



EddyVISION32[®] v4.x

Technical Reference Manual for the Analysis Program Module

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12. ERRATA

- ❑ EddyVISION 32 release 4.x runs only on Windows 95/98 or Windows NT 4.0.

NOTE: Windows NT 4.0 is the preferred platform.

- ❑ EddyVISION 32 release 4.x makes use of a three (3) button mouse; certain features are not available to users with a two (2) button mouse.
- ❑ EddyVISION 32 release 4.x requires at least 64meg of ram, 1024x768 pixel display, a 200MHz Pentium-type processor, and a 1Gb hard drive with at least 100Mb free space. A screen resolution of 1280x1024 is recommended when using the Analysis software.
- ❑ Under Windows 95 at 600 dpi, a laser printer with only 2Mb of RAM will not print in landscape mode. Either switch to 300 dpi or portrait mode. Multiple smaller images work fine.

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Section 1: Introduction

Analysis v4.x is part of the EddyVision32 suite of eddy current related software products produced by CoreStar International Corporation, Irwin, Pennsylvania. Although these products are designed to operate under either a Windows 9x or NT 4.0 environment, Windows NT 4.0 is strongly recommended since it's a much more stable environment. Some features of the Analysis software are:

- ❑ Integrated with data acquisition; can easily move from analysis mode to acquisition mode;
- ❑ A signal recognition-based Auto-locate feature unlike the threshold-based used in other analysis systems;
- ❑ Data Segment Recall allows any call to be displayed by double-clicking on the report entry. The original call and setup are restored, including any mixes if applicable. The recalled data is completely dynamic;
- ❑ Ability to create any number of mix and process channels;
- ❑ Ability to develop amplitude (volt) and phase (degree) curves. Allows for multiple curves per channel and each curve can be assigned a descriptive label;
- ❑ Report entries for the current tube & cal group are always displayed in the main Analysis window. No more wondering what was entered on the report;
- ❑ DDA-4 style reports are available, if desired. The report editor supports global edits, cut, paste, user-defined pre-stored headers, on-screen editing, and more;
- ❑ Backup copies are automatically created when reports are edited. The user specifies the number of days backup copies are retained. There is literally no way to lose a report;
- ❑ Expanded strip charts have adjustable chart length for measuring signals of any length;
- ❑ Multiple user-defined screen layouts provide maximum flexibility;
- ❑ Multiple data set manipulation tools include: present vs. historical data comparisons, primary vs. secondary data comparisons, probe response comparisons, etc;
- ❑ Supports multiple data formats including: CoreStar's Native Format, ANSER[®], New ANSER, Eddynet[®], MIZ[®]-40, MIZ-27, MIZ-18, MIZ-30, VORTEX, TC5700, MAD4D, and others;

- ❑ UTOPIA interface permits direct PC-to-magneto-optical (MO) communication. ANSER or Eddynet data can be read directly from a UNIX MO disk in a PC-compatible computer;
- ❑ User-selectable screen colors;
- ❑ Enhanced printing capabilities: print up to four images per page, print black on white while viewing a color screen, user-defined margins, and more;

This manual is divided into the following key sections:

<u>Section</u>	<u>Title</u>	<u>Contents</u>
1	Introduction	General description of Analysis v4.x and technical support contact information;
2	Getting Started	System requirements, installation instructions, and installation notes;
3	Function Reference	Details of all the functions and features of the software;
4	General Analysis Functions	Details of the commons functions used during typical data analysis;
I	Index	A thorough index for finding information about a specific topic;

Technical Support

Technical support is provided to licensed customers *free-of-charge* 24-hours/day for the life-cycle of the software version. This service is limited to basic questions related to installation and use of common software features. This service does not include: building or troubleshooting component files, on-site service, training classes, etc. These services are available per quote on a case-by-case basis.

To speak with a Technical Support Representative:

724.744.4094

During normal business hours (M-F / 8AM-5PM / Eastern)

888.533.9403

After normal business hours

To FAX a Technical Support Representative:

724.744.4093

Your FAX will be answered within 24-hours during normal business hours

Email a Technical Support Representative:

support@corestar-corp.com

Section 2: Getting Started

System Requirements

To install and use EddyVISION v4.x, the computer should meet the following minimum requirements:

- PC with a 200MHz Pentium-type microprocessor (faster the better);
- 1.0 GB hard drive (larger the better);
- Floppy disk drive;
- At least 64 MB of RAM (≥ 128 MB recommended);
- VGA graphics adapter and monitor for at least 1024 x 768 resolution (1280 x 1024 resolution with a ≥ 19 -inch monitor are recommended);
- Microsoft Windows 95/98 or NT 4.0 (Windows NT 4.0 strongly recommended);
- 6X speed CD-ROM for software installation (faster the better);
- 3-button mouse;
- Printer - a Laser-type or color ink-jet are recommended;
- 10/100Base-T Ethernet network interface card (NIC) if networking is required;
- Large capacity removable media device such as ZIP (100Mb) or SuperDisk (120Mb) drives if data files are to be read from such media vs. a network link;

Conventions Used in This Manual

Typographical Conventions

A command shown as **File > New Model** indicates a selection from a menu. This example means, "From the File menu, select New Model."

Windows Conventions

CoreStar's software products and this manual use the same conventions as Microsoft Windows. If you are unfamiliar with Windows conventions such as menus, buttons, title bars, radio buttons, or check boxes, see Windows documentation.

Other Conventions

This manual also uses the conventions described below to make this manual easy to read and understand.

Mouse Clicks

- ❑ **Click** means to click the left mouse button once on the desired function;
- ❑ **Middle-click** means to click the middle mouse button once on the desired function;
- ❑ **Right-click** means to click the right mouse button once on the desired function;
- ❑ **Double-click** means to quickly click the left mouse button twice on the desired function;
- ❑ **& drag** means to click and hold down the indicated mouse button while moving the mouse to attain the desired function. For example, **Click & drag** means to hold down the left mouse button while moving the mouse;

Control & Alternate Characters

Control and alternate characters are ASCII characters that have no representation that can be printed as a single character. CoreStar products use control and alternate characters as shortcuts for invoking certain functions. To type a control or alternate character, hold down the Control (Ctrl) or Alternate (Alt) key while typing the required character or clicking with the appropriate mouse button.

For example, on the main window of Analysis, the Alternate+click mouse combination in any Lissajous independently measures the eddy current signal in that Lissajous. To use the Alternate+click combination, first hold down the Alternate (Alt) key then click the left mouse button. This manual will indicate this keystroke as Alt+click. In the same respect, if a desired function is acquired by the Control key combined with a mouse click, then it will be indicated as shown:

- ❑ **Ctrl+click**
Hold down the Control key first, then click the selection using the left mouse button;
- ❑ **Ctrl+middle-click**
Hold down the Control key first, then click the selection using the middle mouse button;
- ❑ **Ctrl+right-click**
Hold down the Control key first, then click the selection using the right mouse button;

Shift Key

CoreStar products use the Shift key in combination with other keys and/or mouse clicks to obtain certain functions. Shifted functions are activated the same as the control and alternate key combinations above. That is:

- ❑ **Shift+click**
Hold down the Shift key first, then click the selection using the left mouse button;
- ❑ **Shift+middle-click**
Hold down the Shift key first, then click the selection using the middle mouse button;
- ❑ **Shift+right-click**
Hold down the Shift key first, then click the selection using the right mouse button;
- ❑ **Shift+right-arrow**
Hold down the Shift key first, then press the right-arrow key on the keyboard;

Function Keys

Certain functions are activated by pressing one of the numbered function keys along the top of the keyboard. These keys are labeled **F1** through **F12**. In this manual, if a function key is specified, it will be shown in the format **F#** - keeping with the way in which these keys are labeled on the keyboard.

Installing EddyVISION v4.x

1. With Windows 95/98 or NT 4.0 already running, close all unnecessary applications.
2. Insert the CoreStar EddyVision32 v4.x CD-ROM disk in the CD-ROM drive.
3. If auto-insert notification is enabled for the CD-ROM drive on the PC, the installation program should start automatically. If the installation program doesn't automatically start after ≈ 30 seconds, proceed to step 4, otherwise skip to step 5.
4. Click the **Start** menu, choose **Run**, click the **Browse** button, select the appropriate drive for the CD-ROM, select the file named *Setup.exe*, click **Open**, then click **OK** on the **Run** window. The installation window shown in Figure 2-1 will appear. Click the **Next** button.

