

Supervision Detail Recorder Operation Manual

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Overview

The Sage Instruments Supervision Detail Recorder (SDR) is a software option to the Sage Instruments 375A Dual DS1 Monitor. This package includes an operation manual (this document) and a floppy disk that contains the SDR software. The SDR software is designed to run on an IBM AT class compatible personal computer (PC). A laptop or notebook type computer is especially useful during the data collection phase. A graphic adapter display is required and should support the VGA and EGA graphic standards. A hard disk, one floppy disk drive, and at least one available serial port is required. Several major printer standards are supported for hard copy output.

The SDR option allows your 375A to collect all supervision data from 24 bidirectional trunks for thousands of calls. It will automatically store and analyze the data, generate summary and trouble reports, and allow a detailed look at the events in question to clearly illustrate any problems.

The SDR works on all one-way or two-way wink start trunks, PBX/DID, equal access or private trunks, as well as all other interoffice trunks. One, two, or three wink calls are recognized. SDR will also work on Loop Start, Ground Start, and Immediate Start Trunks. Once the data has been collected from the trunks in question, the SDR analyzer checks all calls for correct timing parameters. It prints a full array of traffic data and computes the usage for each trunk. Disconnect timing is displayed to aid in finding drop-off problems. The system locates and graphically displays any abnormality that might normally be hard or impossible to find.

Personnel at all expertise levels can use the SDR. It deals with items in standard telephony terminology and displays what the problems are at a glance. Finally, you can locate the problems that lead to mid-conversation cutoffs, call transfer cutoffs, failure to complete, and reorder problems, just to name a few.

Contacting Sage Instruments

Be sure to specify Supervision Detail Recorder or SDR when asking for technical support. Customers located outside of the US may also contact their nearest Sage distributor for assistance.

By mail

Sage Instruments, Inc.
240 Airport Blvd.
Freedom, CA 95019-2614

By email

sales@sageinst.com or support@sageinst.com

By fax

831-761-9246

By phone 831-761-1000
M-F, 9 a.m. to 5 p.m., Pacific Time

By WWW

To receive company and product information via the World Wide Web, visit our home page at:

<http://www.sageinst.com>

Typographic Conventions

The following typefaces and graphics are used in this manual.

Typeface	Usage
Press the Statistics key.	This typeface is used to denote a key on the keyboard.
<i>FRAME ERRORS</i> is displayed.	This typeface is used to denote text that is displayed on the 375A or 930A front panel.
	This symbol denotes caution text. Be sure to read the text to ensure proper use.

Installation

Preparing the SDR for data collection requires installing the software on your PC and connecting a serial cable to the 375A from the PC. Data analysis does not require a connection to the 375A.

To install the software portion of the SDR:

- 1 Insert the floppy disk that came with this manual into the appropriate floppy drive on your PC.
- 2 At the DOS command line prompt, type A:INSTALL if the floppy disk is in the A drive.
If the floppy disk is in a different drive, type the letter designation of the drive in place of "A" (e.g., B:INSTALL if the floppy disk is in the B drive).
- 3 Press Enter.

The Install program prompts you for a destination drive and path where the program will be installed. The default is C:\SAGESDR. In this operation manual, all of the DOS commands assume that the software is installed in the default directory.

You should allow the Install program add the destination of the installed program into the PATH command of your autoexec.bat so your computer can find the SDR program, regardless of your currently active drive and path. If your old path command was PATH=C:\;C:\LOTUS;C:\DOS; and you used the default installation drive and path, it would change to PATH=C:\;C:\LOTUS;C:\DOS;C:\SAGESDR. You must reboot your PC for the new path command to take effect. Refer to your PC manual for more details.

- 4 Indicate whether you want to view the READ.ME file.

A READ.ME file is typically included on the distribution disk. The file is copied to your hard disk along with the SDR program so you can refer to it at any time. Choose YES if you want to view the file; choose NO to bypass this step.

When the Install program finishes, your computer will be in the directory in which the SDR program was installed. You immediately run the program.

Getting Started

If You Never Read Manuals

If you never read manuals and just want to get your new SDR option working, take a few moments to read at least this chapter. Most of the major functions are explained here. We recommend that you take time to investigate all of the unique features of SDR when you are ready.

Online Help

On most display screens, one of the command options listed at the bottom of the screen is F1=Help. If you press F1 in these instances, a help screen is displayed. When a help screen is extensive, use the page up and page down keys to access all of the information.

Starting the Program

Before starting the program, be sure you have followed the installation procedure on page 2.

At the DOS prompt, type SDR and press Enter. The Main menu, Figure 1-1, appears.

If you are running a monochrome VGA laptop or desktop computer, type SDR /M to start SDR in the monochrome mode.

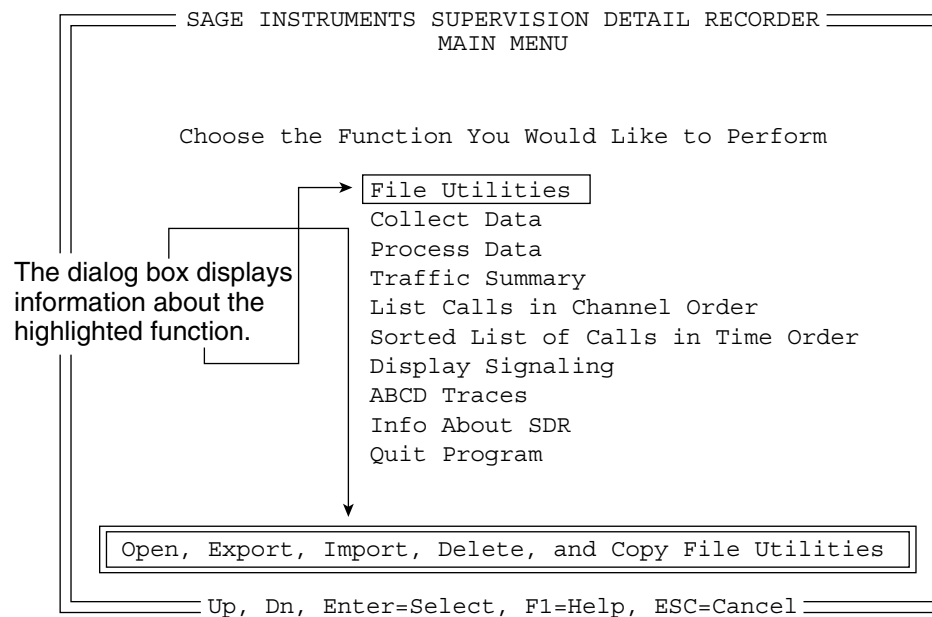


Figure 1-1 Main menu

The Menus

Various menus are used throughout SDR to help quickly analyze large amounts of information and events. A dialog box is displayed at the bottom of each screen and gives information about any choice that is currently highlighted (see Figure 1-1). The information in this dialog box provides options and tools available to you for the chosen selection. All keys for a particular function are shown on the lower portion of each screen. Many functions have built-in printer drivers that format and print calls, lists, and summaries.

Collect Data

The Collect Data menu captures events on trunks and stores the events on the hard drive for analysis. Large quantities of data on the history of the trunks, over long periods of time, can be stored for analysis and troubleshooting.

Process Data

The Process Data menu processes the collected data through appropriate call filters, according to the trunk start type. Ground Start, Loop Start, Wink Start, and Immediate Start types are in supported. The start types are automatically identified by SDR, but they can be overridden.

Map of Calls

The Map of Calls menu is used after a file has been opened or processed. The menu provides a detailed analysis of all calls on all 24 channels over a period of time, according to a selectable scale. The map is color coded for fast recognition of problem calls and can be configured to omit selected channels from analysis. Once configured, you can display various statistics regarding the selected channels, such as usage, call count, averages for the directions selected, and faults. You can also look at the details of a specific call displayed on the call map.

Traffic Summary

A detailed Traffic Summary is computed for the trunks being analyzed. The data is given in actual and average times. Trunk utilization, along with usage, attempts, and completions, is shown. All data is calculated over the entire group and for the individual trunks.

List Calls in Channel Order

The List Calls in Channel Order menu generates lists of various categories of call types according to your particular needs. Abnormal calls, Out of Timing specifications, or All calls can be formatted. A detailed list is presented, showing all pertinent information about each call. Any call on the list can then be highlighted and displayed in greater detail.

Sorted List of Calls in Time Order

The Sorted List of Calls in Time Order menu is identical to List Calls in Channel Order, except that call are listed in chronological order.

Display Signaling

The Display Signaling menu provides a detailed look at any call of interest. All timing characteristics and signaling details are shown. The display can be scrolled using various criteria. Any channel, call, or event can be easily displayed.

ABCD Traces

The ABCD Traces menu displays the discreet ABCD signaling bits passed over the carrier facilities in the raw format. This is the data received before the call filters are used. The ABCD and call displays can be toggled back and forth during analysis. Manual timing can be done using a Marker (see Marker on page 43).

File Utilities

The File Utilities selection is used to Open a previously processed File Set for analysis. A file list is shown containing all File Sets currently contained in SDR. The one of interest can then be chosen. The Open File Set is used as the basis for all other functions of SDR until a different File Set is opened. Various other File Set functions are also included, such as Export, Import, Delete or Copy to or from floppy disks.

Information about SDR

The Information about SDR menu provides information about SDR and the computer being used. You can make a calculation on the capacity of SDR from this information. If a file has been opened, information about its collection is shown.

Quitting the Program

To exit any display screen, press **Q** or **ESC**. From the Main Menu, pressing **Q** exits the program.

You can also use the up arrow and down arrow keys to move the highlighter selection bar to the Quit Program menu command, and then press **Enter**.

Capturing Data

SDR collects the data to be analyzed via a method called capturing data.

First, the 375A is plugged into the PCM jacks of the DS1 facility where the trunks being monitored reside. The 375A and a computer are then connected via a cable, which establishes a high speed data link; the 375A reads out all of the signaling bits every 20 ms for 24 channels at a time.

The data is then processed by the SDR program, which converts the data directly into usable formats to be used for analyzing problems.

NOTE The ABCD bits are assembled into packets by the 375A and sent to the computer, which does a last-look compare on the bits. The changes are recorded on the hard drive, along with the real time marker of when each event happened. In addition, the associated channel and whether side 1 or 2 initiated the event are also recorded. The information is compressed by the program and stored, allowing a large amount of data/time to be analyzed. Tens of thousands of transitions, spanning numerous days, are common and easily handled.

After one or two collections you will find Capturing Data (or Collection) is relatively simple and can be set up very quickly. Use the F1 (Help) function key to remind you of the collection procedures.

Call Capacity of SDR Collection

The call capacity of SDR is directly related to the amount of free hard drive space, the type of computer used, the amount of free RAM, and the amount of calls per unit of time (how busy the trunks are).

To determine the approximate maximum number of calls that can be collected:

- 1** Select Info About SDR from the Main Menu.
- 2** Divide the Max Transitions Per Channel figure by 10 to approximate the number of calls.

The Transitions Per Channel is related to the output count register on the Collect screen while the collection is in progress.

Multiply the Transitions Per Channel figure by 24 (channels) to determine the approximate maximum output count figure. The SDR collection capacity is very large and will be sufficient to handle very busy trunks for a large amount of time.

Setup

You will need:

- 375A Dual DS1 Monitor and manual
- Computer connection cable (see 375A to SDR Printout on page 50)
- Computer with the SDR program installed

- Cords to connect the 375A to the PCM jacks
- AC power source for the 375A and computer

You will need to know the following items.

- location of the PCM jacks (Carrier assignment)
For example, the jack location on the DSX bay or CSU.
- collection name to be used in SDR
- name for the side 1 direction
- name for the side 2 direction
- current time and date
- number of the computer's serial port to be used
- numbers of the channels to be collected

Getting Started

Locate the equipment convenient to the PCM jacks and the power source.

Setting Up the 375A

Start the 375A before starting the computer.

- 1 Plug the cable from the 375A into the computer's serial port.

Make sure that the connections are secure and cannot be easily dislodged. Loose connections could disrupt the collection.

- 2 Note the port number.
- 3 Apply power to the 375A.
- 4 Plug in the PCM cords.

Pay close attention to the direction of the cords to ensure the right identification of side 1 and side 2 during later analysis.

 **CAUTION** The 375A is a highly sensitive carrier monitoring device. It detects even slight errors present on the PCM bit stream. Due to the high data rates involved, do not move or handle the PCM cords unless absolutely necessary to prevent corruption of the collection or missed events. Place the cords where they will not be subjected to handling during the collection interval.

- 5 Make sure that the carrier information on the 375A front panel shows a normal signal and that there are no abnormalities.

There should be no red LEDs illuminated. Refer to the *375A Dual DS1 Monitor Operation Manual* for details.

- 6 Start SDR.
 - Press the OPTION key on the front panel of the 375A.
 - Press the up arrow or down arrow key to scroll the display to *OPTION: 09 START SDR*.
 - Press the ENTER key.

The screen displays *ARE YOU SURE?*

- Press the up arrow or down arrow key until *YES* is displayed.
- Press the ENTER key.

The display reads: *SDRRUNNING1: 2:* . When the hands are sweeping the clock icons, the 375A is seeing data on both sides of the PCM inputs, and data is being transmitted to the computer.

The 375A serial port is automatically set up with the right protocol to talk to the computer.

