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Colin Hinson

In the village of Blunham, Bedfordshire.

CHIRPSOUNDER REMOTE CONTROL SYSTEM

OPERATING MANUAL

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Amendment record sheet
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A Menu Family Trees

ABBREVIATIONS

Admin	Administration
AGC	Automatic gain control
AP	Air publication
Auth	Authorization
bps	Bits per second (baud)
CCOM	Chirpcomm
COMM	Communication
CRCS	Chirpsounder remote control system
DIP	Dual in-line package
DOS	Disk operating system
DTE	Digital transfer equipment
ESC	Escape
FREQ	Frequency
ID	Identification
MISC	Miscellaneous
MOF	Maximum observable frequency
MSG	Message
MUF	Maximum useable frequency
PSTN	Public service telephone network
Q	Quality
RCS	Receiver, Chirpsounder
RF	Radio frequency
RNK	Rank
SNR	Signal-to-noise ratio
STS	System status
TCS	Transmitter, Chirpsounder

WARNING

LETHAL VOLTAGE - DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT.
REFER TO JSP 375 VOL 2 AND DEF STAN 61-15 ISSUE 3

SECTION 1

INTRODUCTION

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- 2 Description
- 3 Master/Slave terminals
- 4 CRCS equipment
- 5 Configuration
- 6 CRCS program software
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INTRODUCTION

1 This handbook assumes that the operator of the Chirpsounder Remote Control System (CRCS) is fully informed on the subject and use of Chirpsounder equipment. The reader of this handbook should already be familiar with the Air Publications quoted in ~~Table 1 of this section.~~ *in Associated publications*

DESCRIPTION

2 The Chirpsounder Remote Control System (CRCS) is a computer terminal that allows an operator to control the operation and programming of remote Chirpsounder resources (TCS-5 transmitters and RCS-5B receivers). The Chirpsounder records received by the RCS-5B can be stored and viewed on the CRCS terminal. The terminal can store a full month of records from up to five RCS-5Bs. New records automatically overwrite old records that are over one month old. In addition, the terminal can program Chirpcomm messages transmitted by the TCS-5, and can display and log Chirpcomm messages received by the RCS-5B. The terminal communicates with its resources via modems connected to telephone lines. All modems operate at 9600 baud.

Master/Slave terminals

3 There are two types of terminals: Master and Slave. Terminals are defined by the software loaded into them. The terminals can be redefined off-line by loading the appropriate application software. The slave terminal can change the programming of the resource only if given authority by the master terminal. Except for resource allocation, the operation of the Master and the Slave terminals is identical. The two terminals communicate in duplex mode via a dedicated serial link. See Sections 2 and 3.

CRCS EQUIPMENT

4 Fig 1 and Table 1 show the equipment constituting the CRCS system. The various manufacturers' publications relevant to this equipment are listed at the rear of this section.

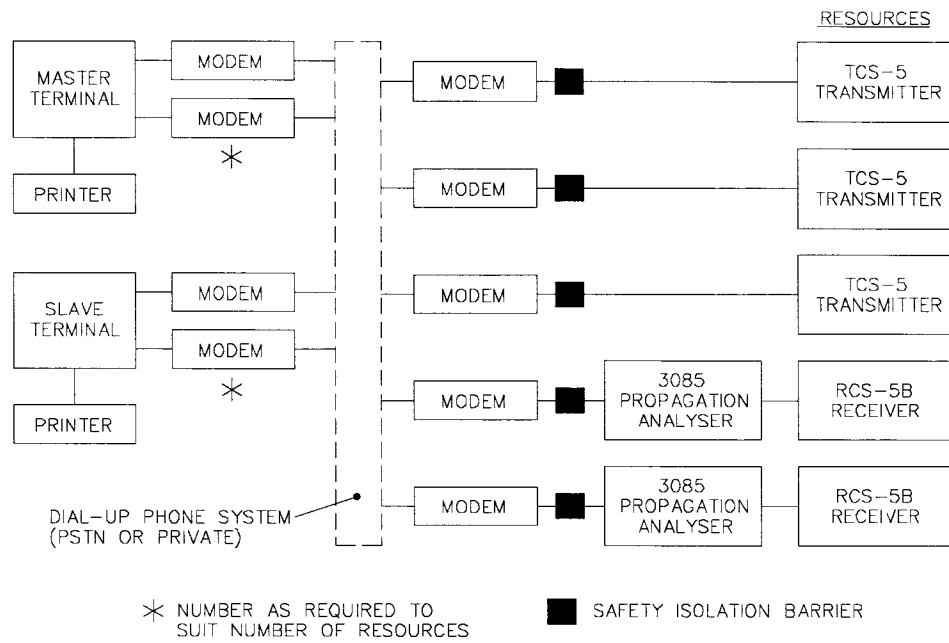


Fig 1 CRCS equipment : block diagram

TABLE 1 CRCS EQUIPMENT

Title	Part No	Qty
Terminal Computer (4 Mbyte RAM) (1 Gbyte Hard disk)	433S/MX W321	1 per terminal
Terminal monitor	P1528EB	1 per terminal
Serial Communications Board (Digiboard)	0960-0008	1 per terminal
DOS disks	V6.2	1 set of three per terminal (Master & Slave)
CRCS program disks	3135A/0001	1 set of two per terminal
HP560C Deskjet printer	C2168A	1 per terminal
BR3085 Propagation Analyzer	3085-1502-02	1 per RSC-5B
Data cable	8120-4005-120	1 per RCS-5B
Hayes Modem	Optima 96	1 per asset
Elremco Safety Isolation Barrier	A30/FM	1 per asset
TCS-5 modem cable	3135/0501	1 per TCS-5
3085 modem cable	202-622	1 per RCS-5B
Gender changeover	202-442	1 per RCS-5B

CONFIGURATION

5 You must first configure the terminal with the site names and phone numbers of all the resources you wish to monitor/control. Once configured, the terminal can monitor the activity, read data and program the resources. To change the terminal configuration, or to reprogram a resource, you must have password-protected permission granted by the System Manager. Otherwise, you can only view the activity and the data. See Section 3.

CRCS PROGRAM SOFTWARE

6 The CRCS program is a DOS-based Windows application. It provides a menu-driven operator interface which requires the selection of menu controls using a mouse or keyboard controls. A menu bar at the top of the screen permits selection of a series of drop-down displays, windows and dialogue boxes, all in colour. These displays may contain areas that display information, allow entry of information, and provide operators control in the form of "buttons" or check boxes. Any screen may be selected for the printer. Operation of the system is fully described in Section 3. Fig 1, 2 and 3 of Annex A at the rear of this handbook are throw-clear illustrations defining the menu structure and the full range of screens.

SPECIFICATION

Software Functions:	Remote control & set-up of TCS-5 and RCS-5B. Automatic propagation and occupancy analysis. Automatic ranking of assigned frequencies. Automatic archiving to disk. System status monitoring. Colour graphic displays of Chirp records. Send & receive Chirpcomm messages. Remote testing (BIT) of TCS-5 and RCS-5B. Hardcopy printout of all data.
Data transfer rate:	9600 bps nominal between computer and 3085 Propagation Analyzer, via 2-wire dial-up or field wire phone circuit.
Printer:	HP Deskjet 560C colour printer Serial RS-232 interface.
AC line power:	240V AC, 50Hz
Operating temperature	+10 to +40°C

ASSOCIATED PUBLICATIONS

TCS-5 Transmitters	AP 116R-0306-IL
RCS-5B Receivers	AP 116R-0306-1K
BR 3085 Propagation Analyzers	0040-3085-1502
Digiboard Installation Guide and Reference Manual	DBI 90022(00)
Digiboard Intelligent Serial Communications Boards Software Manual	DBI 9200162A
HP DESKJET 560C Printer User's Guide	C2168-90011

SECTION 2

INSTALLATION

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- 3 Interconnections
- 5 Modem configuration
- 8 Software installation
- 9 Post-installation
- 11 Changing Default ID and passwords
- 12 Terminal conversion

Fig

- 1 RCS-5B/BR 3085 connections
- 2 TCS-5 connection
- 3 Location of DIP switches

EQUIPMENT SUPPLIED

1 Table 1 in Section 1 lists the equipment supplied to implement the CRCS. Equipment is supplied set up as follows:

1.1 ^{computer} The BR 3085 Propagation Analyzers are configured as RS-232 DTE for 9600 baud, 8-bit, 1 stop-bit and no parity. No further setting up is required, but details may be found in the Remote Computer Interface section (2-7.5) of the Propagation Analyser Operating and Service manual, 0040-3085-1502. → 15021

1.2 The terminal computers are already fitted with the Digiboard Serial Communications board.

POWER CONNECTIONS

2 All equipment is to operate at 240 VAC, 50 Hz. Where necessary, refer to the handbooks in the list of Associated Publications in Section 1 for details of input selection

INTERCONNECTIONS

3 Fig 1 illustrates the connection of system cables associated with an RCS-5B receiver.

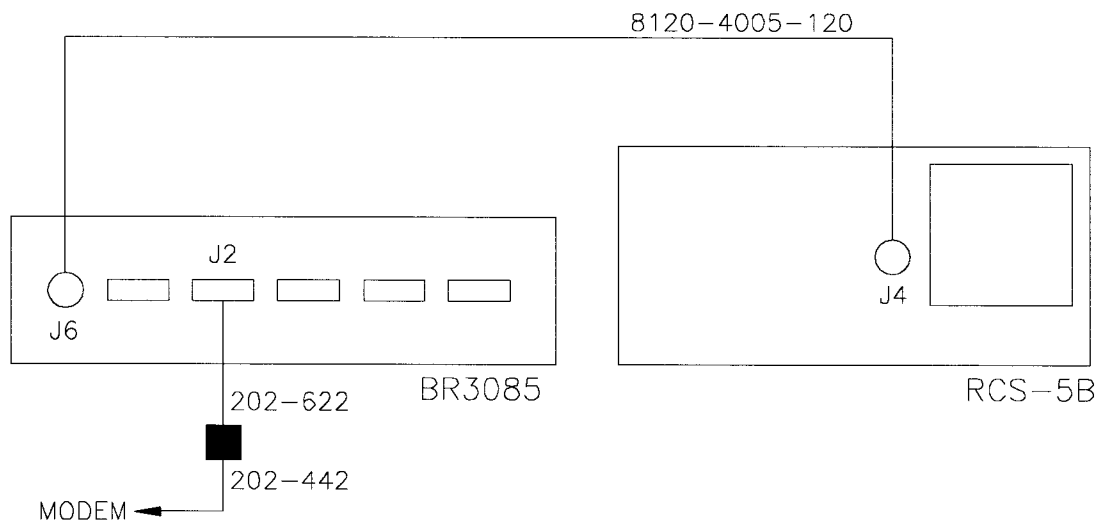


Fig 1 RCS-5B/BR3085 connections

4 Fig 2 illustrates the connection of a TCS-5.

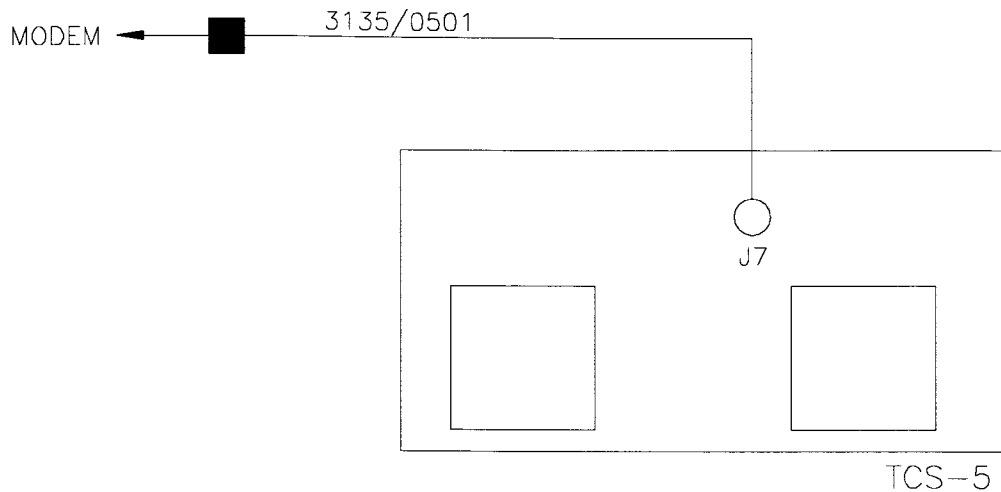


Fig 2 TCS-5 Connection

MODEM CONFIGURATION

5 The modems connected to the terminals are configured automatically during system power-up.

6 The modems connected to the resources are supplied preset. If a modem requires setting up for any reason, however, it needs to be set up off-line and the parameters stored in profile 0, so that they can be loaded during modem power-on. Set the modems up as follows:

B15	factory setting, not critical
B0	factory setting, not critical
B41	factory setting, not critical
B60	factory setting, not critical
E0	MODEM DOES NOT ECHO - used with all modems
L2	speaker volume -factory setting, not critical
M1	factory setting, not critical
N1	factory setting, not critical
P	pulse dialling
Q2	NO RESULT CODES in answer mode
V1	factory setting, not critical
W0	factory setting
X4	factory setting, not critical

Y0 factory setting, not critical
 &A0 factory setting, no critical
 &C1 TRACKS CARRIER DETECT SIGNAL - used by PC to verify connect
 &D0 IGNORE STATUS OF DR SIGNAL
 &G2 factory setting, not critical
 &K0 DISABLE LOCAL (HARDWARE) FLOW CONTROL (RTS line)
 &Q5 factory setting, not critical
 &R1 IGNORE RTS
 &S0 FORCES DSR LINE
 &T4 factory setting, not critical
 &U0 factory setting, not critical
 &X0 factory setting, not critical
 &Y0 SELECT USER PROFILE 0

S0 1 for AUTO answer

NOTE: It is very important to set Q2, especially for the TCS-5 transmitters, for proper operation.

7 For a dedicated line (as opposed to dial-up), it is necessary when configuring a modem to select "dumb" mode manually, by removing the front end cap and setting the DIP switches as follows:

CAUTION: Before removing the modem's front end cap, always unplug the telephone line and turn off power to the modem. Do not operate the modem without the end caps or housing while the telephone line is connected to the telephone outlet; doing so may expose live parts and create a safety hazard.

7.1 To remove the modem's front end cap, insert a screwdriver into the notch on the side of the front end cap, then twist the screwdriver slightly to loosen the end cap. When the end cap is removed, you will see a set of four DIP switches on the left side of the board, (refer to fig 3).

7.2 Modem programming for Asynchronous Mode. Connection via Dedicate Lines are as follows:

- i) Originating Modem
 AT&F
 AT&L1&C1&W
 Dip Switch 1 - Down
- ii) Answering Modem
 AT&F
 AT&L1&C1S0=1&W
 Dip Switch 1 - Down

"AT&F" is a command string resetting the modem to its factory default.

"AT&L1&C1&W" is a command string generally setting up the modem but including "L1" - leased line operation.

"S0=1" sets the answering modem to "auto answer".

The modem must be programmed at 9600 baud for compatibility with the CRCS.

Once Dip switch 1 is set the modems no longer respond to AT Commands.

7.3 To replace the end cap, simply attach one side and snap the other into place.

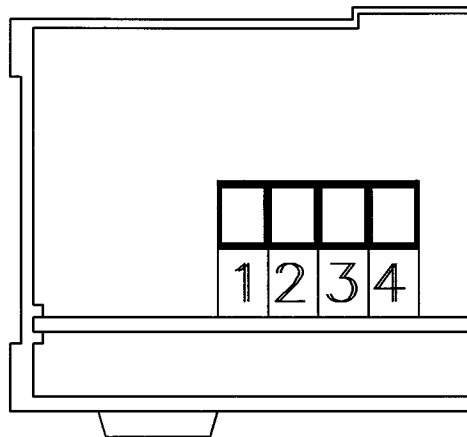


Fig 3 Location of DIP switches

SOFTWARE INSTALLATION

8 The terminals are supplied already loaded with the DOS program (V6.2) and CRCS software. However, to install the CRCS software, which can take nearly three and a half hours, proceed as follows:

8.1 Install the CRCS disk 3135A/0001, disc - 1 Master or disc - 2 Slave as required, into drive A on the computer. Note: Only one computer in a two computer system should have the master installed, the other should have slave software installed.

8.2 At the DOS prompt, type A:INSTALL, followed by ENTER.

8.3 After the software has been installed to restart the CRCS software, remove any disc from drive A and reboot the computer to run.

8.4 Archival subdirectories are required for Chirpsounder Record, ranking data and system archiving. A warning screen informs that creation of directories takes approximately three hours to complete. Select YES to continue.

POST-INSTALLATION

9 The program reads the system setup files from the Hard disc. If the system setup files have not been previously configured, the system is initialised with default values, and the setup parameters should be examined. If the system setup files have been configured previously, then the system is initialised with that configuration.

10 The following is the sequence typically required to be performed by a user first accessing the system. References below relate to paragraph numbers in Section 3.

Topic	Pull-Down Window	Para
Administration	"Admin"	19
Configuring the System	"Configure"	38
Setting up Chirpsounder Transmitters	"Set Up"	46
Setting up Chirpsounder Receiver	"Set Up"	59
Status	"Status"	68
Viewing Archived Information	"File"	74
Maintenance	"Misc"	90

CHANGING DEFAULT ID AND PASSWORDS

11 The newly-installed system is programmed to accept SYSMANAGER as "Log In" ID and PASSWORD for passwords. These entries must be all in capital letters. See Section 3, ADMINISTRATION FUNCTIONS, para 19, to customise the system.

TERMINAL CONVERSION

12 To convert the Slave terminal to become the Master terminal (and vice-versa):

a) Reboot the system, and halt the initiation of the CRCS system software by using the "Ctrl+C" key combination, after "Colr Trax Loaded", to exit to the DOS operating system.

b) The prompt "terminate batch job (Y/N)? will appear, answer Yes.

- c) At prompt C:\CRCS> type "cd\"Return.
- d) Insert disc into drive A
- e) At prompt C:\> type "A:\Install"
- f) Remove disc from Drive A and Reboot the computer.

SECTION 3

OPERATION

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3	TCS-5 tests

Figs

Untitled - all facsimile screen displays shown in-text

SOFTWARE SUMMARY

1 A list of CRCS software terms is shown in Table 1. The CRCS software employs an application framework library (Borland TurboVision) that consists of the display elements defined in Table 1.

2 Throw-clear diagrams of the menu encountered by the operator are shown at Annex A Figs 1 to 7. In these diagrams, the fig numbers refer to the displays illustrated in Section 3 and the type styles have the following significance; a CONFIGURE function is given below as an example.

2.1 **CONFIGURE.** This is the top menu heading selected from the Main Menu bar.

2.2 **RESOURCES.** This is a choice selectable from the drop-down menu box provided once the top menu heading has been selected.

2.3 "Chirpsounder Resource Configuration". This is a screen title, displayed on the screen at the screen at the top of the window.

2.4 **EDIT.** This is a control selection from one of the drop-down screens, often leading to a further screen.

2.5 *Invalid tel no.* This is a brief explanatory note.

TABLE 1 CRCS TERMS

Term	Definition
Desktop:	The display backdrop that all other displays are part of. It may not always be visible, depending on the size of windows that are on the desktop.
Menu bar:	Resides at the top of the desktop and is normally always visible. At the right side of the menu bar the system clock time is displayed. The user log-in status is also displayed. Placed on the menu bar are menu items that select pull-down menus. Menu bar items may be selected using the mouse, hot-keys, or keyboard arrow controls. Selected menu items become highlighted in green, and result in the pull-down menu associated with that menu bar item to become visible.

Term	Definition
Pull-Down Menus:	Provide a grouping of related selections for the associated menu item. Pull-down menu selections are a mechanism to open a display window or dialogue box on the desktop. Menu selections may also perform a function without opening a new display. Menu selections may have submenus that appear when they are activated. A pull-down menu selection that is active is highlighted in green. Menu selections are enabled by the mouse, hot-keys, or using keyboard arrow keys.
Windows:	Appear on the desktop to display status information, provide operator controls to open other windows or perform some function. Typically, windows are "non-modal" meaning that other operations, such as menu-bar use for selection of other displays is still permitted. Some windows can be moved around the desktop for simultaneous viewing with other windows by selecting the top line of the window and dragging the mouse with the button held.
Dialogue Boxes:	Are used to display and enter information in a captive or "modal" display where the operator is required to complete the operation before performing any other unrelated function. The menu bar is disabled in this condition until the operator closes the dialogue box by "pressing" the OK or Cancel "buttons", pressing the ESC key (same as cancel) or clicking on the close symbol at the upper left of the dialogue box. Dialogue boxes are typically used for setup functions, warning messages etc. They are displayed on top of status windows that may be open at the time. They can usually be moved for simultaneous viewing with the status window.
Status Bar:	At the bottom of the desktop, is used to display universal hotkeys or function keys for use instead of a mouse. For example, the "F10 Menu" message means that the F10 function key may be used to select the menu bar. Once selected, arrow keys select menu-bar items, and the return key to activate the item. The status bar is also used to display context sensitive help messages for pull-down menu selections.
CONTROLS:	There are several types of controls in the displays that permit selection of a control option, entry of data, perform an operation, or scroll through a list. Controls can be selected using the mouse or keyboard, and change colour when enabled. These controls are listed below:

Term	Definition
Buttons:	are always green and can be "pressed" to perform an operation. They contain a label with one character a different colour indicating the "hot key" for that button. A button can be pressed 3 ways: clicked on with a mouse, selected using the Tab key and pressing return, or with the "hot key" character (use of the hot key may require the ALT key to be pressed at the same time if the display containing the control is not "active" or selected). Using the mouse is the most intuitive method. The most common button is the "OK" control.
Dots (.):	controls that permit a selection of one of several options listed vertically. The selection can be changed using the mouse, hot key or up/down arrows. The Tab key can be used to select a different field or another control.
Check Boxes:	permit selection of several options at the same time. An example of a check box is in the polling programmer display.
Scroll Bars:	used on displays where there is a list of data. A vertical bar at the right side of the data with arrows at the top and bottom controls the scrolling. If the list is "selected" an item in the list will be highlighted and scrolling done using the mouse and the scroll bars. An alternate method is using up/down arrow, page up/down, or home/end keyboard keys. An operation (such as edit) on the selected list item is typically performed by "pressing" a button displayed near the list. This results in a dialogue box opening to execute the desired operation on the selected item.
Input Lines:	controls that allow entry and editing of data and appear as a horizontal blue bar of varying length depending on the field size. The input box must be selected before entry is possible. An input line may be selected for editing by a single mouse click, tabbing to the control, or hot key. A single mouse click in the middle of a string of characters displayed in the input line permits new characters to be inserted (up to the limit of the box). Double clicking on the input line enables the input line text to be erased and replaced by the next entry.
Mouse:	the mouse "cursor" appears as a solid block on the display. When the mouse is "clicked" on a control the effect is to select it. Double clicking on some controls (such as input lines) may have an additional effect.

Term	Definition
Keyboard:	<p>The keyboard can be used in place of a mouse to select and activate menu bar items, pull-down selections, window and dialogue boxes. The simplest means of selecting control groups is using the Tab key. Controls enabled for activation are highlighted. Items within a control group (such as dots (.)) are selected using the up/down arrow keys. An alternate (and quicker) method of selecting controls is hot-keys. Each control has a letter highlighted in yellow indicating the hot key character. Pressing the hot-key activates the control. Menu-bar item hot-key letters are highlighted in red and require use of the ALT key in conjunction with the hot-key.</p>

GENERAL

PROGRAM OPERATION

1 Program operation consists of the selection of a succession of drop-down menus and interactive screens, using a mouse or keyboard controls. A menu bar at the top of the screen permits selection of a series of displays, windows and dialogue boxes. These displays may contain areas that display information, allow entry of information, and provide operator control in the form of "buttons" or check boxes.

2 The cursor appears as a solid rectangular block that may be moved with a mouse. Clicking the mouse selects the required function. In the text which follows, "select" represents a mouse-click. If the mouse should be inoperative for any reason, either of the following methods will be required:

2.1 Use the F10 key, arrow keys, and the ENTER key. Within a dialogue box use the keyboard Tab and Arrow keys. Use of the Tab key results in a control or control group being highlighted when chosen. In the case of a control group (such as radio buttons or check boxes), the individual control in the group will be highlighted and small underscore cursor will appear under the selected control. The up/down Arrow keys select the individual control.