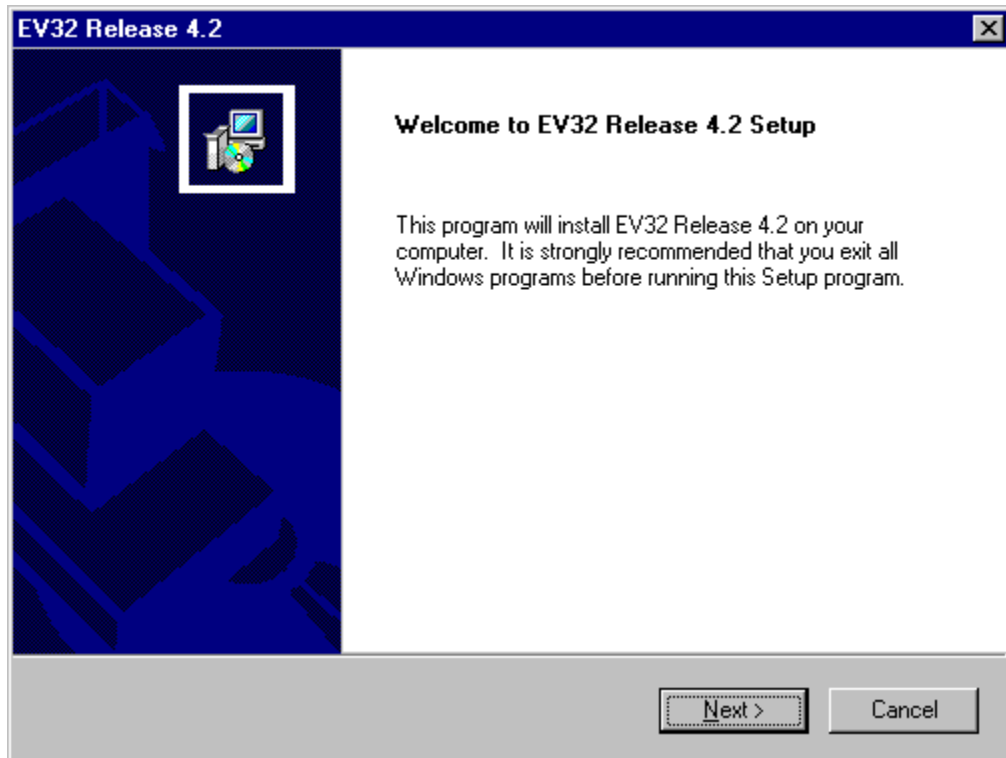


Figure 2-1. Installation Window

5. The window shown in Figure 2-2 appears. The installation program defaults to an installation directory named *c:\corestar*. Click the **Browse** button to select a different installation drive and/or directory. If the desired directory doesn't already exist, the installation program will create it. Example: *d:\corestar*. Finally, click the **Next** button to continue.

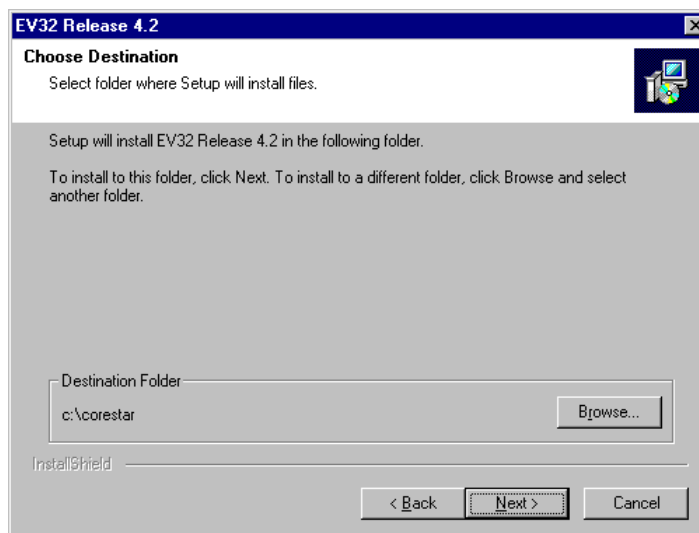


Figure 2-2. Installation Destination Window

6. The window shown in Figure 2-3 appears. Either select, enter the name for a new program folder, or accept the default name where the program shortcuts will be stored on the Start Menu. The default name for the program folder is *EV32 Release 4.x* where *x* is the current release of version *EddyVISION32 v4*.

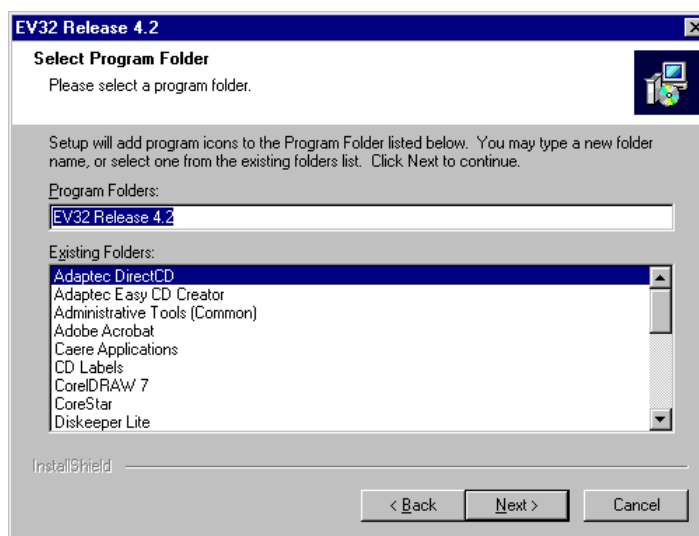


Figure 2-3. Program Folder Selection Window

- Click the **Next** button on the window shown in Figure 2-3. The installation process begins. During the installation, the status window in Figure 2-4 will show the progress of the installation.

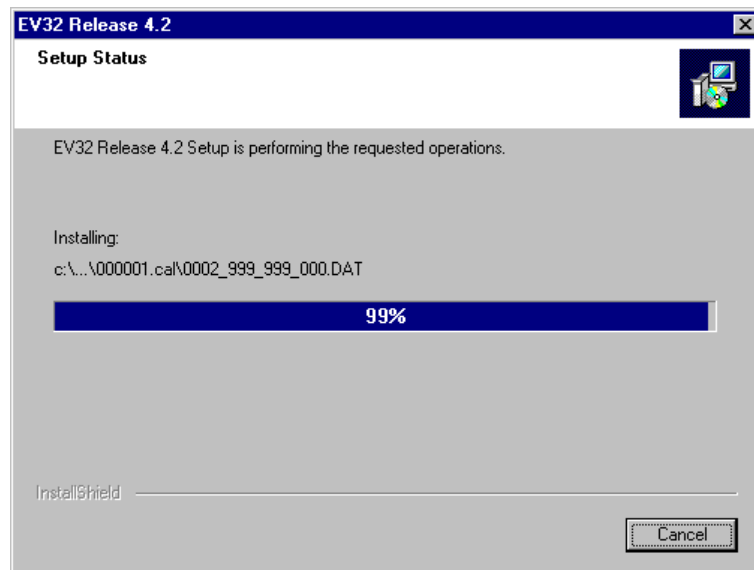


Figure 2-4. Installation Status Window

- When the status bar shown in Figure 2-4 reaches its end, the message box shown in Figure 2-5 will appear. This message box simply notifies you that the driver for the HASP™ security key is currently being installed. Once the driver is successfully installed, the message box shown in Figure 2-6 will appear. Simply click **OK** to continue. HASP is the brand name of the enable modules used with CoreStar software products that attach to the PC's printer port.

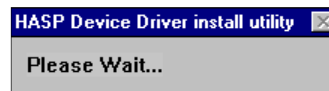


Figure 2-5. HASP Device Driver Installation In-progress Message

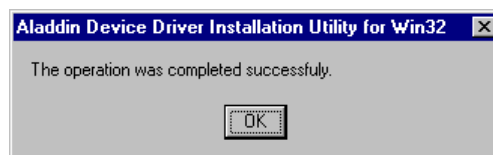


Figure 2-6. HASP Device Driver Installation Completed Message

9. Finally, the message box shown in Figure 2-7 appears indicating that the CoreStar EddyVISION32 software has been successfully installed. Click the **Finish** button to exit the installation program. You'll notice that a shortcut folder now appears on the Desktop entitled *EddyVISION32 Rel 4.x*. Double-clicking this folder reveals four (4) program shortcut icons. The installation program installs the complete CoreStar EddyVISION32 suite of eddy current related software products; however, only the programs you have enable keys for will run. If desired, you may want to place copies of desired shortcuts directly on the Desktop. With the *EddyVISION32 Rel 4.x* folder open, **right-click & drag** desired shortcuts to the Desktop and release the right button, then select **Copy Here** on the popup menu.

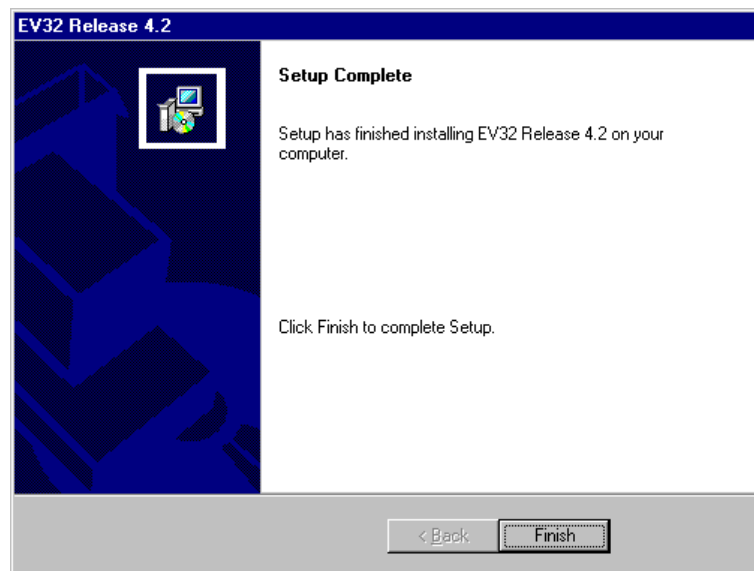


Figure 2-7. EddyVISION32 v4.x Installation Complete Message Window

10. As with any new software installation, it's a good idea to shutdown and restart the computer. This may be necessary since some of the newly installed files may not be loaded into memory until the PC is restarted depending on the operating. Depending on the PC type and operating system in use, another message box may appear suggesting that you restart the PC, if so, select **Yes**.