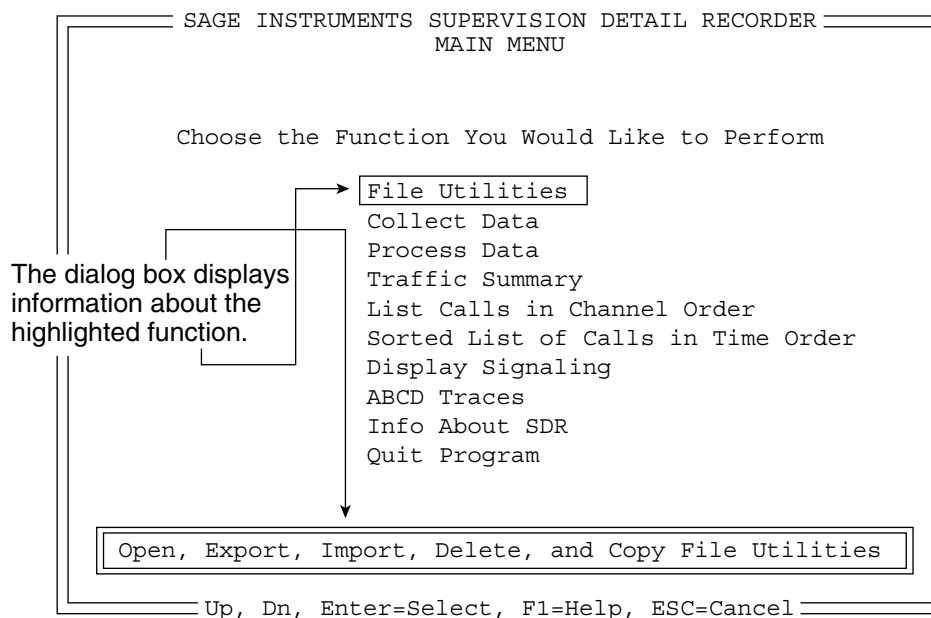
Exit by pushing the RESET key on the 375A. The serial port will restore to the previous setting.

Setting Up the Computer

Start the 375A before starting the computer.

- 1 Apply power to the computer.
- 2 Type SDR.

The SDR Main Menu appears.



- 3 Select Collect Data.

- Press the C key, or
- Use the up arrow or down arrow key to highlight Collect Data, and then press Enter.

NOTE The serial port is automatically set up during the collection interval. You only need to name the serial port to be used.

The first Collect screen appears and the cursor is positioned in the File Name box.

SAGE 375	
File Name:	SDRTEST
Side 1 ID:	NEAR
Side 2 ID:	FAR
Time:	15:57:39
Date:	05/20/99
Short Comment:	SDR TEST FILE
Serial Port:	1

Enter File Name

Such as the Abbreviated Office Name and Date (e.g., SNCA0524)

Up, Dn, Enter=Select, F1=Help, F2=COLLECT, ESC=Cancel

1 Enter the collection name (alphanumeric characters only).

Press the F1 function key for suggestions on filling in this screen.

2 Enter the name that the side 1 cord of the 375A points to.

Use the up arrow, down arrow, or Tab key to move to the Side 1 ID box.

3 Enter the name that the side 2 cord of the 375A points to.

To move to the Side 2 ID box, press the Tab key.

4 Note the displayed Time and Date.

- If they are correct, press the Tab key to move through them.
- If they are not correct, enter the correct time and then press the Enter key.

The computer's clock is set to the current time (the time you entered).

- Enter the correct date, and then press the Enter key.

The computer's clock is set to the current date (the date you entered).

It is essential that the time and date be correct because it is important to be able to coordinate other inputs and sources (i.e., complaints) with the times recorded by SDR.

NOTE The screen does not update while the time is highlighted. Until the Enter key is pressed, the current time is maintained. After pressing the Tab key, the time is updated to show the current (new) time on the screen.

5 Enter any comments that might be useful about this collection into the Short Comment field.

The comment entered here is shown each time the file list is displayed to remind you of any pertinent information about this collection. It also appears on various other screens such as the Traffic Summary.

6 Enter the Serial Port number that the cable from the 375A is plugged into.

Ports 1–4 are supported by SDR.

- 7** When everything is correct, press the F2 function key to proceed to the Masking screen.

Before pressing F2, use the up arrow, down arrow, or Tab key to move to any information you want to change. The Masking screen is described in the following section.

NOTE You can change this information later, if desired, by using File Utilities (Modify File Info). However, the time and date cannot be changed. The File Set name can be changed using File Utilities (Copy File Set). For more information on the File Utilities menu, (see File Utilities on page 47).

Channel Masking

```

Sage SDR Data Collector
C:\SAGESDR\FILESETS\SDRTEST\SDRTEST.CDA

[1-24]

Side 1  A  0000 0000 0000 0000 0000 0000
        B  0000 0000 0000 0000 0000 0000
        C  0000 0000 0000 0000 0000 0000
        D  0000 0000 0000 0000 0000 0000

Side 2  A  0000 0000 0000 0000 0000 0000
        B  0000 0000 0000 0000 0000 0000
        C  0000 0000 0000 0000 0000 0000
        D  0000 0000 0000 0000 0000 0000

CHANNEL MASKING

<--Select Channel, Space Bar=Toggle Mask, F2=Start Collecting, ESC=Quit

```

The Channel Masking screen appears after you press F2 at the Collect Data screen. In the Channel Masking screen you can mask out unwanted channels.

- 1** Use the left arrow or right arrow key to move the highlight over the channel you want to mask.
- 2** Use the space bar to toggle the state of the channel.

A set of Xs overrides the zeroes (0s).

The SDR program uses a very efficient compression scheme to store data on the hard drive. This typically allows long collection intervals. The hard drive will not store data from masked channels, therefore, masking channels is a more efficient use of disk space.

- ➡ Data channels or channels not using ABCD bit signaling should always be masked; if these channels are not masked the disk could rapidly fill up with erroneous data.

NOTE The maximum collection interval is based on the available free space on the hard drive, and under normal conditions allows sufficient time to find most problems. Collection automatically stops when less than one MB of disk space is free.

Starting Collection

Calibration

- 1 After you mask the desired channels (see Channel Masking on page 11), press F2 to start collecting data.

A menu appears.

- 2 Highlight the desired menu option, and press Enter.

The menu options are:

- Full Display—use on fast computer with no I/O synch problems. Data is not suppressed.
- Suppress Display of Signaling Bits—give the CPU more time to service the I/O port. The signaling bit fields and data are suppressed.
- Minimal Display—use on slower computer encountering I/O synch problems. Although the headers remain, the only data displayed is the Start Time, Verify, and Sector Size.
- Cancel—Cancel the data collection and return to the main screen.

Once selected, collection begins and the selected form of display appears.

```

C:\SAGESDR\FILESETS\TEST123\TEST123.CDA

Calibration          100.0%    Current Time        9:16:15  3/25
Output Ct            52       Start Time          9:15:12  3/25
Major Sync Failures                      Elapsed Time       0:00:19
Minor Sync Failures                      Verify            0
Lost Bytes           1296      Sector Size          512
Max Waiting Bytes    10       Avail Disk KBytes   11289
Cur Waiting Bytes                      File Size KBytes    1

                               [1-24]

Side 1      A      0000 0000 0000 0000 0000 0000
            B      0000 0000 0000 0000 0000 0000
            C      0000 0000 0000 0000 0000 0000
            D      0000 0000 0000 0000 0000 0000

Side 2      A      0000 0000 0000 0000 0000 0000
            B      0000 0000 0000 0000 0000 0000
            C      0000 0000 0000 0000 0000 0000
            D      0000 0000 0000 0000 0000 0000

                               Collecting Data

Press Q or ESC to Quit Collecting

```

Figure 2-1 The Collect Data screen

The 375A should be started prior to this set up. The calibrate percentage on this screen counts toward 100.0%, $\pm 1\%$. The count should stabilize after approximately one minute.

NOTE If the computer is having trouble maintaining 100% calibration, quit the collection. When you restart, use the F10 function key instead of the F2 function key on the Channel Masking screen. Using the F10 key disables the dynamic Signaling Bit (ABCD) display and allows the computer to have considerably more real time.

NOTE The calibrate percentage is based on the packet count coming out of the 375A and the 20 ms count kept in the computer. The count can be incorrect if the PCM signal to the 375A is corrupted or a problem has arisen between the 375A and the computer. The

calibrate figure checks that the computer clock is at least a 12 MHz rate or the real time availability of the computer is sufficient to process the data.

The bottom of the screen should change from a flashing Sage 375A-PC Link Out of Service to a flashing COLLECTING DATA, which indicates the integrity of the data link established between the computer and the 375A. If the link is not established, possible problems could be either that some timing values contained in the analyzed file are skewed from real time, or the collection is not taking place.

When SDR is collecting, all computer real time options, such as Screen Save, Disk Turndown, Battery Save, etc., should be turned off.

During the collection interval, some useful information is displayed on the screen.

- **Current Time**—displayed along with the time that the collection was started (Start Time) and the total time the collection has been running (Elapsed Time).
- **Available Bytes**—number of byte available on your hard drive; displayed along with the number of bytes used so far in kilobytes.
- **Output Count**—a count of the total number of events seen so far.

This count usually starts around 24, the initial states of the channels. As calls are made on a channel, each event increments this count.

The actual events can be followed at the bottom of the screen by watching the ABCD display for each active channel.

Data Link Messages

On each channel, the ABCD display is highlighted on the first transition, giving a quick report that a channel has had some activity.

If there is a problem collecting, check the Collect Data message on the bottom of the screen. The message Sage 375A-PC Link Out of Sync indicates bad communications between the PC and the 375A. This message is a fatal error, and the collection should be restarted.

If the Main Menu returns right away, the hard drive might have less than one MB of free space. SDR requires at least one megabyte of free disk space to start collecting data.

Major/Minor Sync Failures

The Major/Minor Sync Failure counters count the times the data link between the 375A and the PC had errors and notes whether the errors resulted in lost bytes. These errors should not occur normally. If a few error occur and they are not constant, there might be a glitch in the collected data that would have to be ignored later. If the Sync Failures happen often, you should stop the collection and try to find the source of the trouble.

One common source for this problem occurs when you accidentally push or lean on the keyboard during collection. Be careful not to lay anything on the keyboard; this can cause the keyboard servicing program to take up the computer's time, in which case the data link might not be serviced.

Waiting Bytes

The Waiting Bytes counters indicates whether the buffer that receives the data from the link between the 375A and the PC can process the data in a timely manner. If the computer must perform other tasks, the buffer will take up the slack. When the computer completes the other tasks, it unloads the buffer and the current Waiting Byte count goes down. The Maximum counter indicates the maximum count in the buffer since the collection started.

It is normal for these counters to start out at a higher-than-normal figure. The current Waiting Byte count should go down to typically less than 30 and cycle up and down.

If the Waiting Byte count continues to count up, the computer cannot keep up with the data link. The computer usually cannot keep up with the data link when the computer does not have enough real time. You should stop the collection and resolve the problem. Your collection might be corrupted to the point of being useless. The computer might not have enough real time if another program is running on the computer, such as the hard drive shut down routine. It is important to turn off any other options or programs in the computer.

Ending the Collection

To end the collection, press Q or ESC. The SDR Main Menu appears.

Export the newly collected file to a floppy disk to save the file. You can also use the file on the disk to analyze the data on another computer. Use the File Utilities (Export File) function (see Export File on page 48).

Processing a File Set

Overview

A file goes through the following general procedure when processed. This procedure is discussed in further detail in the following sections.

- Choose the file
- Use the built-in default timing parameters or change the parameters as desired.
- SDR processes the raw data into usable information using various call filters.
- The data is broken down into channels, times, calls, and calls containing abnormalities (bad calls).

Procedure

To process a data collection File Set:

1 Select Process Data from the Main menu.

- Press P or
- Press the up arrow or down arrow key until Process Data is highlighted, and then press Enter.

The File List appears.

2 Use the up arrow or down arrow key to highlight the file to be processed.

The File List appears, listing all of the File Sets currently available in SDR, whether processed previously or not.

If there is an asterisk (*) in front of a File Name, the file has been processed before. If there are two asterisks (**), the file has been processed using timing parameters other than the default.

3 Press Enter.

Classifying Channels screen appears. After the channels are classified, the Call Types screen appears.

The following sections discuss Classifying Channels, the Call Types screen, and other options for which you can use SDR.

Classifying Channels

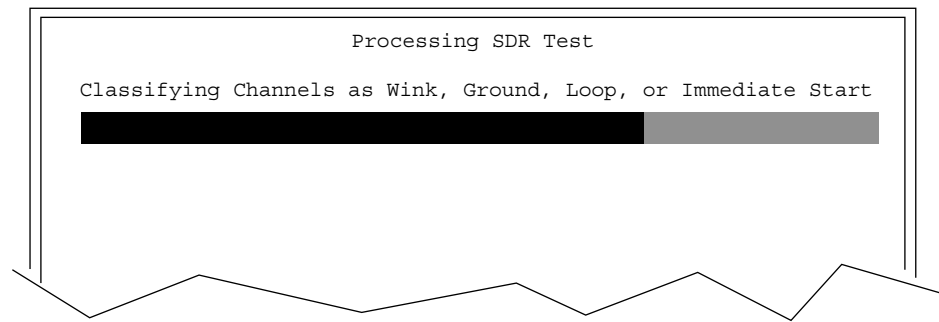


Figure 2-2 The Classifying Channels screen

SDR first looks at each channel and determines whether it is Wink Start, Ground Start, Loop Start, or Immediate Start.

After the channels are classified, the Call Types screen appears.

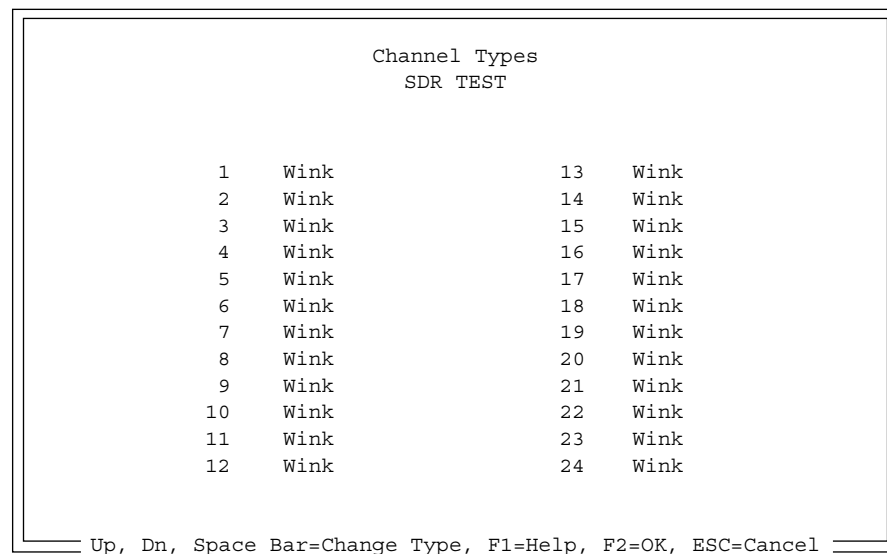


Figure 2-3 The Call Types screen

- 1** To change the type here, if desired, use the up arrow or down arrow key and the space bar.
- 2** After the channels are properly labeled, press F2 to proceed through the Call Timing Parameter screens.

