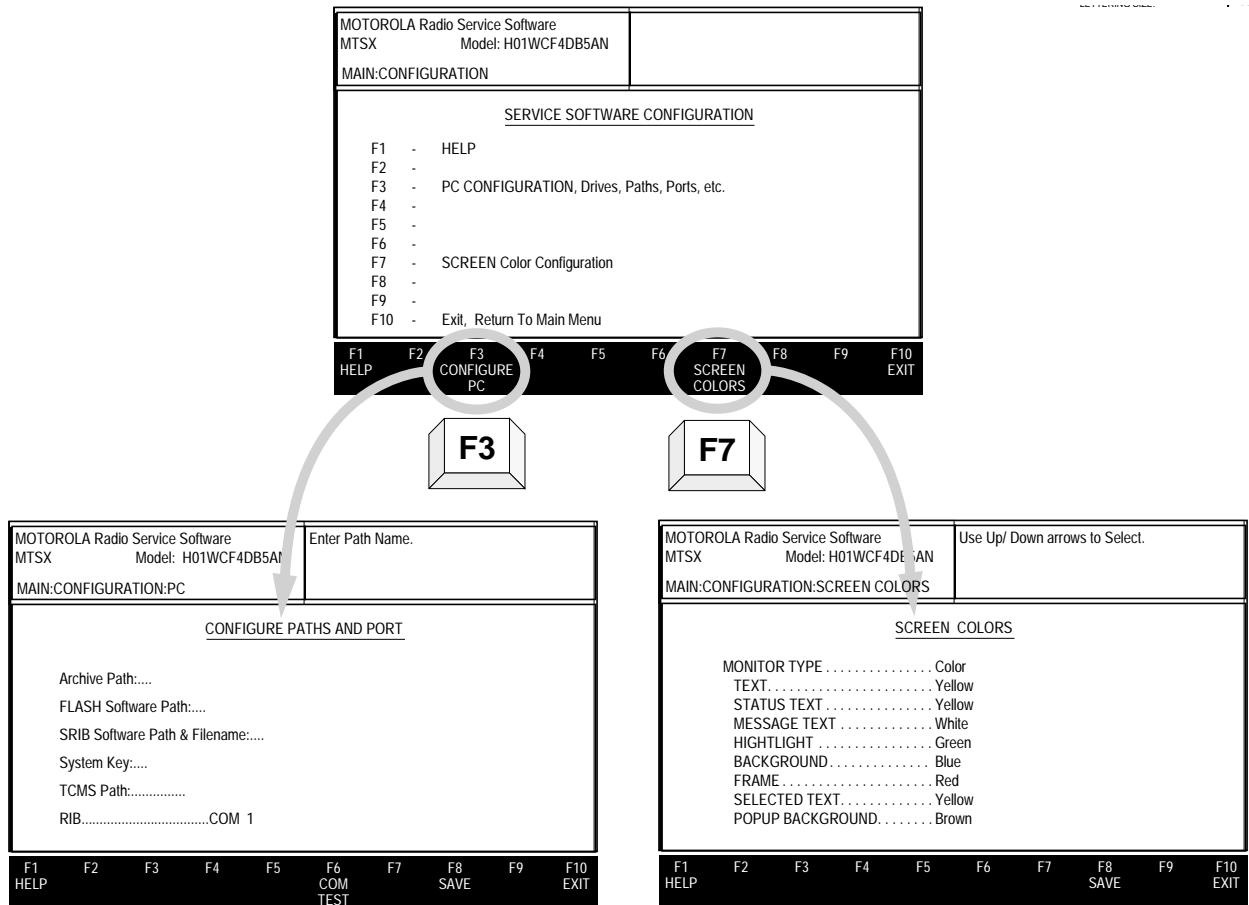
Figure 2-12. Service Software Configuration Menu Options

2.10.1 Setting Default Archive and Backup Paths

First, you can set the drive name and path names for archive files you will create later. Specifying a default path name here will save much typing time later every time you go to save an archive file. Here's how to set the default archive and backup file paths.

Table 2-10. Creating Archive File Paths

Instruction	What to Type	Explanation
1. GO to CONFIGURE COMPUTER	⌐F3⌐	Press **F3** at the SERVICE SOFTWARE COMPUTER CONFIGURATION MENU to get to CONFIGURE COMPUTER.
2. Specify archive file path	**C:\MRSS\MTSX\ARCHIVE**	At CONFIGURE COMPUTER, type this archive file path name if you have a hard disk. This is where you will keep your radio archive files. If you don't keep archive files on your hard disk, specify (one of) your diskette drive(s).
3. Save this configuration	⌐F8⌐	**F8** saves the field options displayed on the screen.

Next are the steps to specify the serial port you use for interfacing with the radio and RIB. The default port is COM 1.

2.10.2 Setting a Communications Port

Table 2-11. Setting a Port

Instruction	What to Type	Explanation
1. Go to CONFIGURE COMPUTER	F3	Press **F3** at SERVICE SOFTWARE CONFIGURATION MENU to go to CONFIGURE COMPUTER.
2. Go to the RIB field	TAB	Pressing **Tab** , **Enter** or **Return** advances to the next field. Press **Tab** five times.
3. Select a port	↑ ↓	Use the arrow keys to scroll through the available ports. Options are **COM 1** or **COM 2** on many computers. Some computers will also have **COM 3** and **COM 4**. Choose the port where you will connect the computer-to-RIB cable.
4. Test the port	F6	You can test the port by pressing **F6**, COM TEST - if OK it will beep and in the **Instruction Area** (see letter **B** in Figure 2-7) of the screen the words "Communication with the radio was successful" will appear.
5. Save this configuration	F8	**F8** saves the field options on the screen. "Configuration File Written Successfully" appears in **Instruction Area** (B) of the screen.
6. Exit screen when done	F10	Press **F10** to exit this screen and go to previous menu.

2.11 EXITING THE RSS

If you want to program a radio, don't exit yet. Whenever exiting the RSS, always ask yourself these questions:

1. Did you apply the changes to the radio (save to the radio)?

2. Did you apply the changes to a computer file (save archive file)?

If you do want to exit, exiting is very easy - you use the **Esc** key to return to the MAIN MENU, then press **F10/F2** to exit to the DOS prompt.

2.12 MAIN MENU

RSS LOCATION: Press any key when instructed on the BANNER Screen.

```
┌─────────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software             │ Select Function F1 - F10.            │
│ MTSX              Model:                     │                                      │
│                                              │                                      │
│ MAIN                                         │                                      │
├──────────────────────────────────────────────┴──────────────────────────────────────┤
│                                                                                      │
│                              MAIN  MENU                                              │
│                                                                                      │
│        F1   -   HELP                                                                 │
│        F2   -   SERVICE Alignment (Requires RIB)                                     │
│        F3   -   GET/SAVE/PROGRAM Codeplug Data from/to Disk/Radio                    │
│        F4   -   CHANGE/CREATE/VIEW Radio Codeplug Data                               │
│        F5   -   PRINT Codeplug Data                                                  │
│        F6   -   FILE Maintenance                                                     │
│        F7   -                                                                        │
│        F8   -   FLASHport Upgrade                                                    │
│        F9   -   SETUP Computer Configuration                                         │
│        F10  -   Exit Radio Service Software, Return to DOS                           │
│                                                                                      │
└──────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	SERVICE	GET	CHANGE	PRINT	FILE		FLASHPORT	SETUP	EXIT
	MENU	SAVE	VIEW	DATA	MAINT		UPGRADE	MENU	TO DOS

The MAIN MENU is the top level of the program from which all function selections start. All selections are made via the function keys, labeled **F1** through **F10** on the keyboard. All other menus contain an ESC key, and by pressing it the operator may at any time return to the MAIN MENU. After making a selection, the user will be directed to similar menus and/or data entry screens for RF alignment or codeplug data. The user must initially load data from a radio (or disk) via the GET/SAVE function before being permitted to CHANGE/VIEW any codeplug data. For any problems not covered by the Radio Service Software Users manual or the service manual, contact the local MOTOROLA field technical representative.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP when pressed provides additional information on this screen. Generic help is available within any help screen via the MORE HELP function.

F2 - SERVICE is a multi-level menu that permits access to all radio service alignments via the service screens**.** A radio must be connected to the computer via the RIB before access will be permitted to the service screens. All service screens access the codeplug directly, therefore, it is **NOT** necessary to read the codeplug data before using the service screens.

F3 - GET/SAVE is used to read codeplug data from a radio and/or retrieve archived codeplug data from a diskette or hard disk for editing via the CHANGE/VIEW function. GET/SAVE is also used to program edited codeplug data back into the radio or to create an archive file on a diskette or hard disk.

F4 - **CHANGE/VIEW** is a multi-level menu that is used to change, view, or modify codeplug features and option configurations. All radio codeplug parameters are classified as either RADIO-WIDE, CONVENTIONAL, TRUNKED, or PERSONALITY related. CHANGE/VIEW permits access to each of these categories. Unlike the SERVICE function, a codeplug must be loaded into the computers memory, via GET/SAVE functions, before CHANGE/VIEW functions can be accessed. An archive file can be accessed without a radio being connected.

F5 - **PRINT MENU** will print selected codeplug data.

F6 - **FILE MAINTENANCE** is available to allow some file manipulation capability without exiting the RSS. New directories can be created and files can be deleted from this screen.

F8- **FLASHPORT UPGRADE** is a multi-level menu that is used to view the radio's configuration, to view the FLASHkey's contents, to upgrade the codeplug, and to FLASH the radio.

F9 - **SETUP** is used to configure the the Radio Service Software to the users particular application. Archive path names, communication ports, and even screen colors may be customized to the customer's specific needs.

F10 - **EXIT** is used to quit the program and return to DOS. Ensure that all desired codeplug changes have been programmed back to the radio and that an archive copy has been made. If this is not done, all changes will be lost as returning to DOS erases this data from the computer's memory.

2.12.1 How to Read the Codeplug

A. Connect the radio to the computer as shown in Figure 2-1. If you are not already at the MAIN MENU, press any key at the BANNER screen.

B. From the MAIN MENU press **F3**; the GET/SAVE/PROGRAM MENU will be displayed.

2.12.1.1 Reading the Codeplug

You may read the codeplug from the radio or from the archive disk. After reading, the codeplug will be checked for valid serial number, model number, checksums, etc.

2.12.1.2 Reading Codeplug Data from the Radio

Turn the radio on and press **F2**. A series of status messages will appear in the upper right corner of the screen. If a communication error occurs, a pop up window will be displayed. If no errors occur, the center of the screen will display the progress of the codeplug read. The read process will take approximately one minute. After the codeplug is read, the GET/SAVE/PROGRAM MENU will be displayed.

2.12.1.3 Reading Disk Codeplug Files

Press **F3** from the GET/SAVE/PROGRAM MENU. The Disk File Names screen will be displayed. An archive path and the list of files in that path will be displayed. By default, the path will be the corresponding archive path specified on the Paths and Port screen. If you want to retrieve a file from another path, press **F2**, type in the path name, and then press **Enter**. The names of the files in the new path will be displayed.

To verify the model number and serial number of the codeplug file before reading it, select the desired file by pressing **Enter**, **Tab**, **Shift,** or the arrow keys until the desired filename is highlighted.

To retrieve a selected file, press **F8**. The selected file will be retrieved, validated, and placed in computer memory. The read process will be displayed on the screen.

2.13 SETUP CONFIGURATION

RSS LOCATION: **At the MAIN MENU, press** $\boxed{F9}$ **.**

```
┌──────────────────────────────────────────────────┬──────────────────────┐
│ MOTOROLA Radio Service Software                   │                      │
│ MTSX                Model:                        │                      │
│                                                   │                      │
│ MAIN:CONFIGURATION                                │                      │
├───────────────────────────────────────────────────┴──────────────────────┤
│                                                                            │
│                    SERVICE SOFTWARE CONFIGURATION                          │
│                                                                            │
│        F1    -    HELP                                                      │
│        F2    -                                                             │
│        F3    -    PC CONFIGURATION,  Drives, Paths, Ports, etc.            │
│        F4    -                                                             │
│        F5    -                                                             │
│        F6    -                                                             │
│        F7    -    SCREEN Color Configuration                               │
│        F8    -                                                             │
│        F9    -                                                             │
│        F10   -    Exit, Return to Main Menu                                │
│                                                                            │
└────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		CONFIGURE PC				SCREEN COLORS			EXIT

The Setup Computer Configuration screen is accessed by pressing **F9** at the MAIN MENU. From this screen, you may set up the paths for the archive file. You may also setup the serial port (COM 1 or COM 2) that will be used to communicate with the radio.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - **CONFIGURE PC** is used to set default disk drive paths for archive files and backup files. It is also used to select which asynchronous communications port (COM 1 or COM 2) the RIB will be connected to. The radio service software will automatically determine at what clock speed the computer is operating on. No user-selectable parameters are required.

F7 - SCREEN COLORS is used to enable the color display option. The standard default configuration for Radio Service Software is for a monochrome display monitor. However, if the computer is capable of color display the viewing quality is greatly enhanced. (Refer to your computer's owner's manual for a complete description of path names and asynchronous communication ports.)

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at at time.

2.13.1 Configuring Paths and Port

RSS LOCATION: **At the MAIN MENU, press** [F9]   [F3] .

```
┌─────────────────────────────────────────────┬───────────────────────────────┐
│ MOTOROLA Radio Service Software             │ Enter Path.                   │
│ MTSX            Model:                       │                               │
│                                              │                               │
│ MAIN:CONFIGURATION:PC                        │                               │
├──────────────────────────────────────────────┴───────────────────────────────┤
│                                                                              │
│                        CONFIGURE PATHS AND PORT                              │
│                                                                              │
│        Archive Path: ....C:\MRSS\MTSX\ARCHIVE                                │
│                                                                              │
│        FLASH Software Path:...C:\MRSS\MTSX\UPGRADE                           │
│        Bootstrap Code Path & Filename: C:\MRSS\MTSX\UPGRADE\MTSXBOOT.ENC     │
│        SRIB Software Path & Filename:...C:\MRSS\MTSX\SRIB\SMARTRIB.ENC       │
│                                                                              │
│        System Key: .....C:\MRSS\MTSX\SYSKEY                                  │
│                                                                              │
│        TCMS Path........C:\MRSS\MTSX\OFP                                     │
│                                                                              │
│        RIB ...............................COM 1                             │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					COM TEST		SAVE		EXIT

This screen is used to set default disk drive paths for archive files and backup files. It is also used to select which asynchronous communications port (COM 1 or COM 2) the RIB (radio interface box) will be connected to.

Refer to your computer's owner's manual for a complete description of directory path names and asynchronous communications ports.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - COM TEST (Communications Test) is used to verify that your computer is set up properly and is able to READ and PROGRAM a radio codeplug properly.

After your computer and RIB are connected per your Radio Service Software manual and you have selected the appropriate communication port, turn on your radio and execute COM TEST by pressing **F6.**

COM TEST will verify your system is functioning properly by sending commands to the radio and checking for the proper response. No codeplug changes will result from these commands. An OK response will be displayed in the Status Window if the system checks OK. Otherwise, error messages will be displayed. Consult Appendix A for proper corrective action.

F8 - SAVE is used to save the configuration information to a file on your program disk. Every time you use the Radio Service Software the configuration that you SAVED last will be used. At anytime the configuration may be changed and SAVED.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at at time.

FIELD DEFINITIONS:

Archive Path

Enter the default directory path where archive files are to be located.

The GET/SAVE — SAVE FILE function will default to this path. Refer to your computer's owner's manual for a complete description of directories and path names.

FLASH Software Path

Enter the default directory path where archive files are to be located. The default path established by the MRSS installation program is C:\MRSS\MTSX\Upgrade. In order to assure a successful FLASHport Upgrade, it is strongly recommended that none of the files installed by the MRSS installation program be moved, overwritten by the user, or renamed. Prior to performing a FLASHport Upgrade, MRSS displays the list of files that exist in the path entered here. The user is then asked to select the desired FLASHport Upgrade Software Kit and press **F8** to start the upgrade process. Errors such as: UNABLE TO OPEN THE SELECTED UPGRADE FILE, FILE CHECKSUM ERROR, UNABLE TO OPEN THE SELECTED UPGRADE FILE, or INCORRECT UPGRADE SOFTWARE KIT, mean that the selected file cannot be accessed, or the selected file has an invalid format (the file is not MRSS compatible), or the Software Kit No. in the file does not match the one on your FLASHKEY, respectively. In case of such errors, make sure the selected file is the one that was shipped to you with your upgrade kit.

Bootstrap Code Path & File Name

Enter the default directory path and the default file name for this file. The default path established by the RSS for this field is "C:MRSS\MTSX\UPGRADE\MTSXBOOT.ENC.

SRIB Software Path & File Name

Enter the default directory path and the default name for the SRIB Software file. The default path established by the MRSS installation program is C:\MRSS\MTSX\SRIB, and the default file name is SMARTRIB. ENC. In order to assure a successful FLASHport Upgrade, it is strongly recommended that none of the files installed by the MRSS installation program be moved, overwritten by the user, or renamed. Errors such as: UNABLE TO OPEN THE SRIB SOFTWARE FILE, or SRIB SOFTWARE CHECKSUM FILE, UNABLE TO CONTINUE, mean that the selected file cannot be accessed, or the selected file has an invalid format (the file is not MRSS compatible). In case of such errors, make sure the selected file is the one that was shipped to you with your upgrade kit.

<div align="center">

WARNING

</div>

If you install the RSS in a drive or sub-directory other than in the default directory "C:\MRSS\MTSX", the above paths for FLASH software, Bootstrap Code, and SRIB software must also be changed.

TCMS Path

Enter the Default directory path from where TCMS Update files will be retrieved. The GET/SAVE — GET TCMS file function will default to this path. Refer to your computer's owner's manual for a complete description of asynchronous communications ports and how to configure them.

System Key

Enter the default directory path where trunking system keys are to be located. Refer to your computer's owner's manual for a complete description of directories and path names.

RIB

Use the up/down arrow keys to select to which asynchronous communications port (COM 1 or COM 2) your RIB (radio interface box) is connected.

If you are not sure how your computer is configured or if you have two asynchronous communications ports, first select COM 1 and use the COM TEST (**F6**) function to communicate with a radio. If the test fails, select COM 2 and repeat COM TEST. Be sure that all cables and power supplies are connected per the instructions in you radio service software user's guide. Refer to your computer's owner's manual for a complete description of asynchronous communications ports and how to configure them.

2.13.2 Setting Screen Colors

RSS LOCATION: **At the MAIN MENU, press** [F9] [F7] **.**

MOTOROLA Radio Service Software MTSX Model: MAIN:CONFIGURATION:SCREEN COLORS	Use Up/Down arrows to Select.

<u>SCREEN COLORS</u>

```
MONITOR TYPE .............................Color
    TEXT...........................................Yellow
    STATUS TEXT............................Yellow
    MESSAGE TEXT.........................White
    HIGHLIGHT ................................Green
    BACKGROUND ..........................Blue
    FRAME .......................................Red
    SELECTED TEXT.......................Yellow
    POPUP BACKGROUND..............Brown
```

F1 HELP	F2	F3	F4	F5	F6	F7	F8 SAVE	F9	F10 EXIT
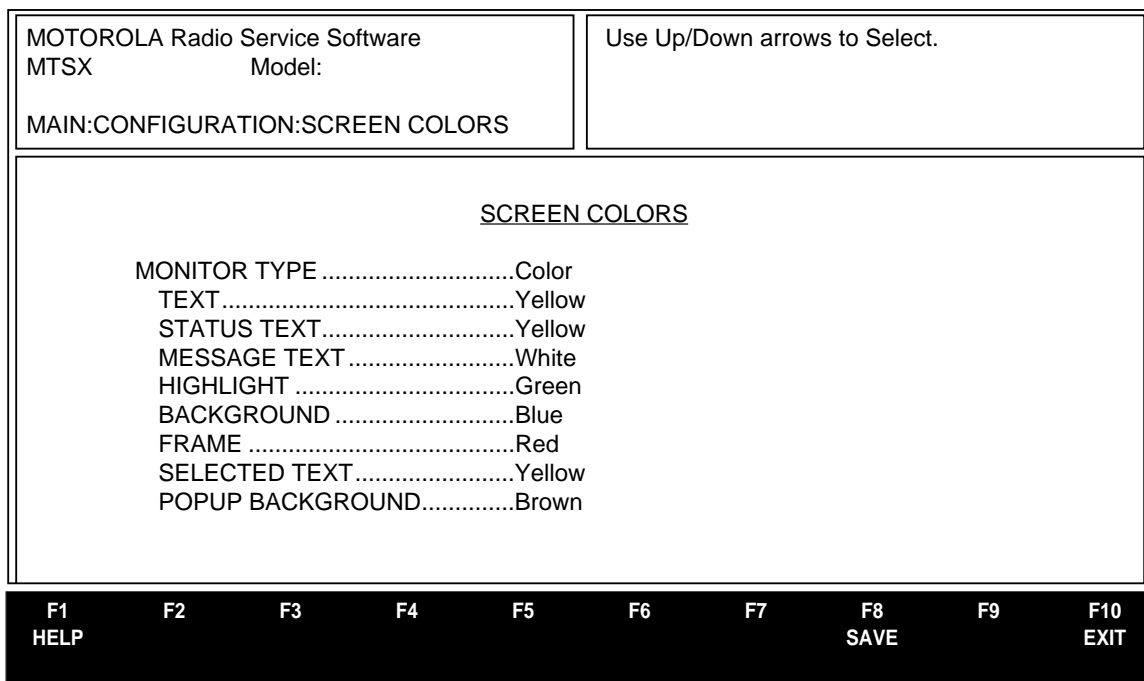
This screen is used to select the type of display monitor that you are using with your computer, that is, Monochrome or Color.

For proper color operation, you must have a color monitor and the appropriate color display interface card installed in you computer. Please refer to your computer's owner's manual and/or your computer dealer if you have questions regarding the color capability of your computer.

You may also further customize your screen by selecting colors for the screen's text, status line, message line, highlighted text, background, frame, selected text, and popup background.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - SAVE is used to save the configuration information to a file on your program disk. Every time you use the Radio Service Software, the configuration that you SAVED last will be used. At anytime the configuration may be changed and SAVED.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Monitor Type
Use the UP/DOWN arrow keys to select either a monochrome or color display monitor.

Default = Monochrome.

Text
Use the UP/DOWN arrow keys to select the desired color for screen text.

Default = Light Gray

Status Text
Use the UP/DOWN arrow keys to select the desired color for the status line located in the lower portion of the top right-side window.

Default = Light Gray

Message Text
Use the UP/DOWN arrow keys to select the desired color for the message line located in the upper portion of the top right-side window.

Default = Light Gray

Highlight
Use the UP/DOWN arrow keys to select the desired color for the highlighted screen text.

Default = Brown

Background
Use the UP/DOWN arrow keys to select the desired color for the screen.

Default = Black

Frame
Use the up/down arrow keys to select the desired color of the screen outline.

Default = Light Gray

Selected Text
Use the UP/DOWN arrow keys to select the desired color of the selected text.

Default = Light Gray

Popup Background
Use the UP/DOWN arrow keys to select the desired color of the popup background.

Default = Black

Screen configuration changes must be SAVED (**F8**) before you EXIT (**F10**) this screen.

SECTION 3. BASIC RADIO PROGRAMMING TUTORIAL

3.1 INTRODUCTION TO SECTION

Now that the hardware and software installation is complete, the RSS is up and running, and you're familiar with the keyboard and the RSS user-interface, you are ready to personalize a radio. The tutorials that follow will walk you through the programming of radios with specific features.

The first tutorial walks a new user through the steps to program an MT2000 basic 16-channel conventional radio and saving the personality to the codeplug and archive files.

The second portion of the tutorial walks you through the process of programming an MTX8000 trunked radio.

The third tutorial involves cloning (copying) the personality data from an archive file of one already programmed radio to other radios. Cloning is used when there is a need for multiple radios equipped with the same radio features and functions.

These tutorials list the desired features for the particular application, then give an overview in a list format of the major steps involved in programming the radio, then finally walks you through the specific steps to program the features into the radio.

All of the tutorials assume that the RSS is up and the MAIN MENU is displayed. If the MAIN MENU is not displayed, follow the brief steps below. In all the tutorials, remember **F1** displays help information corresponding to the current highlighted field or current screen. **F10** backs you out of the RSS one menu level at a time. **Esc** goes directly to the MAIN MENU.

Table 3-1. Quick Steps to Bring Up MAIN MENU

1. Assemble, connect and power up the hardware and computer.
2. After the computer has successfully booted, the prompt will be **C:**.
3. If you have not yet installed this latest RSS version, make a backup RSS copy (see Section 2.7.1) and install it on your hard disk. (see Section 2.7.4)
4. Type **MTSX**
5. Press **Return**
6. Press any key at the BANNER screen (see Figure 2-4, Section 2.7.7).
7. The MAIN MENU appears.

3.2   PROGRAMMING A BASIC 16-CHANNEL MT2000 CONVENTIONAL RADIO

In this tutorial, we list the desired features, address the major decisions involved, and give step-by-step instructions for programming the 16-channel conventional portable radio.

3.2.1   Desired Features

Let's assume the following features are desired:

- 16 Transmit/Receive Frequencies
- Private Line/Digital Private Line (TPL/DPL) Codes
- Assign Scan to the concentric switch and create two scan lists.
- Enable Telephone Operation (for full keypad models only)

We will assume that factory defaults are suitable for most parameter values.

3.2.2   Major Decisions Involved

To program the desired features above, the approach with the RSS will be:

1. Determine desired number of personalities (channels) desired.
2. Determine desired feature systems to use (basic, scan, signalling).
3. Determine desired features to program radio-wide (all channels).
4. Determine desired features to program per-personalities (individual channels only).

3.2.3   High Level Programming Flow

The overview of the flow of programming in this example is as follows:
1. Read the radio.
2. Assign button/switch functions that differ from factory defaults.
3. Create a second scan list (list members not filled in at this time).
4. Set up the phone number list.
5. Create/configure Conventional personalities.
6. Assign personalities to switch positions on Zone/Channel screen.
7. Fill in scan lists with the desired zone/channel entries.
8. Program the radio.

This programming flow was chosen because it minimizes navigation between screens.

3.2.4   Step-by-Step Specific Programming Instructions

We have designed a sample chart (Page 3-3) for a conventional radio for recording the features you wish to program into your radio. See Appendix E for a blank form you can use for future conventional radios.

CONVENTIONAL RADIO PERSONALITY CHART

FEATURE NAME	Pers 1	Pers 2	Pers 3	Pers 4	Pers 5	Pers 6	Pers 7	Pers 8	Pers 9	Pers 10	Pers 11	Pers 12	Pers 13	Pers 14	Pers 15	Pers 16
Tx FREQUENCY																
Tx PL/DPL Code																
Rx Frequency																
Rx PL/DPL Code																
Time-Out Timer																
Scan List																
Phone																
Smart PTT																
TX Power																
Zone																
Channel																
Name																

Table 3-2. Conventional Radio Personality Chart

3.2.5 MT2000 Button/Switch/Menu Item Defaults

Table 3-3. MT2000 Button / Switch / Menu Item Defaults

ITEM	MODEL A4 TOP DISPLAY NO KEYPAD	MODEL A7 FRONT DISPLAY FULL KEYPAD
Orange Button	Volume Set	Volume Set
Rotary Switch	Channel Select	Channel Select
Side Button 1	Light	Light
Side Button 2	Unprogrammed	Unprogrammed
Side Button 3	Monitor	Monitor
Concentric Switch	Low Power	Low Power
Toggle Switch	PL Disable	PL Disable
Menu Item 1	Not Supported	PROG
Menu Item 2	Not Supported	MUTE
Menu Item 3	Not Supported	ZONE/SYS

NOTES

Menu Items only apply to front display radios, and are accessed with the arrow keys on the radio keypad.

A table of all allowable button functions can be seen on pages 6-15 and 6-16. A table of all allowable Menu Items functions can be seen on pages 6-20 and 6-21.
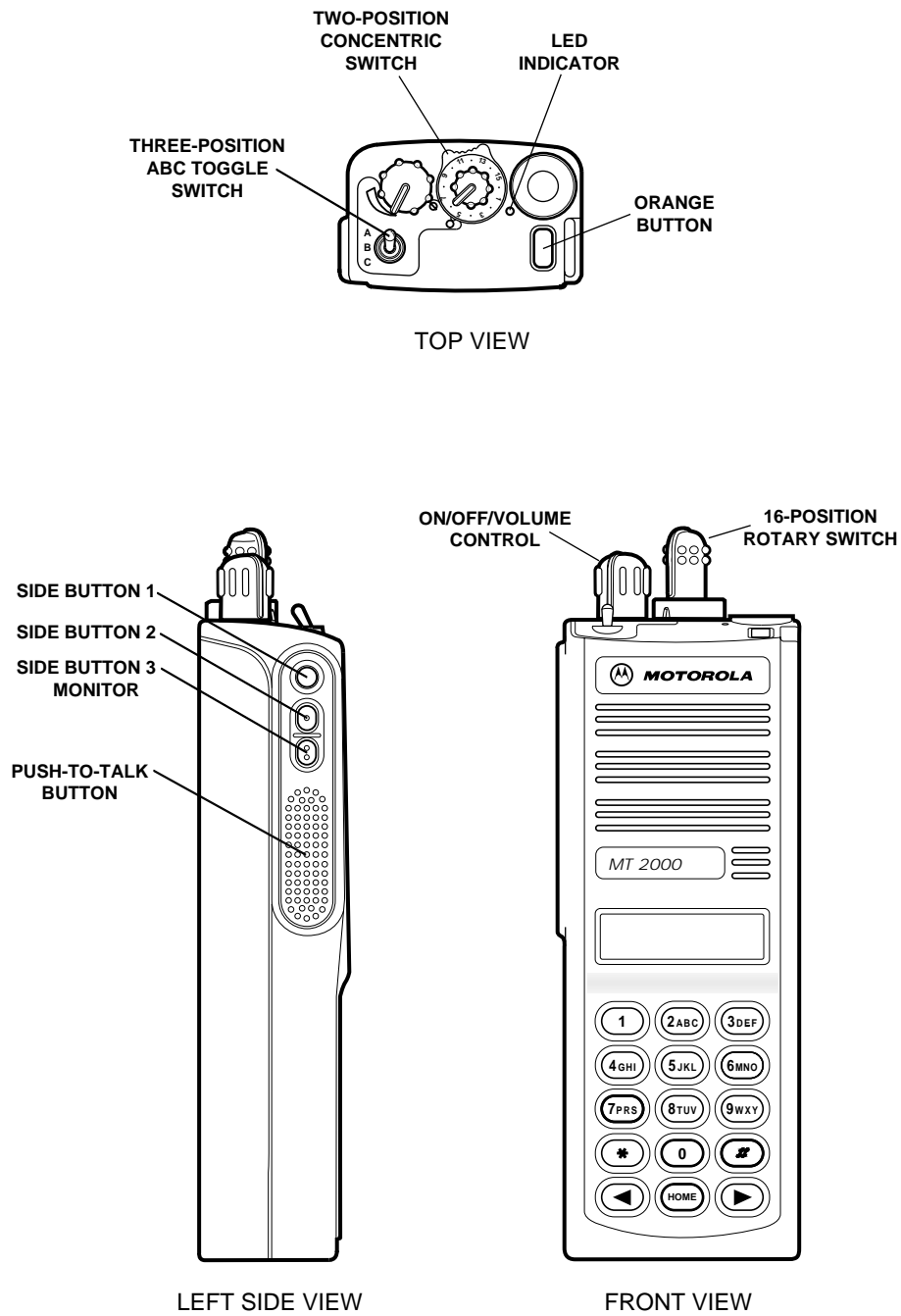
TWO-POSITION CONCENTRIC SWITCH

LED INDICATOR

THREE-POSITION ABC TOGGLE SWITCH

ORANGE BUTTON

TOP VIEW

ON/OFF/VOLUME CONTROL

16-POSITION ROTARY SWITCH

SIDE BUTTON 1

SIDE BUTTON 2

SIDE BUTTON 3 MONITOR

PUSH-TO-TALK BUTTON

LEFT SIDE VIEW

FRONT VIEW

Figure 3-1. Button Locator Diagram (Button Location Purposes Only)

3.2.6   Read Current Radio's Personality (Codeplug)

Before we can program the MT2000 radio with some features we must read and access the current radio's personality (codeplug data).

Table 3-4. Steps to Read A Radio's Personality (Codeplug)

Instruction	What to Type	What it Does or Means
1. Go to GET/SAVE menu	**F3**	Press **F3** at the MAIN MENU to get to the GET/SAVE Menu.
2. Get current radio's codeplug data	**F2**	At the GET/SAVE menu, press **F2** to execute the function. You will also see an indication of how much of the radio codeplug has been read.

3.2.7   Program the Radio-Wide Features First

After the MT2000 radio's codeplug data is read, the RSS allows us to access the CHANGE/VIEW menu. From here we can program the features we want on each channel, and the ones we want common to all channels. First we'll program the common (radio-wide) features. Note that some screens are not accessed, leaving many parameters at factory default values, which are suitable in most cases.

Table 3-5. Steps to Program Radio-Wide Features

Instruction	What to Type	How to do it/What it Means
1. Go to CHANGE/VIEW menu	**ESC** **F4**	(Press **Esc** to back up to MAIN MENU.) Press **F4** at the MAIN MENU to see the CHANGE/VIEW Menu.
2. Go to Radio-Wide Configuration Menu	**F3**	At the CHANGE/VIEW menu, press **F3** to see the Radio Wide Configuration Menu.
3. Go to Radio Wide Features Configuration Menu	**F3**	Press **F3** to see Radio Wide Features Configuration Menu.
4. Go to Radio Wide Switch Configuration screen	**F3**	Press **F3** to see Radio Wide Switch Configuration Screen. The two position concentric switch (Conventional Feature) will be highlighted
5. Select Scan	**↑** **↓**	Press up/down arrow keys to select Scan for Position A, and Blank for position B **NOTE:** We will assume that the factory defaults are suitable for remaining controls.
6. Exit to Radio Wide Configuration Menu	**F10** **F10**	Press **F10** twice to see Radio Wide Configuration menu.
7. Go to Scan Lists and Options	**F5**	Press **F5**. Scan Type - Conventional will be highlighted, press **Tab** until Scan List is highlighted
8. Add a second Scan List	**F2**	Press **F2**. Scan List members will be added after the Zone/Channel screen has been completed.
9. Exit to Radio Wide Configuration Menu	**F10**	Press **F10** to return to Radio Wide Configuration Menu.

3.2.8   Program the Phone List

Table 3-6 provides the steps required to create the phone list for your radio.

Table 3-6. Steps to Program the Phone List

Instruction	What to Type	How to do it/What it Means
1. Go to Phone Configuration screen	**F4**	Press **F4** at the Radio Wide Configuration Menu to see the Phone Configuration screen.
2. Go to Phone Num Display Format field.	**TAB**	Pressing **Tab** advances the prompt to the next field
3. Select USA	↑ ↓	Press up/down arrow key to select USA.
4. Go to Phone Number field	**TAB**	Pressing **Tab** advances the prompt to the next field
5. Type in desired phone number		
6. Go to Phone Text	**TAB**	Pressing **Tab** advances the prompt to the next field
7. Type in desired name		
8. Repeat steps 2 through 7 to add additional phone numbers and names.		
9. Go to Change/View Menu	**F10** **F10**	Press **F10** twice to go to Change/View Menu.

3.2.9   Programming Conventional Personalties

Table 3-7, on the following page, provides the steps required to program conventional personalities into your radio.

Table 3-7. Steps to Program Conventional Personalties

Instruction	What to Type	How to do it/What it Means
1. Go to Conventional menu	F6	From the Change/View menu, press **F6** to see Conventional menu.
2. Go to Conventional Personalty screen	F3	Personality will be highlighted.
3. Add new personalities. Return to Personality 1	F2 F4	Pressing **F2** repeatedly will add desired number of personalities. Press **F4** to return to Personality 1.
4. Tab to Scan List	TAB	Press **Tab** to advance to Scan List field.
5. Select appropriate scan list "1"	↑ ↓	Press up/down arrow keys to select "1".
6. Go to Phone Operation	TAB	Pressing **Tab** advances the prompt to the next field.
7. Select None/Unlimited or List Only	↑ ↓	Press up/down arrow keys to scroll for choices.
8. Go to Receive Frequency field	TAB	Pressing **Tab** advances the prompt to the next field.
9. Enter frequency data	↑ ↓	Enter frequency data via keyboard or up/down arrow keys.
10. Go to Receive Squelch Type field	TAB	Pressing **Tab** advances the prompt to the next field.
11. Make selection (PL)	↑ ↓	Press up/down arrow keys to select TPL, DPL, or CSQ. Or enter PL via the keyboard.
12. Go to Code field	TAB	Pressing **Tab** advances the prompt to the next field.
13. Enter Code	↑ ↓	Press up/down arrow keys to scroll for choices, or enter code via the keyboard.
14. Go to Transmit Frequency field	TAB	Pressing **Tab** advances the prompt to the next field.
15. Enter frequency data	↑ ↓	Press up/down arrow keys to select PL.
16. Go to Transmit Squelch Type field	TAB	Pressing **Tab** advances the prompt to the next field.
17. Repeat steps 11 through 13 for Transmit field.	F4	Press **F4** to advance to next personality.
18. Go to next Personality		
19. Repeat steps 4 through 18 for additional personalities.		
20. Go to Change/View Menu	F10 F10	Press **F10** twice to go to Change/View Menu.

3.2.10 Program the Zone/Channel Features Next

Now that the personalities are programmed, we'll assign them to switch positions using the Zone/Channel screen.

Table 3-8. Steps to Program Zone/Channel Features

Instruction	What to Type	How to do it/What it Means
1. Go to Zone/Channel Assignment screen	F8	From the Change/View menu, press **F8** to see the Zone/(Channel) Assignment screen.
2. Add desired number of channels	F6	Pressing **F6** repeatedly will add additional channels.
3. Go to Page 1		Press **Page Down** key to advance to page 1.
4. Go to Channel Name field	TAB	Pressing **Tab** advances the prompt to the next field.
5. Type in desired name		Type desired name via the keyboard up to 11 characters. Press **Enter** or **Tab** to advance to Personality field. NOTE: Character field may be changed to a maximum of 14 characters from Main Menu, **F4/F3/F6.**
6. Go to Personality Number field. Assign the desired personality number to each Channel Number	TAB ↑ ↓	Pressing **Tab** advances the prompt to the next field. Type desired Personality number via keyboard or up/down arrow keys.
7. Repeat steps 5 and 6 for the remainder of the channels		
8. Exit to Change/View Menu	F10	Press **F10** to exit to Change/View Menu.

NOTE

*If more than 16 personalities (channels) were created, an additional zone will be required. Zones can be added on the zone/channel screen by pressing **F2.** The channels in a particular zone should be grouped in some logical way, such as geographical area or work group.*

3.2.11   Fill In the Scan List

Now that the Zone/Channel features are programmed, we'll now fill in the Scan List which was created earlier.

Table 3-9. Steps to Fill In the Scan List

Instruction	What to Type	How to do it/What it Means
1. Go to Radio Wide Configuration menu	F3	From the Change/View menu, press **F3** to see the Radio Wide Configuration Menu.
2. Go to Scan List	F5	Press **F5** to see Scan List screen. If "1" is not already displayed for Scan List number, press **F3** to see previous list. If "1" is displayed, proceed ahead.
3. Go to Member Zone	TAB	Pressing **Tab** advances the prompt to the next field.
4. Enter "1" (this is the only zone applicable in this tutorial)		Type desired channel number to be scanned.
5. Enter channel desired to scan	Enter	Press **Enter** to select desired channel number.
6. Repeat steps 3 through 5 until all desired channels are entered.		We will assume that factory defaults are suitable for remaining fields.
7. If you have created more than 1 Scan List, repeat entire table for each scan list		
8. Exit to MAIN MENU	ESC	Press **Esc** to exit to MAIN MENU.

3.2.12 Program the Personality Into the Codeplug

Now that you have set values for all the features you want, it is time to actually program them into the radio. Programming the personality into the radio's codeplug must be done after creating or editing the personality of a radio or else the changes will be lost. Make sure that the radio is connected to the RIB and that both the RIB and the radio are powered up before pressing **F8**.

Table 3-10. Steps to Save Personality to Radio's Codeplug

Instruction	What to Type	How to do it/What it Means
1. Go to GET/SAVE menu.	F3	(Press **Esc** to back up to MAIN MENU.) Press **F3** at the MAIN MENU to see the GET/SAVE menu.
2. Go to Program Codeplug	F8	Pressing **F8** at the GET/SAVE menu advances you to the PROGRAM CODEPLUG screen where the current data stored in the computer's RAM (what you can see on the RSS screens) is programmed into the radio's codeplug.

CAUTION
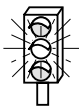
When programming or tuning a radio DO NOT disconnect the radio from the RIB when the computer is communicating with the radio - it may leave the radio in an inoperable state. The only recommended time to disconnect the radio is at the MAIN MENU or GET/SAVE screens.

3.2.13 Program the Personality Into Archive and Backup Files

You have just saved the personality to the radio, but it is important to save it on disk too. Below are the steps to save the radio's personality to an archive file and a backup file.

Table 3-11. Steps to Save Radio Personality to Archive and Backup Files

Instruction	What to Type	How to do it/What it Means
1. Go to GET/SAVE menu.	`ESC` `F3`	(Press **Esc** to back up to MAIN MENU.) Press **F3** at the MAIN MENU to see the GET/SAVE menu.
2. Go to SAVE ARCHIVE FILE	`F7`	Press **F7** at the GET/SAVE to see SAVE ARCHIVE FILE screen. This displays the archive disk drive and path name, current model number, current radio serial number. If there is no customer ID, it can be added at this time.
3. Change the archive path name (if necessary)	`F2`	You will be prompted to enter an archive file path name.
4. Specify archive path name	**DESIRED PATH NAME**	Path is user definable.
5. Save the file	`F8`	Pressing **F8** at the SAVE ARCHIVE FILE screen saves the data in an archive file specified above.

3.3   PROGRAMMING A BASIC MTX8000 TRUNKED RADIO

In this tutorial, we list the desired features, address the major decisions involved, and give step-by-step instructions for programming a basic MTX8000 trunked portable radio

3.3.1   Desired Features

Let's assume the following features are desired:

- Two systems, two subfleets/talkgroups each
- Talkgroup scan with one list
- Telephone interconnect with a call list

We will assume that the factory defaults are suitable for most parameter values.

3.3.2   Major Decisions Involved

To program the desired features above, the approach with the RSS will be:

1. Determine desired number of systems and subfleets desired and their configuration.
2. Determine desired feature systems to use (basic, scan, etc.).
3. Determine desired features to program radio-wide (all systems).
4. Determine desired features to program per-system per-personality, etc.

3.3.3   High Level Programming Flow

The overview of the flow of programming in this example is as follows:

1. Read the radio.
2. Merge the TCMS download file with the radio's codeplug.
3. Assign button/switch functions that differ from factory defaults.
4. Program the phone list.
5. Reference the scan list to each personality.
6. Assign personalities to switch positions on the zone/channel screen.
7. Fill in the scan list with desired zone/channel entries.
8. Program the radio.

3.3.4   Step-by-Step Specific Programming Instructions

We have designed a sample chart (Page 3-14) for recording the features you wish to program into your trunked radio. See Appendix F for a blank form you can use for future radios.

TRUNKED RADIO PERSONALITY CHART

FEATURE NAME	Pers 1	Pers 2	Pers 3	Pers 4	Pers 5	Pers 6	Pers 7	Pers 8	Pers 9	Pers 10	Pers 11	Pers 12	Pers 13	Pers 14	Pers 15	Pers 16
System																
Talkgroups																
Individual ID																
Connect Tone																
Power Level																
Talk Permit																
Private Call																
Call Alert																
Interconnect																
Scan List																
Zone																
Channel																
Name																

Table 3-12. Trunked Radio Personality Chart

3.3.5   MTX8000/9000 Radio Button / Switch / Menu Item Defaults

Table 3-13. MTX8000/9000 Radio Button / Switch / Menu Item Defaults

ITEM	MODEL B3 NO DISPLAY NO KEYPAD	MODEL B4 TOP DISPLAY NO KEYPAD	MODEL B5 FRONT DISPLAY LIMITED KEYPAD	MODEL B7 FRONT DISPLAY FULL KEYPAD
	CONV FUNC/TRUNK FUNC	CONV FUNC/TRUNK FUNC	CONV FUNC/TRUNK FUNC	CONV FUNC/TRUNK FUNC
Orange Button	Volume Set/Phone	Phone	Phone	Phone
Rotary Switch	Channel/Subfleet Sel	Channel/Subfleet Sel	Zone	Zone
Side Button 1	Unprogrammed	Light	Light	Light
Side Button 2	Unprogrammed	Unprogrammed	Unprogrammed	Unprogrammed
Side Button 3	Monitor/Private Call	Monitor/Private Call	Monitor/Private Call	Monitor/Private Call
Concentric Switch	Not Supported	Blank	Blank	Blank
Toggle Switch	Scan	Scan	Scan	Scan
Menu Item 1	Not Supported	Not Supported	CHAN/SUB SEL	CHAN/SUB SEL
Menu Item 2	Not Supported	Not Supported	PROG/PAGE	PROG/PAGE
Menu Item 3	Not Supported	Not Supported	MUTE/PROG	MUTE/PROG
Menu Item 4	Not Supported	Not Supported	NONE/MUTE	NONE/MUTE

NOTES: *1) Where only one function is specified, it is identical for conventional and trunking.*
2) Menu Items only apply to front display radios, and are accessed with the arrow keys on the radio keypad.
3) A table of all allowable button functions can be seen on pages 6-15 and 6-16. A table of all allowable Menu Items functions can be seen on pages 6-20 and 6-21.

TWO-POSITION
CONCENTRIC
SWITCH

LED
INDICATOR

THREE-POSITION
ABC TOGGLE
SWITCH

ORANGE
BUTTON

TOP VIEW

ON/OFF/VOLUME
CONTROL

16-POSITION
ROTARY SWITCH

SIDE BUTTON 1

SIDE BUTTON 2

SIDE BUTTON 3
MONITOR

PUSH-TO-TALK
BUTTON

LEFT SIDE VIEW   FRONT VIEW
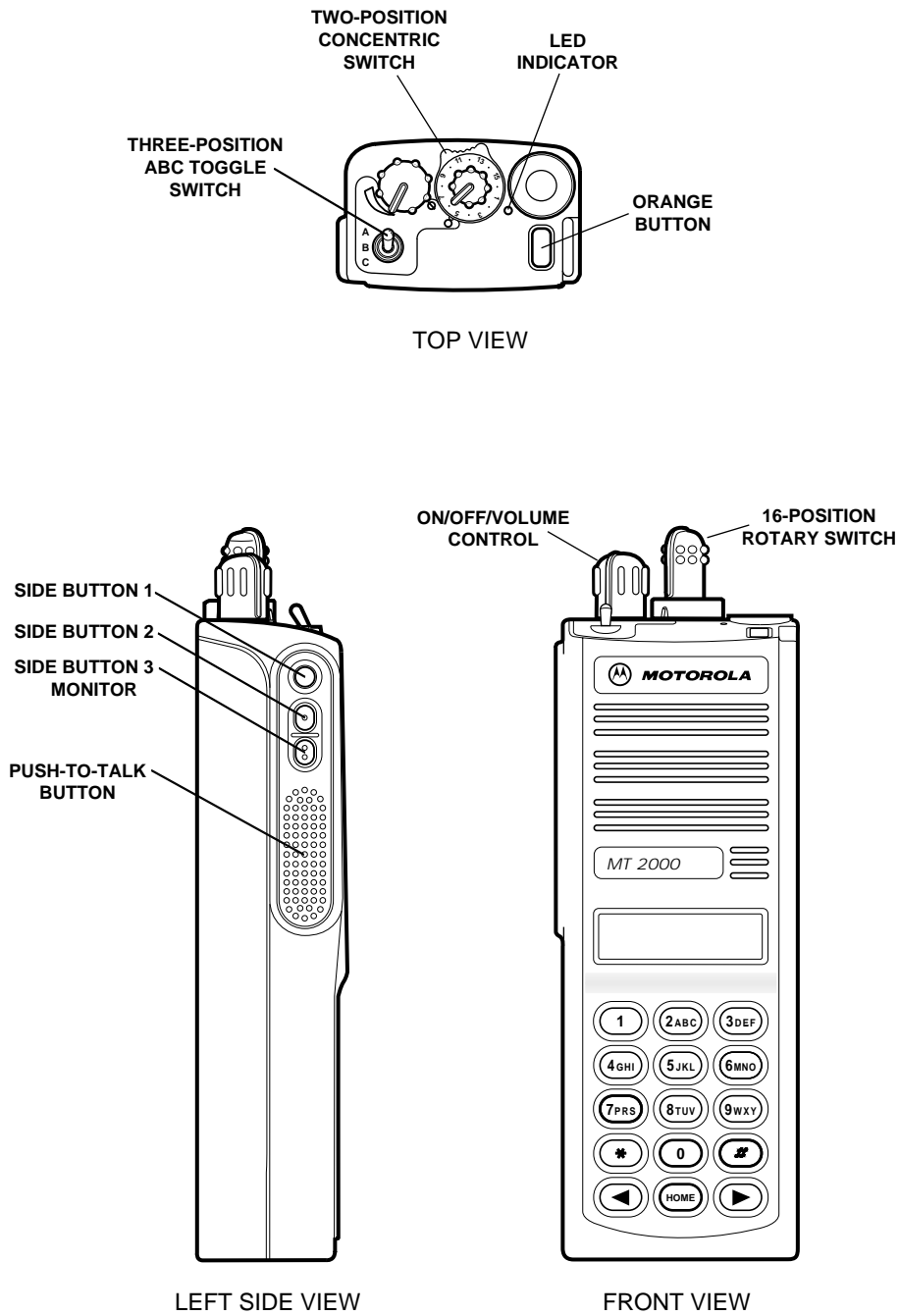
Figure 3-2. Button Locator Diagram (Button Location Purposes Only)

3.3.6 Read Current Radio's Personality (Codeplug)

Before we can program the MTX8000 with some features we must read and access the current radio's personality (codeplug data).

Table 3-14. Steps to Read A Radio's Personality (Codeplug)

Instruction	What to Type	What it Does or Means
1. Go to GET/SAVE menu	F3	Press **F3** at the MAIN MENU to get to the GET/SAVE Menu.
2. Get current radio's codeplug data	F2	At the GET/SAVE menu, press **F2** to execute the function. You will also see an indication of how much of the radio codeplug has been read.

3.3.7 TCMS Merge Process

For this tutorial, we will assume that the TCMS file is in the appropriate directory. Before we can program the MTX8000 with some features we must merge the TCMS file into the MTX8000 radio. Table 3-15 describes the TCMS merge process.

Table 3-15. Steps to Merge/Download TCMS

Instruction	What to Type	What it Does or Means
1. Go to GET/SAVE menu	F3	Press **F3** at the MAIN MENU to get to the GET/SAVE Menu.
2. Go to MERGE FORM	F4	At the GET/SAVE menu, press **F4** to get TCMS codeplug update disk file.
3. Update Data	F8	The TCMS Path is highlighted. We assumed the TCMS file was in the appropriate directory, if this path is not in the highlighted area, type in the appropriate path name.
4. Exit to MAIN MENU	ESC	Press **Esc** to exit to MAIN MENU.

3.3.8 Program the Radio-Wide Features First

After the MTX8000 radio's codeplug data is read, and the TCMS file is merged, the RSS allows us to access the CHANGE/VIEW menu. From here we can program the features that are unique to each system or personality and the ones that are common to all. First we'll program the common (radio-wide) features. Note that some screens are not accessed, leaving many parameters at factory default values, which are suitable in most cases.

3.3.9   Steps to Assign Controls

At the Radio Wide Features Configuration Menu, we will assign button and switch functions.

Table 3-16. Steps to Assign Button and Switch Functions

Instruction	What to Type	How to do it/What it Means
1. Go to CHANGE/VIEW menu	F4	Press **F4** at the MAIN MENU to see the CHANGE/VIEW Menu.
2. Go to Radio-Wide Configuration Menu	F3	At the CHANGE/VIEW menu, press **F3** to see the Radio Wide Configuration Menu.
3. Go to Radio Wide Features Configuration Menu	F3	Press **F3** to see Radio Wide Features Configuration Menu.
4. Go to Radio Wide Button Configuration screen	F2	Press **F2** to see Radio Wide Button Configuration Screen. The Orange Button (Conventional Feature) will be highlighted.
5. Go to 16 Pos Rotary field	TAB	Pressing **Tab** advances the prompt to the next field.
6. Select Chan/Sub Select	↑ ↓	Press up/down arrow keys to select Chan/Sub Select for Conventional and Trunking columns
7. Exit to Radio Wide Features Configuration Menu	F10	Press **F10** to return to Radio Wide Features Configuration Menu.
8. Go to Radio Wide Switch Configuration screen	F3	Press **F3** to see Radio Wide Switch Configuration Screen. The Two Position Concentric field (Conventional Feature) will be highlighted.
9. Select Scan for Position A Select Blank for Position B	↑ ↓	Press up/down arrow keys to select Scan for Position A, and Blank for position B. Repeat process for Trunking Column.
10. Go to Three position Toggle field	TAB	Pressing **Tab** advances the prompt to the next field.
11. Select "Zone/Sys Select" for Positions A, B, and C	↑ ↓	Press up/down arrow keys to select Zone/Sys Select for all three switch positions. Repeat process for Trunking Column.
12. Exit to Radio Wide Configuration Menu	F10 F10	Press **F10** twice to see Radio Wide Configuration menu.

3.3.10 Program the Phone List

Table 3-17 provides the steps required to program the phone list for your radio.

Table 3-17. Steps to Program the Phone List

Instruction	What to Type	How to do it/What it Means
1. Go to Phone Configuration screen	F4	Press **F4** at the Radio Wide Configuration Menu to see the Phone Configuration screen.
2. Go to Phone Num Display Format field.	TAB	Pressing **Tab** advances the prompt to Phone Num Display Format field.
3. Select USA	↓	Press up/down arrow key to select USA.
4. Go to Phone Number field	TAB	Pressing **Tab** advances the prompt to the next field.
5. Type in desired phone number	Phone number	Type in desired phone number.
6. Go to Phone Text	TAB	Pressing **Tab** advances the prompt to the next field.
7. Type in desired name	Name	Type in desired name.
8. Repeat steps 4 through 7 to add additional phone numbers and names		
9. Go to Radio Wide Configuration Menu	F10	Press **F10** to go to Radio Wide Configuration Menu.

3.3.11   Program Talkgroup Scan with One List

Table 3-18 provides the steps required to program Talkgroup scan with one list.

Table 3-18. Steps to Program Talkgroup Scan with One List

Instruction	What to Type	How to do it/What it Means
1. Go to Scan List screen	**F5**	Press **F5** at the Radio Wide Configuration Menu to see Scan List screen.
2. Go to Scan Type field	**TAB**	If not already highlighted, press **Tab** to advance the prompt to Scan Type field.
3. Select Talkgroup Scan	↑ ↓	Press up/down arrow keys to select Talkgroup Scan. Note: This is necessary to allow the Scan List to be referenced by a trunked personality.
4. Exit to Change/View Menu	**F10** **F10**	Press **F10** twice to exit to Change/View Menu.

3.3.12 Modify Personalities for Scan and Phone Features

Table 3-19 provides the steps required to modify the personalities for scan and phone features.

Table 3-19. Steps to Modify Personalities for Scan and Phone

Instruction	What to Type	How to do it/What it Means
1. Go to Trunking Menu	F4	At the Change/View Menu, press **F4** to see the Trunking Menu.
2. Go to Trunking Personality screen	F4	Press **F4** to see Trunking Personality screen.
3. Go to Phone Interconnect field	TAB	Press **Tab** to advance to the Phone Interconnect field.
4.. Select the desired mode of phone operation	↑ ↓	Press up/down arrow keys to select "List Only".
5. Go to Scan List field	TAB	Press **Tab** to advance to Scan List field.
6. Select Scan List "1"	↑ ↓	
7. Go to Next Personality	F4	Press **F4** to go to Next Personality.
8. Repeat steps 5 through 7 for each additional personality		
9. Exit to Change/View Menu	F10 F10	Press **F10** twice to exit to Change/View Menu.

3.3.13 Program the Zone/Channel Features Next

Now that the personalities are programmed, we'll assign them to switch positions using the Zone/Channel screen.
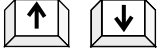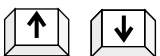
Table 3-20. Steps to Program Zone/Channel Features

Instruction	What to Type	How to do it/What it Means
1. Go to Zone/Channel Assignment screen	F8	From the Change/View menu, press **F8** to see the Zone/ (Channel) Assignment screen
2. Add a Zone	F2	Press **F2** to add a Zone.
3. Go to Previous Zone	F3	Pressing **F3** takes you back to Zone 1.
4. Add desired number of channels	F6	Pressing **F6** repeatedly will add additional channels.
5. Go to Personality Type field	TAB	Pressing **Tab** advances the prompt to the Personality Type field.
6. Select "Trunk"	↑ ↓	Press up/down arrow keys to select "Trunk".
7. Go to Personality Number	**Enter** TAB	Press **Enter** or **Tab** to advance to Personality Number field.
8. Enter desired Personality Number	Type desired number	Repeat steps 6 and 7 for additional Channel numbers.
9. Go to Next Zone	F4	Press **F4** to go Next Zone.
10. Repeat steps 4 through 9 for each Zone		
11. Exit to Change/View Menu	F10	Press **F10** to exit to Change/View Menu.

3.3.14 Fill in the Scan List

Now that the Zone/Channel features are programmed, we will fill in the scan list.

Table 3-21. Steps to Fill in the Scan List

Instruction	What to Type	How to do it/What it Means
1. Go to Radio Wide Configuration menu	F3	From the Change/View menu, press **F3** to see the Radio Wide Configuration Menu.
2. Go to Scan List	F5	Press **F5** to see Scan List screen. If "1" is not already displayed for Scan List number, press **F3** to see previous list. If "1" is displayed, proceed ahead.
3. Go to Member # 1 Zone	TAB	Pressing **Tab** advances the prompt to the Zone field of Scan List Member # 1.
4. Select the desired zone	↑ ↓	Press up/down arrow keys to select desired zone or enter zone number via the keyboard.
5. Go to Channel field	TAB	Pressing Tab advances the prompt to the Channel field.
6. Enter channel number desired to scan	↑ ↓	Press up/down arrow keys to select desired channel or enter channel number via the keyboard.
7. Repeat steps 4 through 6 until desired channels are entered.		
8. If you have created more than 1 Scan List, repeat entire table for each scan list.		
9. Exit to MAIN MENU	ESC	Press **Esc** to exit to MAIN MENU.

3.3.15 Program Data Into Radio Codeplug

Now that you have set values for all the features you want, it is time to actually program them into the radio. Programming the personality into the radio's codeplug must be done after creating or editing the personality of a radio or else the changes will be lost. Make sure that the radio is connected to the RIB and that both the RIB and the radio are powered up before pressing **F8**.

Table 3-22. Steps to Save Personality to Radio's Codeplug

Instruction	What to Type	How to do it/What it Means
1. Go to GET/SAVE menu.	F3	(Press **Esc** to back up to MAIN MENU.) Press **F3** at the MAIN MENU to see the GET/SAVE menu.
2. Go to Program Codeplug	F8	Pressing **F8** at the GET/SAVE menu advances you to the PROGRAM RADIO screen, where the current data stored in the computer's RAM (what you can see on the RSS screens) is programmed into the radio's codeplug.

CAUTION
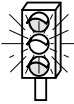
When programming or calibrating a radio DO NOT disconnect the radio from the RIB when the computer is communicating with the radio - it may leave the radio in an inoperable state. The only recommended time to disconnect the radio is at the MAIN MENU or GET/SAVE screens.

3.3.16   Exit the RSS

Table 3-23. Steps to Exit the RSS

Instruction	What to Type	How to do it/What it Means
1. Go to MAIN MENU menu.	**ESC**	Press **Esc** to back up to MAIN MENU.
2. Exit to DOS	**F10** **F2**	Press **F10** then **F2** to exit to DOS.

3.4   CLONING MORE RADIOS

To clone (copy) radios, they must be of the same model type and version. Cloning applies predominately to conventional-only radios. To clone trunked radios, you are required to have a system key for each of the trunked systems programmed into the source radio on file. Most organizations that program trunked radios will not have access to these keys. The process for cloning conventional and trunked radios, however, is the same.

3.4.1.   Desired Features

The desired features are the exact same ones listed in the first tutorial, section 3.2.1

3.4.2   Major Decisions Involved

The major steps for cloning in this tutorial are reduced from six steps in the first tutorial to two steps here.

To program the cloned radio, the approach will be:

    a. Pick desired archive file
    b. Decide how many radios to clone

3.4.3   Step-by-Step Specific Cloning Instructions

In following section you will:

    a. Read into the RSS the specific archive file you want to clone,
    b. Actually clone that source file into the current (target) radio's codeplug,
    c. Clone the remaining radios the same way, and then
    d. Exit the RSS.

3.4.4   Read Desired Source Archive File