11. Once Windows 95/98/NT has restarted, connect any program security key to the parallel (printer) port on the PC (see Figures 3-1 & 3-2 in Section 3), then double-click the Analysis icon under the *EddyVISION32 Rel 4.x* folder on the desktop and Analysis should start.
12. If no security key is attached to the parallel port of the PC, a message box similar to the one shown in Figure 2-8 will appear after starting the Analysis program. Click **OK**, close the Analysis program, attach any valid security key, and restart the Analysis software.



Figure 2-8. Security Key Message Box

13. If you receive a *Fatal Exception Error* or similar message box when starting the Analysis program, the most likely cause is a conflicting print driver. Try deleting the printers in the Windows **Printers** dialog, one at a time, until the Analysis program starts normally and the conflicting print driver is identified. Under Windows 98, the HP 950 inkjet print driver is known to cause this problem. It is reasonable to assume that other print drivers could cause the problem as well. Be sure that you have the appropriate installation disks to reinstall the desired non-conflicting printers before deleting any printers in the **Printers** dialog.

Installation Note

If the computer system has the Adobe® Type Manager installed, uninstall it. This program overrides the font handling functions of Windows, and may cause problems when printing from CoreStar software products, especially products that use symbol fonts, i.e., tubesheet maps, symbols in headers or reports, etc.

Electronic Manual

This manual as well as manuals for all program modules are included in their entirety on the CoreStar EddyVISION32 Installation CD-ROM disk. They're provided in Microsoft® Word 97 format. If you do not have Word 97, you will need to install the free Microsoft Word 97 Viewer on your system. The Microsoft Word Viewer enables the user to open, view, and print Microsoft Word 97 document files. The free Microsoft Word Viewer is included on the CD-ROM disk as well.

To install the free Microsoft Word Viewer:

1. Place the CoreStar EddyVISION32 Installation CD-ROM disk in the CD-ROM drive. If the install program automatically starts, wait for the installation window to appear, then click **CANCEL** to stop the install operation.
2. Click **Start > Run > Browse** and select the CD-ROM drive.
3. Open the directory on the CD-ROM called *X:\MSVIEWER*, where "X" is the letter of your CD-ROM drive.
4. Select the file named *WDVIEW97.EXE*, click **Open**, then click **OK** on the **Run** dialog. Follow the instructions on the screen to install the free Microsoft Word Viewer.

Section 3: Function Reference

Connecting the Security Key

In order to start and use the Analysis program, a valid Analysis HASP™ security key must be connected to your computer's printer port. Figure 3-1 shows what the security key looks like. These keys are fabricated in such a way that more than one key can be connected in series if you wish to use other CoreStar software products concurrently.

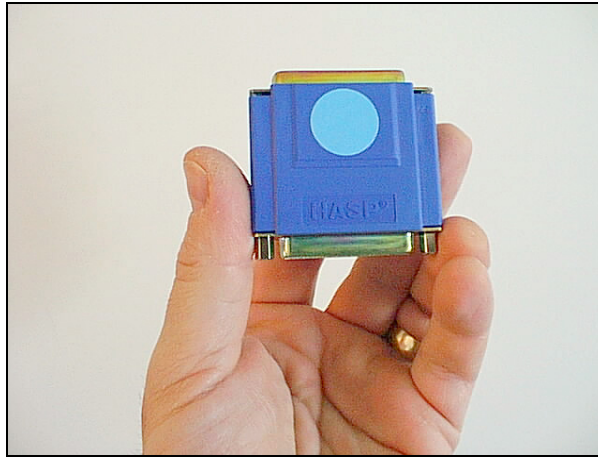


Figure 3-1. Security Key

Connect the key(s) to the parallel port as shown in Figure 3-2. If a printer is to be used, connect the printer cable to the back of the key.



Figure 3-2. Attaching the Security Key to the PC

Starting the Analysis Software

To start the **Analysis** software, **double-click** the **Analysis** icon. After the program starts, the main window of the **Analysis** program shown in Figure 3-3 will appear.

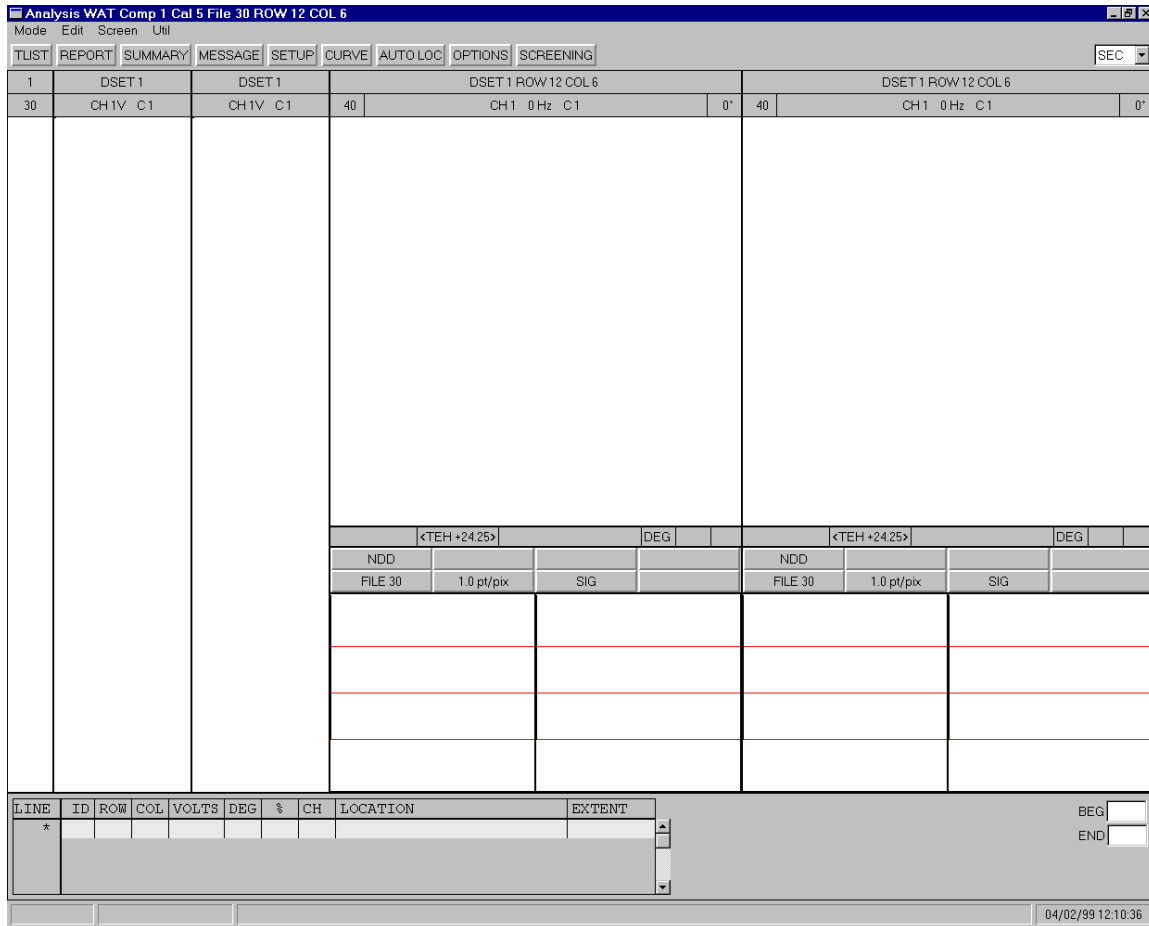


Figure 3-3. The Main Analysis Window

Description of the Main Window

All functions of the Analysis software are accessed from the main window shown in Figure 3-3. Various functions are accessed via pull-down menus along the top left of the window or the specialized buttons just below the pull-down menus. This window is where the analyst spends the majority of time while analyzing eddy current data. Figure 3-4 points out and offers descriptions of the different areas of the main window. Review the figure in order to familiarize yourself with the main window.