2.2 Use the keyboard "hot keys", as follows. Each control label has one character that is highlighted in yellow. When that highlighted character is entered on the keyboard, that control "button" is selected. Main menu bar hot keys are also highlighted in yellow and, unless the menu bar is active, require simultaneous operation of the ALT key.

3 As a general rule, you may exit from a display without causing any change in the database or Chirpsounder operation by following means:

3.1 Select the CANCEL control, using the mouse.

3.2 Press the ESC key.

3.3 Select the escape symbol, which is a small block in the top corner of the display, using the mouse.

4 Alternatively, selecting OK to exit from a display may cause changes. In such a case, a Warning Box will ask you to confirm the changes.

CRCS TERMS

5 Table 1 in Annex A at the rear of this handbook provides definitions of terms and controls used by this application. the user should familiarise himself with these definitions, and they are not repeated in this section.

USER LEVELS AND PASSWORDS

6 The system allows for three levels of operator, as follows:

6.1 Level 2 is the System Manager, who alone is able to authorise new users and nominate their user level.

6.2 Level 1 operators are authorised to program resources and change their allocation as required.

6.3 Level 0 operators may view information only.

7 Users above Level 0 need a password to log in. consult your System Manager to obtain a User ID and, if required, a password (which you must memorise). You may change your password at any time and should be changed if ever unauthorised use is suspected. Passwords must be safeguarded from unauthorised use at all times. Similarly, you must log out every time you leave the terminal unattended.

MAIN MENU

8 The Main Menu bar (shown below) appears along the top of the screen, and is used to select all remote control displays or perform various system functions. Selecting a menu bar item causes a pull-down menu to appear that allows selection of related displays or operations. Access to the Main Menu bar is disabled when a dialogue box is currently in use.

≡ **File Configure Admin Status Setup Misc**

9 The Main Menu headings are summarised below:

9.1 **SYSTEM** (indicated by 3 horizontal lines): Items relating to overall system operation are contained in this pull-down menu. Selecting this menu item will show the Pull-down menu selection "ABOUT". Selecting ABOUT, results in the copyright display.

9.2 **FILE**. Pull-down menu selections pertain to the viewing of archive files including One Chirp Record Archive, Four Chirp Records Archive, System Archive, Chirpcomm Messages Archive and Freq Ranking Archive. Any selection causes a submenu to open to select the type of archive file.

9.3 **CONFIGURE**. Pull-down menu includes Resources and Comm Ports menu items which access the "Chirpsounder Resource Configuration" and "Comm Port Configuration" displays, respectively.

9.4 **ADMIN**. The Admin pull-down menu permits selection of Log In, Log Out, System Manager, Orderwire, Change Password and Resource Allocation functions.

9.5 **STATUS**. Chirpsounder status displays are selected in this pull-down menu. System Status, Chirpsounder Receiver and Chirpcomm Transmitter status displays are mutually exclusive and shown as non-modal displays. That is, while they are displayed in the background, other displays or dialogue boxes can be selected and displayed "on top" of these non-modal displays.

9.6 **SETUP.** The Setup pull-down menu permits selection of various functions and displays for RCS-5B Chirpsounder Receiver and TCS-5 Chirpsounder Transmitter.

9.7 **MISC.** Selection of this menu item accesses the RCS-5B and TCS-5 self test functions.

PRINTING

10 Any screen appearing on the terminal may be printed on the colour printer by pressing the ALT and P keys together. Printing takes approximately four minutes, during which time the system is locked out. After printing an ionogram, press the ESC key. Position the cursor on STATUS and select it, followed by SYSTEM, to regain the default screen.

11 After printing screens other than ionograms, use of the mouse and the cursor may be inhibited. To recover normal operation, proceed as follows after printing:

11.1 Press the ESC key for each superimposed window.

11.2 Press the F10 key to place the cursor on the main menu bar.

11.3 Using the left and right arrow keys, place the cursor on STATUS.

11.4 Use the down arrow key to select RCS-5B RECEIVER.

11.5 Press the ENTER key, to obtain "RCS-5B Selections".

11.6 Press the K key (for OK).

11.7 On the "Chirpsounder Receiver Status" display, press the C key (for Chirp Record) followed by V (for view).

11.8 Quit the ionogram display by pressing the ESC key.

11.9 With the mouse recovered, select STATUS.

11.10 Select SYSTEM, to return to the default screen, "Chirpsounder Remote Control System Status".

SCREEN EXAMPLES

12 The screen examples shown in this section are reduced in size for the purposes of this handbook. They are referred to in the text by their titles, which appear in white along the top of the display, thus "Screen Title". Actual displays shown are taken from the development equipment. Their content is not typical of the CRCS in normal operation, but their format is exactly the same.

13 On start-up, and periodically in operation, the "Chirpsounder Remote Control System Status" display is presented. This shows the latest status of the data polling activity on each resource (with time stamps). This screen is shown in Fig 1 below. It is referred to in the following text as the "default" screen.

RESOURCE	SITE	STATUS
RCS #1	Private Wire	Z30650Z Jan 96 Polling failed
RCS #2	DAVE'S LAB	Z30920Z Jan 96 Polling OK
RCS #3	RECEIVER 3	
RCS #4	RECEIVER 4	
RCS #5	RECEIVER 5	
TCS #1	Cad Room	Z30657Z Jan 96 Polling failed
TCS #2	TRANSMITTER 2	
TCS #3	TRANSMITTER 3	
TCS #4	TX4	
TCS #5	TRANSMITTER 5	

Fig 1

POLLING

14 On power-up the Master terminal polls the Slave terminal automatically, and repeats the poll at hourly intervals, via Serial Port #1. SLAVE ONLINE or SLAVE OFFLINE appear at the bottom right hand corner of the screen as a result. SLAVE ONLINE is normal for a successful result.

15 For a terminal polling resources:

15.1 Polling a TCS-5 takes approximately 30 seconds. This is essentially a handshake poll providing a BITE check for on-line presence.

15.2 Polling a RCS-5B takes approximately two minutes, to allow time for the necessary data to be retrieved (for ionograms, etc).

15.3 While a resource is engaged with one terminal, the other terminal cannot successfully poll the resource. In such a case, "Polling failed" is shown on the default System Status screen. As the Chirpsounder architecture is based on five minute sweep intervals, the terminals should be programmed so as to use the five-minute time-slots on a staggered basis.

15.4 Only one attempt is made to dial up a resource. No further attempt is made in the event of a failure to connect in that programmed poll.

IONOGRAMS

16 Chirpsounder records are saved automatically in the archive directory according to sounder path, archive day and time. Archived records in files can be selected, viewed and printed as a graphical and tabular representation of the received RCS-5B sounding (ionogram). Later in this section this retrieval process is described under FILE functions and STATUS functions. The Chirpsounder record (ionogram) is presented as shown in Fig 2.

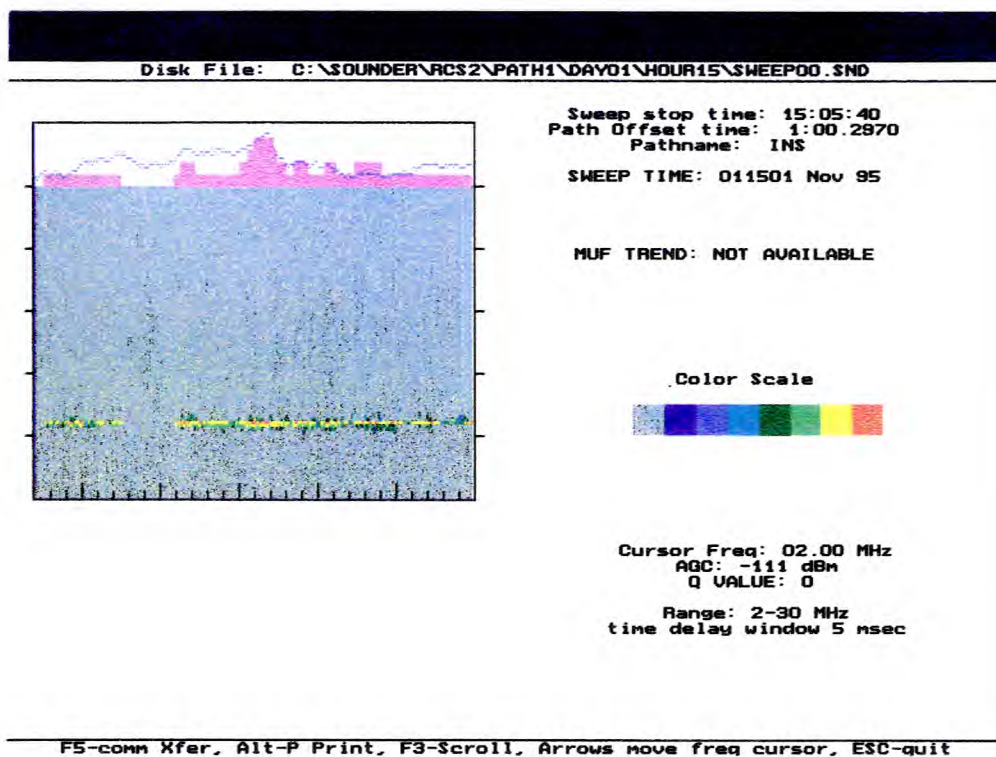


Fig 2

Note:

Figure 2 is showing an archived file and not a current Chirp Record and differs in that the Data Rate is not shown and there is the ability to scroll through previous displays in archive.

17 The Chirpsounder Record on the left of the display shows the propagation characteristics of the sounded path graphically, in colour.

17.1 Use the keyboard arrow keys to move a cursor showing precise propagation characteristics and signal level as a function of frequency. The up/down keys move the cursor in 5 MHz steps, and the left/right keys move the cursor in 100KHz steps. The cursor frequency, receiver power level and signal quality value are shown at the lower right of the display. The AGC VALUE indicates the absolute amplitude of the received signal at the frequency indicated by the cursor.

17.2 The graph at the top of the Chirpsounder Record indicates the received power level (receiver AGC) as a function of frequency. The power level may be due to signal or noise or both.

17.3 The bar graph represents signal quality (Q value) as a function of frequency. The propagation analysis software in the 3085 Propagation Analyzer produces these values to indicate communications conditions, and are the basis for the ranking of communications frequencies. The dotted line shows the AGC level.

17.4 The ionograms are colour-coded to show amplitude as a function of colour. The amplitude colour scale is in 6dB steps from red (0dB reference) to light blue (-30dB). CRCS - generated enhancements fill in gaps and eliminate random effects created by noise, interference, and Chirpcomm modulation, which would normally appear on a "raw" Chirpsounder Record.

17.5 Chirpsounder sweep parameters, including sweep stop time, path offset and path name are displayed at the top right of the display. The MUF TREND indicator shows if the Maximum Useable frequency (MUF), also known as the Maximum Observable Frequency (MOF), of the current sounding is RISING, STEADY or FALLING, relative to the average MUF of the previous two soundings for a particular path. The MUF is the highest frequency of any propagating mode seen by the RCS-5B. The MUF TREND indicator will show NOT AVAILABLE if the current sounding or either of the two previous ones showed no propagating modes, or were in Autosync mode. A DATA RATE indicator provides a recommendation for the relative data rate that you could expect to achieve with a digital data modem operating on a HF communications link at the frequency indicated by the cursor. The DATA RATE indicator changes between LOW, MEDIUM and HIGH, depending upon the SNR and the Multipath measured by the sounder at the cursor frequency. If there is no propagation at the cursor frequency the DATA RATE indicator is blank.

18 The mouse cursor and hotkeys do not function when you are viewing graphic Chirpsounder records. Follow the prompts at the bottom of the screen.

18.1 Use the arrow keys on the keyboard to move the frequency cursor.

18.2 Press the ESC key to quit the display.

18.3 Use the F3 key to scroll through up to 12 previously archived records.

18.4 Use the F5 key to transfer the record to another system via serial port #2. While this occurs, TRANSFERRING DATA - PLEASE WAIT appears in red on the screen and the system is locked out.

18.5 Press the ALT and P keys simultaneously to print the record. This takes approximately four minutes. Press the ESC key to recover the cursor after printing.

ADMINISTRATION FUNCTIONS

1 By selecting ADMIN on the main menu bar, the pull-down menu options shown on Fig 3 are made available, to enable the following functions.

- 1.1 Personnel access.
- 1.2 Allocation of sounder resources to the system.
- 1.3 Free text communication between the terminals.

ADMINISTRATION

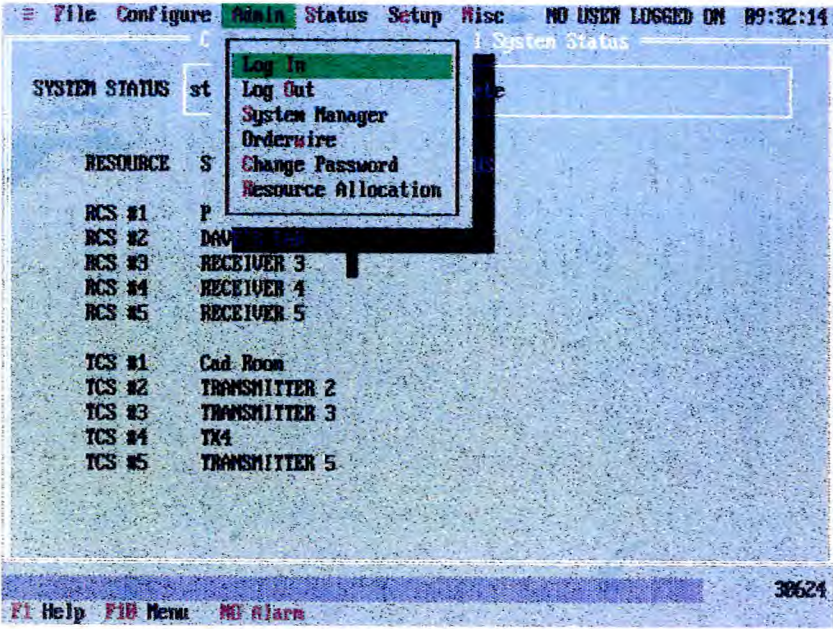


Fig 3

LOGGING IN/OUT

- 2 From ADMIN on the main menu bar (Fig 3), select "LOG IN" to obtain the "Log In Process" display.
- 3 Type in your User ID code (in capitals) and select OK. The "Log In Process" display is shown in figure 4.
- 4 If your User ID code is accepted enter the password (for user levels 1 and 2) and select OK.
 - 4.1 CANCEL aborts any LOG IN attempt.
 - 4.2 Any LOG IN attempt logs out any currently logged-in user.

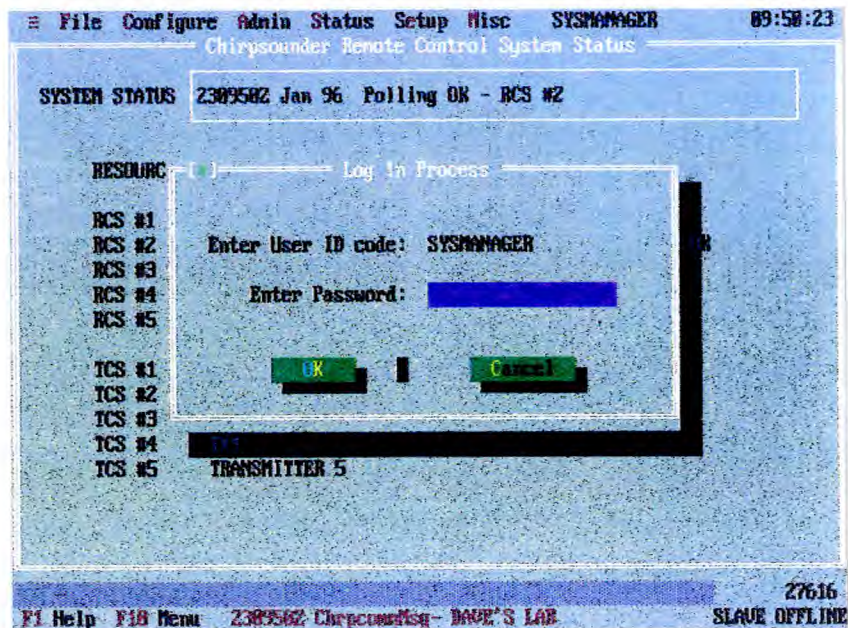


Fig 4

- 5 When you are leaving the terminal select LOG OUT from Fig 3.

SYSTEM MANAGER

6 Once the System Manager has logged in the normal way, he alone may select SYSTEM MANAGER (Fig 3) to review the User ID list (maximum 20 users), add or delete users, change user access levels, and modify User ID's.

7 From ADMIN on the main menu bar (Fig 3), select SYSTEM MANAGER to obtain the "System Manager Log In Process" display (Fig 5).

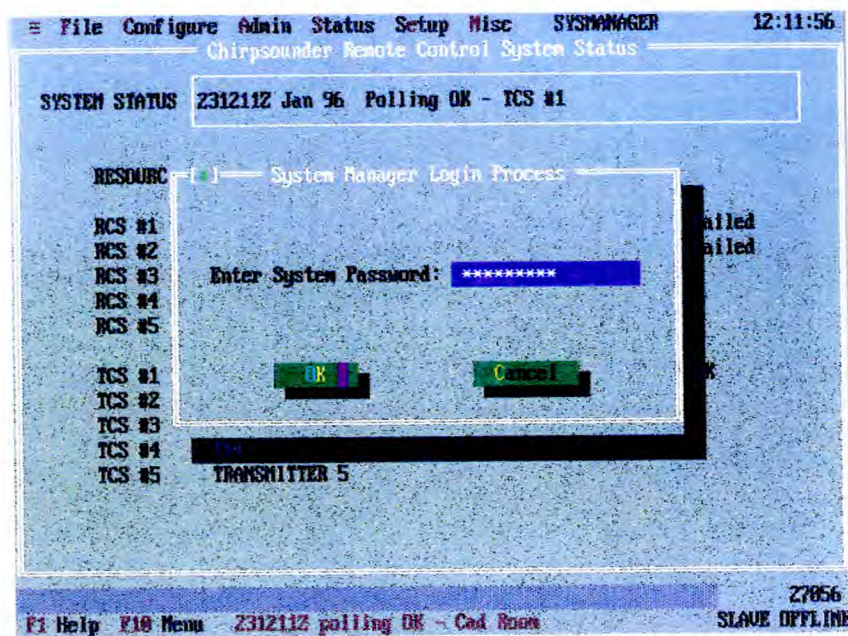


Fig 5

8 Type in your System Password and select OK. CANCEL aborts any attempt.

9 The resulting display is "User ID/Password Control" (Fig 6). Only the System Manager has access to this and the following screen.

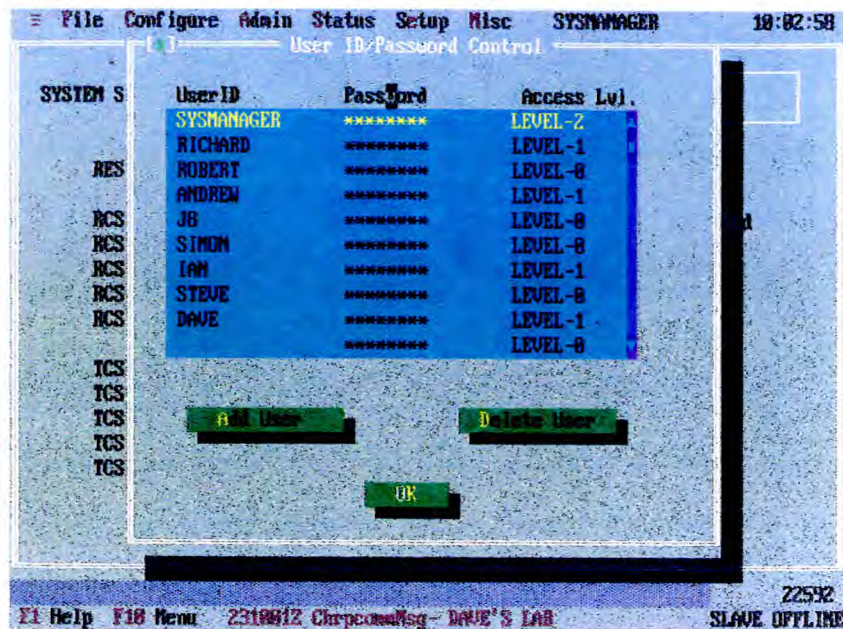


Fig 6

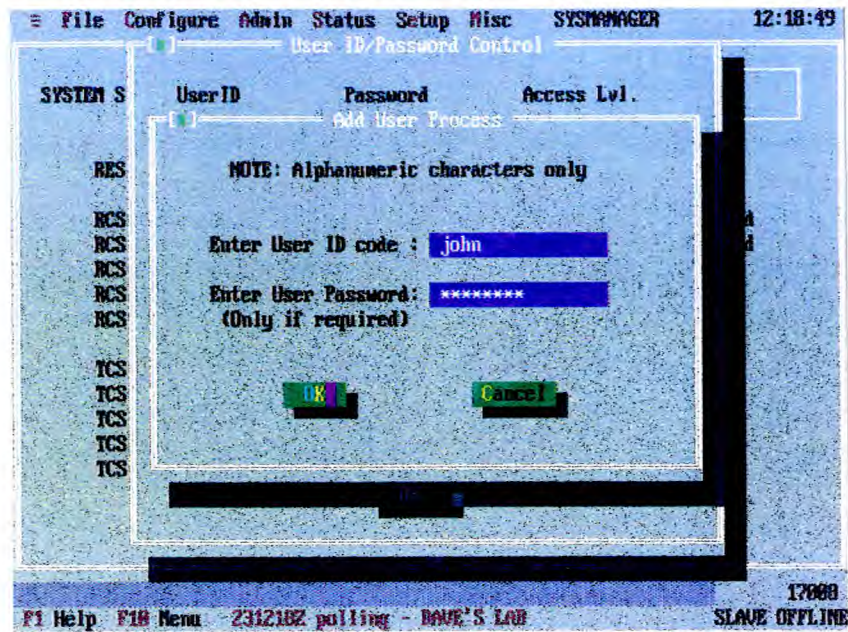
10 The scrollable window on the above screen enables the cursor to highlight any one of the valid users (up to 20) or to add a new user. To delete a user (highlighted by the cursor), select Delete User and respond to the Confirmation Message which will follow. To add a new user, select ADD USER to obtain the "Add User Process" display (Fig 7).

10.1 Enter the new User ID.

10.2 For a level 0 user, press the ENTER key

10.3 For a user requiring a password, select Enter User Password and then enter a password (up to 15 characters).

10.4 Select OK to return to the previous screen to confirm the entry.



ADMINISTRATION

Fig 7

CHANGE PASSWORD

11 To change a password, select CHANGE PASSWORD to obtain the display "Change Password" (Fig 8).

- 11.1 Re-enter your OLD password, "Enter new password" will appear beneath.
- 11.2 Enter the NEW password (up to 15 characters), "Verify New Password" will appear beneath.
- 11.3 Verify the NEW password by re-entering it.
- 11.4 Memorize the NEW password and select OK.

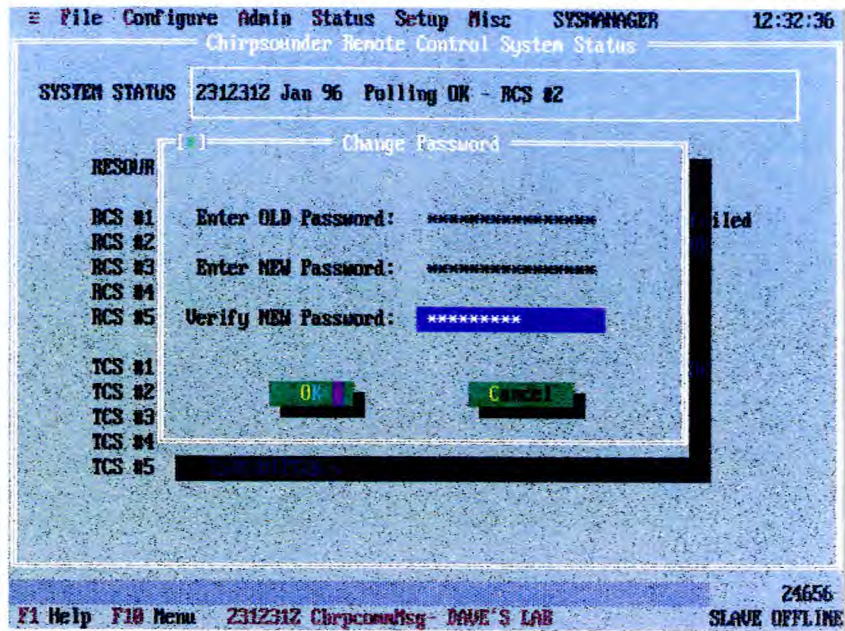


Fig 8

ORDERWIRE

12 Selecting ORDERWIRE enables either terminal operator to exchange free text messages with the other operator in duplex mode, by means of the "Orderwire Communications" screen. (Fig 9).