```
┌─────────────────────────────────────────┐  ┌──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │  │ Press Enter to Select File Name.     │
│ MTSX            Model: H01WCF4DB5AN      │  │ Press F8 to Load Codeplug File.      │
│                                          │  │                                      │
│ MAIN:GET/SAVE/PROG:GET FILE              │  │                                      │
└─────────────────────────────────────────┘  └──────────────────────────────────────┘
┌─────────────────────────────────────────────────────────────────────────────────────┐
│  Archive:                                                                             │
│                                                                                       │
│                              ARCHIVE FILES                                            │
│                                                                                       │
│      A466ASNO.331                                                                     │
│      A467ASNO.361                                                                     │
│      A469ASNO.431                                                                     │
│                                                                                       │
│                                                                                       │
│                                                                                       │
└─────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CHANGE			DELETE	CHDIR	CHDIR	GET		EXIT
	ARCHIVE			SELECTED	UP	DOWN	ARCHIVE		

3.4.5   Clone Current Radio From Archive File

Radio codeplugs consist of both personality and tuning data. Cloning allows you to "merge" two codeplugs together. The archive file or radio with the desired personality will be referred to as the source file or source radio. The other will be referred to as the target radio. The result will be an image that can be programmed into a radio and/or saved to an archive file. This image will have the source codeplug's personality yet the tuning data of the target codeplug will remain unchanged. In this tutorial, the source personality is the file saved in the first tutorial, and the target radios are the remaining radios not yet programmed.

NOTE
The IDs for MDC-1200, DTMF, etc. must be changed manually if you want to have unique IDs! You may do this by going to CHANGE/VIEW immediately after cloning each radio.

3.4.6   Cloning Remaining Radios

Table 3-24. Steps to Clone Radios

Instruction	What to Type	How to do it/What it Means
1. Go to GET/SAVE menu.	**ESC** **F3**	(Press **Esc** to back up to MAIN MENU.) Press **F3** at the MAIN MENU to see the GET/SAVE menu.
2. Go to GET ARCHIVE FILE	**F3**	Press **F3** at the GET/SAVE menu to go to GET ARCHIVE FILE screen. A list of files is displayed which look like serial numbers that the RSS found under the archive path name.
3. Change the Archive path	**F2**	Press **F2** to highlight the archive path.
4. Type in path name	**C:\MRSS\MTSX\ARCHIVE**	This tells the RSS to display the file names found in this directory. You will see the file named xxxxxxxx.xxx that you saved in the first tutorial.
5. Select desired file	**TAB**	Press **Tab** until the selected file is highlighted.
6. Get selected file	**F8**	Press **F8** to get the selected (highlighted) file.
7. Return to the GET/SAVE Menu	**F10**	Press **F10** to return to the GET/SAVE menu.
8. Connect target radio		Assemble the hardware and connect the radio you want cloned.
9. Save source into target radio	**F5**	Press **F5** from GET/SAVE to clone the current radio's codeplug with the selected source file's personality.
10. Clone the Radio	**F8**	Press **F8.** The cloning process will check for compatibility of the two radios automatically. You will receive an error message if cloning cannot be performed. If for any reason the radios cannot be cloned, an error message will appear. Check all connections or refer to Appendix A.
11. Disconnect radio		When Step 8 is completed, you can disconnect the radio. In a matter of seconds the second radio was cloned. Disconnecting the radio should only be done at the GET/SAVE menu or the MAIN MENU, or the radio may be left in an inoperable state.
12. Proceed to Step 1 in next table for cloning additional radios		

3.4.7   Clone Additional Radios

Table 3-25. Cloning Additional Radios

Instruction	What to Type	How to do it/What it Means
1. Connect the next target radio		Connect cable from RIB to the radio.
2. Clone the radio	F5	Press **F5** at the GET/SAVE Menu to clone the radio. This saves (programs) the source file into the current radio.
3. Clone the Radio	F8	Press **F8**. The cloning process will check for compatibility of the two radios automatically. You will receive an error message if cloning cannot be performed.
4. Disconnect the radio		When Step 2 is completed, disconnect the radio.
5. Clone remaining radios		Repeat Steps 1-3 for remaining radios. If for any reason the radios cannot be cloned, an error message will appear. Check all connections or refer to Appendix A.

3.4.8.   Exit the RSS

Table 3-26. Steps to Exit the RSS

Instruction	What to Type	How to do it/What it Means
1. Go to MAIN MENU menu.	ESC	Press **Esc** to back up to MAIN MENU.
2. Exit to DOS	F10 F2	Press **F10** then **F2** to exit to DOS.

Congratulations! You are now a radio programmer! You now have a foundation for programming more radios. To retain a good portion of what you've learned so far, please review this material or program another radio within 48 hours.

3.5   ADDITIONAL RADIO MODELS

The following tables list additional radio models and their Button/Switch/Menu Item defaults.

Table 3-27. MTS2000 RADIO BUTTON / SWITCH / MENU ITEM DEFAULTS

ITEM	OPTION H35 CONV. ONLY	OPTION H36 STARTSITE	OPTION H37 SMARTNET	OPTION H38 SMARTZONE
	TOP DISPLAY NO KEYPAD	TOP DISPLAY NO KEYPAD	TOP DISPLAY NO KEYPAD	TOP DISPLAY NO KEYPAD
Orange Button	Emergency	Unprogrammed	Vol Set / Emergency	Vol Set / Emergency
Rotary Switch	Channel Sel	Channel / Subfleet Sel	Channel / Subfleet Sel	Channel / Subfleet Sel
Side Button 1	Light	Light	Light	Light
Side Button 2	Unprogrammed	Unprog / Phone	Unprog / Phone	Unprog / Site Disp-Srch
Side Button 3	Monitor	Monitor / Private Call	Monitor / Private Call	Monitor / Phone
Concentric Switch	Scan	Scan	Scan	Scan
Toggle Switch	PL Disable	Zone Select	Zone Select	Zone Select
Menu Item 1	Not Supported	Not Supported	Not Supported	Not Supported
Menu Item 2	Not Supported	Not Supported	Not Supported	Not Supported
Menu Item 3	Not Supported	Not Supported	Not Supported	Not Supported
Menu Item 4	Not Supported	Not Supported	Not Supported	Not Supported

3.5.1   MTS 2000 Radio Button/Switch/Menu Item Defaults

Table 3-28. MTS2000 RADIO BUTTON / SWITCH / MENU ITEM DEFAULTS

ITEM	OPTION H35 CONV. ONLY	OPTION H36 STARTSITE	OPTION H37 SMARTNET	OPTION H38 SMARTZONE
	FRONT DISPLAY MODELS	FRONT DISPLAY MODELS	FRONT DISPLAY MODELS	FRONT DISPLAY MODELS
Orange Button	Emergency	Unprogrammed	Vol Set / Emergency	Vol Set / Emergency
Rotary Switch	Channel Sel	Channel / Subfleet Sel	Channel / Subfleet Sel	Channel / Subfleet Sel
Side Button 1	Light	Light	Light	Light
Side Button 2	Unprogrammed	Unprog / Phone	Unprog / Phone	Unprog / Site Disp-Src
Side Button 3	Monitor	Monitor / Private Call	Monitor / Private Call	Monitor / Phone
Concentric Switch	Scan	Scan	Scan	Scan
Toggle Switch	PL Disable	PL Disable / Blank	PL Disable / Blank	Pl Disable / Blank
Menu Item 1	ZONE	ZONE / SYS	ZONE / SYS	ZONE / SYS
Menu Item 2	PROG	PROG / PAGE	PROG / PAGE	PROG / PAGE
Menu Item 3	MUTE	MUTE / PROG	MUTE / PROG	MUTE / PROG
Menu Item 4	Not Supported	NONE / MUTE	NONE / MUTE	NONE / MUTE
Menu Item 5	Not Supported	Not Supported	Not Supported	NONE / CALL

SECTION 4. SERVICE MENU FUNCTIONS

4.1 RADIO SERVICE VIA THE RSS

Now that the hardware and software installation is complete and the RSS is up and running, you are ready to personalize the radio(s). The following paragraphs are constructed to guide a qualified service technician through the allowable alignments and configurations to keep the radio(s) at full capability throughout its design life. This section describes how to utilize the RSS manual through the various menus and screens to achieve any and all radio capabilities that may be desired by the radio users.

NOTE
All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

4.2 SERVICE MENU

RSS LOCATION: **At the MAIN MENU, press** F2 **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 -  F10.           │
│ MTSX            Model:                    │                                      │
│                                          │                                      │
│ MAIN:SERVICE                             │                                      │
├──────────────────────────────────────────┴──────────────────────────────────────┤
│                                                                                  │
│                            SERVICE MENU                                          │
│                                                                                  │
│        F1   -   HELP                                                             │
│        F2   -   Transmitter Alignments                                          │
│        F3   -   Receiver Alignments                                             │
│        F4   -   Signalling Alignments                                           │
│        F5   -                                                                    │
│        F6   -                                                                    │
│        F7   -                                                                    │
│        F8   -                                                                    │
│        F9   -   Controller Board Initialization Program                         │
│        F10  -   Exit, Return to Main Menu                                        │
│                                                                                  │
├──────────────────────────────────────────────────────────────────────────────────┤
│  F1      F2       F3       F4       F5    F6    F7    F8      F9       F10         │
│  HELP    TX       RX       SIGNAL                             CBI      EXIT        │
│          ALIGN    ALIGN    ALIGN                             PROGRAM              │
└──────────────────────────────────────────────────────────────────────────────────┘
```

All radio alignment and board replacement procedures are accessed from the SERVICE MENU. A radio must be connected to your computer via a RIB and cables, and the radio turned on before you will be permitted to access the service screens.

CAUTION
Do NOT switch radios in the middle of any SERVICE procedure. Always use the EXIT function key (F10) to return to the MAIN MENU before disconnecting the radio. Improper exits from service screens may leave the radio in an improperly configured state, resulting in seriously degraded radio or system performance. Refer to your radio service manual for detailed service procedures.

All service screens read and program the radio codeplug directly; you do NOT have to use the GET/SAVE/PROGRAM MENU functions unless you are changing or printing data. You will be prompted at each service screen to save the new values before exiting the screen.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **TX ALIGN** (Transmitter Alignment) function is used to perform standard radio transmit alignment procedures. Standard periodic alignment procedures are performed from this menu. Refer to your radio service manual for transmit alignment procedures. These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.

Before adjusting signalling deviation, radio compensation/deviation adjustments must be made. No adjustments are required for DPL, PL, or trunking connect tone deviation.

Whenever any of the modulation circuitry has been replaced, the following alignment procedures must be performed.

Modulation Balance
Modulation Limit: VCO Attenuator
Modulation Limit: Reference Attenuator

In addition, all signaling modulation limit alignments (DTMF, MDC, SingleTone, Secure and High Speed Trunking Data) should be checked.

F3 - **RX ALIGN** (Receiver Alignment) function is used to perform standard radio receive alignment procedures. Refer to your radio service manual for receive alignment procedures. These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in a seriously degraded radio or system performance.

F4 - **SIGNAL ALIGN (**Signalling Alignment) Refer to your radio service manual for signalling alignment procedures. These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in a seriously degraded radio or system performance.

F10 - **EXIT** moves the display backward in the RSS tree, one screen or menu at a time.

4.2.1 TRANSMITTER ALIGNMENT MENU

RSS LOCATION: **At the SERVICE MENU, press** [F2] **.**

```
┌─────────────────────────────────────────┐ ┌─────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ │ Select a Function  F1 - F10.        │
│ MTSX           Model:                    │ │                                     │
│                                          │ │                                     │
│ ...SERVICE:TRANSMITTER ALIGNMENT MENU    │ │                                     │
└─────────────────────────────────────────┘ └─────────────────────────────────────┘
┌───────────────────────────────────────────────────────────────────────────────────┐
│                        TRANSMITTER ALIGNMENT MENU                                   │
│                                                                                     │
│     F1    -   HELP                                                                   │
│     F2    -   Reference Oscillator                                                   │
│     F3    -   Tx Power                                                               │
│     F4    -   Tx Deviation Balance (Compensation)                                    │
│     F5    -   Tx Deviation Limit                                                     │
│     F6    -   Tx Deviation Limit: Reference                                          │
│     F7    -   Tx VCO Crossover Frequency                                             │
│     F8    -   Secure Tx Deviation                                                    │
│     F9    -                                                                          │
│     F10   -   Exit, Return to Service Menu                                           │
│                                                                                     │
└───────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	REF	TX	DEV	DEV	REF	VCO	SECURE		EXIT
	OSC	PWR	BAL	LIMIT	ATTEN		DEV		

Standard periodic alignment procedures are performed from this menu. Refer to you radio service manual for alignment procedures. These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.

Signalling deviation for DTMF, MDC, Single Tone, Secure and High-Speed trunking data should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced. Before adjusting signalling deviation, radio compensation/deviation adjustments must be made. No adjustments are required for DPL, PL, or trunking connect tone deviation.

┌───┐
│ **PROGRAMMING PROCEDURE:**   │
│   │
│ 1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.   │
│   │
│ 2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.   │
│   │
│ 3. Select the desired function key (**F1 - F10**).   │
└───┘

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - REF OSC (Reference Oscillator Alignment) This is the working value of the reference oscillator (reference frequency). Refer to your radio service manual for the transmitter power alignment procedure. This procedure should only be attempted by qualified service personnel.

F3 - TX PWR (Transmit Power Alignment) Refer to your radio service manual for the transmitter power alignment procedure. This procedure should only be attempted by qualified service personnel.

F4 - **DEV BAL** (Transmit Deviation Balance [Compensation] Alignment) Refer to your radio service manual for the transmit deviation balance compensation alignment procedure. This procedure should only be attempted by qualified service personnel.

F5 - **DEV LIMIT** (Transmit Deviation Limit Alignment) This is the reference softpot value for this frequency. Refer to your radio service manual for the transmit deviation limit alignment reference attenuator procedure. This procedure should only be attempted by qualified service personnel.

F6 - **REF ATTEN** (Transmit Deviation Limit Alignment: Reference Softpot) Refer to your radio service manual for the transmitter deviation limit alignment reference attenuator procedure. This procedure should only be attempted by qualified service personnel.

F7 - **TX VCO** (Transmit VCO Crossover Alignment) This is only available on UHF and VHF model radios. Refer to your radio service manual for the transmitter power alignment procedure. This procedure should only be attempted by qualified service personnel.

F8 - **SECURE DEV** (Secure Transmit Deviation Alignment) Refer to your radio service manual for the secure transmit deviation alignment procedure. This procedure should only be attempted by qualified service personnel.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

4.2.1.1 REFERENCE OSCILLATOR ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F2] [F2] **.**

```
MOTOROLA Radio Service Software        Use UP/DOWN Arrows To Adjust Softpot.
MTSX            Model:

..........REFERENCE OSCILLATOR
```

```
                    REFERENCE OSCILLATOR


    Frequency        Current Value

    869.9875             155                    New Softpot Value ...................155




                        Transmitter........Off
   0                                                                    255
   Min                                                                  Max
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE PTT		PROGRAM VALUE		EXIT

The New Softpot Value is the working value of the reference oscillator (reference frequency). Refer to your radio service manual for the reference frequency alignment procedure. The reference oscillator is adjusted by first keying the radio via **F6**, then press the up/down arrow keys to increase or decrease the frequency respectively. (A three minute time-out-timer is enabled when the radio is keyed via **F6**.) Shift up/down arrow keys will increase the adjustment speed. The radio will transmit on the test mode 1 frequency. A relative adjusted value will be displayed on the status bar, but the actual transmitter frequency must be determined from the frequency counter or the service monitor.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F2**. The REFERENCE OSCILLATOR screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

4.2.1.2 TRANSMIT POWER ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** F2 F3 **.**

```
┌─────────────────────────────────────────┬─────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows To Adjust Softpot.│
│ MTSX          Model:                     │                                     │
│                                          │                                     │
│ ...TRANSMIT  POWER                       │                                     │
├──────────────────────────────────────────────────────────────────────────────┤
│                         TRANSMIT POWER                                          │
│                                                                                │
│              Current Value                     New Softpot Value               │
│  Frequency   High Pwr  Low Pwr               High Pwr  Low Pwr                  │
│  806.0125       30       26                      30       26                    │
│  815.0125       42       42                      42       42                    │
│  824.9875       50       50                      50       50                    │
│  851.0125       60       60                      60       60                    │
│  860.0125       70       70                      70       70                    │
│  869.9875       80       80                      80       80                    │
│                                                                                │
│                      Transmitter..........Off                                  │
│   0                                                              127           │
│  Min  ├──┼──┼──┼──█──┼──┼──┼──┼──┼──┼──┼──┼──┤                   Max           │
│                                                                                │
└────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE PTT		PROGRAM VALUE		EXIT

Refer to your radio service manual for the transmitter power alignment procedure. This procedure should only be attempted by qualified service personnel.

The adaptive splatter control feature uses the transmitter power settings for reduced transmit power under strong received signal conditions to reduce adjacent-channel interference.

Transmitter power is adjusted by first keying the radio via **F6**, and then by pressing the up/down arrow keys to increase or decrease power respectively. SHIFT up/down will increase the adjustment speed. A relative Tx power value (NOT WATTS) will be displayed, but the actual transmitter power output must be determined from your service monitor.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F3**. The TRANSMIT POWER screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

Function key descriptions and field definitions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

New Softpot Value High Pwr
This is the power level 1 for this frequency. The status bar shows the setting in relation to the minimum and maximum settings.

New Softpot Value Low Pwr
This is the power level 2 for this frequency. The status bar shows the setting in relation to the minimum and maximum settings.

4.2.1.3 TRANSMIT DEVIATION BALANCE (COMPENSATION) ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F2] [F4] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows To Adjust Softpot. │
│ MTSX            Model:                    │                                        │
│                                           │                                        │
│ ...TRANSMIT DEVIATION BALANCE (COMPENS)   │                                        │
└─────────────────────────────────────────┴──────────────────────────────────────┘
```

```
┌────────────────────────────────────────────────────────────────────────────────┐
│              TRANSMIT DEVIATION BALANCE (COMPENSATION)                            │
│                        Current                                                   │
│          Frequency      Value            New Softpot Value                        │
│          806.0125        30                     30                                │
│          815.0125        30                     30                                │
│          824.9875        30                     30                                │
│          851.0125        45                     45                                │
│          860.0125        45                     45                                │
│          869.9875        45                     45                                │
│                                                                                  │
│                     Transmitter ..............Off                                │
│   0    ┣━┿━┿━┿━┿━┿━█━┿━┿━┿━┿━┿━┿━┿━┿━┿━┫   63                                     │
│   Min                                          Max                               │
└────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE PTT		PROGRAM VALUE		EXIT

Refer to your radio service manual for the balanced attenuator alignment (compensation) procedure. This procedure should only be attempted by qualified service personnel.

Compensation alignment is critical to the operation of signalling schemes that have very low frequency components (that is, DPL) and could result in distorted waveforms if improperly adjusted.

Balanced attenuator alignment balances the modulation sensitivity of the VCO and reference modulation (synthesizer low-frequency port) lines. It is a way of correcting for deviation sensitivity versus RF frequency variations in the VCO. The transmit and receive bands are divided into frequency zones with a calibration point (value) in each zone. Balanced attenuator alignment is required after replacing (or servicing) the controller board or the RF board. Using the up/down arrow keys, adjust compensations per your radio service manual.

Performing this procedure automatically calculates compensation alignment.

The programming procedure, function key descriptions, and field definition are on the following page.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F4**. The TRANSMIT DEVIATION BALANCE (COMPENSATION) screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

New Softpot Value
This is the balance value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.1.4 TRANSMIT DEVIATION LIMIT ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** ⌨F2 ⌨F5 **.**

```
┌─────────────────────────────────────┬────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Use UP/DOWN Arrows To Adjust Softpot.│
│ MTSX          Model:                 │                                    │
│                                      │                                    │
│ ...TRANSMIT DEVIATION LIMIT          │                                    │
├──────────────────────────────────────────────────────────────────────────┤
│                     TRANSMIT DEVIATION LIMIT                               │
│                      Current                                               │
│         Frequency     Value              New Softpot Value                 │
│         806.0125      185                    185                           │
│         815.0125      185                    185                           │
│         824.9875      185                    185                           │
│         851.0125      180                    180                           │
│         860.0125      180                    180                           │
│         869.9875      180                    180                           │
│                                                                            │
│                  Transmitter ..............Off                             │
│   0                                                          255           │
│   Min  ├──┼──┼──┼──┼──┼──┼──█──┼──┼──┼──┼──┼──┼──┤           Max           │
└──────────────────────────────────────────────────────────────────────────┘
  F1       F2      F3      F4      F5      F6      F7      F8      F9      F10
  HELP                                     TOGGLE           PROGRAM         EXIT
                                           PTT              VALUE
```

Refer to your radio service manual for the transmit deviation limit alignment procedure. This procedure should only be attempted by qualified service personnel.

Transmit deviation limit alignment is a way of correcting for deviation sensitivity versus RF frequency variations in the VCO. The transmit and receive bands are divided into frequency zones with a calibration point (value) in each zone. Compensation for each of these points must be checked and adjusted if the VCO is replaced.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F5**. The TRANSMIT DEVIATION LIMIT screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the VCO softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.1.5 TRANSMIT DEVIATION LIMIT ALIGNMENT: REFERENCE SOFTPOT

RSS LOCATION: **At the SERVICE MENU, press** F2 F6 .

```
┌─────────────────────────────────────┬─────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Use UP/DOWN Arrows To Adjust Softpot.│
│ MTSX          Model:                 │                                      │
│                                      │                                      │
│ ...TRANSMIT DEVIATION LIMIT:REFERENCE│                                      │
├──────────────────────────────────────┴────────────────────────────────────┤
│             TRANSMIT DEVIATION LIMIT: REFERENCE                             │
│                                                                            │
│                      Current Value            New Softpot Value            │
│       Frequency      Channel Spacing          Channel Spacing              │
│                                                                            │
│       869.9875       20KHz ...........114      120KHz.............114      │
│                                                                            │
│                                                                            │
│                    Transmitter ..............Off                           │
│    0                                                          127          │
│   Min  ├──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──█──┼──┤         Max          │
└────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE PTT		PROGRAM VALUE		EXIT

Refer to your radio service manual for the transmit deviation limit alignment reference softpot procedure. This procedure should only be attempted by qualified service personnel.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F6**. The TRANSMIT DEVIATION LIMIT: REFERENCE screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Channel Spacing Field Definition
This is the reference softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.1.6 TRANSMIT VCO CROSSOVER ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** `F2` `F7` **.**

MOTOROLA Radio Service Software MTSX Model: ...VCO CROSSOVER	Use UP/DOWN Arrows To Adjust Softpot.

VCO CROSSOVER

Current Frequency	New Frequency
486.0250	486.0250

Transmitter . . . . . .Off

F1 HELP	F2	F3	F4	F5	F6 TOGGLE PTT	F7	F8 PROGRAM VALUE	F9	F10 EXIT

Refer to your radio service manual for the transmit VCO crossover alignment procedure. This procedure should only be performed by qualified service personnel.

Transmit deviation limit alignment is a way of correcting for deviation sensitivity versus RF frequency variations in the VCO. The transmit and receive bands are divided into frequency zones with a calibration point (value) in each zone. Compensation for each of these points must be checked and adjusted if the VCO is replaced.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMITTER ALIGNMENT MENU appears.

3. Press **F7**. The TRANSMIT VCO CROSSOVER screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Frequency Field Definition
This is the VCO crossover softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.1.7 SECURE TRANSMIT DEVIATION

RSS LOCATION: **At the SERVICE MENU, press** [F2]   [F8] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows To Adjust Softpot. │
│ MTSX            Model:                    │                                      │
│                                           │                                      │
│ MAIN:SERVICE:TX ALIGN:SECURE TX DEV      │                                      │
├───────────────────────────────────────────────────────────────────────────────┤
│                      SECURE TRANSMIT DEVIATION                                   │
│                                                                                  │
│   Frequency          Current Value                                               │
│                                                                                  │
│    490.0250              110                        New Softpot Value ..............110 │
│                                                                                  │
│                                                                                  │
│                          Transmitter . . . .Off                                  │
│                                                                                  │
│   0                     ▆                                                   127   │
│  Min ├───┼───┼───┼───█───┼───┼───┼───┼───┼───┼───┼───┼───┼───┤            Max   │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE		PROGRAM		EXIT
					PTT		VALUE		

Refer to your radio service manual for the secure transmit deviation alignment procedures. This procedure should only be attempted by a qualified service personnel. Secure transmit deviation should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMIT ALIGNMENT MENU appears.

3. Press **F8**. The SECURE TRANSMIT DEVIATION screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - TOGGLE PTT - function will alternately key and dekey the radio being serviced

F8 - PROGRAM VALUE function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.
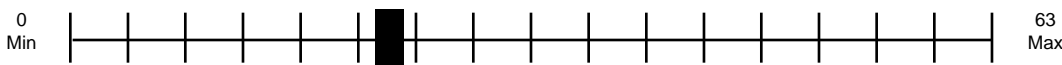
New Softpot Value Field Definition
This is the secure transmit deviation softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.1.8   CONTROLLER BOARD INITIALIZATION (CBI)

| F2 | | F9 |

RSS LOCATION: **At the SERVICE MENU, press** [F2] [F9] **.**

MOTOROLA Radio Service Software
MTSX   Model:

MAIN:SERVICE:CBI

CONTROLLER BOARD INITIALIZATION

Serial Number..............................###ABC?###
Model Number......................XXXXXXXXXXXX
FLASHcode..........................XXXXX-XXXXX-X

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP							PROGRAM RADIO		EXIT

This screen can be accessed from the SERVICE MENU only when a CBI-programmed radio is connected to the computer via the RIB. If not, the RSS will display an error message. This screen allows you to transfer codeplug information from the computer to the radio codeplug. Enter a valid serial number and press **F8** to proceed.

Note

A CBI radio and RIB must be properly connected to the computer and the power turned on before you press **F8**.

Note

If the radio connected to the RIB is NOT a CBI-initialized radio and you press **F9** from the SERVICE MENU, the RSS will display the following pop-up message: "!!!Warning!!! The radio attached to the RIB is not a CBI-initialized radio."

WARNING

DO NOT turn off the radio or disconnect the radio from the computer while it is attempting to program the codeplug. Interrupting the programming process will destroy codeplug contents and completely disable the radio.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F2**. The TRANSMIT ALIGNMENT MENU appears.

3. Press **F9**. The CONTROLLER BOARD INITIALIZATION (CBI) appears.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F9 - PROGRAM RADIO -Programs the selected value into the radio. The RSS will display the following message: "!!!Warning!!! Continue to program the following serial number into the CBI radio: <Serial Number>." Press F2 to proceed with the initialization and F10 to cancel. If communication with the radio fails, the RSS will display a pop-up error message. Check you cable connections and try again.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Field Definitions

Serial Number
Enter the serial number of the radio you wish to initialize. This number can be found on the outside casing of the radio. You will NOT be able to initialize the CBI radio unless you enter a valid serial number.

Model Number
This is a read-only field. It displays the model number of the radio currently attached to the computer using the RIB. The model number is retrieved from the radio's controller board and is displayed for verification purposes only.

FLASHcode
This is a read-only field. It displays the FLASHcode of the radio currently attached to the computer using the RIB. The FLASHcode is retrieved from the radio's controller board and is displayed for verification purposes only.

4.2.2 RECEIVER ALIGNMENT MENU

RSS LOCATION: At the SERVICE MENU, press [F3] .

```
┌─────────────────────────────────────────┬───────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.         │
│ MTSX            Model:                    │                                   │
│                                          │                                   │
│ MAIN:SERVICE:RECEIVER ALIGNMENT MENU     │                                   │
└─────────────────────────────────────────┴───────────────────────────────────┘
┌───────────────────────────────────────────────────────────────────────────────┐
│                         RECEIVER ALIGNMENT MENU                                 │
│                                                                                 │
│      F1   -   HELP                                                              │
│      F2   -   Front End Bandpass Filter                                         │
│      F3   -   Rated Audio Calibration                                          │
│      F4   -   Squelch Attenuator (12.5KHz)                                     │
│      F5   -   Squelch Attenuator (20KHz)                                       │
│      F6   -   Squelch Attenuator (25/30KHz)                                    │
│      F7   -   Rx VCO Crossover Frequency        .                             │
│      F8   -   Secure Rx Discriminator Level                                    │
│      F9   -                                                                     │
│      F10  -   Exit, Return to Service Menu                                      │
│                                                                                 │
└───────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	FRONT END FILT ALGN	AUDIO	SQUELCH 12.5KHz	SQUELCH 20KHz	SQUELCH 25/30KHz	VCO	SECURE DISCR		EXIT

Standard periodic receiver alignment procedures are performed from this menu. Refer to your radio service manual for receive alignment procedures. These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVER ALIGNMENT MENU appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - FRONT END FILT ALGN (Front End Bandpass Filter Alignment) Refer to your radio service manual for the front end bandpass alignment procedure. This procedure should only be attempted by qualified service personnel.

F3 - AUDIO (Rated Audio Calibration) Refer to your radio service manual for the rated audio calibration procedure. This procedure should only be attempted by qualified service personnel.

F4 - SQUELCH 12.5KHz (Squelch Attenuator 12.5KHz Adjustment) Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

F5 - SQUELCH 20KHz (Squelch Attenuator 20KHz Adjustment) Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

F6 - SQUELCH 25/30KHz (Squelch Attenuator 25/30KHz Adjustment) Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

F7 - **VCO** (Rx VCO Crossover Frequency Adjustment) Refer to your radio service manual for the alignment procedure. This procedure should only be attempted by qualified service personnel.

F8 - SECURE DISCR (Secure Receive Discriminator Level Adjustment) Refer to your radio service manual for the secure receive discriminator level alignment procedure. This procedure should only be attempted by qualified service personnel.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

4.2.2.1   FRONT END FILTER ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F3] [F2] **.**

MOTOROLA Radio Service Software	Use UP/DOWN Arrows To Adjust Softpot.
MTSX Model:	
...FRONT END FILTER (VHF & UHF ONLY)	

FRONT END FILTER (VHF & UHF ONLY)

| | Current | |
Frequency	Value	New Softpot Value
450.02500	0	0
465.22500	0	0
475.22500	0	0
484.97500	0	0
500.27500	0	0
511.97500	0	0
519.97500	0	0

0 Min ———————————————————— 255 Max

| F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 | F9 | F10 |
| HELP | | | | | | | PROGRAM VALUE | | EXIT |

Refer to your radio service manual for the front end filter alignment procedure. This procedure should only be attempted by qualified service personnel.

PROGRAMMING PROCEDURE:

1.   Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2.   Press **F3**. The RECEIVER ALIGNMENT (VHF & UHF ONLY) MENU appears.

3.   Press **F2**. The FRONT END FILTER ALIGNMENT screen appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the front end filter softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.2.2 RATED AUDIO ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F3] [F3] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows To Adjust Softpot. │
│ MTSX           Model:                    │                                       │
│                                          │                                       │
│ ...RECEIVER ALIGNMENT MENU:RATED AUDIO   │                                       │
├──────────────────────────────────────────────────────────────────────────────────┤
│                              RATED AUDIO                                           │
│                                                                                    │
│   Frequency         Current Value              New Softpot Value                   │
│   938.0625          Std. Audio .........201    Std. Audio ..............201        │
│                                                                                    │
│                                                                                    │
│    0    ┼──┼──┼──┼──█──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼   255                        │
│    Min                                                   Max                       │
├──────────────────────────────────────────────────────────────────────────────────┤
│  F1      F2      F3      F4      F5      F6      F7      F8      F9      F10         │
│  HELP                                                   PROGRAM         EXIT        │
│                                                         VALUE                       │
└──────────────────────────────────────────────────────────────────────────────────┘
```

Refer to your radio service manual for the rated audio calibration procedure. This procedure should only be attempted by qualified service personnel.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVER ALIGNMENT MENU appears.

3. Press **F3**. The RATED AUDIO screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.
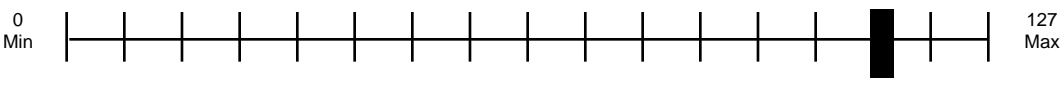

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.
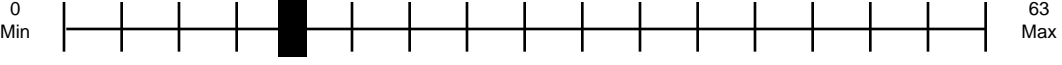
F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Std Audio Field Definition
This is the rated volume softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.2.3 SQUELCH ATTENUATOR (12.5KHZ) ALIGNMENT

RSS LOCATION: At the SERVICE MENU, press F3 F4 **.**

```
┌─────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Use UP/DOWN Arrows To Adjust Softpot.  │
│ MTSX           Model:                │                                        │
│                                      │                                        │
│ ...SQUELCH (12.5KHz)                 │                                        │
└─────────────────────────────────────┴──────────────────────────────────────┘
┌─────────────────────────────────────────────────────────────────────────────┐
│                        SQUELCH  (12.5KHz)                                     │
│                        Current                                                │
│        Frequency        Value                 New Softpot Value               │
│        450.02500         63                          63                       │
│        465.22500         63                          63                       │
│        475.22500         63                          63                       │
│        484.97500         63                          63                       │
│        500.27500         63                          63                       │
│        511.97500         63                          63                       │
│                                                                               │
│                                                                               │
│   0                                                              63           │
│   Min ├──┼──┼──█──┼──┼──┼──┼──┼──┼──┼──┼──┼──┤  Max                           │
│                                                                               │
└───────────────────────────────────────────────────────────────────────────── ┘
  F1        F2       F3       F4       F5      F6       F7       F8      F9      F10
  HELP                                                          PROGRAM         EXIT
                                                                VALUE
```

Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

The squelch attenuator setting is increased or decreased by pressing the up/down arrow keys respectively. A relative value between 0 and 63 will be displayed on the screen. Adjust the squelch setting to the desired value.

This screen allows you to adjust the squelch level for each test mode frequency. Use the up/down arrows to change the value of the squelch. Use the **Tab** key to move between frequency points.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVER ALIGNMENT MENU appears.

3. Press **F4**. The SQUELCH (12.5KHz) screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the squelch attenuator softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.2.4 SQUELCH ATTENUATOR (20KHZ) ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F3] [F5] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows To Adjust Softpot.      │
│ MTSX            Model:                    │                                            │
│                                          │                                            │
│ ...SQUELCH (20KHz)                       │                                            │
├──────────────────────────────────────────┴──────────────────────────────────────────┤
│                              SQUELCH  (20KHz)                                         │
│                         Current                                                      │
│          Frequency       Value              New Softpot Value                        │
│          851.0625         63                       63                                 │
│          860.0625         63                       63                                 │
│          869.9375         63                       63                                 │
│          851.0625         63                       63                                 │
│          860.0625         63                       63                                 │
│          869.9375         63                       63                                 │
│                                                                                      │
│                                                                                      │
│    0                                                                          63     │
│    Min  |──┼──┼──┼──█──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──|              Max     │
│                                                                                      │
├──────────────────────────────────────────────────────────────────────────────────────┤
│  F1      F2      F3      F4      F5      F6      F7      F8      F9      F10           │
│  HELP                                                  PROGRAM          EXIT         │
│                                                        VALUE                         │
└──────────────────────────────────────────────────────────────────────────────────────┘
```

Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

The squelch attenuator setting is increased or decreased by pressing the up/down arrow keys respectively. A relative value between 0 and 63 will be displayed on the screen. Adjust the squelch setting to the desired value.

This screen allows you to adjust the squelch level for each test mode frequency. Use the up/down arrows to change the value of the squelch. Use the **Tab** key to move between frequency points.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVER ALIGNMENT MENU appears.