If there is more than one call type, the parameter screens for each type will appear. After the last parameter screen, processing begins.

Call Timing Parameter Screens

The Call Timing Parameters screen appears after you press F2 at the Channel Types screen.

The Call Timing Parameter screen shows all of the default timing values that the call filter uses when processing a file. The screen is laid out in a pictorial format representing various elements of a call.

Use the Tab or Enter key to move through the various timing fields to set the timing values.

NOTE The highlighted section at the bottom of the screen changes as you move among the fields. It explains the field and gives the recommended default value of the field.

To change a timing value, highlight the field and enter the new value. Use the decimal point to designate milliseconds. There are 1000 ms in a second, therefore the range for ms is .000 to .999. Seconds are entered as numbers between 1.000 to 59.000.

The only field in which you can enter minutes is the Wink to Answer interval. This field has a default maximum of 3:00, in minutes and seconds. Use multiples of 20 for milliseconds.

If a parameter has been changed it will be highlighted in red if SDR is being run on a color monitor or in reverse video if you are using a black and white or monochrome monitor.

NOTE Most of the timing values presented as defaults are Bellcore standard timing values, rounded off to 20 ms boundaries. The HELP screen contains an in-depth explanation of the individual fields. To view the HELP screen press the F1 function key.

To go back to the Main Menu at any time, press ESC.

After the timing values are set, press the F2 function key to start processing the file.

Wink Start

```

===== Wink Start Call Timing Parameters =====
                      SDRTEST
Min | ←----- 2.000 -----> | Guard
|
|----- Wk1 -----|----- Wk2 -----|----- Wk3 -----|----- Talk -----|----- Disc -----|
Min | .000 | .100 | .460 | .100 | .460 | .100 | .460 | 2.000 | 10.000 |
Max | 4.000 | .360 | 15.000 | .500 | 18.000 | .500 | 3:00 |      |      |
Min | <- .200 -> |      |      |      |      |      |      |      |      |      |
|
|----- Seize -----|----- Answer -----|----- Disc -----|----- Disc -----|
|
|----- 2-Way Trunk Glare Timing -----|----- Min -----|----- Max -----|
|----- Hit Timing -----|----- .000 -----|----- .360 -----|
|----- Flash Timing -----|----- .440 -----|----- 12.000 -----|
|
|----- Minimum Seize Interval for Short Seize Test -----|
|----- Recommended Value = 2.000 -----|
|
|----- Tab/Enter=Advance to Next Field, F1=Help, F2=ANALYZE, ESC=Cancel -----|

```

The Wink Start Call Timing Parameters are listed below.

- Short Seize Time
- Pre-wink Interval
- Wink 1 to Wink 2 Interval (optional)
- Guard Interval
- Wink 1 Interval
- Wink 2 Interval (optional)

- Wink 2 to Wink 3 Interval (optional)
- Short Answer Time
- Seize to Wink 1 On-hook Time
- Hit Timing
- Wink to Answer Interval
- Timed Disconnect (cutoff tolerance)
- Glare Timing
- Flash Timing

Ground Start

Ground Start Call Timing Parameters					
SDRTEST1					
===== FXS Originating Call =====					
	2.000				
FXS	Ring-Ground	Tip-Ground		Disc	
FXO					
Min	.020	.100	2.000	10.000	
Max	.800				
===== FXS Terminating Call =====					
	2.000				
FXS	.100	Trip	Talk	Disc	
FXO	~~~~~ Ringing ~~~~~				
Min	.000	.000	2.000	10.000	.600
Max	4.000	.300			
FXO OSI Before Answer Max: .100 FXS Hit Min: .020 FXS Flash Min: .300 FXO OSI After Answer Max: .300 FXS Hit Max: .280 FXS Flash Max: 1.500 Showering Line Cycles: 3 Off-Hk Max: 2.000 On-Hk Max: 2.000					
Short Seize Interval Recommended Value = 2.000					
Tab/Enter=Advance to Next Field, F1=Help, F2=ANALYZE, ESC=Cancel					

The Ground Start Call Timing Parameters are listed below.

FXS Originating Calls

- Short Seize
- Tip Ground Interval
- Tip Ground to End of Ring Ground Interval
- Seize to Tip Ground Interval
- Disconnect Interval

FXS Terminating Calls

- Short Ring Interval
- Seize to Ring Interval
- Talk Interval
- Guard Interval
- Seize to Trip Interval
- Ring Trip Interval
- Disconnect Interval

Other Timing Parameters

- FXO OSI Before Answer
- FXS Hit timing
- Showering Line Cycles
- FXO OSI After Answer
- FXS Flash Timing

Loop Start

Loop Start Call Timing Parameters				
SDRTEST3				
FXS Originating Call				
2.000				
FXS				
FXO	No Change			
Min	.020		2.000	
Max	.800	.100		10.000
FXS Terminating Call				
FXS	.100	Trip	2.000	Talk
FXO	~~~~~ Ringing ~~~~~			Guard ~~~~~
Min		.000	2.000	.600
Max		.300		
FXO OSI Before Answer Max: .100 FXS Hit Min: .020 FXS Flash Min: .300 FXO OSI After Answer Max: .300 FXS Hit Max: .280 FXS Flash Max: 1.500 Showering Line Cycles: 3 Off-Hk Max: 2.000 On-Hk Max: 2.000				
Short Seize Interval				
Recommended Value = 2.000				
Tab/Enter=Advance to Next Field, F1=Help, F2=ANALYZE, ESC=Cancel				

The Loop Start Call Timing Parameters are listed below.

FXS Originating Calls

- Short Seize

FXS Terminating Calls

- Short Ring Interval
- Ring Trip Interval
- Guard Interval
- Seize to Trip Interval
- Talk Interval

Other Timing Parameters

- FXO OSI Before Answer Timing
- FXO OSI After Answer Timing
- FXS Hit Timing
- FXS Flash Timing
- Showering Line Cycles

Activity Files—Top Bar

The first timing period creates the 24-channel activity files that contain all of the events on a particular channel.

The 24-channel activity files are created only the first time that a file is processed. Thus, if you process the file again to change a timing value, process is very short. However, you can force the activity bits to be reprocessed on a previously processed File Set by pressing the F10 function key instead of the F2 function key on the Parameter screen.

Analyzing Calls—Middle Bar

Analyzing Calls takes the data from the Activity Files and runs it through the various filters.

- First, the signaling type is determined: Wink Start, Ground Start, Loop Start, or Immediate Start trunks. (Others will be marked Unknown.)

NOTE Each channel can be a different Call Type, but a particular channel can have only one type. The Call Type of each channel is displayed at the end of processing.

- Second, the events are interpreted into calls, and then the various elements of the calls are timed to locate and mark any discrepancies from the timing parameters. The timing values that are used are then stored.
- Third, the various intervals of the calls are timed and put together in a traffic summary, which can be viewed from the Traffic Summary screen or printout.
- Fourth, any events that are not part of the calls are identified. For instance, any babbling signaling bits or illegal ABCD bit values for the particular call type of the channel.

Bad Calls—Bottom Bar

The third timing bar shows the time taken to process any discrepancies found during call processing. This information forms the various lists and graphic screens used to analyze and find problems.

These steps can take some time to complete, depending on the length of the collected file and the speed of the computer. A little less than one minute per one thousand calls is common. Subsequent processing of the same file takes about half the time.

Transition Screen

The Transition screen appears after you processing is complete (see Processing Screen on page 19).

Transition/Call Count per Channel											Framing=D4
SDRTEST											
Ch	Type	FXS	Trans	Calls	Valid	Ch	Type	FXS	Trans	Calls	Valid
1	Grnd	2	100	12	11	13	Grnd	2	24	2	2
2	Grnd	2	128	14	14	14	Grnd	2	18	2	2
3	Grnd	2	69	8	8	15	Grnd	2	14	1	1
4	Grnd	2	133	18	18	16	Grnd		0	0	0
5	Grnd	2	120	16	15	17	Grnd		0	0	0
6	Grnd	2	96	12	12	18	Grnd		0	0	0
7	Grnd	2	77	10	10	19	Grnd		0	0	0
8	Grnd	2	107	15	15	20	Grnd		0	0	0
9	Grnd		0	0	0	21	Grnd	2	90	12	12
10	Grnd		0	0	0	22	Grnd	2	113	15	15
11	Grnd	2	114	11	11	23	Unkn		0	0	0
12	Grnd	2	112	12	10	24	Unkn		0	0	0
				160 Calls	156 Valid Complete	1 Valid Incomplete					

Press Enter
← to continue

Figure 2-5 shows the two ways to access the Processing screen. This screen shows a quick summary of each channel's activities.

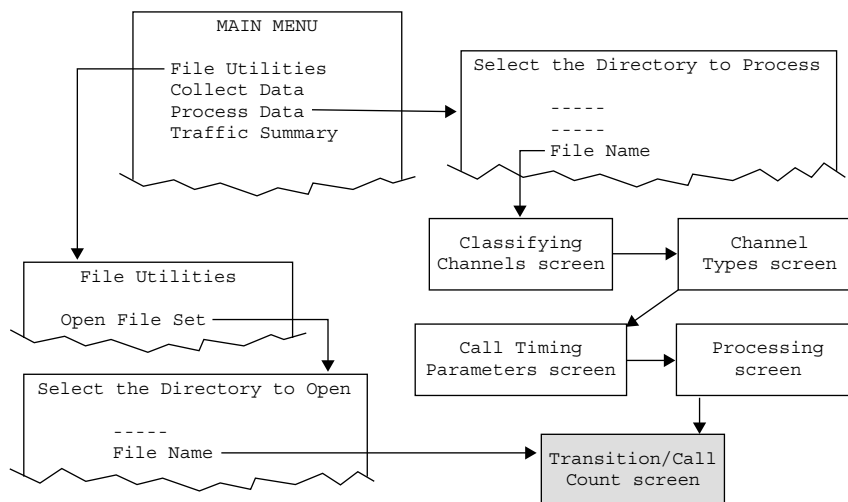


Figure 2-5 Navigating to the Transition screen

Framing

The type of framing seen during the collection is displayed. The framing has a bearing on the signaling bit type. D4 uses only the A and B signaling bits; ESF uses the A,B,C, and D signaling bits. The framing is displayed in the upper right corner of the screen.

Type

The channel type column displays a result of different tests made on the channel data. The call types supported by SDR are Immediate Start, FXS/FXO Ground and Loop Start, and 1/2/3 Wink Start trunks. After deciding on the call type of the channel, the data is processed through the appropriate call filters. A channel can have only one call type, and each channel is independent of all the others.

FXS

This column shows whether Side 1 or Side 2 of the collection is FXS.

Transition Count

The Transition Count (Trans) column displays a count of the total number of transitions on the channel.

Total Calls

The Total Calls column displays the total number of whole calls seen on the channel. Partial first or last calls in the collection are not counted.

When a collection starts, some calls may already be in progress and will result in incomplete data for the call. Likewise, when the collection is stopped, some calls may not be finished. These calls are considered partial calls and are not part of the total count.

Completed Call Count

The completed call count (Valid Compl) is the number of calls that were answered and went into the talk state. This satisfies the reason for making the call in the first place.

Incompleted Call Count

The incompleted call count is the number of calls that were not carried through to answer for any reason.

Total Calls

The total number of calls (Calls), total number of completed calls (Valid Complete), and total number of incompleted calls (Valid Incomplete) are the totals of all the channels combined.

Traffic Summary

To access the Traffic Summary screen:

- 1 Select Traffic Summary from the Main menu.

If there is more than one call type, the Channel Type menu appears.

- 2 If needed, select the call type.

The Traffic Summary screen appears.

Sage Instruments Supervision Detail Recorder

TRAFFIC SUMMARY: SDRTEST Sage SDR Test File Set

From: 03/25/99 10:01:15 Total: 0 days 2 hrs 2 mins 22 secs

To : 03/25/99 14:03:37

Chan	Orig	Att	Comp	Unans	Avg Comp	Avg Talk	Usage	Pct
ALL	SFTC_5E	217	193	24	0:15	3:19	36:37:35	53
	OKTC_4E	389	295	94	0:11	2:56		
1	SFTC_5E	0	0	0	0:00	0:00	1:14:48	61
	OKTC_4E	14	12	2	0:12	5:59		
2	SFTC_5E	0	0	0	0:00	0:00	55:00	44
	OKTC_4E	25	22	3	0:16	2:12		
3	SFTC_5E	0	0	0	0:00	0:00	1:05:14	53
	OKTC_4E	17	12	5	0:11	5:06		
4	SFTC_5E	0	0	0	0:00	0:00	47:27	38
	OKTC_4E	21	17	4	0:11	2:32		
5	SFTC_5E	1	1	0	0:18	15:22	44:25	36
	OKTC_4E	21	16	5	0:11	1:29		
6	SFTC_5E	1	0	1	0:00	0:00	47:28	38
	OKTC_4E	28	21	7	0:11	2:00		
7	SFTC_5E	0	0	0	0:00	0:00	41:08	33
	OKTC_4E	13	11	2	0:13	3:27		

Figure 2-6 Traffic Summary screen

The Traffic Summary provides some useful information about the amount and duration of calls, both on a per channel basis and on all channels combined. This information is helpful with the maintenance of trunks, as well as with provisioning and utilization.

If the File Set contains more than one trunk type (e.g., Ground and Wink), the Channel Type screen appears and must specify for which trunk type the traffic schedule should be computed. Only one type at a time can be done. The other channels appears as N/A on the traffic screen and printout.