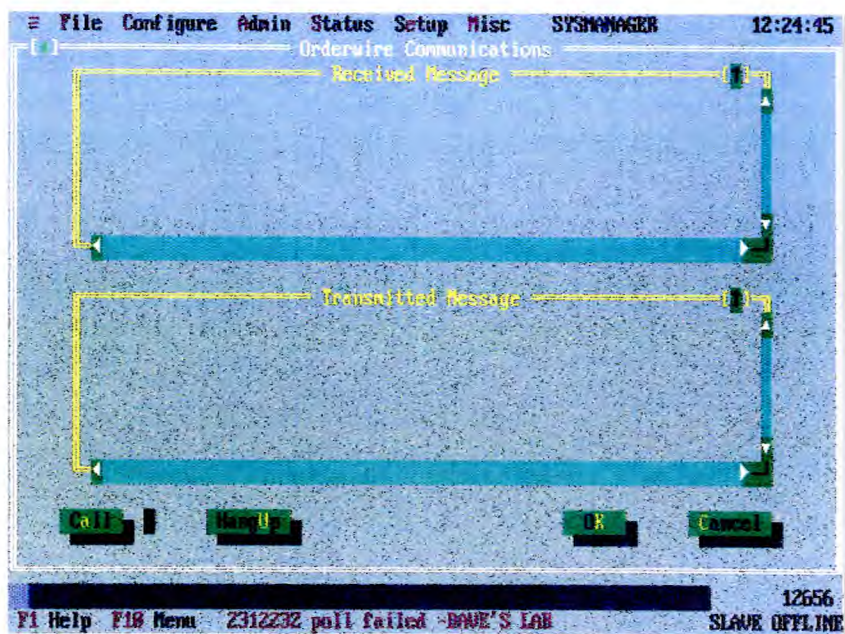


Fig 9

13 During orderwire communication, each terminal shows its Received Message and Transmitted Message in its appropriate scrollable window.

14 To initiate communication:

14.1 Select CALL. Failure to do so will result in display Fig 10.

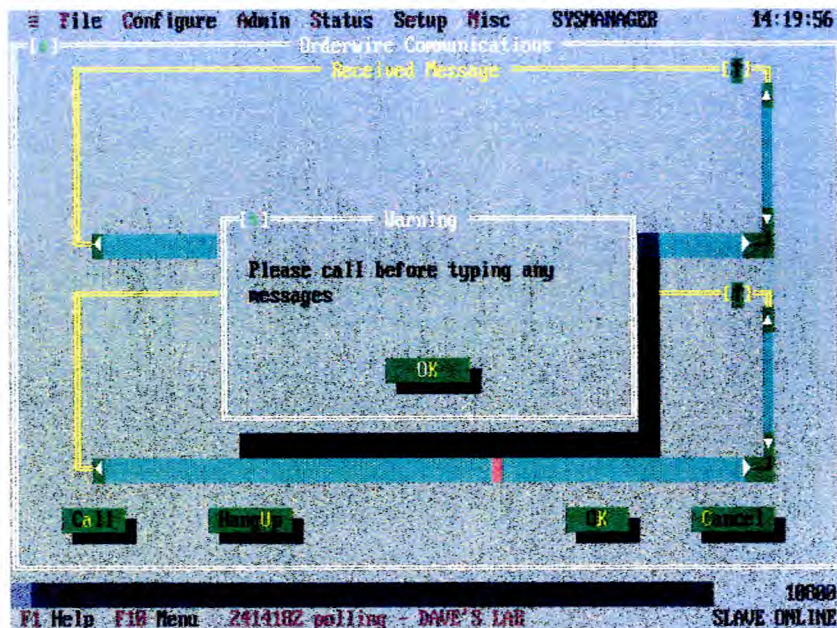


Fig 10

14.2 Display Fig 11 indicates the progress of orderwire connection. Once the connection is made, display Fig 12 is shown. Select OK on the Information window, click on the Transmitted Message box and type in your message.

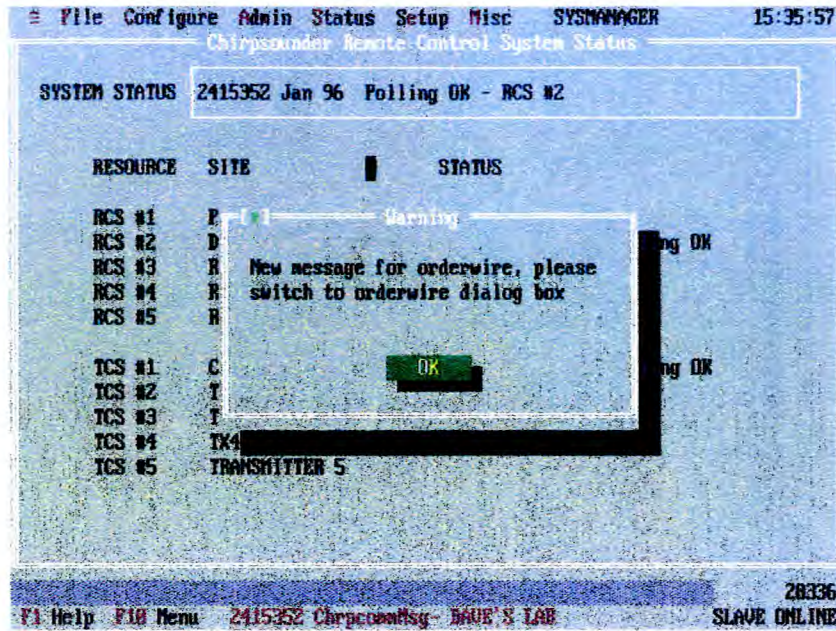


Fig 11



Fig 12

14.3 At the receiving terminal the operator is alerted to the message by the Warning box on his screen (Fig 13). He must then select ADMIN - ORDERWIRE to read his message and reply if necessary.



ADMINISTRATION

Fig 13

14.4 Both master and slave screen show the exchange of messages as shown in Fig 14.

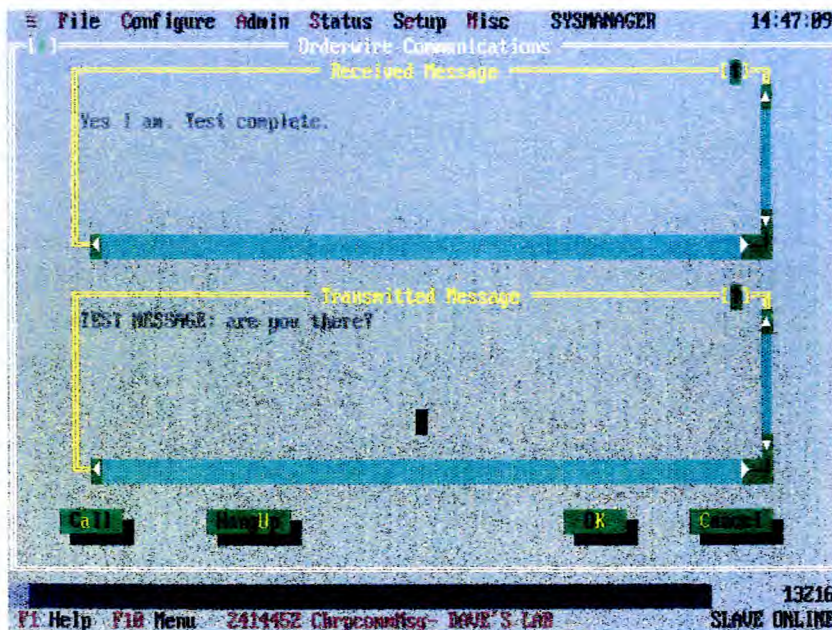


Fig 14

15 To terminate the connection, select HANG UP. Optionally, the initiator may select OK or CANCEL to hang up. In either case, respond to the Confirmation message. At the far end, the symbol +++ will appear at the end of the last message to signify termination.

RESOURCE ALLOCATION

16 Selecting RESOURCE ALLOCATION obtains the "Resource Allocation Authorization" screen (Fig 15). The purpose of this screen is to allocate Chirp resources between the Master and Slave terminals, and display the current allocation. A resource should be allocated to only one terminal and the screens on Master and Slave terminals should agree. The current allocation status may be Master, Slave or Pending (when a resource is being re-allocated to the Slave but the process is not yet complete). The cursor may be scrolled to highlight any particular resource.



Fig 15

17 The CANCEL ALLOCATION selection de-allocates the selected resource from the Slave terminal, removing Slave authorisation. It is important that this selection is made at both terminals to avoid an anomalous situation: only one terminal should be allocated for each resource.

18 A terminal can poll an RCS-5B (for ionogram, status, etc) that has not been allocated to it, but it cannot alter any of the resource settings.

19 To reallocate a resource from Master to Slave involves the use of Orderwire communication and the "Resource Request/Authorization" screens (Fig 16 for Master; Fig 17 for Slave) obtained by selecting GRANT ALLOCATION on screen Fig 15. The procedure is as follows:

19.1 Slave communicates to Master via Orderwire requesting resource (x) be reallocated.

19.2 The Master selects the resource to be allocated, then Grant Allocation. The Master Site - Resource Request/Authorization screen will appear, refer to Fig 16.

19.3 At the Slave terminal, select REQUEST SEED CODE. The system replies with an eight-digit code number. Send this code to the Master terminal on Orderwire.

Note:

Seed Codes and Authorization codes will need to be noted separately for transfer to Orderwire.

ADMINISTRATION

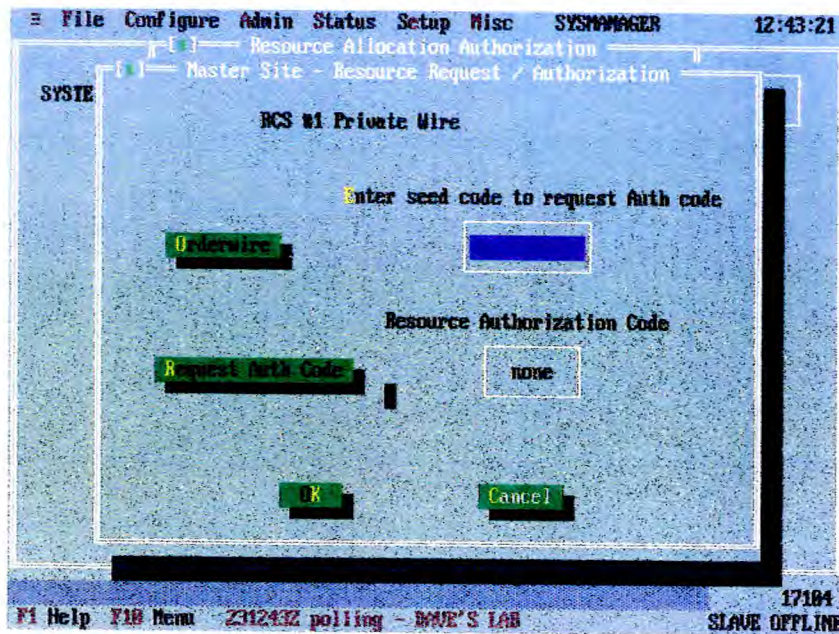


Fig 16

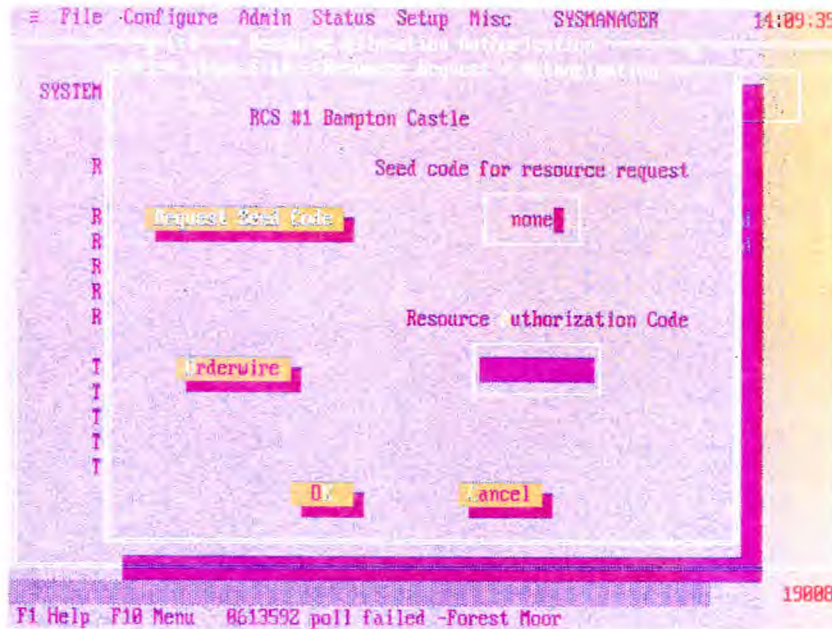


Fig 17

19.4 At the Master terminal, select ORDERWIRE and enter the seed code. Select REQUEST AUTH CODE. The system replies with another eight-digit code number. Send this code to the Slave terminal on Orderwire.

Note:

Seed Codes and Authorization codes will need to be noted separately for transfer to Orderwire.

19.5 At the Slave terminal, select ORDERWIRE and enter the resource authorization code. Press OK to reallocate the resource (CANCEL will abort the process). On the resulting Confirmation box, be sure to press YES. Pressing NO can lead to an anomalous situation whereby the resource is allocated to both terminals, but the "Resource Allocation List" will only show Master or Slave not both.

CONFIGURE FUNCTIONS

1 By selecting CONFIGURE on the main menu bar, pull-down menu options COMM PORTS and RESOURCES are made available to allow the user to configure the system. System configuration should not be attempted while background polling is in progress.

COMM PORTS

2 Selection of comm PORTS obtains the "Comm Port Configuration" display (fig. 18), which allows the display and editing of 12 comm ports, with respect to baud rate, data bits, stop bits and parity.

Port #	OnLine	Usage	Baud Rate	Data Bits	Stop Bits	Parity
1	Yes	OrderWire	9600	8	1	NONE
2	Yes	Data Port	9600	8	1	NONE
3	No	N/A	9600	8	1	NONE
4	No	N/A	9600	8	1	NONE
5	Yes	Dial Up	9600	8	1	NONE
6	Yes	Dial Up	9600	8	1	NONE
7	No					
8	Yes	Dedicated	9600	8	1	NONE
9	No					
10	No					
11	No					
12	No					

ON/OFF LINE EDIT OK

F1 Help F10 Menu 231140Z polling - DAUF'S LAB 20600 SLAVE OFFLINE

CONFIGURE

Fig 18

3 Of the 12 ports, port #1 is used only for orderwire communications; port #2 is used for exporting data to an external PC; ports #3 and #4 are not available to the system (their operational status cannot be modified); ports #5 to #12 can be used for any resource (through its connected modem). The CRCS uses any available on-line serial port for communication. A serial port should be taken off-line if no hardware is connected to it. (i.e ON/OFF LINE toggled to NO)

3.1 Port #1 cannot be taken off-line.

3.2 Modification of comm ports cannot be performed while polling is active.

4 Ensure the Port to be modified is "On Line" before selecting EDIT. Selection of EDIT, once the cursor has highlighted the chosen port, obtains the "Comm Port Configure" screen (fig 19). This screen allows the modification of configuration parameters.

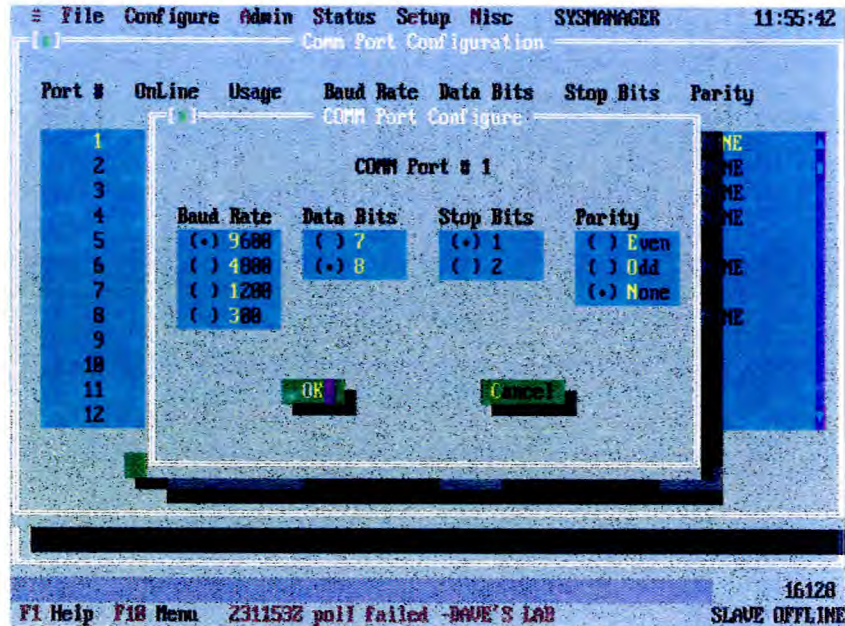


Fig 19

5 For normal operation the parameters should be set to 9600 baud, 8 data bits; 1 stop bit, NONE parity. Selection of OK saves the modification after you have responded to the Confirmation Box.

RESOURCES

6 Selection of RESOURCES from the "Configure" menu obtains the "Chirpsounder Resource Configuration" display (fig. 20) which defines the type of data communications link to each resource. Selection of OK closes this box.

Resource	Dial-Up	Port #	Site Name	Phone Number
RCS #1	NO	8	Private Wire	
RCS #2	YES	Any	DAVE'S LAB	227
RCS #3	YES	Any	RECEIVER 3	333
RCS #4	YES	Any	RECEIVER 4	444
RCS #5	YES	Any	RECEIVER 5	555
TCS #1	YES	Any	Cad Room	213
TCS #2	YES	Any	TRANSMITTER 2	233
TCS #3	YES	Any	TRANSMITTER 3	233
TCS #4	YES	Any	TX4	233
TCS #5	YES	Any	TRANSMITTER 5	233
OrderWire	Yes	1	SLAVE TERMINAL	285
Reserved	NO	2		

CONFIGURE

Fig 20

7 After system initialization the "Chirpsounder Resource Configuration" display can be used to confirm the setup for operation. Each resource must be defined by a Site Name. Communications between the terminals and the resources can be made through a standard phone system or direct field wire connection. For the "Dial-Up" mode a phone number must be provided. No number is needed when the direct field wire is used, but a serial port number must be dedicated to the resource. The OrderWire is the exception: serial port #1 is dedicated to it (it requires a phone number). For the phone number entry, only digits 0 to 9, blank space and comma are allowed for the system. For an invalid phone number, the screen shown in Fig 21 is displayed.

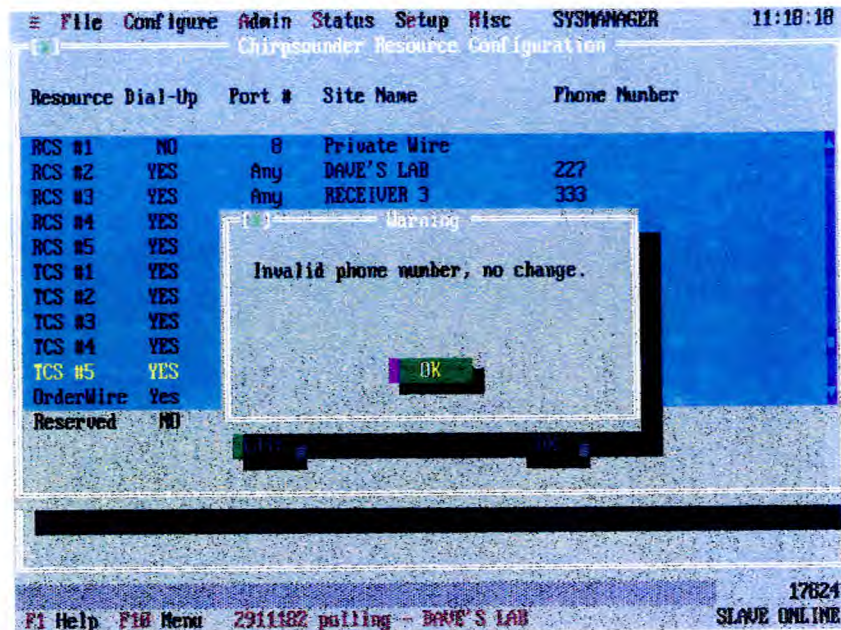
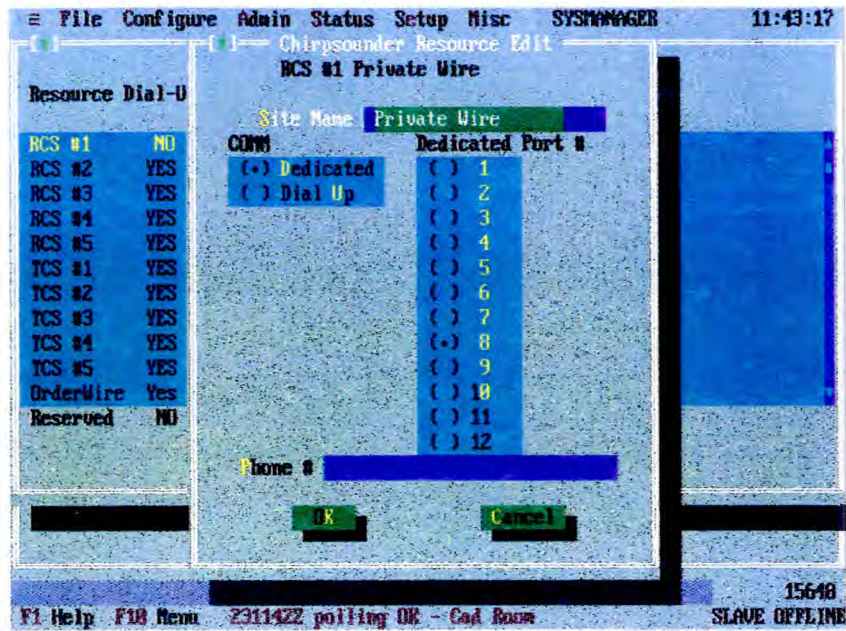


Fig 21

8 Select EDIT to modify the configuration for the selected resource (highlighted by the cursor in Fig 20), via the screen "Chirpsounder Resource Edit" (Fig 22).

8.1 You must select either DEDICATED or DIAL UP mode: if DEDICATED you must select a port, with no phone number; if DIAL UP, enter a phone number (up to 25 digits long) but do not select a port number. Only those comm ports that have been placed on-line in the "Comm Port Configuration" screen (Fig 18) can be used to access resources.



CONFIGURE

Fig 22

- 8.2 Editing is not possible if the resource is currently being polled.
- 8.3 Select OK to write the changes to the system Hard Disk.

SETUP (CHIRPSOUNDER TRANSMITTER)

1 Selecting SETUP and TCS-5 allows you to program the TCS-5 sweep parameters (sweep limits, start time offset and sweep program), to program the Blanker frequency list (used to blank protected comm frequencies), and to program the Chirpcomm Message List (used to compose and send Chirpcomm messages). Sweep parameters already programmed into a remote TCS-5 may also be read. The pull-down menu is shown in Fig 23.