3. Press **F5**. The SQUELCH (20KHz) screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.
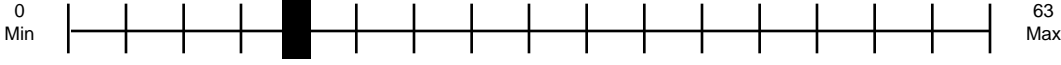
F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the squelch attenuator softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.2.5 SQUELCH ATTENUATOR (25/35KHZ) ALIGNMENT

RSS LOCATION: At the SERVICE MENU, press [F3] [F6] **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Use UP/DOWN Arrows To Adjust Softpot. │
│ MTSX            Model:                       │                                       │
│                                              │                                       │
│ ...SQUELCH (25/30KHz)                        │                                       │
└─────────────────────────────────────────────┴──────────────────────────────────────┘
```

                              SQUELCH (25/30kHz)
                                   Current
        Frequency   Value   New Softpot Value
        851.0625   63   63
        860.0625   63   63
        869.9375   63   63
        851.0625   63   63
        860.0625   63   63
        869.9375   63   63

    0   63
    Min   ├──┼──┼──┼──█──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┤   Max

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP							PROGRAM VALUE		EXIT

Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

The squelch attenuator setting is increased or decreased by pressing the up/down arrow keys respectively. A relative value between 0 and 63 will be displayed on the screen. Adjust the squelch setting to the desired value.

This screen allows you to adjust the squelch level for each test mode frequency. Use the up/down arrows to change the value of the squelch. Use the **Tab** key to move between frequency points.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVER ALIGNMENT MENU appears.

3. Press **F6**. The SQUELCH (25/30kHz) screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the squelch attenuator softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.2.6 RECEIVE VCO CROSSOVER ALIGNMENT

RSS LOCATION: **At the SERVICE MENU, press** [F3] [F7] **.**

```
┌─────────────────────────────────────────┬─────────────────────────────────────────┐
│ MOTOROLA Radio Service Software           │ Use UP/DOWN Arrows To Adjust Softpot.     │
│ MTSX            Model:                     │                                           │
│                                           │                                           │
│ ...VCO CROSSOVER                          │                                           │
├───────────────────────────────────────────────────────────────────────────────────┤
│                                                                                       │
│                            VCO CROSSOVER                                               │
│                                                                                       │
│                                                                                       │
│                    Current                          New                               │
│                    Frequency                        Frequency                         │
│                                                                                       │
│                    486.0250                         486.0250                          │
│                                                                                       │
│                                                                                       │
│                        Transmitter. . . . . . .Off                                    │
│                                                                                       │
│                                                                                       │
│                                                                                       │
├───────────────────────────────────────────────────────────────────────────────────┤
│   F1        F2       F3       F4       F5      F6      F7       F8       F9      F10    │
│   HELP                                        TOGGLE           PROGRAM           EXIT   │
│                                               PTT              VALUE                    │
└───────────────────────────────────────────────────────────────────────────────────┘
```
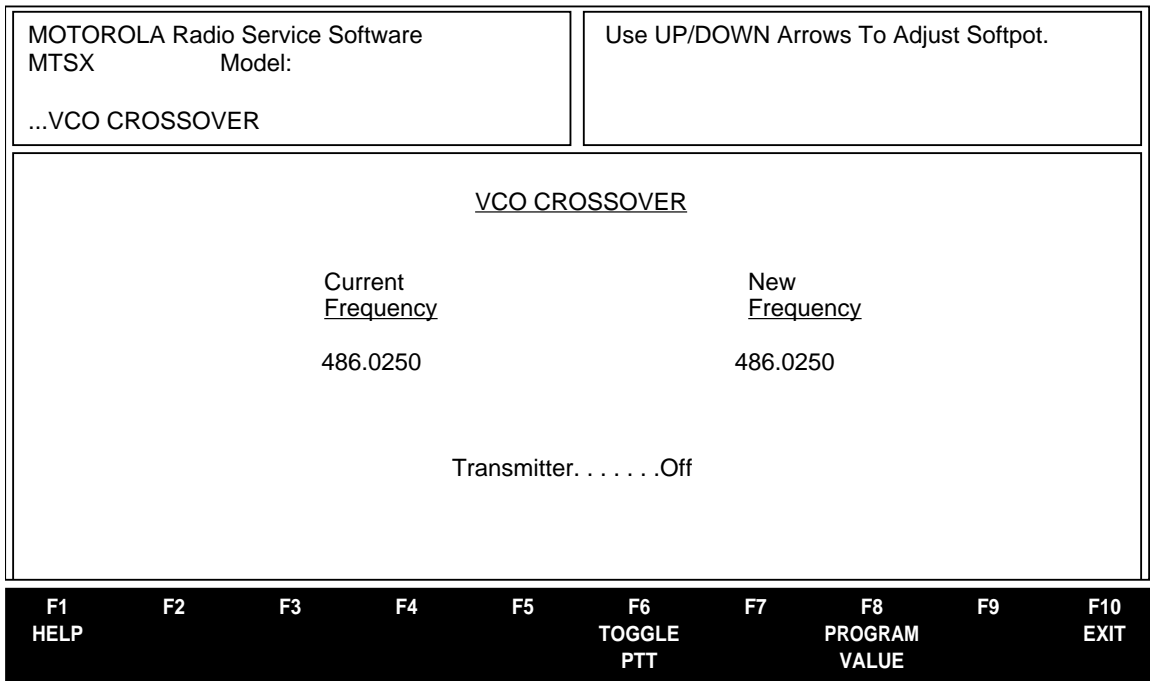
Refer to your radio service manual for the receive VCO crossover alignment procedure. This procedure should only be performed by qualified service personnel.

Receive deviation limit alignment is a way of correcting for deviation sensitivity versus RF frequency variations in the VCO. The transmit and receive bands are divided into frequency zones with a calibration point (value) in each zone. Compensation for each of these points must be checked and adjusted if the VCO is replaced.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVE ALIGNMENT MENU appears.

3. Press **F7**. The VCO CROSSOVER screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Frequency Field Definition
This is the VCO crossover softpot value for this frequency.

4.2.2.7 SECURE RECEIVE DISCRIMINATOR LEVEL

RSS LOCATION: **At the SERVICE MENU, press** [F3] [F8] **.**
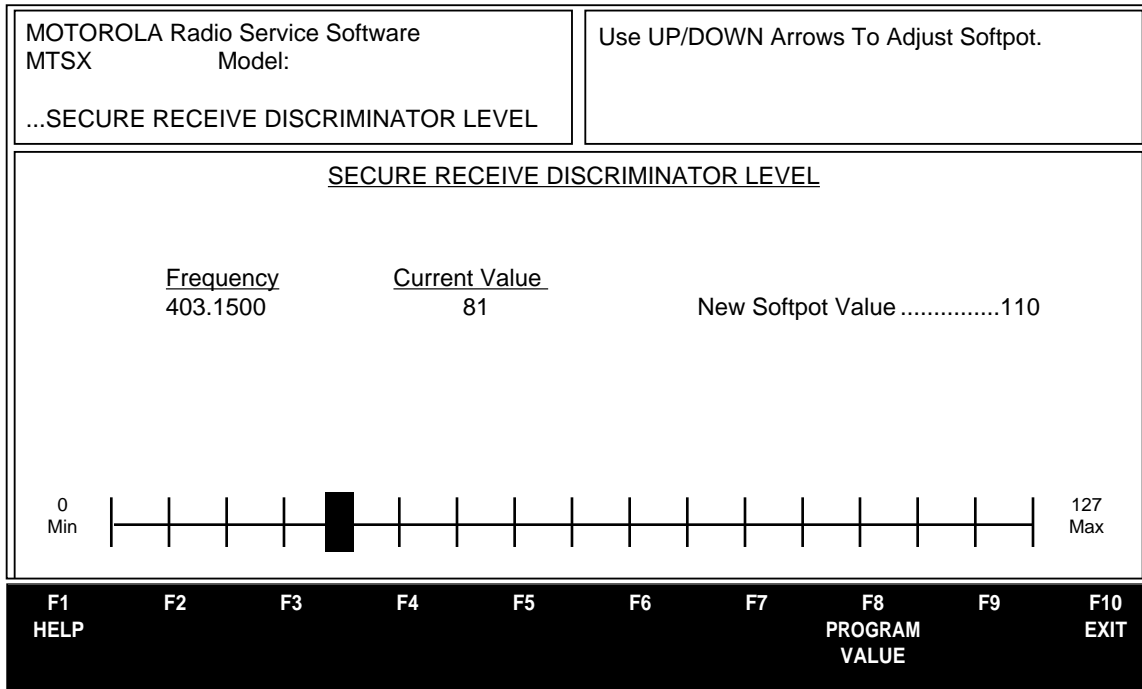
MOTOROLA Radio Service Software
MTSX   Model:

...SECURE RECEIVE DISCRIMINATOR LEVEL

Use UP/DOWN Arrows To Adjust Softpot.

SECURE RECEIVE DISCRIMINATOR LEVEL

Frequency   Current Value
403.1500   81   New Softpot Value 110

0   127
Min   Max

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP							PROGRAM VALUE		EXIT

Refer to your radio service manual for the squelch alignment procedure. This procedure should only be attempted by qualified service personnel.

Secure receive discriminator level should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F3**. The RECEIVE ALIGNMENT MENU appears.

3. Press **F8**. The SECURE RECEIVE DISCRIMINATOR LEVEL screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the secure receive discriminator level softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.3 SIGNALLING ALIGNMENT MENU

RSS LOCATION: **At the SERVICE MENU, press** [F4] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.        │
│ MTSX            Model:                    │                                  │
│                                           │                                  │
│ MAIN:SERVICE:SIGNALLING ALIGNMENT MENU    │                                  │
├───────────────────────────────────────────────────────────────────────────┤
│                                                                             │
│                    SIGNALLING ALIGNMENT MENU                                │
│                                                                             │
│        F1   -   HELP                                                        │
│        F2   -   DTMF                                                        │
│        F3   -   High Speed                                                  │
│        F4   -   MDC 1200                                                    │
│        F5   -                                                              │
│        F6   -                                                              │
│        F7   -                                                              │
│        F8   -                                                              │
│        F9   -                                                              │
│        F10  -   Exit, Return to Service Menu                                │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	DTMF	HIGH	MDC						EXIT
	ALIGN	SPEED	1200						

Refer to your radio service manual for the signalling alignment procedure. This procedure should only be attempted by qualified service personnel. Signalling deviation should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced. All radio compensation/deviation adjustments must be made before adjusting signalling deviation.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F4**. The SIGNALLING ALIGNMENT MENU appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **DTMF ALIGN** (DTMF [Dual Tone Multi-Frequency] Transmit Deviation Alignment) Refer to your radio service manual for the DTMF signalling deviation alignment procedure. This procedure should only be attempted by qualified service personnel.

F3 - **HIGH SPEED** Refer to your radio service manual for the transmitter deviation limit alignment: high speed procedure. This procedure should only be attempted by qualified service personnel.

F4 - **MDC 1200** Refer to your radio service manual for the MDC signalling deviation alignment procedure. This procedure should only be attempted by qualified service personnel.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

4.2.3.1 DTMF TRANSMIT DEVIATION
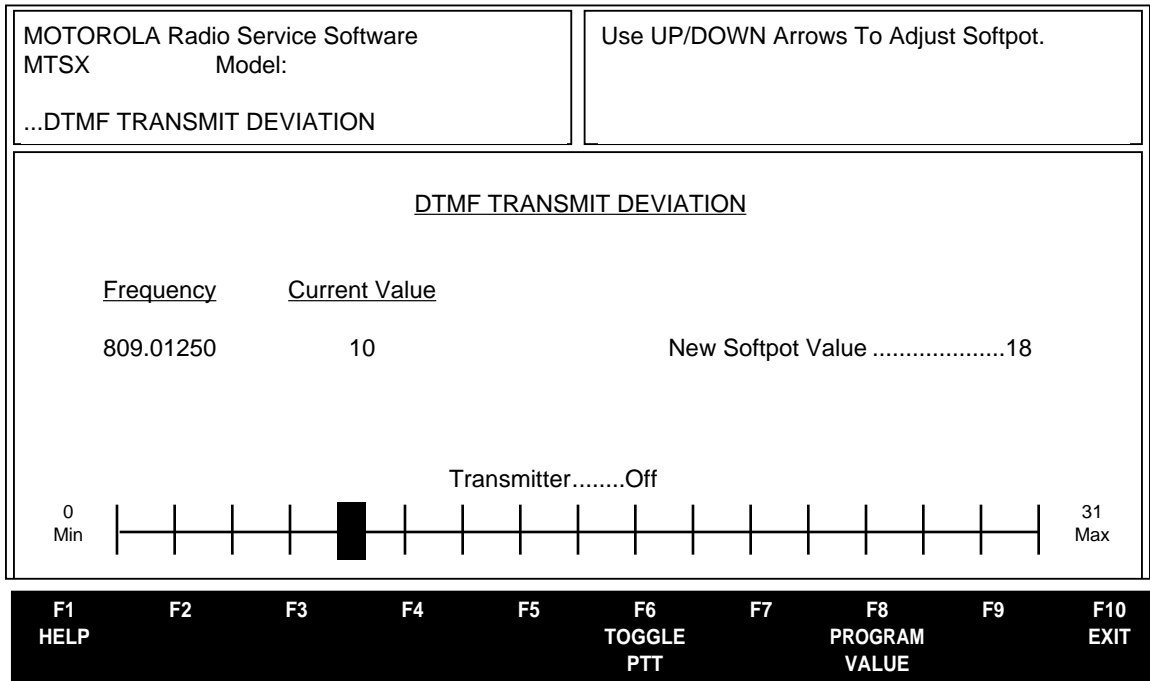
RSS LOCATION: At the SERVICE MENU, press [F4] [F2] **.**

MOTOROLA Radio Service Software MTSX Model: ...DTMF TRANSMIT DEVIATION	Use UP/DOWN Arrows To Adjust Softpot.

DTMF TRANSMIT DEVIATION

Frequency	Current Value	
809.01250	10	New Softpot Value 18

Transmitter........Off

0 Min   31 Max

F1 HELP	F2	F3	F4	F5	F6 TOGGLE PTT	F7	F8 PROGRAM VALUE	F9	F10 EXIT

Refer to your radio service manual for the DTMF signalling deviation alignment procedure. This procedure should only be attempted by qualified service personnel.

DTMF deviation should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced. All radio compensation/deviation adjustments must be made before adjusting DTMF deviation.

DTMF deviation is increased or decreased by first keying the radio via **F6**, and then by pressing the up/down arrow keys respectively. A relative deviation value is displayed, but the actual transmitter deviation must be determined from your service monitor. Set your modulation analyzer to read peak deviation.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F4**. The SIGNALLING ALIGNMENT MENU appears.

3. Press **F2**. The DTMF TRANSMIT DEVIATION screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

The function key descriptions and field definition are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 -   **HELP** provides useful information about the currently displayed menu, screen, or field.

F6 -   **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 -   **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

New Softpot Value
This is the DTMF softpot value. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.3.2 TRANSMIT SIGNALLING: HIGH SPEED

RSS LOCATION: **At the SERVICE MENU, press** [F4] [F3] .

```
┌─────────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Use UP/DOWN Arrows To Adjust     │
│ MTSX            Model:                        │ Softpot.                         │
│                                               │                                  │
│ ...TRANSMIT SIGNALLING:HIGH SPEED             │                                  │
└─────────────────────────────────────────────┴──────────────────────────────────┘
```

TRANSMIT SIGNALLING: HIGH SPEED

Frequency	Current Value
869.9875	17

New Softpot Value 17

Transmitter........Off

0 Min ├─┼─┼─┼─■─┼─┼─┼─┼─┼─┼─┼─┼─┼─┼─┼─┤ 31 Max

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP					TOGGLE PTT		PROGRAM VALUE		EXIT

Refer to your radio service manual for the transmit deviation limit alignment: high speed procedure. This procedure should only be attempted by qualified service personnel.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F4**. The SIGNALLING ALIGNMENT MENU appears.

3. Press **F3**. The TRANSMIT SIGNALLING: HIGH SPEED screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - TOGGLE PTT function will alternately key and dekey the radio being serviced.

F8 - PROGRAM VALUE function will program the selected value into the radio.

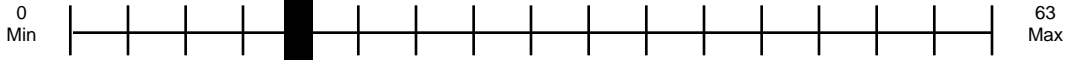**F10 - EXIT** moves the display backward in the RSS tree, one screen or menu at a time.

New Softpot Value Field Definition
This is the high-speed softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

4.2.3.3 TRANSMIT SIGNALLING: MDC 1200

RSS LOCATION: **At the SERVICE MENU, press** [F4] [F4] **.**
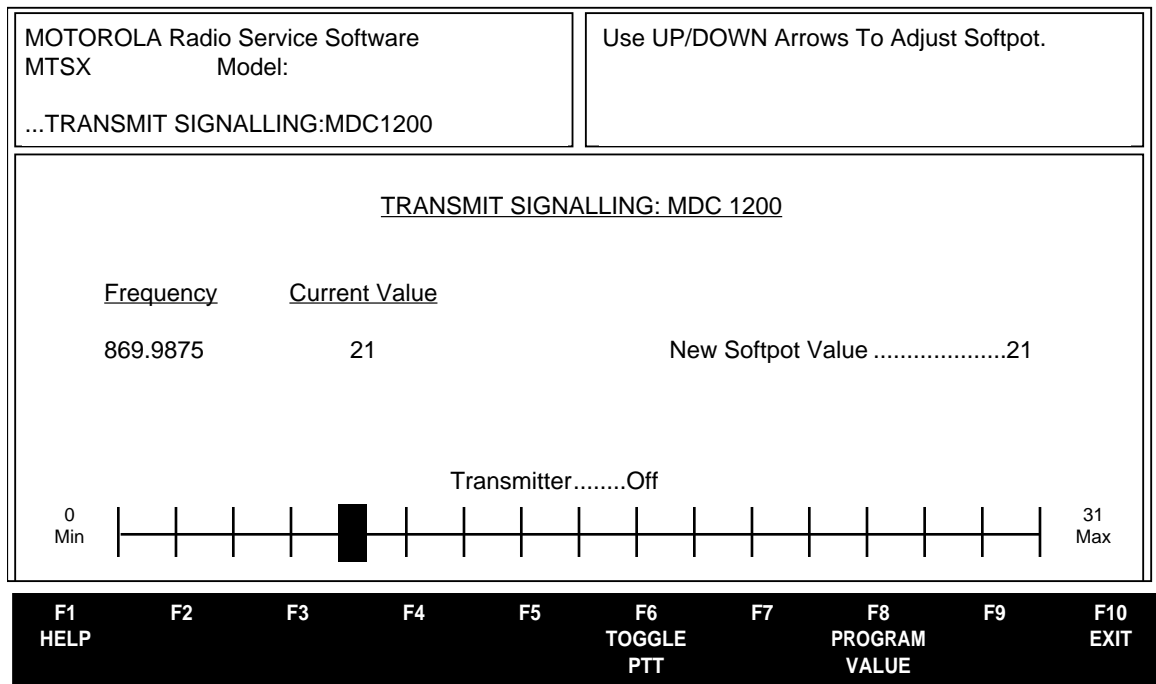
MOTOROLA Radio Service Software MTSX Model: ...TRANSMIT SIGNALLING:MDC1200	Use UP/DOWN Arrows To Adjust Softpot.

TRANSMIT SIGNALLING: MDC 1200

Frequency	Current Value	
869.9875	21	New Softpot Value 21

Transmitter........Off

0 Min ——————————————————————————— 31 Max

F1 HELP	F2	F3	F4	F5	F6 TOGGLE PTT	F7	F8 PROGRAM VALUE	F9	F10 EXIT

Refer to your radio service manual for the MDC signalling deviation alignment procedure. This procedure should only be attempted by qualified service personnel.

MDC deviation should be checked any time the radio is serviced and must be adjusted whenever any of the modulation circuitry has been replaced. All radio compensation/deviation adjustments must be made before adjusting MDC deviation.

MDC deviation is increased or decreased by first keying the radio via **F6**, and then by pressing the up/down arrow keys respectively. A relative deviation value is displayed, but the actual transmitter deviation must be determined from your service monitor. Set your modulation analyzer to read peak deviation.

PROGRAMMING PROCEDURE:

1. Press **F2** at the MAIN MENU. The SERVICE MENU appears.

2. Press **F4**. The SIGNALLING ALIGNMENT MENU appears.

3. Press **F4**. The TRANSMIT SIGNALLING: MDC 1200 screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

The function key descriptions and field definition are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F6 - **TOGGLE PTT** function will alternately key and dekey the radio being serviced.

F8 - **PROGRAM VALUE** function will program the selected value into the radio.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

New Softpot Value
This is the MDC softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.

SECTION 5. GET/SAVE/PROGRAM MENU FUNCTIONS

5.1 INTRODUCTION TO SECTION

This section describes all the functions available from the GET/SAVE/PROGRAM MENU. To guide you through these functions,the following GET/SAVE/PROGRAM-related menus and screens are shown with their specific RSS location, programming procedures from the MAIN MENU, function key descriptions, and field definitions.

NOTE

All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

5.2 GET/SAVE/PROGRAM MENU

RSS LOCATION: **At the MAIN MENU, press** [F3] **.**

MOTOROLA Radio Service Software	Select Function F1 - F10.
MTSX Model:	
MAIN:GET/SAVE/PROG	

GET/SAVE/PROGRAM MENU

F1 - HELP
F2 - Read Data from Radio Codeplug (Requires RIB)
F3 - Get Codeplug Data from Archive Disk File
F4 - Get TCMS Codeplug Update Disk File
F5 - Clone Radio
F6 -
F7 - Save Codeplug Data to Archive Disk File
F8 - Program Data into Radio Codeplug (Requires RIB)
F9 - Radio Programming History
F10 - Exit

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	READ RADIO	GET ARCHIVE	MERGE TCMS	CLONE RADIO		SAVE ARCHIVE	PROGRAM RADIO	VIEW HISTORY	EXIT

The GET/SAVE functions are used to transfer codeplug data from your radio or an archive file into your computer in order for you to Change, View, or Print it. GET/SAVE functions also permit you to PROGRAM modified data back into your radio or to SAVE a copy of the codeplug data in an archive file.

CAUTION

Do NOT turn off the radio or disconnect it from the computer while attempting to PROGRAM the codeplug. Interrupting the programming process WILL destroy the codeplug contents and completely DISABLE the radio!

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Select the desired function key (**F1** - **F10**).

The function key descriptions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **READ RADIO** function reads the information (data) stored in the radio codeplug (EEPROM) and transfers it to the computer's memory. The time required to READ a codeplug will depend directly on your computer type and the size of the codeplug you are reading. The status of the READ operation is displayed at the bottom of the screen. After completion of the read operation, data validation occurs. During this step, data merges, formats, and screen interdependencies are checked.

F3 - **GET ARCHIVE** function is used to retrieve an archive file from a diskette or hard disk to the computer. Once retrieved, the file may be modified via the CHANGE/VIEW functions or programmed into a radio just as codeplug information read from the radio via the **F2** READ function.

F4 - **MERGE TCMS** is used to update the codeplug information with trunking information from the TCMS (Trunking Code Management System). The required changes must first be entered into the TCMS database through a TCMS terminal, then downloaded using a modem and the TCMS On-Line Field Programming (OFP) software package.

F5 - **CLONE RADIO** is used to copy codeplug information from one radio to another radio. Only radios with the same model number may be cloned. The screen summarizes the individual ID information for both MDC and Trunking so that it can be changed from one convenient screen. Trunked radios may not be cloned unless System Keys have been loaded for each trunking system ID.

F7 - **SAVE ARCHIVE** function is used to create (or update) an archive copy of the codeplug information onto a diskette or hard disk. An archive copy of every radio installed or serviced is STRONGLY recommended in order to be able to quickly restore customer information is case of a codeplug failure.

F8 - **PROGRAM RADIO** function is used to transfer codeplug information from the computer to the radio codeplug. A radio and RIB must be properly connected to the computer and power turned on before you attempt the program function. After pressing the **F8** function key, the programming of the codeplug commences, and data validation occurs. During this step, data ranges, formats, and screen interdependencies are checked.

The time required to PROGRAM a codeplug will depend directly on your computer type and the size of the codeplug you are programming. The status of the PROGRAM operation is displayed at the bottom of the screen.

F9 - VIEW HISTORY gives all the information about the last time the radio was programmed. This includes where and when the radio was programmed and if the programming was authorized.

<div align="center">

CAUTION
</div>

If software versions of the radio and the current data are not compatible, then Read the radio codeplug and enter the data again. Conventional data can be entered from the RSS screens or cloned from another radio. Trunked data must be down loaded from the trunking code management system (TCMS) via a TCMS codeplug update.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

5.2.1 READING CODEPLUG DATA

You may read the codeplug from the radio or from the archive disk. After reading, the codeplug will be checked for valid serial number, model number, check sums, etc.

5.2.1.1 READING CODEPLUG DATA FROM THE RADIO *(Requires RIB)*

RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** ⌨ F2 **.**

```
┌─────────────────────────────────────┬────────────────────────────┐
│ MOTOROLA Radio Service Software      │                            │
│ MTSX             Model:              │                            │
│                                      │                            │
│ MAIN:GET/SAVE/PROG:READ RADIO        │                            │
├──────────────────────────────────────────────────────────────────┤
│                                                                    │
│                    READ RADIO CODEPLUG                             │
│                                                                    │
│                                                                    │
│                Reading Codeplug Block 1 of 34                      │
│                                                                    │
│                                                                    │
│                                                                    │
│         0%                                      100%               │
│                                                                    │
│           ├───┼───┼───┼───┼───┼───┼───┼───┼───┤                    │
│                                                                    │
└──────────────────────────────────────────────────────────────────┘
   F1       F2       F3       F4       F5      F6      F7      F8      F9      F10
```
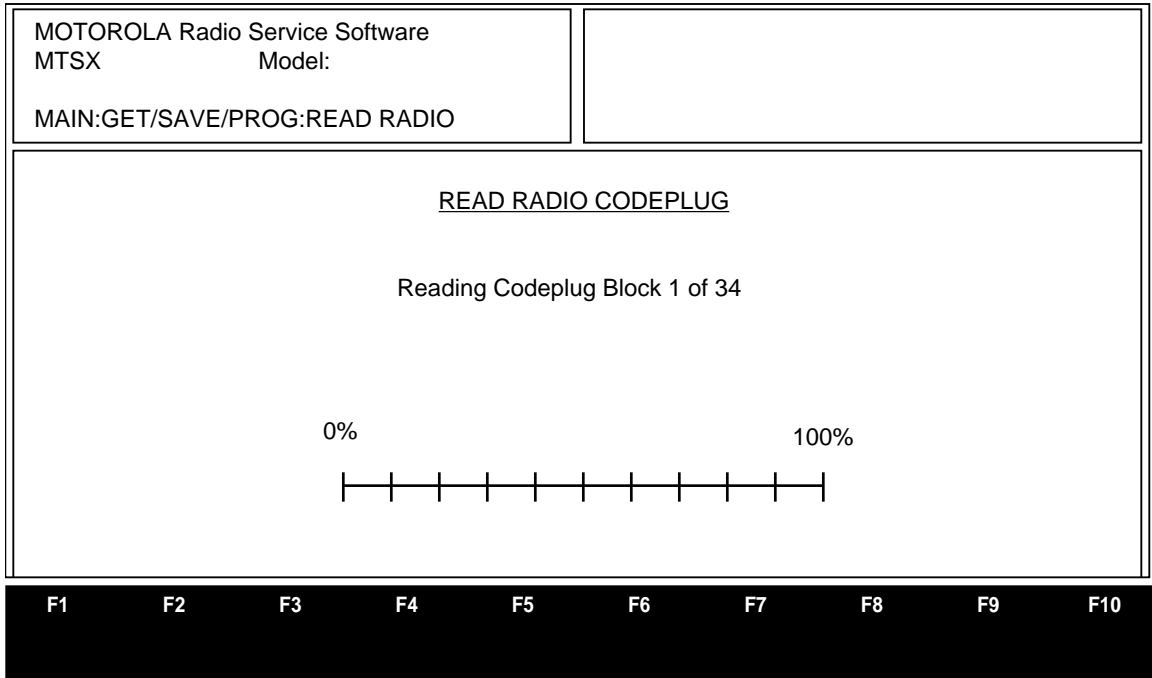
To read codeplug data from the radio, press **F2** (READ RADIO function) at the GET/SAVE/PROGRAM MENU; the READ RADIO CODEPLUG screen will appear (refer to the screen shown above). A series of status messages will appear in the upper right corner of the screen. If a communication error occurs, a pop up window will be displayed. If no errors occur, the center of the screen will display the progress of the codeplug read. The read process will take approximately one minute, depending on the type of computer and the size of the codeplug being read. After the codeplug is read, the GET/SAVE/PROGRAM MENU will be displayed.

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Press **F2**. The READ RADIO CODEPLUG screen appears.

FIELD DEFINITION:

Reading Codeplug Blocks This is the number of blocks that have been read. The status bar shows the relative value of the number of blocks read so far compared to the total number of blocks to be read.

5.2.1.2 READING CODEPLUG DATA FROM AN ARCHIVE FILE *(Requires RIB)*

RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** ⌑F3⌑ .

```
┌────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software    │ Press Enter to Select File Name. │
│ MTSX            Model:             │ Press F8 to Load Codeplug File.  │
│                                    │                                  │
│ MAIN:GET/SAVE/PROG:GET FILE        │                                  │
├────────────────────────────────────┴──────────────────────────────────┤
│                                                                        │
│  Archive: C:\MRSS\MTSX\ARCHIVE                                         │
│                                                                        │
│                           ARCHIVE FILES                                │
│                                                                        │
│      A466ASNO.331                                                       │
│      A467ASNO.361                                                       │
│      A469ASNO.431                                                       │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
└────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CHANGE ARCHIVE			DELETE SELECTED	CHDIR UP	CHDIR DOWN	GET ARCHIVE		EXIT

The GET ARCHIVE function is used to retrieve an archive file from a diskette or hard disk. Once retrieved, the file may be modified via the CHANGE/VIEW functions or programmed into a radio just as codeplug information read from the radio via the **F2** READ RADIO function.

Press **Tab** to select a codeplug file to be retrieved. The **F8** function key is used to GET the selected file as described below.

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Press **F3**. The ARCHIVE FILES screen appears.

3. Press **Tab** to select the desired file, or press the desired function key (**F1 - F10**).

Function key descriptions and field definitions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - CHANGE ARCHIVE function is used to specify the directory path where the archive file is to be located. The default archive path will always be the specified default path from the PC CONFIGURATION Menu (**F9,F3** Configuration on the MAIN MENU).

F5 - **DELETE SELECTED** function allows you to delete the selected archive file.

F6 - **CHDIR UP** function is used to move one level up in the directory tree structure.

F7 - **CHDIR DOWN** function is used to move one direction down in the directory tree structure.
Press Tab to select a directory. Directories are represented in upper case. The contents of the directory will be shown when the function key has been pressed.

F8 - GET ARCHIVE is used to get the archive file highlighted on the screen.

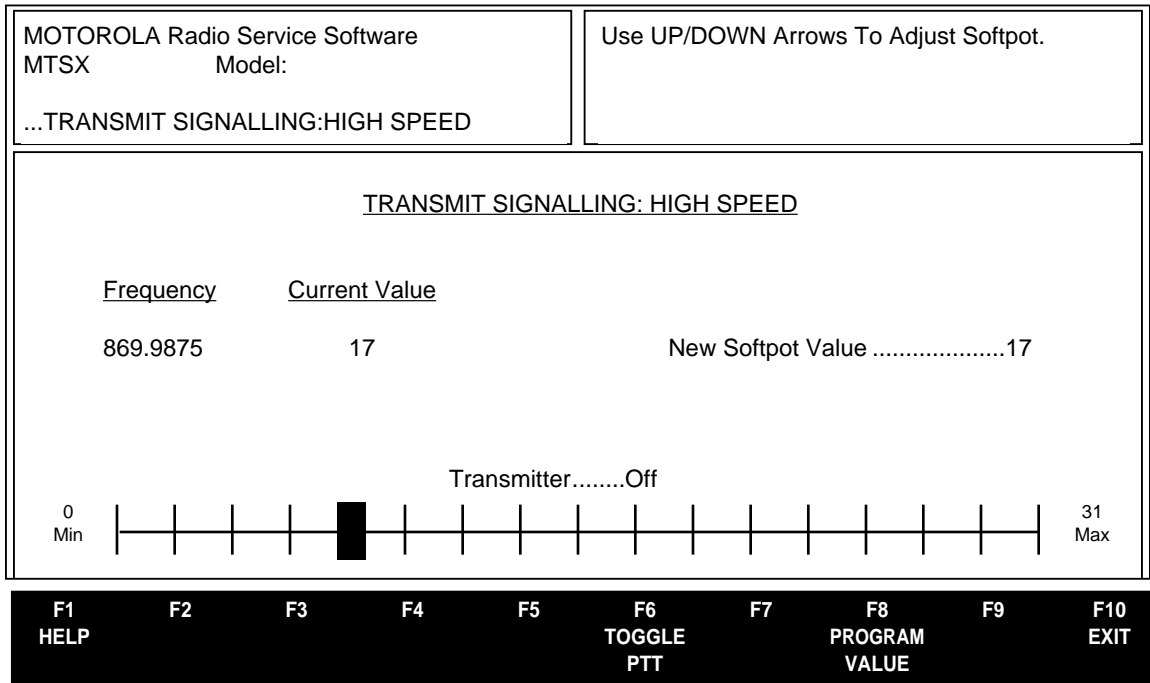**F10 - EXIT** moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

File Name
This is the DOS name of the file which contains the data for the codeplug. Refer to your computer's owner's manual for a complete description of file names.

5.2.2   GET TCMS CODEPLUG UPDATE DISK FILE

RSS LOCATION: At the GET/SAVE/PROGRAM MENU, press $\boxed{\text{F4}}$ **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software             │ Enter Path.                  │
│ MTSX                Model:                  │                              │
│                                             │                              │
│ MAIN:GET/SAVE/PROG:MERGE                    │                              │
├─────────────────────────────────────────────┴──────────────────────────────┤
│ TCMS Path:                                                                  │
│   S/N: .........402ASQ0199          MERGE FORM                              │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
│                                                                             │
├─────────────────────────────────────────────────────────────────────────────┤
│  F1       F2      F3      F4      F5      F6      F7      F8      F9     F10 │
│  HELP                                                    UPDATE         EXIT│
│                                                         DATA               │
└─────────────────────────────────────────────────────────────────────────────┘
```

This screen is used to update the codeplug information with trunking information from the TCMS (Trunking Code Management System). The required changes must be first entered into the TCMS database through a TCMS terminal, and then downloaded using a modem and the TCMS On-line Filed Programming (OFP) software package.

Merge Procedure:

1.   Enter the changes into the TCMS database.
2.   Download a DOS file with the new trunking information.
3.   Use GET/SAVE functions to either Read the radio codeplug or Get the archive file for the radio to be updated.
4.   Access the MERGE TCMS screen and press **F8** to update the codeplug information.

PROGRAMMING PROCEDURE:

1.   Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2.   Press **F4**. The MERGE FORM screen appears.

3.   Enter the directory path for the directory which contains the TCMS merge files. The default archive path will always be the specified default path from the PC CONFIGURATION screen (**F9**, **F3** from the MAIN MENU).

5.2.3 RADIO CLONING

RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** [F5] .

| MOTOROLA Radio Service Software
MTSX   Model:

MAIN:GET/SAVE/PROG:CLONE RADIO | Select Function F1 - F10 |

NEW TRUNKING IDS

Serial Number ....

Pers #	System Key	Type	System #	ID	Flt/ATG	Type I Indv ID	II/IIi Indv ID	Universal ID
01	Disabled	II	01	0001	000F			
02	Disabled	IIi	01	0001	0001			
03	Disabled	I	02	0001	0001			

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	READ SER NUM	CONV ID	LIMITED CLONE		DUPLICATE II/III ID	SAVE FILE	PROGRAM RADIO		EXIT

This screen is used to copy codeplug information from one radio to another one. Only radios with the same model number may be cloned. This screen summarizes the individual ID information for both MDC and Trunking so that it can be changed from one convenient screen. Conventional radios may be cloned completely. Trunking radios may only be cloned if you have a system key for every trunking system in the codeplug.

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Press **F5**. The TRUNKED CLONING screen appears.

3. Select the desired function key (**F1 - F10**).

Full Cloning:

System keys for all Trunked Systems in the radio are required to perform a full clone. Follow the steps below for Full Cloning procedures.

1. Use the GET/SAVE functions to read (**F3**/**F2**) the radio codeplug to be cloned. That is the "source" codeplug. An archive file may also be used as the "source" codeplug.

2. Enter the serial number of the radio to be cloned on the TRUNKED CLONING screen, or press **F2** to read the serial number from the connected radio. System keys are required to change the serial number.

3. Change the trunking individual IDs to those required by the new radio on this screen. If MDC IDs are used also, they can be changed on the MDC ID screen by pressing **F3**.

4. Connect the "target" radio to the computer, and press the **F8** function key to program the "source" codeplug into the "target" radio.

Limited Cloning
A limited clone may be used when all the system keys required to perform a full clone are not available. When a limited clone is performed, all trunking information, which existed in the "source" radio , will be deleted or changed to default data. Re-entry of trunking information will be required. The steps below will guide you in performing a limited clone.

1. Use the GET/SAVE functions to read (**F3**/**F2**) the radio codeplug to be cloned. That is the "source" codeplug. An archive file may also be used as the "source" codeplug.

2. Press the Limited Clone function key (**F4**) on the TRUNKED CLONING screen. At this point all the trunking data in the "source" codeplug will be deleted or defaulted. This includes all trunking system and trunking personality data. Zone/Channel, Conventional, Phone List, Call list and Scan List data will be preserved.

Warning
Do NOT program this image into the original radio unless you want all the trunking data to be deleted.

3. Enter the serial number of the radio to be cloned or press **F2** to read the serial number from the connected radio. The **F2** function will not be allowed prior to step 2 unless system keys are present. At this point in time you will have a codeplug image for the "target" radio which contains the conventional data and radio wide data from the "source" radio and no trunking data. You may operate on the codeplug image in the same fashion as any other codeplug image. It may be archived, edited or programmed into the "target" radio. Normally you will proceed to step 4.

4. Go to the TCMS merge screen (**F3/F4**). Merge the new "target" codeplug with the file downloaded from TCMS for the "target" radio. You now have a "target" codeplug image which contains the conventional and radio wide data from the "source" radio, and the trunking data from the TCMS merge.

5. Program the target radio by pressing **F8** from the normal programming screen (**F3/F8**) or the cloning screen (**F3/F5**).

6. Archive the "target" codeplug image.

NOTE
A radio and RIB must be properly connected to the computer and power turned on before you attempt the READ function.

The time required to READ a codeplug will depend directly on your computer type and the size of the codeplug you are reading. The status of the READ operation is displayed at the bottom of the screen.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - READ SER NUMBER   Reads the serial number from the target radio so it can be correctly placed within the workspace.

F3 - CONV ID (Conventional ID) navigates you to a screen where you assign the MDC IDs. This function will only be active when a trunking-capable radio is being cloned.

F4 - LIMITED CLONE This function is used for cloning the Conventional and Radio Wide sections of the codeplug. This deletes the Trunking data and reads the serial number from the radio. Trunking System keys (or FTR Key) are required for cloning the Trunking System data. Limited Clone requires the target radio to be connected so that the serial number can be read.

F6 - DUPLICATE II/IIi ID duplicates the selected Type II/IIi ID (the one under the cursor) into all other Type II/IIi personalities for which system keys are present.

F7 - SAVE FILE is used to create or update an archive copy of the codeplug information onto a disk or hard disk. An archive copy of every radio installed or serviced is strongly recommended to be able to quickly restore customer information in case of a codeplug failure.

F8 - PROGRAM RADIO is used to transfer codeplug information from the computer to the radio codeplug.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Note

If a model up-issue is being performed (AN TO BN OR BN TO AN Cloning) note that:

- When cloning a BN archive to a AN radio the radio will remain as AN model radio

- When cloning a AN codeplug to a BN radio, the radio will remain a BN radio. However, any secure (voice encrypted) data will be lost. AN models are not secure capable. Re-read the the radio and enter the "Radio Wide Options" screen **F4/F3/F2** and change the "Secure Equipped" field and the fields in the "Radio Wide Secure Options" screen **F4/F3/F2/F6** if necessary. Go to the "Program Radio" screen (**F3/F8**) and reprogram the radio with secure data.

5.2.4 SAVING CODEPLUG DATA TO AN ARCHIVE FILE

RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** `F7` **.**

```
┌────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software     │ Enter Archive Path.          │
│ MTSX            Model:              │                              │
│                                     │                              │
│ MAIN:GET/SAVE/PROG:SAVE FILE        │                              │
├─────────────────────────────────────┴──────────────────────────────┤
│   Archive: C:\MRSS\MTSX\ARCHIVE                                      │
│                                                                     │
│               SAVE CODEPLUG DATA TO ARCHIVE FILE                    │
│                                                                     │
│        Archive Filename ....................A466ASNO.331            │
│        Model Number ........................                        │
│        Serial Number ........................466ASN0331            │
│        Last Programmed ....................9409060941              │
│        Program Source......................Factory                 │
│                                                                     │
│                                                                     │
│                                                                     │
│                                                                     │
└─────────────────────────────────────────────────────────────────────┘
```

F1 HELP	F2 CHANGE ARCHIVE	F3	F4	F5	F6	F7	F8 SAVE ARCHIVE	F9	F10 EXIT

The SAVE ARCHIVE function is used to create (or update) an archive copy of the codeplug information onto a diskette or hard disk.

NOTE

You are STRONGLY encouraged to make an archive copy of every radio installed or serviced in order to be able to quickly restore customer information is case of a codeplug failure.

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Press **F7**. The SAVE CODEPLUG DATA TO ARCHIVE FILE screen appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - CHANGE ARCHIVE function is used to specify the directory path where the archive file is to be located. The default archive path will always be the specified default path from the SERVICE SOFTWARE CONFIGURATION screen (**F9, F3** from the MAIN MENU).

F8 - SAVE ARCHIVE function executes the save process.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

Archive Filename

This is DOS name of the archive file. This must be no more than 8 characters with a 3 character extension.

Model Number

This is the radio model number which should correspond to the model number printed on the label under the radio's battery.

Software Option

This field will detail any software options programmed - applies to Private System model numbers only.

Serial Number

This is the radio serial number stored in the codeplug, which should correspond to the serial number printed on the label under the radio's battery.

Programmed Date

This is the time and date the radio was last programmed. Format is YYMMDDHHMM Y-year, M-month, D-day, H-hour, M-minute. Time is in military format (1:30 PM = 1330).

Program Source

This field describes the source of the most recent internal codeplug programming:

    RSS - Programmed by a standard field RSS.
    Factory - Programmed in the factory.
    Lab - Programmed using a special development RSS.
    FTR Key - Programmed using a FTR (Field Technical Representative) hardware key.

5.2.5 PROGRAMMING THE RADIO'S CODEPLUG *(Requires RIB)*
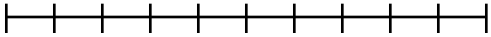
RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** [F8] **.**

```
┌─────────────────────────────────┬──────────────────────────┐
│ MOTOROLA Radio Service Software │                          │
│ MTSX            Model:          │                          │
│                                 │                          │
│ MAIN:GET/SAVE/PROG:PROGRAM RADIO│                          │
├─────────────────────────────────┴──────────────────────────┤
│                                                             │
│                  PROGRAM RADIO CODEPLUG                      │
│                                                             │
│                                                             │
│             Programming Codeplug Block 1 of 34              │
│                                                             │
│                                                             │
│                                                             │
│         0%                          100%                     │
│                                                             │
│         ├──┼──┼──┼──┼──┼──┼──┼──┼──┼──┤                      │
│                                                             │
└─────────────────────────────────────────────────────────────┘
   F1    F2    F3    F4    F5    F6    F7    F8    F9   F10
```

This screen allows you to program the radio. A radio interface box (RIB) is required to perform this operation.

```
┌───────────────────────────────────────────────────────────────┐
│ PROGRAMMING PROCEDURE:                                        │
│                                                               │
│ 1.  Press F3 at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears. │
│                                                               │
│ 2.  Press F8. The PROGRAM RADIO CODEPLUG screen appears.      │
└───────────────────────────────────────────────────────────────┘
```

TRUNKING RADIOS ONLY:
If you do not have the necessary System Key files and are programming a radio, the serial number of the attached radio must be identical to the one in the serial number field on the RSS and PROGRAMMING HISTORY screen. If the serial numbers are different, programming will be aborted. To program this radio you must first read this radio using the **F2** READ function.

FIELD DEFINITION:

Programming Codeplug Blocks
This is the number of blocks that have been programmed. The status bar shows the relative value of the number of blocks programmed so far compared to the total number of blocks to be programmed.

5.2.6 PROGRAMMING HISTORY

RSS LOCATION: **At the GET/SAVE/PROGRAM MENU, press** $\boxed{\text{F9}}$ **.**

MOTOROLA Radio Service Software MTSX Model: MAIN:GET/SAVE/PROG:HISTORY	Information Only. These Fields Cannot be Changed.

<div style="text-align:center">PROGRAMMING HISTORY</div>

```
Model Number ...............................................
Software Option ....................................None
Serial Number ..........................466ASN0331
Radio Software Version .......................R 1.31
Radio Codeplug Version ........................0004
Programmed Date .....................9410171345
Program Source ................................Factory
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen shows the historical statistics of the radio and the service software such as serial number, model number, last programmed date, programming source, etc.

PROGRAMMING PROCEDURE:

1. Press **F3** at the MAIN MENU. The GET/SAVE/PROGRAM MENU appears.

2. Press **F9**. The PROGRAMMING HISTORY screen appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Model Number
This is the radio model number which should correspond to the model number printed on the label under the radio's battery.

Software Option
This field will detail any software options programmed - applies to Private System model numbers only.

Serial Number
This is the radio serial number stored in the codeplug, which should correspond to the serial number printed on the label under the radio's battery.

Radio Software Version
This is the version of operators software running in the radio.

Radio Codeplug Version
This is the codeplug description version number, which will determine which versions of RSS that the codeplug is compatible with.

Programmed Date
This is the time and date the radio was last programmed. Format is YYMMDDHHMM Y-year, M-month, D-day, H-hour, M-minute. Time is in military format (1:30 PM = 1330).

Program Source
This field describes the source of the most recent internal codeplug programming:

    RSS - Programmed by a standard field RSS.
    Factory - Programmed in the factory.
    Lab - Programmed using a special development RSS.
    FTR Key - Programmed using a FTR (Field Technical Representative) hardware key.

SECTION 6. CHANGE/VIEW MENU FUNCTIONS

6.1 INTRODUCTION TO SECTION

This section describes all the functions available from the CHANGE/VIEW MENU. To guide you through these functions, the following CHANGE/VIEW-related menus and screens are shown with their specific RSS location, programming procedures from the MAIN MENU, function key descriptions, and field definitions.

NOTE

All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

6.2 CHANGE/VIEW MENU

RSS LOCATION: **At the MAIN MENU, press** [F4] **.**

MOTOROLA Radio Service Software	Select Function F1 - F10
MTSX Model:	
MAIN:CHANGE/VIEW	

CHANGE/VIEW MENU

F1   -   HELP
F2   -
F3   -   Radio Wide Buttons, Switches, Display, Scan, Phone
F4   -   Trunking Systems, Personalities, Call Lists, Options
F5   -
F6   -   Conventional Systems, Personalities , MDC, Options
F7   -
F8   -   Zone/Channel Assignment
F9   -
F10   -   EXIT, Return to Main Menu

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		RADIO CONFIG	TRUNK DATA		CONV DATA		ZONE/CHN ASSIGN		EXIT

The CHANGE/VIEW MENU is a multi-level menu that is used to view or modify codeplug features and option configurations. All codeplug parameters are classified as either Radio Configuration, Conventional, or Trunking. The CHANGE/VIEW MENU functions permit access to each category. Unlike the SERVICE MENU functions, a codeplug must be loaded into your computer's memory (via the GET/SAVE/PROGRAM MENU functions) before you can access the CHANGE/VIEW screens. You may change or view an archive file without a radio connected.

NOTE

If your radio model does not contain a specific feature, you will not be permitted access to the corresponding data field or screen for that feature. Refer to you radio catalog sheets or radio service manual for radio model descriptions and features.

IMPORTANT NOTE

The CHANGE VIEW MENU does NOT actually modify the radio codeplug data, but instead, modifies a copy of the data retrieved from the codeplug or archive file via the GET/SAVE/PROGRAM MENU functions.

After all CHANGE/VIEW modifications are completed, you MUST return to the GET/SAVE/PROGRAM MENU and program the changes back into the radio or save them to a new archive file. Otherwise, the modifications will be lost when you turn off your computer or load in another codeplug.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - RADIO CONFIG (Radio Configuration) is used to change or view radio parameters and options that affect the overall radio operation, such as the button settings or default volume setting. Both conventional and trunking operations are included.

F4 - TRUNK DATA (Trunking Data Configuration) is a multi-level menu used to change or view trunking-only personalities, systems, etc. Most personality and system data must be changed via the TCMS (trunking code management system) and can only be viewed. However, all lists (call, scan, phone) may be changed. For conventional-only models, this function key will not be valid.

F6 - CONV DATA (Conventional Data Configuration) is used to change or view conventional-only parameters such as personalities, buttons, and MDC signalling. For trunked-only models, this function key will not be valid.

F8 - ZONE/CHN ASSIGN (Zone/Channel Assignment) is used to assign a group of channels (or talkgroups) to a particular zone based on some common characteristic such as geographic location, job function, signalling type, etc.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.1 RADIO WIDE CONFIGURATION MENU

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] **.**

```
MOTOROLA Radio Service Software        Select Function F1 - F10.
MTSX             Model:

MAIN:CHANGE/VIEW:CONFIG
```

```
                  RADIO WIDE CONFIGURATION MENU

          F1    -   HELP
          F2    -   Radio Wide Options
          F3    -   Buttons, Switches, Menu Items
          F4    -   Phone Lists and Options
          F5    -   Scan Lists and Options
          F6    -   Display Options
          F7    -
          F8    -
          F9    -
          F10   -   EXIT, Return to Change/View Menu
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	RADIO OPTIONS	FEATURE OPTIONS	PHONE OPTIONS	SCAN OPTIONS	DISPLAY OPTIONS				EXIT

The RADIO WIDE CONFIGURATION MENU may be used to further customize your radio for specific applications. Parameters and options that affect both conventional and trunking operation are adjusted with this screen. Typically, when you begin to edit a codeplug, you should come to this menu and configure the radio wide options first by working your way through the submenus of this menu. This will allow the options on other screens to reflect the radio-wide options. Fields for unsupported options will not be visible.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **RADIO OPTIONS** allows you to edit general options that affect the radio as a whole. The options include LEDs, self test, etc.

F3 - **BUTTONS, SWITCHES, MENU ITEMS OPTIONS** allows you to define the functions that each button, switch, and menu item performs.

F4 - **PHONE OPTIONS** allows you to edit phone information for the radio, including phone numbers. (This screen is visible only if the radio supports this option).

F5 - **SCAN OPTIONS** allows you to enable scan and modify radio wide scan parameters, such as response times.

F6 - **DISPLAY OPTIONS** allows you to edit display information for the radio.

F10 - **EXIT** moves the display backward in the RSS tree, one screen or menu at a time.

6.2.1.1. RADIO WIDE OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** `F3` `F2` .

```
┌─────────────────────────────────────────┬──────────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Choice.       │
│ MTSX              Model:                 │                                            │
│                                          │                                            │
│ MAIN:CHANGE/VIEW:CONFIG:RADIO OPTIONS    │                                            │
├──────────────────────────────────────────┴──────────────────────────────────────────┤
│                          RADIO WIDE OPTIONS                                           │
│    Alert Tones ......................................Enabled                          │
│    Min Alert Tone Volume  ...........................128                              │
│       Alert Tone Volume Offset ...................-12.0    Block Pending CA/PC .................Disabled │
│       Self Test Alert Tone ......................Disabled  Rotary Switch (Scan Prgm)..........Channel  │
│    Low Battery                                            Selectable Keypad Mute ..............Enabled  │
│       Tx Chirp ........................................Enabled    Short Keypress Duration (ms) ...............50 │
│       Standby Chirp (sec) ...............................60       Long Keypress Duration (ms)............1000 │
│       LED...............................................Enabled    Maximum Channels (Talkgroups) .......160 │
│    Out of Range ...........................No Indication   Radio Cloning .......Disabled Rollover Alert │
│                                                          Rotary Alert .............................................. │
│    Channel Change ID .........................Enabled    Home Mode Selection.................Enabled │
│       CCID Delay Timer.................................0.0       Secure Equipped.................................Yes │
└──────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
					SECURE OPTIONS	EMERG OPTIONS		MORE OPTIONS	
HELP									EXIT

This screen allows you to set up various options that affect radio-wide operation. The options on this screen should be correctly edited and verified before proceeding to edit personality data.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F2**. The RADIO WIDE OPTIONS screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F6 - SECURE OPTIONS is used to indicate whether or not the radio is equipped with secure hardware. If your radio is not Secure equipped , SECURE OPTIONS will not be shown on the screen.

F7 - EMER OPTIONS (Emergency Options) is used to configure radio-wide emergency operation such as Silent Emergency and Man Down timing.

F9 - MORE OPTIONS is used to configure the Time-Out-Timer table.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Alert Tones
Enables or disables all of the alert tones for the radio. Factory default is Enabled.

Min Alert Tone Volume
Use the UP/DOWN arrow keys to select the Minimum Alert Volume level the radio will use. If the volume pot setting is above this level, then the actual volume setting will be used. Otherwise, the minimum alert tone volume will be used. Valid entries are 0 to 255. Factory default is 128.

Alert Tone Volume Offset
Use the UP/DOWN arrow keys to select the Alert Tone Volume Offset the radio will use.

The Alert Tone Volume Offset is the value to raise or lower the volume of an alert tone in reference to the current user selected volume. The alert tone offset can range from -24db to +24db with steps of 1.5db.