Traffic Summary Screen

The header contains the times used to make the various calculations, From and To.

The Total time is the accumulated time in days, hours, minutes, and seconds.

All refers to the combined totals of all channels and each direction.

- Chan Orig—the name of the originating direction
- Att—the number of attempts or originations
- Comp—count of completed calls (answered)
- Unans—count of incomplete calls (not answered)
- Avg Comp—the average amount of time from seizure to answer
- Avg Talk —the average total talk time
- Usage—the total non-idle time

The Usage is actual time rather than time calculated from CCS or other sampled type calculations.

- Pct—the percentage of total collect time that was non-idle

NOTE The Traffic Summary can quickly spot underutilized or overutilized trunks. The Avg Comp can be used, for example, to find an attendant's answer times. The Avg Talk can be used to check the utilization of a voice mail system or auto attendant system.

To print the Traffic Summary, press P. The Traffic Summary is formatted to print on one 8-1/2 inch x 11 inch sheet of paper.

Call Lists

The List Calls in Channel Order menu (on the Main Menu) is one of the most useful tools available to aid you in quickly pinpointing problems. After a File Set has been processed or opened via the File Utilities Menu, proceed to the listing of calls.

1 Select a listing method menu command from the Main Menu.

- Press L (for List Calls) or
- Use the up arrow or down arrow key to move to List Calls in Channel Order or Sorted List of Calls in Time Order.

Sorted List of Calls in Time Order is the same as List Calls in Channel Order but sorted in chronological order rather than channel order.

If there is more than one call type, the Channel Type menu appears.

2 If needed, select the call type of interest, and press Enter.

The List menu screen appears. The figures in the following sections show the List menu for the various start types.

3 Highlight the type of call of interest (see the following section).

The Qualify Calls menu appears (see Qualify Calls on page 30).

Wink Start

```

LIST MENU FOR WINK START CALLS
SDR TEST

Select One of the Out of Spec Types
607 All Calls
22 All Abnormal/Out-of-Spec
3 Out of Spec
7 Timed Disconnect
0 No-Winks
0 Hits
1 Non-Call Events
0 Guard Failures
3 Short Seizures
6 Short Answers
2 Flashes
0 Glare Timing
0 Always Seized
0 Never Seized

List All Calls

Up, Dn, Enter=Select, F1=Help, ESC=Cancel

```

Call Type	Description
All Calls	Lists every call.
All Abnormal/Out of Spec	Lists all abnormal or out of timing specifications.
Out of Spec	Allows choices as to the out of timing specification category desired.
Timed Disconnects	Lists calls that have the originating party remaining off-hook past the timed disconnect parameter.
No-Winks	Lists calls missing the wink.
Hits	Lists calls containing short on-hook periods during the talk or completion intervals.
Non-Call Events	Lists any events which are not a part of a normal call. These include any illegal signaling bit states which are seen or babbling signaling bits.
Guard Failures	Lists all calls containing a guard failure or re-origination before the guard time.
Short Seizures	Lists calls that have a short overall seizure time.
Short Answers	Lists calls that have short talk times.
Flashes	Lists calls containing on-hook periods that are longer than hits but shorter than disconnects.
Glare Timing	Lists two-way trunks with simultaneous seizures.
Always Seized	Lists all channels that were seized for the duration of the collection interval.

Call Type	Description
Never Seized	Channels that were not utilized during the duration of the collection interval.

Ground Start

```

===== LIST MENU FOR GROUND START CALLS =====
                        SDR TEST1

Select One of the Out of Spec Types

160  All Calls
5    All Abnormal/Out-of-Spec
1    Out of Spec
2    Timed Disconnect
0    Pre-Trips
1    Hits
0    Non-Call Events
1    Guard Failures
0    FXS False Busy
0    Long OSI Before Answer
0    Long OSI After Answer
0    Short Calls
0    Short Seizures
0    Short Rings
0    Tip Group Test
0    Short Answers
0    Flashes
0    Showering Line
9    Always/Never Seized

List All Calls

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Call Type	Description
All Calls	Lists every call.
All Abnormal/Out of Spec	Lists all abnormal or out of timing specifications.
Out of Spec	Allows choices as to the out of timing specification category desired.
Timed Disconnects	Lists calls that have the originating party remaining off-hook past the timed disconnect parameter.
Pre-Trips	Lists calls that trip as soon as ringing starts.
Hits	Lists calls containing short on-hook periods during the talk or completion intervals.
Non-Call Events	Lists any events which are not a part of a normal call. These include any illegal signaling bit states which are seen or babbling signaling bits.
Guard Failures	Lists all calls containing a guard failure or re-origination before the guard time.
FXS False Busy	Lists calls in which the FXS side stays off-hook after the FXO side goes on-hook.
Long OSI Before Answer	A long open switch interval from FXO.
Long OSI After Answer	A long open switch interval from FXO.
Short Calls	Lists calls originating from the FXS side that are of short duration.

Call Type	Description
Short Seizures	Lists calls that have a short overall seizure time.
Short Rings	Lists calls that have short ringing intervals.
Tip Ground Test	Lists calls if a momentary tip ground is returned from the FXO side after a call.
Short Answers	Lists calls that have short talk times.
Flashes	Lists calls containing on-hook periods that are longer than hits but shorter than disconnects.
Showering Line	Lists calls continually going off- and on-hook.
Always Seized	Lists all channels that were seized for the duration of the collection interval.
Never Seized	Channels that were not utilized during the duration of the collection interval.

Loop Start

```

===== LIST MENU FOR LOOP START CALLS =====
                        SDRTEST3

Select One of the Out of Spec Types
410  All Calls
2    All Abnormal/Out-of-Spec
0    Out of Spec
0    Pre-Trips
1    Hits
0    Non-Call Events
0    Guard Failures
0    Long OSI Before Answer
0    Long OSI After Answer
0    Short Seizures
1    Short Rings
0    Short Answers
0    Flashes
0    Showering Line
9    Always/Never Seized

List All Calls

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Call Type	Description
All Calls	Lists every call.
All Abnormal/Out of Spec	Lists all abnormal or out of timing specifications.
Out of Spec	Allows choices as to the out of timing specification category desired.
Pre-Trips	Lists calls that trip as soon as ringing starts.
Hits	Lists calls containing short on-hook periods during the talk or completion intervals.
Non-Call Events	Lists any events which are not a part of a normal call. These include any illegal signaling bit states which are seen or babbling signaling bits.

Call Type	Description
Guard Failures	Lists all calls containing a guard failure or re-origination before the guard time.
Long OSI Before Answer	A long open switch interval from FXO.
Long OSI After Answer	A long open switch interval from FXO.
Short Seizures	Lists calls that have a short overall seizure time.
Short Rings	Lists calls that have short ringing intervals.
Short Answers	Lists calls that have short talk times.
Flashes	Lists calls containing on-hook periods that are longer than hits but shorter than disconnects.
Showering Line	Lists calls continually going off- and on-hook.
Always Seized	Lists all channels that were seized for the duration of the collection interval.
Never Seized	Channels that were not utilized during the duration of the collection interval.

Immediate Start

```

===== LIST MENU FOR IMMEDIATE START CALLS =====
                        SDRTEST4

Select One of the Out of Spec Types
3444 All Calls
  43 All Abnormal/Out-of-Spec
   0 Out of Spec
   9 Timed Disconnects
  12 Hits
   2 Non-Call Events
   0 Guard Failures
   8 Short Seizures
  12 Short Answers
   0 Flashes
   0 Glare Timing
   0 Always Seized
   0 Never Seized

List All Calls

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Call Type	Description
All Calls	Lists every call.
All Abnormal/Out of Spec	Lists all abnormal or out of timing specifications.
Out of Spec	Allows choices as to the out of timing specification category desired.
Timed Disconnects	Lists calls that have the originating party remaining off-hook past the timed disconnect parameter.
Hits	Lists calls containing short on-hook periods during the talk or completion intervals.

Call Type	Description
Non-Call Events	Lists any events which are not a part of a normal call. These include any illegal signaling bit states which are seen or babbling signaling bits.
Guard Failures	Lists all calls containing a guard failure or re-origination before the guard time.
Short Seizures	Lists calls that have a short overall seizure time.
Short Answers	Lists calls that have short talk times.
Flashes	Lists calls containing on-hook periods that are longer than hits but shorter than disconnects.
Glare Timing	Lists two-way trunks with simultaneous seizures.
Always Seized	Lists all channels that were seized for the duration of the collection interval.
Never Seized	Channels that were not utilized during the duration of the collection interval.

Out of Spec Calls

The Out of Spec list contains the various timing values and the number of calls that failed. You can select and list any of the various call types.

To view an Out of Spec list, select Out of Spec from the List menu. The Out of Spec menu appears. The figures in the following sections show the Out of Spec menu for the various start types.

Wink Start

```

===== OUT OF SPEC MENU FOR WINK START CALLS =====
                        SDR TEST

      Select One of the Out of Spec Types
      3   All Out of Spec Calls
      0   Seize to Wink 1 Off-Hook
      0   Seize to Wink 1 On-Hook
      0   Wink 1 Width
      0   Wink 2 Width
      0   Wink 3 Width
      0   Wink 1/2 Interval
      0   Wink 2/3 Interval
      3   Pre-Answer Interval
      0   Cutoff Tolerane

      List All Out of Spec Calls

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Ground Start

OUT OF SPEC MENU FOR GROUND START CALLS

SDRTEST1

Select One of the Out of Spec Types

1

All Out of Spec Calls

0

Ring Ground Interval

0

FXO Response

1

Pre-Ring Interval

0

Ring Trip Interval

List All Out of Spec Calls

Up, Dn, Enter=Select, F1=Help, ESC=Cancel

Loop Start

OUT OF SPEC MENU FOR LOOP START CALLS

SDRTEST3

Select One of the Out of Spec Types

0

All Out of Spec Calls

0

Ring Trip Interval

List All Out of Spec Calls

Up, Dn, Enter=Select, F1=Help, ESC=Cancel

Immediate Start

```

===== OUT OF SPEC MENU FOR IMMEDIATE START CALLS =====
                      SDRTEST3

                Select One of the Out of Spec Types

                        0    All Out of Spec Calls
                        0    Pre-Answer Interval

List All Out of Spec Calls

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Qualify Calls

After making a choice on any of the Call Lists or Out of Spec screens (see Call Lists on page 23 or Out of Spec Calls on page 28), the Qualify Calls menu appears. You can then qualify the list by Direction, Channel, or Time. You can narrow the choices as desired according to the symptoms of the trouble or other input, such as a particular time or channel.