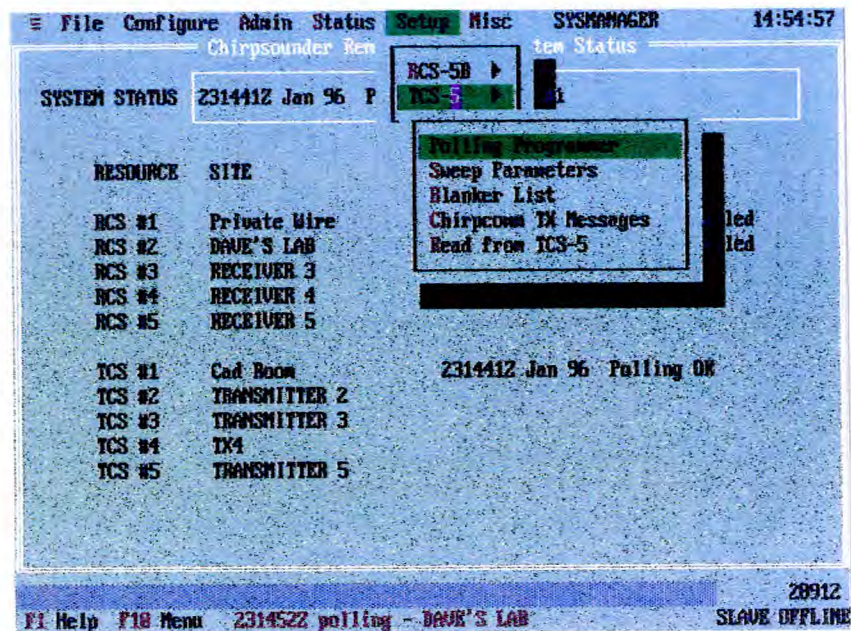


Fig 23

2 Selection of any of the functions on screen Fig 23 first obtains the "TCS-5 Selections". Screen (Fig 24), so that a particular TCS-5 may be selected. Select OK to continue.

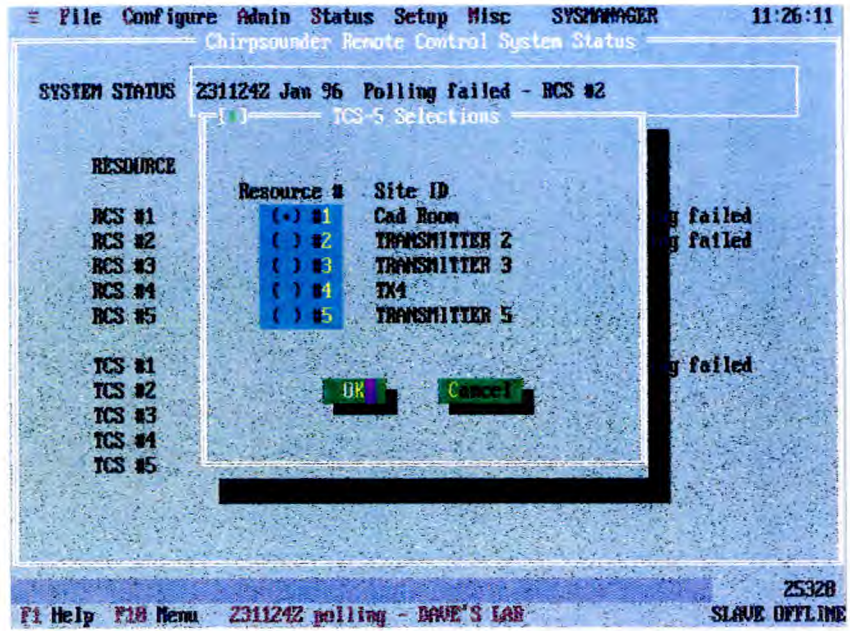


Fig 24

SET UP TX

POLLING PROGRAMMER

3 The Polling programmer allows you to set a schedule to poll status and data from the TCS-5 selected from screen Fig 24. The CRCS will call and interrogate the selected TCS-5 approximately ten seconds after the end of each sweep that is polled. When the TCS-5 has completed a sweep the system will automatically transfer the transmitter status data to the terminal. The TCS-5 can be programmed to sweep during five-minute intervals that are not polled by the terminal (using SWEEP PARAMETERS), but the terminal will only transfer status data for the sweeps selected in POLLING PROGRAMMER. Screen "Chirpsounder Transmitter Polling Programmer" (Fig 25) allows polls to be selected. Note that PROGRAMMED SWEEPS cannot be changed from this screen. Select OK after selecting the required polls and then respond to the Confirmation Box.

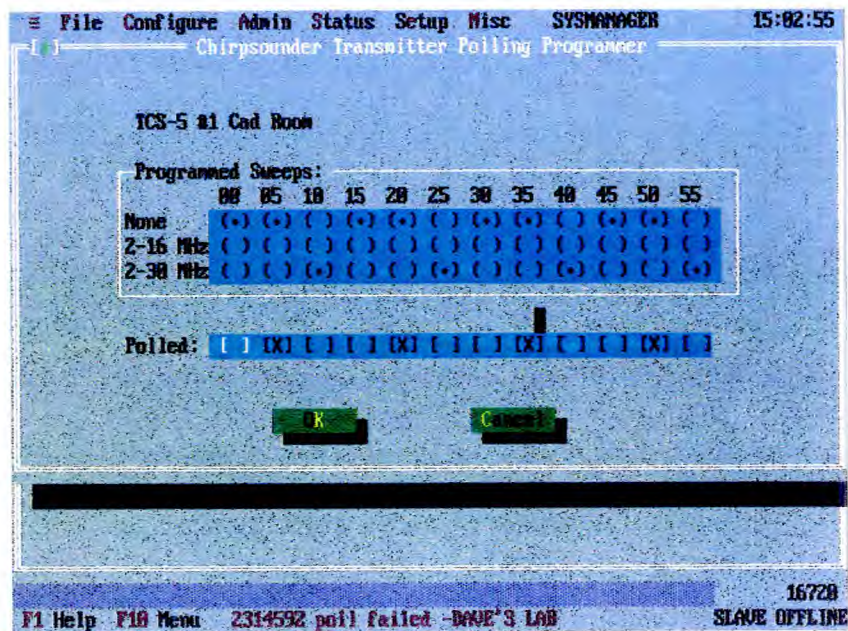


Fig 25

4 Note the following constraints:

4.1 Only one attempt is made by a terminal for each programmed poll. No retry is made within that five-minute slot.

4.2 Because of time constraints it is not possible for a terminal to poll all resources in the same five-minute time slot.

SWEEP PARAMETERS

5 The screen Fig 26 "TCS-5 Sweep Parameter Setup" displays the sweep parameters for the TCS-5 selected from screen Fig 24.

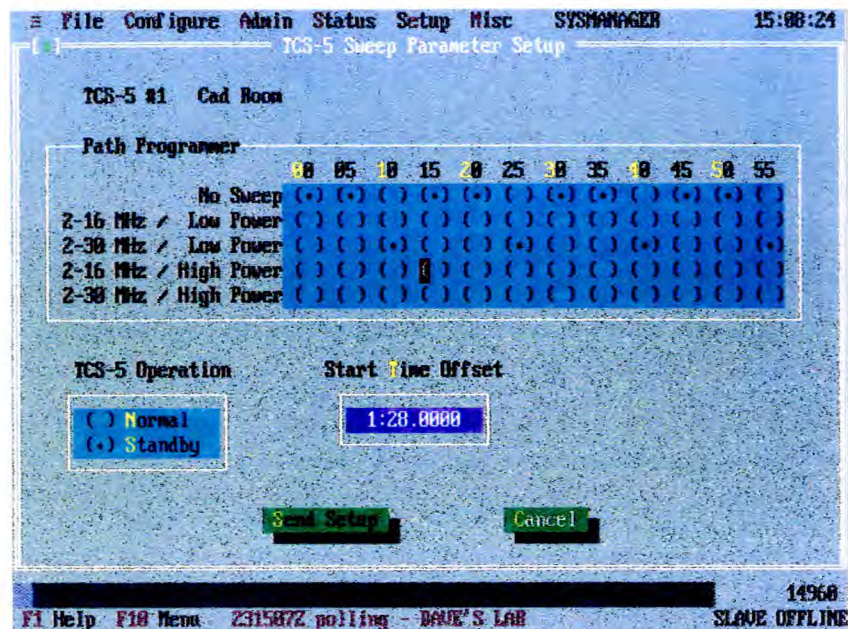


Fig 26

6 Select CANCEL to exit the display without change. The parameters may be modified as follows:

6.1 **PATH PROGRAMMER** : The sweep limits (2-16 MHz, 2-30 MHz or none) and the transmit power (Low = 10 Watts, High = 100Watts) must be specified for each of the 12 five-minute timing intervals per hour. The "dot" indicates the current situation.

6.2 **TCS-5 OPERATION** : Set to NORMAL, the Chirp program will operate as scheduled. Chirp transmissions may be disabled by placing the system in STANDBY : this feature only inhibits Chirp RF emission.

6.3 **START TIME OFFSET** : The offset time determines when the Chirp will start with respect to each five-minute segment of the hour (range in integer seconds from 0:0.0000 to 4:58.0000).

7 Select SEND SETUP to send the new parameters to the selected TCS-5 via modem. A warning display will alert you to the parameter being sent and a message box will indicate sending status.

SET UP TX

BLANKER LIST

8 The TCS-5 can be programmed to blank (momentarily stop transmitting) when its sweep advances to within ± 10 KHz of any frequency stored in the Blanker List. Up to 96 frequencies can be stored in the list (range : 2.0 to 29.999 MHz).

9 The screen shown in Fig 27, "Blanker List Setup" is obtained for the selected TCS-5. The blanker frequencies are listed (and can be modified) on this screen. Further functions are as follows:

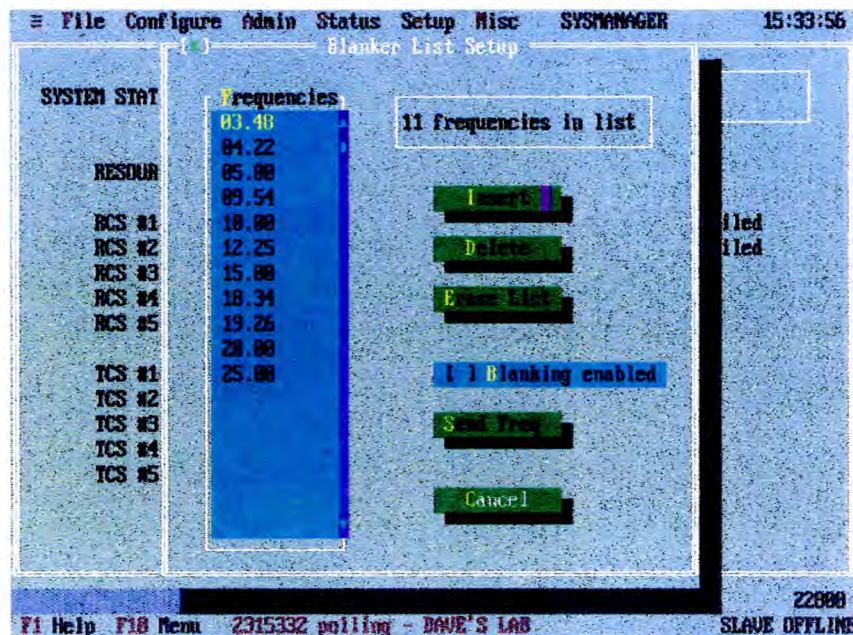


Fig 27

9.1 **DELETE** : This deletes the selected frequency (highlighted by the cursor) from the list.

9.2 **ERASE LIST** : This deletes the entire list. A Warning box requires you to confirm.

9.3 **CANCEL** : This discards any changes that have not been saved (by selecting "Send freq").

9.4 **BLANKING ENABLED** : Select this to enable the operation of the Blanker List.

9.5 **INSERT** : This obtains the screen "Blanker Frequency Entry" (Fig 28). Place the cursor in the FREQUENCY (MHz) field and enter a new frequency (to 10 KHz resolution). Selecting OK accepts the input; CANCEL aborts.

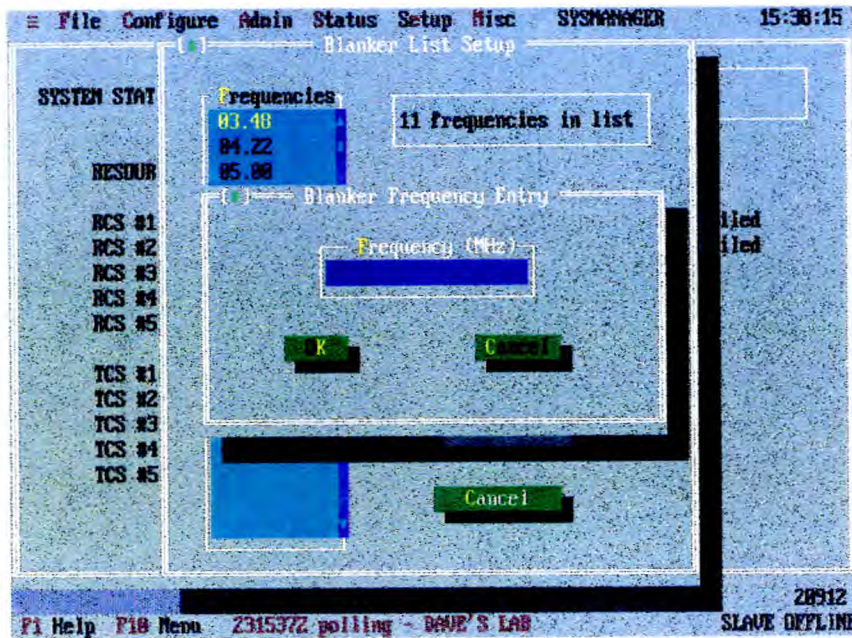


Fig 28

9.6 SEND FREQ : This selection sends the whole "Blanker" list (as displayed on screen Fig 27) to the selected TCS-5 via its associated modem, and saves all the current blanker frequencies in the list.

SET UP TX

CHIRPCOMM TX MESSAGES

- 10 The CRCS terminal can store up to 16 previously composed Chirpcomm messages.
- 11 A special "backup" message can be stored in the TCS-5 which will be transmitted automatically if a power failure at the transmitter causes the TCS-5 to lose its regular chirpcomm message programming.
- 12 Screen (Fig 29) shows all the transmitter Chirpcomm messages stored in the terminal. A total of 16, 38-character messages can be stored in the terminal.

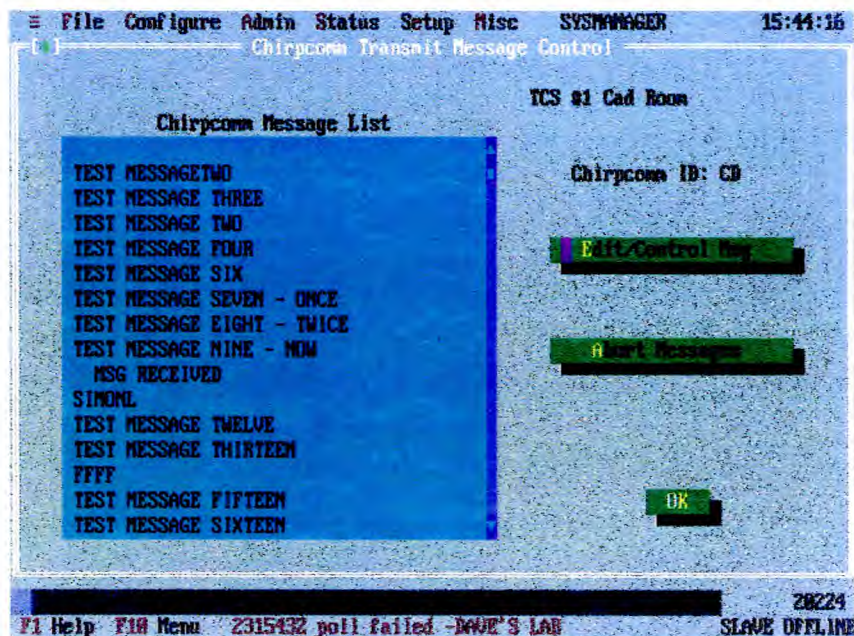


Fig 29

12.1 **ABORT MESSAGES** : This selection clears the "current" and "waiting-to-send" Chirpcomm messages. The current sweep continues, but without Chirpcomm message modulation. Respond to the Confirmation Box.

12.2 **OK** : returns you to the status display.

12.3 **EDIT/CONTROL MSG** : On the selected message (from screen Fig 29), working on display Fig 30, proceed as follows to modify or renew the message:

12.3.1 Use the keyboard to either compose the new message or to modify the previous message.

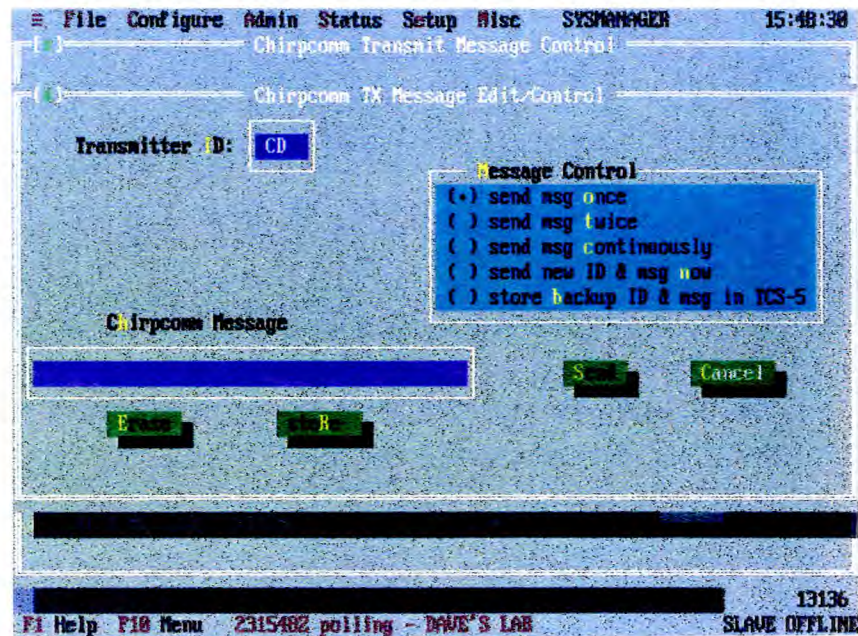


Fig 30

SET UP TX

12.3.2 If required, change the transmitter ID. Note that the ID change becomes valid only if the "SEND NEW ID & MSG NOW" option is selected.

12.3.3 If required, change the Backup ID and message. Note that the ID change will become valid only if the "STORE BACKUP ID & MSG IN TCS-5" option is selected.

12.4 Select the required option from the MESSAGE CONTROL box, as follows. Subsequent selection of SEND sends the message and stores it in the terminal.

12.4.1 SEND MSG ONCE : The Chirpcomm message is sent to the TCS-5 and transmitted during the next sweep only. Successive sweeps transmit only the transmitter ID, without the message.

12.4.2 SEND MSG TWICE : The Chirpcomm message is sent to the TCS-5 and transmitted during the next two sweeps only.

12.4.3 SEND MSG CONTINUOUSLY : The Chirpcomm message is sent to the TCS-5 and transmitted on the next sweep, and each sweep thereafter.

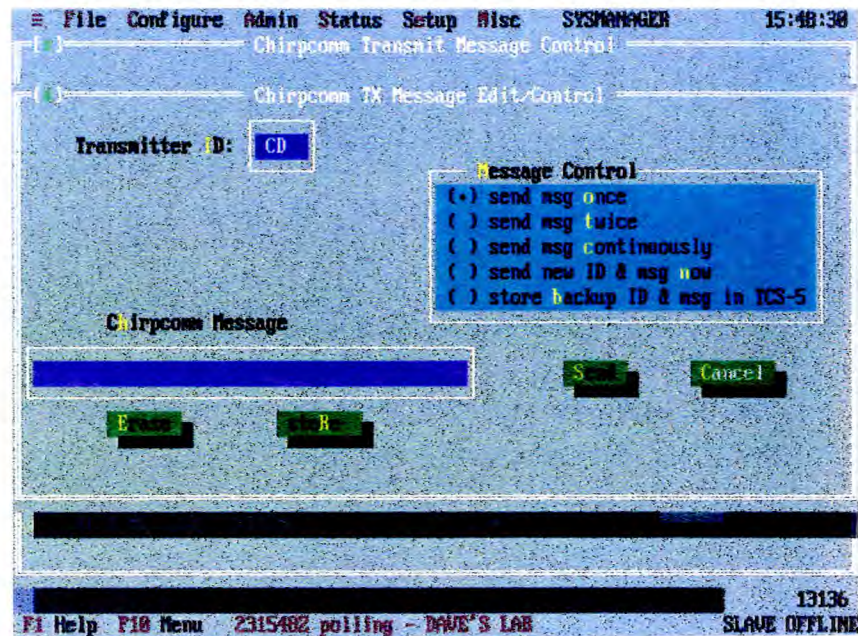


Fig 30

SET UP TX

12.3.2 If required, change the transmitter ID. Note that the ID change becomes valid only if the "SEND NEW ID & MSG NOW" option is selected.

12.3.3 If required, change the Backup ID and message. Note that the ID change will become valid only if the "STORE BACKUP ID & MSG IN TCS-5" option is selected.

12.4 Select the required option from the MESSAGE CONTROL box, as follows. Subsequent selection of SEND sends the message and stores it in the terminal.

12.4.1 SEND MSG ONCE : The Chirpcomm message is sent to the TCS-5 and transmitted during the next sweep only. Successive sweeps transmit only the transmitter ID, without the message.

12.4.2 SEND MSG TWICE : The Chirpcomm message is sent to the TCS-5 and transmitted during the next two sweeps only.

12.4.3 SEND MSG CONTINUOUSLY : The Chirpcomm message is sent to the TCS-5 and transmitted on the next sweep, and each sweep thereafter.

12.4.4 SEND NEW ID & MSG NOW : With this option you can change the two-character transmitter ID as well as the 38-character Chirpcomm message. This option operates the same as SEND MSG CONTINUOUSLY above, except that the current message is cancelled and the new ID and message is substituted immediately, even if a sweep is already in progress.

12.4.5 STORE BACKUP ID & MSG IN TCS-5 : This option stores a new backup ID to message in the TCS-5 (see para 57.3.3).

12.5 Having acknowledged confirmation, the new Chirpcomm message is saved in the terminal memory buffer and also transmitted to the selected TCS-5.

READ FROM TCS-5

13 The CRCS terminal calls the selected TCS-5 and reads all of the current operating sweep parameters. After the terminal completes the call a confirmation box appears advising you that the call was successful. If you then want to view the setup data read from the TCS-5 go to the SWEEP PARAMETERS display as described before.

13.1 When you read from the TCS-5 the local Blanker List is overwritten.

SET UP TX

SETUP (CHIRPSOUNDER RECEIVER)

1 Selecting SETUP and RCS-5B allows you to program or view the RCS-5B sweep parameters and the frequency list used for frequency ranking. The pull-down menu is shown in Fig 31.

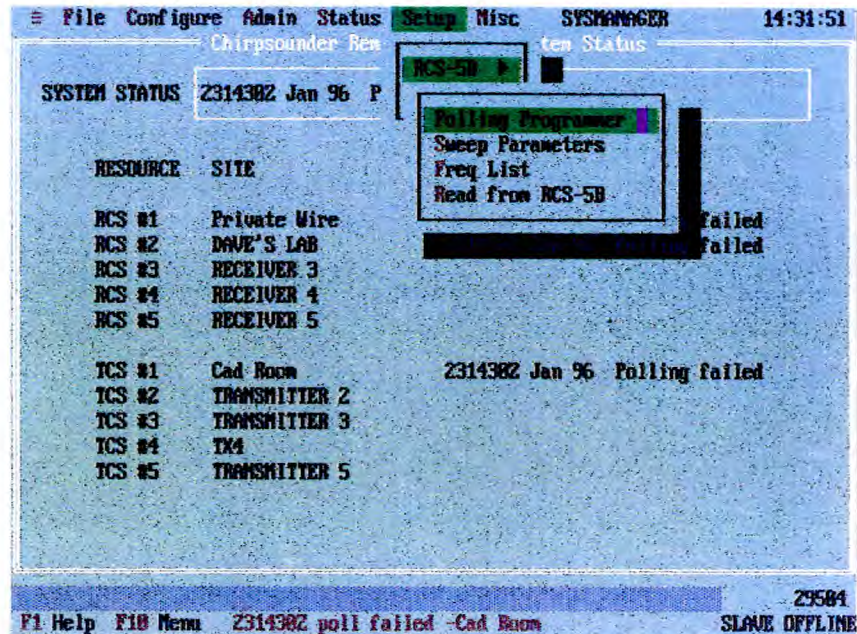


Fig 31

2 Selection of any of the functions on screen 31 first obtains the "RCS-5B Selections" screen (Fig 32), so that a particular RCS-5B may be selected. Select OK to continue.