The default is -12db.

Self Test Alert Tone
When enabled, an alert tone beep will sound each time the radio is turned on and the self-test is complete. Factory default is Disabled.

Low Battery Tx Chirp
Enables the low battery alert tone. A chirp (beep) will be heard immediately after the PTT switch on the radio is released, when a low battery condition is detected during transmit. Factory default is Enabled.

Low Battery Standby Chirp (sec)
This determines the length of time between the low battery alert chirps. Valid entries are from Disabled, 30 to 930 seconds in increments of 30. This field allows direct values to be entered (in increments of 30) or values can be selected by using the up/down arrow keys. Factory default is 60 seconds.

Selecting Disabled will prevent the radio from sounding alarms when the radio is idle. The low battery alarm will still sound after transmitting if the Low Battery Tx Chirp field is Enabled.

Low Battery LED
When this field is enabled, the red Tx LED will flash when a low battery condition is detected and the radio is transmitting. Factory default is Enabled.

Out of Range
This field determines how the radio will indicate an Out of Range condition on a trunked system. When the radio can no longer communicate with the base, the radio will give an Out of Range alert tone, display an Out of Range message, or both. This feature can be disabled by setting the value to No Indication.
The factory default is No Indication.

Channel Change ID
Use the UP/DOWN arrow keys to enable the Channel Change ID field. Enabling this field allows access to the CCID Registration field located on the CONVENTIONAL PERSONALITY OPTIONS screen [F4F6F3F9].

The factory default is Disabled.

CCID Delay Timer
To set the value for this field, use the UP/DOWN arrow keys or enter directly. This field determines the length of time the radio must be idle on a zone/channel before the Channel Change ID is transmitted.

Valid entries are 0-8.0 sec in 0.5 sec increments. The factory default is 2 sec.

Block Pending CA/PC
When enabled, the radio will ignore all successive Call Alerts (after receiving a Call Alert) with a different ID than the one originating the pending call. Factory default is Disabled.

Rotary Switch (Scan Prgm)
Use the up/down arrow keys to define the operation of the Channel Rotary during scan programming when BOTH Zone and Channel selection are from the radio menu (i.e., the rotary is not used). The rotary can be used to step through either CHANNELS or ZONES during scan programming. This feature is ONLY applicable when both the zone and channel selections are from the menu. Factory default is Channel.

Selectable Keypad Mute
When enabled, the user may mute the keypad chirps from the radio menu. A mute selection must also be selected on the menu screen **(F4/F3/F3/F4)**. Factory default is Enabled.

Short Keypress Duration (ms)
This value determines the amount of time that a key must be pressed to be considered a valid short keypress. An example of a Short Keypress would be pressing a digit on the keypad when entering a Private Call ID. Valid entries are 50 to 750 ms in 50 ms increments. Factory default is 50 ms.

Long Keypress Duration (ms)
A long keypress involves pressing and holding a key for a period of time to enable a radio function or feature. This means that you must press and hold the key down for the time specified by this field. Valid entries are 250 to 3750 ms in 250 ms increments. Factory default is 1000 ms (1 second).

Maximum Channels (Talkgroups)
This is a read-only field that indicates the maximum number of channels/talkgroups that a radio can access.

Radio Cloning
Certain radio models permit direct radio <-> cloning with a special cloning cable. If this feature is not desired, select disabled.

Rotary Alert (Factory default is Rollover Alert)
Use the up/down arrow keys to select the type of Rotary Alert for Continuous Rotary control models. The type of Continuous Rotary Alerts are:

Rollover Alert - Turning the Rotary control passed all programmed channels in either direction will cause an alert tone (beep) and the display will indicate "UNPROG."

Elec. Stop - Turning the Rotary control passed the first channel position in either direction will cause an alert tone.

None - Turning the Rotary control causes no alert tone.

Secure Equipped
Use the UP/DOWN arrow keys to enable secure operation for radios equipped with the secure hardware option. Setting this field to Yes allows access to the secure screens.

<div align="center">

Caution
The user must make sure that the secure hardware is installed in the radio when
setting this field to Yes, otherwise it will lead to improper operation of the radio.

</div>

Home Mode Selection
This feature allows a radio operator to traverse to a dedicated zone/channel by a short press of the Home button (available in portable radios). A long press of the Home Button will program the Home Mode to be set to the radio's currently selected zone/channel.

<div align="center">

Note
If the user programmed Zone or Channel onto any of the buttons or switches,
pressing the Home key will override the hardware settings. The radio will realign to
the button or switch settings once the button or switch is toggled.

</div>

6.2.1.1.1. RADIO WIDE SECURE OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F2] [F6] .

```
┌─────────────────────────────────────────┬─────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select    │
│ MTSX            Model:                    │ Choice.                         │
│                                          │                                 │
│ ...CONFIG:RADIO OPTIONS:SECURE OPTIONS   │                                 │
├──────────────────────────────────────────┴─────────────────────────────────┤
│                                                                             │
│                      RADIO WIDE SECURE OPTIONS                              │
│                                                                             │
│                                                                             │
│                                                                             │
│        Ignore Sec/Clr Switch When Strapped.................................Yes │
│        XL IC Present ......................................................Yes │
│        TX Clear Alert Tones .....................................Enabled    │
│        Periodic Keyfail Alert Tone ..............................Enabled    │
│        Non-XL Scan Unsquelch Duration (ms)...............................275 │
│        XL Scan Unsquelch Duration (ms) .......................................875 │
│        Secure Punch Thru.....................................Always On      │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
   F1        F2        F3        F4        F5        F6        F7        F8        F9        F10
   HELP                                                                              EXIT
```

This screen allows you to set up secure options that affect radio-wide operation.

Note

The Secure Equipped field must be set to "Yes" to access the secure screens

FUNCTION KEY DESCRIPTIONS:

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3.   Press **F2**. The RADIO WIDE OPTIONS screen appears.
     If the radio is secure Capable, set the field Secure Equipped to "Yes"

4.   Press **F6**. The RADIO WIDE SECURE OPTIONS screen appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5.   If a field is selected, press the up/down arrow keys to select choice or value.

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Ignore Sec/Clr Switch When Strapped
If this parameter is set to Yes and the active radio mode is strapped to Secure or Clear, the radio ignores the setting of the Secure/Clear Switch and allows user-initiated voice transmissions based upon the mode's
strapping. In this configuration the Secure/Clear Switch has no effect. If this parameter is set to No and the active radio mode is strapped to Secure or Clear, the radio checks the position of the Secure/Clear Switch
against the active mode's strapping. If the strapped value does not match the setting of the switch, the radio will not transmit

The factory default is No.

XL IC Present
This field should be set to Yes if the radio is equipped with an XL chip.

Tx Clear Alert Tones
When this field is set to Enabled, an alert tone will be generated every time the user keys up the radio in the clear mode. The factory default is Enabled.

Periodic Keyfail Alert Tone
When this field is set to Enabled, a periodic alert tone will be generated whenever the radio has lost key and one of the following conditions are met:

    1.   Secure/Clear Strapping is set to Secure or
    2.   Secure/Clear Strapping is set to Select and the two position concentric switch is in the secure position.

Factory default is Enabled.

Non-XL Scan Unsquelch Duration
When scanning for coded transmissions, this field determines the period of time that the radio will wait for a Non-XL (Cipher Feedback) encrypted signal to be detected following a carrier detect. When the Scan Select field in the Personality screen is set to Non-XL, the selected value for this field is used when scanning.
The range is -60-6375 in 25 ms. increments. The factory default is 275 ms.

XL Scan Unsquelch Duration
When scanning for coded transmissions, this field determines the period of time the radio will wait for a Non-XL (Cipher Feedback) or XL encrypted signal to be detected following a carrier detect. When the Scan Select field in the Personality screen is set to Non-XL&XL, the selected value for this field is used when scanning.
The factory default is 875 ms. The range is -60-6375 in 25 ms. increments.

Secure Punch Thru
Use UP/DOWN arrow keys to scroll or directly enter the desired value. The RSS shall allow the user to set the Secure Punch Thru feature to one of the following settings: Disabled, Always On, or to a Variable Volume Position (i.e. the feature will become active when the volume knob is set to a level greater than this programmed volume position). The valid range of the Variable Volume Position is from 1 to 254 which corresponds to the absolute position of the radio volume knob.

Secure Punch Thru is a feature intended to reduce high volume distortion in the secure receive mode by removing much of the distortion producing low frequency content (i.e. from amplifier clipping and speaker/housing overload), and improve intelligibility in high background noise environments (i.e. the radio is at high volume), by boosting the high frequency content that tends to get washed out in such conditions.

The Secure Punch Thru feature is activated when the radio is receiving in the secure mode and the volume knob is beyond an RSS programmable position. The feature turns off the de-emphasis filter in the receive secure audio path, leaving the audio pre-emphasized from the transmitter (i.e. the lower frequencies are reduced and the higher frequencies are increased). The factory default is Disabled.

Note
       This feature requires the transmitting radios to use pre-emphasis, which is normally the
       case. Also, the Secure Punch Thru feature activation point can be anywhere from the
       volume knob's lowest position (i.e. turned on all the time when receiving secure) to its
       highest position (i.e. turned off all the time when receiving secure).

6.2.1.1.2   RADIO WIDE EMERGENCY OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F2] [F7] **.**

```
┌────────────────────────────────────┐ ┌─────────────────────────────────────┐
│ MOTOROLA Radio Service Software    │ │ Use UP/DOWN Arrows to Select Choice.│
│ MTSX              Model:           │ │                                     │
│                                    │ │                                     │
│ ...CONFIG:RADIO OPTIONS:EMERG OPT  │ │                                     │
└────────────────────────────────────┘ └─────────────────────────────────────┘
┌──────────────────────────────────────────────────────────────────────────────┐
│                     RADIO WIDE EMERGENCY OPTIONS                               │
│                                                                                │
│                                                                                │
│              Silent Alarm ......................Enabled                        │
│               Unmute Option ................Disabled                           │
│              Channel Delay (sec) ...................02                          │
│              Man Down Pre-Alert (sec)............10                             │
│              Man Down Post-Alert (sec) ..........10                            │
│                                                                                │
│                                                                                │
└──────────────────────────────────────────────────────────────────────────────┘
   F1        F2       F3       F4       F5       F6       F7       F8       F9       F10
   HELP                                                                           EXIT
```

The Emergency parameters listed on this screen are radio-wide, in that they apply both to conventional and trunking signaling. Emergency operation must be enabled in the system selected for signalling Type in the Conventional Personality screen **(F4/F6/F3)** and/or the Trunking personality screen **(F4/F4/F4/F8)**. In addition, the Emergency button must be configured from the Radio Wide Button screen **(F4/F3/F3/F2)**.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3.   Press **F2**. The RADIO WIDE OPTIONS screen appears.

4.   Press **F7**. The RADIO WIDE EMERGENCY OPTIONS screen appears.

5.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Silent Alarm
When enabled, the radio will operate silently when transmitting an emergency signal. No audible or visual indicators will occur. This feature is not compatible with Emergency Receive. To enable Silent Alarm the Emergency Receive (**F4/F3/F6**) must be disabled. Emergency operation must be enabled on the Conventional Personality screen **(F4/F6/F3)** and/or the Trunking Personality Emergency Options screen **(F4/F4/F4/F8**). In addition, the Emergency button must be configured from the Radio Wide Button screen **(F4/F3/F3/F2)**.

Warning
> Programming of Silent Emergency provides the user NO indication, visible or audible, that the emergency has been sent. If you program silent emergency in conjunction with the Long Press Emergency feature users should be trained to LONG PRESS the emergency press button for an extended duration to ensure that the emergency will be sent.

Unmute Option
This feature is an optional ADDITION to the Emergency Silent Alarm feature Enabling this feature will cause the radio to UNMUTE on the emergency talkgroup (for trunking) or frequency (for conventional) for voice traffic when the radio is in SILENT ALARM EMERGENCY mode. The Unmute Option will allow the dispatcher to provide feedback to the person initiating the emergency state via code words, without drawing undesirable attention.
The factory default is Disabled.
Warning

Channel Delay (sec)
The radio must be on a channel for this delay time before it can transmit an emergency signal. For emergency operation, sometimes this delay time is desired to prevent the radio from sending an emergency signal on an undesired channel,which might occur while the user is changing channels and pressing the emergency button. Valid selections are 0 to 7 seconds. Factory default is 2 seconds.

Man Down Pre-Alert (sec)
This delay is the period between closure of the Man Down switch and the initiation of the Man Down Alert tone. The radio must have an external Man Down switch for this feature to work. The Man Down switch is an optional switch that can be attached to the radio to detect when the radio position is not vertical. Valid delays are 1 to 120 seconds. Factory default is 10 seconds.

Man Down Post-Alert (sec)
This delay is the period between the Man Down alert tone and the actual transmission of the Emergency Alarm sequence. The radio must have an external Man Down switch for this feature to work. The Man Down switch is an optional switch that can be attached to the radio to detect when the radio position is not vertical. Valid delays are 1 to 120 seconds. Factory default is 10 seconds.

6.2.1.1.3. MORE RADIO WIDE OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** ` F3 ` ` F2 ` ` F9 `.

```
┌─────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │  Enter or Scroll to Select Value.     │
│ MTSX              Model:             │                                       │
│                                      │                                       │
│ ...CONFIG:RADIO OPTIONS:OPTIONS      │                                       │
├─────────────────────────────────────┴──────────────────────────────────────┤
│                          RADIO WIDE OPTIONS                                  │
│                                                                             │
│     Mic AGC ......................................Disabled                   │
│                                                                             │
│                                                                             │
│                      Num     Time Out Timer Table (sec)                      │
│                                                                             │
│                       1              Infinite                                │
│                       2                30                                    │
│                       3                60                                    │
│                       4               120                                    │
└─────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

The option parameters listed on this screen are radio-wide, in that they apply both to conventional and trunking operation.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F2**. The RADIO WIDE OPTIONS screen appears.

4. Press **F9**. Another RADIO WIDE OPTIONS screen appears showing more options.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITION:

Mic AGC (Automatic Gain Control)
Use the UP/DOWN arrow keys to select the microphones which will use the AGC feature. The AGC will automatically raise or lower the gain of the microphone to keep the audio level near a pre-determined level.

The choices are Internal, External, Internal and External, or the default value of Disabled.

Time-Out Timer Table (sec)
These values are used by the personalities for the Time-Out Timer (TOT) values. Each personality can select its own time-out timer value from the four that are on this screen.

UP/DOWN arrow keys select the four TOT values available to each personality. Each conventional channel and trunking personality may reference one of these four values. TOT values from 15 to 465 seconds may be selected in 15 second increments. An Infinite value is also available.

If the radio is transmitting and the TOT time expires, the radio is automatically dekeyed and a continuous alert tone will be generated for as long as the PTT button is pressed. To continue transmitting, the PTT button must be released and the radio rekeyed.

Factory default values are: Infinite, 30, 60, and 120 seconds.

6.2.1.2 RADIO WIDE FEATURES CONFIGURATION MENU

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F3] **.**

```
┌─────────────────────────────────────────┬─────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.       │
│ MTSX              Model:                 │                                 │
│                                          │                                 │
│ MAIN:CHANGE/VIEW:CONFIG:FEATURES         │                                 │
├──────────────────────────────────────────┴─────────────────────────────────┤
│                                                                             │
│               RADIO WIDE FEATURES CONFIGURATION MENU                        │
│                                                                             │
│          F1    - HELP                                                       │
│          F2    - Button/Rotary Configuration                               │
│          F3    - Switch Configuration                                       │
│          F4    - Menu Item List Configuration                              │
│          F5    -                                                            │
│          F6    -                                                            │
│          F7    -                                                            │
│          F8    -                                                            │
│          F9    -                                                            │
│          F10   - EXIT, Return to Radio Wide Configuration Menu             │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	BUTTON CONFIG	SWITCH CONFIG	MENU ITEM						EXIT

This screen is a multi-level menu that is used to change, view, or modify codeplug features and option configurations that affect both conventional and trunking operation. Typically, when you begin to edit a codeplug, you will come to this menu and configure the radio-wide options first by working your way through the screens of this menu. This will allow the options on other screens to reflect the radio-wide options. Some fields will not be visible if the radio does not support that option.

┌───┐
│ **PROGRAMMING PROCEDURE:**   │
│   │
│ 1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.   │
│   │
│ 2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.   │
│   │
│ 3. Press **F3**. The RADIO WIDE FEATURES CONFIGURATION MENU appears.   │
│   │
│ 4. Select the desired function key (**F1 - F10**).   │
└───┘

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **BUTTON CONFIG** (Button Configuration) allows you to edit button assignments for the radio.

F3 - **SWITCH CONFIG** (Switch Configuration) allows you to edit switch assignments for the radio.

F4 - **MENU ITEM** allows you to edit menus that appear on the radio's display. Menu Items are supported on Front Display models only.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.1.2.1 RADIO WIDE BUTTON CONFIGURATION

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F3] [F2] .

MOTOROLA Radio Service Software
MTSX   Model:

...CHANGE/VIEW:CONFIG:FEATURES:BUTTONS

Use UP/DOWN Arrows to Select Choice.

RADIO WIDE BUTTON CONFIGURATION

Button	Conventional	Trunking
Orange Button	Volume Set Tone	Nuisance Delete
16 Pos Rotary	Chan/Sub Select	Channel Select
Side Button 1 (Top)	Light	Light
Side Button 2	Unprogrammed	Phone
Side Button 3	Monitor	Private Call

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

Depending on your radio version and model number, you will be able to choose from all or some of the functions listed on the following page.

NOTE
Factory default button assignments are listed in Tables 3-3, 3-13, 3-27, and 3-28.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F3**. The RADIO WIDE FEATURES CONFIGURATION MENU appears.

4. Press **F2**. The RADIO WIDE BUTTON CONFIGURATION screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

WARNING
DO NOT DUPLICATE A FUNCTION ON MULTIPLE CONTROLS, I.E., A BUTTON AND A SWITCH, OR A SWITCH AND A MENU. THIS MAY CAUSE THE RADIO TO MALFUNCTION, AND CAN CAUSE OPERATOR CONFUSION.

Conventional Buttons:

Blank - No function. No tone will sound.

Chan/Sub Select – Change Channels (Rotary Only)

Call Response - Is used to respond to a private call, or call alert, or phone call. This function should be used for 'Response Only' radios, or in conjunction with the Phone/Private Call functions assigned to the Menu.

Dynamic Priority – Increases the priority of the current active channel.

Emergency – Activates an Emergency transmission. [2] (Not Available on All Models).

Light – Turns on the display light.

Nuisance Delete – Removes the current active channel from the list.

Monitor – Radio will unsquelch when the button is pressed, allowing you to listen to activity on the channel.

Page - Select Call Alert ID. [2]

Phone – Enables the DTMF Encoder. [1]

Rptr Acc Button 1 and 2 - Repeater Access Button 1 and 2 are used to manually send a repeater-access request code.

Scan – Enables / Disables Scan. [1]

Select Call - Select Selective Call ID. [2]

Talkaround/Direct – Enables / Disables Talkaround for transmit.[1]

Unprogrammed – No function. A bad key chirp tone will sound.

Volume Set Tone – Generates a tone when pressed. Used for volume knob adjustment.

Zone/Sys – Change Zones (Rotary Only)

NOTES

[1] For the radio to function properly, this feature must also be enabled on the Conventional Personality screen (**F4/F6/F3**).

[2] For the radio to function properly, this feature must also be enabled on the MDC System screen (**F4/F6/F4/F3**).

Trunking Buttons:

Blank - No function. (Rotary Only)

Chan/Sub Select – Change Channels (Rotary Only)

Call Response - Used to respond to a private call, or call alert, or phone call. This function should be used for 'Response Only' radios, or in conjunction with the Phone / Private Call functions assigned to the Menu. [2]

Emergency – Activates an Emergency transmission. [2] (Not Available on All Models).

Light – Turns on the display light.

Message - Enables the Message feature [2]

Nuisance Delete – Removes the current active channel from the list.

One Touch x - Activates the One Touch feature programmed for the. selected button. [3]

Page - Enables the Call Alert feature. [2]

Phone – Used to answer or initiate a Phone Call. [2]

Private Call - Enables the Private Call feature. [2]

Reprogram Request - Enables the Reprogram Request feature which transmits a trunking reprogram request.

Scan – Enables / Disables Scan. [2]

Site Display/Srch – Displays the current Site or enables a Site search for AMSS or SmartZone operation. [1]

Site Lock/Unlock – Enables / Disables Site automatic site changes for AMSS or SmartZone operation. [1]

Status - Enables the Status feature. [2]

Unprogrammed – No function. A bad key chirp tone will sound.

Volume Set Tone – Generates a tone for the duration of the press.

Zone/Sys – Change Zones (Rotary Only)

<div align="center">**NOTES**</div>

[1] For radio to function properly, this feature must also be enabled on the Trunking System screen (**F4/F4/F3**).

[2] For radio to function properly, this feature must also be enabled on the Trunking Personality screen (**F4/F4/F4**).

[3] For radio to function properly, this feature must also be enabled on the Trunking System Option screen (**F4/F4/F3/F9**).

6.2.1.2.2   RADIO WIDE SWITCH CONFIGURATION

RSS LOCATION: **At the CHANGE/VIEW MENU, press** F3 F3 F3 **.**

MOTOROLA Radio Service Software MTSX Model: ...CONFIG:FEATURES:SWITCHES	Use UP/DOWN Arrows to Select Choice.

RADIO WIDE SWITCH CONFIGURATION

Switch Labels	Conventional Feature	Trunking Feature
Two Position Concentric		
Position A	Blank	Scan
Position B	Blank	Blank
Three Position Toggle		
Position A	Blank	Blank
Position B	Blank	Blank
Position C	PL Disable	Blank

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen allows you to edit switch settings that pertain to the radio for both trunking and conventional personalities.

NOTE
Factory defaults for switch assignments are listed in Tables 3-3, 3-13, 3-27, and 3-28.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3.   Press **F3**. The RADIO WIDE FEATURES CONFIGURATION MENU appears.

4.   Press **F3**. The RADIO WIDE SWITCH CONFIGURATION screen appears.

5.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Two Position Concentric Position A (Conventional and Trunking)
This field determines the function of the two-position switch when it is in the position marked with the 0 symbol.

Press the up/down arrow keys to select the function of the two-position concentric switch located at the top of the radio. Press Help **(F1)** for a list of possible selections.
For the Secure equipped radios, position A is fixed and defined as "Secure Tx Select".

Two Position Concentric Position B (Conventional and Trunking)
This field determines the function of the two-position switch when it is in the position marked with the 0 symbol.

Press the up/down arrow keys to select the function of the two-position concentric switch located at the top of the radio.   Press Help **(F1)** for a list of possible selections.
For the Secure equipped radios, position B is fixed and defined as "Clear Tx Select".

Three Position Toggle Position A (Conventional and Trunking)
This field determines the function of the three position switch when it is in the position marked "A".

Press the up/down arrow keys to select the function of the two-position toggle switch located at the top of the radio. Press Help **(F1)** for a list of possible selections.

Three Position Toggle Position B (Conventional and Trunking)
This field determines the function of the three position switch when it is in the position marked "B".

Press the up/down arrow keys to select the function of the three-position toggle switch located at the top of the radio.   Press Help **(F1)** for a list of possible selections.

Three Position Toggle Position C (Conventional and Trunking)
This field determines the function of the three position switch when it is in the position marked "C".

Press the up/down arrow keys to select the function of the three-position toggle switch located at the top of the radio. Press Help **(F1)** for a list of possible selections.

6.2.1.2.3 RADIO WIDE MENU ITEM CONFIGURATION

RSS LOCATION: At the CHANGE/VIEW MENU, press [F3] [F3] [F4] .

```
┌──────────────────────────────────────────────┬───────────────────────────────┐
│ MOTOROLA Radio Service Software                │ Use UP/DOWN Arrows to Select Choice. │
│ MTSX              Model:                       │                               │
│                                                │                               │
│ MAIN:CHANGE/VIEW:CONFIG:FEATURES:MENUS         │                               │
├────────────────────────────────────────────────────────────────────────────────┤
│              RADIO WIDE MENU ITEM CONFIGURATION                                  │
│                                                                                  │
│    #    Conv Item       #   Conv Item      #   Trunk Item      #   Trunk Item    │
│                                                                                  │
│    1    ZONE/SYS                            1   ZONE/SYS        9   MUTE          │
│    2    DIR                                 2   MUTE                              │
│    3    MUTE                                3   CALL                              │
│                                             4   STS                              │
│                                             5   MSG                              │
│                                             6   RPGM                             │
│                                             7   PROG                             │
│                                             8   VIEW                             │
│                                                                                  │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD CNV ITM		DELETE CNV ITM			ADD TRK ITM		DELETE TRK ITM	EXIT

This screen allows you to edit the radio-wide menu list. Radio models with front display utilize a Menu to simplify the operation of the radio. This screen is used to customize the radio for the required feature set.

The radio will automatically use either the Conventional or Trunking menu functions as required. If a personality does not use a specific feature, the radio will not display that menu item for that personality.

The menu items are displayed in the order in which they are placed in the list. Therefore, the first three items will always be shown when the menu is entered (assuming that personality uses those items).

Use **F2** to add and **F4** to delete conventional items.
Use **F7** to add and **F9** to delete trunking items.

WARNING
Do NOT duplicate a function on multiple controls, i.e. a button and a switch, or a button and a menu, or a switch and a menu. This may cause the radio to malfunction, and can cause operator confusion.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F3**. The RADIO WIDE FEATURES CONFIGURATION MENU appears.

4. Press **F4**. The RADIO WIDE MENU ITEM CONFIGURATION screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the up/down arrow keys to select choice or value.

Function key descriptions and field definitions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD CNV ITM (Add Conventional Item) allows you to add a conventional item.

F4 - DELETE CNV ITM (Delete Conventional Item) allows you to delete a conventional item.

F7 - ADD TRK ITM (Add Trunked Item) allows you to add a trunked item.

F9 - DELETE TRK ITM (Delete Trunked Item) allows you to delete a trunked item.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Conv Item
Press the up/down arrow keys to select Menu functions.

Use **F2** to add, and **F4** to delete conventional items. Depending on your radio version and model number, you will be able to choose from all or some of the functions listed below.

CHAN/SUB	Select/Change Channels
BLANK	No Function. No tone will sound.
DIR	Enable/Disable (Talkaround) (1)
MSG	Enables the Message feature. [3]
MUTE	Enable/Disable the keypad beeps
PAGE	Select Call Alert ID. [3]
PHON	Select DTMF Phone Number to be transmitted (1)
PROG	Change Phone/Scan lists (1)
PSWD	Change Radio Lock Password (2)
PWR	Enable/Disable Tx Low Power
SCAN	Enable/Disable Channel Scan (1)
STS	Enables the Status feature. [3]
VIEW	View Phone/Scan lists (1)
ZONE/SYS	Select/Change zones

NOTES

[1] For radio to function properly, this feature must also be enabled on the Conventional Personality screen (**F4/F6/F3**).

[2] For radio to function properly, this feature must also be enabled on the Radio Wide Display Options screen (**F4/F6/F3**).

[3] For the radio to function properly, this feature must also be enabled on the MDC System screen (**F4/F6/F4/F3**).

 *   For PSWD to show on the RADIO WIDE MENU ITEM CONFIGURATION screen, RADIO LOCK must be enabled on the RADIO WIDE DISPLAY OPTIONS screen (**F4/F3/F6**).

[4] The radio display shows 3 valid menu items per screen. When programmed menu items are not applicable for a specific zone/channel combination, the menu items will be discarded.

WARNING
THE RADIO DISPLAY MUST CONTAIN AT LEAST 1 VALID, NON-BLANK MENU ITEM. Failure to do so may result in improper behavior of the radio.

Trunk Item
Use the UP/DOWN arrow keys to select Menu functions.

Use **F7** to add, and **F9** to delete trunked items. Depending on your radio version and model number, you will be able to choose from all or some of the functions listed below.

CALL	Select Private Call ID (2)
CHAN/SUB	Select/Change Channels or Subfleets.
BLANK	No Function. No tone will sound.
MSG	Select Message to be transmitted (2)
MUTE	Enable/Disable the keypad beeps
PAGE	Select Call Alert ID (2)
PHON	Select DTMF Phone Number to be transmitted (2)
PROG	Change Phone/Private Call/Scan lists (2)
PSWD	Change Radio Lock Password (3)
PWR	Enable/Disable Tx Low Power
RPGM	Enable/Disable Reprogram Request
SCAN	Enable/Disable Channel Scan (2)
SITE	Change AMSS or SmartZone Site (1)
STS	Select Status to be transmitted. [2]
VIEW	View Phone/Private Call/Scan lists (2)
ZONE/SYS	Select/Change zones

NOTES

[1] For radio to function properly, this feature must also be enabled on the Trunking System screen (**F4/F4/F3**).

[2] For radio to function properly, this feature must also be enabled on the Trunking Personality screen (F**4/F4/F4**)

[3] For radio to function properly, this feature must also be enabled on the Radio Wide Display Options screen (F**4/F3/F6**).

*   For PSWD to show on RADIO WIDE DISPLAY OPTIONS screen, RADIO LOCK must be enabled.

[4] The radio display shows 3 valid menu items per screen. When programmed menu items are not applicable for a specific zone/channel combination, the menu items will be discarded.

WARNING
THE RADIO DISPLAY MUST CONTAIN AT LEAST 1 VALID, NON-BLANK MENU ITEM. Failure to do so may result in improper behavior of the radio.

6.2.1.3 PHONE CONFIGURATION

RSS LOCATION: **At the CHANGE/VIEW MENU, press** ⌨F3 ⌨F4 **.**

```
┌────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software    │ Use UP/DOWN Arrows to Select Choice. │
│ MTSX            Model:             │                                  │
│                                    │                                  │
│ MAIN:CHANGE/VIEW:CONFIG:PHONE      │                                  │
├────────────────────────────────────┴──────────────────────────────────┤
│                                                                         │
│                        PHONE CONFIGURATION                              │
│                                                                         │
│   Man Acc Live Dialing ..........................Disabled    Phone Num Display Format ...................None │
│                                                                         │
│           Num        Phone Number            Phone Text                 │
│            1                                  PHONE 1                    │
│            2                                  PHONE 2                    │
│            3                                  PHONE 3                    │
│            4                                  PHONE 4                    │
│            5                                  PHONE 5                    │
│   `        6                                  PHONE 6                    │
│            7                                  PHONE 7                    │
│            8                                  PHONE 8                    │
└─────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD NUMBER			DELETE NUMBER			ACCESS DEACCESS	DIAL OPTIONS	EXIT

This menu allows you to edit the telephone interconnect configuration for your radio, including stored telephone numbers and aliases. These parameters are radio-wide, and apply to both trunking and conventional.

```
┌─────────────────────────────────────────────────────────────────────────┐
│  PROGRAMMING PROCEDURE:                                                  │
│                                                                          │
│  1.  Press F4 at the MAIN MENU. The CHANGE/VIEW MENU appears.            │
│                                                                          │
│  2.  Press F3. The RADIO WIDE CONFIGURATION MENU appears.                │
│                                                                          │
│  3.  Press F4. The PHONE CONFIGURATION screen appears.                   │
│                                                                          │
│  4.  Press Tab to select the desired field, or press the desired function key (F1 - F10). │
│                                                                          │
│  5.  If a field is selected, press the up/down arrow keys to select choice or value. │
│      Enter the phone number via the keyboard.                           │
└─────────────────────────────────────────────────────────────────────────┘
```

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD NUMBER allows you to add a new phone number.

F5 - DELETE NUMBER allows you to delete an existing phone number.

F8 - ACCESS/DEACCESS allows you to change the DTMF access codes.

F9 - DIAL OPTIONS allows you change DTMF timing parameters.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Man Acc Live Dialing
This feature, when enabled, allows you to put in the access codes manually and dial numbers from the keypad while transmitting. When enabled, this will override the Phone Dialing selection on the Dial Options screen **(F9)**. The factory default is Disabled.

Phone Num Display Format
This field is used when special formatting is required to display phone numbers, such as when the phone number is longer than the display.

If set to USA, the phone numbers will be assumed to be area code/number.

The default setting means no special formatting is required. The factory default is None.

Phone Number
Enter the phone number of up to 16 characters here. The ten digits are all valid, and so are the special characters P, *, and #. The P causes the radio to pause momentarily during dialing. The length of the pause is programmable and is on the DIAL OPTIONS screen. Numbers can be added or deleted with the F2 and F5 function keys. Place the cursor over the number to be deleted. New numbers will be added at the end of the list. A total of 19 numbers are allowed.

Phone Text
Enter the name that will appear on the radio display for this phone number. The maximum number of characters will be determined by the radio model. Numbers can be added or deleted with the F2 and F5 function keys. Place the cursor over the number to be deleted. New numbers will be added at the end of the list. A total of 19 numbers are allowed.

6.2.1.3.1 DTMF ACCESS/DEACCESS CODES

RSS LOCATION: **At the CHANGE/VIEW MENU, press** F3 F4 F8 **.**

```
┌─────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter Code.                  │
│ MTSX             Model:                  │                              │
│                                          │                              │
│ MAIN:CHANGE/VIEW:CONFIG:PHONE:CODES      │                              │
├─────────────────────────────────────────┴──────────────────────────────┤
│                                                                         │
│                    DTMF ACCESS/DEACCESS CODES                           │
│                                                                         │
│          Num         Access Code            Deaccess Code               │
│           1             *1P#                   *1P#                      │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
├─────────────────────────────────────────────────────────────────────────┤
│ F1     F2      F3      F4      F5      F6     F7     F8     F9     F10    │
│ HELP   ADD                     DELETE                              EXIT  │
│        CODE                    CODE                                      │
└─────────────────────────────────────────────────────────────────────────┘
```

This screen allows you to set the Access/Deaccess Code pairs used for the Conventional Phone Operation.

The Access Code is used to keep unauthorized users from using the interconnect system on the repeater. The Deaccess Code is used to tell the system that the phone call is finished and shorten the wasted air time. These codes can be selected in the Auto Access Code on the CONVENTIONAL PERSONALITY PHONE OPTIONS screen (**F4/F6/F3/F8**).

The valid symbols are as follows:

> 0-9   Digits
> *   Asterisk
> #   Pound
> P   Pause

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F4**. The PHONE CONFIGURATION screen appears.

4. Press **F8**. The DTMF ACCESS/DEACCESS CODES screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, enter the access or deaccess code via the keyboard.

Function key descriptions and field definitions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD CODE adds another access/deaccess code pair.

F5 - DELETE CODE deletes an access/deaccess code pair from the list.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Access Code
This is the code used to access the phone line. Some conventional interconnect systems require a * to access the telephone line. Some systems require a multi-digit access code which consists of 1 to 4 digits and may or may not contain a *. Multi-digit access codes are used to prevent unauthorized subscriber units from accessing the interconnect system.

NOTE
*From the keypad, enter pause (P) by pressing * and then #.*

Deaccess Code
This is the code to deaccess the phone line. Enter 1 to 4 digits to compose the multi-digit release code. Some conventional interconnect systems require a # to release (disconnect) the telephone line when you are through using it.

Release codes are used for system management purposes to improve system loading by eliminating dead air time after interconnect calls are completed.

NOTE
*From the keypad, enter pause (P) by pressing * and then #.*

Codes can be added and deleted with the **F2** and **F5** function keys. Place the cursor over the code to be deleted. New codes will be added at the end of the list. A total of 19 unique Access/De-access pairs are allowed.

6.2.1.3.2 DIALing OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F4] [F9] **.**

MOTOROLA Radio Service Software MTSX Model: MAIN:CHANGE/VIEW:CONFIG:PHONE:DTMF	Enter or Scroll to Select Value.

DIALING OPTIONS

Phone Dialing ....Delayed Buffered   DTMF Pause Time (ms) 1000
DTMF Digit Hangtime (ms) 1000

Num	Initial Delay (ms)	Digit Duration (ms)	Interdigit Delay (ms)
1	250	150	100
2	250	150	100
3	250	150	100
4	250	150	100

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen allows you to modify the DTMF phone wide parameters such as timing and phone dial operation.

NOTE
For non-keypad models-This option can ONLY be used with
the One Touch Button Feature **(Main Menu F4/F4/F3/F9/F5).**

Each trunking and conventional system uses one of these parameter sets which are selected in the DTMF Access Timing table field on the CONVENTIONAL PERSONALITY PHONE OPTIONS screen (**F4/F6/F3/F8**), and in the Phone DTMF Timing field on the TRUNKING SYSTEM OPTIONS screen (**F4/F4/F3/F9)**.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F4**. The PHONE CONFIGURATION screen appears.

4. Press **F9**. The DIALING OPTIONS screen appears

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Phone Dialing
This field sets the dial operation of the phone option.

The dialing options are:

          Immediate Live - Connects when entering phone mode, live dial.
          Immediate Buffered - Connects when entering phone mode, buffered dial.
          Delayed Buffered - Connects when PTT is pressed, buffered dial.

Immediate access and delayed access both automatically connect the radio to the system. Immediate access connects when entering phone mode while delayed access connects when the PTT is pressed.

Buffered dialing lets the user put the phone number in the radio then push PTT to send the phone number. Live dialing lets the user enter the numbers while transmitting.

Digit Hangtime (ms)
This field specifies the amount of time the radio continues transmitting after completion of a DTMF digit transmission. Range is 25 to 6375 ms. in 25 ms. increments. Factory default is 1 second (1000 ms).

Initial Delay (ms)
This field allows you to select the length of time the carrier is transmitted before starting to transmit DTMF digits. Valid selections are 0 to 6375 ms. in 25 ms. increments. Factory default is 250 ms.

Digit Duration (ms)
This field allows you to select the length of time that the DTMF digit will be transmitted. Valid selections are 25 to 6375 ms by 25 ms increments. Factory default is 150 ms.

Interdigit Delay (ms)
This field allows you to select the delay time between DTMF digits in a DTMF digit transmission sequence. Valid selections are 0 to 6375 ms and may be selected by 25 ms increments. Factory default is 100 ms.

DTMF Pause Time (ms)
Valid selections are 500 to 4000 ms and may be selected in 500 ms increments. Factory default is 1000 ms. This is the length of the DTMF Pause Timer.

6.2.1.4 RADIO WIDE SCAN LISTS AND OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F5] .

MOTOROLA Radio Service Software
MTSX   Model:
Page 1 of 2
MAIN:CHANGE/VIEW:CONFIG:SCAN

Use UP/DOWN Arrows to Select Type.

Scan List.....................................1

<u>SCAN LIST</u>

Scan Type ....Conventional	Mem	Zn	Chn	Zone	Channel
	1				
	2				
Dynamic Priority..................................Enabled	3				
Priority 1 Type ....Fixed	4				
Priority 1 Member ....None	5				
	6				
	7				
Non-Priority Members ....Fixed	8				
Designated Tx Mem ....Talkback					

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD LIST	PREV LIST	NEXT LIST	DELETE LIST	DELETE MEMBER		SCAN OPTIONS		EXIT

This screen holds the fields for the scan lists. Each personality selects a scan list by choosing the scan list number. Only certain types of lists are allowed for a personality, for example a conventional personality cannot choose a trunking II list.

NOTE

Make sure the zone summary is complete and the personalities are created before attempting to create a scan list.

MOTOROLA Radio Service Software
MTSX   Model:

MAIN:CHANGE/VIEW:CONFIG:SCAN

Use UP/DOWN Arrows to Select Type.

Scan List.....................................1

<u>SCAN LIST</u>

Scan Type ....Priority Mon	Mem	Zn	Chn	Zone	Channel	
Trunking System ID...................................1-0001	1	1	Z1	P1	400	A
Trunking System Type.....................................II/IIi	1	2	Z1	P1	400	B
	3	1	3	Z1	P1	400 C
Priority 1 Type ....Fixed	4	1	6	Z1	P1	400 A
Priority 1 Member ....None	5	1	7	Z1	P1	400 B
Priority 2 Type ....Fixed	6	1	1	Z1	P1	400 C
Priority 2 Member ....None	7					
Non-Priority Members ....Fixed	8					
Designated Tx Mem ....Talkback						

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD LIST	PREV LIST	NEXT LIST	DELETE LIST	DELETE MEMBER		SCAN OPTIONS		EXIT

Scan List Screen with SMARTNET features

If the SMARTNET Type I feature has been purchased, then this type may contain trunking personalities from the same Type I system. (Up to 10 members).

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F5**. The SCAN LIST screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD LIST allows you to add a scan list.

F3 - PREV LIST (Previous List) allows you to return to the previous scan list.

F4 - NEXT LIST allows you to go to the next scan list.

F5 - DELETE LIST allows you to delete a scan list.

F6 - DELETE MEMBER allows you to delete a member from the list.

F8 - SCAN OPTIONS allows you to edit scan options and features.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Scan List Number
Each conventional and trunking personality may have a unique scan list. The scan lists defined on this section are assigned on the personality screens. Additional lists may be added with the **F2** key, and deleted with the **F5** key.

Scan Type
This field indicates the type of scan list. The choices are:

Conventional	May only contain conventional personalities. (Up to 15 members).
Subfleet	May only contain trunking personalities from the same Type I system. (Up to 10 members).
Priority Mon	May only contain trunking personalities, and may contain personalities from different systems. Use this for Type II systems only. (Up to 10 members).
	If the SMARTNET Type I feature has been purchased, then this type may contain trunking personalities from the same Type I system. (Up to 10 members)
Talk Group	May contain both conventional and trunked personalities from different systems. May be used for Type I or Type II operation. (Up to 10 members).

Dynamic Priority
The last channel transmitted on will always be the Second Priority Channel. The priority of the First Priority channel is not affected. When this feature is enabled, the Second Priority field is hidden. The factory default is Enabled.

Priority 1 Type
This field selects the type of priority scan the radio will use.

>Selected Chan - The radio will use the last selected channel as the priority channel. First priority and second priority may not both be the selected channel.

>Fixed - The radio uses a selected member of the scan list, as the priority channel. This member is not programmable from the radio.

>OP/SEL - The radio uses a selected member of the scan list as the priority channel. The user must select the member of the scan list to be used as the priority member.
>Disabled - No priority channel will be allowed.

Priority 2 Type
This field selects the type of priority scan the radio will use.

>Selected Chan - The radio will use the last selected channel as the Priority Member. First priority and second priority may not both be the selected channel.

>Fixed - The radio uses a selected member of the scan list, as the priority channel. This member is not programmable from the RSS, and may not be modified from the radio (i.e. Fixed).

>OP/SEL - The radio uses a selected member of the scan list as the priority channel. This member can be programmed by the RSS, and may also be modified from the radio controls (i.e. OPerator SELectable)

>Disabled - No priority channel will be allowed.

Priority 2 Member
Use the UP/DOWN arrow keys to select the Second Priority channel from this scan list. Optionally the channel number may be entered directly.

Non-Priority Members
When enabled, the user may modify the non-priority channel members.

Designated Tx Mem
This is the number of the scan member to be designated transmit channel during scan operation. Enter the number of the scan member to have a fixed channel. This may not be a receive-only channel. Select "Selected Chan" to transmit on the last user-selected channel. Select "Talkback" to transmit on the same channel that the radio stopped scanning on. If the channel is a receive-only channel, the radio will give a warning that transmission is not possible.

Zn
This is the number of the zone of the scan member. Check the zone summary form for the zone/channel information.

Chn
This is the number of the channel of the scan member. Check the zone summary form for the zone/channel information. If the field displays ???, then an invalid channel condition exists.

6.2.1.4.1. RADIO WIDE SCAN OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F3] [F5] [F8] **.**

MOTOROLA Radio Service Software MTSX Model: MAIN:CHANGE/VIEW:CONFIG:SCAN:OPTIONS	Use UP/DOWN Arrows to Select Choice.

SCAN OPTIONS

RADIO WIDE
Nuisance Mode Delete ....Disabled
Priority Scan Alert ....Disabled
Rx Hold Time (sec) 3
HUB Suspends Scan ....Disabled

CONVENTIONAL
Carrier Detect Required ....Disabled
Priority Chan Marking....................Disabled
Monitor Hold Time (sec) 6
Voting Scan...................................Disabled

TRUNKING

Failsoft Hold Time (sec) 6
System Search Time (sec).......................1

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen is used to customize the Channel Scan feature for a specific application. Options and parameters that affect radio-wide operation, conventional operation, and trunking operation are available.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3.   Press **F5**. The SCAN LIST screen appears.

4.   Press **F8**. The SCAN OPTIONS screen appears.

5.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Nuisance Mode Delete

This option allows you to temporarily delete non-priority channels from the scan list that are constantly busy which may cause the radio to be constantly locked onto a channel. A channel deleted using this option will remain deleted until scan is stopped. When scan is started again, all channels which were previously deleted will be replaced. Factory default is Enabled.

Priority Scan Alert

If this option is enabled, the radio will audibly alert the user when it unmutes on a priority channel while scanning. One beep is generated for the priority talkgroup in a trunked scan list, or for the first priority channel in a conventional scan list. Two beeps are generated for the second priority channel in a conventional scan list. Factory default is Disabled.

Rx Hold Time (sec)

This is the amount of time the radio remains on a channel after a message has been received before scanning resumes. Valid entries are 0 to 255 seconds in 1 second increments. Factory default is 3 seconds.

HUB Suspends Scan

Use the UP/DOWN arrow keys to Enable/Disable the HUB Suspends Scan feature. HUB Suspends Scan will determine if the scan operation will be suspended while the microphone is removed from the hang up box. If HUB Suspends Scan is enabled, scan operation will be suspended while the microphone is removed from the hang up box. This will allow the user to complete a conversation while scan is suspended. For portables this option is applicable when a Vehicular Adapter is used.
The factory default is Disabled.

Carrier Detect Required

When this option is enabled, the priority channels will stop on carrier squelch detect but only unmute on the standard signaling conditions programmed for that channel. Factory default is Disabled.

Priority Chan Marking

When this option is enabled and the radio is in Priority Scan Mode, the radio checks the channel for activity and proper PL. If the channel has carrier but the wrong PL or no PL, the channel is marked so the radio will not recheck for the proper PL. The radio will not unmute on this channel until the carrier is dropped.

This is done to prevent the PL decode time from being added to the audio hole time when the radio is unmuted on a non-priority channel and is sampling the priority channel. Care should be exercised in using this feature - it is possible for messages to be missed, especially if long repeater hangtimes are used. Factory default is Disabled.

Monitor Hold Time (sec)

Scan monitor hold time is the time the radio remains on a conventional channel during scan after the monitor button has been released. Valid entries are 0 to 255 seconds in 1 second increments. Factory default is 6 seconds.

Voting Scan

Conventional Voting Scan is used to select the best repeater to use in a multi-frequency simulcast conventional system. Enabling this field will cause all conventional personalities using a conventional scan list with
Auto Scan enabled (Main->F4->F6->F3->F9) to perform conventional voting scan. Before using Conventional Voting Scan, you must first create a conventional scan list which contains all repeaters in the Conventional
Voting Scan wide area network. Each conventional personality in this list must have Auto Scan enabled. The factory default is Disabled

Warning
Having more than 7 list members in a conventional scan list used for Conventional Voting Scan may degrade performance, resulting in missed transmissions.

Failsoft Hold Time (sec)
This timer value determines how long the radio will stay unmuted on a failsoft channel (1 to 255 with 1 second increments or Disabled) if failsoft is found while in talkgroup scan. Factory default is 6 seconds.

System Search Time (sec)
This timer value determines how long the radio will stay on a control channel (0 to 255 seconds with 1 second increments) searching for talkgroups which are in the scan list before scanning the next system. The system search timer will only apply in systems which do not employ the scan marker feature. Factory default is 10 seconds for Smartnet models and 1 second for Privacy Plus models.

6.2.1.5   RADIO WIDE DISPLAY OPTIONS

RSS LOCATION: At the CHANGE/VIEW MENU, press F3 F6 .

MOTOROLA Radio Service Software MTSX Model: MAIN:CHANGE/VIEW:CONFIG:DISP DATA	Use UP/DOWN Arrows to Select Choice.

RADIO WIDE DISPLAY OPTIONS

Text Justification.......................................Left	Alt Display Time (ms) 100
	Temp Msg Display Time (ms) 1000
Channel Text Size 2	Display Light Time (ms) 15
Zone Text Size 12	Auto Light.....................................Enabled
	Emergency Receive ....Disabled
Slow Scroll Rate (ms)...............................500	Display Sys/Sub............................Enabled
Fast Scroll Rate (ms)................................250	Backlight While in MTVA...............Disabled
Slow Scroll Count 3	Radio Lock ....Enabled
	Mandatory Password ....Disabled
	Max Password Length............................8
Native Language ....English	Password ....

F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9 MORE OPTIONS	F10 EXIT

This screen permits modifications of display options to customize the radio to specific user applications. The features and options shown here apply to all systems and personalities.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3.   Press **F6**. The RADIO WIDE DISPLAY OPTIONS screen appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1-F10**).

5.   Press UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F9 - MORE OPTIONS allows access to additional parameters that can be used to customize the radio to the appropriate system requirements.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Text Justification
This option applies to Channel names, Zone names, Phone aliases, Private Call List aliases, Call Alert aliases, Status aliases, and Message aliases. Factory default is Left.

Channel Text Size
The Channel Text size will vary inversely to the Zone (System) Text size since both must be displayed at the same time. Factory default for Zone (system) text size is 11 for front-mounted display radios. Valid entries are 1 to 14 characters, depending on the radio model.

Zone Text Size
The Zone Text size will vary inversely to the Channel Text size since both must be displayed at the same time. Valid entries are 0 to 13 characters, depending on the radio model. Factory default is 3 for front-mounted display radios.

Slow Scroll Rate (ms)
This is the rate at which the display will Slow Scroll through a list. The radio will first Slow Scroll, then it will Fast Scroll after the Slow Scroll Count expires. Valid entries are 250 to 6250 ms in 250 ms increments. Factory default is 500 ms.

Fast Scroll Rate (ms)
This is the rate at which the display will Fast Scroll through a list. The radio will first Slow Scroll, then it will Fast Scroll after the Slow Scroll Count expires. Valid entries are 250 to 6250 ms in 250 ms increments. Factory default is 250 ms.

Slow Scroll Count
This is the number of menus to be scrolled before the radio switches to the Fast Scroll Rate. Valid entries are 0 to 255. Factory default is 3 menus.

Native Language
Use the UP/DOWN arrow keys to select the value for this field. This field allows the radio to produce displays in several different languages. Valid entries are English, Spanish, French, German, Italian, and Portuguese. This field can be used only by MTS models.