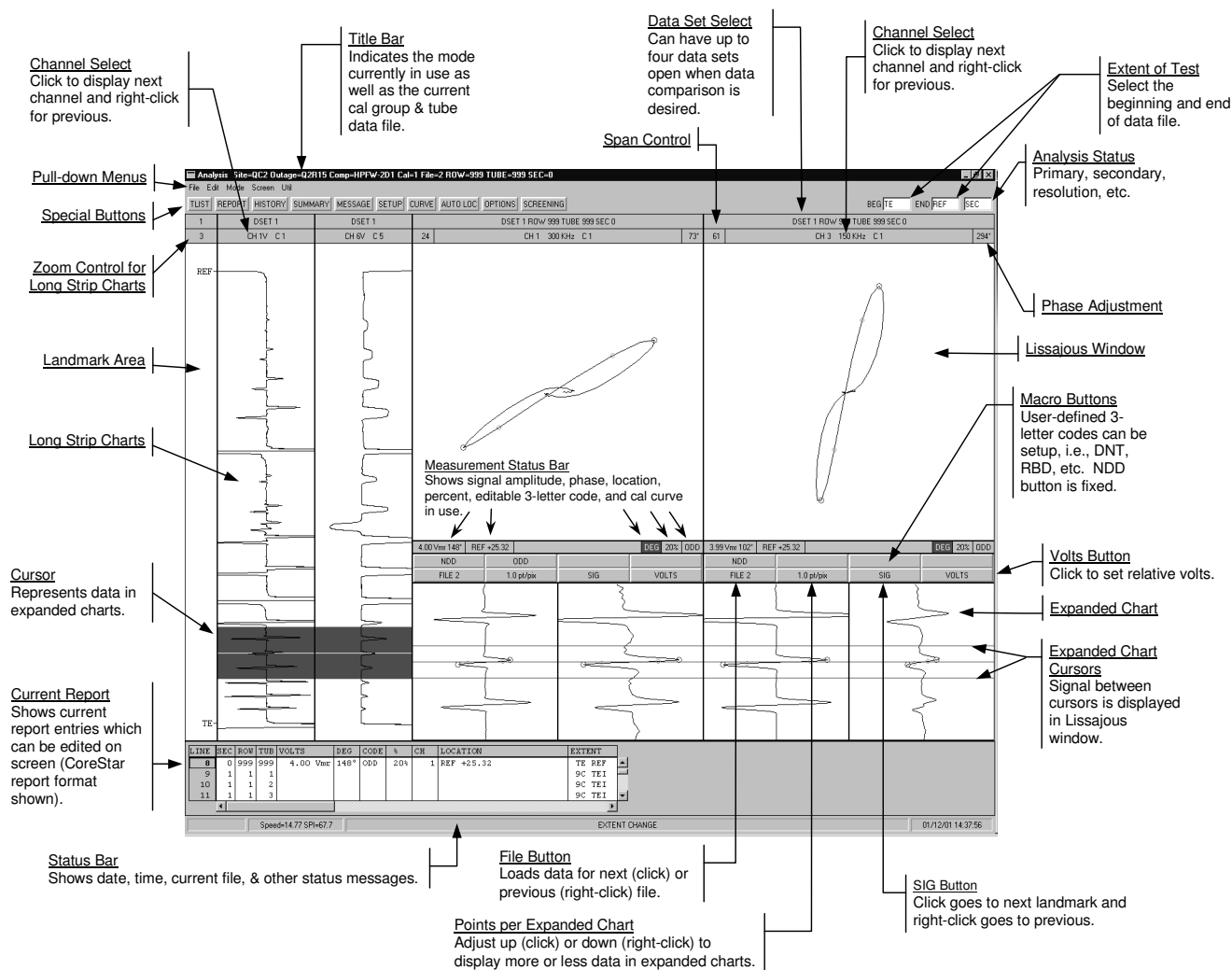


Figure 3-4. Parts of the Main Analysis Window

Menus - Main Window

File Menu

As shown in Figure 3-5, the **File** menu contains four (4) choices. They are: **Print Setup ...**, **Print Screen (F12)**, **Force Page Eject**, and **Exit ...**.

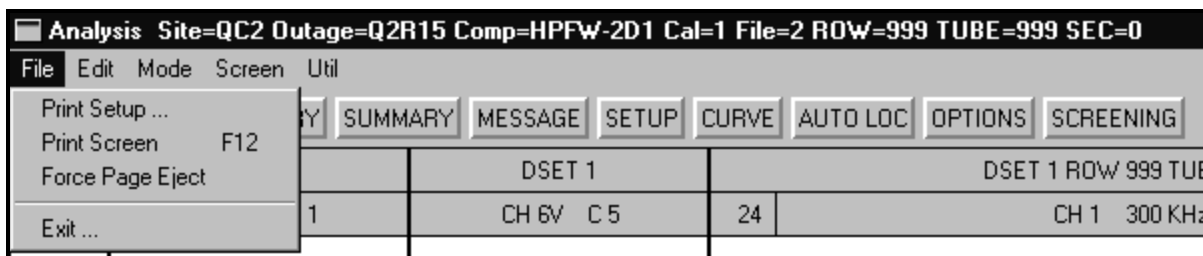


Figure 3-5. File Menu

- ❑ **File > Print Setup ...:** As the name implies, selecting the **File > Print Setup ...** menu item in Figure 3-5 causes the typical Windows® Print window to appear as shown in Figure 3-6. Using this window, the printer's parameters can be set as desired. In order to access other printer settings, i.e., landscape, portrait, etc., select the **Properties** button. Once the print parameters are set as desired, all successive screen dumps will print based on these settings until changed.

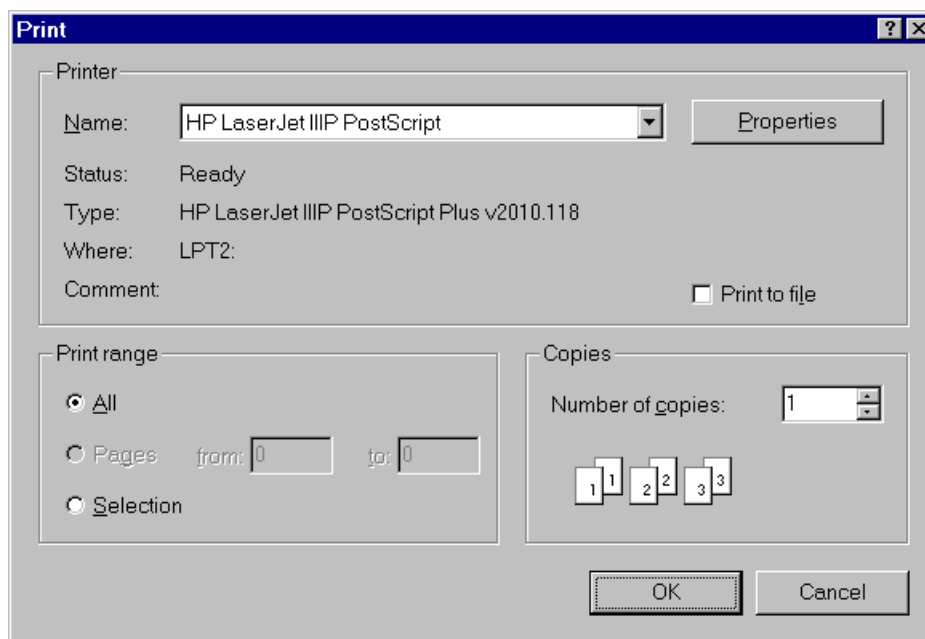


Figure 3-6. Print Setup Window

- ❑ **File > Print Screen (F12):** As the name implies, selecting the **File > Print Screen (F12)** menu item in Figure 3-5, causes the system to print the currently displayed analysis window to the default printer. The layout of the resulting printout is determined by other settings that will be covered later in this section (*see Options Button*). The driver for the selected printer must be installed on the computer for **Print Screen** to function properly. The shortcut key on the keyboard for **Print Screen** is the **F12** function key.
- ❑ **File > Force Page Eject:** Selecting the **File > Force Page Eject** menu item in Figure 3-5 causes all current graphics being held in the computer's memory to be sent immediately to the default printer. Later in this section, you'll learn how to set the print function for one, two, three, or four graphics per page (*see Options Button*). If the print function is set for more than one graphic per page, graphics are held in memory each time the **Print Screen** function is selected. When the specified number of graphics equals the number selected per page, the printout is then sent to the printer. The **Force Page Eject** function allows the user to print the graphics currently stored in memory regardless of the number of graphics per page setting.
- ❑ **File > Exit ...:** Selecting the **File > Exit ...** menu item in Figure 3-5 displays a warning message box asking you to confirm your desire to close the Analysis software. Clicking **Yes** closes the program while clicking **No** leaves the program open. Clicking the 'X' button in the upper right corner of the window immediately closes the program with no warning.

Edit Menu

As shown in Figure 3-7, the **Edit** menu contains three choices. They are: **Defect List ...**, **Landmarks ...**, and **Screens ...**.

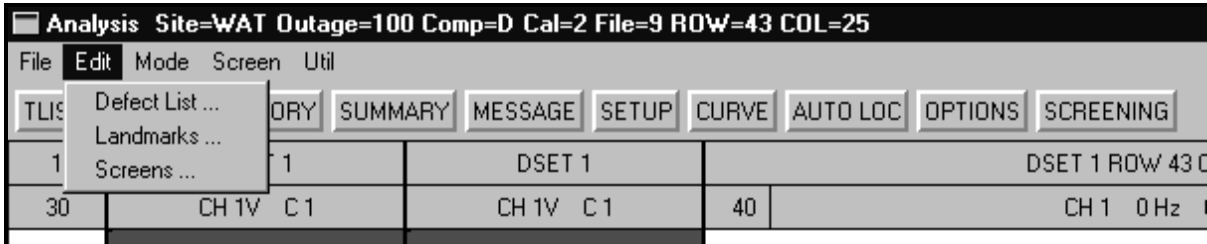


Figure 3-7. Main Window Edit Menu

- ❑ **Edit > Defect List ...:** Selecting the **Edit > Defect List ...** menu item causes the dialog shown in Figure 3-8 to appear.