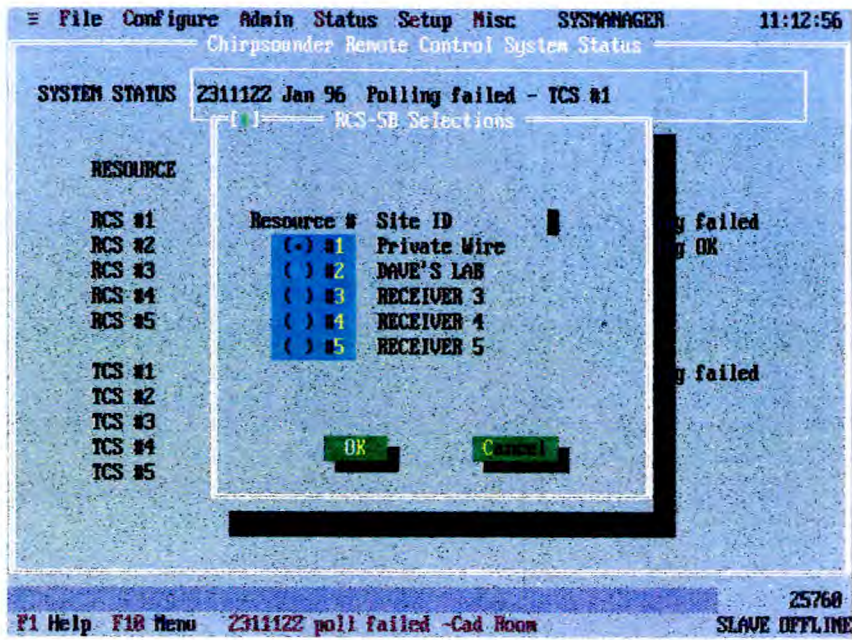


Fig 32

SET UP RX

POLLING PROGRAMMER

3 The polling programmer for the selected RCS-5B operates in the same way as that for transmitters, described earlier. Polls are selected from screen "Chirpsounder Receiver Polling Programmer" (Fig 33).

4 The Polling programmer allows you to set a schedule to poll status and data from the TCS-5 selected from screen Fig 32. The CRCS will call and interrogate the selected TCS-5 approximately ten seconds after the end of each sweep that is polled. When the TCS-5 has completed a sweep the system will automatically transfer the receiver status data to the terminal. The TCS-5 can be programmed to sweep during five-minute intervals that are not polled by the terminal (using SWEEP PARAMETERS), but the terminal will only transfer status data for the sweeps selected in POLLING PROGRAMMER. Screen "Chirpsounder Receiver Polling Programmer" (Fig 33) allows polls to be selected. Note that PROGRAMMED SWEEPS cannot be changed from this screen. Select OK after selecting the required polls and then respond to the Confirmation Box.

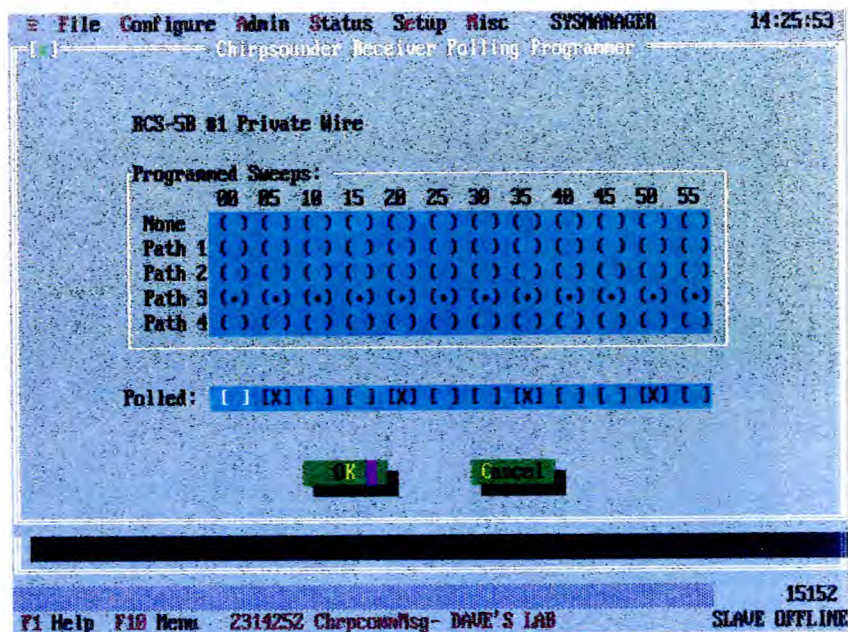


Fig 33

5 Note the following constraints:

5.1 Only one attempt is made by a terminal for each programmed poll. No retry is made within that five-minute slot.

5.2 Because of time constraints it is not possible for a terminal to poll all resources in the same five-minute time slot.

SWEEP PARAMETERS

6 The screen Fig 34 "RCS-5B Sweep Parameter Setup" displays the sweep parameters for the RCS-5B selected from screen Fig 32:

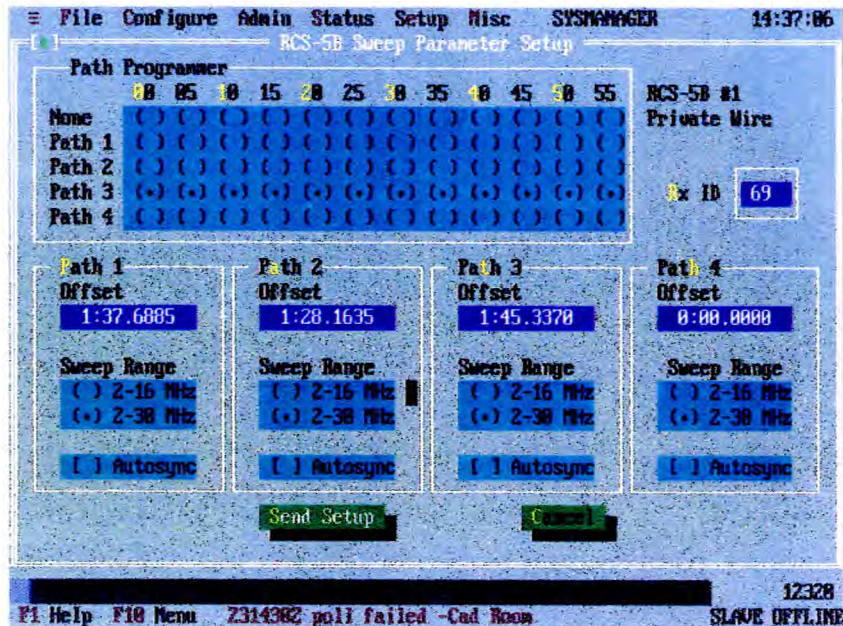


Fig 34

7 Programming is similar (for each of four paths) to that for transmitters, described earlier. The parameters may be modified as follows:

7.1 **PATH PROGRAMMER** : Select either "None" or any of the four "Paths" for each of the 12 five minute timing intervals per hour. The "Dot" indicates the current situation.

7.2 **PATH OFFSET** : The offset time determines when the receiver will start with respect to each five minute segment of the hour (range in integer seconds from 0:0.0000 to 4:58.0000) ie to match the start time offset of the transmitter.

7.3 **SWEEP RANGE** : Select either 2-16 MHz or 2-30 MHz to match that of the transmitter being received.

7.4 **AUTOSYNC** : Select "autosync" for each of the four paths as required. Autosync will only be initiated once "Send Setup" has been selected. Once the receiver has achieved autosync, each of the four paths independently defaults (ie the x in the autosync box disappears automatically in each case).

7.5 **RX ID** : The receiver ID can be changed by selecting "RX ID" and entering a new 2 character ID.

SET UP RX

7.6 Select "Send Setup" to pass the new parameters to the receiver.

7.7 Selecting "Cancel" will abort any current changes and return to the default screen.

FREQ LIST

8 Each RCS-5B can maintain a list of 100 comm. frequencies in non-volatile memory. The RCS-5B processes the list to indicate which frequencies are best for communications, based upon propagation and occupancy.

9 The screen shown in Fig 35, "Chirpsounder Frequency List Edit" is obtained for the selected RCS-5B. The list may be viewed, edited or erased entirely from this screen.

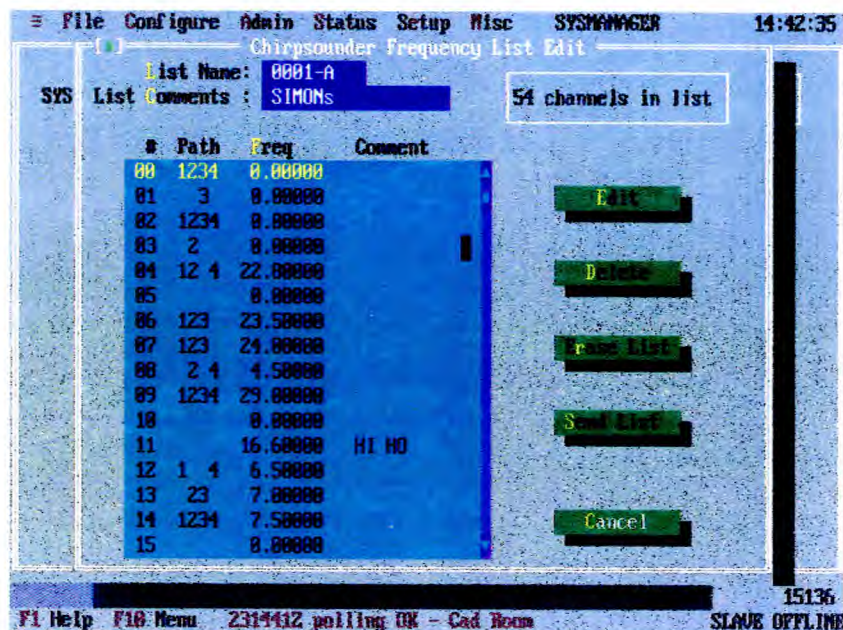


Fig 35

9.1 LIST NAME : This input field may be used to name the list. Valid input is four digits, hyphen and (A-F), eg 1234-A.

9.2 LIST COMMENTS : This input field provides a comment line of up to 16 characters.

9.3 DELETE : Deletes the cursor-highlighted entry.

9.4 ERASE LIST : Erases the entire list.

9.5 CANCEL : Exits and discards any changes that have not been saved.

9.6 SEND LIST : The list is saved on disk if successfully sent to the receiver.

9.7 EDIT : This selection obtains the screen Fig 36.

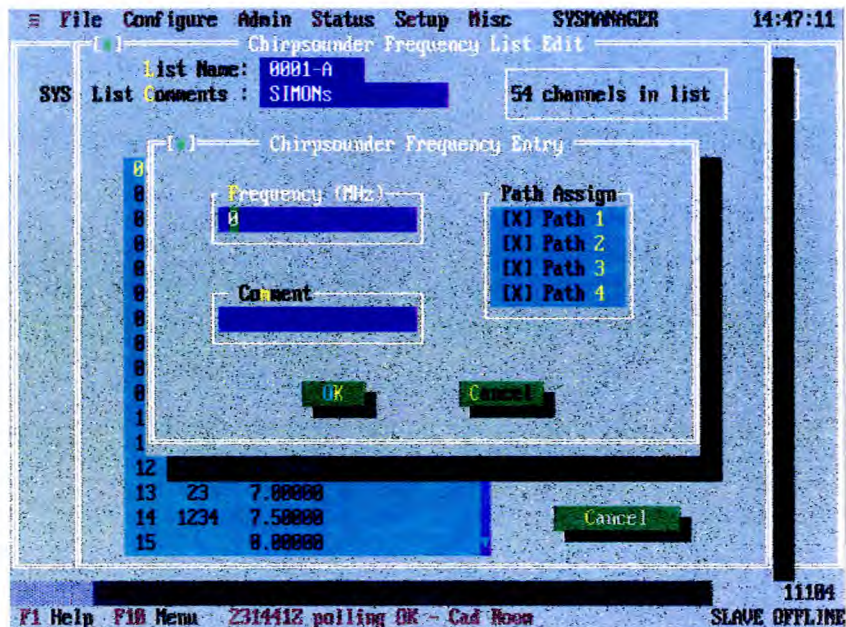


Fig 36

9.7.1 Type in a frequency (range : 2 to 29.99 MHz).

9.7.2 Use a PATH ASSIGN to select which of the four paths the frequency is to be assigned to.

9.7.3 Use COMMENT input field if required.

9.7.4 Select OK to save the edited data and exit to screen Fig 35. Selection of CANCEL aborts the editing attempt.

10 The amended list is not available until the end of the next valid sweep (when polled).

SET UP RX

READ FROM RCS-5B

11 This selection reads the current operation sweep parameters from the selected RCS-5B. A communication status message is displayed at the end of the process. If communication to the receiver is successful then this updated status and parameters of the receiver can be viewed by selecting "Status" or "Setup".

STATUS FUNCTIONS

1 System Status (showing the last system status polled), Chirpsounder Receiver and Chirpcomm Transmitter Status displays are mutually exclusive and shown as non-modal displays, ie while they are displayed in the background other displays and dialogue boxes can be selected and displayed on top of them.

SYSTEM

2 Fig 37 is the default display on system start-up. It shows the latest polling status on each on-line RCS-5B and TCS-5, with time stamps.

RESOURCE	SITE	STATUS
RCS #1	Private Wire	230658Z Jan 96 Polling failed
RCS #2	DAVE'S LAB	230920Z Jan 96 Polling OK
RCS #3	RECEIVER 3	
RCS #4	RECEIVER 4	
RCS #5	RECEIVER 5	
TCS #1	Cad Room	230657Z Jan 96 Polling failed
TCS #2	TRANSMITTER 2	
TCS #3	TRANSMITTER 3	
TCS #4	TX4	
TCS #5	TRANSMITTER 5	

F1 Help F10 Menu 230920Z ChirpsoundSys - DAVE'S LAB 23264 SLAVE OFFLINE

Fig 37

STATUS

RCS-5B

3 Selection of RCS-5B Receiver from the status menu first obtains the "RCS-5B Selections" screen (Fig 38), so that a particular RCS-5B may be selected. Select OK to continue.

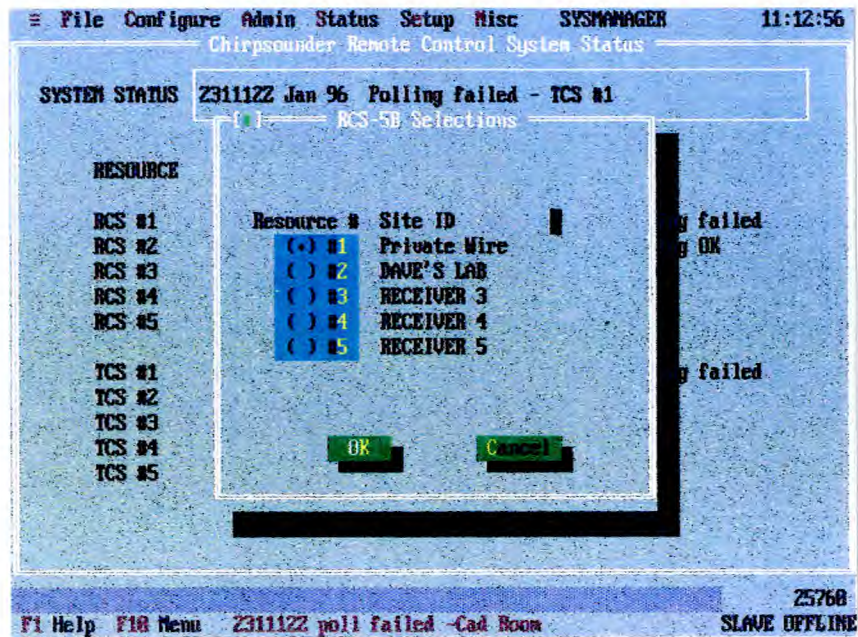


Fig 38

4 Screen (Fig 39), "Chirpsounder Receiver Status", displays the status (including the most recently received Chirpcomm message) for the selected RCS-5B.

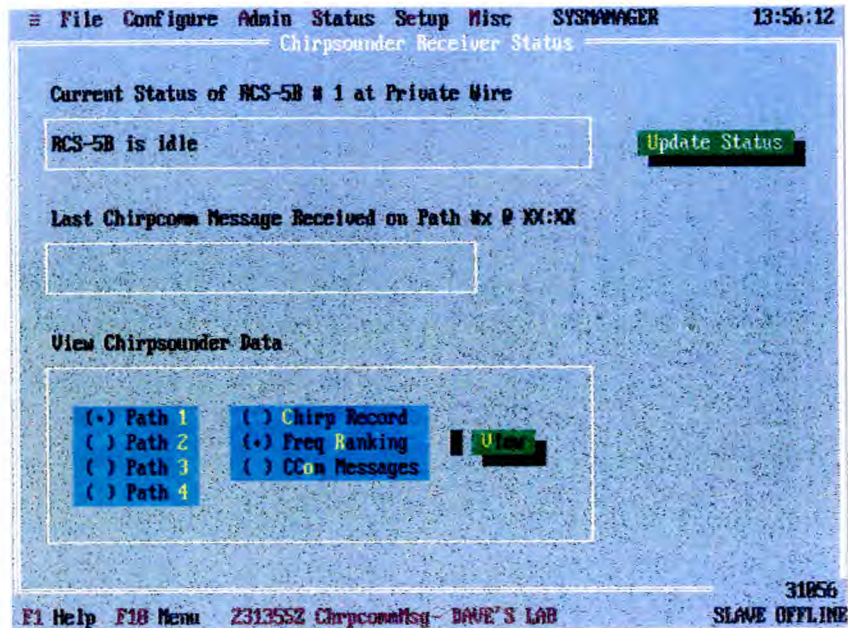


Fig 39

4.1 To exit from this screen, select STATUS, followed by SYSTEM, to obtain the default screen Fig 37.

4.2 UPDATE STATUS : This selection obtains the real-time status of the RCS-5B. It obtains the sweeping frequency in MHz from the receiver at the time of enquiry for display. It will display the status as idle if no sweeping is in progress. Fig 40 shows the Information Box displayed while calling is in progress.

STATUS

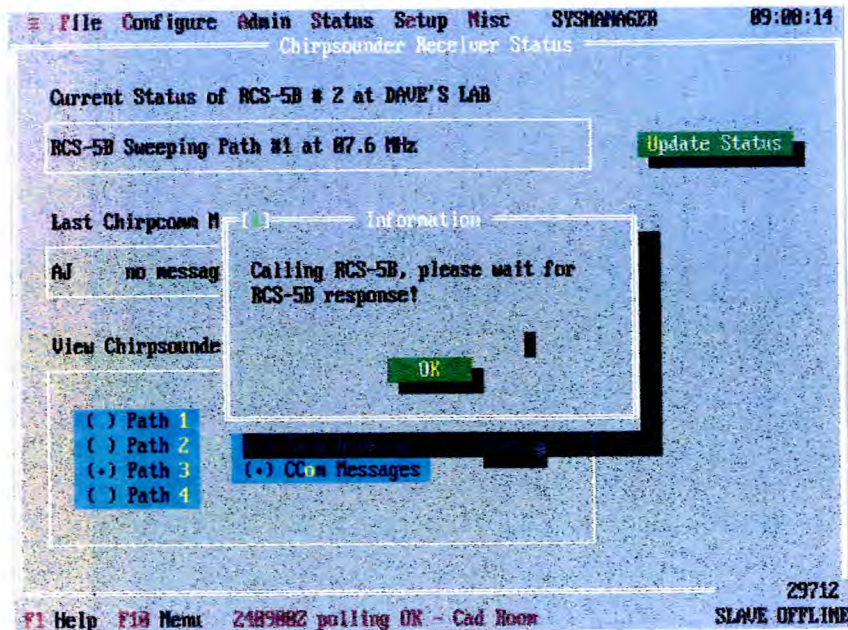


Fig 40

4.3 VIEW : This selection displays latest-received data from the selected RCS-5B. Each of the types of data must be selected by PATH number (1 o 4). The types of data that may be selected are:

- 4.3.1 CHIRP RECORD
- 4.3.2 FREQ RANKING
- 4.3.3 CCOM MESSAGES

4.4 For CCOM MESSAGES, select CCOM MESSAGES, select the path number and select VIEW. A display similar to Fig 41 is obtained ("RCS-5B Chirpcomm messages"), showing the last 20 messages.

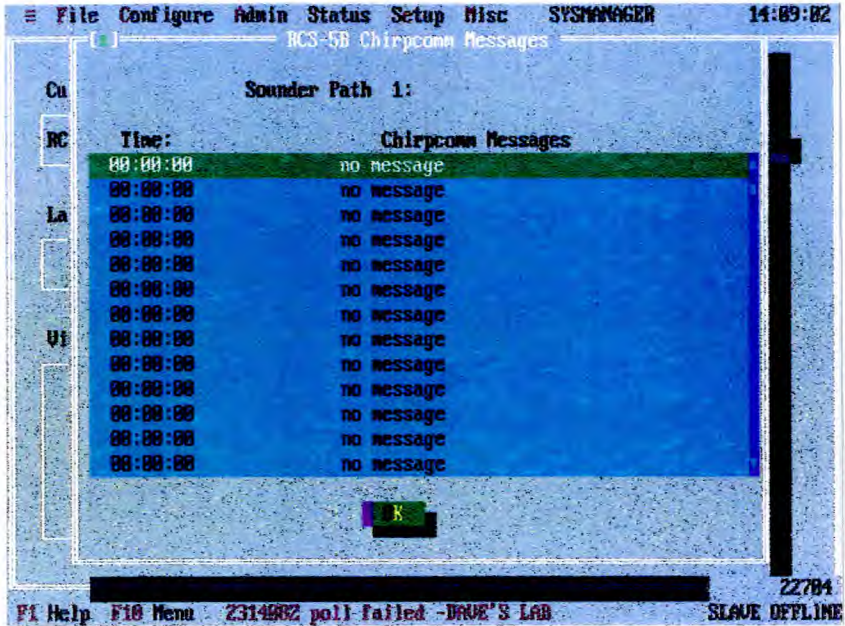


Fig 41

4.5 For FREQ RANKING, select FREQ RANKING, select the path number and select VIEW. A display similar to Fig 42 is obtained ("RCS-5B Frequency Ranking"), where Ch# represents the channel number from the frequency list (see SETUP functions).

STATUS

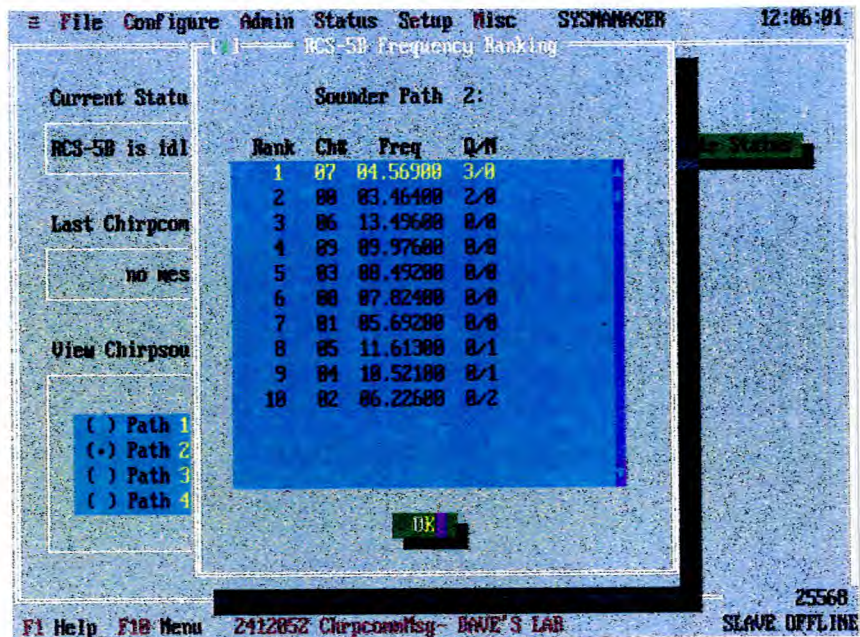


Fig 42

4.5.1 Note that the ranking list may not be valid if a new entry has recently been made to the frequency list (see SETUP CHIRPSOUNDER RECEIVER -FREQ LIST) and the new list has not been sent to the receiver for ranking prior to a full sweep.