The default value is 'English'.

Alt Display Time (ms)
This is the time an Alternate message will be displayed. Valid entries are 250 to 6250 ms in 250 ms increments. Factory default is 1 second (1000 ms).

Temp Msg Display Time (ms)
This is the time a Temporary message will be displayed. Valid entries are 250 to 6250 ms in 250 ms increments. Factory default is 1 second (1000 ms).

Display Light Time (sec)
This is the time the Display light will illuminate the display. This time is given in seconds. Valid entries are 1 to 255 in 1 second increments. Factory default is 15 seconds.

Auto Light
When enabled, this option causes the display to light each time a button or key is pressed (except for PTT). The light will time out per the Display Light Time just as if the light button had been pressed. Factory default is Disabled.

Emergency Receive
If Enabled, the radio display will alternate between 'EMER RECEIVED' and the current channel when it unmutes on an emergency call. For 6 character display models, 'EMGRCV' will be displayed. This feature is not compatible with Silent Emergency. Emergency must be enabled on each Trunking personality **(F4/F4/F4/F8)** if your radio supports the emergency feature. Factory default is Disabled.

Display Sys/Sub
Use the UP/DOWN arrow keys to Enable SYS/SUB mnemonics to be displayed on the radio menu instead of ZONE/CHAN.

This feature permits customization of trunking applications to minimize user training. The factory default depends on the model.

Backlight While in MTVA
Use the UP/DOWN arrow keys to select Enabled or Disabled.

When this feature is Enabled, the backlight on the radio will be continuously on while it is in the MTVA. Any key press that would normally affect the status of the backlight will be ignored. When the radio is removed from the MTVA, the backlight will turn off, and button presses affecting it will resume normal operation. When this feature is Disabled, the MTVA will not affect backlight operation. The factory default is Disabled.

Radio Lock
When this field is enabled, the user will be required to enter the Radio Lock Password on power-up before using the radio. In order to use this feature, a PSWD function must also be enabled on the Radio Wide Menu screen (**F4/F3/F3/F4**). Factory default is Disabled.

Mandatory Password
When this field is enabled, the user must enter a password each time the radio is turned on. If this option is disabled, the user may avoid entering a password by changing it to NULL. (See Radio Operator's Manual). Factory default is Disabled.

Max Password Length
This is the maximum length a password is allowed to have. The radio uses this value only when the password function is enabled on a button. This field is only applicable when the Radio Lock feature is enabled. Valid entries are 1 to 8 characters. Factory default is 8.

Password
When this field is selected you would enter your password, up to 8 characters. Enter the numeric Password directly from the keyboard. The password is the numeric value which must be entered when the radio is turned on (when the radio lock feature is Enabled). The factory Default is NULL.

6.2.1.5 1 RADIO WIDE DISPLAY MORE OPTIONS

RSS LOCATION: At the CHANGE/VIEW MENU, press [F3] [F6] [F9] .

MOTOROLA Radio Service Software MTSX Model: ...CONFIG:DISP DATA:MORE OPTIONS	Use UP/DOWN Arrows to Select Choice.

RADIO WIDE DISPLAY MORE OPTIONS

Caller ID.. ....ID Only

F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen permits modification of display options to customize the radio to specific user applications. The features and options shown here apply to all systems and personalities.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F3**. The RADIO WIDE CONFIGURATION MENU appears.

3. Press **F6**. The RADIO WIDE DISPLAY OPTIONS screen appears.

4. Press **F9**. The RADIO WIDE DISPLAY MORE OPTIONS screen appears.

5. Press UP/DOWN arrow keys to select choice or value.

FIELD DEFINITIONS:

Caller ID
The Caller ID feature displays ID information of the last radio to initiate a call that the radio unmuted upon. This information is automatically displayed.
'Id Only': The radio will display the ID of the radio which initiated the current call.

'Alias Text': The radio will attempt to match the Caller ID with a member of the current Call List and display a name instead of a number.

The factory default is Disabled.

6.2.2 TRUNKING MENU

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.    │
│ MTSX          Model:                     │                              │
│                                          │                              │
│ MENU:CHANGE/VIEW:TRUNKING                │                              │
├──────────────────────────────────────────┴─────────────────────────────┤
│                                                                         │
│                           TRUNKING MENU                                 │
│                                                                         │
│           F1 -    HELP                                                   │
│           F2 -    Trunking Radio Wide Options                           │
│           F3 -    Trunking Systems: System ID, Control Channels, etc.   │
│           F4 -    Trunking Personality: Talk Groups, Emergency options, etc. │
│           F5 -    Trunking Call List Data                               │
│           F6 -                                                          │
│           F7 -                                                          │
│           F8 -                                                          │
│           F9 -                                                          │
│           F10 -   EXIT, Return to Change/View Menu                      │
│                                                                         │
└─────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	TRUNK WIDE OPT	TRUNK SYS	TRUNK PERS	TRUNK ID LIST					EXIT

This menu allows you to navigate to the trunking edit screens. The options in these screens pertain only to trunking radio features.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - TRUNK WIDE OPT (Trunking Radio Wide Options) screens are applicable to all trunking operation, regardless of system type or signalling type.

F3 - TRUNK SYS (Trunking Systems) is used to change and view trunked system parameters. A trunking system refers to a specific repeater site, system ID, control channel frequencies, and the connect tone required to operate on that system.

F4 - TRUNK PERS (Trunking Personality) allows you to change and view the parameters for a trunking personality. A trunking personality refers to the type of features and options that are used on a trunking channel or talkgroup. Multiple personalities may use the same system, and multiple talkgroups may also use the same personality.

F5 - TRUNK ID LIST (Trunking Call List) allows you to edit the list of Trunking Call IDs and the corresponding names (or alias). This screen is visible only if the radio supports this option.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.2.1 TRUNKING RADIO WIDE OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F2] **.**

```
┌───────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software        │ Use UP/DOWN Arrows to Select      │
│ MTSX           Model:                  │ Choice.                          │
│                                        │                                  │
│ MENU:CHANGE/VIEW:TRUNKING:WIDE OPTIONS │                                  │
├────────────────────────────────────────┴─────────────────────────────────┤
│                                                                           │
│                     TRUNKING RADIO WIDE OPTIONS                           │
│                                                                           │
│         Telephone Interconnect ....................Half Duplex            │
│         ISW Window Adjust .........................................41      │
│         Auto Dial Holdoff (ms).................................2525        │
│         RF Modem ............................................Disabled      │
│                                                                           │
└───────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	SMRTZN ENV	VOC OPT							EXIT

The options and parameters on this menu apply to all trunking operation, independent of system, personality, or talkgroup. Other radio wide options that apply to both conventional and trunking operation are located on the Radio Wide Options screen **(F4/F3/F2)**. Conventional options are located on the Conventional Radio Wide Options screen.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F2**. The TRUNKING RADIO WIDE OPTIONS screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - SMRTZN ENV calls up the screen which allows setting of parameters which are related to the SmartZone operating environment. This function will only be visible when a radio with the SmartZone software option has been read.

F3 - VOC OPT calls up the screen which allows setting of parameters which are related to the Voice On the control option. This function will only be visible when a codeplug wIth the Voice On Control option has been read.

F10 -HELP moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Telephone Interconnect This option allows the radio to initiate and receive land-to-portable telephone calls and specifies the type of interconnect.

Half duplex means that communication can take place in one direction at a time only. Full duplex allows communication in both directions at the same time. Portable products supported by this RSS support half-duplex phone communication **ONLY.**

ISW Window Adjust
The ISW Window Adjust value is a timing parameter and is used to fine-tune trunking system performance.

Important Note
Do not modify this field unless you are a FTR. Changing the ISW Window Adjust field may degrade the trunking systems performance.

Auto Dial Holdoff (ms)
This field defines the amount of time the radio will wait after gaining access to phone channel before a pre-queued phone number will be dialed. It ensures that the fixed end is ready for dialing to commence. Normally the user waits for a dial tone, but in this case, the radio is dialing and cannot detect a dial tone.

RF Modem
If RF Modem is Enabled, the radio will only be able to function as an RF Modem (i.e, to be used with system watch). When RF Modem is Disabled, the radio operates normally.

6.2.2.1.1 SMARTZONE ENVIRONMENT

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F2] [F2] **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Enter or Scroll to Select Value. │
│ MTSX          Model:                         │                                  │
│                                              │                                  │
│ . . . . WIDE OPTIONS: SMART ZONE ENVIRONMENT │                                  │
├──────────────────────────────────────────────────────────────────────────────── │
│                       SMARTZONE ENVIRONMENT                                       │
│                                                                                   │
│  Failsoft Inactivity (sec)..............120    Filter Constant K1 ...........8    │
│  Busy Override Delay (sec) ...........6        Filter Constant K2 ...........7    │
│  Aff. Hold Off (sec).....................63    Filter Constant K3 ...........6    │
│  Busy Override Chirp Ack ..........ON          Filter Threshold Constant T1 ....1E│
│  Display Site Trunking................ON       Filter Threshold Constant T2 ....23│
│  Full Spectrum CC Scan ...........ON           Filter Threshold Constant T3 ....28│
│  Full Spectrum CC Scan Timer ...10                                                │
│  RSSI OSW Counter ..................80                                            │
│  RSSI Acceptable Threshold.......4A                                               │
│  RSSI Good Threshold ..............50                                             │
│  RSSI Excellent Threshold. ........57                                            │
│  VC RSSI Accpt Threshold...............Disabled                                   │
└───────────────────────────────────────────────────────────────────────────────── │
  F1        F2      F3      F4      F5      F6      F7      F8      F9      F10
  HELP                                                                      EXIT
```

This screen allows you to change or view the SmartZone Envirnment configuration.

> **PROGRAMMING PROCEDURE:**
>
> 1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.
>
> 2. Press **F4**. The TRUNKING MENU appears.
>
> 3. Press **F2**. The TRUNKING RADIO WIDE OPTIONS screen appears.
>
> 4. Press **F2**. The SMARTZONE ENVIRONMENT screen appears.
>
> 5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).
>
> 6. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Failsoft Inactivity (sec)
This field pertains to failsoft operation. If a radio remains inactive while operating in failsoft for this specified time (in seconds), the radio will momentarily leave failsoft and attempt to find a control channel. A value of zero here indicates that the radio will not leave failsoft. The valid range is 0 to 255 in 1 second increments.

Factory default is 120.

Busy Override Delay (sec)
This field specifies the time interval (in seconds) during which the user must depress the PTT button in order for the radio to issue a busy override signal. The valid range is 2 to 6 in 1 second increments.

Factory default is 4.

Aff. (affiliating) Hold Off (sec)
This field is the time (in seconds) that the radio should delay before affiliating at a new site when leaving a site which just incurred a failure. The valid values are 1, 3, 7, 15, 31, 63, 127, and   255 in 1 seconds.

Factory default is 63.

Busy Override Chirp Ack
Setting this bit causes the radio to produce a chirping sound after a busy override has been issued.

Factory default is On.

Display Site Trunking
Setting this bit causes the radio to display the "Site Trunking" message when the user is locked onto a site that is in site-trunking mode.

Factory default is On.

Full Spectrum CC Scan
Setting this bit causes the radio to perform a full spectrum Control Channel scan when the radio goes out of range of all its programmed Control Channel information. Full spectrum scan searches the entire frequency band (800 MHz, 900 MHz, band 1 UHF band, or VHF) for a control channel for the radio to lock onto. This is used when the radio cannot find a control channel on any of the frequencies programmed on the RSS.

Factory default is OFF.

Full Spectrum CC Scan Timer (sec)
This is the amount of time (in seconds) the radio has to perform full spectrum CC scan before returning to the normal CC scan. The valid range is 5 to 31 seconds.

Factory default is 10.

RSSI Acceptable Threshold
Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels -- poor, acceptable, good and excellent – as shown (i.e.: all values below the acceptable constant fall into the POOR level, values between the acceptable and good constants fall into the ACCEPTABLE level, etc.). The value in this field specifies the POOR/ACCEPTABLE boundary. Domain {L: 00 <= L <= FF}.
The default is 61

RSSI Good Threshold
Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels: poor, acceptable, good and excellent. This value specifies the acceptable/good boundary. Domain {L: 00 <= L <= FF}. The default is 66.

RSSI Excellent Threshold
Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels: poor, acceptable, good and excellent. This value specifies the good/excellent boundary. Domain {L: 00 <= L <= FF}. The default is 69.

VC RSSI Accpt Threshold (Voice Channel RSSI Acceptable Threshold)
While in a voice call, RSSI samples will be compared against the Voice Channel RSSI Acceptable Threshold. If samples fall below this threshold, the radio will initiate an attempt at site switching, causing an interruption in the voice call. Valid RSSI values range from 1 to FF. Selecting Disabled will set the threshold to 0, disabling voice channel RSSI site switching. The factory default is Disabled.

Special Note On RSSI Threshold Constant Settings
The default values for the RSSI (received signal strength indication) threshold constants programmed in your radio may not be optimal for your system. These values are critical for proper site switching. Please review the following information to set the RSSI threshold constants for your SmartZone system configuration and desired site switching performance.

6.2.2.1.2   VOICE ON CONTROL OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F2] [F3] **.**

```
┌──────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Choice. │
│ MTSX          Model:                     │                                      │
│                                          │                                      │
│ . . . . TRUNKING:WIDE OPTIONS: VOC Options│                                      │
├──────────────────────────────────────────┴──────────────────────────────────────┤
│                                                                                  │
│                              VOC Options                                         │
│                                                                                  │
│           VOC Capable.......................................Disabled             │
│           RSSI Acceptable Threshold.............................74               │
│           VOC Site Lock Time .....................................60             │
│           VOC Pended Emer Time ................................20                │
│           VOC Activation Time ......................................20           │
│                                                                                  │
│                                                                                  │
│                                                                                  │
├──────────────────────────────────────────────────────────────────────────────────┤
│  F1      F2      F3      F4      F5      F6      F7      F8      F9      F10        │
│  HELP                                                                    EXIT      │
└──────────────────────────────────────────────────────────────────────────────────┘
```
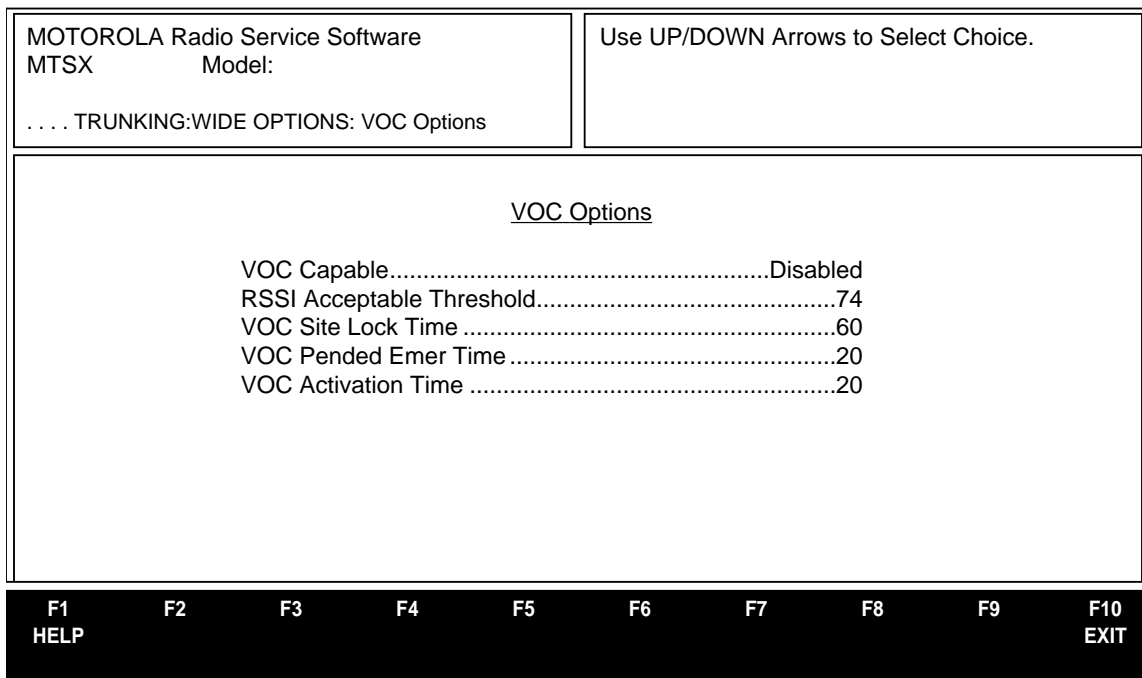
This screen allows you to change or view the Voice on Control options.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F4**. The TRUNKING MENU appears.

3.   Press **F2**. The TRUNKING RADIO WIDE OPTIONS screen appears.

4.   Press **F3**. The Voice On Control Options screen appears.

5.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Voice On Control Capable
When a radio is VOC Capable, it is able to handle the transition of a site going into and out of Voice On Control Mode without entering the Out-of-Range state.

Factory default is Disabled.

RSSI Acceptable Threshold
This field defines the minimum signal strength (RSSI value) for a radio to determine that it is in range of a valid voice or control channel. If a site enters Voice on Control, the radio will remain locked onto that site. One of the possible conditions that would cause the radio to roam to another site (or possibly enter the Out-of-Range state) is when the radio determines there is about 5 seconds of low signal strength (RSSI below this threshold) on the last active CC. The range of values for this field is 0 to 255.

Factory default is 74.

Voice On Control Site Lock Time
This field defines the maximum time (in seconds) a radio will remain locked onto a Voice on Control or Control Site before it will attempt to lock onto another site (and possibly enter the Out-of-Range state). The range of values for this field is 15 to 255 in 1 sec. intervals.

Factory default is 60.

Voice On Control Pended Emer Time
This field defines the necessary data fields for operation on a Voice on Control capable site. When a site enters VOC Mode, its Control Channel is surrendered for a Voice Call. All radios that are not Voice On Control Capable will go out of range at that time. The range of values for this field is 500 to 6000 msec in 25 msec intervals..

Factory default is 500.

Voice On Control Activation Time
This field determines the maximum time (in 25 mS increments) that the radio will delay before sending in ISW requests upon receiving a system Status OSW indicating the site is exiting Voice On Control Mode.
he range of values for this field is 500 to 6000 ms in 25 msec intervals.

Factory default is 500.

6.2.2.2 TRUNKING SYSTEMS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F3] **.**

```
┌─────────────────────────────────────────┬───────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter or Scroll to Select System. │
│ MTSX          Model:                     │                                   │
│                                          │                                   │
│ MAIN:CHANGE/VIEW:TRUNKING:SYSTEM         │                                   │
└─────────────────────────────────────────┴───────────────────────────────────┘
```

System 2   TRUNKING SYSTEM

    System Key. ....Disabled   UNIVERSAL ID.............................1
    System Type I
    System ID...0001
                                                                Size Code ....A
                                                                Fleet ID 0001
                                                                Individual ID..................................000
    Connect Tone (Hz).....................#0-105.88   Access Type ....Slow
    Coverage Type.............................Disabled   Conversation Type ....Message
                                                                Tx Defeat.......................................Disabled

                                                                This Call ID 16

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYSTEM	PREV SYSTEM	NEXT SYSTEM	DELETE SYSTEM	CHAN ASSIGN			MORE OPTIONS	EXIT

TRUNKING SYSTEM Screen for System 2, Type I

```
┌─────────────────────────────────────────┬───────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter or Scroll to Select System. │
│ MTSX          Model:                     │                                   │
│                                          │                                   │
│ MAIN:CHANGE/VIEW:TRUNKING:SYSTEM         │                                   │
└─────────────────────────────────────────┴───────────────────────────────────┘
```

System 2   TRUNKING SYSTEM

    System Key. ....Disabled
    System Type I   UNIVERSAL ID.............................1
    System ID...0001
                                                                Size Code C
                                                                Fleet ID 400
                                                                Individual ID..................................033
    Connect Tone (Hz).....................#0-105.88   Access Type ....Slow
    Coverage Type.............................Disabled   Conversation Type ....Message
                                                                Tx Defeat.......................................Disabled
    Dynamic Regrouping.....................Enabled
    Zone 2   Chan 10

                                                                This Call ID 16

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYSTEM	PREV SYSTEM	NEXT SYSTEM	DELETE SYSTEM	CONTROL CHANNEL			MORE OPTIONS	EXIT

TRUNKING SYSTEM Screen for System 2, Type I With Smartnet Features

RSS LOCATION: **At the CHANGE/VIEW MENU, press**   [F4] [F3]   **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Type.   │
│ MTSX          Model:                     │                                      │
│                                          │                                      │
│ MAIN:CHANGE/VIEW:TRUNKING:SYSTEM         │                                      │
├──────────────────────────────────────────┴──────────────────────────────────────┤
│   System ........................2               TRUNKING SYSTEM                  │
│                                                                                   │
│      System Key. .................................Disabled                        │
│      System Type.............................................II/IIi               │
│      System ID...........................................0001                      │
│        Alias...........................................Disabled                    │
│      Individual ID ....................................1-0001                      │
│      Connect Tone (Hz)......................#0-105.88                              │
│      Coverage Type.............................Disabled                           │
│                                                                                   │
│      Affiliation Type ................................On PTT                       │
│      Dynamic Regrouping.......................Enabled                             │
│        Zone................0        Chan................0                          │
│      Remote Monitor...............................Enabled                          │
│        RM Base Time.......................................15                       │
└───────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYSTEM	PREV SYSTEM	NEXT SYSTEM	DELETE SYSTEM	CONTROL CHANNEL			MORE OPTIONS	EXIT

TRUNKING SYSTEM Screen for System 2, Type II/IIi

A Trunking System refers to a specific repeater site, the system ID, the individual radio ID for that System, the control channel frequencies, and the connect tone required to operate on that System.

Each system that the radio is programmed to operate on is 'linked' to one or more trunking personalities. The personality defines the features available for the radio while operating on that system. Each radio is uniquely identified on each system by its individual ID.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTION:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SYSTEM allows you to add a system.

F3 - PREV SYSTEM allows you to go to the system before the current one.

F4 - NEXT SYSTEM allows you to go to the system after the current one.

F5 - DELETE SYSTEM allows you to delete a system.

F6 - CHAN ASSIGN or CONTROL CHANNEL MENU allows you to enter the control channels for the system.

F9 - MORE OPTIONS makes available other options for the trunking system.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

System
Use the up/down arrow keys to scroll from system #1 to the number of systems in the radio.

System Key
A system key or FTR key is required to access this field. Otherwise, the TCMS download procedure must be used (F3/F4)

System Type
If the Trunking System is Type I, the range of the ID changes for different size codes. The ID is a three digit hexadecimal number. If you have more than one fleet on a system, you may want to use a Universal ID, so people calling you can use one ID.

If the Trunking System is type II or IIi, the individual ID is a four digit hexadecimal number. For Type II trunking, your radio will have a single Individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system.

TYPE I or TYPE II/IIi indicates the trunked signalling protocol used on this system.

Type I is the original MOTOROLA trunked signaling protocol.

Type II/IIi is an enhanced version of the original protocol that provides additional fleet management flexibility for a given system via an expanded signalling format. Each radio has a single individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system. The screen for a II/IIi system contains some information different than that for a Type I.

System ID

This field contains the 4-digit hexadecimal number which identifies the trunked system. A system key or FTR key is required to access this field. Otherwise, the TCMS download procedure must be used. (**F3/F4**). This number must match the ID of the Trunking Repeater System.

Alias

Up/down arrow keys will Enable/Disable the System Alias feature. When enabled, the upper 8 bits of the System ID are ignored. Factory default is Disabled.

Connect Tone

The Connect Tone is a sub-audible tone required on the voice channel to access the trunked repeater. The function is similar to the conventional repeater access tone. This field is not applicable to SmartZone systems.

0 - 105.88 Hz	4 - 97.3 Hz.
1 - 76.60 Hz	5 - 116.13 Hz
2 - 83.72 Hz	6 - 128.57 Hz
3 - 90.00 Hz	7 - 138.46 Hz

Coverage Type

A system key or FTR key is required to access this field. Otherwise, the TCMS download procedure must be used. **(F3/F4).** The choices for this field are:

WAC AMSS - Wide Area Coverage Automatic Multiple Site Select.
Local AMSS - Local Automatic Multiple Site Select.
Smart Zone - New Motorola system for wide area roaming.
Disabled - Disable wide area coverage.

In an AMSS system, multiple sites are linked together to form a larger trunked system. Radios programmed for Wide Area AMSS can use the site that they are within range of, and when they move between sites, the radio can switch sites without interruption of communications that are in progress. Up to eight control channels can be used for Wide Area Systems.

If WAC AMSS is selected and WAC AMSS Failsoft is selected on the Trunking Personality screen **(F4/F4/F4)**, the **F6** function key on the personality screen will be used for entering the failsoft channels. Radios programmed for Local AMSS are only allowed to use one site. This site is entered as the Site ID below the Coverage Type field.

Remote Monitor

Use the up/down arrow keys to enable/disable Radio Trace (remote monitor) for this system.

RM Base Time

Use the up/down arrow keys to select the base time in seconds. The radio will transmit during a Radio Trace for this system (15, 30, 45, or 60 secs).

Affiliation Type (Type II/IIi) Automatic/On PTT

Use the up/down arrow keys to select the Affiliation type:

Automatic - The radio will immediately affiliate with the central controller as soon as it is turned on, and will automatically re-affiliate each time the talkgroup is changed.

On PTT - Affiliates only when the PTT is pressed. Factory default is On PTT.

Dynamic Regrouping

The up/down arrow keys will enable/disable Dynamic Regrouping for this radio. A system key or FTR key is required to access this field. Otherwise, the TCMS download procedure must be used. (F3/F4). A Dynamic Regrouping Talkgroup position (DYN) must be assigned on the zone/summary (F4/F8) screen. Enabling Dynamic Regrouping will automatically add DYN to the list of talkgroups on that screen. Only one DYN position may be assigned per system. Dynamic Regrouping allows the dispatcher to temporarily reassign selected radios operating in separate fleets and/or talkgroups into a single group. Factory default is Disabled.

Zone

This is the zone position used when a radio is dynamically regrouped. This is used in conjunction with the channel position to determine which zone/channel Talkgroup will be used during Dynamic Regrouping.

Chan

This is the channel position used when a radio is dynamically regrouped. This is used in conjunction with the zone position to determine which zone/channel talkgroup will be used during Dynamic Regrouping.

Universal ID (Type I Only)

When trunking type I is selected, a Universal ID is used, all individual calls (Phone, Private Call, and Call Alert) will be received if they are addressed to the Universal ID, even though the operator might have another personality in that system selected. This simplifies individual communications with the radio. Also, the radio will initiate all Private and Phone Calls with the Universal ID. Therefore, only one ID per radio must be enabled at the Central Site Controller. The radio will also respond to Dynamic Regrouping commands to the Universal ID, making it easier for a regrouping console to regroup a radio. Factory default is Disabled.

Individual ID

Enter the three digit ID for this system (Type I Only). Examples are: 001, 02A, 1FF, 200. An actual ID must be entered, not a personality number. Use the up/down arrow keys to override the Universal ID for Individual calls. When this option is enabled, the radio will use the PFI (Personal Fleet ID) to initiate individual calls instead of the Universal ID. Factory default is Disabled.

Size Code

Use the up/down arrow keys to choose the SIZE CODE for this fleet.

Valid SIZE CODES are: A,B,C,D,E,F,G,H,I,J,K,M,O,Q.

The SIZE CODE determines the maximum number of fleets, subfleets, and individual IDs allowed. The SIZE CODE and fleet ID chosen must match the programming of the Central Controller.

Size Code	Prefix	Fleet	Subfleet	Individual ID
A	0 - 7	00 - 7F	A - C	000 - 00F
B	0 - 7	00 - 0F	A - G	000 - 03F
C	0 - 7	00 - 07	A - G	000 - 07F
D	0 - 7	00 - 00	A - O	000 - 1FF
E	0 - 7	00 - 3F	A - C	000 - 01F
F	0 - 7	00 - 1F	A - G	000 - 01F
G	0 - 7	00 - 1F	A - C	000 - 03F
H	0 - 7	00 - 0F	A - C	000 - 07F
I	0 - 7	00 - 07	A - C	000 - 0FF
J	0 - 7	00 - 03	A - G	000 - 0FF
K	0 - 7	00 - 01	A - O	000 - 0FF
M	0 - 3	00 - 00	A - O	000 - 3FF
O	0 - 1	00 - 00	A - O	000 - 7FF
Q	0 - 0	00 - 00	A - O	000 - FFF

Fleet ID
The Fleet ID is a three digit hexadecimal number where the first digit is the prefix and the second two digits are the Fleet. For any size code the subfleets for Fleetwide and Dynamic Regrouping are always available.

The valid range for the Fleet I depends on the size code chosen. Examples of Fleet IDs are 300, 402, 001, and 703.

Individual ID
Enter the Trunking Individual ID in hex. The Individual ID is a number that uniquely identifies your radio on a particular system (or Personality for Type I). A system key or FTR key is required to access this field. Otherwise, the TCMS download procedure must be used (**F3/F4**).

Type II/IIi Only
Valid IDs will be between 1 and FFFF. The decimal equivalent of the Individual ID is used for your radio's Private Conversation Call ID (7+ID#), interconnect land-to-portable unit calls (7+ID#), and interconnect land-to-portable talkgroup calls (7+ID#).

Type II systems have a single Individual ID per radio, independent of the number of talkgroups, user groups, or personalities that radio has on that system.

Type I systems have a unique ID for each personality.

Access Type
Use the up/down arrow keys to select the Trunking Access type:
    Slow - The original trunking signaling protocol with acknowledgments (high speed) for all channel grants.
        (Rx = Slow, Tx = Slow).
    Fast - An enhancement to the original protocol that eliminated the channel grant acknowledgments, thus
        improving the channel access time. (Rx = Fast, Tx = Fast).

This information must be coordinated with your system manager to insure proper operation of the system.

Conversation Type
Use the up/down arrow keys to select the Trunking Conversation type, either Message or Transmission.

Message Trunked Systems:
After the initiator dekeys the radio, the voice channel stays active (hangtime) so other members of the talkgroup can respond on the same channel. If a radio in the talkgroup transmits during another user's transmission, they will talk over the other transmission.

Transmission Trunked Systems:
No hang time and no talk over. When a radio is dekeyed, the channel is immediately de-allocated and reassigned. If the user tries to talk over an active channel, the radio will not respond until the channel is clear.

Tx Defeat
When this option is enabled, the radio will use the PFI to initiate individual calls instead of the Universal ID.
Factory default is Disabled.

This Call ID
This is the Type I call ID, which is calculated from the Size Code, Fleet ID, and Individual ID.

6.2.2.2.1 CHANNEL ASSIGNMENT DATA

RSS LOCATION: **At the CHANGE/VIEW MENU, press** `F4` `F3` `F6` **.**

| MOTOROLA Radio Service Software | Enter or Scroll to Select System. |
| MTSX   Model: | |

...TRUNKING:SYSTEM:CHAN ASSIGN

System.....................................1

CHANNEL ASSIGNMENT DATA

<u>Rx Channel Ranges - MHz</u>   <u>Tx Channel Ranges - MHz</u>

#	Status	Spacing (kHz)	Start	End	Status	Spacing (kHz)	Start	End
1	Enable	6.25	136.00000	136.00000	Enable	6.25	136.00000	136.00000
2	Blank				Blank			
3	Blank				Blank			

F1 HELP	F2	F3 PREV SYS	F4 NEXT SYS	F5	F6 CONTROL CHANNEL	7	F8	F9	F10 EXIT

This screen is used to enter the Channel Assignment data used for OB. (Other Band Trunking). Three different frequency splits may be defined for each system.

After the Receive and Transmit ranges are defined, press **F6** to enter the Control Channel frequencies.

Caution

This information must match the Central Controller exactly or the system will not work.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4. Press **F6**. The CHANNEL ASSIGNMENT DATA screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the up/down arrow keys to select choice or value.

FIELD DEFINITIONS:

Status
Use the UP/DOWN arrow keys to enable this frequency split.

(KHz)
Use the UP/DOWN arrow keys to select the Channel Spacing for this frequency range.

(End Freq - Start Freq) must be evenly divisible by the channel spacing so the range can be divided into an integer value to assign the control channel number properly.

Start
Enter the Frequency Range Start point directly in MHz. The Start frequency must be less than the end frequency, and they must be within the allowed frequency range of the radio

Do not use the UP/DOWN arrow keys.

Caution
This information must match the Central Controller exactly or the system will not work.

End
Enter the Frequency Range End point directly in MHz. The End frequency must be larger than the start frequency, and they must be within the allowed frequency range of the radio

Do not use the UP/DOWN arrow keys.

Caution
This information must match the Central Controller exactly or the system will not work.

6.2.2.2.2 CONTROL CHANNEL

RSS LOCATION: **At the CHANGE/VIEW MENU, press** ` F4 ` ` F3 ` ` F6 ` ` F6 ` **.**

```
┌────────────────────────────────────────┬────────────────────────────────────────┐
│ MOTOROLA Radio Service Software         │ Enter or Scroll to Select System.       │
│ MTSX          Model:                    │                                         │
│                                         │                                         │
│ ....TRUNKING:SYSTEM:CONTROL CHANNEL     │                                         │
├────────────────────────────────────────┴────────────────────────────────────────┤
│  System.....................................1                                     │
│                              CONTROL CHANNELS                                     │
│                                                                                   │
│                           Number      Frequency                                   │
│                                                                                   │
│                             1        851.0125                                     │
│                                                                                   │
│                                                                                   │
│                                                                                   │
│                                                                                   │
│                                                                                   │
│                                                                                   │
└───────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD CHAN	PREV SYS	NEXT SYS	DELETE CHAN					EXIT

This screen allows you to change or view the control channels for this particular system.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4. Press **F6**. The CHANNEL ASSIGNMENT DATA screen appears.

5. Press **F6**. The CONTROL CHANNELS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD CHAN allows you to add a channel.

F3 - PREVIOUS SYS allows you to go to the system before the current one.

F4 - NEXT SYS allows you to go to the system after the current one.

F6 - DELETE CHAN allows you to delete a channel.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

System Number
The number of this trunking system. To select a system use the UP/DOWN arrows to scroll, enter the number directly, or use the function keys F3/F4 to scroll through the available systems.

Control Channel
A system key or FTR key is required to access these fields. Otherwise, the TCMS download procedure must be used **(F3/F4).** Use the function keys to add and delete control channels.

Four Control Channel Frequencies are standard (eight if Wide Area Coverage Type is AMSS, (4 for Local AMSS and 32 for SmartZone). Add channels by pressing **F2**, and delete the extra channels by pressing **F5**.

Enter the CONTROL CHANNEL Receive frequency directly in MHz.

6.2.2.3 TRUNKING SYSTEM OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F3] [F9] .

```
┌─────────────────────────────────────────────┬──────────────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Enter or Scroll to Select System.        │
│ MTSX           Model:                        │                                          │
│                                              │                                          │
│ ...CHANGE/VIEW:TRUNKING:SYSTEM:OPTIONS       │                                          │
└─────────────────────────────────────────────┴──────────────────────────────────────────┘
```

System.........................1   TRUNKING SYSTEM OPTIONS

   Tx Power Select ....High   Phone DTMF Timing 1
   Trunk Repeater Offset......................45 MHz   Initial Delay (msec).............................250
                                       Digit Duration (msec)...........................150
   Channel Assgn. Type ....Domestic   Inter Digit Delay (msec)........................100
   Splinter Channel ....Disabled   Hot DTMF Timing 1
   Rx Modulation ....2 Level Receive   Initial Delay (msec)............................250
                                         Digit Duration (msec)...........................150
                                       Inter Digit Delay (msec)........................100

                                        Status Aliasing ....Enabled
   Channel Bandwidth ....25.0 kHz   Message Aliasing ....Enabled
   ISW Retry Timer ....Disabled   Site Aliasing ....Enabled

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV SYS	NEXT SYS	ONE TOUCH	STATUS ALIAS	MSG ALIAS	SITE ALIAS		EXIT

This screen has more options for this particular trunking system.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4.** The TRUNKING MENU appears.

3. Press **F3.** The TRUNKING SYSTEM screen appears.

4   Press **F9.** The TRUNKING SYSTEM OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTION:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV SYS (Previous System) allows you to go to the system before the current one.

F4 - NEXT SYS (Next System) allows you to go to the system after the current one.

F5 - ONE TOUCH (when enabled) is used to change and view the Trunking.System One Touch Features and the One Touch Indices assocated with the Features.

F6 - STATUS ALIAS (when enabled) is used to change and view the parameters associated with Trunking System Status Alias.

F7 - MSG ALIAS (Message Alias)\ (when enabled) is used to change and view the parameters associated with Trunking System Message Alias.

F8 - SITE ALIAS (when enabled) is used to change and view the parametersassociated with Trunking System Site Alias.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

System
Use the up/down arrow keys to scroll from system number 1 to the number of systems in the radio.

Tx Power Select
The transmit power may be reduced 1 watt for 800 and 900 MHz models, and 2 watts for VHF and UHF models. Factory default is High. This feature is not available for all models.

DEPENDENCIES:
The power levels selected will depend on the alignment values, which can be adjusted under the alignment section in the Service portion of this RSS package.

Trunk Repeater Offset
The value must be set to the frequency separation between the transmitter and receiver frequencies used at the central repeater site. Factory default is 45MHz for 800 band and 39 MHz for 900 band.

Channel Assign Type
Sets the channel assignment type to Domestic or International. Domestic - 25 KHz channel spacing used in the USA. International - 12.5 KHz channel spacing used outside the USA.

Splinter Channel (800 MHz Only)
The control channels will be shifted down 12.5 KHz and the radio will interpret the channel numbers received over the air as splinter channels as well. Channels in the 821 band will not be affected. Factory default is Disabled.

Rx Modulation
This field should be based off of the expected receive data format for the personality. This field allows the user to configure the radio's personality for strictly binary (2-level) receive operation, strictly multi-level (4-level) receive operation, or both binary and multi-level receive operation (Auto Receive). When operating in Auto Receive mode, the radio will automatically detect the received signal type and process the data accordingly. As a side note, however, 2-level sensitivity is reduced when operating in the Auto Receive mode and thus should not be used on channels or systems that are strictly binary (2-level). This field applies only to Secure radios.

Channel Bandwidth
Use the UP/DOWN arrow keys to select the Channel BandWidth. This value must be set to the Channel BandWidth of the system the radio is to operate on.

NOTE
Strapping fields for Announcement Group, Fleet ID, Talkgroup, etc.will be forced to 'Clear' if 12.5 kHz is selected.

The factory default is 25.0 kHz.

ISW Retry Timer
Use the up/down arrow keys to select the value for this field.
This field changes the interim spacing between ISW retries. Spacing between retries is extended to accommodate System access delays. Valid entries are Disabled, 25ms, 50ms, and 75ms. Factory default us Disabled.

Phone DTMF Timing
Timing may be changed for Initial Delay, Digit Duration, and Inter Digit Delay. The radio contains a table with four sets of values of these parameters. The actual parameters are entered on the Radio Wide Phone Configuration screen **(F4/F3/F4/F9)**. Factory default is 1.
NOTE
For non-keypad models-This option can ONLY be used with the One Touch Button Feature **(Main Menu F4/F4/F3/F9/F5).**

Hot DTMF Timing

Timing may be changed for Initial Delay, Digit Duration, and Inter Delay. The radio contains a table with four sets of values of these parameters. The actual parameters are entered on the Radio Wide Phone Configuration screen **(F4/F3/F4/F9)**. Factory default is 1.

HearClear

This option allows Hearclear during voice operation. This option is available for 900 MHz systems only. HearClear is a feature used primarily in the 900 MHz band to reduce noise caused by the smaller bandwidth used in the 900 band. Factory default is enabled for 900 MHz, otherwise Disabled.

Status Aliasing

This option will permit you to customize the Status number and to assign an alias name to each message **(F6)**. (For non-keypad models this option can ONLY be used with the One Touch Button Feature **(**Main Menu-**F4/F4/F3/F9/F5)).** The status feature must be enabled on the Trunking Personality screen **(F4/F4/F4)**, and the status mnemonic (STS) must be assigned on the Radio Wide Menu screen **(F4/F3/F3/F4)**.

Message Aliasing

This option will permit you to customize the Message number and to assign an alias name to each message **(F7)**. (For non-keypad models this option can ONLY be used with the One Touch Button Feature **(**Main Menu-**F4/F4/F3/F9/F5)).** The status feature must be enabled on the Trunking Personality screen **(F4/F4/F4)**, and the message mnemonic (MSG) must be assigned on the Radio Wide Menu screen **(F4/F3/F3/F4)**.

Site Aliasing

This option will permit you to customize the site number to assign an alias name to each site. AMSS or SmartZone Coverage Type, must be added on the Trunking System screen **(F4/F4/F3),** and the SITE mnemonic must be assigned on the Radio Wide Menu screen **(F4/F3/F3/F4)** for this feature to operate properly.

6.2.2.3.1 ONE TOUCH BUTTON OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F3] [F9] [F5] **.**

MOTOROLA Radio Service Software MTSX Model: ...TRUNKING:SYSTEM:OPTIONS:ONE TOUCH	Use UP/DOWN Arrows to Select Choice.

ONE TOUCH BUTTON OPTIONS

```
Button 1 Feature .........................Disabled
            Index..................................1
Button 2 Feature .........................Disabled
            Index ................................1
Button 3 Feature .........................Disabled
            Index..................................1
Button 4 Feature .........................Disabled
            Index................................1
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4   Press **F9**. The TRUNKING SYSTEM OPTIONS screen appears.

5. Press **F5**. The ONE TOUCH BUTTON OPTIONS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTION:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Button 1-4 Features
Use the up/down arrow keys to select the feature that corresponds to this One Touch Button.
One Touch Buttons 1 through 4 may be selected as Trunking Buttons (Side Button 1, Side Button 2, Side Button 3, and the Orange Button) on the Radio Wide Button Screen (**F4/F3/F3/F2**).

Index
Enter the value for the index into the list of the feature (Phone, Private Call, Call Alert, Status, or Message) assigned to the One Touch Button.

6.2.2.3.2 TRUNKING STATUS ALIAS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F3] [F9] [F6] **.**

```
MOTOROLA Radio Service Software          Enter or Scroll to Select Value.
MTSX          Model:

...SYSTEM:OPTIONS:STATUS ALIAS
```

```
                         TRUNKING STATUS ALIAS

        Num        Status Alias Number         Status Alias Text

         1                  1                      STATUS  1
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD ITEM			DELETE ITEM					EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4 Press **F9**. The TRUNKING SYSTEM OPTIONS screen appears.

5 Press **F6**. The TRUNKING STATUS ALIAS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD ITEM allows you to add a trunking status alias item.

F5 - DELETE ITEM allows you to delete a trunking status alias item.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Status Alias Number
This field corresponds to status number that is transmitted over the air.

Status Alias Text
This field contains the text that is displayed when the corresponding status number is selected.

6.2.2.3.3 TRUNKING MESSAGE ALIAS

RSS LOCATION: At the CHANGE/VIEW MENU, press [F4] [F3] [F9] [F7] **.**
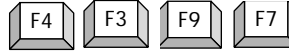
MOTOROLA Radio Service Software
MTSX   Model:

...:SYSTEM:OPTIONS:MESSAGE ALIAS

Enter or Scroll to Select Value.

TRUNKING MESSAGE ALIAS

Num	Message Alias Number	Message Alias Text
1	1	MESSAGE 1

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD ITEM			DELETE ITEM					EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F3**. The TRUNKING SYSTEM screen appears.

4   Press **F9**. The TRUNKING SYSTEM OPTIONS screen appears.

5   Press **F7**. The TRUNKING MESSAGE ALIAS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD ITEM allows you to add a trunking message alias item.

F5 - DELETE ITEM allows you to delete a trunking message alias item.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Message Alias Number
This field corresponds to status number that is transmitted over the air.

Message Alias Text
This field contains the text that is displayed when the corresponding status number is selected.

6.2.2.4 TRUNKING PERSONALITY

RSS LOCATION: **At the CHANGE/VIEW MENU, press** ⌨F4 ⌨F4 **.**

```
┌─────────────────────────────────────────┬─────────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Choice.    │
│ MTSX          Model:                     │                                          │
│                                          │                                          │
│ MENU:CHANGE/VIEW:TRUNKING:PERS           │                                          │
└─────────────────────────────────────────┴─────────────────────────────────────────┘
```

Personality........................1   TRUNKING PERSONALITY

   Protocol Type...I   Private Call Type..........................PC I/PC II
   System/ID 1-0001   Operation ....Unlimited
      Type ....II/IIi   Supervisor Pool ID 01
      Size Code...A   Call Alert Operation.........................List Only
      Fleet ID 001   Phone Interconnect.........................List Only
                                                                       Hot Keypad (DTMF).........................Disabled

   Individual ID....................................0-000
   Failsoft Type ....Disabled
                                                 .   Call ID List..1
                                                                       This Call ID (PC I) 600080
   Time Out Timer 3-   60   This Call ID (PC II) 16
                                                                       Scan List..None

```
┌──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┐
│  F1  │  F2  │  F3  │  F4  │  F5  │  F6  │  F7  │  F8  │  F9  │ F10  │
│ HELP │ ADD  │ PREV │ NEXT │DELETE│      │ SUB  │ EMER │ MORE │ EXIT │
│      │ PERS │ PERS │ PERS │ PERS │      │FLEETS│OPTIONS│OPTIONS│     │
└──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┘
```

TRUNKING PERSONALITY Screen for Protocol Type I

```
┌─────────────────────────────────────────┬─────────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Choice.    │
│ MTSX          Model:                     │                                          │
│                                          │                                          │
│ MENU:CHANGE/VIEW:TRUNKING:PERS           │                                          │
└─────────────────────────────────────────┴─────────────────────────────────────────┘
```

Personality........................1   TRUNKING PERSONALITY

   Protocol Type...I   Private Call Type..........................PC I/PC II
   System/ID 1-0001   Operation ....Unlimited
      Type I   Supervisor Pool ID 01
      Size Code...C   Call Alert Operation.........................Unlimited
      Fleet ID 400   Phone Interconnect.........................Unlimited
                                                                       Hot Keypad (DTMF).........................Disabled

   Individual ID   51-033
   Failsoft Type ....Disabled
                                                 .   Call ID List..1
                                                                       This Call ID (PC I) 632947
   Time Out Timer 2-   30   This Call ID (PC II) 36915
                                                                       Scan List 1

```
┌──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┐
│  F1  │  F2  │  F3  │  F4  │  F5  │  F6  │  F7  │  F8  │  F9  │ F10  │
│ HELP │ ADD  │ PREV │ NEXT │DELETE│      │ SUB  │ EMER │ MORE │ EXIT │
│      │ PERS │ PERS │ PERS │ PERS │      │FLEETS│OPTIONS│OPTIONS│     │
└──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┘
```

TRUNKING PERSONALITY Screen for SMARTNET Type I

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Type.   │
│ MTSX          Model:                     │                                      │
│                                          │                                      │
│ MENU:CHANGE/VIEW:TRUNKING:PERS           │                                      │
└─────────────────────────────────────────┴──────────────────────────────────────┘
```

Personality........................2   TRUNKING PERSONALITY

   Protocol Type...IIi   Private Call Type ....Disabled
   System/ID.....................................2-2FOE
      Type..II/IIi   Call Alert Operation ....Disabled
      Individual ID..   Phone Interconnect ....Unlimited
   Size Code...A   Hot Keypad (DTMF) ....Enabled
   Announcement Group FF0
      Strapping.......................................Clear
   Failsoft Type ....Talk Grp   Trunking Status................................Enabled
   Talk Permit Tone ....Enabled   Message ....Enabled
   Time Out Timer ....3-...........60
                                                       Scan List...None