```

===== QUALIFY CALL MENU =====
                      SDR TEST

                List

                Originating Office

                Channel

                Time

List All Calls, Orig=Both, Chan=All

===== Up, Dn, Enter=Select, F1=Help, ESC=Cancel =====

```

Figure 2-7 Qualify Call menu

Highlight the qualification and press **Enter** to generate the list.

NOTE You can pick any combination of qualifications desired. The default is Both Directions, All Channels during the complete collection interval.

Lists

To view a list of calls, select **List** from the Qualify Calls menu. A list of calls appears. This list shows all of the pertinent information about each call.

NOTE Some lists can contain thousands of calls. Use caution when selecting an option, especially when printing. The lists can take considerable time (several minutes) to print.

After exiting from a graphic display, the call list appears again at the point where you left. This makes it handy to index through many similar types of calls very quickly.

ABNORMAL CALLS:		SDRTEST		Sage SDR Test File Set			
All Faults/Timing				Chan=All		Orig=BOTH	
Wink Start						From: 03/25/99 10:01:15	
						To : 03/25/99 14:03:37	
Ch	Call	Date	Time	Orig Ofc	Event Type	Actual vs Parameter	
2	19	03/25/99	13:26:35	OKTC_4E	Flash(es)		
6	7	03/25/99	12:32:16	OKTC_4E	Timed Disc	10.960>	10.000
6	29	03/25/99	12:58:49	OKTC_4E	Short Seize	0.280<	2.000
8	3	03/25/99	12:14:44	OKTC_4E	Short Answer	1.540<	2.000
8	17	03/25/99	13:33:15	OKTC_4E	Non-Call Event		
9	3	03/25/99	12:14:31	OKTC_4E	Short Answer	0.800<	2.000
10	26	03/25/99	13:41:21	OKTC_4E	Timed Disc	10.340>	10.000
11	8	03/25/99	12:46:33	OKTC_4E	Short Answer	1.420<	2.000
11	21	03/25/99	13:56:29	OKTC_4E	Short Answer	1.040<	2.000
13	19	03/25/99	13:45:14	OKTC_4E	Timed Disc	10.400>	10.000
16	7	03/25/99	12:35:13	OKTC_4E	Short Answer	0.000<	2.000
16	8	03/25/99	12:38:22	OKTC_4E	Pre-Ans Interval	0.400<	0.460
16	12	03/25/99	13:17:35	OKTC_4E	Short Seize	1.220<	2.000
18	5	03/25/99	12:16:10	OKTC_4E	Pre-Ans Interval	0.400<	0.460
18	21	03/25/99	13:19:10	OKTC_4E	Timed Disc	10.340>	10.000
18	23	03/25/99	13:27:52	OKTC_4E	Short Seize	1.960<	2.000
18	11	03/25/99	12:28:36	OKTC_4E	Timed Disc	10.440>	10.000
19	11	03/25/99	12:35:41	OKTC_4E	Flash(es)		
19	13	03/25/99	13:31:31	OKTC_4E	Timed Disc	10.340>	10.000

Figure 2-8 Abnormal calls by channel number

ABNORMAL CALLS: SDRTEST				Sage SDR Test File Set					
All Faults/Timing				Chan=All		Orig=BOTH		From: 03/25/99 12:01	
Wink Start								To : 03/25/99 14:01	
Ch	Call	Date	Time	Orig Ofc	Event Type	Actual vs Parameter			
9	3	03/25/99	12:14:31	OKTC_4E	Short Answer	0.800<	2.000		
8	3	03/25/99	12:14:44	OKTC_4E	Short Answer	1.540<	2.000		
18	5	03/25/99	12:16:10	OKTC_4E	Pre-Ans Interval	0.400<	0.460		
18	11	03/25/99	12:28:36	OKTC_4E	Timed Disc	10.440>	10.000		
6	7	03/25/99	12:32:16	OKTC_4E	Timed Disc	10.960>	10.000		
16	7	03/25/99	12:35:13	OKTC_4E	Short Answer	0.000<	2.000		
19	11	03/25/99	12:35:41	OKTC_4E	Flash(es)				
16	8	03/25/99	12:38:22	OKTC_4E	Pre-Ans Interval	0.400<	0.460		
11	8	03/25/99	12:46:33	OKTC_4E	Short Answer	1.420<	2.000		
6	29	03/25/99	12:58:49	OKTC_4E	Short Seize	0.280<	2.000		
16	12	03/25/99	13:17:35	OKTC_4E	Short Seize	1.220<	2.000		
18	21	03/25/99	13:19:10	OKTC_4E	Timed Disc	10.340>	10.000		
2	19	03/25/99	13:26:35	OKTC_4E	Flash(es)				
18	23	03/25/99	13:27:52	OKTC_4E	Short Seize	1.960<	2.000		
19	13	03/25/99	13:31:31	OKTC_4E	Timed Disc	10.340>	10.000		
8	17	03/25/99	13:33:15	OKTC_4E	Non-Call Event				
10	26	03/25/99	13:41:21	OKTC_4E	Timed Disc	10.340>	10.000		
13	19	03/25/99	13:45:14	OKTC_4E	Timed Disc	10.400>	10.000		
11	21	03/25/99	13:56:29	OKTC_4E	Short Answer	1.040<	2.000		

Figure 2-9 Abnormal calls by time

All Call List

To view all calls, select All Calls on the List menu (step 3 on page 24).

- Ch—channel number
- Call—the sequential call number
- Orig—the name of the originating direction
- Date—the date the call was seized
- Time—the time the call was seized
- 1st Disc—the name of the direction which disconnected first

- 1st Disc Time—the time that the 1st disconnect occurred
- Wk—the number of winks contained in this call
- Ans?—whether the call was completed (answered) or not
- Event—an abbreviated abnormal event type if necessary

ALL CALLS: SDRTEST Sage SDR Test File Set									