4.5.2 Q/N represents Quality/Noise. Quality is ranked from 0 = no propagation to 5 = good propagation; noise is ranked from 0 = clear to 3 = noisy.

4.6 For CHIRP RECORD, select CHIRP RECORD, select the path number and select VIEW. A display similar to Fig 43 is obtained ("Chirp Record Display").

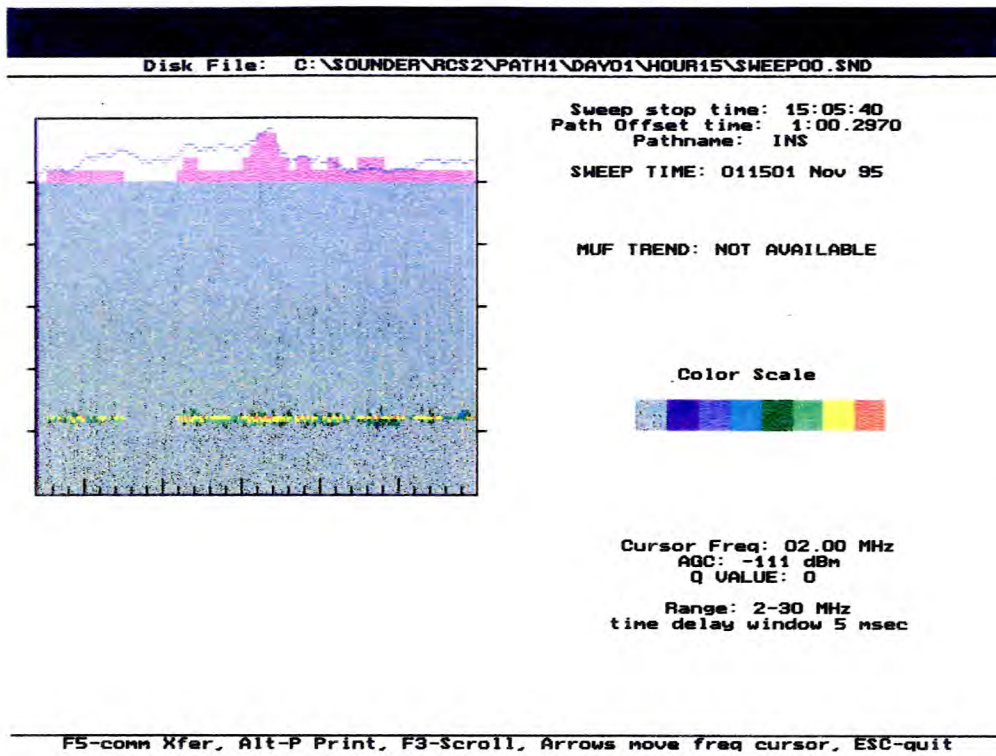


Fig 43

- 4.7 Refer to page 10 (Ionograms) for a description of this screen.
- 4.8 Keyboard keys ALT and P, pressed together, enable a coloured print to be taken of the ionogram.
- 4.9 Press the ESC key to return to screen Fig 39.

STATUS

TCS-5

5 Selection of TCS-5 from this Status menu first obtains the "TCS-5 SELECTIONS" screen (Fig 44), so that a particular TCS-5 may be selected. Select OK to continue.

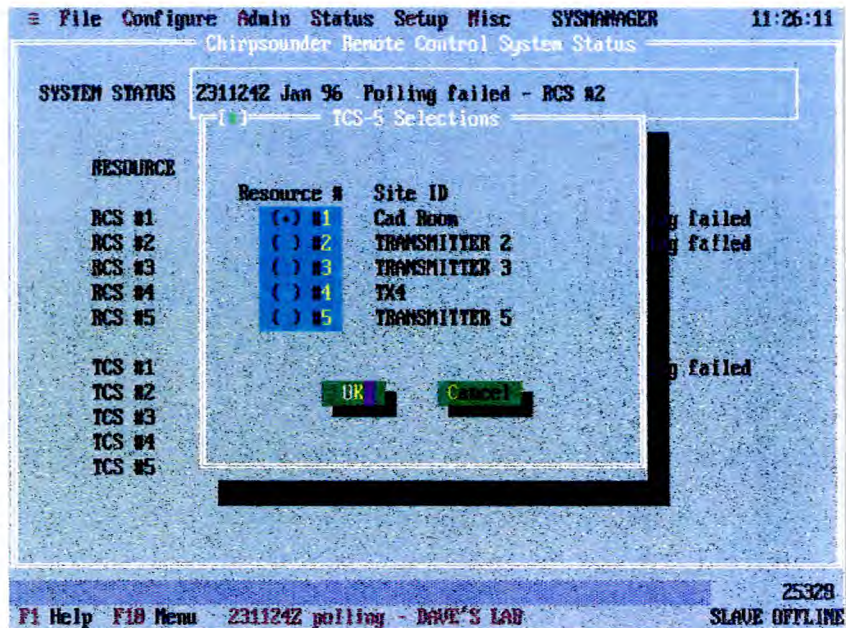


Fig 44

6 Screen (Fig 45), "Chirpsounder Transmitter Status", displays the current status for the selected TCS-5, including Transmit RF Power level. Also displayed are the current Chirpcomm message being sent, the Waiting-To-Send message (and its send time), the Backup message stored in the TCS-5, and the Alarm Status for the TCS-5. Note that a full field of colons (:) in the Chirpcomm message boxes indicates that no Chirpcomm message other than the ID is being transmitted.

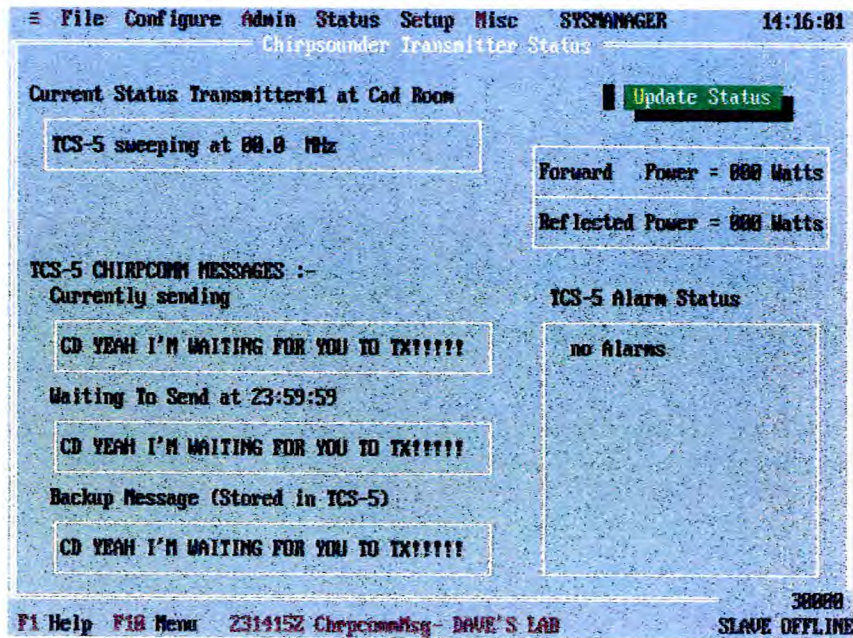


Fig 45

STATUS

READING ARCHIVED FILES

1 ALL propagation data from individual paths (including ranking data and Chirpcomm messages) are stored on to the Hard Disk as they are received.

2 By selecting FILE from the main menu bar and then VIEW ARCHIVES, the pull-down menu options shown on Fig 46 are made available, to enable the following functions:

- 2.1 One Chirp Record Archive
- 2.2 Four Chirp Records Archive
- 2.3 System Archive
- 2.4 Chirpcomm Messages Archive
- 2.5 Freq Ranking Archive

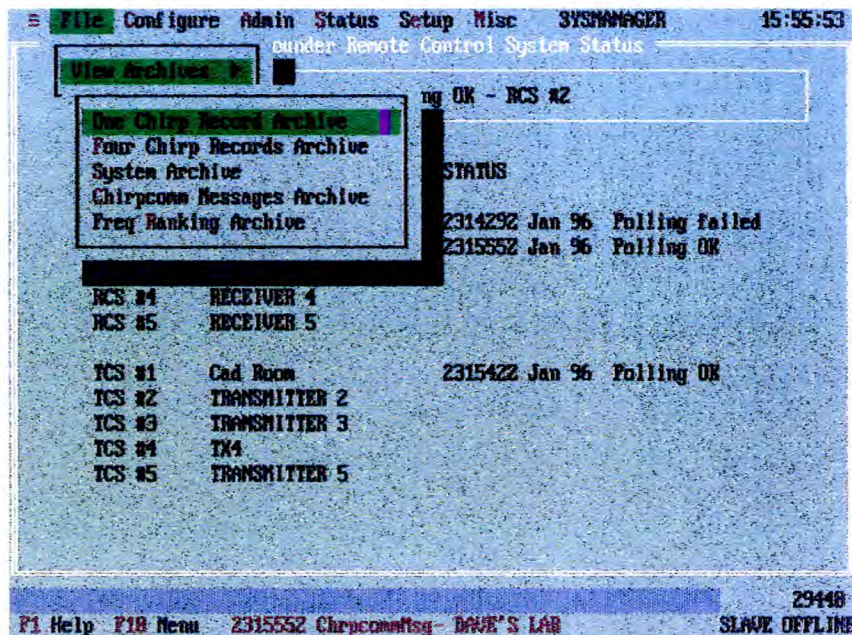


Fig 46

3 Archival storage of Chirpsounder records and frequency list ranking uses a fixed directory structure located in the C:\SOUNDER directory.

- 3.1 In the SOUNDER directory there are five sub-directories, RCS-1 to RCS-5.
- 3.2 Within each of the above there are four path sub-directories, Path 1 to Path 4.

3.3 Within each Path directory there are 31 daily sub-directories, DAY 01 to DAY 31.

3.4 Within each daily directory there are 24 hourly sub-directories, HOUR 00 to HOUR 23.

3.5 The path, day and hour that the archive file was saved determines the directory used for storage of the archive file.

3.6 The name of the archived file reflects the interval of the sweep, eg SWEEP 05 is the name for the data files of the sweep starting five minutes after the hour.

3.7 Different types of data files are distinguished by different file extensions: the propagation data file has the SWEEP05.SND format; the frequency ranking data file has the SWEEP05.RNK format; the Chirpcomm message data file has the SWEEP05.MSG format.

ONE CHIRP RECORD ARCHIVE

4 This selection obtains the screen shown in Fig 47 "Open Sounder File", to enable the display of one Chirp record which has been stored into a Chirp Record Archive data file.

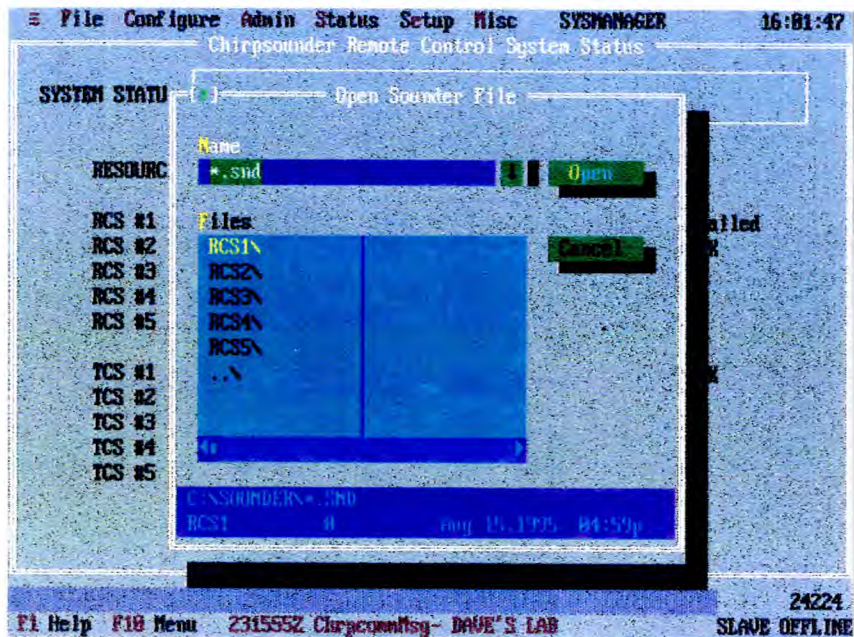


Fig 47

5 You must select the specific record you wish to view by selecting the desired sub-directories (resource, path, day and hour) and file name (sweep interval). After each selection, double-click on the highlighted selection, or select OPEN. Finally, select OPEN to obtain a display similar to Fig 48.

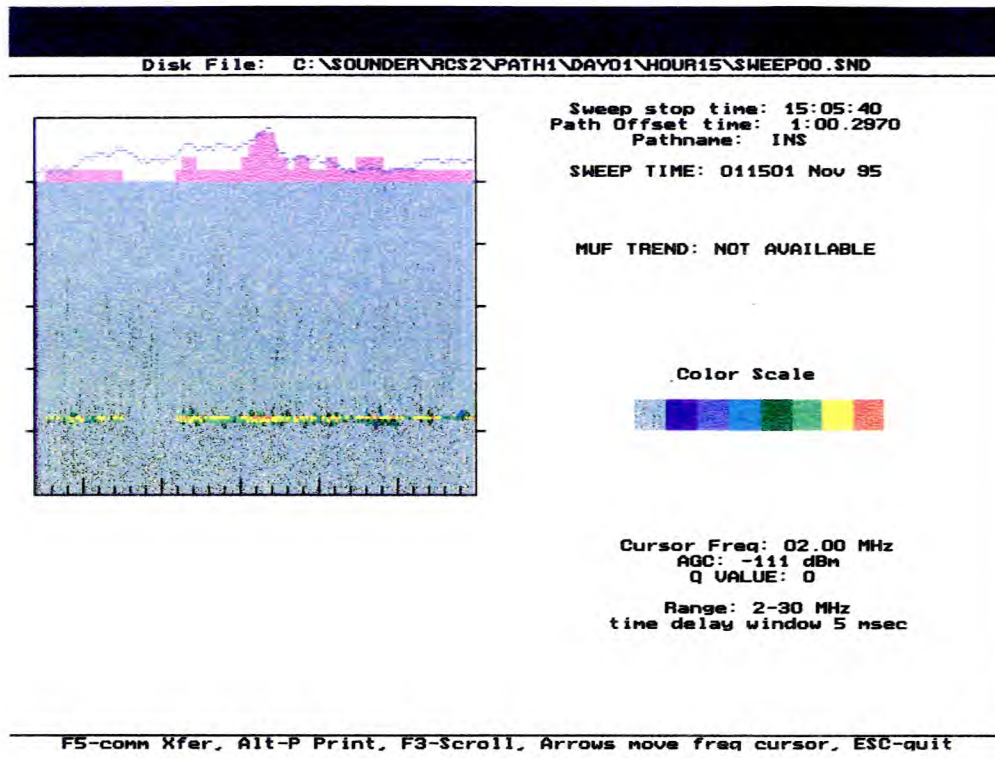


Fig 48

6 You may press F3 on the keyboard to scroll through 12 consecutive soundings (the display will ultimately return to the original record). Scrolling is limited to the same subdirectories for resource, path and day; it is not limited to a specific hour subdirectory (ie 12 consecutive soundings can be spread over several hours if only a few soundings per hour were stored by the Polling Programmer).

7 A frequency cursor can be moved to display the corresponding AGC, Q and data rate values, as follows:

7.1 Use the UP and DOWN arrow keys on the keyboard to move the frequency cursor by steps of 5MHz.

7.2 Use the LEFT and RIGHT arrow keys on the keyboard to move the frequency cursor by steps of 100KHz.

FOUR CHIRP RECORDS ARCHIVE

8 This selection obtains the screen shown in Fig 47, "Open Sounder File", to enable the display of four consecutive Chirpsounder records from the archived data files, arranged on the screen as shown in Fig 49. To obtain the "Four Chirp Records Archive" select the desired sub-directories (resource, path, day and hour) and file name. After each selection, double click on the highlighted selection, or select OPEN. Finally, select OPEN to obtain a display similar to Fig 49.

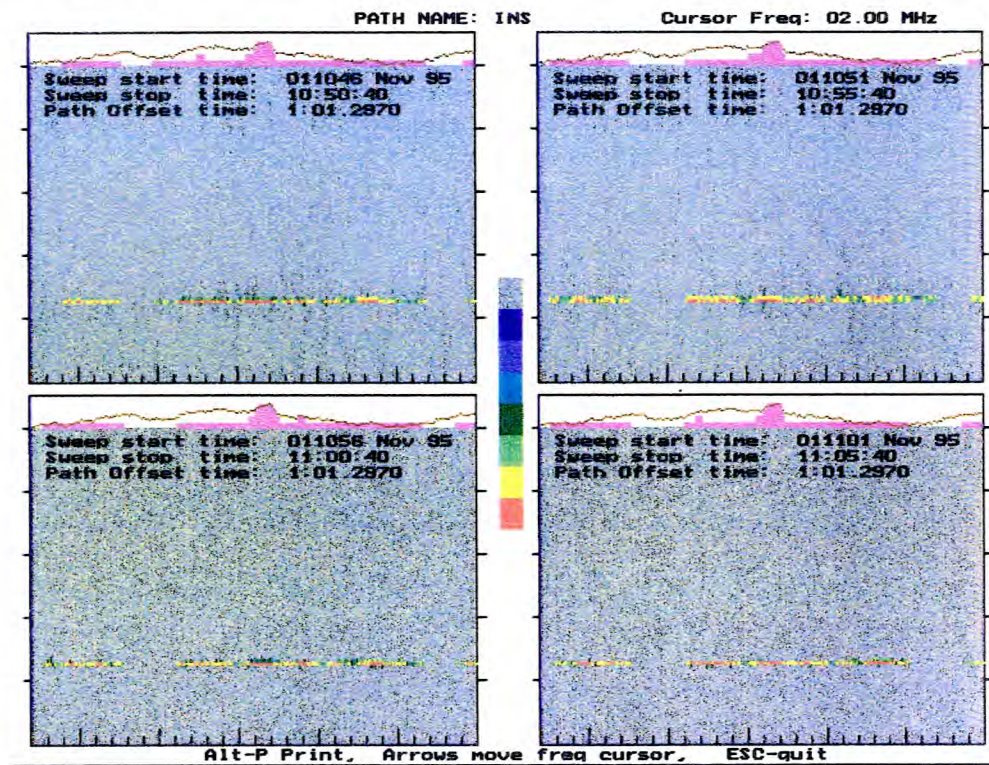


Fig 49

9 The display shows the selected sounding and the next three consecutive soundings stored in that same directory.

CHIRPCOMM MESSAGES ARCHIVE

10 This selection obtains the screen shown in Fig. 50. "Open File (msg)", to enable the display of the last-received Chirpcomm messages stored in the selected directory of the message Archive files.

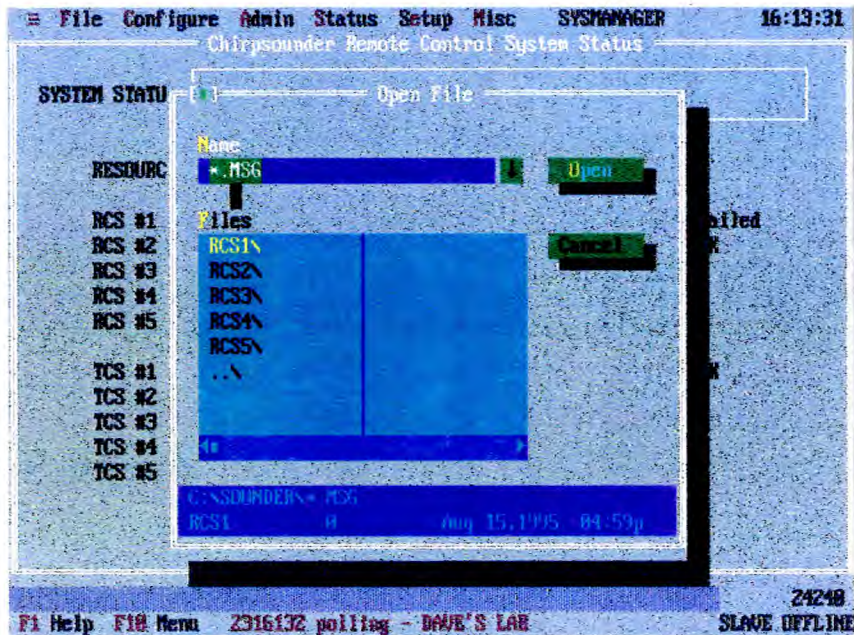


Fig 50

11 You must select the required directory by selecting the desired sub-directories (resource, path, day and hour) and file name (sweep interval). After each selection, double-click on the highlighted selection, or select OPEN. Finally, select OPEN to obtain a display similar to Fig. 51.

Note

That the last 20 messages for specific receivers and paths can be retrieved by viewing the screen shown in Fig 41 (STATUS - VIEW - CCOM MESSAGES).



Fig 51

FREQ RANKING ARCHIVE

12 This selection obtains the screen shown in Fig 52 "Open File (RNK)", to enable the display of all the ranked frequencies stored in the selected directory of the frequency ranking archive files. These are the frequencies ranked from a sweep based on the frequency list in the RCS-5B. The channel numbers, channel frequencies and the Q/N values are displayed as in Fig. 53. There may be up to 12 frequency-ranked data files, one for each five-minute interval.

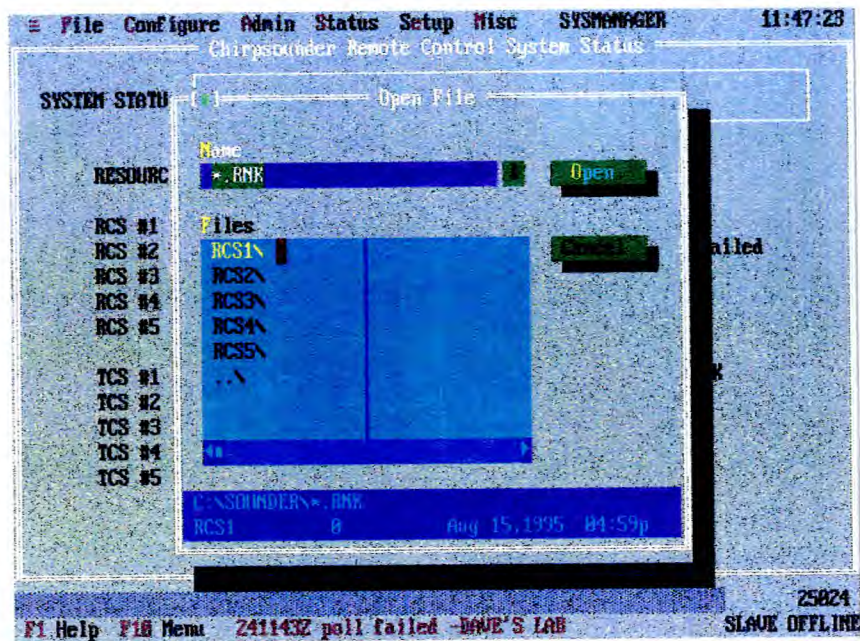


Fig 52

13 You must select the required directory by selecting the desired sub-directories (resource, path, day and hour) and filename (sweep interval). After each selection, double-click on the highlighted selection, or select OPEN. Finally, select OPEN to obtain a display similar to Fig 53.

ARCHIVED FILES

File Configure Admin Status Setup Misc SYSMANAGER 11:52:47
 Chirpsounder Remote Control System Status
 SYSTEM ARCHIVE VIEWER
 Disk file: c:\sounder\rcs2\path1\DAY01\HOUR09\sweep45.rnk
 End Time: 095048
 Sounder Path 1:

Rank	Ch#	Freq	Q/N
1	46	16.94628	4/1
2	47	16.72388	4/1
3	14	87.58888	1/8
4	42	86.84388	1/8
5	12	86.58888	1/8
6	11	86.88888	1/8
7	39	85.86588	1/8
8	89	85.88888	1/8
9	37	84.56788	1/8
18	87	84.88888	1/8

19376
 F1 Help F10 Menu 241143Z poll failed -DAVE'S LAB SLAVE OFFLINE

Fig 53

SYSTEM ARCHIVE

14 Archival storage of system status records also uses a fixed directory structure located in the c:\ARCHSYS directory. In the ARCHSYS directory there are 31 daily subdirectories, DAY 01 to DAY 31. Within each daily directory there are 24 hourly files, HOUR00.STS to HOUR23.STS. Each file contains the audit trail of the system activities, which are time stamped.