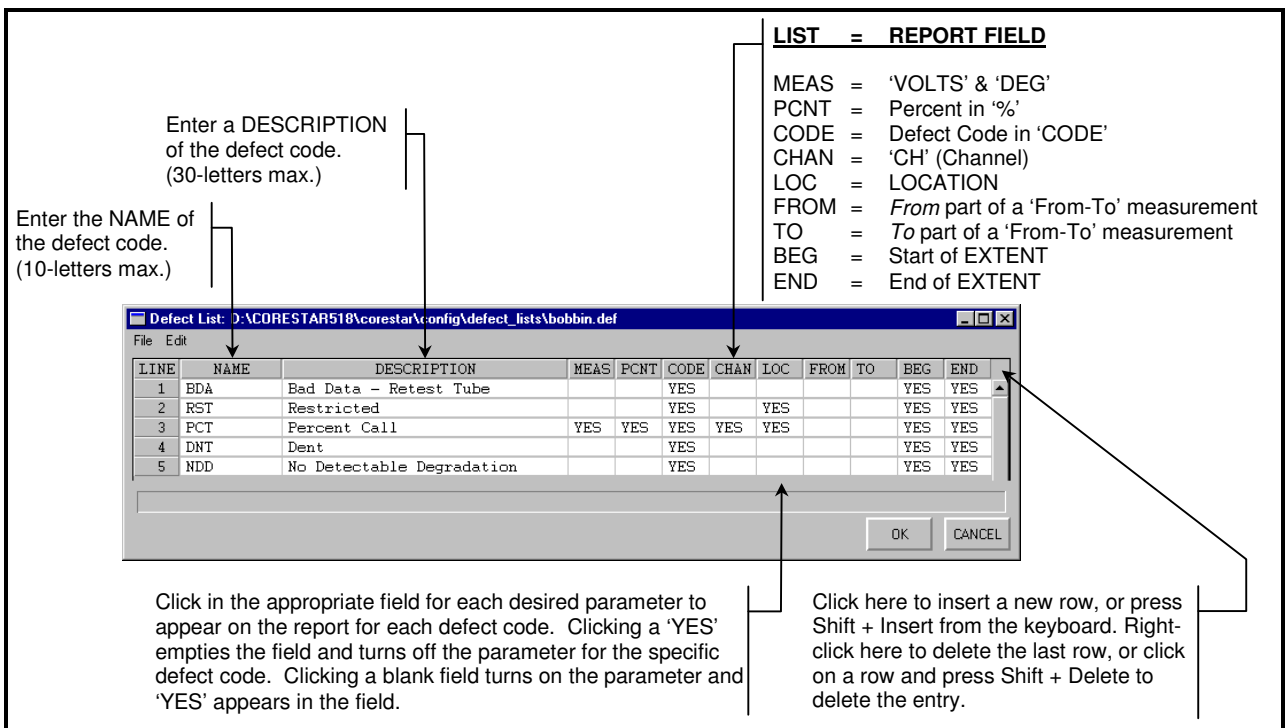


Figure 3-8. Defect List Dialog

Using this interface, user-defined defect codes may be entered and/or edited by the analyst. If a parameter is turned on (YES) for a specific defect code, that parameter will appear on the report when a call is made using that defect code. Referring to Figure 3-8, if a 'BDA' call is made, the defect code (BDA) will appear in the CODE column on CoreStar-type reports or in the '%' column of other report types, i.e., DDA-4, along with

the BEG and END (EXTENT) of test. The number of defect codes that can be entered in this dialog is unlimited. Once defect codes are entered, they never have to be entered again. To edit an existing defect code, simply type over and/or toggle the appropriate parameters. To delete a defect code entry, click the row containing the defect code of interest, and press **Shift+Delete** from the keyboard. To insert a new row, press **Shift+Insert** from the keyboard or click the gray box as indicated in Figure 3-8. The **NAME** of the defect code is limited to a maximum of 10-characters; however, the **NAME** should be restricted to the traditional 3-letter code to accommodate the space provided in most eddy current analysis report types.

Figure 3-9 shows the resulting report entries (CoreStar-type report) for each of the defect codes shown in Figure 3-8. Compare the figures and you'll see how the defect codes work based on the parameters that are enabled for each defect code in the list.

LINE	SEC	ROW	TUB	VOLTS	DEG	CODE	%	CH	LOCATION	EXTENT
8	1	1	1			BDA				9C TEI
9	1	1	2			RST			7C +12.52	7C TEI
10	1	1	3	1.22 Vmr	38°	PCT	94%	1	4BF -0.24	9C TEI
11	1	1	3			DNT				9C TEI
12	1	1	4							9C TEI

Figure 3-9. Partial Report Editor Window With 'Defect List' Codes
(CoreStar-type Report Shown)

The **File** menu on the **Defect List** window has three (3) items as shown in Figure 3-10.

E	DESCRIPTION	MEAS	PCNT	CODE	CHAN	LOC	FROM	TO	BEG	END
	No Detectable Degradation	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Multiple Axial Indication	YES	YES	YES	YES	YES	YES	YES	YES	YES

Figure 3-10. File Menu on the Defect List Dialog

Multiple defect list files (.def) may be 'built' and saved for different applications and future use. The following **File** functions on the **Defect List** dialog are provided for this purpose.

- ❑ **Edit > Defect List ... > File > Open ...:** Allows the user to open an existing defect list file for use.
- ❑ **Edit > Defect List ... > File > Save:** Allows the user to save any changes made to the current working defect list. This function uses the same file name of the current defect list file in use. Making changes to a defect list, and clicking **OK** has the same effect as the **File > Save** function.
- ❑ **Edit > Defect List ... > File > Save As...:** Allows the user to give a defect list file any desired name. In addition, the user can select any target drive or directory in which to save a defect list file. Unless otherwise specified, all defect list files are stored in a subdirectory named *x:\corestar\config\defect_lists*, where 'x' is the drive on which the CoreStar Analysis software is installed.

The **Edit** menu on the **Defect List** window has one (1) items as shown in Figure 3-11.

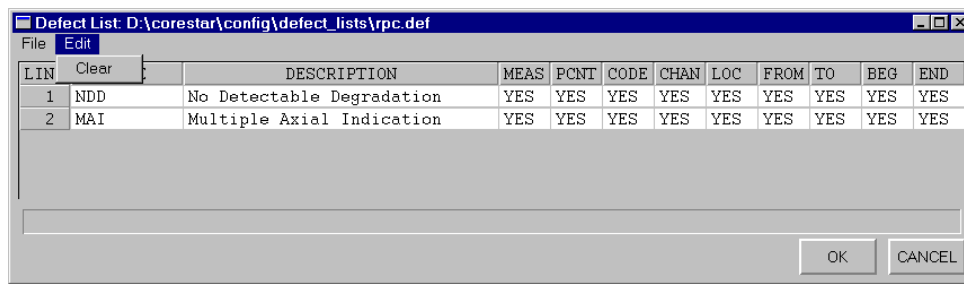


Figure 3-11. Edit Menu on the Defect List Dialog

- ❑ **Edit > Defect List ... > Edit > Clear:** This function clears or deletes all entries on the currently displayed defect list. If you clear all entries using this function, and decide afterwards that you didn't want to delete all the entries, simply click the **CANCEL** button. The **CANCEL** button serves as an undo function; however, once the **OK** button is clicked, any changes are saved to the currently opened defect list file.

There are two methods to access the defect codes from the current **Defect List** during analysis. One method is to assign selected codes to the three (3) programmable defect code buttons at the bottom of each Lissajous window. To assign a code to one of the buttons, **Shift+click** a button until the desired defect code is displayed. **Shift+right-click** on a button to display the previous defect code in the **Defect List**. Figure 3-12 shows the four (4) defect code buttons for a given Lissajous window setup for NDD (fixed), DNT, BDA, and PCT. Although NDD is fixed on the first button, you must include NDD on the defect list if you intend to use this button. The reason is that you must indicate which parameters you desire to be reported when an NDD call is made. Clicking NDD not only enters an NDD call to the eddy current report, but it also advances to and loads the next data file from the TLIST.

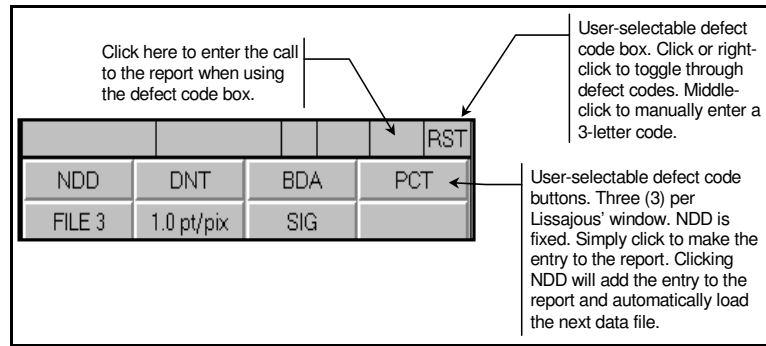


Figure 3-12. The Defect Code Buttons Below a Typical Lissajous Window

Once you have the defect codes setup on the desired buttons, all you do to make a call is click the appropriate button, and that entry is added to the report with the fields you specified in the **Defect List** for that code. Clicking NDD will not only make the report entry, but it will also load the next tube file automatically. Similarly, **right-clicking** any user-defined defect code button will add the specified report entry, and load the next data file automatically provided *Next Tube on RB* is enabled in the **Options** dialog (see *Options Button later in this section*). This function is handy for BOP-type analysis where only the largest and/or deepest flaw is desired for each tube regardless of the number of flaws actually in the tube.

The other method of selecting defect codes for a given analysis call is to **click** or **right-click** the upper-right box shown in Figure 3-12 until the desired defect code appears. The defect code RST is shown as an example in the figure. Once the desired defect code is displayed, **click** in the box adjacent to the left to enter the call to the report. This method is handy if it is desired to see the defect code on graphic print-outs. Finally, you can **middle-click** the defect code box, and simply type in a 3-letter code of your choice; however, the defect code must exist in the defect list.