Chan=All Wink Start Orig=BOTH From: 03/25/99 12:01 To : 03/25/99 14:01									
Ch	Call	Orig	Ofc	Date	Time	1ST DISC	Time	Wk.	Ans? Event
1	1	OKTC_4E		03/25	12:14:31	SFTC_5E	12:09:36	1	Ans
1	2	OKTC_4E		03/25	12:14:44	SFTC_5E	12:11:28	1	Ans
1	3	OKTC_4E		03/25	12:16:10	SFTC_5E	13:13:29	1	Ans
1	4	OKTC_4E		03/25	12:28:36	OKTC_4E	13:17:25	1	Ans
1	5	OKTC_4E		03/25	12:32:16	OKTC_4E	13:22:09	1	Ans
1	6	OKTC_4E		03/25	12:35:13	SFTC_5E	13:29:12	1	Ans
1	7	OKTC_4E		03/25	12:35:41		13:30:40	1	UnAn
1	8	OKTC_4E		03/25	12:38:22	OKTC_4E	13:35:42	1	Ans
1	9	OKTC_4E		03/25	12:46:33	OKTC_4E	13:37:23	1	Ans
1	10	OKTC_4E		03/25	12:58:49	SFTC_5E	13:40:06	1	Ans
1	11	OKTC_4E		03/25	13:17:35	OKTC_4E	13:43:37	1	Ans
1	12	OKTC_4E		03/25	13:19:10	OKTC_4E	13:44:11	1	Ans
1	13	OKTC_4E		03/25	13:26:35		13:49:53	1	UnAn
1	14	OKTC_4E		03/25	13:27:52	SFTC_5E	13:58:06	1	Ans
1	1	OKTC_4E		03/25	13:31:31	OKTC_4E	12:02:41	1	Ans
1	2	OKTC_4E		03/25	13:33:15	OKTC_4E	12:07:20	1	Ans
1	3	OKTC_4E		03/25	13:41:21	SFTC_5E	12:14:19	1	Ans
1	4	OKTC_4E		03/25	13:45:14		12:15:39	1	UnAn
1	5	OKTC_4E		03/25	13:56:29	OKTC_4E	12:19:35	1	Ans

Figure 2-10 All calls by channel number

ALL CALLS: SDRTEST Sage SDR Test File Set									
Chan=All Wink Start Orig=BOTH From: 03/25/99 12:01 To : 03/25/99 14:01									
Ch	Call	Orig	Ofc	Date	Time	1ST DISC	Time	Wk.	Ans? Event
3	1	OKTC_4E		03/25	12:01:17		12:01:36	1	UnAn
2	1	OKTC_4E		03/25	12:01:55	OKTC_4E	12:02:41	1	Ans
24	1	OKTC_4E		03/25	12:02:17	OKTC_4E	13:03:22	1	Ans
23	1	OKTC_4E		03/25	12:02:21	OKTC_4E	13:03:44	1	Ans
20	1	OKTC_4E		03/25	12:02:45	SFTC_5E	13:06:40	1	Ans
19	1	SFTC_5E		03/25	12:02:51	SFTC_5E	13:04:02	1	Ans
18	1	OKTC_4E		03/25	12:03:10	OKTC_4E	13:03:23	1	Ans
17	1	OKTC_4E		03/25	12:03:10	OKTC_4E	13:04:00	1	Ans
16	1	OKTC_4E		03/25	12:03:12	SFTC_5E	13:11:29	1	Ans
13	1	SFTC_5E		03/25	12:04:05	SFTC_5E	13:05:10	3	Ans
24	2	SFTC_5E		03/25	12:04:18	SFTC_5E	13:07:33	3	Ans
12	1	OKTC_4E		03/25	12:04:26	SFTC_5E	13:09:32	1	Ans
11	1	OKTC_4E		03/25	12:04:27	SFTC_5E	13:05:59	1	Ans
10	1	OKTC_4E		03/25	12:04:57	SFTC_5E	13:07:44	1	Ans
9	1	OKTC_4E		03/25	12:05:12	OKTC_4E	12:08:24	1	Ans
8	1	OKTC_4E		03/25	12:05:58	SFTC_5E	12:06:42	1	Ans
6	1	OKTC_4E		03/25	12:06:04	OKTC_4E	12:09:06	1	Ans
5	1	OKTC_4E		03/25	12:06:06		12:06:43	1	UnAn
4	1	OKTC_4E		03/25	12:06:07	OKTC_4E	12:06:39	1	Ans

Figure 2-11 All calls by time

Graphic Displays

Graphic Display of Calls

You can access the Graphic Call display from the Main Menu (Display Signaling choice) or from the various call lists (see Figure 2-12).

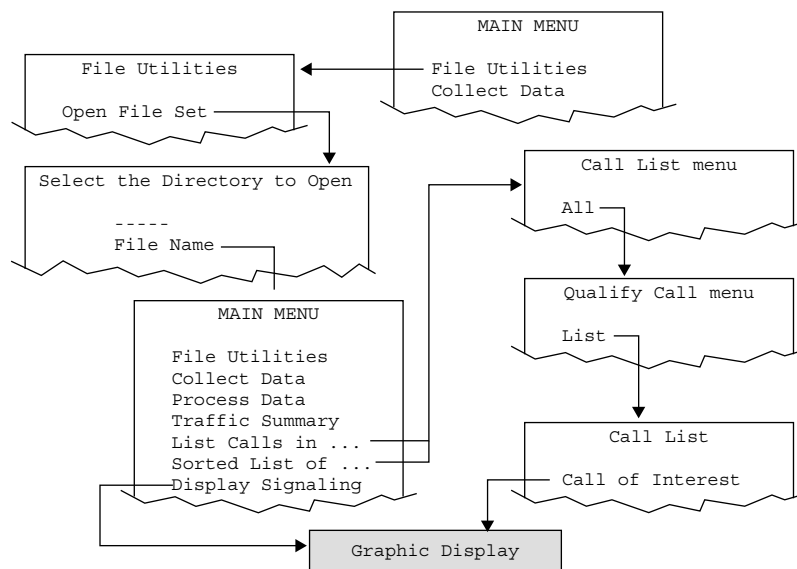


Figure 2-12 Navigating to the Graphic Call display

This display shows all of the timing associated with a particular call and gives you the ability to browse through the various call events and the various details of any call. The display can be indexed by Date/Time, Channel, Call, Next/Previous Call Beginning, Next/Previous Call End, Next/Previous Faulty Call, or Next/Previous Transition.

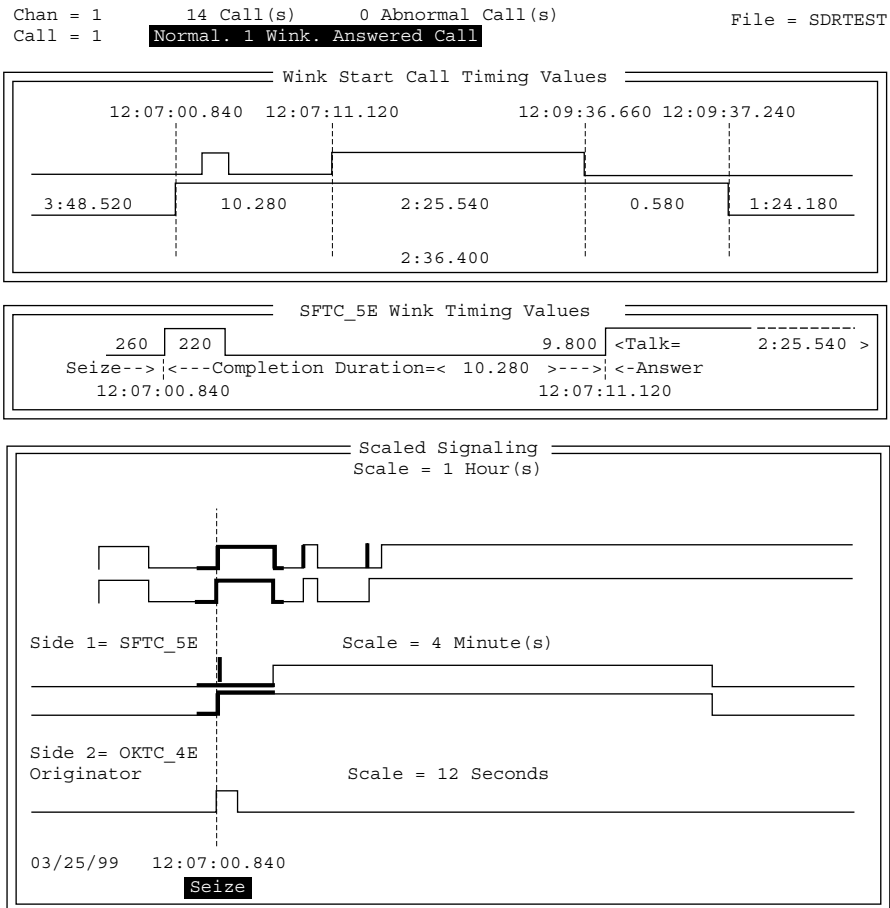


Figure 2-13 Sample Graphic Call display

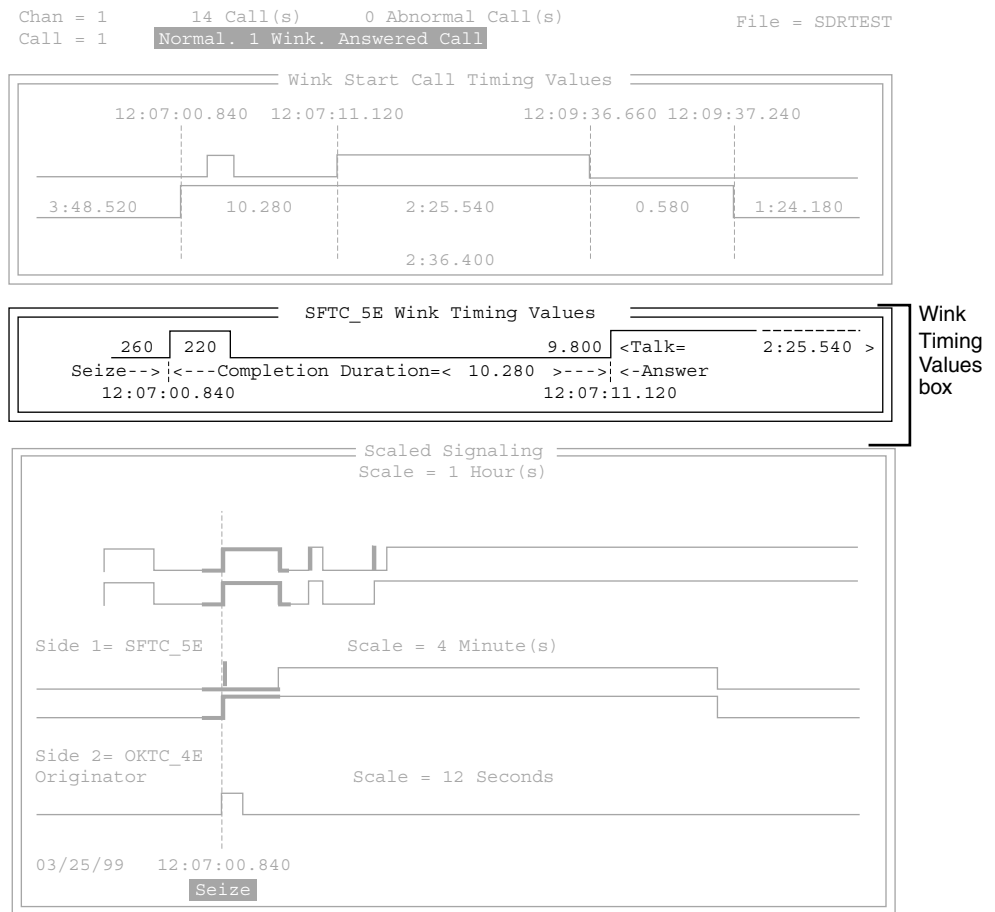
Header

The header shows the channel (Chan) and call number (Calls) of the displayed call, along with the number of abnormal calls (Abnormal Calls) on this channel. The call type identification, number of winks, and whether the call is answered or unanswered are also displayed. If the call is a normal type, the display is green (on a color display). If the call is an abnormal call type, the display is red.

Wink Timing Values Box

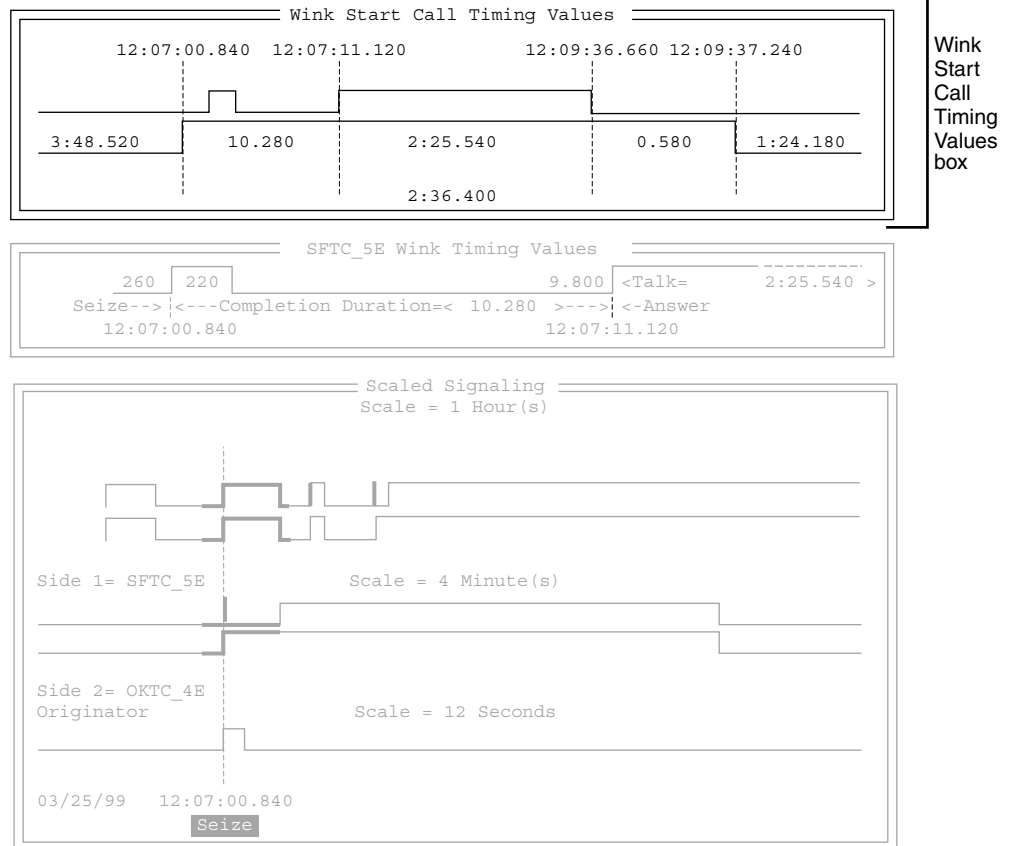
The Wink Timing Values box shows the following timing:

- Seize time
- Wink intervals
- Wink-to-answer interval
- Talk interval
- Pre-wink interval
- Inter-wink intervals
- Answer time
- Completion duration



Chan = 1 14 Call(s) 0 Abnormal Call(s)
 Call = 1 Normal. 1 Wink. Answered Call

File = SDRTEST



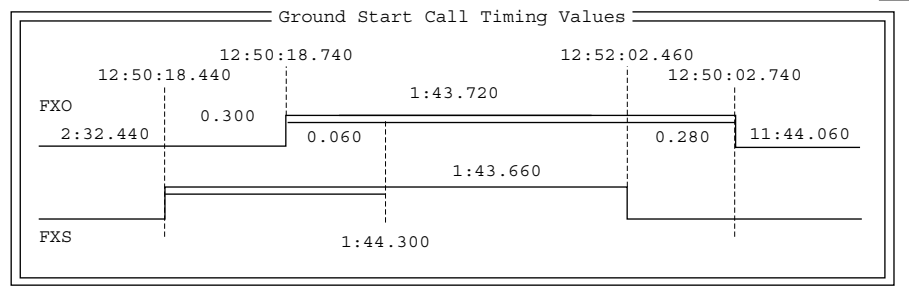
The Wink Start Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Call completion interval
- Talk interval
- Last disconnect time
- Interval to next call
- Seize time
- Answer time
- First disconnect time
- Disconnect interval
- Overall call interval

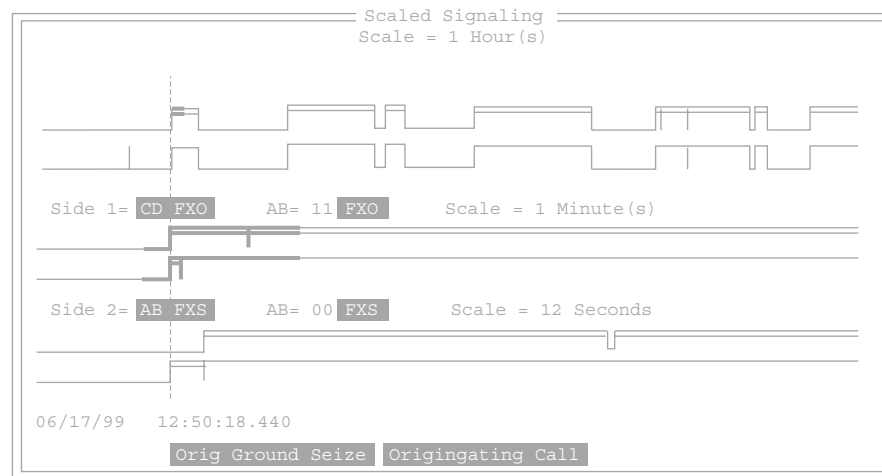
Ground Start-Originating

Chan = 6 12 Call(s) 0 Abnormal Call(s)
 Call = 1 Normal, FXS Orig.

File = SDRTEST



Ground
Start
Orig
Call
Timing
Values
box