15 This selection obtains the screen shown in Fig 54, "Open File (STS)", to enable the display of the events recorded in a selected hourly system archive file. You must select the required directory by selecting the desired subdirectories (day, hour). After each selection, double-click on the highlighted selection, or select OPEN. Finally, select OPEN to obtain a display similar to Fig. 55.

The following items are logged and time-stamped and presented in chronological order:

- Resource Configuration modifications.
- Comm Port Configuration modifications.
- Orderwire Communications.
- User Log In, Log Out and Password Change.
- System manager procedures.
- Resource Allocation.
- Status Interrogation.
- Data Polling Status.
- Data transfer.
- RCS-5B and TCS-5 Parameter Modifications.
- Self Test Reports.
- CRCS System Initialization.

Caution

The terminal DOS clock is factory set, however, the clock accuracy should be checked periodically to ensure that archive information is time stamped accurately and does not retard or advance to another 5 minute chirp segment.

To change the DOS clock:

- a) Reboot system, after "ColvTax loaded interrupt by pressing Ctlr+C keys. At prompt enter Yes.
- b) At prompt C:\CRCS> type "cd\"enter
- c) At prompt C:\> type "time" enter, this displays the current time
- d) Enter the new time and press ENTER
- e) At prompt C:\> press CTRL+ALT+DEL keys to reboot system.

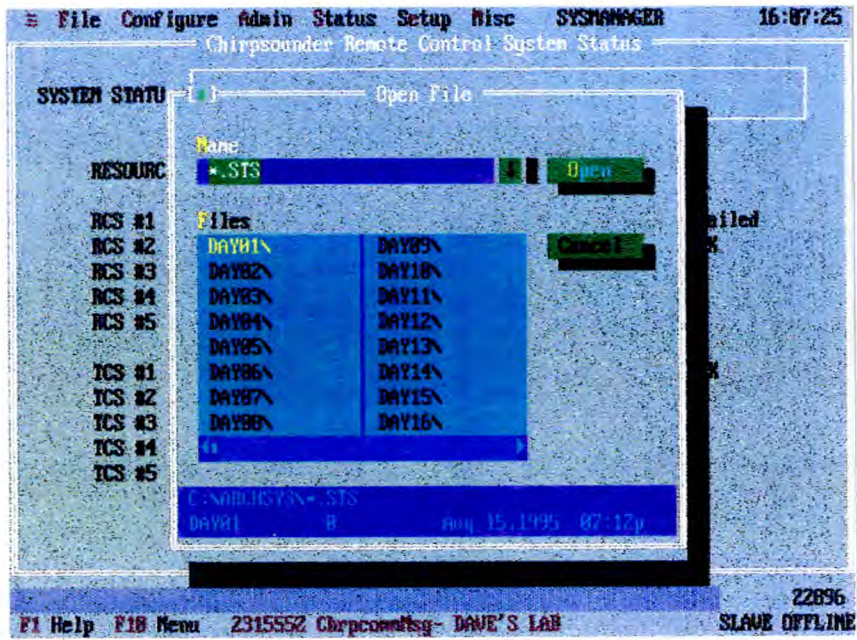


Fig 54

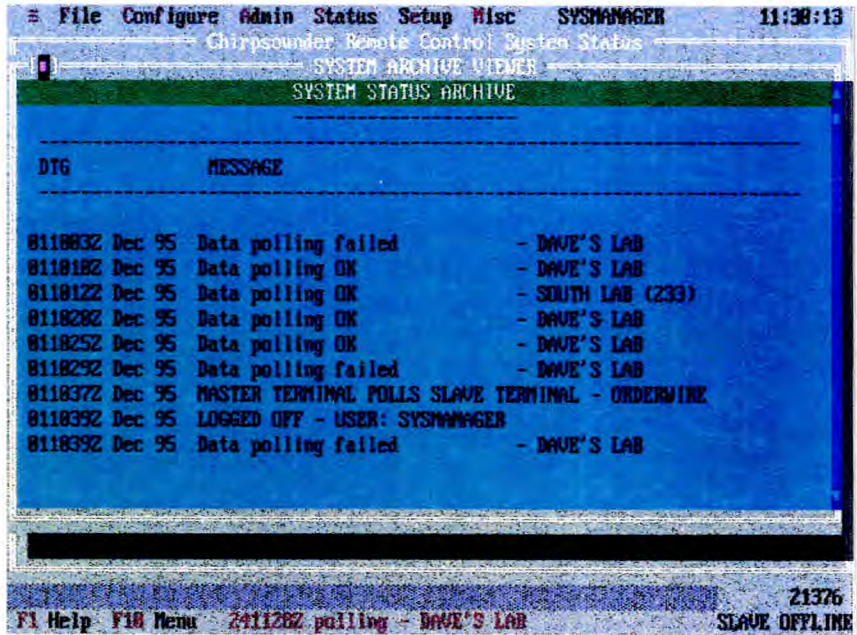


Fig 55

MISC FUNCTIONS

1 Selection of MISC on the main menu bar offers the opportunity of running self tests on the resources as described in the RCS-5B and TC5-5 handbooks.

RCS-5B TESTS

2 This selection obtains the screen "RCS-5B Selections" (Fig. 38), so that a particular RCS-5B may be selected. Select OK to continue. The "Chirpsounder Test Mode" screen (Fig 56) allows initiation of the tests (select PERFORM RCS TESTS). Selection of CANCEL aborts the attempt.

Caution

Performing Receiver test will terminate any sweep in progress.

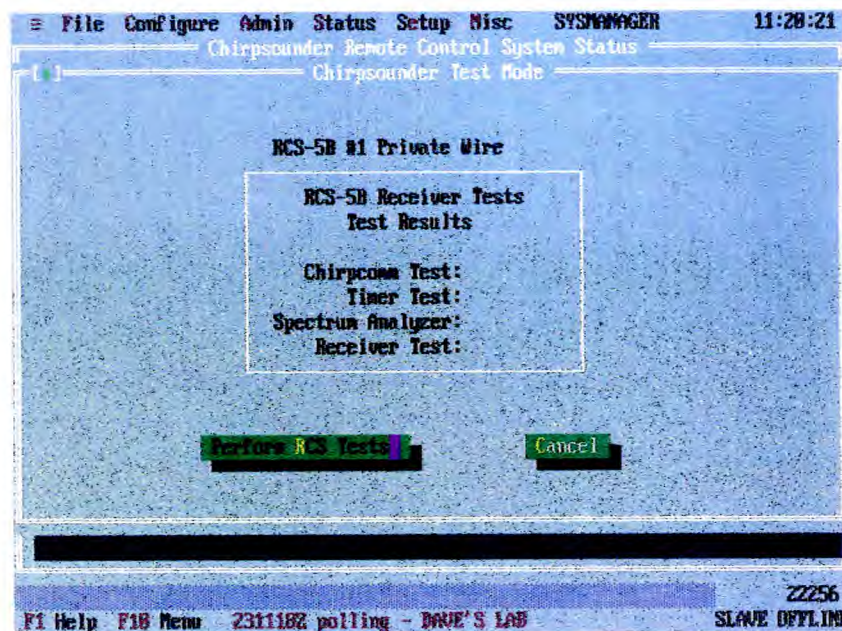


Fig 56

2.1 The screen shown in Fig. 57 shows that testing is under way. Had the selected RCS-5B been busy, ie being polled by any terminal, the screen shown in Fig. 58 would have been displayed.

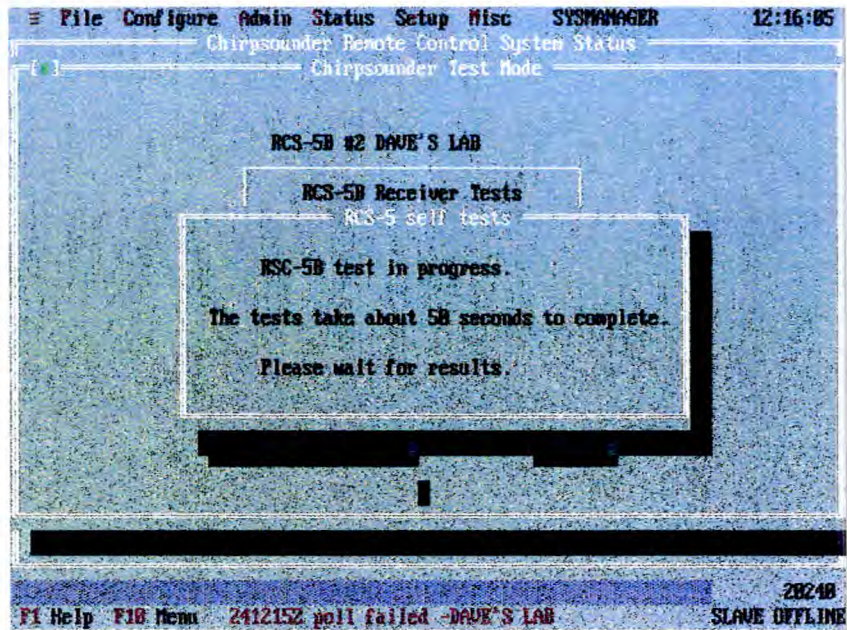


Fig 57

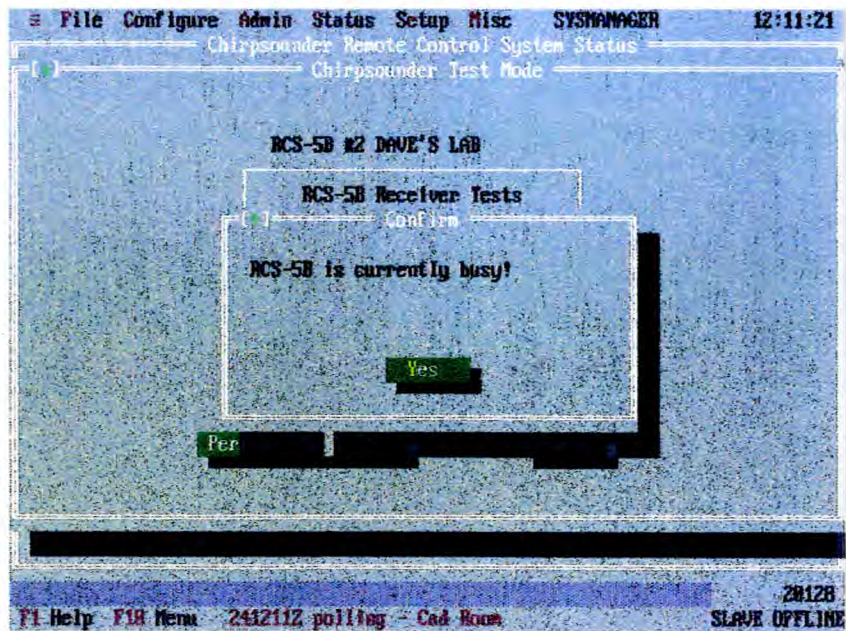


Fig 58

2.2 On successful completion of the tests, the screen shown in Fig. 59 is displayed.

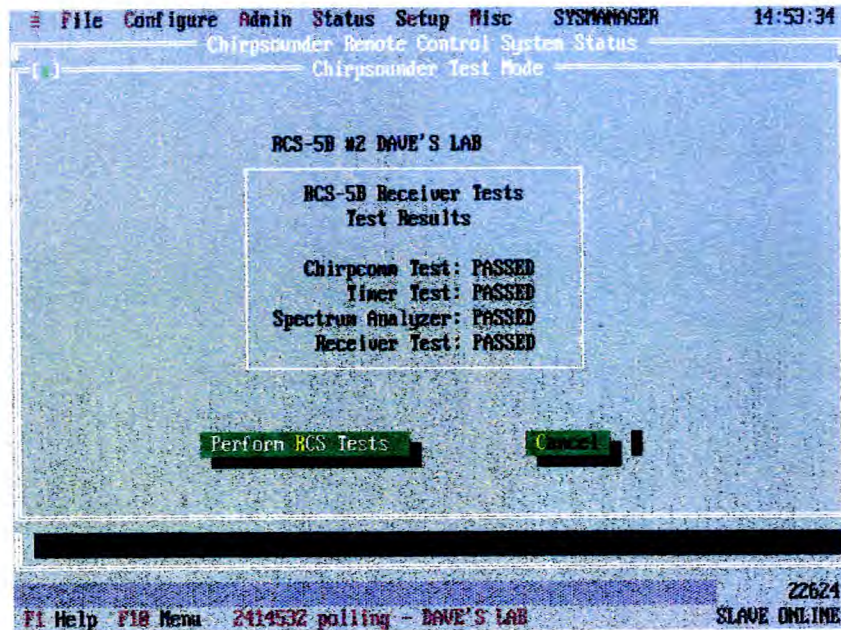


Fig 59

2.3 The RCS-5B also has the facility to self test the internal battery. At present, this test is only available locally and cannot be accessed from the Remote Control System.

TCS-5 TESTS

3 This selection obtains the screen "TCS-5 Selections" (Fig. 44), so that a particular TCS-5 may be selected. Select OK to continue. The "Chirpsounder Test Mode" screen (Fig. 60) allows initiation of the tests (select PERFORM TCS TESTS). Selection of CANCEL aborts the attempt.

Caution

Performing Receiver test will terminate any sweep in progress.

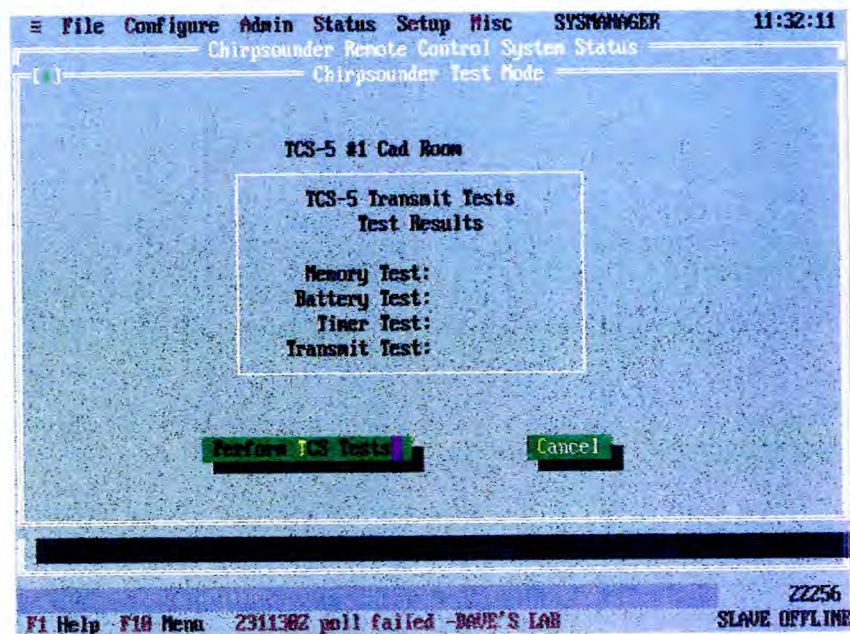


Fig 60

3.1 The screen shown in Fig. 61 shows that testing is under way. Had the selected TCS-5 been busy, ie being polled by any terminal, the screen shown in Fig. 62 would have been displayed. Fig. 63 shows the Warning Box associated with a failed attempt to interrogate the TCS-5. This occurs when all the available modems are in use.

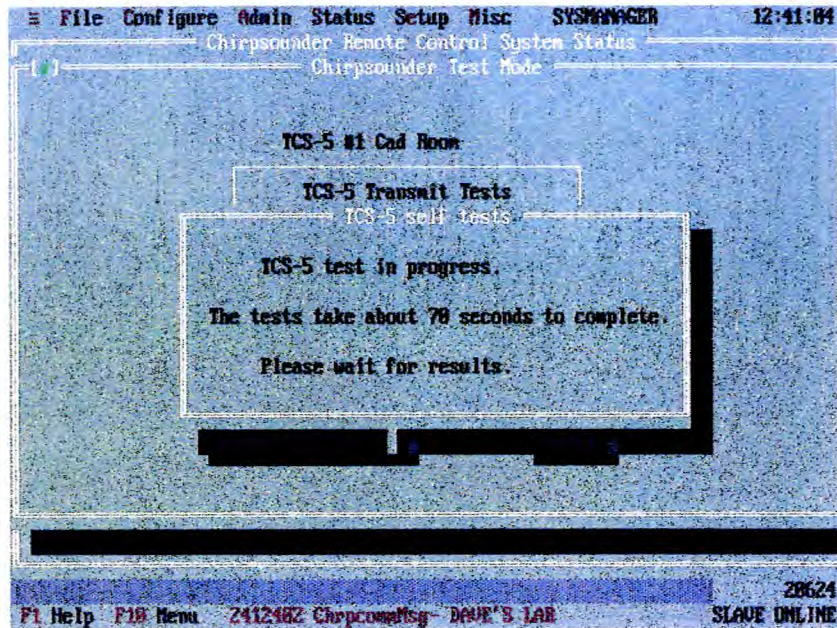


Fig 61

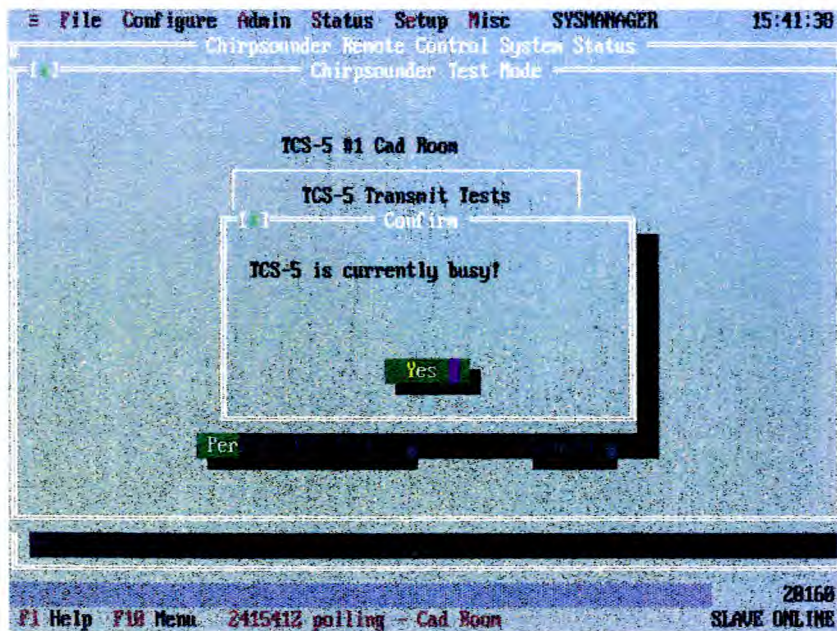


Fig 62

MISC

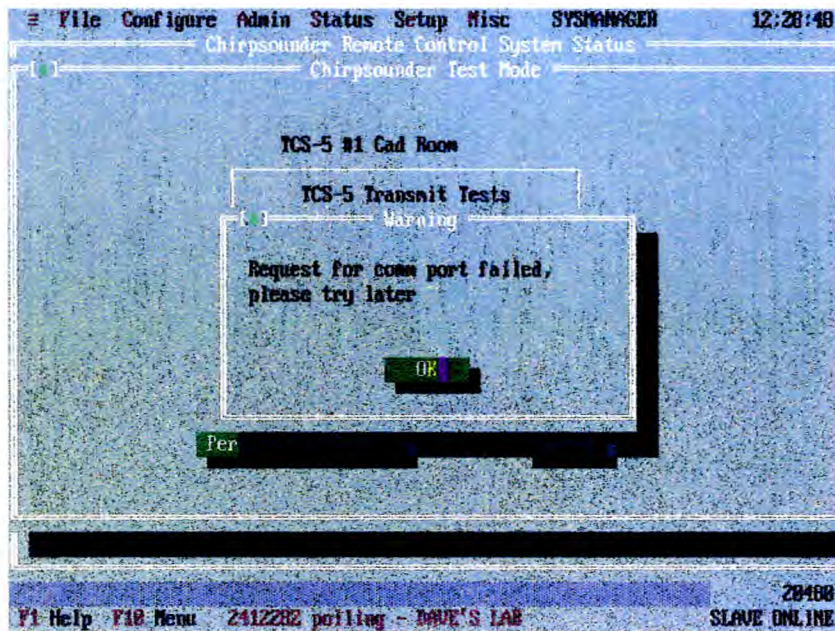


Fig 63

92.2 On successful completion of the tests, the screen shown in Fig. 64 is displayed.

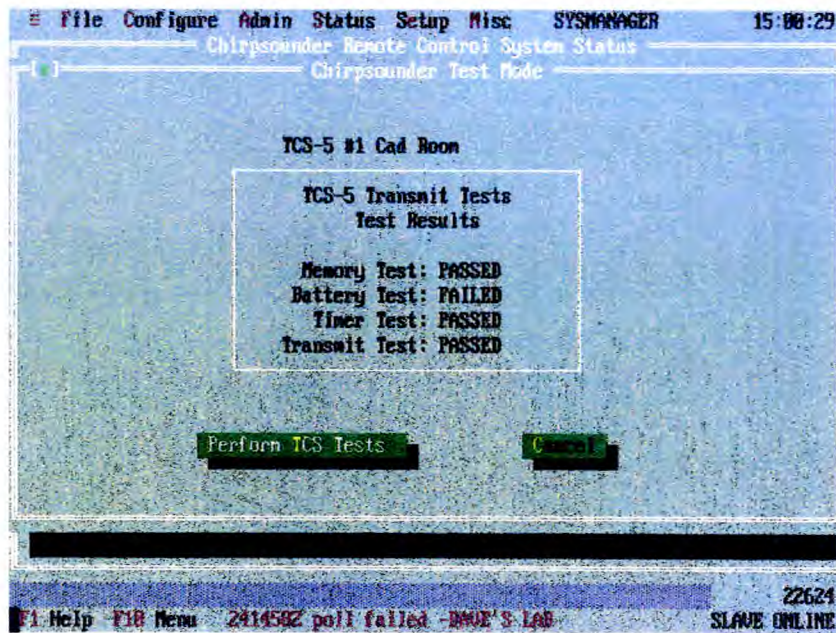


Fig 64

ANNEX A

MENU FAMILY TREES

Fig

- 1 Admin
- 2 Configure
- 3 Set Up TCS-5
- 4 Set Up RCS-5B
- 5 Status
- 6 File/View Archives
- 7 Misc