- **Edit > Landmarks ...:** Selecting **Landmarks ...** from the **Edit** menu in Figure 3-7 causes the window in Figure 3-13 to appear. The window contains two tabs named **User Defined** and **System**. Selecting the **System** tab as shown in Figure 3-13, displays the landmarks within the component file (.cmp) selected in the **SUMMARY** window. A component file is created by the MakeComp software program which contains not only the tubesheet details of the component, but many other parameters including a landmark table.

NUM	NAME	POS	POINT	DIST	TYPE	LEG	FIRST	LAST	ANGLE
1	HTE	0.00	-1	0.00	TEH	INLET	1	32767	0.00
2	HTS	21.03	-1	21.03	TSH	INLET	1	32767	0.00
3	H01	29.40	-1	29.40	SP	INLET	1	32767	0.00
4	H02	49.40	-1	49.40	SP	INLET	1	32767	0.00
5	H03	73.52	-1	73.52	SP	INLET	1	32767	0.00
6	H04	117.40	-1	117.40	SP	INLET	1	32767	0.00
7	H05	161.40	-1	161.40	SP	INLET	1	32767	0.00
8	H06	205.40	-1	205.40	SP	INLET	1	32767	0.00
9	H07	249.40	-1	249.40	SP	INLET	1	32767	0.00
10	H08	293.40	-1	293.40	SP	INLET	1	32767	0.00
11	AV1	0.00	-1	313.82	AVB	UBEND	10	32767	65.00
12	AV2	0.00	-1	-1.00	AVB	UBEND	21	32767	26.00
13	AV3	0.00	-1	-1.00	AVB	UBEND	21	32767	-26.00
14	AV4	0.00	-1	322.45	AVB	UBEND	10	32767	-65.00
15	C14	293.40	-1	342.86	SP	OUTLET	1	32767	0.00
16	C13	249.40	-1	386.86	SP	OUTLET	1	32767	0.00
17	C12	205.40	-1	430.86	SP	OUTLET	1	32767	0.00
18	C11	161.40	-1	474.86	SP	OUTLET	1	32767	0.00
19	C10	139.40	-1	496.86	BAF	OUTLET	1	32767	0.00
20	C09	128.40	-1	507.86	BAF	OUTLET	1	32767	0.00

Figure 3-13. Landmark's Window (System Tab)

The table shown in Figure 3-13 only allows the user to view the current system landmarks; however, the MakeComp software must be used for editing if required. For more information on creating landmark tables, see the technical reference manual for the MakeComp software. These system landmarks are used when **Auto Locate** is enabled. They are also available when **Auto Locate** is disabled, and may be set manually.

Selecting the **User Defined** tab on the window shown in Figure 3-13 causes the table shown in Figure 3-14 to appear.

NUM	NAME	POS	POINT
1	REF	0.00	11.891
2	TE	12.00	10.925
3		0.00	-1

Figure 3-14. Landmark's Window (User-defined Tab)

Here, the user can enter a list of manual landmarks as needed. For example, the landmark *REF* refers to the reference end of a calibration standard which begins at *0.00-inches*. The far tube-end of the standard is referred to as *TE*, which is *12.00-inches* from the *REF* landmark. The **POINT** column changes automatically as a landmark is set in the landmark area of the main screen (Figure 3-4). Any number of user-defined landmarks may be added. To insert a landmark on an existing **User Defined** list, position the cursor on the landmark where you want the row inserted and press **Shift + Insert**. To add a new entry to the bottom of the list, press **Enter** after each **NAME** and **POS** (distance) entry and a new row will automatically appear, or simply click the gray box shown in Figure 3-14. When entering user-defined landmarks, remember that each landmark builds in distance from the previous landmark. For example, if the next landmark at the bottom of the list in Figure 3-14 was *REF2* located *12-inches* from *TE*, *REF2* would be entered as the **NAME** and the **POS** value would be *24-inches* – the total distance from *REF* to *REF2*. The **OK** and **CANCEL** buttons work as update and undo functions, respectively.

The actual use of landmarks, both **Auto-Locate** and **Manual Locate**, will be discussed later in this section.

- ❑ **Edit > Screens ...:** Selecting **Screens ...** from the **Edit** menu in Figure 3-7 causes the window in Figure 3-15 to appear. This dialog allows the user to setup a total of eight (8) display screens. Each screen is given a user-defined name, which appears under the **Screen** menu on the main window discussed in the next topic. Review Figure 3-15 for the details of each setting. The analysis software must be restarted for newly entered screen layouts to take effect.

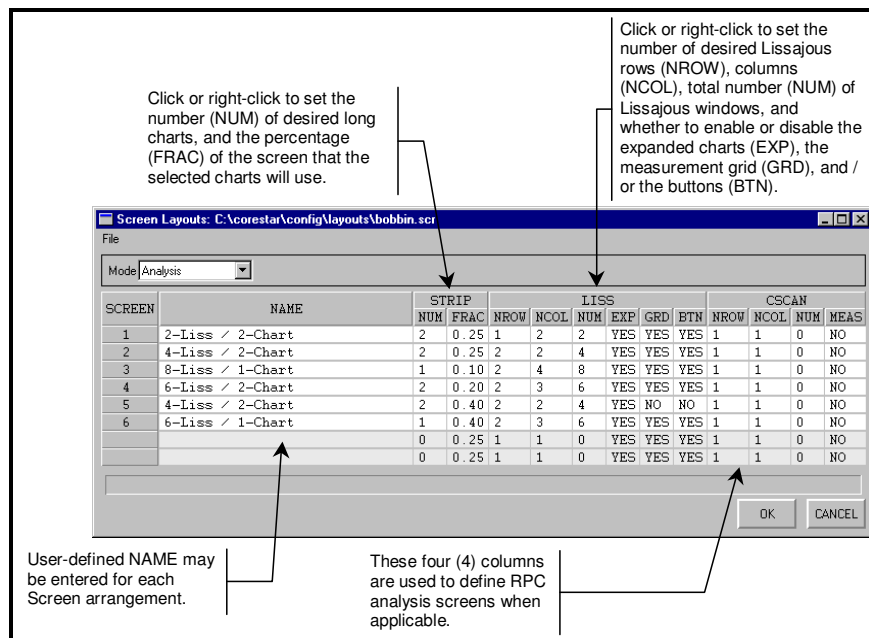


Figure 3-15. Screen Layouts Window

The **Mode** combo-box shown in Figure 3-16 allows the user to setup user-defined screens for each CoreStar software product. For example, the **Analysis** software can have up to eight user-defined display screens, the **Test** (acquisition) software can have up to eight user-defined display screens, etc.

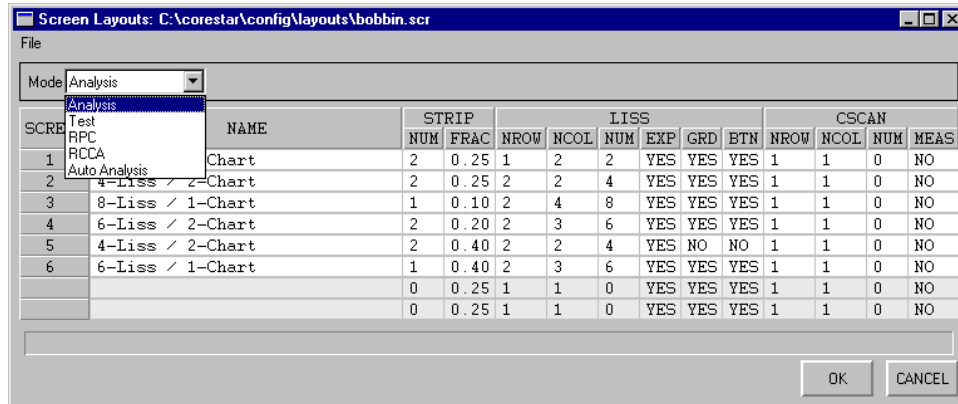


Figure 3-16. Screen Layouts Window - Mode Drop-down Box

As shown in Figure 3-17, the **Screen Layouts** window has only one menu named **File**. **File > Open ...** allows the user to load previously saved screen layout files (.scr). **File > Save** simply saves the current **Screen Layout** settings to the currently opened .scr file. Finally, the **File > Save As ...** function allows the user to give the .scr file a new name. The settings saved in a .scr file include settings for all **Modes** (see Figure 3-16).

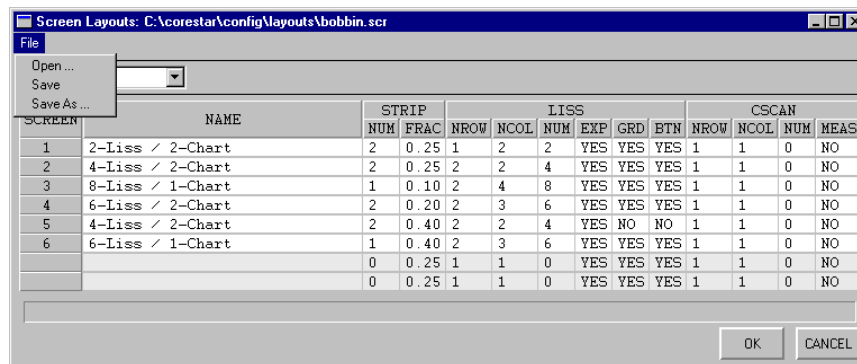


Figure 3-17. Screen Layouts Window – File Menu

The screen combinations are practically unlimited due to the choices available and built-in flexibility. Figure 3-18 shows just a couple screen layout possibilities. Care should be exercised when choosing screen layouts. Depending on the purpose, too many windows and/or charts can become confusing rather than beneficial; however, printout requirements can be met in most cases by a single screen dump versus two screen dumps as traditionally done in the past. Experiment with the different screen layout options until you reach a good balance between an efficient analysis screen and a useful printout.