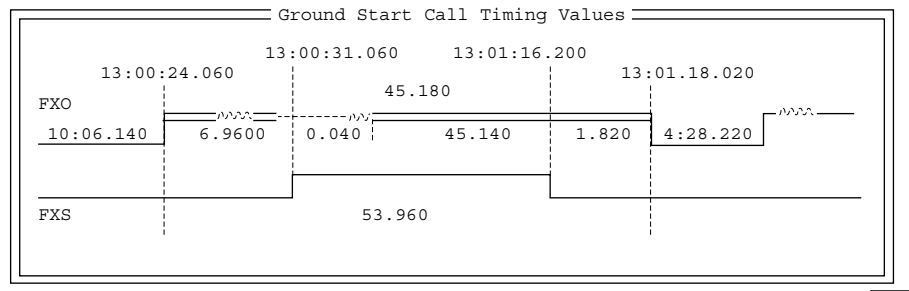
The Ground Start Originating Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Ring ground interval
- Ring ground removal interval
- First disconnect time
- Disconnect interval
- Overall call interval
- Seize time
- Tip ground time
- Talk interval
- Last disconnect time
- Interval to next call

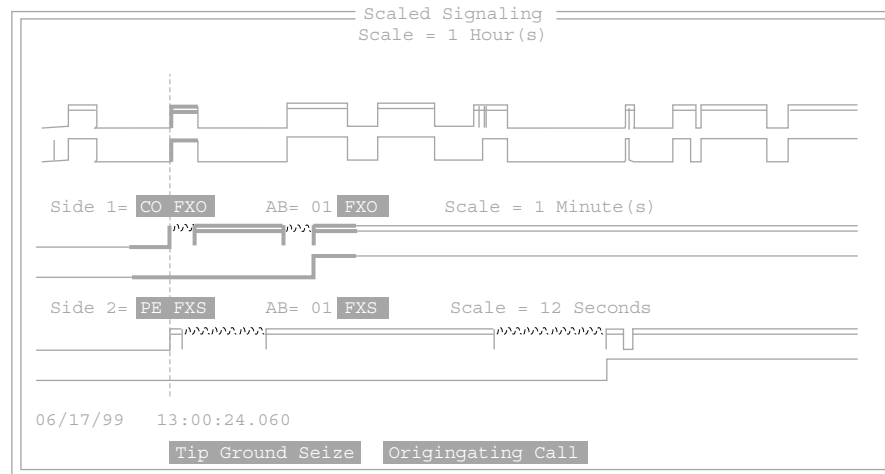
Ground Start-Terminating

Chan = 11 11 Call(s) 0 Abnormal Call(s)
 Call = 1 Normal. FXS Terminating Answered Call

File = SDRTEST



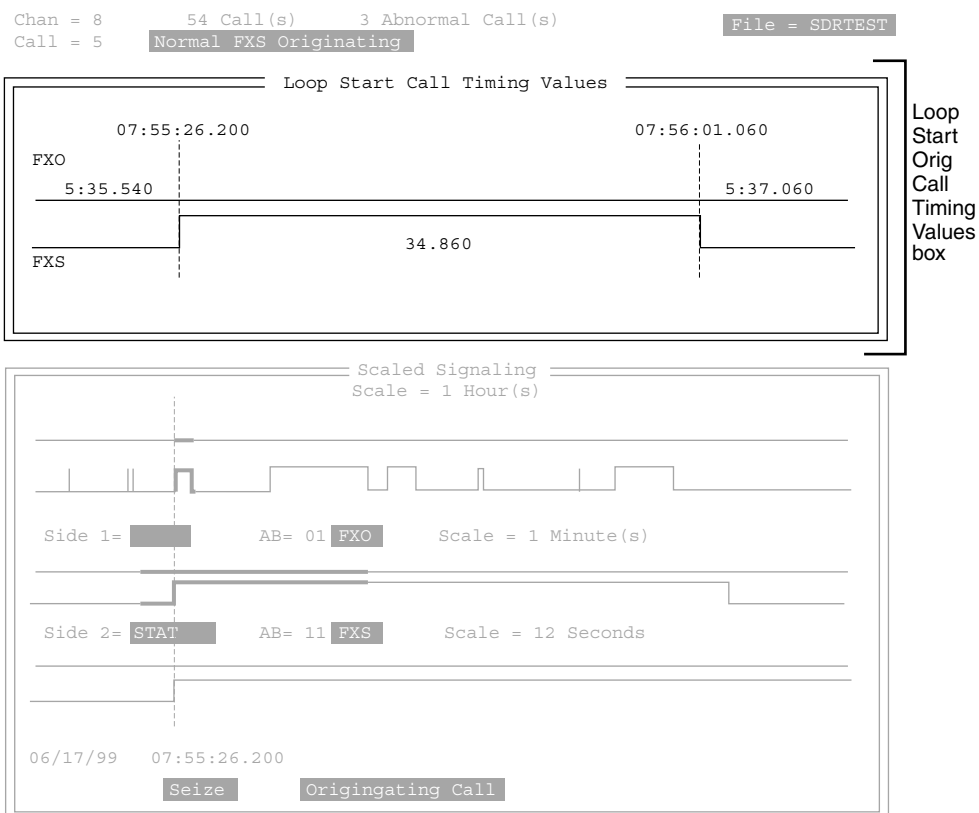
Ground
Start
Term
Call
Timing
Values
box



The Ground Start Terminating Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Ringing interval
- Ring trip interval
- First disconnect time
- Disconnect interval
- Overall call interval
- Seize time
- Answer time
- Talk interval
- Last disconnect time
- Interval to next call

Loop Start-Originating

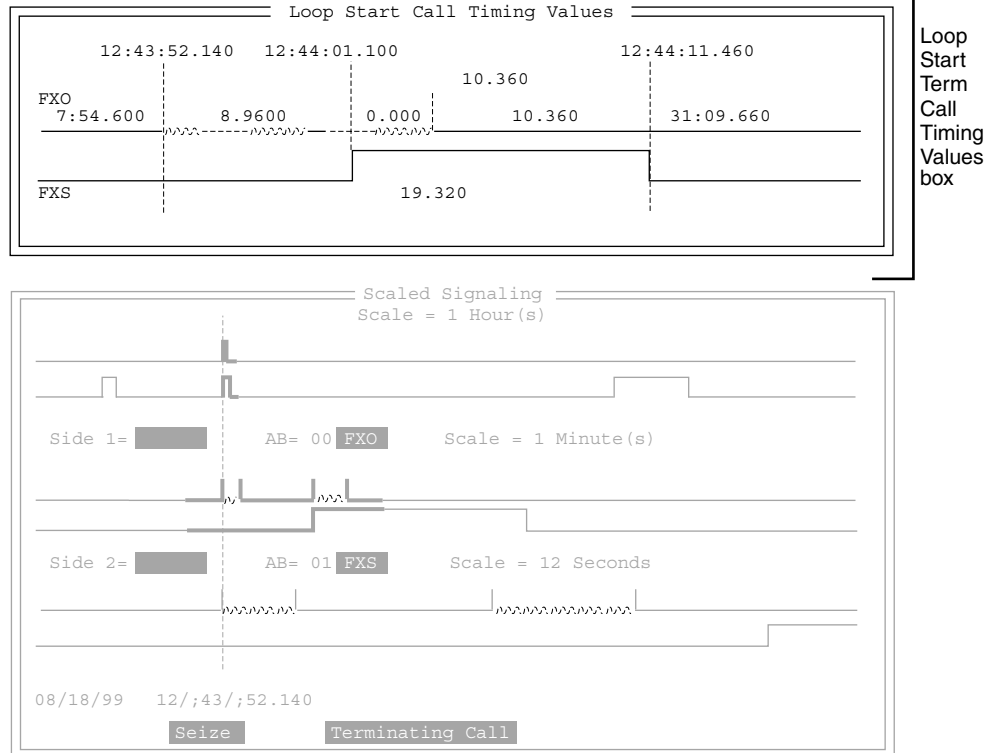


The Loop Start Originating Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Disconnect time
- Overall call interval
- Seize time
- Interval to next call

Loop Start-Terminating

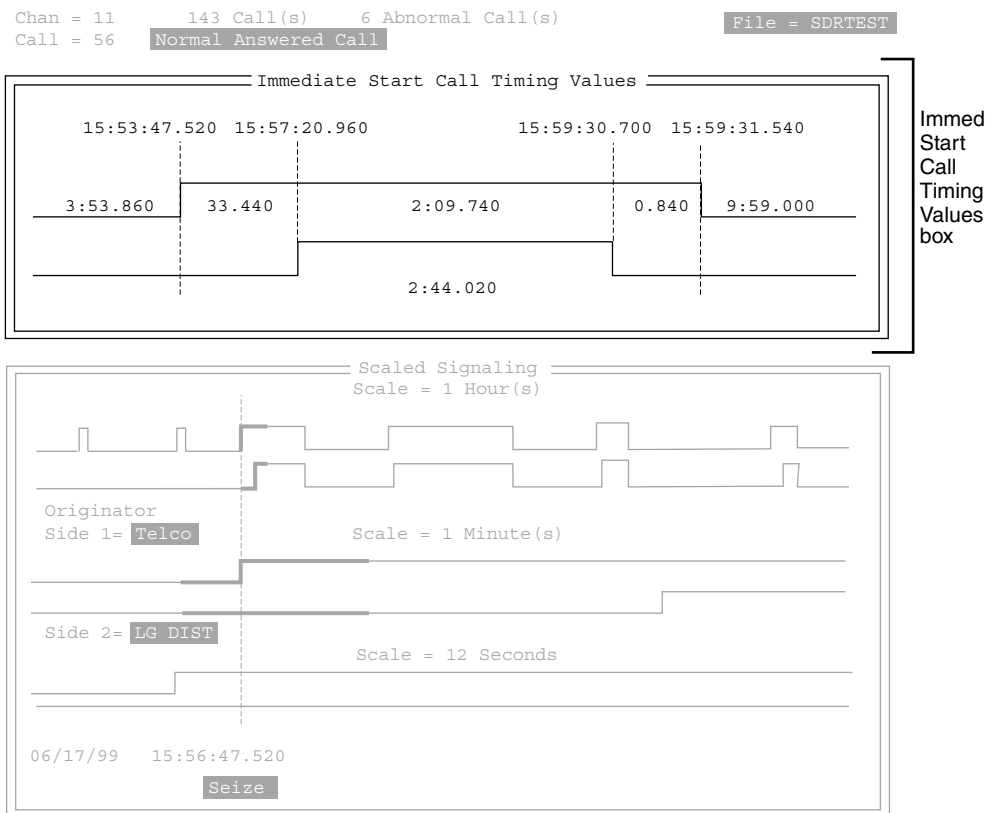
Chan = 5 11 Call(s) 1 Abnormal Call(s) File = SDRTEST
 Call = 10 Normal 2 Ping FXS Terminating Incoming Call



The Loop Start Terminating Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Ringing interval
- Ring trip interval
- First disconnect time
- Disconnect interval
- Overall call interval
- Seize time
- Answer time
- Talk interval
- Last disconnect time
- Interval to next call

Immediate Start



The Immediate Start Call Timing Values box shows the following timing parameters:

- Interval from previous call
- Call completion interval
- Talk interval
- Last disconnect time
- Interval to next call
- Seize time
- Answer time
- First disconnect time
- Disconnect interval
- Overall call interval

Trace Sets

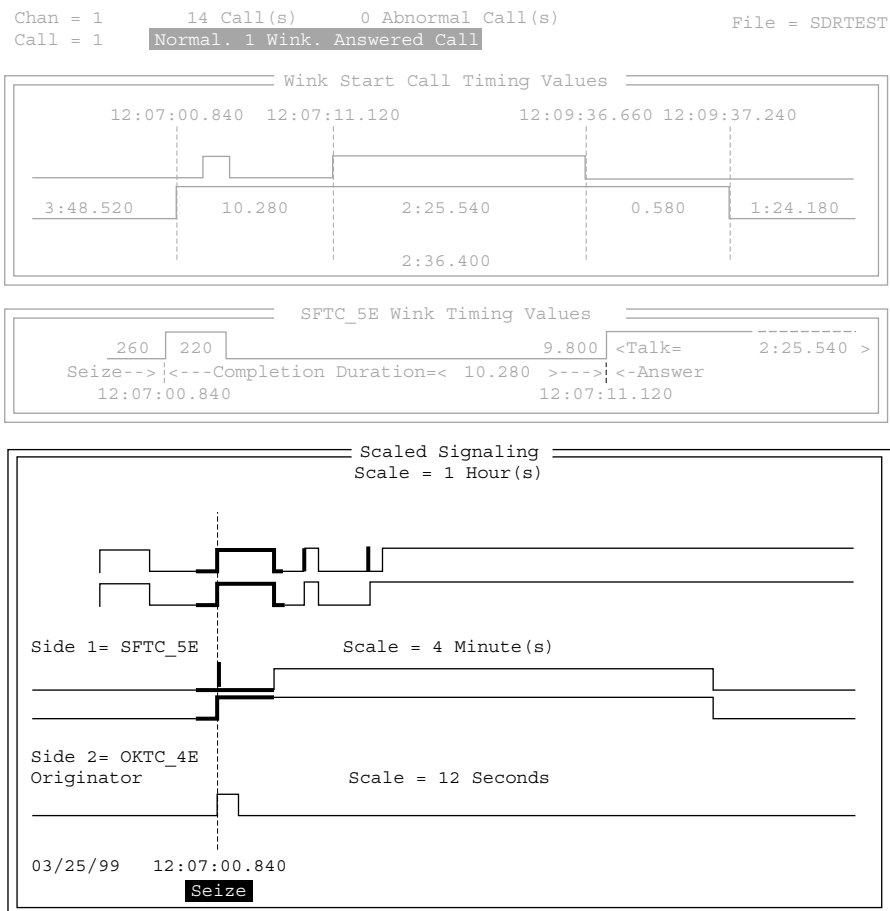


Figure 2-15 Trace Sets display

Figure 2-16 shows the two ways to access the Trace Sets display (Figure 2-16).

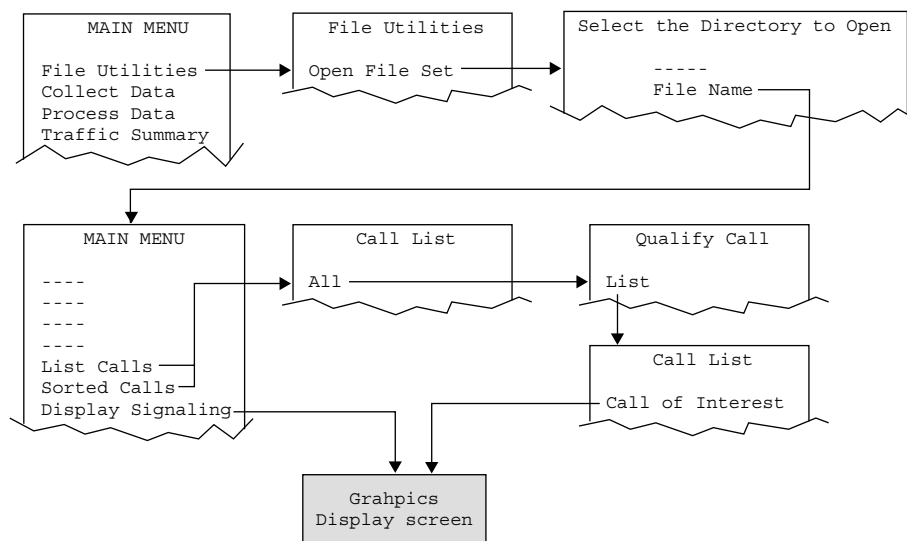


Figure 2-16 Navigating to the Graphics display screen

The Scaled Signaling section of the call display is laid out in three trace sets in three different time bases. A darkened area in the hours and minutes trace sets that overlaps the reference line represents the portion of the trace that is being portrayed as “expanded” in the trace set below it.

For example, in Figure 2-17, the darkened area in the top trace set (①) is expanded in the middle trace set. The darkened area in the middle trace set (②) is expanded in the bottom trace set.

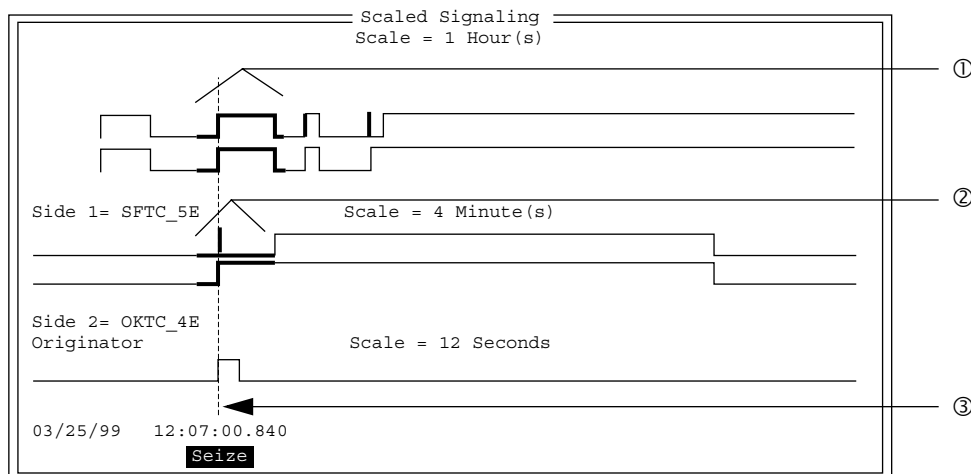


Figure 2-17 Sampel Scaled Signaling section of a Trace Set display

The top trace set is in hours and shows a large time period on the trunk. The number of hours represented can be changed by using the S key. The middle trace set is in minutes and typically displays all or most of a call. The minutes represented can be changed using the S key. The trace set shows the Side 1/2 identities and the associated originator of this call. The bottom trace set is laid out in a 12-second scale and reveals the highest resolution of SDR. This display shows in detail any type of event contained in a call.

A reference line (③) shows the same relative position on all three time scales. The call event that the reference line is associated with is always identified in the box below the line. The date and time of this particular event is also shown.

Marker

The M key places a marker on an event. As the event on the reference line changes, the time interval between the marked event and the event on the reference line is displayed.

To remove the marker, press the M key to move the marker to the reference line. Press M again and the marker will turn off.

Display ABCD Traces

Press the D key to toggle between the ABCD Signaling Bit display and the Call Graphic display. Figure 2-18 shows the three ways to access ABCD Traces.

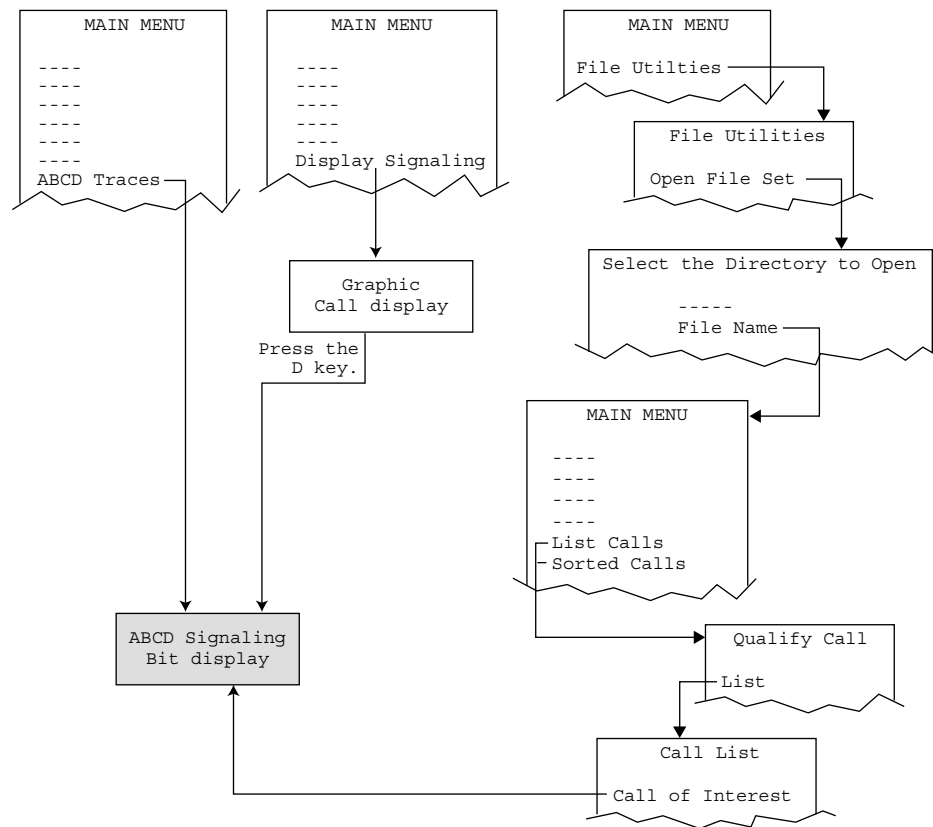
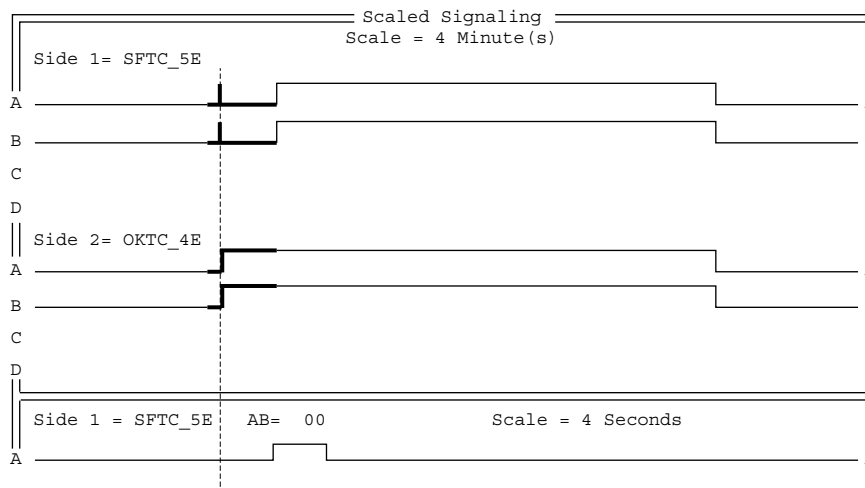


Figure 2-18 Navigating to the ABCD Signaling Bit display

Signaling Bit Display

To view the ABCD Signaling Bit display, press the A key at the Main Menu or press the D key on the Call Graphics screen. Press P to print this screen.