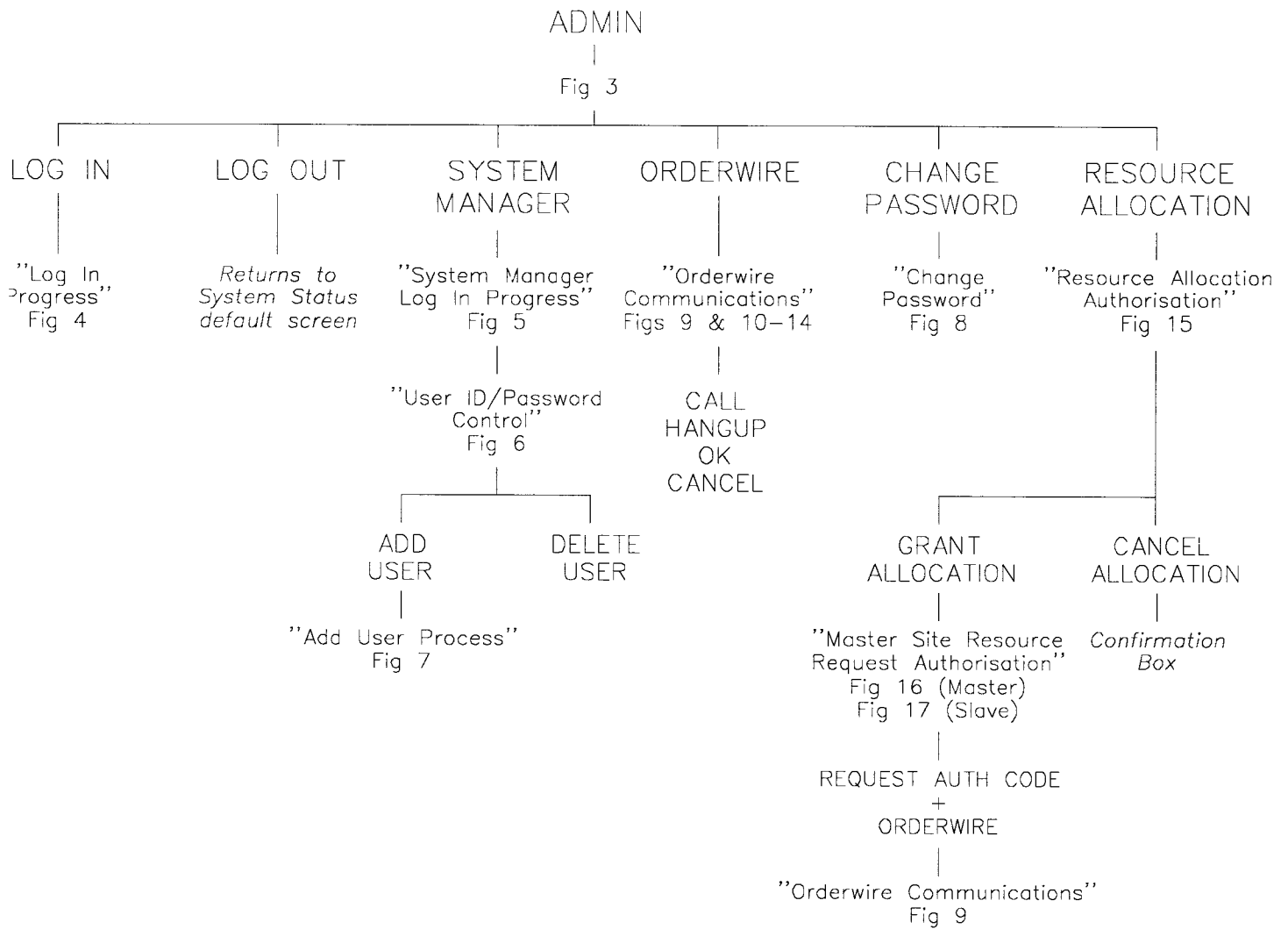


Fig 1

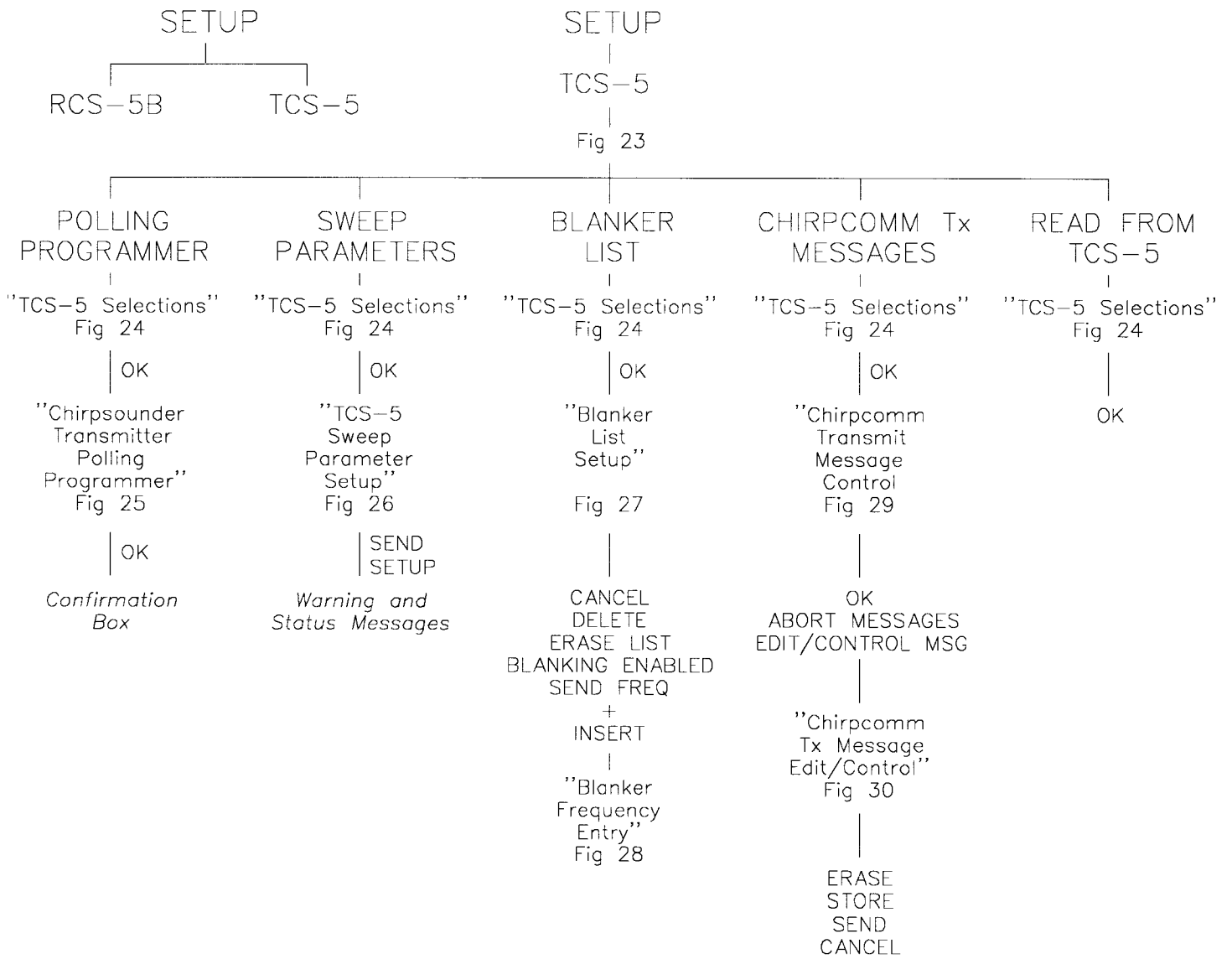


Fig 3

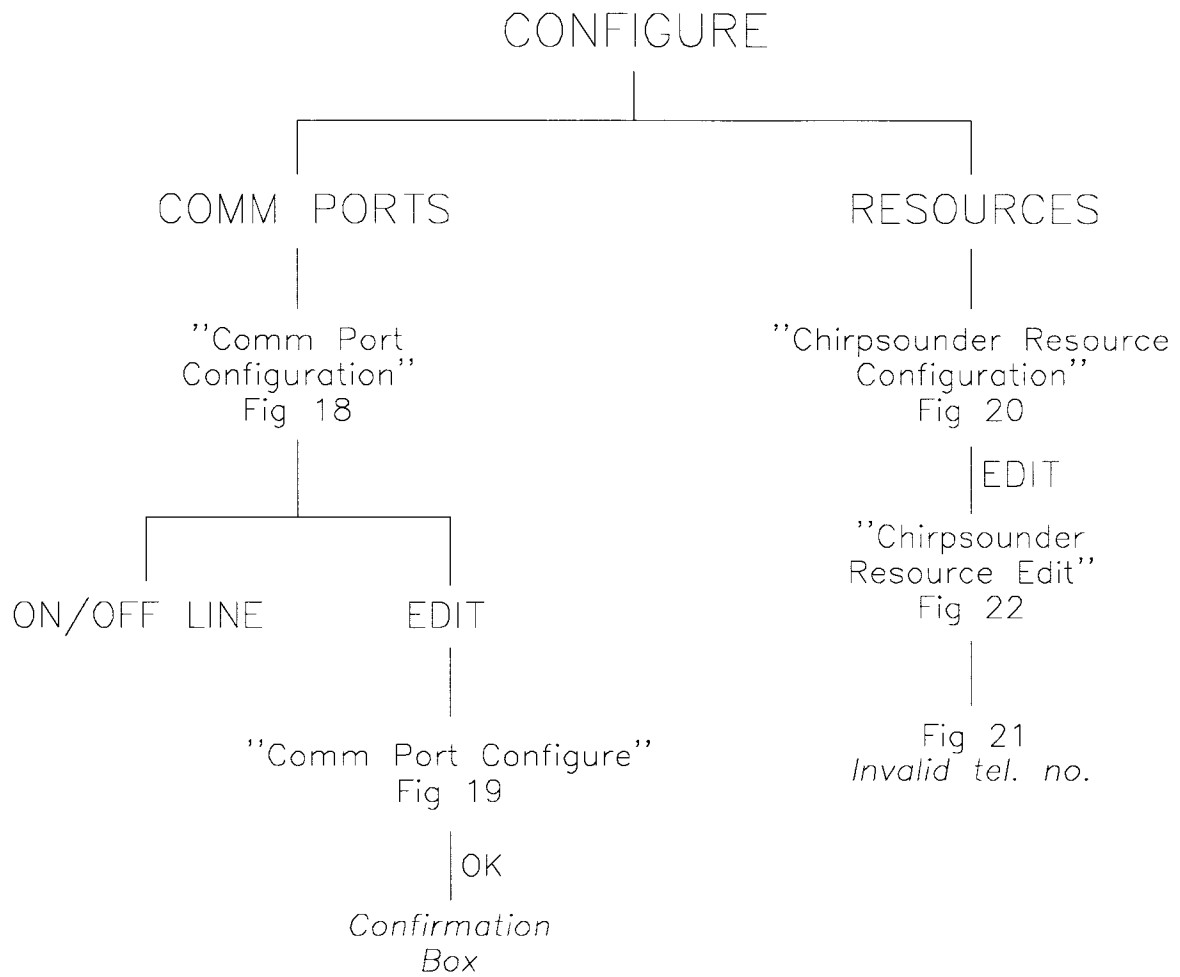


Fig 2

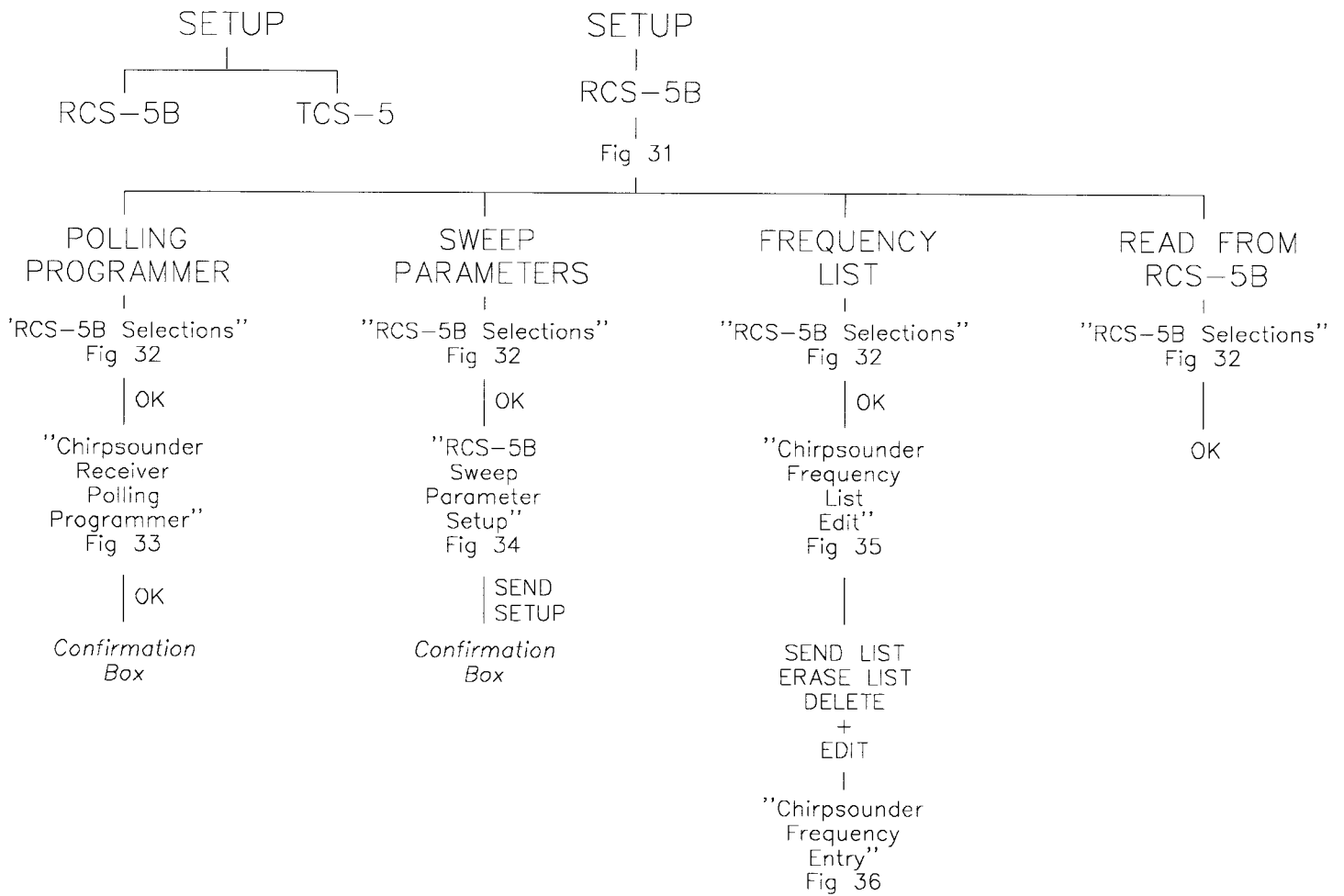


Fig 4

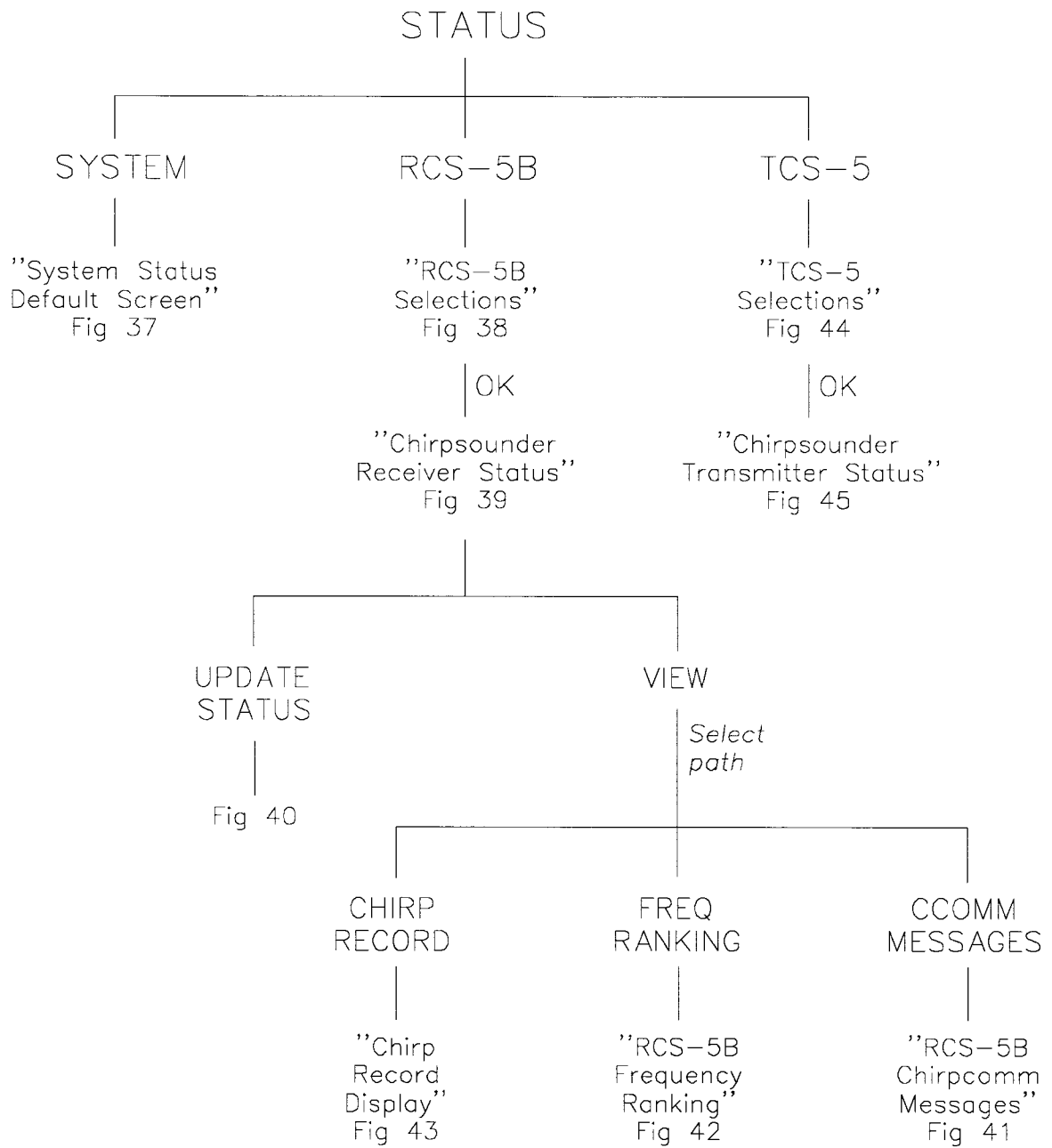


Fig 5

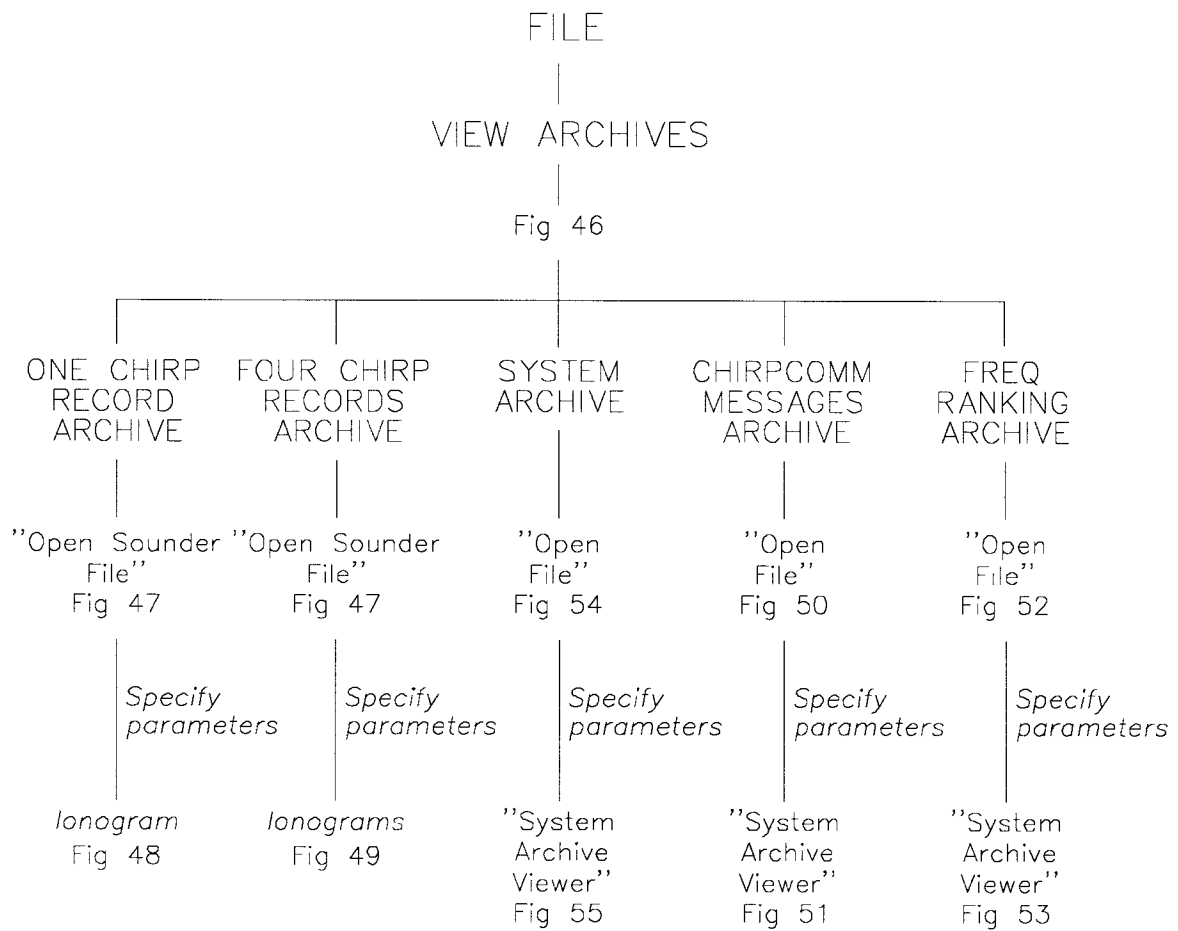


Fig 6

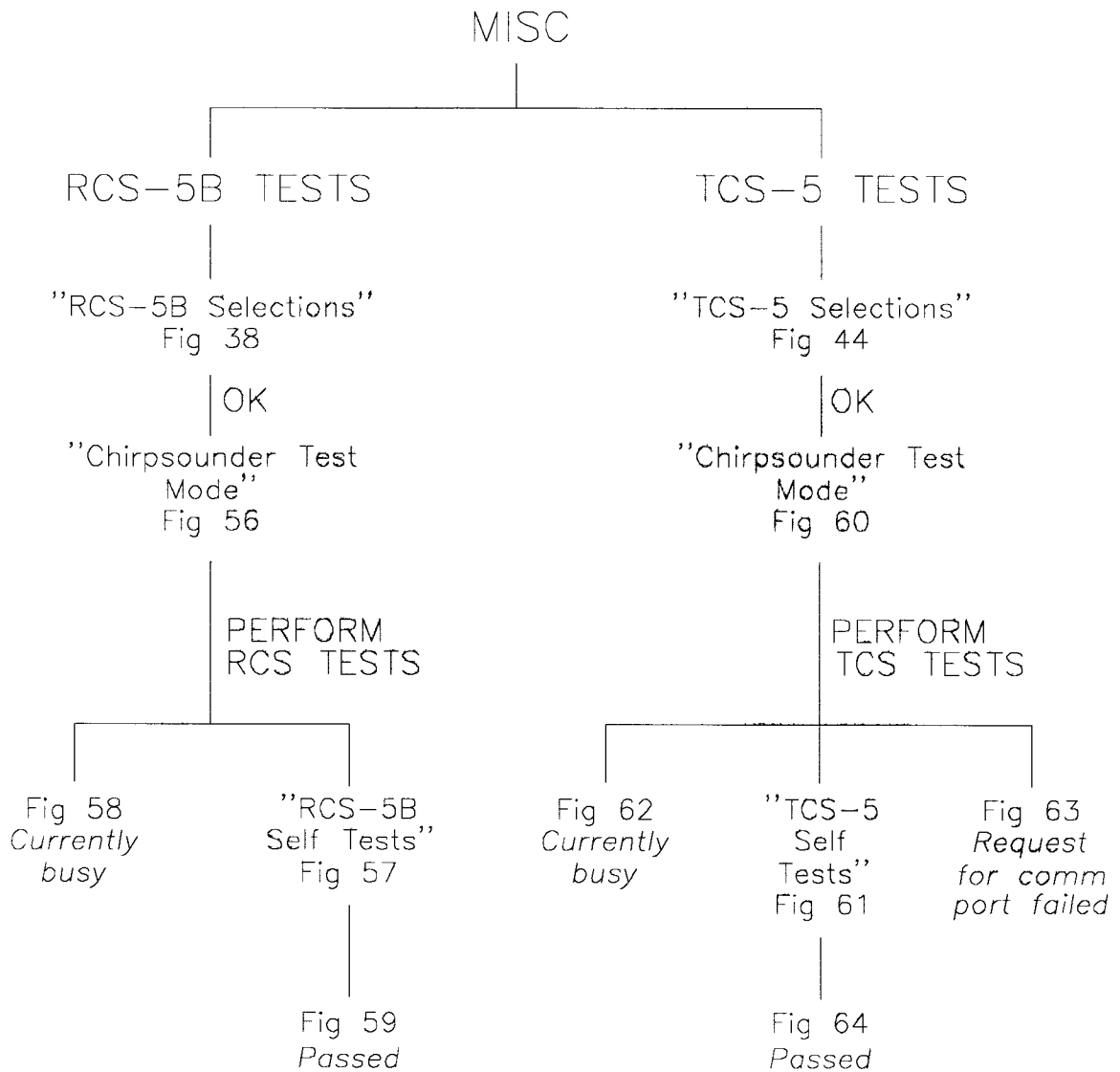


Fig 7