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS		SUB FLEETS	EMER OPTIONS	MORE OPTIONS	EXIT

TRUNKING PERSONALITY Screen for System Type IIi

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Use UP/DOWN Arrows to Select Type.   │
│ MTSX          Model:                     │                                      │
│                                          │                                      │
│ MENU:CHANGE/VIEW:TRUNKING:PERS           │                                      │
└─────────────────────────────────────────┴──────────────────────────────────────┘
```

Personality........................1   TRUNKING PERSONALITY

   Protocol Type...II   Private Call Type ....PC II
   System/ID......................................1-0001   Operation ....Resp Only
      Type...II/IIi
                                       Call Alert Operation.........................Unlimited
   Announcement Group....................None   Phone Interconnect.........................Unlimited
                                       Hot Keypad (DTMF).........................Disabled
   Individual ID 1-0001   Status..Disabled
   Failsoft Type..............................Disabled   Message ....Disabled

                                       Call ID List..1
   Time Out Timer........................3-   60
                                       Scan List...None

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS		TALK GROUPS	EMER OPTIONS	MORE OPTIONS	EXIT

TRUNKING PERSONALITY Screen for System Type II

These screens are used to view and edit the main information for a trunking personality, such as the system number to use, the Time-Out Timer to use, and the main options. It also provides access to the other trunking screens: Sub Fleets, Talkgroups and Emergency.

FUNCTION KEY DESCRIPTION:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD PERS allows you to add a personality. You will automatically be moved to the new personality. To remove a personality, simply remove any references to it from the Mode Summary Screen. The personality will be removed, when you save or program to a radio.

F3 - PREV PERS allows you to go to the personality before this one.

F4 - NEXT PERS allows you to go to the personality after this one.

F5 - DELETE PERS allows you to delete the current personality.

F7 - SUBFLEETS allow you to edit the position of the Sub Fleets and associated data, such as secure strapping and scan type.

  or TALKGROUPS allows you to edit the positions of the talkgroups and associated data, such as secure strapping and scan type.

F8 - EMER OPTIONS (Emergency Options) allows you to edit and enable the emergency information such as the default Talkgroup, and edit emergency options such as Console Acknowledge Required. This function will only be active when a radio containing the SMARTNET or SmartZone software option has been read.

F9 - MORE OPTIONS allows you to change or view more trunking personality parameters.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Personality
Up/down arrow keys will scroll through the available personalities. Alternately the **F3/F4** function keys can be used to navigate through the available personalities. Personalities can be added by pressing **F2** or deleted by pressing **F5** function keys. You will be prompted before the delete occurs.

Protocol Type
The Protocol Type refers to the type of trunking system, Type I, II, or II/IIi.

Type I is the original MOTOROLA trunked signalling protocol.

Type II is an enhanced version of the original protocol that provides additional fleet management flexibility for a given system via an expanded signalling format.

Type IIi is a hybrid of type I and II that permits a radio to operate as a type II unit on a type I system.

System/ID
The up/down arrow keys will select the Trunking System this personality is to use. (The system ID is shown by the system number) The trunking system **(F4/F4/F3)** should be set up before the personality information is entered since some of these fields depend on the system information.

Type

If the Trunking System is Type I, the range of the ID changes for different size codes. The ID is a three digit hexadecimal number. If you have more than one fleet on a system, you may want to use a Universal ID, so that people calling you can use one ID. Press **F8** to go to the Universal ID screen where you can enter the information required to use a universal ID.

If the Trunking System is type II or IIi, the individual ID is a four digit hexadecimal number. For Type II trunking, your radio will have a single Individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system.

TYPE I or TYPE II/IIi indicates the trunked signalling protocol used on this system.

Type I is the original MOTOROLA trunked signalling protocol.

Type II/IIi is an enhanced version of the original protocol that provides additional fleet management flexibility for a given system via an expanded signalling format. Each radio has a single individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system.

Announcement Group

Enter the Announcement Talk Group in this field. This field contains the user TalkGroup for Announcements for the current personality. The Announcement TalkGroup is a 3 digit hexadecimal number.

Strapping

This field configures the transmit mode of Announcement Group or Fleet ID. If set to Clear or Secure, the Announcement Group or Fleet ID is forced to that particular transmit mode. When set to Select, the user is allowed to select the secure transmit modes via the radio's two position concentric switch.

Individual ID

Contains the Individual ID, number that uniquely identifies your radio on a particular system.

Valid IDs will be between 1 and FFFF. The decimal equivalent of the Individual ID is used for your radio's Private Conversation Call ID (7 + ID#), interconnect land-to-portable unit calls (7 + ID #), and interconnect land-to-portable talkgroup calls (7 + ID #).

For Type II trunking, your radio will have a single Individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system.

Failsoft Type

When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation.
Depending on the type of system, there will be different choices for Failsoft operation:

Disabled	No failsoft used.
Personality/Fleet	Uses the Announcement Group Failsoft Frequency for all talkgroups within the personality.
Talkgroup/Subfleet	The frequency is determined by the Subfleet selected. These are set in the Subfleet screen.
WAC AMSS	The Failsoft frequency used depends on which AMSS site the radio is using at the time. The frequencies are entered via the **F6** function key.

Talk Permit Tone
Enable this option if you want the Talk Permit tone every time the PTT is pressed. The talk permit tone is a series of three quick tones that sound once the PTT button has been pressed and your radio has keyed up on the voice channel assigned by the trunked central controller. You may begin talking immediately.

Time -Out Timer
The radio contains four Time-Out Timers. You may select one of the four timers. The values for the timers can be changed on the CHANGE/VIEW:RAD CONFIG:RAD WIDE:MORE OPTIONS screen.

Factory default is 60 sec.

Private Call Type
Enable this field if you want the radio to be able to initiate Trunked Private Call.

Use the up/down arrow keys to select the desired PRIVATE CALL type.

The valid possibilities in this field are DISABLED, ENHANCED, PC II, and Advanced. ENHANCED is the only valid type for 900 Mhz radios and it is not allowed on any other band. Only PC II is allowed for 800 Mhz Type II and Type IIi personalities. For Type I personalities both type PC I and PC II private calls can be made so PC I or PC II can be chosen, or PCI/PCII if both types of private call will be made from this personality.

Operation
Use the up/down arrow keys to select the operation of the Private Call feature for this personality.

    Response Only -   Allows the radio to accept calls only.
    List Only -   Allows the radio user to make calls from the call list. [For non-keypad models this option can ONLY be used with the One Touch Button Feature (Main Menu-**F4/F4/F3/F9/F5**)].
    Unlimited -   Allows the radio to make calls from the call list and from the keypad. This also allows the radio user to modify the call ID list. (requires full keypad)
    Disabled -   No Private Call operation is allowed.

Call Alert Operation
Call Alert allows the operator to receive pages and to transmit pages either by typing in a 6-digit Decimal ID (Unlimited) or by selecting one of the IDs in the Trunking Call ID list (List Only).

    Response Only -   Allows the radio to accept pages only.
    List Only -   Allows the radio user to send pages from the call list. [For non-keypad models this option can ONLY be used with the One Touch Button Feature (Main Menu-**F4/F4/F3/F9/F5**)].
    Unlimited -   Allows the radio to send pages from the call list and from the keypad. This also allows the radio user to modify the page ID list. (requires full keypad)
    Disabled -   No Call Alert operation is allowed.

Select Response Only to only receive pages. Select Disabled to disable paging facilities.

Phone Interconnect
This option allows the radio to initiate and receive land-to-portable telephone calls and specifies the type of interconnect. Choices are:

    Answer Only -   Allows the radio to accept calls only.
    List Only -   Allows the radio to make calls only from the phone list. [For non-keypad models this option can ONLY be used with the One Touch Button Feature (Main Menu-**F4/F4/F3/F9/F5**)].
    Unlimited -   Allows the radio to make calls from the phone list and from the keypad. This also allows the radio user to modify the phone list. (requires full keypad.).
    Disabled -   No phone operation is allowed.

Hot Keypad (DTMF)
Use up/down arrow keys to enable DTMF while transmitting operation for this personality. When this feature is enabled, the keypad is live during all dispatch operation. Pressing any digit 0 - 9, *, or # will cause that digit to be transmitted. Factory default is Disabled.

Status
Enables/Disables the transmission of pre-determined Status messages.

IMPORTANT NOTE
*The radio controls may require additional setup for your Status configuration. Also refer to the Radio Wide Button/Switch/Menu screen **(F4/F3/F3)**. In addition, Status number and name aliasing is available on the Trunking System Options screen **(F4/F4/F3/F9)**.*

Message
Enables/Disables the transmission of pre-determined canned messages.

IMPORTANT NOTE
*The radio controls may require additional setup for your Message configuration. Also refer to the Radio Wide Button/Switch/Menu screen **(F4/F3/F3)**. In addition, Status number and name aliasing is available on the Trunking System Options screen **(F4/F4/F3/F9)**.*

Call ID List
This is the number of the Call ID list that this personality will use for Private Call.

IMPORTANT NOTE
*Refer to the Trunking Wide Call List screen **(F4/F4/F6)**. The radio controls may require additional setup for your Private Call configuration on the Radio Wide Button/Switch/Menu screen **(F4/F3/F3)**.*

The Private Call and Call Alert features must have a call list assigned for Unlimited and List operation. Factory default is 1 list per trunking system.

Scan List
IMPORTANT NOTE
*Refer to the Radio Wide Menu screen **(F4/F3/F5)**. The radio controls may require additional setup for your Scan configuration on the Radio Wide Button/Switch/Menu screen **(F4/F3/F3**).*

To change or view the scan list, select the Scan Menu **(F4/F3/F5**). Trunking personalities may use Subfleet, Priority Monitor, and Talkgroup type scan lists. Factory default is None.

6.2.2.4.1 TRUNKING SUBFLEETS

RSS LOCATION: **At the CHANGE/VIEW MENU, press**   [F4]   [F4]   [F7]   **.**

```
┌──────────────────────────────────────────┬───────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Enter or Scroll UP/DOWN to Select ID │
│ MTSX            Model:                     │ (in Hex)                          │
│                                            │                                   │
│ ...CHANGE/VIEW:TRUNKING:PERS:SUBFLEET      │                                   │
├────────────────────────────────────────────────────────────────────────────────┤
│  Personality ................1                                                  │
│                              TRUNKING  SUBFLEETS                                 │
│                                                                                 │
│          #          Subfleet      Failsoft      F/S Frequency                   │
│          1            001                                                       │
│                                                                                 │
│                                                                                 │
│                                                                                 │
└────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	SUB FLT			SUB FLT					

This screen is used to enter the Subfleets that will use each personality. Once the subfleets are entered, they are assigned to the Zone/System or Channel/Subfleet selector at the Zone/Summary screen (F4/F8).

If the radio is a secure equipped radio, then strapping fields will be visible, and secure strapping can be set up for each field. The personality may have up to 16 talkgroups (the number of positions on the rotary switch) indicated by the numbers 1-16, including an Announcement and/or a Dynamic Regrouping talkgroup.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F4**. The TRUNKING PERSONALITY screen appears.

4. Press **F7**. The TRUNKING SUBFLEETS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SUB FLT (Add Subfleet) allows you to add a Subfleet.

F5 - DELETE SUB FLT (Delete Subfleet) allows you to delete a Subfleet.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.2.4.2 TRUNKING TALKGROUP

| F4 | F4 | F7 |

RSS LOCATION: At the CHANGE/VIEW MENU, press   .

```
+--------------------------------------------+----------------------------------------+
| MOTOROLA Radio Service Software            | Enter or Scroll UP/DOWN to Select ID   |
| MTSX           Model:                      | (in Hex)                               |
|                                            |                                        |
| MAIN:CHANGE/VIEW:TRUNKING:PERS:TLK GRP     |                                        |
+--------------------------------------------+----------------------------------------+
|                                                                                     |
|  Personality ................1                                                      |
|                              TRUNKING TALKGROUPS                                     |
|                                                                                     |
|                                                                                     |
|             #          Tlk Grp       Failsoft      F/S Frequency      Strapping     |
|             1           001                                                         |
|                                                                                     |
|                                                                                     |
|                                                                                     |
|                                                                                     |
|                                                                                     |
|                                                                                     |
+-------------------------------------------------------------------------------------+
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	TLK GP			TLK GP					

This screen is used to create the list of Talkgroups. If the radio is a secure equipped radio, then strapping fields will be visible, and secure strapping can be set up for each field. The personality usually has 16 positions (the number of positions on the rotary switch), indicated by the numbers 1-16. The Announcement Talkgroup is usually in the sixteenth position.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F4**. The TRUNKING PERSONALITY screen appears.

4. Press **F7**. The TRUNKING TALKGROUPS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD TLKGP (Add Talkgroup) allows you to add a Talkgroup.

F5 - DELETE TLKGP (Delete Talkgroup) allows you to delete a Talkgroup.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

PARAMETERS FOR EACH NUMBER

Personality Number

Talkgroup

This screen is used to enter Talkgroups (subfleets) that will use each personality. Once the Talkgroups/Subfleets are entered, they are assigned to a Zone/System and a Channel/Subfleet selector position on the Zone/Summary screen. **(F4/F8).**

If the radio is secure equipped, strapping features will be visible, and secure strapping can be set up for each field. The personality may have up to 16 talkgroups, including an Announcement Group and or a Dynamic Regrouping talkgroup.

Failsoft

Use the UP/DOWN arrow keys to Enable/Disable Failsoft for this talkgroup. When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation. If the radio is set to Failsoft by TalkGroup, then the radio will use these frequencies to transmit and receive on.

Failsoft Frequency

Enter the frequency directly in MHz. A transmit and receive frequency are required if the system is UHF or VHF.

Strapping

This field contains the transmit mode of Talkgroup or Subfleet. If set to Clear or Secure, the Talkgroup or Subfleet is forced to that particular transmit mode. When set to Select, the user is allowed to select the secure or clear transmit modes via the radio's two position concentric switch.

6.2.2.4.3 TRUNKING EMERGENCY DATA CONFIGURATION

RSS LOCATION: **At the CHANGE/VIEW MENU, press** F4 F4 F8 .

```
┌──────────────────────────────────────────┬────────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Enter or Scroll to Select Choice.  │
│ MTSX          Model:                       │                                    │
│                                            │                                    │
│ MAIN:CHANGE/VIEW:TRUNKING:PERS:EMER        │                                    │
└──────────────────────────────────────────┴────────────────────────────────────┘
┌───────────────────────────────────────────────────────────────────────────────┐
│                     EMERGENCY DATA CONFIGURATION                                │
│                                                                                 │
│                                                                                 │
│    Protocol Type..................................IIi                           │
│    Access Type ...............................Fast                              │
│    Emergency Call .................................Disabled    Revert Size Code .......................................A │
│    Emergency Alarm ..............................Disabled    Revert Fleet ID....................................0001 │
│                                                               Strapping..........................................Clear │
│       Retry Counter...............................1          Revert Subfleet ....................................001 │
│    Emergency Hot Mic..........................Disabled          Strapping..........................................Clear │
│       TxPeriod.....................................10          │
│    Tactical ..............................................Enabled │
│       Revert PTT ID .................................Disabled │
└───────────────────────────────────────────────────────────────────────────────┘
┌───────────────────────────────────────────────────────────────────────────────┐
│ F1      F2      F3      F4      F5      F6      F7      F8      F9      F10       │
│ HELP                                                                   EXIT      │
└───────────────────────────────────────────────────────────────────────────────┘
```

This screen is used to enter all of the emergency information for a trunked personality.

┌──┐
│ **PROGRAMMING PROCEDURE:**   │
│   │
│ 1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.   │
│   │
│ 2.   Press **F4**. The TRUNKING MENU appears.   │
│   │
│ 3.   Press **F4**. The TRUNKING PERSONALITY screen appears.   │
│   │
│ 4.   Press **F8**. The EMERGENCY DATA CONFIGURATION screen appears.   │
│   │
│ 5.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). │
│   │
│ 6.   If a field is selected, press the UP/DOWN arrow keys to select choice or value. │
└──┘

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Protocol Type
Use the UP/DOWN arrow keys to select the Trunking Protocol Type for this personality.

> Type II - An enhanced version of the original protocol that provides additional fleet management flexibility   for a given system via an expanded signaling format.
> Type IIi - A hybrid of Type I and II that permits a radio to operate as a type II unit on a type I system.

Access Type
This determines how the radio will access a Type II/IIi system. Either Tx Fast/Rx Slow or Tx Fast/Rx Fast.

Select Tx Fast/Rx Fast for use with fast access systems and Tx Fast/Rx Slow for slow access protocol emergency subfleets. New type I radios operating on fast access systems should be set for fast access. Type IIi radios which have to communicate on systems with slow radios should be set to slow access.

Emergency Call
Emergency Call gives the operator priority to enable the Emergency Call option.

The Emergency Call condition is entered by pressing a button configured to initiate emergency. All subsequent PTT transmissions while in the CALL state will be made with high priority access to a voice channel. Emergency Alarm and Emergency Call may both be enabled, in which case the Call state is entered when PTT is pressed. Factory default is Disabled.

Emergency Alarm
Emergency Alarm allows the operator to press the Emergency button to send an alarm to the dispatcher. Emergency Alarm is a coded transmission made on the control channel in response to pressing a button configured to initiate an emergency. These alarm transmissions will be sent until the control channel acknowledges the alarm, the console dispatcher acknowledges the alarm (if console ack is enabled), or the alarm retry counter is exhausted.

If normal alarm operation is selected, the display will flash emergency and valid key chirp will be heard when the alarm condition is entered. Four good beeps will be heard when the alarm condition has been acknowledged.

If silent alarm is selected, there will be no display or audible indication when the alarm condition is entered, nor will there be any indication of alarm acknowledgement. Also, the radio will mute the receiver audio so that no radio traffic is heard. Factory default is Disabled.

Console Acknowledgement Required
If a Console Acknowledge is Required then an Emergency Alarm is not considered successful unless a Dispatcher Acknowledge is received. When an Emergency Alarm is not successful the full four beep Acknowledge Tone is not sounded and the Alarm is automatically sent again until the number of retries specified is exhausted. Factory default is Disabled.

Retry Counter
If an unlimited number of retries is desired then select Infinite, otherwise enter a value from 1 to 255.

Normally if the radio is unsuccessful in sending a transmission it will retry for one ISW sequence before quitting. For Emergency Alarms, however, the radio will retry for the number of ISW sequences specified by the Retry Counter. NOTE: Emergency alarm must be enabled for this field to be valid.

Tactical
Tactical (Default)
Emergency Alarms and Calls are made on the selected talkgroup unless: a) The Announcement is selected or b) The Dynamic Regrouping talkgroup is selected and there is not a valid dynamic ID. In both cases the default Talkgroup is used.

Non-Tactical
The radio uses the default Talkgroup and default Announcement group for Emergency transmissions.

Revert PTT ID
When enabled, Default Talkgroup or Announcement Group transmissions will be PTT-ID style. Factory default is Disabled.

Revert Size code
Use the UP/DOWN arrow keys to choose the SIZE CODE for this personality.

Valid SIZE CODES are: A,B,C,D,E,F,G,H,I,J,K,M,O,Q.

The SIZE CODE determines the maximum number of fleets, subfleets, and individual IDs allowed. The SIZE CODE and fleet ID chosen must match the programming of the Central Controller.

Revert Fleet ID/Subfleet
The Fleet ID is a three digit hexadecimal number where the first digit is the Prefix and second two digits are the Fleet. For any size code, the subfleets for Fleetwide and Dynamic Regrouping are always available.

Size Code	Prefix	Fleet	Subfleet	Individual ID
A	0 - 7	00 - 7F	A - C	000 - 00F
B	0 - 7	00 - 0F	A - G	000 - 03F
C	0 - 7	00 - 07	A - G	000 - 07F
D	0 - 7	00 - 00	A - O	000 - 1FF
E	0 - 7	00 - 3F	A - C	000 - 01F
F	0 - 7	00 - 1F	A - G	000 - 01F
G	0 - 7	00 - 1F	A - C	000 - 03F
H	0 - 7	00 - 0F	A - C	000 - 07F
I	0 - 7	00 - 07	A - C	000 - 0FF
J	0 - 7	00 - 03	A - G	000 - 0FF
K	0 - 7	00 - 01	A - O	000 - 0FF
M	0 - 3	00 - 00	A - O	000 - 3FF
O	0 - 1	00 - 00	A - O	000 - 7FF
Q	0 - 0	00 - 00	A - O	000 - FFF

Revert Announcement Group (or Revert Fleet ID)
Enter the Emergency Default Announcement TalkGroup in this field. This field contains the Emergency User TalkGroup for Announcements during an emergency for the current personality. The Emergency Default Announcement TalkGroup is a 3 digit hexadecimal number.

While in the emergency call state with tactical emergency disabled, your radio will monitor this talk group for fleetwide announcement calls.

Revert Announcement Group (or Revert Fleet ID) Strapping
This field configures the transmit mode of Emergency Announcement Group or Emergency Fleet ID. If set to Clear or Secure, the Emergency Announcement Group or Fleet ID is forced to that particular transmit mode. When set to Select, the user is allowed to select the secure or clear transmit modes via the radio's two position concentric switch.

Revert TalkGroup (or Revert Subfleet)
This field contains the Emergency User TalkGroup for use during an emergency for the current personality. The Emergency Default Talk Group is a 3 digit hexadecimal number.

Database controlled parameter. Emergency Type II only parameter.

If the tactical emergency feature is disabled, then all emergency transmissions will be made on this default talkgroup.

If tactical is enabled, then all emergency transmission are made on the currently selected talkgroup. The only exception would be when the radio has been dynamically regrouped and the dynamic regrouping mode is selected, in which case the emergency transmission would be made on the dynamic regrouping talkgroup.

Revert Talkgroup (or Revert Subfleet) Strapping
This field configures the transmit mode of Emergency TalkGroup or Emergency Subfleet. If set to Clear or Secure, the Emergency Talkgroup or the Emergency Subfleet is forced to that particular transmit mode. When set to select, the user is allowed to select the secure or clear transmit modes via the radio's two position concentric switch.

Emergency Hot Mic
This feature when enabled, will activate the Emergency Hot Mic operation (also known as Trunking Emergency with voice to follow). When an Emergency Alarm is generated, and the emergency alarm acknowledge is received, the radio will automatically drop into emergency call mode and begin transmitting for the time specified by the Tx Period with the mic unmuted.

IMPORTANT
This feature is mutually exclusive with normal emergency operation. That is, if this feature is enabled emergency operation will always operate in this manner.

Tx Period (sec)
When the Emergency Hot Mic feature is enabled, the Tx Period determines the time period the radio will be transmitting with the mic unmuted, without user intervention. The Tx Period ranges from 10-120 seconds in increments of 10 seconds. Default Tx Period is 10 seconds.

6.2.2.4.4 TRUNKING PERSONALITY OPTIONS

RSS LOCATION: At the CHANGE/VIEW MENU, press [F4] [F4] [F9] .

```
┌──────────────────────────────────────────┬────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Enter or Scroll to Select      │
│ MTSX          Model:                       │ Personality.                   │
│                                            │                                │
│ MAIN:CHANGE/VIEW:TRUNKING:PERS:OPT         │                                │
├────────────────────────────────────────────────────────────────────────────┤
│                                                                              │
│      Personality ............1         TRUNKING PERSONALITY OPTIONS          │
│                                                                              │
│                                                                              │
│                                                                              │
│                    Conversation Type .................................Message│
│                    Auto Scan .............................................Disabled│
│                                                                              │
│                    Proper Code Detect...............................Disabled │
│                                                                              │
│                                                                              │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV PERS	NEXT PERS		PREF SITES				EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F4**. The TRUNKING PERSONALITY screen appears.

4. Press **F9**. The TRUNKING PERSONALITY OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV PERS allows you to go to the personality before this one.

F4 - NEXT PERS allows you to go to the personality after this one.

F6 - PREF SITES calls up a screen which allows you to enter the preferred site status for SmartZone transmitter sites. This function will only be active when a radio containing the SmartZone software option has been read and SmartZone is enabled on the system associated with the current personality.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Field Definitions

Personality
Use the up/down arrow keys to scroll through the available personalities. Alternately the **F3/F4** function keys can be used to navigate through the available personalities.

Conversation Type
Use the up/down arrow keys to select the Trunking "Conversation" type, choices are: Message, Transmission or PTT ID.

> Message Trunked:
>
> After the initiator dekeys the radio, the voice channel stays active (hang time) so other members of the talkgroup can respond on the same channel. If a radio in the talkgroup transmits during another user's transmission, they will talk over the other transmission.
>
> Transmission Trunked:
>
> No hang time and no talk over. When a radio is dekeyed, the channel is immediately deallocated and reassigned. If a user tries to talk over an active channel, the radio will not key until the channel is clear.
>
> PTT ID:
>
> PTT ID systems are similar to message conversation type systems with hang time and talk over, but they send an ID code to the controller when PTT is pressed. After the ID transmission, the radio goes back to the voice channel to talk to the other users.

Auto Scan
Use the up/down arrow keys to enable the Auto Scan option for this personality.

When enabled, the radio will automatically scan when on this personality. To use a scan on/off switch or button, this option must be disabled.

Factory default is Disabled.

Proper Code Detect
When this parameter is set to Enabled, the speaker will unmute on secure data only if it is encrypted with the correct key.

Access Type
Use the up/down arrow keys to select the Trunking Access type:

> Slow - Refers to Rx Slow utilizing the high speed acknowledgments for all channel grants
> (Rx=Fast, Tx=Fast).
> Fast - Refers to the elimination of the high speed acknowledgment which improves channel access time
> (Rx=Fast, Tx=Fast.

This information must be coordinated with your system manager to insure proper operation on the system.

Talk Permit Tone
Use the up/down arrow keys to select the Talk Permit Tones.

When enabled, a Talk Permit Tone beep will be made every time a transmission is made. The tone indicates that the user may begin the talking.

The factory default is Enabled.

6.2.2.4.4.1 SMARTZONE PREFERRED SITES

| F4 | F4 | F9 | F6 |

RSS LOCATION: **At the CHANGE/VIEW MENU, press**   .
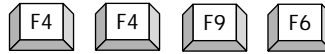
MOTOROLA Radio Service Software
MTSX   Model:

. . .TRUNKING:PERS:OPT:PREFERRED SITES

Enter or Scroll to Select Value.

SMARTZONE PREFERRED SITES

#	Site ID	Prefer Status
1	1	Preferred
2	1	Least
3	2	Always
4	8	None

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD ITEM			DELETE ITEM					EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.
2. Press **F4**. The TRUNKING MENU appears.
3. Press **F4**. The TRUNKING PERSONALITY screen appears.
4. Press **F9**. The TRUNKING PERSONALITY OPTIONS screen appears.
5. Press **F6**. The SMARTZONE PREFERRED SITES screen appears.
6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).
7. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD ITEM allows you to add a SmartZone site.

F5 - DELETE ITEM allows you to delete a SmartZone site.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Site ID
The value specifies the site ID of the site having preferred status. The range of values is 1 to 64.

Prefer Status
The value of the preferred site status for the site.

The choices are:

    None - site is given no preference. If the site is not listed here, the radio automatically assigns it no preference.

    Least - site will be avoided unless it is the only usable site for operation.

    Preferred - site will be used over all non-preferred sites with similar signal strength.

    Always - site will be used over all non-preferred sites with similar signal strength even if site loses communication with the zone controller (enter site trunking).

6.2.2.5 TRUNKING CALL LIST

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F4] [F5] .

MOTOROLA Radio Service Software MTSX　　　　Model: MAIN:CHANGE/VIEW:TRUNKING:CALL LIST	Enter or Scroll to Select List.

```
   Call List .......................1                    CALL LIST TABLE


   #  Call ID      Call Text            #      Call ID          Call Text

   1  ---------       Call 1
```

F1 HELP	F2 ADD LIST	F3 PREV LIST	F4 NEXT LIST	F5 DELETE LIST	F6 ADD CALL ID	F7 DELETE CALL ID	F8	F9	F10 EXIT

This screen is used to edit Trunking Call IDs and the associated names (or aliases). The number of characters for the name will be determined by the display capability of the radio. Each trunking system may have a unique call list, and each list may have a maximum of 19 IDs. The call list defined on this screen are assigned to the trunking system of the Trunking System screen. (**F4/F4/F3**).

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F4**. The TRUNKING MENU appears.

3. Press **F5**. The CALL LIST TABLE screen appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD LIST allows you to add another call list.

F3 - PREV LIST (Previous List) allows you to go to the list before the current one.

F4 - NEXT LIST allows you to go to the list after the current one.

F5 - DELETE LIST allows you to delete a call list.

F6 - ADD CALL ID allows you to add a new call ID.

F7 - DELETE CALL ID allows you to delete a call ID.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Call List
Each trunking system may have a unique call list, and each list may have a maximum of 19 IDs. The call list defined on this screen are assigned to trunking personalities in the trunking personality screen (**F4/F4/F4**). This assignment must be made or the list will not be accessible.

Call Text
Enter the alphanumeric name for this Call ID. The name will appear on the radio display to facilitate ease of operation.

Call ID
Enter the six digit (decimal) Call ID (or Universal ID) for this member of the call list. The Call ID is used in Private Call or Call Alert to uniquely identify the individual that is to be called or paged. For Type I and IIi radios, use the Universal ID if available.

6.2.3 CONVENTIONAL MENU

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] **.**

MOTOROLA Radio Service Software
MTSX   Model:

MAIN:CHANGE/VIEW:CONV

Select Function Key F1 - F10.

CONVENTIONAL MENU

F1   -   HELP
F2   -   Conventional Radio Wide Configuration
F3   -   Conventional Personalities, Options
F4   -   MDC Systems, Options, Call List
F5   -
F6   -
F7   -   Auxiliary Systems
F8   -   Conventional Message Alias List
F9   -   Conventional Status Alias List
F10 -   EXIT

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CONV WIDE OPT	CONV PERS	MDC CONFIG			AUX SYSTEM	MSG ALIAS	STATUS ALIAS	EXIT

This screen allows you to navigate to the conventional edit screens. The options in these menus pertain only to conventional radio features.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - CONV WIDE OPT (Conventional Radio Wide Options) This screen holds the fields that are pertinent to all the conventional channels in the radio, such as monitor type.

F3 - CONV PERS (Conventional Personalities) This screen is used to define the conventional frequencies, coded squelch type (PL/DPL), and to define conventional options (phone, scan, etc.) and signalling (MDC) permitted on each channel.

F4 - MDC SYSTEM This screen is used to define the MDC signalling configurations of each conventional personality. Each system can be defined with a unique PTT ID, emergency operation, and signalling timing options. This function will only be active when a radio with MDC capabilities has been read. Not all radios have this capability.

F7 - AUX SYSTEM (Auxiliary System)
This menu contains the advanced Conventional Signalling features that are in addition to MDC, such as Quick-Call II, GE Star, Singletone etc. This function will only be active when a radio with these signalling capabilities has been read.

F8 - MSG ALIAS

This screen contains the Conventional Message Alias List and is used to view and edit the Message Alias Number and Message Alias Text.

F8 - STATUS ALIAS

This screen contains the Conventional Status Alias List and is used to view and edit the Status Alias Number and Status Alias Text.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.3.1   CONVENTIONAL RADIO WIDE OPTIONS

RSS LOCATION: At the CHANGE/VIEW MENU, press [F6] [F2] .

MOTOROLA Radio Service Software
MTSX   Model:

MAIN:CHANGE/VIEW:CONV:WIDE OPTIONS

Use UP/DOWN Arrows to Select Choice.

CONVENTIONAL RADIO WIDE OPTIONS

Monitor Type..Open Squelch
   Latch Enable Tone ....Disabled
   Latch Enable Time (sec) 2.0
Smart PTT Retry Timer (ms) 275
Smart PTT Quick Key Timer (ms) 500
Hub Defeats PL ....Disabled
Direct Frequency Enabled..................................Disabled
Last Number Redial ....Enabled

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen holds the fields that allow you to change the features that affect all the conventional modes

---

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2,   Press **F6.** The CONVENTIONAL MENU appears.

3.   Press **F2.** The CONVENTIONAL RADIO WIDE OPTIONS screen appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

Monitor Type
This option determines how the radio unmutes when the monitor button is pressed. Silent Monitor, also called PL Defeat, allows the user to monitor the channel before transmitting. Factory default is Open Squelch.

  Open Squelch - When this option is enabled, the radio will always unmute, even on noise, when the monitor button is pressed.

  Silent - Radio will be carrier squelched in Monitor mode.

Latch Enable Tone
The monitor button may be momentarily pressed, or may be latched by pressing the monitor button for a short period of time (Latch Enable Time). This option causes the radio to give a short beep each time the permanent monitor function has been enabled. Permanent monitor is cancelled by pressing the monitor button again. Factory default is Disabled.

Latch Enable Time (sec)
Values between 0.0 and 6.0 seconds may be selected in 0.5 second increments. Select Disable (0) to turn off this option.

Smart PTT Retry Timer (ms)
Values between 0 and 5000 ms may be selected in 25 ms increments. When Smart PTT is enabled, this field adjusts the period at which the radio will sample for a clear channel. Factory default is 275 ms.

Smart PTT Quick Key Timer (ms)
Values between 100 and 5000 ms may be selected in 100 ms increments. When smart PTT is enabled, a quick key (double press) of the PTT button can override the feature and cause the radio to transmit although the channel is busy. The timer determines the maximum amount of time between PTT presses, i.e., how fast the user must press the PTT button to override. Factory default is 500 ms.

Hub Defeats PL
When HUB Defeats PL is enabled, PL/DPL will be disabled when the microphone is removed from the hang up box. This allows for monitoring of a conventional channel to prevent transmitting during another conversation.

  Factory default is Disabled.

Note
This feature is only applicable to portable radios when a Vehicular Adapter is used.

Direct Frequency Enabled
If the Direct Frequency flag is Enabled, the user can enter if the direct frequency in the conventional Personality Screen (F4/F6/F3) and change it. Direct Frequency flag is Disabled and the direct frequency will be copied from the conventional Rx frequency.

Last Number Redial
When this feature is Enabled, the last number that was dialed will appear on the display and transmit when PTT is pressed.

When this feature is Disabled, the last number that was dialed will be cleared.

This feature is only available on MT2000 radios with R02.00 firmware or later. R02.00 was initially shipped in October 1994. The factory default is Enabled.

6.2.3.2 CONVENTIONAL PERSONALITY USING GE STAR SIGNALLING

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F3] **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Enter or Scroll to Select Type       │
│ MTSX          Model:                         │                                      │
│                                              │                                      │
│ MAIN:CHANGE/VIEW:CONV:PERS                   │                                      │
├─────────────────────────────────────────────┴──────────────────────────────────────┤
│                           CONVENTIONAL PERSONALITY                                  │
│       Personality ...............1                                                  │
│                                                                                     │
│       Receive Only ................................Disabled    Signalling ....................................GE STAR │
│       Direct / Talkaround ........................Enabled       GE STAR System # ...............................1      │
│       Time Out Timer............................3 -    60       PTT ID........................................Disabled │
│       Scan List .............................................None                                                      │
│       Hot Keypad ..................................Disabled                                                            │
│       Phone Operation..........................Unlimited                                                               │
│                                      Receive          Transmit           Direct                                       │
│       Frequency (MHz)                851.06250        806.01250          851.06250                                     │
│       Squelch Type                   DPL              DPL                DPL                                           │
│         Code                         023              023                023                                           │
│       DPI Invert                     Enabled          Enabled            Enabled                                       │
└─────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS			PHONE OPTIONS	MORE OPTIONS	EXIT

This screen allows you to edit the information for conventional operation using GE STAR type signalling.

......CONVENTIONAL PERSONALITY OPTIONS-SIGNALLING DEACTIVATED (NONE)

```
┌─────────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Enter or Scroll to Select Type       │
│ MTSX          Model:                         │                                      │
│                                              │                                      │
│ MAIN:CHANGE/VIEW:CONV:PERS                   │                                      │
├─────────────────────────────────────────────┴──────────────────────────────────────┤
│                           CONVENTIONAL PERSONALITY                                  │
│       Personality ...............1                                                  │
│                                                                                     │
│       Receive Only ................................Disabled    Signalling ............................................None │
│       Direct / Talkaround ........................Enabled                                                              │
│       Time Out Timer............................3 -    60                                                              │
│       Scan List .............................................None                                                      │
│       Hot Keypad ..................................Disabled                                                            │
│       Phone Operation..........................Unlimited        Quik-Call II System # .............................1   │
│                                      Receive          Transmit           Direct                                       │
│       Frequency (MHz)                851.06250        806.01250          851.06250                                     │
│       Squelch Type                   DPL              DPL                DPL                                           │
│         Code                         023              023                023                                           │
│       DPI Invert                     Enabled          Enabled            Enabled                                       │
└─────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS			PHONE OPTIONS	MORE OPTIONS	EXIT

This screen allows you to edit the information for conventional operation with signalling deactivated.

......CONVENTIONAL PERSONALITY OPTIONS-WITH MDC SIGNALLING

```
┌──────────────────────────────────────────┬─────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Enter or Scroll to Select Type  │
│ MTSX           Model:                      │                                 │
│                                            │                                 │
│ MAIN:CHANGE/VIEW:CONV:PERS                 │                                 │
├────────────────────────────────────────────────────────────────────────────┤
│                      CONVENTIONAL PERSONALITY                                 │
│       Personality...............1                                            │
│                                                                              │
│       Receive Only ...............Disabled   Signalling .................MDC  │
│       Direct / Talkaround ........Enabled     MDC System # .................1 │
│       Time Out Timer.............3 -   60      PTT ID...............Disabled   │
│       Scan List ..................None         Emergency .............Disabled│
│       Hot Keypad .................Disabled     Revert.......Rvt  Table Entry #3│
│       Phone Operation.............Unlimited                                   │
│                              Receive          Transmit          Direct        │
│        Frequency (MHz)        851.06250        806.01250         851.06250     │
│        Squelch Type           DPL              DPL               DPL           │
│          Code                 023              023               023           │
│        DPL Invert             Enabled          Enabled           Enabled       │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD PERS	PREV PERS	NEXT PERS	DELETE PERS		MDC OPTIONS	PHONE OPTIONS	MORE OPTIONS	EXIT

This screen allows you to edit the information for conventional operation using MDC type signalling.

NOTE

If Signalling requires MDC or GE STAR capabilities, you cannot have Quick-Call II. Follow CONVENTIONAL PERSONALITY screens with signalling deactivated (None) for Quick-Call II capabilities.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW menu appears.

2.   Press **F6**. The CONVENTIONAL MENU appears.

3.   Press **F3**. The CONVENTIONAL PERSONALITY screen appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5.   If a field is selected, press the up/down arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD PERS (Add Personality) allows you to add a Conventional personality. Each personality must be "connected" to a channel on the Zone/Channel Summary menu (**F4/F8**).

F3 - PREV PERS (Previous Personality) allows you to go to the personality before this one.

F4 - NEXT PERS (Next Personality) allows you to go to the personality after this one.

F5 - DELETE PERS (Delete Personality) removes the current personality. You will be prompted for a second response before the personality is deleted.
The only way to recover a deleted personality is to immediately re-read the radio or the archive file. However, any other changes that were made and not previously saved will be lost.

F7 - MDC OPTIONS (available with MDC signalling only) allows access to MDC parameters linked to this personality. Other System wide MDC parameters are located on the MDC System menu (**F4**/**F6**/**F4**). This function will only be active when a radio with MDC capabilities has been read and the signalling type set for MDC. Not all radios have this capability.

F8 - PHONE OPTIONS allows you to edit the conventional phone configuration for each conventional personality.

F9 - MORE OPTIONS allows access to additional parameters that can be used to customize your radio to your specific system requirements.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Personality
Use the up/down arrow keys to select the desired conventional personality. The number may also be entered directly or selected via the function keys.

Refer to the radio catalog sheet for the maximum number of personalities allowed for this model.

Receive Only
Use the up/down arrow keys to enable Receive-only operation on this personality. If enabled, all transmissions including signalling, are inhibited. The factory default for this field is Enabled.

Direct/Talkaround
Use the up/down arrow keys to enable Talkaround operation on this personality. In talkaround (or direct) mode, the radio will transmit on the receive frequency. This is useful when a repeater is not in operation or is out of range.

Talkaround may be used in a manual or automatic mode. In the manual mode, a talkaround switch must be defined on the Radio Wide Button Switch menu (**F4**/**F3**/**F3**). The switch may be either on the top or side of the radio, or on the keypad menu (if applicable).

If manual talkaround operation is enabled and no switch is assigned, the radio will default to talkaround operation on this personality. The factory default for this field is Disabled.

Time-Out Timer
Use the UP/DOWN arrow keys to select the TOT (Time out Timer) for this personality.

Each personality may choose one of four different TOT values. The four values for the radio can be changed on the Radio Wide Options screen (**F4**/**F3**/**F2**/**F9**).

The TOT determines the amount of time the radio can continuously transmit before the radio must be dekeyed. When the time is about up the radio beeps and then stops transmitting.
The factory default is 60 sec.
Scan List
Use the UP/DOWN arrow keys to select the Scan List to be used for this personality.

To change or view the scan list, select the Scan List screen (**F4**/**F3**/**F5**). Conventional personalities may use

Conventional or Talkgroup type scan lists. The factory default is None.

Hot Keypad
Use the UP/DOWN arrow keys to enable Hot Keypad (DTMF while transmitting) operation for this personality. When this feature is Enabled, the keypad is live during all dispatch operations. The factory default is Disabled.

Phone Operation
Use the UP/DOWN arrow keys to select the type of phone service for this personality:

> List Only -   The user may only call pre-programmed numbers from the phone list stored in the radio.
>
> Unlimited -   The user may call phone numbers from the list, or directly enter any number via the keypad.
>
> None -   Disable the phone for this personality.

If the Radio has Manual Access with Live Dialing, Unlimited must be selected to allow keypad access.

Signalling
Use the UP/DOWN arrow keys to enable MDC, GE STAR, or None signalling on this personality.

MDC is a Motorola proprietary, 1200 baud digital signalling protocol used for unit identification, selective signalling, and emergency features. The MDC Options function key will only be active when this field has been set to MDC. The factory default for this field is None.

GE STAR System #
Use the UP/DOWN arrows to scroll through the available selections. Directly enter the desired value. Integer values from 1 to the maximum,number of GE STAR systems are allowed. The radio will support a maximum of 7 GE STAR systems.

MDC System #
Use the UP/DOWN arrow keys to select the MDC system to be used by this personality.

To add and/or configure MDC systems, access the MDC SYSTEM screen (**F4**/**F6**/**F4**). The factory default is 1.

PTT ID
Use the UP/DOWN arrow keys to enable the MDC Unit Identification feature for this personality.

When this feature is enabled, each time the transmitter is keyed and/or dekeyed, the Unit ID will be broadcast. The factory default is Disabled.

Quik Call II System #
Use the UP/DOWN arrow keys to scroll through the available selections or directly enter the desired value. Integer values from 1 to the maximum number of QUIK-CALL II systems are allowed. The radio will support a maximum of 15 QUIK-CALL II systems.

Revert
Use the UP/DOWN arrow keys to select the Emergency transmit channel: The choices are Selected Channel or Channel #1, #2, or #3.

Selected Channel will cause the emergency transmission to always be broadcast on the current personality. However, the emergency transmission can also be reverted to another personality. Each MDC System also contains a table of three emergency revert channels, which are configured on the MDC System menu (**F4/F6/F4/F3**). Channels #1, #2, and #3 refer to that table. The factory default is Selected Channel.

Note
Receive Only personalities must always revert.

WARNING
For the radio to function properly during the emergency transmission, the three emergency revert channels mentioned above, MUST be Conventional Channels which are not receive-only, nor have Quik-Call II Enabled.

Frequency (MHz)
Enter the Receive, Transmit, or Direct (Talkaround) frequency directly in MHz. Optionally, the UP/DOWN arrow keys may be used to scroll through valid channels.

Blank receive frequencies are not allowed. Refer to the Motorola Catalog Sheets / Price Pages for valid receive frequencies for this model.

Squelch Type
Use the UP/DOWN arrow keys to select the Receive, Transmit, or Direct (Talkaround) squelch type:

CSQ -   Carrier Squelch
PL -   Tone Private Line
DPL -   Digital Private Line

Disabled -   (Transmit and direct only)

A data field for a PL/DPL code will be displayed for PL or DPL.

PL Code

Enter the PL (Private Line) frequency directly in Hz (Ex: 192.8) or the alpha-numeric code (Ex: 7A).

The UP/DOWN arrow keys may be used to scroll through the standard frequencies and codes. The code can also be selected by pressing the first letter and then scrolling to select the correct code.

Standard Private Line Frequencies / Motorola Code:

Freq	Code	Freq	Code	Freq	Code	Freq	Code	Freq	Code
67.0	XZ	91.5	ZZ	123.0	3Z	167.9	6Z	225.7	M4
69.3	WZ	94.8	ZA	127.3	3A	173.8	6A	229.1	9Z
71.9	XA	97.4	ZB	131.8	3B	179.9	6B	233.6	M5
74.4	WA	100.0	1Z	136.5	4Z	186.2	7Z	241.8	M6
77.0	XB	103.5	1A	141.3	4A	192.8	7A	250.3	M7
79.7	WB	107.2	1B	146.2	4B	203.5	M1	254.1	OZ
82.5	YZ	110.9	2Z	151.4	5Z	206.5	8Z		
85.4	YA	114.8	2A	156.7	5A	210.7	M2		
88.5	Y	118.8	2B	162.2	5B	218.1	M3		

NOTE

A low-level hum or buzz in the received audio MAY be experienced when TPL code OZ (254.1 Hz) is used. This PL code is at the high end of the subaudible frequency range and may be heard in the audio under certain circumstances. Use of this code should be avoided if possible.

DPL Code

Enter the DPL Digital (Private Line) code directly (Ex: 023). Leading zeros are required.

The UP/DOWN arrow keys may be used to scroll through the standard codes.

Valid DPL Codes:

Code	Code	Code	Code	Code	Code	Code	Code	Code
023	071	134	223	306	411	503	631	734
025	072	143	226	311	412	506	632	743
026	073	152	243	315	413	516	654	754
031	074	155	244	331	423	532	662	
032	114	156	245	343	431	546	664	
043	115	162	251	346	432	565	703	
047	116	165	261	351	445	606	712	
051	125	172	263	364	464	612	723	
054	131	174	265	365	465	624	731	
065	132	205	271	371	466	627	732	

6.2.3.2.1 PERSONALITY MDC OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F3] [F7] .

MOTOROLA Radio Service Software MTSX Model: MAIN:CHANGE/VIEW:CONV:PERS:MDC	Enter or Scroll to Select Personality.

Personality 1

PERSONALITY MDC OPTIONS

Call Alert Decode ....Enabled   Tx Inhibit On Busy.........................Enabled
Call Alert Encode ....Enabled
Selective Call Decode....................Enabled
    Unmute Type..Or
Selective Call Encode ....Enabled
   Auto Sel Call Transmit ....Enabled
MDC Unlimited Calling ....Disabled

F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen permits access to additional MDC features and options to further customize the radio configuration to your specific communication needs.

NOTE
Signalling must be set on MDC to review this screen.

CAUTION
MDC System parameter changes can substantially degrade system performance if they are made on one or a few radios, but not all radios in the system.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW menu appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F3**. The CONVENTIONAL PERSONALITY screen appears.

4. Press **F7**. The PERSONALITY MDC OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Personality
Use the UP/DOWN arrow keys to select the desired conventional personality. The number may also be entered directly or selected via the function keys.

Refer to the radio catalog sheet for the maximum number of personalities allowed for this model.

Call Alert Decode
Use the UP/DOWN arrow keys to enable MDC Call Alert Decode.

Enabling Call Alert Decode, allows the user to receive pages from the base station as well as from other radios.

The factory default is Disabled.

Call Alert Encode

Use the UP/DOWN arrow keys to enable/disable Call Alert Encode.

Enabling Call Alert Encode, makes it possible for the radio user to send pages to other radios.

The factory default is Disabled.

NOTE
If this feature is enabled, and selection of target radio(s) ID(s) via Call list is to be made available to the user, data must be programmed into the appropriate Call List Table.

Selective Call Decode
Use the UP/DOWN arrow keys to enable the MDC Selective Call Decode for this personality.

Selective Call allows the user to receive individual and group calls. It is intended not so much to ensure privacy but to eliminate the annoyance of users receiving traffic that does not pertain to them. The factory default is Disabled.

Unmute Type
Use the UP/DOWN arrow keys to select the muting type: AND or OR.

      AND Muting: Radio must receive both the Selective Call code (or Quik-Call II tones) and the proper code (PL/DPL and/or secure) before it will unmute.

      OR Muting: Radio will unmute on proper code (PL/DPL and/or secure) or on carrier after the Selective Call code (or Quik-Call II tone) is decoded.

The factory default is OR.

Selective Call Encode
Use the UP/DOWN arrow keys to enable/disable Selective Call Encode for this personality.

Selective Call Encode, when enabled, allows the user to send calls to an individual or to a group of radios. This feature is intended not so much to ensure privacy but to eliminate the annoyance of users receiving traffic that does not pertain to them.

The factory default is Disabled.

NOTE

If this feature is enabled, and selection of target radio(s) ID(s) via Call list is to be made available to the user, data must be programmed into the appropriate Call List Table.

Tx Inhibit On Busy

Use the UP/DOWN arrow keys to enable the MDC Transmit Inhibit on Busy Channel option for this personality.

When this option is enabled, polite MDC transmissions will be inhibited when a carrier is present on the channel.

The factory default is Disabled.

Auto Sel Call Transmit

Use the UP/DOWN arrow keys to enable or disable the Auto Selective Call Transmit option.

If the Auto Sel Call Transmit option is enabled, the radio will remain in Selective Call mode after the PTT switch is released otherwise it will exit Selective Call mode as soon as the PTT switch is released.

The factory default is Enabled.

MDC Unlimited Calling

Use the UP/DOWN arrow keys to enable/disable Unlimited Calling.

With this option enabled, the user is able to directly enter the ID of radios to be called by means of the radio keypad. Target Radio ID selection via the programmed Call List instead, still remains available for models so equipped.

The factory default is Disabled.

NOTE

* To be able to take advantage of this feature, a radio must be equipped with a numeric keypad.
* This option affects only the Call Alert Encode and Selective Call Encode features.