```
Chan = 1      Wink Start                               File = SDRTEST
Call = 1      Normal. 1 Wink. Answered Call
```



Header

The Header information includes the Channel and Call Number, the Call Start Type (Wink, Immediate, etc.), and the Call display box. This box is green for a normal call type and red if an abnormal call is being displayed.

Scaled Signaling

The Scaled Signaling display consists of two parts. The top box is scaled in minutes and the bottom is in seconds. The minutes trace set is related to the Call Graphics screen and shares the same value as the middle trace set. Its time scale can be changed by pressing the S key and scrolling down to the minutes field. A darkened area of the minute trace shows the area represented below in the seconds scale. It always overlaps the reference line.

A reference line shows the same relative event in both time scales and has the time and date of the transition located at the bottom of the screen. The identification of the event is also displayed.

The Side 1/2 identities are shown on each trace set.

The AB or ABCD bit value (AB=XX) is always displayed on the lower trace set and is very useful for analyzing various signaling states.

Toggle to Call Graphics Screen

Press the D key to toggle between the ABCD Signaling Bit display and the Call Graphics display.

The Detailed Signaling Bit traces represented are designed for in-depth analysis and are very useful as such. To avoid confusion while referring to individual signaling bits, you do not have the ability to jump from call to call as you do when you are in the Call Graphics screen. Once you become familiar with using the D key to toggle back and forth between the two screens, the value of this tool will become evident.

Marker

Use the M key to mark a signaling event on the reference line. As the transition key X is used to move to another event, the marker interval between the two events is displayed. Pressing the M key always moves the marker to the reference line. Press M again to remove the marker.

Information about SDR

To access the Info About SDR display

- Press the I key at the Main Menu or
- Use the up arrow or down arrow key to scroll to the field and press the Enter key.

SDR Environment Display

About SDR Environment		
SDR Version	=	2.xx
Heap Space Currently Available	=	37964
Max Transitions Per Channel	=	12964
Video Mode	=	3
Disk Space Available (KBytes)	=	VGA (4)
CDA File Collected with Version	=	1.11
CDA File Calibration	=	100.0%
Designed and Developed by Walt Haines and Bob Shepardsor		
↓ to continue		

This display shows information about the File Set that is currently open, as well as the version number for the SDR program that you are running. Other information about the computer system is also displayed:

- SDR—version number of the SDR program
- Heap Space—for diagnostic purpose only
- Max Transitions Per Channel—the maximum transitions per channel that can fit into the RAM space on the computer.

Divide this number by 10 and to calculate an approximation of the minimum call per channel capacity of the computer. Multiply the maximum calls per channel by 24 to calculate the maximum calls per File Set that can be analyzed on this computer.

NOTE Max Transitions Per Channel does not necessarily relate to the collection file size, which is the result of hard drive free space. However, if a larger File Set is processed than the computer can handle, the number of calls on the channel will be truncated to fit the RAM space available. You will typically not have a problem with the capacity of SDR, which can range from days to weeks, depending on the trunks being monitored.

- Video Mode—the DOS video mode assigned in the computer
- Video Display Type—the video display board the computer has
- Disk Space Available—the usable hard drive space in kilobytes

CDA File:

- Collected with Version—the version number of the SDR program that was used to collect the file which is currently open
- File Calibration—the calibration figure of the collected file that is currently open

If a file has not been opened, these figures are blank.

File Utilities

To access the File Utilities:

- press the F key at the Main Menu or
- Use the up arrow or down arrow key to scroll to the File Utilities field, and then press the Enter key.

The File Utilities menu is used for the following functions.

- Open a previously processed File Set
- Place a File Set onto a floppy disk (Export)
- Retrieve a File Set from a floppy disk (Import)
- Delete unwanted File Sets
- Copy a File Set to another name so it can be processed in a different manner
- Modify the file information (Side 1/2 identification or Comments).

FILE UTILITIES MENU

Select One fo the File Utility Functions

Open File Set

Export File

Import File

Delete File Set

Copy File

Modify File Info

Open a Previously Processed File Set

Up, Dn, Enter=Select, F1=Help, ESC=Cancel

Figure 2-19 File Utilities menu

Help

Use the Help box at the bottom of the File Utilities menu for a description of each choice. Use the F1 function key to get an in-depth description of each field.

Open File Set

Only previously processed File Sets can be opened. Immediately after a File Set is processed, it is automatically opened. A File Set remains open until another File Set is opened, or a collection is made, or the SDR program is completed.

Export File

The Export File is used to write a File Set to a floppy disk. Once selected, the file list appears.

- 1** Choose which File Set to export.
 - Highlight your choice.
 - Press the Enter key.

- 2** Identify the destination disk.

The File Set is then copied to the floppy disk.

Only one File Set is allowed on each floppy disk. Some File Sets can be quite large and require two or more disks. To simplify the process of importing a File Set, you do not have to enter the name of the File Set.

Import File

After selecting Import File, you must specify which drive you are retrieving from. The File Set is automatically copied from the floppy disk, the proper directories and files are built in the SDR program on the hard drive. The name of the File Set appears on the screen after the File Set has been imported.

Delete File Set

After selecting Delete File Set, the file list appears. Highlight your choice and press Enter. You must confirm that you want to delete the selected File Set. If you are sure, press Enter. If not, press ESC.

Copy File

Copy File is typically used to make a copy of a File Set to reprocess it using different timing parameters. The original file is saved unchanged. Use this along with Delete File Set to rename a File Set and remove the old one, if you choose.

After selecting Copy File, the file list appears. Highlighting your choice, and enter new file name. Use alphanumeric characters only.

Modify File Info

Modify File Info allows you to rename the Side 1/2 identification or change the Comment fields associated with a File Set.

- 1** Open the file that you want to modify
- 2** Choose Modify File Info.

The File Identification screen appears. This is the same screen that is shown when collecting File Sets.

- 3** Enter a new name or change the comment fields as desired.
- 4** Press the F2 function key to overwrite the old data and save the new data to the file.

ABCD Signaling States

Wink or Immediate

AB=00 or 11. If ESF, A=B=C=D.
Basic Rule: A=B.

Loop

FXO	FXS	(Orig Call)	FXO	FXS	(Term Call)
A B	A B	STATE	A B	A B	STATE
0 1	0 1	Idle	0 1	0 1	Idle
0 1	1 1	FXS ORIG (Dial Tone)	0 0	0 1	FXO ORIG (Ring)
0 1	1 1	Talk	0 1	1 1	Talk (Answer)
0 1	0 1	Disconnect	0 1	0 1	Disconnect
Basic Rules:		FXO	FXS		
		A=0 Always			A=0 Off Hook
		B=1 Except Ringing			A=1 Off Hook
					B=1 Always

If ESF: A=C, B=D

Ground

FXO	FXS	(Orig Call)	FXO	FXS	(Term Call)
A B	A B	STATE	A B	A B	STATE
1 1	0 1	Idle	1 1	0 1	Idle
1 1	0 0	Ring Grnd (FXS Seize)	0 1	0 1	Tip Grnd (FXO Seize)
0 1	1 1	Tip Grns (Dial, Talk)	0 0	0 1	Ringing
0 1	1 1	Talk	0 1	1 1	Talk (Answer)
1 1	0 1	Disconnect	1 1	0 1	Disconnect
Basic Rules:		FXO	FXS		
		A=0 Off Hook (Tip Grnd)			A=0 Off Hook
		A=1 On Hook			A=1 Off Hook
		B=1 Except Ringing			B=1 Except Ring Ground

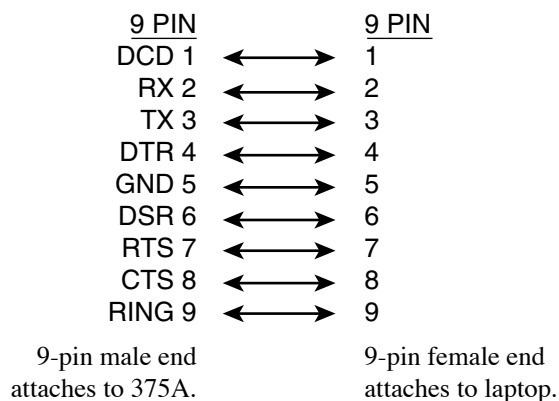
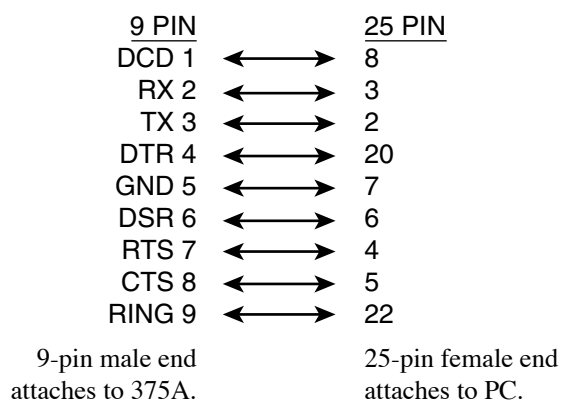
If ESF: A=C, B=D

SDR determines whether a channel is masked out (Mask), Wink start (Wink), Immediate start (Immd), Loop start (Loop), Ground start (Grnd), or Unknown (Unkn). Unkn includes always/never seized. The status is displayed on the Transition Screen at the end of processing or when a File Set is opened.

An Unknown channel type is one that for more than 10 percent of the collected time, the ABCD states did not conform to any of the valid call types.

NOTE Loop, Wink, Grnd, or Immd have to have valid states at least 90 percent of the time for a channel to be classified as one of these types. An override is available during processing to reclassify a channel.

375A to SDR Printout





Technical Advisory

Supervision Detail Recorder

SDR V2.82 Install Can Corrupt AUTOEXEC.BAT

Problem

When properly installing SDR v2.82 onto a drive other than the "C:" drive, the INSTALL program will delete all but the first line of the existing AUOTEXEC.BAT file. There is no danger in allowing the INSTALL program to modify your CONFIG.SYS file.

Solution

When prompted, specify that the INSTALL program should NOT modify your AUTOEXEC.BAT file. Instead, use a word processor to manually add the following line of text.

SET SAGESDR=D:\SAGESDR

Replace "D:\\" with the letter that corresponds to the drive on which you are installing the program.

Be sure to save the file to the root directory of the "C:" drive as an ASCII DOS text file. If you save the file as a standard word processor file, DOS cannot read the file and the results will be unpredictable.

Example

When installing SDR v2.82 onto drive "D:", the INSTALL program asks whether it should add "SET SAGESDR=D:\SAGESDR" to your AUTOEXEC.BAT file. If you answer yes, the "SET" command is added; however, all lines except the first line of AUTOEXEC.BAT file are deleted. Fortunately, the INSTALL program saves a complete copy of the AUOTEXEC.BAT file as AUTOEXEC.01.



Technical Note #7

Supervision Detail Recorder

This Technical Note is an update to the Supervision Detail Recorder Operation Manual, version 2.6. This Technical Note includes the information contained in Technical Notes 5A and 6.

Changes in Version 2.82

Collect Data Screen

Several fields have changed in the Collect Data screen. Figure 2-1 on page 12 of the *Supervision Detail Recorder Operation Manual* shows an earlier version of the screen. There are two new fields that are useful in troubleshooting.

Please record the data in these fields before calling Sage for technical support.

- **8250/16450 Mode** specifies the UART used during data collection.
- **Line Status Error** provides error data.

In addition, the **Output Ct** field has been renamed to **Transition Ct**.

Data Collection Algorithm

Significant changes have been made in the data collection algorithm to accommodate revisions found in certain BIOS' being distributed in IBM clones and laptops. To help eliminate Major and Minor Synch error problems, the PC used for data collection must be AC powered, and the Power Management features must be turned off.

Changes in Version 2.74

SDR software versions 2.74 and later contain additional startup command line options. These options provide more flexibility in your PC configuration. If you encounter synchronization errors or have special requirements for file storage or data collection, you can configure your PC accordingly.

Startup Command Line Options

Use the following command line options to start the SDR program. These options (switches) are used during data collection. The switches can be typed in any order, upper or lowercase. Do not use spaces between switches if you are entering more than one.

Switch Definitions

- B** Allows you to control whether the B-Bit is used in call processing.
If the B switch is set, a pop-up dialog box appears before a file is processed. Select whether the B-Bits are used or ignored. The processing summary screen indicates the selection in the upper-right corner of the screen.
- H** Disables the F1 HELP function, freeing up space for an additional 1000 transitions.
If the H switch is set, a pop-up box appears when F1 is selected stating that HELP has been disabled. To enable the HELP function, restart SDR without the H switch in the command line.
- C** Designates that the computer has a color monitor (default).
- M** Designates that the computer has a monochrome monitor.
- path** Designates the SDR data file directory (C:\SAGESDR is the default).
The path set here is where the SDR files reside (e.g., Help, Demos) and where the data collection files are stored (and retrieved) during processing. To process files stored in a different directory, restart SDR using the appropriate path.

Command Line Syntax: SDR - or / [B] [H] [C] [M] [path]

Examples:

```
SDR -B D:\SDRDATA
SDR /mb
SDR /BH
SDR C:\SAGE /B
SDR C:\SAGE
```

Another Preventable Source of “Out of Sync” Conditions

We have found that attempting to print the screen during data collection causes an Out of Sync condition. **DO NOT** press Shift-Prnscrn while collecting data. Use the print feature after processing is complete.