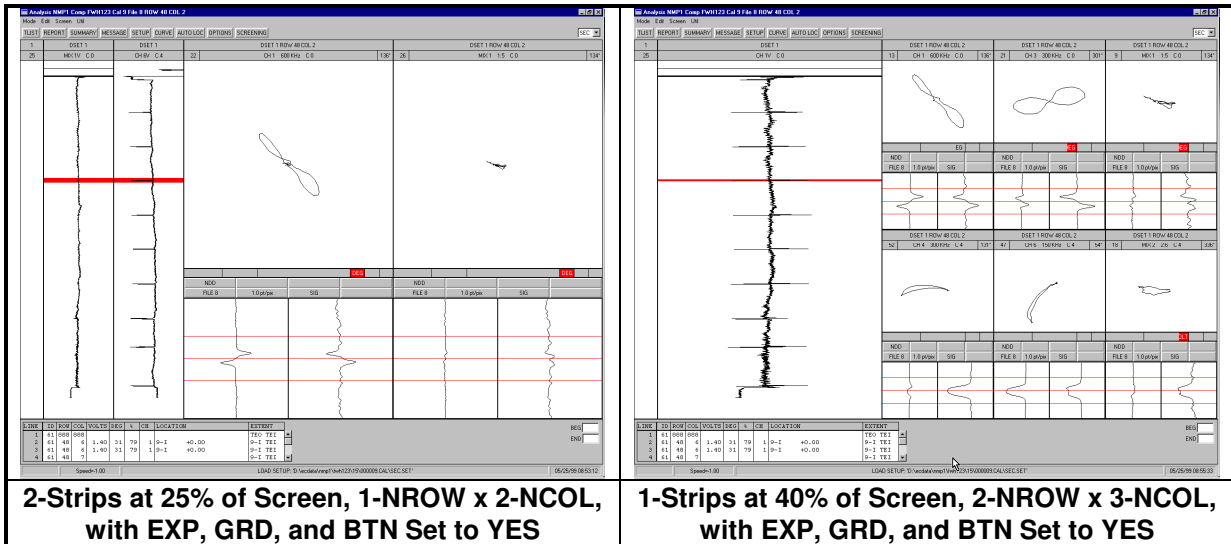


Figure 3-18. Screen Layout Examples

Mode Menu

As shown in Figure 3-19, the **Mode** menu contains five choices of operation. They are: **Test Mode**, **Analysis Mode**, **RPC Mode**, **RCCA Mode**, and **Auto Mode**.

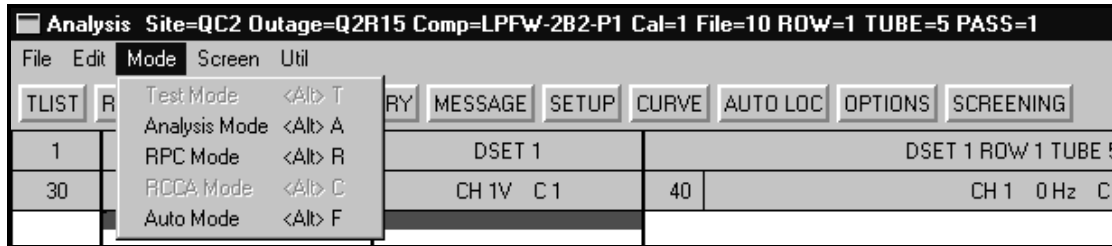


Figure 3-19. Mode Menu

- ❑ **Test Mode:** Select for data acquisition.
- ❑ **Analysis Mode:** Select for standard (manual) bobbin data analysis.
- ❑ **RPC Mode:** Select for rotating probe coil data analysis.
- ❑ **RCCA Mode:** Select for rod control cluster assembly data analysis.
- ❑ **Auto Mode:** Select for rule-based auto-analysis.

To access the different modes of operation, a security key is required for each. The security key(s) connected to the PC will determine which modes are enabled. For example, in Figure 3-19, the Analysis, RPC, and Auto modes are not dimmed. This means that the security key currently in use allows for only these three (3) modes of operation.

Screen Menu

As shown in Figure 3-20, the **Screen** menu contains eight choices. They are by default, **Screen 1** through **Screen 8**. Note that each selection has a corresponding shortcut key, i.e., **F1** through **F8**, respectively. Pressing one of the shortcut keys from the keyboard is the same as making the selection from the **Screen** menu – plus, it's faster. These selections are simply different user-defined screen layouts with more or less Lissajous windows, long strip charts, buttons on/off, expanded chart on/off, etc. Once each screen is setup, it retains those settings until changed by the user. Review the previous topic **Edit > Screens ...** for setting up user-defined screen layouts. As screen layouts are defined by the user, the name given to each layout will appear in the **Screen** menu; however, the analysis software must be restarted for this to occur. If no screen layout is defined for a given screen selection, a warning beep will sound.

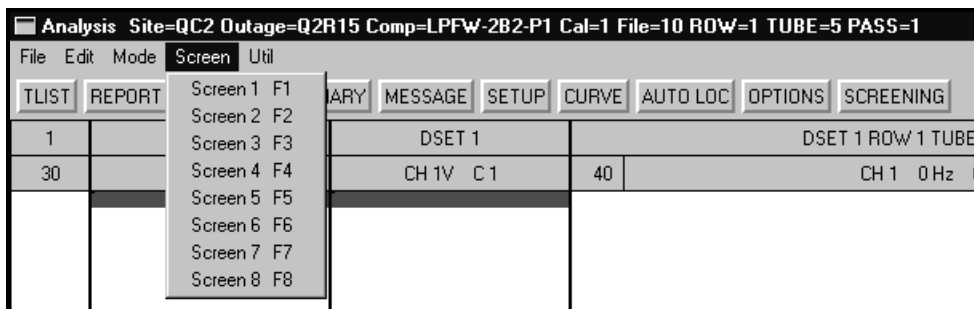


Figure 3-20. Screen Menu

Util Menu

As shown in Figure 3-21, the **Util** menu contains seven (7) items. **Util** is an abbreviation for *Utilities*. Each menu choice is explained in detail in the following paragraphs.

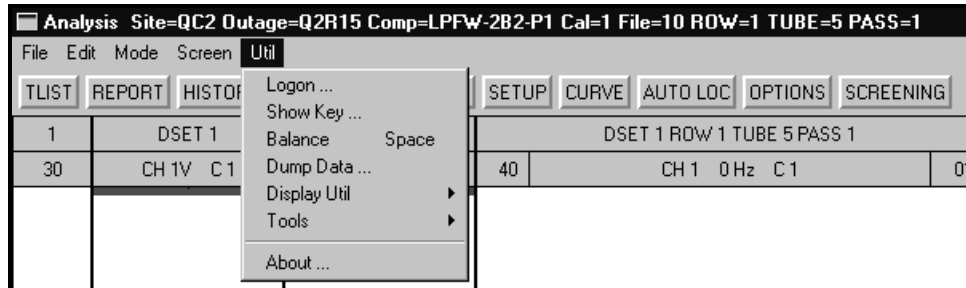


Figure 3-21. Util Menu

- ❑ **Util > Logon ...:** Selecting **Logon ...** from the **Util** menu displays the window shown in Figure 3-22 (a). Logging-on is an option and is not necessary; however, it provides a way for the analyst's **User ID** to be automatically entered in the eddy current report for each tube that the user analyzes. This additional column of information, as well as many others, is only visible if the CoreStar report format is selected. Selecting various report formats will be discussed later in this section under the topic *REPORT Button*. To make a selection, simply click the **User ID** drop-down box as shown in Figure 3-22 (b), and click on the desired **User ID**. The remaining fields of the **Logon** dialog will be filled in automatically. All users' information is retained in a file (.tbl) located in the `\corestar\tables\users` subdirectory. This file is accessed and edited via the *EddyAdmin* utility discussed later in this topic. The **User ID's** shown in Figure 3-22 are traditionally used during the analysis of steam generator eddy current data. They are comprised of the first letter of the user's last name in conjunction with the last four (4) digits of the user's SSN (social security number). Regardless, **User ID's** can be anything the user desires.

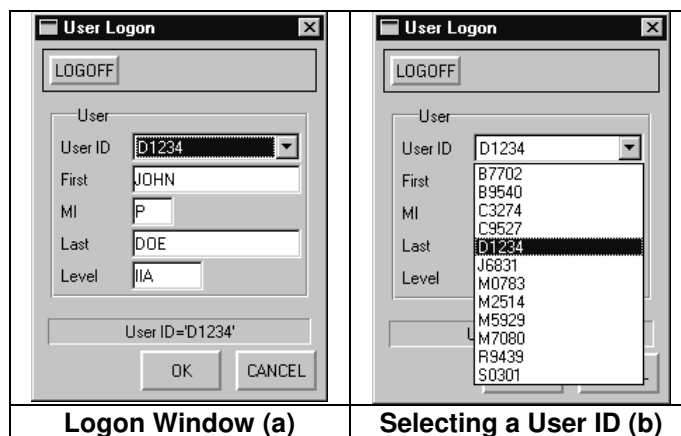


Figure 3-22. Logon Window

- ❑ **Util > Show Key ...:** Selecting the **Util > Show Key ...** menu item in Figure 3-21, causes the system to examine the HASP[®] security key(s) currently connected to the computer. Information about the key(s) is collected and reported in a message box similar to the one shown in Figure 3-23. Security key information includes the **Key ID** number(s), the **Timeout** date(s), and the CoreStar software (**Supported modules**) that can be used with each key. This information should be checked if an error message box, similar to the one shown in Figure 2-8, appears.