6.2.3.2.2 CONVENTIONAL PERSONALITY PHONE OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F3] [F8] .

```
┌─────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Enter or Scroll to Select Personality.│
│ MTSX          Model:                 │                                      │
│                                      │                                      │
│ MAIN:CHANGE/VIEW:CONV:PERS:PHONE     │                                      │
├──────────────────────────────────────┴──────────────────────────────────────┤
│                                                                              │
│      Personality ................1                                           │
│                      CONVENTIONAL PERSONALITY PHONE OPTIONS                   │
│                                                                              │
│                                                                              │
│              Auto Access Code Select .....................1-1P#              │
│              DTMF Access Timing Table .........................1             │
│                Initial Delay (msec) .............................1000         │
│                Digit Duration (msec) ............................125          │
│                Integer Delay (msec) ...............................75         │
│                                                                              │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV PERS	NEXT PERS						EXIT

This screen allows you to edit the conventional phone configuration for each conventional personality.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW menu appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F3**. The CONVENTIONAL PERSONALITY screen appears.

4. Press **F8**. The CONVENTIONAL PERSONALITY PHONE OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV PERS (Previous Personality) allows you to go to the personality before this one.

F4 - NEXT PERS (Next Personality) allows you to go to the personality after this one.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Personality
Use the UP/DOWN arrow keys to select the desired conventional personality. The number may also be entered directly or selected via the function keys.

Refer to the radio catalog sheet for the maximum number of personalities allowed for this model.

Auto Access Code Select
Use the UP/DOWN arrow keys to select an Auto Access Code for this personality.

The radio contains a table for DTMF Access and Deaccess code pairs, and the personality points to one of the table entries. The actual 4-digit codes are entered on the Radio Wide DTMF Access/Deaccess Code (**F4**/**F3**/**F4**/**F8**).

The factory default is 1.

DTMF Access Timing Table
Use the UP/DOWN arrow keys to select the set of DTMF timing parameters for this personality. Timing can be changed for Initial Delay, Digit Duration, and Integer Delay.

The radio contains a table with four sets of values for each of these parameters. The actual parameters are entered on the Radio Wide Phone Options screen (**F4**/**F3**/**F4**/**F9**).

The factory default is DTMF timing parameter set 1.

6.2.3.2.3 MORE CONVENTIONAL PERSONALITY OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F3] [F9] **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software              │ Enter or Scroll to Select    │
│ MTSX          Model:                         │ Personality.                 │
│                                              │                              │
│ MAIN:CHANGE/VIEW:CONV:PERS:OPTIONS           │                              │
├──────────────────────────────────────────────┴─────────────────────────────┤
│        Personality ........1        CONVENTIONAL PERSONALITY OPTIONS         │
│                                                                             │
│     Smart PTT .........................Inhibit On Carrier                    │
│        Quik Key Override .........................Enabled                    │
│           Override Timer (ms)...........................500    Rx Emphasis ................................Enabled  │
│     Tx Power Level ......................................High  Tx Emphasis ................................Enabled  │
│     Busy LED..........................................Enabled                │
│     Unmute/Mute Type.........................Standard    Tx Deviation..................................5.0 KHz  │
│     Rx Unmute Delay (ms) ........................1-    0  Tx Deviation T/A ..........................5.0 KHz  │
│     Reverse Burst/TOC ..........................Enabled     Channel Spacing ......................25.0 KHz  │
│     Squelch (Fine Tune) ....................................0                │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV PERS	NEXT PERS			RAC OPTIONS			EXIT

This screen permits access to additional features and options to further customize the radio configuration to your specific communication needs.

Caution should be observed when changing parameters on this screen. System parameter changes can substantially degrade system performance if they are made on one or a few radios, but not all radios system-wide.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F3**. The CONVENTIONAL PERSONALITY screen appears.

4. Press **F9**. The CONVENTIONAL PERSONALITY OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV PERS (Previous Personality) allows you to go to the personality before the current one.

F4 - NEXT PERS (Next Personality) allows you to go to the personality after the current one.

F7 - RAC OPTIONS (Repeater Access Options)
Allows access to personality specific RAC related information.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Personality
Use the UP/DOWN arrow keys to select the desired conventional personality. The number may also be entered directly or selected via the function keys.

Refer to the radio catalog sheet for the maximum number of personalities allowed for this model.

Smart PTT
Use the UP/DOWN arrow keys to enable the Smart PTT function. The radio can either inhibit on carrier, or, if enabled, the radio will not transmit on a busy channel.

This feature prevents the user from listening to conversations or transmitting over conversations that they are not part of. The Monitor button is Disabled when this feature is active.

The factory default for this option is Disabled.

Quik Key Override
Use the UP/DOWN arrow keys to enable the Smart PTT (Push-to-Talk) Override feature.

If this override feature is enabled, the user can transmit on a busy channel by a quick key (double press) of the PTT switch.

The factory default for this option is Disabled.

Override Timer (ms)
This is the amount of time, in ms, the user can transmit on a busy channel by a quick key (double press) of the PTT button.

The factory default is 500 ms.

Tx Power Level
Use the UP/DOWN arrow keys to select High or Low transmit power for this personality.

The transmit power may be reduced to 1 watt for 800 and 900 MHz models and to 2 watts for VHF and UHF models.

The factory default for this feature is High.

Busy LED
Use the UP/DOWN arrow keys to enable the flashing RED LED to indicate the presence of a carrier (busy channel).

The factory default for this feature is Enabled.

Unmute/Mute Type
Use the UP/DOWN arrow keys to select the receiver muting and unmuting characteristics for this personality:
Standard - The radio unmutes the audio when there is a valid PL (or DPL) signal and mutes when the PL (DPL) signal is no longer present. Use this option for Carrier Squelch operation.

Unmute, Std Mute - The radio unmutes only when there is a valid PL (or DPL) signal AND there is a carrier strong enough to break squelch. The radio mutes when the PL (or DPL) signal is no longer present.

Unmute, OR Mute - The radio unmutes only when there is a valid PL (or DPL) signal AND there is a carrier strong enough to break squelch. The radio mutes when the PL (or DPL) signal is no longer present OR the squelch closes (weak carrier).

The factory default is Standard.

Rx Unmute Delay

Use the UP/DOWN arrow keys to select a Receive Unmute Delay for this personality. Eight choices between zero and 1000 msec. are available.

The Rx Unmute Delay is the amount of time the radio waits to unmute after squelch has been detected.
The factory default is 0 msec.

Reverse Burst/TOC

Use the UP/DOWN arrow keys to enable the Reverse Burst (PL), or turn-off code (DPL), to be transmitted after the radio is dekeyed.

The Reverse Burst, or turn off code, is used to signal the receiving radio that the transmission is ending, and to mute the audio. By muting before the carrier drops, the noise burst (squelch tail) on the receiving end is substantially reduced.

The factory default for this option is Enabled.

Squelch (Fine Tune)

Use the UP/DOWN arrow keys to adjust the Squelch Fine Tuning. This value is combined with the master squelch setting to determine the overall squelch for this personality.

This feature can be used to tighten the squelch on frequencies that are experiencing interference, while maintaining maximum sensitivity on all other frequencies.

The factory default is 0.

Auto Scan

Use the UP/DOWN arrow keys to enable the Autoscan option for this personality.

When enabled, the radio will automatically scan when on this personality. To use a scan on/off switch or button, this option must be Disabled.

The factory default is Disabled.

Rx Emphasis

Use the UP/DOWN arrow keys to enable receive de-emphasis on this personality. The choices are Enabled and Disabled.

Pre-emphasis - Amplifies the higher frequencies so when they are transmitted the signal-to-noise ratio is better.

De-emphasis - Reverses the pre-emphasis after the signal has been received. The factory default is Rx de-emphasis Enabled.

Tx Emphasis

Use the UP/DOWN arrow keys to enable transmit pre-emphasis on this personality. The choices are Enabled and Disabled.

Pre-emphasis - Amplifies the higher frequencies so when they are transmitted the signal-to-noise ratio is better.

De-emphasis - Reverses the pre-emphasis after the signal has been received.

The factory default is Tx pre-emphasis Enabled.

Tx Deviation

Use the UP/DOWN arrow keys to select the Transmitter Deviation for this personality. The choices are:
2.5 KHz - 900 MHz Band (12.5 KHz Channel Spacing)
4.0 KHz - 821 MHz Band (20 KHz Channel Spacing)
5.0 KHz - VHF, UHF and 800 MHz Bands (38/25/25 KHz Channel Spacing)
This is the maximum amount that modulation can cause the carrier to deviate from its unmodulated frequency.

NOTE

Secure/Clear Strapping (Conventional Secure Personality Menu) is forced to "clear" if 12.5 KHz is selected.

6.2.3.2.3.1 CONVENTIONAL RAC OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F3] [F9] [F7] .

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter or Scroll to Select Type   │
│ MTSX            Model:                    │                                  │
│                                           │                                  │
│ MAIN:CHANGE/VIEW:CONV:PERS                │                                  │
└─────────────────────────────────────────┴──────────────────────────────────┘
┌───────────────────────────────────────────────────────────────────────────┐
│                                                                             │
│                         CONV PERS RAC OPTIONS                               │
│                                                                             │
│      Repeater Access ...........................................Enabled     │
│          Tone Signalling System.....................................1       │
│          Access Strapping.............................Mode Slaved           │
│          Access Type ...................................Manual               │
│          RAB 1 Code Type..............................Singletone            │
│            RAB 1 Singletone (Hz) ....................1    300.0             │
│          RAB 2 Code Type..............................Singletone            │
│            RAB 2 Singletone (Hz) ....................1    300.0             │
│                                                                             │
│                                                                             │
└───────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV PERS	NEXT PERS						EXIT

This screen contains all the personality specific RAC related information. This information contained in this screen will change depending on the current personality.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW menu appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F3**. The CONVENTIONAL PERSONALITY screen appears.

3. Press **F9**. The CONVENTIONAL PERSONALITY OPTIONS screen appears.

4. Press **F7**. The CONV PERS RAC OPTIONS screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV PERS (Previous Personality) allows you to go to the personality before this one.

F4 - NEXT PERS (Next Personality) allows you to go to the personality after this one.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Repeater Access
Use the UP/DOWN arrow keys to select the desired conventional personality. The number may also be entered directly.

This option enables Repeater Access on this personality. Repeater Access is used to access a repeater. Typically, upon receiving Repeater Access Codeword the repeater will remain in repeat mode until the hang time expires. See help screen for extensive information.

Tone Signalling System
Use the UP/DOWN arrow keys to select the tone signalling system to be used by this personality.
The factory default is 1.

Access Strapping
Use the UP/DOWN arrow keys to select the Repeater Access strapping, or Mode Slaved for this personality.
The factory default is Mode Slaved.

Access Type
Use the UP/DOWN arrow keys to select the Repeater Access Type. Choices will be Manual RAC or Auto RAC.
The factory default is Manual RAC.

RAB 1 Code Type
Use the UP/DOWN arrow keys to select the Repeater Access Button operation. Depending on your radio capabilities, choices will be Singletone, DTMF or MDC.
The factory default is Singletone.

RAB 1 Singletone (Hz)
For Singletone and MDC, enter the index from the Singletone List or the MDC repeater ID List.

For DTMF enter the tone value, DTMF Tone values are 0-9, * and #.

Optionally, the UP/Down arrow keys could be used to scroll through indexes/values.
The factory default for Singletone will be 300Hz, for DTMF will be zero and for MDC will be 1.

RAB 2 Code Type
Use the UP/DOWN arrow keys to select the Repeater Access Button operation. Depending on your radio capabilities, choices will be Singletone, DTMF, MDC or None.
The factory default is None.

RAB 2 Singletone (Hz)
For Singletone and MDC, enter the index from the Singletone List or the MDC repeater ID List.

For DTMF enter the tone value, DTMF Tone values are 0-9, * and #.

Optionally, the UP/DOWN arrow keys could be used to scroll through indexes/values.
The factory default for Singletone will be 300Hz, for DTMF will be zero and for MDC will be 1.

6.2.3.3 MDC CONFIGURATION MENU

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F4] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.        │
│ MTSX              Model:                 │                                  │
│                                          │                                  │
│ MAIN:CHANGE/VIEW:CONV:MDC                │                                  │
├──────────────────────────────────────────┴──────────────────────────────────┤
│                                                                              │
│                      MDC CONFIGURATION  MENU                                 │
│                                                                              │
│            F1    -  HELP                                                      │
│            F2    -                                                           │
│            F3    -  MDC Systems                                               │
│            F4    -  MDC Call List Data                                        │
│            F5    -  MDC Repeater ID List                                      │
│            F6    -                                                           │
│            F7    -                                                           │
│            F8    -                                                           │
│            F9    -                                                           │
│            F10   -  EXIT                                                      │
│                                                                              │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		SYSTEM DATA	CALL LIST						EXIT

This screen allows you to edit the MDC options for the radio.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F4** The MDC CONFIGURATION MENU appears.

4. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - SYSTEM DATA configures the radio to work with various MDC systems.

F4 - MDC CALL LIST allows you to navigate the MDC Call ID List screen.

F5 - MDC REPEATER ID LIST allows you to navigate the MDC Repeater ID List screen.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.3.3.1 MDC SYSTEMS

RSS LOCATION: At the CHANGE/VIEW MENU, press [F6] [F4] [F3] .

```
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter or Scroll to Select System.    │
│ MTSX          Model:                     │                                      │
│                                          │                                      │
│ MAIN:CHANGE/VIEW:CONV:MDC:SYSTEM         │                                      │
├─────────────────────────────────────────┴──────────────────────────────────────┤
│        MDC System............1                                                   │
│                                  MDC SYSTEM                                       │
│                                                                                  │
│        Primary ID...............................0001    Emergency ..................................Enabled      │
│        Secondary ID................................00000000    Emergency Type...............Alarm and Call │
│        Variable ID ..............................000      Emer PTT ID Sidetone ..............Enabled  │
│        Leading PTT-ID ..............................Enabled    Acknowledge Alert Tone ..........Enabled │
│         PTT-ID Sidetone ..........................Disabled                       │
│        Trailing PTT-ID ...............................Disabled          Revert Table              │
│        Radio Check ..................................Disabled                    │
│        Radio Inhibit...................................Disabled        Num      Zone    Channel    │
│        Status ..............................................Enabled      1        1        1      │
│        Status Request...............................Disabled       2        1        1           │
│        Message .........................................Disabled        3        1        1        │
└──────────────────────────────────────────────────────────────────────────────┘
```

F1 HELP	F2 ADD SYS	F3 PREV SYS	F4 NEXT SYS	F5 DELETE SYS	F6	F7 MORE EMER OPTIONS	F8	F9 MORE OPTIONS	F10 EXIT

This screen allows you to change or view parameters that pertain to an MDC system. The settings shown are only for the system shown.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F4**. The MDC CONFIGURATION MENU screen appears.

4. Press **F3**. The MDC SYSTEM screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SYS (Add System) allows you to add a system.

F3 - PREV SYS (Previous System) allows you to go to the system before the current one.

F4 - NEXT SYS (Next System) allows you to go to the system after the current one.

F5 - DELETE SYS (Delete System) allows you to delete a system.

F7 - MORE EMER OPTIONS is used to configure the MDC Emergency Feature parameters in addition to the ones located on the MDC SYSTEMS and MDC SYSTEMS OPTIONS Screens.

F9 - MORE OPTIONS allows you to change or view additional MDC system field parameters.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

MDC System
This is the number of the MDC system. Use the UP/DOWN arrow keys to change the MDC system or directly enter the system number.

Primary ID
Enter the primary unit ID in this field. It is a four digit number.

Enter a value or use the UP/DOWN arrow keys to select Primary Identification Code from 1 to DEEE. The ID is in a hexadecimal number. The digit F is not allowed in the ID.

The primary identification code (PID) indicates which unit on the network sent the message. All inbound messages will be sent with this identification code.

Secondary ID
Enter a value or use the UP/DOWN arrow keys to select Secondary Identification Code from 0 to 0EEE EEEE for the terminal. This ID is a hexadecimal number. The digit F is not allowed in the ID.

This is the secondary ID assigned to the radio unit by the host. The secondary ID is related to the position of the unit.

Variable ID
The Variable Unit ID is used to group radios so that several radios will decode the same selective call or call alert. The variable unit ID is a three digit number from 0 to EEE. This ID is a hexadecimal number. The digit F is not allowed in the ID.

On a system which uses fleets and groups the first digit of the variable ID represents the fleet, and the last two digits of the ID represent the group. ie.

```
              VID = FGG
                    I   I
                    I -----------Group
                    --------Fleet
```
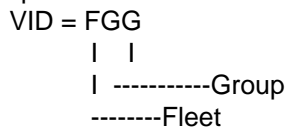
Leading PTT ID
Use the UP/DOWN arrow keys to enable or disable the UNIT IDENTIFICATION data packet transmission at the BEGINNING of each transmission (BOT).

If the leading PTT ID feature is enabled, each time you press the microphone PTT, the radio automatically will send the radio's unit identification code to the dispatcher

PTT ID Sidetone
Use the UP/DOWN arrow keys to enable or disable the PTT ID Sidetones. During the transmission of data packets, the microphone and all voice transmission is automatically disabled. PTT ID Sidetones are used to indicate when the data transmission is complete and you may begin talking.

If PTT ID Sidetones are enabled, a continuous alert tone will sound as soon as you press PTT and will continue until the data packet(s) has been sent. You must wait until the tone stops before you begin talking

Trailing PTT ID
Use the UP/DOWN arrow keys to enable or disable the MDC UNIT IDENTIFICATION data packet transmission at the END of each transmission (EOT).

If the trailing PTT ID feature is enabled, each time you release the microphone PTT, the radio automatically will send the radio's unit identification code to the dispatcher.

The PTT ID Sidetone will NOT sound for trailing PTT IDs.

Radio Check
Enabling this option allows the dispatcher to check the state of the radio (turned on or off), as long as the radio is within the range of the system. (clear mode)

Radio Inhibit
This field indicates whether or not the Radio Inhibit feature is enabled.

Enabling this field allows the radio to respond to a remote inhibit command. Upon receipt of this command the radio transmits an acknowledgement to the dispatch equipment; it then goes into a dormant state in which the receiver audio is muted, the transmit audio path is blocked, all operator controls are rendered inoperative, channel scan is stopped on the Radio Operating mode which received the command, and all LEDs are turned off. The radio can be un-inhibited via sending a radio enable command or by reading and writing the codeplug with the RSS.

Status
This field indicates whether or not the Status feature is enabled. The Status feature, when enabled, allows the user to select and transmit a specific status from a list pre-programmed into the radio. A complete activation of the Status feature therefore includes first enabling the feature and then programming the desired status list to be made available to the user. Status list programming is performed by means of the Status Alias screen **(**MAIN MENU-**F4/F6/F9)**. The factory default is Disabled.

Status Request
This field indicates whether or not the Status Request feature is enabled. If Status Request is enabled, the radio responds to a remote status interrogation with the last attempted status. Disabling the feature prohibits the radio from responding to a remote status interrogation. The factory default is Disabled.

Message
This field indicates whether or not the Message feature is enabled. Message, when enabled, allows the user to select and transmit a specific message, from a list pre-programmed into the radio. A complete activation of the Message feature therefore includes first enabling the feature and then programming the desired list of messages to be made available to the user. Message list programming is performed by means of the Message Alias screen (MAIN MENU-**F4/F6/F8**). The factory default is Disabled.

Emergency
This field indicates whether or not the Emergency feature is Enabled.

Emergency Type

Alarm Only- An emergency message is repeatedly sent to the base station until it is cancelled when all the allowed retries (both polite and impolite) have been sent, or reception of an acknowledgement from the base station, or the first PTT press, or a long press of the emergency button occurs.

Alarm and Call-An emergency message is repeatedly sent to the base station until either all the allowed retries (both polite and impolite) have been sent or the radio receives an acknowledgement from the base station. Once an acknowledgement is received from the base station, the user can talk to the base station. An emergency PTT ID will be sent with the voice on each PTT press. The emergency call is canceled by a long press of the emergency button.

Both types of emergency support reverting (transmitting emergency on a predetermined channel).

Acknowledge Alert Tone

Enable this option if you want an emergency acknowledge beep to be sounded when the radio receives acknowledgement of its emergency call.

Revert Table

This is the Emergency Revert Channel table, which contains the channels pointed to in the conventional personalities, where the radio reverts to when entering Emergency call mode. Enter the zone numbers and the channel numbers in the table. Each MDC personality will select one of these channels or it may choose itself.

First create personalities, then go to the Zone/Channel Assignment screen and enter channel information and you will be able to set the MDC emergency channels.

WARNING
The emergency revert channels MUST be conventional channels
which do not have Quik-Call II enabled, nor can they be receive-only.

6.2.3.3.2 MORE EMERGENCY OPTIONS

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F4] [F3] [F7] **.**

```
┌──────────────────────────────────────────┬─────────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Use UP/DOWN Arrows to Select Choice.│
│ MTSX               Model:                  │                                     │
│                                            │                                     │
│ ...CONV:MDC:SYSTEMS:MORE EMER OPT          │                                     │
├──────────────────────────────────────────┴─────────────────────────────────────┤
│  MDC System.........1                                                           │
│                          MORE EMERGENCY OPTIONS                                 │
│                                                                                 │
│                                                                                 │
│         MDC Hot Mic Emergency....................................Enabled        │
│              MDC Hot Mic Tx Period (sec)..............................10        │
│                                                                                 │
│                                                                                 │
│                                                                                 │
│                                                                                 │
│                                                                                 │
│                                                                                 │
│                                                                                 │
└─────────────────────────────────────────────────────────────────────────────────┘
   F1        F2       F3       F4       F5       F6       F7       F8       F9      F10
   HELP                                                                           EXIT
```

This screen allows you to configure more MDC Emergency Options in addition to the ones located on the MDC SYSTEMS and MDC SYSTEM OPTIONS Screens.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F4**. The MDC CONFIGURATION MENU screen appears.

4. Press **F3**. The MDC SYSTEM screen appears.

5. Press **F7**. The MORE EMERGENCY OPTIONS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FIELD DEFINITION
MDC Hot Mic Emergency
This feature when enabled will activate the MDC Emergency Hot Mic Operation (also known as MDC Emergency with Voice to Follow). After one impolite transmission of emergency alarm, the radio will automatically drop into Emergency Call mode and begin transmitting with the microphone unmuted for the time specified by the MDC Hot Mic Tx Period. The factory default is Disabled.
This feature is mutually exclusive with Emergency Alarm and Emergency Call operations

MDC Hot Mic Tx Period (sec)
When the MDC Emergency Hot Mic feature is enabled, the MDC Hot Mic Tx Period determines the time period the radio will be transmitting with the microphone unmuted without user intervention. The MDC Hot Mic Tx Period ranges from 10 to 120 seconds in increments of 10 seconds. The factory default is 10 seconds.

6.2.3.3.2.1 MDC SYSTEM OPTIONS

RSS LOCATION   **At the CHANGE/VIEW MENU, press** [F6] [F4] [F3] [F9] .

```
┌──────────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Use UP/DOWN Arrows to Select Choice. │
│ MTSX           Model:                      │                                      │
│                                            │                                      │
│ ...CONV:MDC:SYSTEMS:OPTIONS                │                                      │
├────────────────────────────────────────────────────────────────────────────────┤
│     MDC System ................1                                                  │
│                            MDC SYSTEM OPTIONS                                     │
│                                                                                  │
│    System Pretime (ms) ...........................500     Emergency              │
│    Preamble During Pretime ...............Disabled          Polite Retries .......................5 │
│    Inter-Packet Time (ms) ...........................100    Impolite Retries ..................15  │
│    Limited Patience (sec) ...............................60 Emer Priority Tx Inhibit ...........Disabled │
│                                                               Emer Limited Patience (sec) ............0 │
│    DOS (Data Squelch).........................Enabled                             │
│      Operation............................1200/1800 Hz    RAC (Repeater Access Code │
│      Coast Time (ms) ................................1500    Pretime (ms).......................200 │
│    Sel Call Reset ...........................Auto w/Carr    Ack Alert Tone............................Enabled │
│      Auto Reset Time (sec) ...........................5     Preambles .............................................1 │
│                                                             Sidetone ....................................Enabled │
├────────────────────────────────────────────────────────────────────────────────┤
│ F1      F2      F3      F4      F5     F6     F7     F8      F9        F10         │
│ HELP            PREV    NEXT                                MDC SYS   EXIT        │
│                 SYS     SYS                                 REMOTE               │
└──────────────────────────────────────────────────────────────────────────────────┘
```

This screen contains more options for MDC systems.

> **PROGRAMMING PROCEDURE:**
>
> 1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.
>
> 2. Press **F6.** The CONVENTIONAL MENU appears.
>
> 3. Press **F4**. The MDC CONFIGURATION MENU screen appears.
>
> 4. Press **F3.** The MDC SYSTEM screen appears.
>
> 5. Press **F9.** The MDC SYSTEM OPTIONS screen appears.
>
> 6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).
>
> 7. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV SYS (Previous System) allows you to go to the system before the current one.

F4 - NEXT SYS (Next System) allows you to go to the system after the current one.

F9 - MDC SYS (MDC System) MDC SYS REMOTE is used to change and view parameters associated with MDC System Remote Monitor/Radio Trace features.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

MDC System
Use the UP/DOWN arrow keys to change the MDC system or directly enter the system number. Valid entries are 0 to 630ms in increments of 50ms.

System Pretime
This is the amount of pretime used before the first MDC packet is transmitted.

Preamble During Pretime
This is to enable preamble sequence transmission before voice transmissions.

Inter-Packet Time
The Inter-sequence pretime is the period of time between consecutive MDC messages. Valid entries are in the range 0 to 6350 ms in steps of 50 ms increments. Due to the rounding that occurs when preamble during pretime is enabled, the value shown may change by 50 ms when a codeplug is read from a radio or file. This is just in the Radio Service Software, not the radio.

Limited Patience Time
This is the amount of time that transmission of a polite MDC signal will wait before sending out an impolite signal. The range of values are 1-255 sec. and Infinite. The factory default is 60 seconds.

DOS (Data Squelch)
This enables the Data Operated Squelch feature. This keeps the radio from unmuting when data is being received.

Operation
When this field is disabled, only the 1800 Hz criteria for Data Operated Squelch is needed. When enabled, then both 1200 Hz and 1800 Hz signals are required for DOS. The factory default is 1200/1800 Hz.

Coast Time
This is the delay for which the audio will remain muted after the received MDC message is finished. Valid entries are from 0 to 1134.75 in 4.45 ms increments.

Sel Call Reset
This determines how the Select Call mode is reset after receiving a Select Call and the radio has unmuted. The radio will return from carrier squelch mode to select call packet required mode according to this field.

Auto resets the radio after the Sel Call Auto Reset timer has expired.
Auto w/carrier override resets the radio waits until the voice stops.
Both modes can be reset manually by pressing the monitor button.

Auto Reset Time
This is the time the radio will remain in carrier squelch mode after the radio has received a select call directed to it. Once the auto reset time has expired, the radio will reset to the Select Call squelch mode. The valid range of values are 1 to 255seconds. The factory default is 60 seconds.

Emergency Limited Patience Time
When the radio is in Emergency Call Mode, this is the amount of time (in seconds) the radio will wait before impolitely sending voice if voice transmission is inhibited by the Emergency Priority Inhibit feature. The valid range of values are 1 to 255seconds. The factory default is 5 seconds.

RAC (Repeater Access Code) :

Pretime (ms)

This is the amount of pretime used before the first MDC Repeater Access Code (RAC) packet is transmitted. Valid entries are 0 to 6350 ms in steps of 50 ms.

The factory default is 200 ms.

Ack Alert Tone

If this field is enabled, when a Repeater Access Code (RAC) packet is transmitted, the repeater will indicate acceptance of the packet by causing the radio to sound 4 beeps.

The factory default is Disabled.

Preambles

This is a view only field displaying the number of preambles before RAC packet is transmitted.

Sidetone

If this field is enabled, the radio will generate a sidetone upon Automatic Repeater Access Code transmission to warn the user not to talk until the transmission is complete.

The factory default is Enabled.

6.2.3.3.2.2 MDC SYSTEM REMOTE OPTIONS

RSS LOCATION **At the CHANGE/VIEW MENU, press** F6 F4 F3 F9 F9 .

```
┌─────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Enter or Scroll to Select System.│
│ MTSX          Model:                 │                                  │
│                                      │                                  │
│ ...MDC:SYSTEMS:OPTIONS:REM OPTIONS   │                                  │
├──────────────────────────────────────┴──────────────────────────────────┤
│    MDC System ................1                                          │
│                       MDC SYSTEM REMOTE OPTIONS                          │
│                                                                         │
│              Remote Mon/Radio Trace....................Enabled          │
│               Remote Radio Mode ....................Radio Trace         │
│               Tx Base Time (sec)......................................10 │
│               Rx Base Time (sec) .....................................10 │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
└─────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV SYS	NEXT SYS					MDC SYS REMOTE	EXIT

This screen allows you to change/view parameters pertaining to the MDC system remote capabilities of the radio.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6.** The CONVENTIONAL MENU appears.

3. Press **F4**. The MDC CONFIGURATION MENU screen appears.

4. Press **F3.** The MDC SYSTEM screen appears.

5. Press **F9.** The MDC SYSTEM OPTIONS screen appears.

5. Press **F9.** The MDC SYSTEM REMOTE OPTIONS screen appears.

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F3 - PREV SYS (Previous System) allows you to go to the system before the current one.

F4 - NEXT SYS (Next System) allows you to go to the system after the current one.

F9 - MDC SYS (MDC System) MDC SYS REMOTE is used to change and view parameters associated with MDC System Remote Monitor/Radio Trace features.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Fields are defined on the following page.

FIELD DEFINITIONS:

MDC System
This is the number of the MDC system. Use the UP/DOWN arrow keys to change the system, or directly enter the number of the system.

Remote Mon/Radio Trace
Use the UP/DOWN arrow keys to enable/disable the MDC Remote Monitor/Radio Trace feature. When the MDC Remote Monitor/Radio Trace feature is enabled, the radio will be able to decode an MDC Remote Monitor or Radio Trace command sent from the dispatch console. After decoding this command, the radio will key-up its transmitter for a time period calculated using the 'Tx Base Time' and another value embedded within the Remote Monitor/Radio Trace command. The factory default is Disabled.

Remote Radio Mode
Use the UP/DOWN arrow keys to select the MDC Decode Operation.   The MDC Decode Operation allows the radio to operate in one of two possible states when it decodes an MDC Remote Monitor/Radio Trace command:

Radio Trace   - The radio will automatically key-up sending unmodulated carrier.

Remote Monitor - The radio will automatically key-up and unmute the microphone sending
                          voice on the channel.

Tx Base Time (sec)
Use the UP/DOWN arrow keys to select the desired MDC Tx Base Time. The value may also be entered directly. The MDC Tx Base Time is a value used to calculate the period that a radio will key-up after receiving an MDC Remote Monitor/Radio Trace command. This Tx Base Time is multiplied by a second value that is sent from the dispatch console and transmitted to the radio via an MDC Remote Monitor/Radio Trace command. The range is from 10 to 120 seconds in 10 second increments.

Rx Base Time (sec)
Use the UP/DOWN arrow keys to select the desired MDC Tx Base Time. The value may also be entered directly. The MDC Rx Base Time is a value used to calculate the period that a radio will 'listen' after keying-up while it is in the Remote Monitor mode. This Rx Base Time is multiplied by a second value that is sent from the dispatch console and transmitted to the radio via a Remote Monitor/Radio Trace command. The range is from 10 to 120 seconds in 10 second increments.

6.2.3.3.3 CALL LIST TABLE

RSS LOCATION   **At the CHANGE/VIEW MENU, press** [F6] [F4] [F4] .

```
┌─────────────────────────────────────┬────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Enter or Scroll to Select Value.│
│ MTSX           Model:                │                                │
│                                      │                                │
│ ...CHANGE/VIEW:CONV:MDC:MDC CALL LIST│                                │
└─────────────────────────────────────┴────────────────────────────────┘
```

CALL LIST TABLE

#	Call ID	Call Text	#	Call ID	Call Text
1	1234	HUGUES	11	6789	JAVIER
2	3245	WILKER	12	9876	TORBEN
3	4567	CECILIA	13	7654	JASON
4	7689	ALICIA	14	9086	TOM
5	3457	CASSANDE	15	2957	CORY
6	9087	IRENE	16	7654	MIRIAM
7	2987	GABRIELE	17	6785	BETTY
8	7865	GEUMER	18	45769	ARISTID
9	4565	FRANCIS	19	9879	BILL
10	4653	ARUN			

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	CALL ID			CALL ID					

This screen is used to edit Conventional MDC Call ID's and their associated names or aliases. The ID entries in this table are stored in the radio and made available to the radio user in Selective Call or Call Alert operation. For radio models capable of supporting multiple MDC Systems, the Call list defined here is made available to all MDC Systems.

An MDC Call ID is either an Individual Call ID or a Group Call ID. The RSS interprets each entry which begins with the hexadecimal digit `E' as a Group ID. Call IDs beginning with a digit other than `E' are treat as Individual IDs.

NOTES

  *A Call ID preceded by the hexadecimal digit 'E' is interpreted by the RSS as a Group
   ID. IDs of the form 'Exxx' (where x implies any hex digit) should therefore be avoided
   for Individual/Primary ID specification.

   *Note also that the digit 'F' serves as a wildcard, so it can be strategically placed in a
   Call ID to make it match other Call IDs, thus creating the effect of a group ID. 'FFFF' for
   instance, would specify all radios in system.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6.** The CONVENTIONAL MENU appears.

3. Press **F4**. The MDC CONFIGURATION MENU screen appears.

4. Press **F4.** The CALL LIST TABLE screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - **HELP** provides useful information about the currently displayed menu, screen, or field.

F2 - **ADD CALL ID** allows you to add a list member.

F5 - DELETE CALL ID allows you to delete a list member.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

Call ID
Enter the four-digit (hexadecimal) MDC CALL ID for this member of the call list. The Call ID is used to target a radio when an individual or group call has to be sent to that radio or set of radios. The four digit ID is a hexadecimal number and can therefore be comprised of hex digits 'A' through 'F'. The valid range of values is 1-FFFF.

<div align="center">

NOTES ON MDC CALL IDs
</div>

     * A Call ID preceded by the hexadecimal digit 'E' is interpreted by the RSS as a Group ID. IDs of the form 'Exxx' (where x implies any hex digit) should therefore be avoided for Individual/Primary ID specification.

     * Note also that the digit 'F' serves as a wildcard, so it can be strategically placed in a Call ID to make it match other Call IDs, thus creating the effect of a group ID. 'FFFF' for instance, would specify all radios in system.

Call Text
Enter the alphanumeric name for this Call ID. This name will appear on the radio display to facilitate ease of operation.

6.2.3.4 AUXILIARY SYSTEMS

RSS LOCATION   **At the CHANGE/VIEW MENU, press** [F6] [F7] **.**

```
┌─────────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software              │  Select Function F1-F10.     │
│ MTSX          Model:                         │                              │
│                                              │                              │
│ MAIN:CHANGE/VIEW:CONV:AUX                    │                              │
├──────────────────────────────────────────────┴─────────────────────────────┤
│                                                                             │
│                        AUXILIARY SYSTEMS MENU                               │
│                                                                             │
│            F1   -  HELP                                                      │
│            F2   -  Singletone Systems                                        │
│            F3   -  Singletone List                                           │
│            F4   -  Quik-Call II Systems                                      │
│            F5   -  GE STAR Systems                                           │
│            F6   -                                                            │
│            F7   -                                                            │
│            F8   -                                                            │
│            F9   -                                                            │
│            F10  -  EXIT                                                      │
│                                                                             │
└─────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	SINGLE SYSTEM	SINGLE TONES	QUIK-CALL II	GE STAR SYSTEM					EXIT

This screen is used to define the Singletone System information, the Singletone list frequencies, the Quik-Call II Systems information and the GE STAR Systems Information.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6.** The CONVENTIONAL MENU appears.

3. Press **F7**. The AUXILIARY SYSTEMS MENU screen

6. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

7. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - SINGLE SYSTEM Singletone feature allows the capability to selectively access repeaters. The Singletone Systems defined from this option can be specified in the CONV PERS RAC OPTIONS Screen (from Main, **F4,F6,F3,F9,F7**) by enabling the Repeater Access field.

F3 - SINGLE TONES Singletone List contains the programmable tone frequencies for the Singletone Feature.

F4 - QUIK-CALL II   Quik-Call II feature provides a decoding method for the radio to unmute when receiving the proper tones programmed in the systems. The systems defined from this option can be chosen in the CONVENTIONAL PERSONALITY Screen (from Main, **F4,F6,F3**) under the following 2 conditions: 1.) If GE STAR is used as the signalling type, then DOS must be disabled in the specified GE STAR System, and 2.) If MDC is used as the signalling type, then DOS and MDC Demodulator need to be disabled.

F5 - GE STAR SYSTEM is a signalling protocol which provides such features as Data Operated Squelch (DOS), Emergency Alarm, and PTT-ID. The GE STAR Systems defined from this menu option can be specified in the CONVENTIONAL PERSONALITY Screen (from Main, F4,F6,F3) when GE STAR is selected for the Signalling field.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

6.2.3.4.1 SINGLETONE SYSTEM

| F6 | | F7 | | F5 |

RSS LOCATION: **At the CHANGE/VIEW MENU, press**   **.**

MOTOROLA Radio Service Software
MTSX   Model:

...CONV:AUX:SINGLETONE SYSTEM

Enter or Scroll to Select Type

SINGLETONE SYSTEM

System.....................1
         Tone Pretime (ms)..250
         Tone Duration...500
         PTT Sidetone ....Enabled
         RAB Sidetone ....Enabled

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYS	PREV SYS	NEXT SYS	DELETE SYS					EXIT

This screen contains all the parameters related to a Singletone System. The displayed settings only pertain to the system shown.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW menu appears.

2. Press **F6**. The CONVENTIONAL MENU screen appears.

3. Press **F7**. The AUXILIARY MENU screen appears.

4. Press **F2**. The SINGLETONE SYSTEM screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. Press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SYS (Add System) allows you to add a system.

F3 - PREV SYS (Previous System) allows you to go to the system before this one.

F4 - NEXT SYS (Next System) allows you to go to the system after this one.

F5 - DELETE SYS (Delete System) allows you to delete a system.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

System
To select the desired Singletone System, use the Up/Down arrows keys, enter the system number, or use the function keys F3 (previous) and F4 (next). The radio may have a maximum number of 16 systems.

Tone Pretime (ms)
Use the UP/DOWN arrow keys to select or enter the desired value directly. The Tone Pretime for Tone Signalling specifies the length of time that "dead" carrier is transmitted between the initiation of the Tone (RAC) transmission and the actual Tone (RAC) transmission. The valid range is from 25-6375 milliseconds in 25 millisecond increments. The factory default is 250 millisecond increments. The factory default is 250 milliseconds.

Tone Duration
Use the UP/DOWN arrow keys to select or enter the desired value directly. Upon expiration of the Singletone Pretime period, the Singletone shall be encoded onto the carrier for the duration of the value specified in this field. The valid range is from 25-6375 milliseconds in 25 millisecond increments. The factory default is 500 milliseconds.

PTT Sidetone
Use the UP/DOWN arrow keys to Enable or Disable this field. When the PTT Button is pressed, the radio shall generate a continuous sidetone during transmission of the Automatic Repeater Access Codeword (RAC) preceding a voice transmission under the following conditions:

      1. This field is Enabled
      2. Repeater Access is Enabled
      3. The Repeater Access Type is Automatic RAC

RAB Sidetone
Use the UP/DOWN arrow keys or enter directly to select Enabled or Disabled. If this field is Enabled, a continuous sidetone will sound during transmission of the Manual Repeater Access Codeword (MRAC), when MRAC is initiated via the Repeater Access Button (RAB) #1 or RAB #2. Termination of the RAB Sidetone indicates that transmission of the RAC has been completed, and you may begin talking.

6.2.3.4.2 SINGLETONE LIST

RSS LOCATION   **At the CHANGE/VIEW MENU, press** F6 F7 F3 .

MOTOROLA Radio Service Software MTSX Model: CONV:AUX:SINGLETONE LIST	Enter or Scroll to Select Frequency.

<u>SINGLETONE LIST</u>

<u>#</u>	<u>Tone (Hz</u>	<u>#</u>	<u>Tone (Hz</u>
1	300.0		

F1 HELP	F2 ADD TONE	F3	F4	F5 DELETE TONE	F6	F7	F8	F9	F10 EXIT

This screen contains Singletone List information. It allows you to modify the frequencies for the Singletone List.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6.** The CONVENTIONAL MENU appears.

3. Press **F7.** The AUXILIARY MENU appears.

4. Press **F3**. The SINGLETONE LIST screen appears

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. Press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD TONE allows you to add a tone.

F5 - DELETE TONE allows you to delete a tone.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Tone (Hz)
Use the Up/Down arrow keys to select or enter directly the desired tone frequency. The defined tones can be used o a per-conventional personality basis in the CONV PER RAC OPTIONS screen (from Main Menu, F4,F6,F3,F9,F7) by enabling the Repeater Access field. The field "Singletone (HZ)" will contain a tone from this list. The valid range is 300-3000 Hz in 0.1 Hz increments. The factory default is 300 Hz.

6.2.3.4.3 QUIK-CALL II SYSTEM

RSS LOCATION: **At the CHANGE/VIEW MENU, press** F6 F7 F4 **.**

```
MOTOROLA Radio Service Software          Enter or Scroll to Select System.
MTSX            Model:

...CONV:AUX: QUIK-CALL II SYSTEM


        System .....................1
                                    QUIK-CALL II SYSTEM

        System Signalling Type ...................Motorola    Decoder Option.............................(1)  A-B
        Signalling Muting Type...........................AND
          Initial Squelch Type .....................Quik Call
        Reset Type .............................................Auto    Tone      Freq (Hz)     Code
          Auto Reset Carr Ovrd ....................Enabled     A        288.5        138
          Auto Reset Duration (sec).........................5     B        600.9        121
        Decoder 1 Call Type ......................Individual
        Decoder 2 Call Type ..........................Group
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYS	PREV SYS	NEXT SYS	DELETE SYS				MORE OPTIONS	EXIT

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F7**. The AUXILIARY SYSTEMS MENU appears.

4. Press **F4**. The QUIK-CALL II SYSTEM screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SYS (Add System) allows you to add a system.

F3 - PREV SYS (Previous System) allows you to go to the system before the current one.

F4 - NEXT SYS (Next System) allows you to go to the system after the current one.

F5 - DELETE SYS (Delete System) allows you to delete a system.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

System
Use the Up/Down arrows to select the desired Quik-Call II System. The number may also be entered directly. The system may also be selected via the function keys. The radio may have a maximum number of 15 systems.

System Signalling Type
This field dictates the System Signalling Type to be used. It affects the values in the following fields:
> Code A
> Code B
> Code C
> Code E

The available signalling types include:
> Motorola
> GE
> Plectron
> Federal

The factory default is Motorola.

Signalling Muting Type
Use the Up/Down arrows to scroll through the available selections.

This field dictates the signalling Muting Type to be used during Quik-Call II operations: AND, OR.
> AND -   Both signalling Unmuting (Quik-Call) and Radio Unmuting must be satisfied to unmute.
> OR -   Either Signalling Unmuting (Quik-Call) or Radio Unmuting must be satisfied to unmute.

The factory Default is AND.

Initial Squelch Type (this field is for view only).

This field dictates the Initial Squelch Type to be used upon entry to a Quik-Call II channel: Released, Quik Call. The factory Default is Quik-Call.

Reset Type
Use the Up/Down arrows to scroll through the available selections.

This field dictates the Quik-Call II Call Reset Type to be used: Manual or Auto. When Manual Reset is selected a Monitor button is required for proper Quik-Call II operations. The Factory Default is Auto.

Auto Reset Carr Ovrd
Use the Up/Down arrows to scroll through the available selections.

When this feature is enabled, the Auto Reset Duration will be reloaded into the Auto Reset Timer when the radio mutes. The Factory Default is Enabled.

Auto Reset Duration (sec)
Use the Up/Down arrows to scroll through the available selections, or directly enter the desired value. Integer values from 1 to 255 are allowed.

This field dictates the maximum amount of uninterrupted time spent in Release Squelch Mode. When this time duration expires Release Squelch Mode will be exited and Quik-Call II Squelch Mode will be entered. The Factory Default is 5 sec.

Decoder 1 Call Type
Use the Up/Down arrows to scroll through the available selections. This field dictates the Decoder 1 Call Type to be used: Individual or Group. The Factory Default is Individual.

Decoder 2 Call Type
Use the Up/Down arrows to scroll through the available selections.

This field dictates the Decoder 2 Call Type to be used: Individual or Group. The Factory Default is Group.

Decoder Option
Use the Up/Down arrows to scroll through the available selections. This field controls the number of decoders (1 or 2) and the decode sequences to be used on this Quik-'Call II System.

This field controls the number of decoders (1 or 2) and the decode sequences to be used on this Quik-Call II System. The Factory Default is (1) A-B.

Available selections include:
        (1) A-B
        (1) A-B, (2) A-C
        (1) A-B, (2) C-B
        (1) A-B, (2) B
        (1) A-B, (2) C
        (1) A-B, (2) C-D

The factory default is (1) A-B

Codes
Use the Up/Down arrows to scroll through the available selections or directly enter the desired value. Codes vary depending on the Signalling System Type. This field contains a code that represents a Quik-Call II Tone frequency. Codes vary depending on the Signalling System Type selected. The Factory Default is Code A, B, C, or D.

Note: All codes A, B, C, and D should never have the same values.

Factory Defaults

Signalling Type	Code A	Code B	Code C	Code D
Motorola	138	121	13	18
GE	44	7	38	51
Plectron	P1	P10	P25	P36
Federal	F1	F10	F16	F20

Freq (Hz)
Use the Up/Down arrows to scroll or directly enter the available tones. This field represents the frequency of audible tone in 0.1 Hz steps. Values from 288.5 to 3010.0 Hz in 0.1 Hz increments are allowed.

Note: All tones A, B, C, and D should never have the same values.
Factory Defaults

Signalling Type	Code A	Code B	Code C	Code D
Motorola	288.5	600.9	1950.0	2840.0
GE	457.5	607.5	1077.5	1207.5
Plectron	643.0	950.0	1820.0	2932.0
Federal	643.0	1299.0	2084.0	2856.0

6.2.3.4.4 GE STAR SYSTEM

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F7] [F5] .

```
┌─────────────────────────────────────────────┬────────────────────────────────────────┐
│ MOTOROLA Radio Service Software               │ Enter or Scroll to Select System.       │
│ MTSX            Model:                        │                                          │
│                                               │                                          │
│ ...CHANGE/VIEW:CONV:AUX:GE STAR SYSTEM        │                                          │
├───────────────────────────────────────────────┴──────────────────────────────────────┤
│         MDC System............1                                                         │
│                                    GE STAR SYSTEM                                       │
│                                                                                         │
│         Addressing Mode ..............................Normal    Emergency Alarm.........................Enabled  │
│         Radio ID.................................................0000      Monitor w Sil Emer ...................Disabled  │
│         PTT ID Type  ..................................Disabled                                                  │
│            PTT ID Sidetone ..........................Disabled    Impolite Retries .....................................0  │
│            Pretime Duration (ms)..............................0           Revert Table                          │
│         Baud Rate .........................................400 bps                                              │
│         DOS...............................................Enabled      Num     Zone     Channel                │
│            Unmute Hold-Off (ms)..........................550       1        1         1                         │
│            Coast Time (ms) ..................................100       2       Blank     Blank                  │
│                                                                   3       Blank     Blank                       │
└─────────────────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD SYS	PREV SYS	NEXT SYS	DELETE SYS					EXIT

This screen allows you to change/view the parameters that pertain to a GE STAR system. The settings shown on the screen are only for the system shown.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F7**. The AUXILIARY MENU appears.

4. Press **F5**. The GE STAR SYSTEM screen appears.

5. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

6. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD SYS (Add System) allows you to add a GE STAR System.

F3 - PREV SYS (Previous System) allows you to go to the GE STAR System before this one.

F4 - NEXT SYS (Next System) allows you to go to the GE STAR System after the current one.

F5 - DELETE SYS (Delete System) allows you to delete a GE STAR System.

FIELD DEFINITIONS:

System
Use the Up/Down arrows to scroll or directly enter the desired GE STAR system. The number may also be entered directly. The system may also be selected ia the function keys. The radio may have a maximum number of 7 systems.

Addressing Mode
Use the Up/Down arrows to select Normal or Extended. The state of this field determines the range of valid ID's that the radio can use. Specifies the GE STAR addressing mode for the Radio ID. The Factory Default is Disabled.

Radio ID
Use the Up/Down arrows to scroll or directly enter the Radio ID. This field specifies the ID of the radio in decimal. For normal addressing mode, the possible radio IDs range from 0 to 2047 and for the extended addressing mode, the possible radio IDs range from 0 to 9999. This ID is used for both PTT ID and Emergency Alarm data transmissions. The Factory Default is 0000.

PTT ID Type
Use the Up/Down arrows to select Disabled, Leading, Trailing, or Lead/Trail. It specifies the placement of the PTT ID data in a GE STAR transmission. The PTT ID Data can e sent as follows:
        1.   Immediately after a PTT press and before voice (Leading).
        2.   Immediately after a PTT release and after voice (Trailing), or
        3.   Both immediately after a PTT press and PTT release (Lead/Trail).
The Factory Default is Disabled.

PTT ID Sidetone
Use the Up/Down arrows to select Enabled or Disabled. The PTT ID Sidetone specifies whether or not the radio generates a sidetone when sending Leading GE STAR PTT ID data. The Factory Default is Enabled.

Pretime Duration (ms)
Use the Up/Down arrows to scroll or directly enter the desired duration. The Pretime Duration specifies the duration of the pretime transmission preceding the PTT ID and Emergency GE STAR data. The range is 0 to 2550 ms in 25 ms increments. The Factory Default is 500.

Baud Rate
Use the Up/Down arrows to select 400bps or 800 bps. The Baud Rate specifies the baud rate of the GE STAR data in bits per second. The Factory Default is 400 bps.

DOS (Data Operated Squelch)
Use the Up/Down arrows to select Enabled or Disabled. DOS specifies whether or not Data Operated Squelch is Enabled. The Factory Default is Enabled.

Unmute Hold-Off (ms)
Use the Up/Down arrows to scroll or directly enter the desired time. The range is 25 through 2550 in increments of 25. This feature may also be Disabled. The Unmute Hold-Off specifies the duration that the radio waits with speaker muted for a DOS detect after a carrier is first detected. The Factory Default is 550.

Coast Time (ms)
Use the Up/Down arrows to scroll or directly enter the desired time. The range is 0 through 500 in increments of 25. Coast Time specifies the duration that the radio waits with speaker muted after DOS detect has been lost but before unmuting. The Factory Default is 100.

Emergency Alarm
Use the Up/Down arrows to select Enabled or Disabled. The Emergency Alarm field specifies whether or not GE STAR Emergency Alarm is Enabled. The Factory Default is Disabled.

Monitor w Sil Emer
Use the Up/Down arrows to select Enabled or Disabled. The Monitor w Sil Emer field allows the monitor button to function during silent emergency. The Factory Default is Disabled.

Impolite Retries
Use the Up/Down arrows to scroll or directly enter the desired value. The range is 1 to 255. This field specifies the number of impolite emergency alarm packets that the radio will send. The Factory Default is 10

Revert Table (Zone/Channel)
Use the Up/Down arrows to scroll through the available zone/channels. Directly enter the desired value. This table specifies three conventional zone/channel combinations that the selected conventional zone/channel can use (or revert to) when initiating GE STAR Emergency Alarm transmissions. The radio remains on the revert channel only for the duration of the Emergency Alarm transmissions.

The factory default is:

Num	Zone	Channel
1	Blank	Blank
2	Blank	Blank
3	Blank	Blank

6.2.3.4.5 CONVENTIONAL MESSAGE ALIAS LIST

RSS LOCATION: **At the CHANGE/VIEW MENU, press** [F6] [F8] **.**

```
┌──────────────────────────────────────────┬──────────────────────────────────────────┐
│ MOTOROLA Radio Service Software            │ Enter or Scroll to Select Value.           │
│ MTSX          Model:                       │                                            │
│                                            │                                            │
│ ...CHANGE/VIEW:CONV:MESSAGE ALIAS LIST     │                                            │
├────────────────────────────────────────────────────────────────────────────────────────┤
│                                                                                          │
│                        CONV MESSAGE ALIAS LIST                                           │
│                                                                                          │
│              Entry    Message Alias Number       Message Alias Text                       │
│                1               1                   MESSAGE 1                               │
│                2               2                   MESSAGE 2                               │
│                3               3                   MESSAGE 3                               │
│                4               4                   MESSAGE 4                               │
│                5               5                   MESSAGE 5                               │
│                6               6                   MESSAGE 6                               │
│                7               7                   MESSAGE 7                               │
│                8               8                   MESSAGE 8                               │
│                                                                                          │
└──────────────────────────────────────────────────────────────────────────────────────────┘
   F1        F2        F3        F4        F5        F6        F7        F8        F9        F10
  HELP      ADD                            DELETE                                           EXIT
          MESSAGE                         MESSAGE
```

This screen contains the Conventional Message Alias List and is used to view and edit the Message Alias Number and Message Alias Text.

PROGRAMMING PROCEDURE:

1. Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2. Press **F6**. The CONVENTIONAL MENU appears.

3. Press **F8**. The CONVENTIONAL MESSAGE ALIAS LIST appears.

4. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5. If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - **ADD MESSAGE** allows you to add a Message to the List.

F5 - **DELETE MESSAGE** allows you to delete a Message from the List.

Message Alias Number
The Message Alias Number will match the message entry number in most cases. However, if the first entry in the list should cause the fourth message to be sent, then 4 should be assigned to the Message Alias Number of entry 1.

The factory default for the Message Alias Number matches the message entry number.

Message Alias Text
Enter the text. The size of the Message will be display dependent. This field contains the ASCII text for each of the Message Alias Text Fields.

The factory default will be either MSG X or MESSAGE X, where X is the Entry number. The length depends on the display type of the radio.

6.2.3.4.6 CONVENTIONAL STATUS ALIAS LIST

F6   F9

RSS LOCATION: **At the CHANGE/VIEW MENU, press   .**

```
┌─────────────────────────────────────┬──────────────────────────────────────┐
│ MOTOROLA Radio Service Software      │ Enter or Scroll to Select Value.       │
│ MTSX          Model:                 │                                        │
│                                      │                                        │
│ ...CHANGE/VIEW:CONV:STATUS ALIAS LIST│                                        │
├──────────────────────────────────────┴─────────────────────────────────────┤
│                                                                              │
│                          CONV STATUS ALIAS LIST                              │
│                                                                              │
│              Entry       Status Alias Number        Status Alias Text        │
│                1                 1                   STATUS 1                  │
│                2                 2                   STATUS 2                  │
│                3                 3                   STATUS 3                  │
│                4                 4                   STATUS 4                  │
│                5                 5                   STATUS 5                  │
│                6                 6                   STATUS 6                  │
│                7                 7                   STATUS 7                  │
│                8                 8                   STATUS 8                  │
│                                                                              │
├──────────────────────────────────────────────────────────────────────────── │
│ F1      F2       F3      F4      F5      F6     F7      F8      F9     F10      │
│ HELP    ADD                     DELETE                                EXIT     │
│         STATUS                  STATUS                                         │
└──────────────────────────────────────────────────────────────────────────────┘
```

This screen contains the Conventional Status Alias List and is used to view and edit the Status Alias Number and Status Alias Text.

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F6**. The CONVENTIONAL MENU appears.

3.   Press **F9**. The CONVENTIONAL STATUS LIST appears.

4.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

5.   If a field is selected, press the UP/DOWN arrow keys to select choice or value.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - **ADD STATUS** allows you to add a Status to the List.

F5 - **DELETE STATUS** allows you to delete a Status from the List.

Status Alias Number
The Status Alias Number will match the status entry number in most cases. However, if the first entry in the list should cause the fourth status to be sent, then 4 should be assigned to the Status Alias Number of entry 1.

The factory default for the Status Alias Number matches the status entry number.

Status Alias Text
Enter the text. The size of the Status will be display dependent.

This field contains the ASCII text for each of the Status Alias Text Fields.

The factory default will be either STS X, or STATUS X, where X is the Entry number. The length depends on the display type of the radio.

6.2.4 ZONE/TALKGROUP (CHANNEL) ASSIGNMENT

RSS LOCATION :   At the CHANGE/VIEW MENU, press ⌨ F8 **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Enter or Scroll to Select Value. │
│ MTSX              Model:                 │                                  │
│                                          │                                  │
│ MAIN:CHANGE/VIEW:ZONE/CHAN               │                                  │
├──────────────────────────────────────────────────────────────────────────────┤
│   Zone Number .......1     ZONE/TALKGROUP (CHANNEL) ASSIGNMENT                 │
│                                                                               │
│                                                                               │
│   Zone Name...........Z1                                                       │
│                                                                               │
│                                           Personality      Talkgroup          │
│   Channel Number    Channel Name      Type    Number        Number   Strapping│
│                                                                               │
│        1              CHAN 1          Conv       1                            │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
│                                                                               │
└───────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD ZONE	PREV ZONE	NEXT ZONE	DELETE ZONE	ADD CHAN	DELETE CHAN			EXIT

A zone is an artificial grouping of channels (or talkgroups) to permit ease of operation. Generally, all members of a zone will reflect some common characteristic such as geographic location, job function, signalling type, etc.

Each member of a zone is defined by selecting a conventional personality, or a trunking personality and a talkgroup. An optional name can also be assigned to each member of the zone. Each zone can also be named on radios equipped with a display   The number of characters allotted for the zone name versus the channel name is defined on the RADIO WIDE DISPLAY OPTIONS screen (**F4**/**F3**/**F6**). Zones and channels can be added and deleted via the function keys designated at the bottom of the screen.

Zone selection may be via the rotary switch, the toggle switch, or the keypad (if applicable).

PROGRAMMING PROCEDURE:

1.   Press **F4** at the MAIN MENU. The CHANGE/VIEW MENU appears.

2.   Press **F8.** The ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen appears.

3.   Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**).

4.   If a field is selected, press the UP/DOWN arrow keys to select choice or value.

Function key descriptions and field definitions are on the following page.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - ADD ZONE allows you to add a zone.

F3 - PREV ZONE allows you to go to the zone before the current one.

F4 - NEXT ZONE allows you to go to the zone after the current one.

F5 - DELETE ZONE allows you to delete a zone.

F6 - ADD CHAN (Add Channel) allows you to add a channel.

F7 - DELETE CHAN (Delete Channel) allows you to delete a channel.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITIONS:

Zone Number
Use the UP/DOWN arrow keys to select the desired zone. The number may also be entered directly. Zones may be added or deleted with the function keys designated at the bottom of the screen.

Zone Name
Each zone may be assigned an alphanumeric name. The number of characters allotted for the zone name versus the channel name is defined on the RADIO WIDE DISPLAY OPTIONS screen (**F4**/**F3**/**F6**).

The zone name will appear to the left of the channel name on the radio display. For single zone radios, the zone name is optional.

Channel Number (Read-only)
A channel number refers to the position in the list which a particular member occupies.

Depending on the radio model and configuration, channel selection may be via the rotary switch, the toggle switch, or the keypad.

Channel Name
Each channel may be assigned an alphanumeric name. The number of characters allotted for the channel name versus the zone name is defined on the RADIO WIDE DISPLAY OPTIONS screen (**F4**/**F3**/**F6**).

The channel name will appear to the right of the zone name on the radio display.

Personality Type
Use the UP/DOWN arrow keys to select either a conventional or trunked personality for each zone member. Both types may be assigned within a single zone.

Personalities must be defined before they can be assigned on this screen. Trunking personalities are entered on the TRUNKING PERSONALITY screen (**F4**/**F4/F4**), and conventional personalities are entered on the CONVENTIONAL PERSONALITY screen (**F4**/**F6/F3**).

Personality Number
Use the UP/DOWN arrow keys to select the personality number for this channel. The number may also be entered directly.

Talkgroup Number

Use the UP/DOWN arrow keys to select the trunking talkgroup (or Subfleet) ID for this channel. The ID will be displayed in hex. Select ATG for an announcement group, or DYN for a dynamic regrouping position, or FLT for Fleetwide.

Valid talkgroups or subfleets for each personality must be defined on the TRUNKING PERSONALITY screen (**F4**/**F4**/**F4**/**F7**) before they may be assigned on this screen.

The Dynamic Regrouping feature must be enabled on the TRUNKING SYSTEM screen (**F4**/**F4**/**F3**) in order to be selected as a talkgroup. Announcement group and Fleetwide must also be enabled on the Trunking Personality Screen (**F4/F4/F4**) to function properly.

Strapping (Read Only)

This field contains the transmit mode of the talkgroup or subfleet for trunked personality types. If set to Clear or Secure, the talkgroup or subfleet is forced to that particular transmit mode. When set to Select, the user is allowed to select the Secure or Clear transmit modes via the two-position concentric switch.

NOTES

SECTION 7. PRINT MENU FUNCTIONS

7.1 INTRODUCTION TO SECTION

RSS LOCATION: **At the MAIN MENU, press** [F5] .

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │ Select Function F1 - F10.        │
│ MTSX              Model:                  │                                  │
│                                           │                                  │
│ MAIN:PRINT                                │                                  │
└─────────────────────────────────────────┴──────────────────────────────────┘
┌────────────────────────────────────────────────────────────────────────────┐
│                              PRINT MENU                                       │
│                                                                              │
│          F1   -  HELP                                                        │
│          F2   -                                                              │
│          F3   -  Radio Wide Buttons, Switches, Display, Scan                 │
│          F4   -  Trunking Systems, Personalities, Call Lists, Options        │
│          F5   -                                                              │
│          F6   -  Conventional Systems, Personalities, MDC, Options           │
│          F7   -                                                              │
│          F8   -  Zone/Channel Assignment                                     │
│          F9   -  Radio Codeplug Data Summary                                 │
│          F10  -  EXIT, Return to Main Menu                                    │
│                                                                              │
└────────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4		F6	F7	F8	F9	F10
HELP		RADIO CONFIG	TRUNK DATA		CONV DATA		ZONE/CHN ASSIGN	DATA SUMMARY	EXIT

The print function is used to produce permanent records of codeplug configurations. A printer is required, and should be connected to your computer per your computer's user's manual.

Note

When printing, misalignment of page breaks may result if the printer is not set properly. For Best results, the printer should be configured as an IBM ProPrinter or an Epson FX/MX having factory defaults settings. The default number of lines per page is 66. Graphics capability is NOT needed.

PROGRAMMING PROCEDURE:

1. Press **F5** at the MAIN MENU. The PRINT MENU appears.

2. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS

F1 - HELP Provides useful information about the currently displayed menu, screen, or field.

F3 - RADIO CONFIGURATION The radio wide function prints a summary of the radio configuration, including Button/Switch/Menu programming, Phone Lists, Scan Lists, and Display information.

F4 - TRUNKING DATA   The trunking systems and personality function prints a summary of all trunking system information, including control channels, IDs, connect tones, system scan lists, call lists, and status of all major personality features.

F6 - CONVENTIONAL DATA The Conventional Data print function prints a summary of the conventional personalities, MDC Systems and Auxiliary Systems.

F8 - ZONE/CHANNEL ASSIGNMENT The zone summary function prints a summary of current zone/channel information for the radio.

F9 - RADIO CODEPLUG DATA SUMMARY The Radio Codeplug Data Summary function prints a summary of the key radio programming parameters.

F10 - EXIT returns you to the Main Menu.

7.1.1 PRINT RADIO WIDE FEATURES CONFIGURATION MENU

RSS LOCATION: **At the MAIN MENU, press** [F5] [F3] **.**

MOTOROLA Radio Service Software MTSX Model: MAIN:PRINT: FEATURES	Select Function F1 - F10.

RADIO WIDE FEATURES CONFIGURATION MENU

    F1   -   HELP
    F2   -   Radio Wide Options
    F3   -   Buttons, Switches, Menu Items
    F4   -   Phone Lists and Options
    F5   -   Scan Lists and Options
    F6   -   Display Options
    F7   -
    F8   -
    F9   -
    F10 -   Exit, Return to Print Menu

F1 HELP	F2 RADIO OPTIONS	F3 FEATURE OPTIONS	F4 PHONE OPTIONS	F5 SCAN OPTIONS	F6 DISPLAY OPTIONS	F7	F8	F9	F10 EXIT

FUNCTION KEY DESCRIPTIONS

F1 - HELP provides useful information about the currently displayed menu, screen, or field**.**

F2 - RADIO OPTIONS allows you to print the radio wide option screen.

F3 - FEATURE OPTIONS (Buttons, Switches, Menu Items) allows you to print the Button Configuration Screen, Switches Configuration Screen, and Menu Item Configuration screen.

F4 - PHONE OPTIONS allows you to print the screen which shows the Phone Options screen.

F5 - SCAN OPTIONS allows you to print the screen which show scan lists and scan-related options.

F6 - DISPLAY OPTIONS allows you to print the screen which shows the Display Options screen.

F10 -EXIT returns you to the Print Menu.

7.1.2 TRUNKING MENU

RSS LOCATION: **At the MAIN MENU, press** `F5` `F4` **.**

MOTOROLA Radio Service Software MTSX Model: MAIN PRINT:TRUNKING	Select Function F1 - F10.

<div align="center">TRUNKING MENU</div>

```
F1   -   HELP
F2   -   Trunking Radio Wide Options
F3   -   Trunking Systems: System ID, Control Channels, etc.
F4   -   Trunking Personality: Talkgroups, Emergency Options, etc.
F5   -   Trunking Call List Data
F6   -
F7   -
F8   -
F9   -
F10  -   Exit, Return to Print Menu
```

F1 HELP	F2 TRUNK WIDE OPT	F3 TRUNK SYS	F4 TRUNK PERS	F5 TRUNK ID LIST	F6	F7	F8	F9	F10 EXIT

FUNCTION KEY DESCRIPTIONS

F1 - HELP provides useful information about the currently displayed menu, screen, or field**.**

F2 - TRUNK WIDE OPT provides information about options which are applicable to all trunking operations, regardless of system type.

F3 - TRUNK SYS allows you to print the trunking system screen.

F4 - TRUNKING PERSONALITY allows you to print the trunking personality and talkgroups.

F5 - TRUNK ID LIST allows you to print the screen which documents the trunking call lists.

F10 - EXIT returns you to the Print Menu.

7.1.3 CONVENTIONAL MENU

RSS LOCATION: **At the MAIN MENU, press** $\boxed{\text{F6}}$ **.**

MOTOROLA Radio Service Software	Select Function F1 - F10.
MTSX Model:	
MAIN PRINT:CONV	

<u>CONVENTIONAL MENU</u>

F1   -   HELP
F2   -   Conventional Radio Wide Configuration
F3   -   Conventional Personalities, Options
F4   -   MDC Systems, Options
F5   -
F6   -
F7   -   Auxiliary Systems
F8   -
F9   -
F10 -   EXIT

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CONV	CONV	MDC			AUX			EXIT
	WIDE OPT	PERS	SYSTEM			SYSTEM			

FUNCTION KEY DESCRIPTIONS

F1 - HELP provides useful information about the currently displayed menu, screen, or field**.**

F2 - CONV WIDE OPT prints a summary of the conventional personality information.

F3 - CONV PERS (Conventional Personality) function prints a summary of the Conventional Personality information.

F4 - MDC SYSTEM function prints a summary of the MDC system options.

F7 - AUX SYSTEM is used for a submenu in which the following can be printed: Singletone Systems and Lists, Quik-Call II and GE STAR Systems.

F10 - EXIT cancels printing.

NOTES

SECTION 8. FILE MAINTENANCE MENU FUNCTIONS

8.1 INTRODUCTION TO SECTION

This section describes all the functions available from the FILE MAINTENANCE MENU. To guide you through these functions, the following FILE MAINTENANCE-related menus and screens are shown with their specific RSS location, programming procedures from the MAIN MENU, function key descriptions, and field definitions.

8.2 FILE MAINTENANCE MENU

RSS LOCATION: **At the MAIN MENU, press** [F6]

```
┌─────────────────────────────────────────────┬──────────────────────────────┐
│ MOTOROLA Radio Service Software              │                              │
│ MTSX            Model:                       │                              │
│                                              │                              │
│ MAIN:FILE MAINT                              │                              │
├──────────────────────────────────────────────┴──────────────────────────────┤
│                        FILE MAINTENANCE MENU                                 │
│                                                                              │
│     F1    -    HELP                                                          │
│     F2    -    Create Directory Path                                         │
│     F3    -                                                                  │
│     F4    -                                                                  │
│     F5    -    Delete Archive File                                           │
│     F6    -                                                                  │
│     F7    -                                                                  │
│     F8    -                                                                  │
│     F9    -                                                                  │
│     F10   -    Exit                                                          │
│                                                                              │
├──────────────────────────────────────────────────────────────────────────────┤
│  F1       F2       F3      F4      F5       F6      F7      F8      F9     F10 │
│  HELP    DEFINE                    DELETE                                EXIT │
│          PATH                      FILE                                       │
└──────────────────────────────────────────────────────────────────────────────┘
```

This RSS feature allows you to do file management tasks from within the radio service software package. Such tasks as creating directories, deleting files, updating backup, and restoring database files, can be done without exiting the program.

PROGRAMMING PROCEDURE:

1. Press **F6** at the MAIN MENU. The FILE MAINTENANCE MENU appears.

2. Select the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - DEFINE PATH allows you to enter a new pathname.

F5 - DELETE FILE allows you to delete a file from the path, similar to DEL filename in DOS.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

8.2.1 CREATE DIRECTORY PATH

RSS LOCATION: At the FILE MAINTENANCE MENU, press F2

```
┌─────────────────────────────────────────┐  ┌──────────────────────────────┐
│ MOTOROLA Radio Service Software          │  │ Enter Path .                 │
│ MTSX            Model:                    │  │                              │
│                                           │  │                              │
│ MAIN:FILE MAINT:CREATE                    │  │                              │
├───────────────────────────────────────────┴──┴──────────────────────────────┤
│                                                                              │
│                          CREATE DIRECTORY PATH                               │
│                                                                              │
│          New Path Name :   C:\MRSS\MTSX\tmp                                   │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
│                                                                              │
├──────────────────────────────────────────────────────────────────────────────┤
│  F1       F2       F3      F4      F5      F6      F7      F8      F9     F10  │
│  HELP     DEFINE                                                        EXIT  │
│           PATH                                                                │
└──────────────────────────────────────────────────────────────────────────────┘
```

This screen allows you to create a new directory on your computer disk drive. This is similar to the "mkdir" (OR "MD") command in DOS.

PROGRAMMING PROCEDURE:

1. Press **F6** at the MAIN MENU. The FILE MAINTENANCE MENU appears.

2. Press **F2**. The CREATE DIRECTORY PATH screen appears.

3. Type in the new directory path name, or press the desired function key (**F1 - F10**).

4. If you entered a new directory path, press **F2** to create the directory.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - DEFINE PATH allows you to enter a pathname.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

8.2.2 DELETE ARCHIVE FILE

RSS LOCATION   **At the FILE MAINTENANCE MENU, press** [F5]

```
+---------------------------------------------------+  +------------------------+
| MOTOROLA Radio Service Software                   |  |                        |
| MTSX            Model:                            |  |                        |
|                                                   |  |                        |
| MAIN:FILE MAINT: DELETE ARCHIVE                   |  |                        |
+---------------------------------------------------+  +------------------------+
| +-----------------------------------------------------------------------------+ |
|                                                                                 |
|    Current Archive    [ C:\MRSS\MTSX\ARCHIVE                                  ] |
|                                                                                 |
|                              DELETE ARCHIVE FILE                                |
|                                                                                 |
|                                                                                 |
|       FileName            FileName            FileName            FileName       |
|       HELP.prt                                                                   |
|       mtsx.cfg                                                                   |
|       patty.arc                                                                  |
|                                                                                 |
|                                                                                 |
| +-----------------------------------------------------------------------------+ |
+---------------------------------------------------------------------------------+
| F1       F2       F3     F4     F5      F6     F7     F8     F9     F10          |
| HELP     CHANGE                DELETE                              EXIT          |
|          ARCHIVE                FILE                                             |
+---------------------------------------------------------------------------------+
```

This screen allows you to delete unwanted files from the computer's disk drive.

PROGRAMMING PROCEDURE:

1. Press **F6** at the MAIN MENU. The FILE MAINTENANCE MENU appears.

2. Press **F5**. The DELETE ARCHIVE FILE screen appears.

3. Enter the path of the directory which holds the unwanted files by typing the pathname on the Current Archive field.

4. Press **Tab** to select the desired file name.

5. Once you have selected the file name, press the desired function key (**F1 - F10**).

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - CHANGE ARCHIVE allows you to change the directory which you are viewing.

F5 - DELETE FILE allows you to delete a file from the path, similar to DEL filename in DOS.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

FIELD DEFINITION:

FileName
This is the DOS name of the file which you may want to delete. Refer to your computer's owner's manual for a complete description of file names.

SECTION 9. FLASHPORT UPGRADE

9.1 INTRODUCTION TO FLASHport

FLASHport is a revolutionary new method of upgrading the software in a subscriber radio. This involves enabling new features downloading or FLASHing new software into the radio.

This section is a brief preview of FLASHport capabilities. A detailed procedure is obtained through the FLASHport Users Manual (68P81077C65) that accompanies the software upgrade kit.

9.2 FLASHING PROCEDURE

"Flashing" or upgrading your radio requires the standard radio service software (RSS), which is used during normal radio programming and servicing procedures. Refer to the "Getting Started" section for your radio's specific RSS part number. The following is a brief description of the FLASHport Upgrade Menu.

NOTE

The following RSS screens are shown as an example; your screens may vary slightly. The FLASHport path and key titles (HELP, EXIT, FLASH RADIO, etc.) may be the same for portable and mobile radios, but the function keys may be different.

RSS LOCATION: At the MAIN MENU, press ⌨ F8 .

MOTOROLA Radio Service Software MTSX Model: MAIN	Select Function F1 - F10.

MAIN MENU

```
F1    -    HELP
F2    -    SERVICE: Alignment (Requires RIB)
F3    -    GET/SAVE/PROGRAM/CLONE Codeplug Data From/to Disk/Radio
F4    -    CHANGE/CREATE/VIEW Radio Codeplug Data
F5    -    PRINT Codeplug Data
F6    -    FILE Maintenance
F7    -
F8    -    FLASHport Upgrade
F9    -    SETUP Computer Configuration
F10   -    EXIT Radio Service Software, Return to DOS
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	SERVICE MENU	GET SAVE	CHANGE VIEW	PRINT MENU	FILE MAINT		FLASHport UPGRADE	SETUP MENU	EXIT TO DOS

9.3 FLASHPORT UPGRADE

RSS LOCATION: **At the FLASHPORT UPGRADE MENU, press** [F8] **.**

```
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ MOTOROLA Radio Service Software          │                                  │
│ MTSX            Model:                   │   Select Function F1 - F10       │
│                                          │                                  │
│ MAIN: FLASHport Upgrade                  │                                  │
├──────────────────────────────────────────┴──────────────────────────────────┤
│                        FLASHPORT UPGRADE MENU                                │
│      F1    -   HELP                                                          │
│      F2    -   View Radio Configuration                                     │
│      F3    -   View FLASHkey Configuration                                  │
│      F4    -                                                                │
│      F5    -                                                                │
│      F6    -                                                                │
│      F7    -                                                                │
│      F8    -   Upgrade Radio                                                │
│      F9    -                                                                │
│      F10   -   EXIT,  Return to Main Menu                                   │
│                                                                             │
└──────────────────────────────────────────────────────────────────────────┘
```

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	VIEW RADIO	VIEW FLASHKEY					UPGRADE RADIO		EXIT

FLASHport Upgrade is a multi-level menu that is used to view the radio's configuration, to view the FLASHkey's contents, to upgrade the codeplug, and to FLASH the radio.

The HELP screen (**F1)** will guide you through the upgrade process, as well as the users manual that accompanies the FLASHport Upgrade package.

FUNCTION KEY DESCRIPTIONS:

F1 - HELP provides useful information about the currently displayed menu, screen, or field.

F2 - VIEW RADIO CONFIGURATION displays the radio's current system and enhancements prior to the FLASHport upgrade. The displayed information is necessary at the time of ordering a FLASHport Upgrade package. Because the FLASHport upgrade involves downloading new software to the radio, the memory size of the radio's controller board is also displayed in order to reveal possible memory limitations for FLASHing the radio.

F3 - VIEW FLASHkey CONFIGURATION displays the contents of the FLASHkey you will receive after purchasing a FLASHport Upgrade package. The FLASHkey CONFIGURATION screen displays such information as the required FLASH software, number of purchased and remaining upgrades, and a side by side comparison of the features currently enabled in the radio and the features which will be enabled in the radio after FLASHing the radio.

F8 - UPGRADE RADIO will take you to the SELECT FLASH SOFTWARE screen which reads and displays the name of the files that exist in the default directory for the FLASH Software. The user is asked to select the FLASH Software file and press **F8** in order to start the upgrade process.

F10 - EXIT moves the display backward in the RSS tree, one screen or menu at a time.

APPENDIX A

COMPUTER TO RADIO COMMUNICATION ERROR CODES

Error code	Description
01	No response from the radio
Possible corrective actions:	1. Check programming cable connections. 2. Eliminate background routines on the PC. 3. Check power to the RIB.
02	Transmit register time out
Possible corrective action:	Check serial port.
03	Busy low time out
Possible corrective actions:	1. Check that the radio is turned on. 2. Check radio's battery. 3. Check Com. port selection on SETUP screen.
04	Communication collision
Possible corrective actions:	1. Retry operation. 2. Check Com. port selection on SETUP screen. 3. Check power to the RIB. 4. Check programming cable connections.
05	Programmer not receiving its own transmission
Possible corrective actions:	1. Check Com. port selection on SETUP screen. 2. Check RIB to PC cable. 3. Check power to the RIB. 4. Check serial card. 5. Eliminate background routines on the PC.
06	Re-transmission not acknowledged (NAKed)
Possible corrective action:	Retry operation.
07	CRC error
Possible corrective action:	Retry operation.

APPENDIX A (CONT)

COMPUTER TO RADIO COMMUNICATION ERROR CODES

Error code	Description
08	CRC error
Possible corrective action:	Retry operation.
09	No Acknowledgment received
Possible corrective actions:	1. Check radio's battery. 2. Check power to the RIB.
11	Busy high after pulled low
Possible corrective actions:	1. Check COM port selection on Set Up screen. 2. Check COM port. 3. Check RIB-to-PC connections. 4. Check power to the RIB.

NOTE

A low-level hum or buzz in the received audio MAY be experienced when TPL code OZ (254.1 Hz) is used. This PL code is at the high end of the subaudible frequency range and may be heard in the audio under certain circumstances. Use of this code should be avoided if possible.

APPENDIX B

TPL FREQUENCIES AND CODES TABLE

FREQUENCY (Hz)	CODE	FREQUENCY (Hz)	CODE
067.0	XZ	136.5	4Z
069.3	WZ	141.3	4A
071.9	XA	146.2	4B
074.4	WA	151.4	5Z
077.0	XB	156.7	5A
079.7	WB	162.2	5B
082.5	YZ	167.9	6Z
085.4	YA	173.8	6A
088.5	YB	179.9	6B
091.5	ZZ	186.2	7Z
094.8	ZA	192.8	7A
097.4	ZB	203.5	M1
100.0	1Z	206.5	8Z
103.5	1A	210.7	M2
107.2	1B	218.1	M3
110.9	2Z	225.7	M4
114.8	2A	229.1	9Z
118.8	2B	233.6	M5
123.0	3Z	241.8	M6
127.3	3A	250.3	M7
131.8	3B	254.1	OZ

APPENDIX B (CONT)

DPL CODES TABLE			
CODE	**CODE**	**CODE**	**CODE**
023	143	315	532
025	152	331	546
026	155	343	565
031	156	346	606
032	162	351	612
043	165	364	624
047	172	365	627
051	174	371	631
054	205	411	632
065	223	412	645
071	226	413	654
072	243	423	662
073	244	431	664
074	245	432	703
114	251	445	712
115	261	464	723
116	263	465	731
125	265	466	732
131	271	503	734
132	306	506	743
134	311	516	754

APPENDIX C

MTSX FEATURES

CONVENTIONAL SIGNALLING SYSTEM FEATURES			
	MDC-1200	**DTMF**	**DTMF/PHONE**
DATA OPERATED SQUELCH	●		
RADIO CHECK	●		
PTT ID	ENCODE		
EMERGENCY ALARM	ENCODE		
VOICE SELECTIVE CALL	DECODE		
EMERGENCY REVERT	●		
MEMORY DIAL (19 NUMBERS)			●
LAST NUMBER DIAL			●
19 ACCESS/DE-ACCESS CODES			●
CALL ALERT	DECODE		
HOT KEYPAD		●	
MAN-DOWN	●		
IMMEDIATE/DELAYED ACCESS			●
LIVE/BUFFERED DIALING			●
NOTE: Access to many of these features will be model dependent.			

APPENDIX C (CONT)

TRUNKING SIGNALLING SYSTEM FEATURES					
FEATURE	**TYPE I**	**TYPE II**	**FEATURE**	**TYPE I**	**TYPE II**
UNIVERSAL ID	●		PRIORITY MONITOR		●
FAILSOFT	●	●	SUBFLEET SCAN	●	
PTT ID	●	●	MAN-DOWN		●
EMERGENCY ALARM/CALL		●	AFFILIATION		●
PRIVATE CALL	**ENCODE/ DECODE**	**ENCODE/ DECODE**	DYNAMIC REGROUPING		●
CALL ALERT	**ENCODE/ DECODE**	**ENCODE/ DECODE**	RADIO INHIBIT		●
PHONE INTERCONNECT	**ENCODE/ DECODE**	**ENCODE/ DECODE**	AMSS	●	●
HOT KEYPAD	●	●	SMARTZONE		●
STATUS/ MESSAGE		**ENCODE**	GROUP PRIVACY	●	●
TALKGROUP SCAN	●	●	**NOTE: Access to many of these features will be model dependent.**		

APPENDIX C (CONT)

FEATURE	CONVENTIONAL	TRUNKING
RADIO WIDE FEATURES (F3)		
Selectable Keypad Mute	X	X
Alert Tones	X	X
Block Pending CA/PC		X
Codeplug Self Test	X	X
Rotary Switch Function in Scan Programming	X	X
Low Battery Parameters	X	X
Short/Long Keypress Duration	X	X
Radio-to-Radio Cloning	X	
Time-Out Timer Values	X	X
Emergency Silent Alarm	X	X
Emergency Channel Delay	X	X
Mandown Pre/Post Alert	X	X
Button Functions	X	X
Switch Functions	X	X
Menu Item List Functions	X	X
Radio Lock	X	X
Display Scrolling and Name Size Option	X	X
Display Backlight	X	X
Scan List Creation	X	X

FEATURE	CONVENTIONAL (F6/F2)	TRUNKING (F4/F2)
TRUNKING WIDE FEATURES		
Telephone Interconnect Half/Full Duplex		X
Call Alert/PC Response		X
ISW Window Adjust		X
Auto Dial Holdoff		X
CONVENTIONAL WIDE FEATURES		
Monitor Type	X	
Monitor/Latch Parameters	X	
Smart PTT Parameters	X	
Hub Defects PL	X	

NOTE: All function key references are from the Change/View Menu

APPENDIX C (CONT)

FEATURE	CONVENTIONAL (F6/F3)	TRUNKING F4/F4
BY-PERSONALITY FEATURES		
Mode Name (Assigned on Zone/Channel screen)	X	X
Rx Frequency	X	
Tx Frequency	X	
Rx Squelch Type	X	
Rx Squelch Code	X	
Tx Squelch Type	X	
Tx Squelch Code	X	
Talkaround / Direct	X	
Smart PTT	X	
Choose Scan List	X	X
Hot Keypad	X	X
Tx Power Level (For Applicable Bands)	X	X
MDC Signalling System	X	
Tx Deviation	X	
Phone Operation (DTMF Timing Parameters)	X	X
Auto Scan	X	X
Mute/Unmute Options	X	
Choose Time Out Timer Value	X	X
Squelch Fine Tune	X	
Channel Spacing	X	
Pre/De-emphasis	X	
Trunking System		X
Trunking Individual ID		X
Failsoft Type		X
Talk Permit Tone		X
Call Alert		X
Private Call		X
Conversation Type (Message, Transmission, PTT-ID		X
Talkgroups		X
Status		X
Message		X
Access Type (Fast/Slow)		X
20-Channel Synthesized		X
Emergency Parameters		X

NOTE: All function key references are from the Change/View Menu

APPENDIX C (CONT)

FEATURE	CONVENTIONAL MDC (F6/F3)	TYPE I TRUNKING (F4/F4)	TYPE II TRUNKING (F4/F4)
BY-SYSTEM FEATURES			
System ID		X	X
System Type (I, II, IIi)		X	X
System ID Aliasing			X
Individual ID	X	X	X
Universal ID		X	
Connect Tone		X	X
Coverage Type		X	X
Affiliation Type			X
Tx Power		X	X
Repeater Offset		X	X
Channel Assignment Type (Int'l / Domestic)		X	X
Splinter Channel		X	X
Phone DTMF Timing		X	X
Hot Keypad DTMF Timing		X	X
Status/Message Aliasing			X
PTT ID Enable	X		
Sidetone Enable	X		
Radio Check Enable	X		
Emergency Type, Parameters	X		
Emergency Revert, Table Definition	X		
MDC Timing Parameters	X		
DOS Parameters	X		
Sel Call Reset Parameters	X		

NOTE: All function key references are from the Change/View Menu

TRUNKED RADIO PERSONALITY CHART

FEATURE NAME	Pers 1	Pers 2	Pers 3	Pers 4	Pers 5	Pers 6	Pers 7	Pers 8	Pers 9	Pers 10	Pers 11	Pers 12	Pers 13	Pers 14	Pers 15	Pers 16
System																
Talkgroups																
Individual ID																
Connect Tone																
Power Level																
Talk Permit																
Private Call																
Call Alert																
Interconnect																
Scan List																
Zone																
Channel																
Name																

CONVENTIONAL RADIO PERSONALITY CHART

FEATURE NAME	Mode 1 # ____	Mode 2 # ____	Mode 3 # ____	Mode 4 # ____	Mode 5 # ____	Mode 6 # ____	Mode 7 # ____	Mode 8 # ____	Mode 9 # ____	Mode 10 # ____	Mode 11 # ____	Mode 12 # ____	Mode 13 # ____	Mode 14 # ____	Mode 15 # ____	Mode 16 # ____

NOTES

Field and Menu Navigation Key Sequence List

Below is an alphabetized list of all fields and menus available in the RSS. The list can be reached online in the RSS from any Help screen by pressing **F6** (A to P) or **F7** (Q to Z). The availability of individual fields cataloged in the list depends on the features ordered with the radio and, in some cases, on specific settings of other fields in the RSS.

GLOSSARY

Active Channel	A channel upon which the radio is receiving or transmitting a signal.
Adjustment	A means of tuning the radio to a special value.
Align	To adjust the position setting of any multiple stage device to obtain optimum product performance.
ANI	Automatic Number Identification. Used for access/release codes that are frequently used for system management and billing purposes. ANI numbers may only be programmed by the RSS and may not be changed in the field.
Announcement Group	Grouping structure used in a Type II or Type IIi trunking system. An Announcement Group is a large group of radio users that under normal circumstances coordinate actions among themselves.
Archive file	A file containing the personality of a radio - the contents of the radio's codeplug.
Archive File Cloning	The procedure of merging the data from two codeplugs to pass on customer personalities quickly from one radio to another. In the case of archive file cloning, the source of the factory data is an archive file, and the source of the tuning data is the target radio.
Arrow keys	The cursor movement keys located on the numeric keypad. The up and down arrow keys are used to increment and decrement values.
Asynchronous Communication	A data communications method in which information is transmitted one character at a time. A start bit precedes each character and a stop bit follows each character.
Auto Affilliation	The ability of radios in a Type II or Type IIi system to automatically transmit their talkgroup and unit ID information to the Central Controller. Affilliation occurs after the radio has locked on to the control channel frequency. It does not require the radio user to press the PTT.
Automatic Retry	The ability of the portable radio to send up to 16 inbound signalling words in a four second period, if the outbound signalling word is not received from the central controller after the radio has made a request to transmit.
Backup File	A duplicate file of the archive file that is used in event that the original archive file becomes damaged or erased.
Base Station Identifier	(BSI) An identifier which is programmed into the central controller and sent out in Morse code ID on the lowest frequency trunked repeater.
Blank Frequency	A channel that is not assigned a transmit frequency.
Blank PL Code	A channel that is not assigned a receive or transmit PL code.
Boot	To load the computer's operating system.
Busy Channel Lockout (BCL)	A feature on conventional modes that gives "listening privacy". The radio will not key when there is a carrier on channel unless it is your PL/DPL group. Instead, you will hear a busy tone while PTT is held. Also, you will not be allowed to monitor the channel. If all users that share the channel have BCL enabled, then the users have a privacy similar to what a trunked radio system provides.

CA	Call Alert
Call Alert	A feature that is similar to a tone-only or a tone and voice pager. The "page" can leave a persisting indication on the target radio. A call alert stops the channel scan until the Call Alert call is cleared.
Call List	A list of IDs from one or more signalling formats used to send a message to individual or groups.
Carrier	A term that represents any channel activity.
Carrier Squelch	A radio receive mode of operation that uses receiver squelch as the only method of muting the speaker.
Channel	A pair of receive and transmit frequencies.
Cloning Cable	A radio-to-radio connector cable used to program one radio's personality into another radio.
Codeplug	The contents of the radio's EEPROM that determine the radio's personality. This personality information will be the system ID, Unit ID, Fleet/Subfleet/Talkgroup information, as well as the control channel information. The codeplug contains all the features and options stored in the codeplug.
COM port	The logical name of the serial port available on IBM PC computers. They may be COM1, COM2, COM3 OR COM4.
Connect Tone	A tone generated by the radio over the voice channel to the trunked repeater. Connect tone is used as a signal to the central controller that a specific voice channel has been assigned. There are eight different connect tones available. They are; 76.60 Hz, 83.72 Hz, 90.00 Hz, 105.88 Hz, 116.13 Hz, 128.57 Hz, 138.46 Hz.
Continuous Assignment Updating	The ability of the Motorola trunked system to ensure that a radio just coming into service will be sent to the appropriate voice channel to join the rest of the Fleet, Subfleet or Talkgroup. Once a group has been assigned a voice channel, the control channel will continue to transmit the voice channel information for that call for the duration of the call.
Control Channel	In a trunking system, one of the four highest frequencies that is used to provide a continuous two-way communications path between central controller and all radios on the system.
Cursor	The flashing marker used to indicate the current position on the display screen.
CSQ	Carrier Squelch
Database	An organized file containing records or related data.
Decrement	To decrease a value.
Defaults	Standard settings the RSS uses for I/O port locations, files locations, and display settings.
Default Field Value	The value a field will automatically contain if a user does not specifically change it.
Directory	A catalog of files on a disk. To view the catalog of files on a disk on drive A:, enter the DOS directory command: DIR A: <Enter>

Disk Drive	The device that reads and programs information on a permanent storage medium; that is, floppy or hard disks.
Diskette	An alterable permanent magnetic storage medium for microcomputers. Also called a disk, floppy disk or mini diskette.
DOS	Data Operated Squelch. When enabled, DOS will detect an incoming packet of the same signalling scheme as the radio, and squelch the audio for the duration of the packet. A small blip of data will be heard,but most of the packet will not be heard.DPL Digital Private Line coded squelch. A channel that has DPL on the receive frequency will require both the presence of carrier as well as the correct DPL code before it will unmute. Also, if you have DPL on the transmit frequency, all transmissions on that channel will be modulated at a sub-audible level by the DPL code. Modulation is continuous.
DPL	Digital Private Line A continuous sub-audible data signal that is transmitted along with a carrier. A radio that has DPL on the receive frequency will require both the presence of carrier and and the correct DPL code before it will unmute. Also, if there is DPL on the transmit frequency, the DPL code during transmissions made on that channel will be continuous.
DTMF	An acronym for Dual Tone Multi-Frequency. DTMF is a signalling system used by the telephone system
EEPROM	Electronically Erasable Read-Only Memory. Used by the radio to store its alterable personality data.
Enter	A synonym for the carriage return key.
Error	Any condition that prevents the software from functioning properly or any input/response that deviates from what the software was designed to accept.
ESC	The escape key pressing this key returns you to the main menu.
Exit	To leave the current screen and return to the previous screen. The RSS uses the F10 function key for all exit operations.
Failsoft	In the event the Central Controller should fail, the radios in the system will enter a 'conventional" preassigned failsoft channel. Each trunked repeater in the system will key and transmit a data word informing every radio that the system has gone into the failsoft mode and communication will act as a conventional radio repeater.
Field	The changeable area located next to a feature on the screen. The current selected field is always highlighted via inverse video.
File	A collection of information typically stored by the computer on a magnetic medium.
Fleet	A grouping structure used in Type I trunking. A fleet is a group of radio users with a common functional responsibility who, under normal circumstances, coordinate actions among themselves.
Fleet Mapping	In the process of identifying who needs to talk to whom and how individual radio users should be grouped. The fleet map also addresses expansion needs; how many radios may be added to the system.
Floppy Disk Drive	A disk drive that uses removable magnetic disks.
Frequency	The location of the center of a channel in the radio spectrum (measured in MHz).

Get	The means by which a radio's personality is transferred from a personality file to the workspace.
Group	A collection of radios which communicate together.
Handshaking	Refers to the data interchange that takes place between radio and Central Controller via the control and voice channels, such that each knows that the other is present on the channel and ready to exchange information or allow a voice conversation to proceed.
Hard Disk	An alterable permanent data storage medium that has a much larger storage capacity than a diskette.
Hardware	A physical collection of PC boards, solid state devices, and interconnect cabling that you can touch and see.
Help	An on-line reference manual accessed via the F1 function key. Press the F1 function key at any time for additional information about the current menu or highlighted data field.
Highlighting	Displaying the text on the monitor by using dark letters on a light background.
Home channel	The channel the user was on prior to pushing the scan button.
Home Revert	The channel the user will revert to when PTT is pressed while in scan unless scan talkback feature is enabled. Defines the transmit channel requirement for a feature. Typically refers to scan mode operation.
HZ	Hertz, or cycles per second.
Increment	To increase a value by one unit or step.
Inverse Video	Displaying text on the monitor by using light letters on a dark background.
MDC-1200	A Motorola proprietary signalling format. It is a binary format using 1200 baud minimum shift keying modulation.
Menu	A menu contains a list of functions that can be selected and performed by the RSS user by pressing a function key. A menu contains a list of functions. Also see Screens.
Message Trunking	Upon releasing the PTT, the portable radio will remain on the voice channel for a preprogrammed period of time. This allows a response to be made by the other members of the talkgroup without returning to the control channel for another voice channel assignment. Message trunking is commonly referred to as Hang Time on the repeater. Message Trunking Systems generate less Control Channel traffic per conversation than Transmission Trunking Systems.
MHz	Megahertz, or millions of cycles per second.
Mode	A mode is a collection of parameter values, such as frequency, PL codes, and scan lists. Often used interchangably with the terms channel or personality in the RSS manual.
MS-DOS	MicroSoft Disk Operating System. DOS is a group of programs that control the way the computer interfaces with other programs, tells the computer how to use, read and return information to and from application programs and how to organize and use the information on disks.

Path	The location of a sub-directory on a disk or diskette. Paths start at the root directory of the disk or diskette and end at the directory containing the desired file.
PC	Personal Computer.
Personality	A collection of parameter values, such as frequencies and PL codes. Often used interchangably with the terms mode or channel in the RSS manual.
Personality file	A file that contains the data to be stored in a radio's EEPROM. This file contains information such as receive frequency, transmit frequency, squelch code, etc.
PL	Private Line coded squelch. A channel that has PL on the receive frequency will require both the presence of carrier as well as the correct PL code before it will unmute. Also, if you have PL on the transmit frequency, all transmissions on that channel will be modulated at a sub-audible level by the PL code. Modulation is continuous.
PL Code	A two-digit alphanumeric code for specific sub-audible tones.
Pop-Up Window	A message area that overlays on a data entry/display area; used to indicate non-data entry error or to verify destructive commands and to provide function key choices for next course of action.
Port	A hardware interface that the computer uses to communicate with other devices. May be parallel (4, 8, or more bits presented to the interface at a time) or serial (1 bit presented to the interface at a time).
Priority Channel	A channel that is deemed more important to the radio operator than any other. The radio is required to always unmute on activity there even though receiving activity on another channel during priority scan.
Priority Levels	A number given to each radio user on a trunked system to allow system access to the most critical users during busy periods. Assignment of priority levels is controlled by the System Manager. Three levels of priority are available on a Privacy Plus System, five levels are available on Type I SMARTNET system.
Priority Sample Rate	The rate at which the priority channel is checked in priority scan for activity.
Private Line	See PL
Privacy Plus	Privacy Plus is a type of trunking system. This trunking system is limited in the options available to its radio users. The system does not have emergency or dynamic regrouping capabilities. Most shared (Public) Trunking Systems are of the Privacy Plus variety.
Program	1) A set of computer instructions designed to have the computer perform a specific sequence of actions. 2) A means by which the workspace is transferred from the computer into the radio's EEPROM.
Program tree	A figurative term used to describe the organization of a multi-level menu-driven software program.
PTT	Push-To-Talk feature or button.
PTT ID	Push-To-Talk IDentification. A feature that sends your radio's identification number on each transmission.
Queuing	A method of servicing users which is used when a Trunking system is busy. The Central Controller stores a radio's request to transmit and makes determinations as to what radio will be serviced on a First-In First-Out (FIFO) basis.

Quik Call II	A two-tone sequential tone signally system.
Radio Check Software	A signalling feature that lets your radio be polled to see if it is turned on and in range. The user receives no indication of the poll, except perhaps a brief lighting of the transmit or busy light.Radio Service Software purchased by Motorola product resellers through a license agreement that is delivered on a 5 1/4" and 3 1/2" diskettes and used to program two-way radios with a unique set of features, called personalities.
Read	The transfer of information from the radio codeplug to the computer's temporary memory (RAM) via the RIB communication link.
Receive Frequency	The center of the receive channel in MHz.
Recent User Priority	The ability of the Motorola Central Controller to ensure uninterrupted communications to a recent user of the trunked system. Recent User Priority ensures that a group engaged in a conversation will get priority access even if there is a significant delay between transmissions.
Repeater	An electric device with transmit and receive capabilities. A repeater will retransmit information at 125, 70, or 35 Watts of power. A trunked repeater used in 800 MHz trunking systems will typically have the transmit and receive frequencies separated 45 MHz depending upon the original communications system configuration.
RIB	Radio Interface Box.- used to connect a computer system to a radio for the purpose of communication between the radio and the computer. The RIB consist of level-shifting circuits that convert from the standard RSS-232 voltage levels of the computer asynchronous serial interface to the single-ended voltage levels present on the Serial Bus contacts of the radio's feature connector. In conjunction with the RIB, an appropriate RIB-to-cable and RIB-to-computer cable must be used.
Radio Interface Cable	A cable that allows the radio to be connected (interfaced) with a computer for programming or tuning.
RAM	Random Access Memory. The PC's RAM is used to store the radio's codeplug data while it is being viewed or modified. These changes will not become permanent in the radio's codeplug until the radio is programmed.
Read	The operation by which a radio's codeplug information is transferred from the radio's EEPROM to the workspace via the RIB.
RSS	Radio Service Software
RSS-232	An asynchronous serial data transmission standard that defines the required sequencing, and hardware interface.
Rx	Receiver
Save	The means by which a radio's codeplug information is transferred from the workspace to a personality file.
Screen	A list of functions that are accessed by pressing a function key.
Sub-directory	A subdivision of a directory that contains a group of related files. Sub-directories are used to organize your disks.

Software	A list of instructions that tell the computer what to do.
Squelch	A radio circuit that eliminates noise from the speaker when a transmitted signal is not present.
Sub-directories	A group of related files that are located on a hard disk or diskette. Sub-directories are used to organize your disks.
SMARTNET	A type of trunking system primarily used in support of Public Safety and Industrial communication systems. This type of system has emergency and dynamic regrouping capabilities.
System Central Controller	Referred to as Central Controller, is the heart of Motorola's trunking system. The Central Controller is a software controlled, computer driven device that receives and generates data for the trunked radios assigned to it. The Central Controller is responsible for monitoring and directing the operations of the trunked repeaters.
System ID	A number assigned to a trunked system distinguishing it from other systems. The system ID is sent out every 3 seconds on the Control Channel.
Talkaround Frequency	A frequency used for simplex conversations or radio-to-radio communications without the use of a repeater.
Talkback	Indicates that a call can be answered by pressing PTT and responding.
TalkGroup	A group of users in a Type II or Type IIi system.
Talk Permit Tone	A programmable brief series of beeps that provides the radio operator with an indication that a voice channel is available and assigned to them.
Talk Prohibit Tone	An audible tone (honk) heard from the radio's speaker when the PTT is depressed. The tone will be heard when either the radio is out of range of the system, or the radio is programmed with the incorrect system information.
Timeout timer	Time out timer limits the transmission period to a pre-defined time. The radio will automatically stop transmitting when the time period expires and the radio will generate an alert tone to notify the user that no transmission is taking place.TPL Tone Private Line coded squelch. A channel that has TPL on the receive frequency will require both the presence of carrier as well as the correct TPL code before it will unmute. Also, if you have TPL on the transmit frequency, all transmissions on that channel will be modulated at a sub-audible level with the TPL code. Modulation is continuous.
TOT	Time Out Timer
Transmission Trunking	Upon releasing the PTT the radio will return to monitor the Control Channel If the user desires to initiate another call.
Trunk	A communications path
Trunking	The automatic sharing of communications paths between a large number of users.
Type I	A type of trunking that is composed of Fleets and Subfleets, and limited by the size of codes of those groups. A type I system handshaking includes sending of the Acknowledge tone and High Speed Handshake.

Type II   A type of trunking system that is composed of Announcement Groups and Talkgroups. A
                   Type II system is limited on talkgroups and individual ID combinations to 48,000 IDs and
                   4,000 talkgroups per system. The Type II system handshaking does not include sending
                   Acknowledge tone and High Speed Handshake.

Type IIi   A type of trunking system composed of Fleets, Subfleets, and Talkgroups. This trunking type
                   supports both Type I and Type II handshaking. This trunking type allows Type I radios to
                   communicate with Type II radios on the same voice channel.

Transmit   An electronic method of adjusting the modulation of the transmitter to a constant value
Deviation   across the operating frequency range.
Alignment

Tree   A way to describe the organization of the RSS. The Main menu is considered the trunk and
                   the the functions listed on the screen are considered the branches.
Tx   Transmit.

Unit ID   The electronic tuning/alignment information of a particular radio.

Universal ID   A particular personality in a radio unit which is chosen as the one whose trunking identity will
                   always be used to address this unit. In this manner, a unit would respond to an individual
                   call (Private Call, Call Alert, Phone Interconnect, etc.) regardless of the current personality
                   chosen.

User-Scan   Scan type which is programmable through the front panel buttons on the radio.

Voice Channel   A trunked repeater that is used to transmit and receive data and voice from the radios on the
                   system.

Wide Area Call   A call in a wide area coverage system which utilizes a voice channel in all sites of the
                   system.

Workspace   The contents of the radio's EEPROM transformed into ASCII values and stored in the
                   computer's RAM while the RSS is being used.