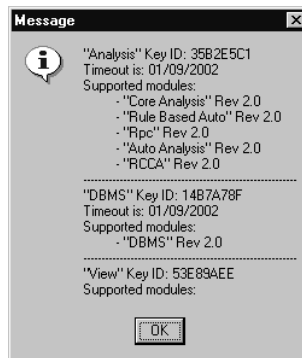


Figure 3-23. Show Key Message Box

If the software you have keys for won't run and a '*No key attached*' or similar message appears after starting the software, try the following possible solutions in the order they are listed:

1. **Check the Timeout date(s):** Click **Util > Show Key ...** on the menu bar and check the **Timeout** date(s). This feature protects the software from unauthorized use after the **Timeout** date has passed. A file named *magic_cookie* located under the `\corestar\bin` subdirectory enables or disables all CoreStar security keys in circulation at any given time based on the **Timeout** date(s). If the **Timeout** date(s) has expired, notify CoreStar, and a new *magic_cookie* file will be sent. This feature protects the licensee if a key(s) is lost or stolen. If a key is lost or stolen, the licensee may obtain a new key(s) and *magic_cookie* file at cost - plus shipping; otherwise, the replacement cost will be the full software price. Updated *magic_cookie* files are automatically emailed to licensed users at the beginning of each year or when new software is purchased. It's a good idea to check the **Timeout** dates of all keys prior to the start of each job. If the **Timeout** dates are imminent, notify CoreStar, and a new *magic_cookie* file will be sent - typically by email. Simply copy the new *magic_cookie* file to the `\corestar\bin` subdirectory. If a security key message still appears after verifying that the **Timeout** date(s) hasn't passed, proceed to step 2.
2. **Re-install the HASP driver:** On the Windows task bar, click **Start > Run > Browse**. Select the file named `\corestar\bin\hinstall.exe` and click **OK**. On the **Run** dialog, type a space then `/i` at the end of the file name. The entry should appear as `x:\corestar\bin\hinstall.exe /i`, where *x*: is the name of the drive where the CoreStar EddyVISION32 software is installed. Finally, click **OK** on the **Run** dialog. Once the HASP driver is reinstalled, a confirmation message will appear. Afterwards, restart the CoreStar software. If a security key message still appears, proceed to step 3.
3. **Obtain a Replacement Key(s):** Each security key contains a permanent lithium battery, which should last for several years; however, if the battery dies, a new key is required. Once the 'dead' key is returned to CoreStar, it will be replaced with a new key at no cost - except for shipping.

- ❑ **Util > Balance:** Selecting the **Util > Balance** menu item in Figure 3-21, causes the system to balance or null the eddy current data displayed in the Lissajous window. The software balances the data based on the data point where the centerline of the cursor is located. The shortcut key on the keyboard for **Balance** is the space bar as shown in Figure 3-21. Alternatively, **right-clicking** in any Lissajous will balance the data as well.
- ❑ **Util > Dump Data ...:** The **Util > Dump Data ...** menu item in Figure 3-21 displays the dialog shown in Figure 3-24. Using this interface, selected segments of eddy current data for a particular channel can be saved in binary file format. Files are saved to the *x:\corestar\data_dumps* subdirectory with the extension *.dmp*, where 'x' is the drive on which the CoreStar analysis software is installed. This function and the resulting files are primarily a research tool and serve no practical application for typical eddy current analysis. For more information regarding the **Dump Data ...** feature, contact the Irwin, PA office.

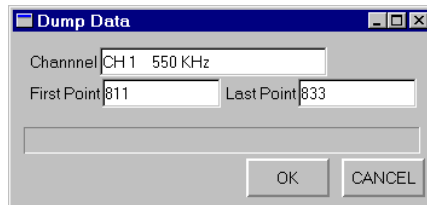


Figure 3-24. Dump Data Window

- ❑ **Util > Display Util:** Selecting the **Util > Display Util** menu item in Figure 3-25 causes a fly-out menu to appear. Each function has a corresponding shortcut key as shown. Shortcut keys or hotkeys are ideal for quick access to desired functions in many Windows-type programs. It is strongly recommended that the hotkeys be used to access these features since many of them are dynamic (active) during their use.

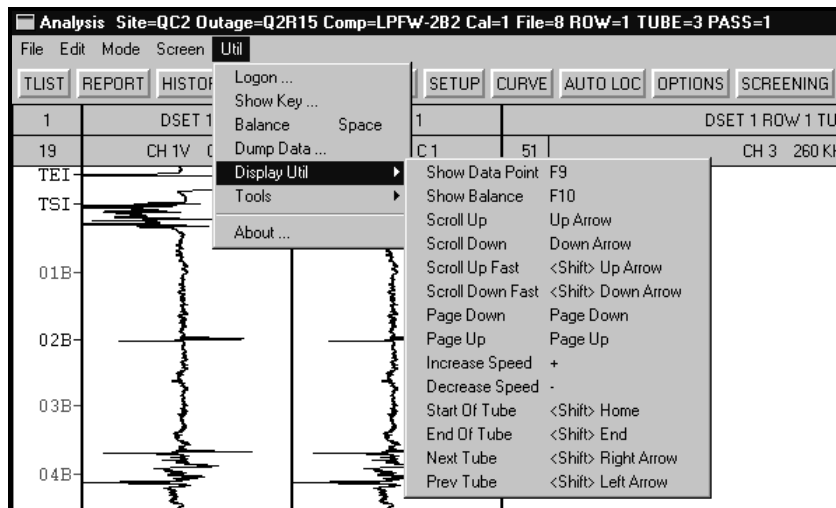


Figure 3-25. Display Util Fly-out

Most of these functions are self-explanatory; however, an explanation for each one is provided below.

- **Util > Display Util > Show Data Point (F9):** With the cursor positioned at a given location along an eddy current data file, activating this function will display the actual data point in the **Status Bar** at the bottom of the main analysis window. If the cursor is then moved to a different point and the **Show Data Point** function is activated again, it displays the data point of the current location and a delta value (number of data points from the previous data point).
- **Util > Display Util > Show Balance (F10):** Selecting the **Show Balance** function displays the **Balance** dialog shown in Figure 3-26. Each percentage listed represents the amount of offset compensation the balance function applied to each X and Y component per channel (including mixes) in order to center the data. A perfectly balanced condition, yet extremely rare, would show all '0%' values. This is a handy tool for checking the adequacy of a probe and test frequency combination. At the bottom of the window, the 'Center Point' value is the data point at which the last balance function was performed.

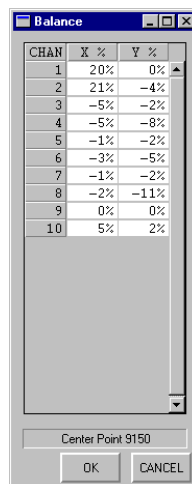


Figure 3-26. Balance Dialog

- **Util > Display Util > Scroll Up (Up Arrow):** Selecting the **Scroll Up** function by pressing and holding down the **Up Arrow** key on the keyboard causes the cursor on the long strip charts to move in an upward direction along the eddy current data at a scroll rate set by the **Increase / Decrease Speed** function discussed below.
- **Util > Display Util > Scroll Down (Down Arrow):** Selecting the **Scroll Down** function by pressing and holding down the **Down Arrow** key on the keyboard causes the cursor on the long strip charts to move in a downward direction along the eddy current data at a scroll rate set by the **Increase / Decrease Speed** function discussed below.

- **Util > Display Util > Scroll Up Fast (Shift + Up Arrow):** Selecting the **Scroll Up Fast** function by pressing and holding down the **Shift + Up Arrow** keys on the keyboard causes the cursor on the long strip charts to move in an upward direction along the eddy current data at an increased rate 10-times faster than the scroll rate.
- **Util > Display Util > Scroll Down Fast (Shift + Down Arrow):** Selecting the **Scroll Down Fast** function by pressing and holding down the **Shift + Down Arrow** keys on the keyboard causes the cursor on the long strip charts to move in a downward direction along the eddy current data at an increased rate 10-times faster than the scroll rate.
- **Util > Display Util > Page Down (Page Down):** Selecting the **Page Down** function by pressing the **Page Down** key on the keyboard causes the eddy current data in the long strip charts to move in an upward direction by one chart length. The long strip chart length is set using the **Zoom Control** above the **Landmark Area** on the main analysis window (see Figure 3-4).
- **Util > Display Util > Page Up (Page Up):** Selecting the **Page Up** function by pressing the **Page Up** key on the keyboard causes the eddy current data in the long strip charts to move in a downward direction by one chart length. The long strip chart length is set using the **Zoom Control** above the **Landmark Area** on the main analysis window (see Figure 3-4).
- **Util > Display Util > Increase Speed (+):** Selecting the **Increase Speed** function by pressing the **Plus (+)** key once on the numeric keypad causes the scroll speed rate to increase one data point. Holding down the **Plus (+)** key causes the scroll speed rate to increase continuously by one data point until the **Plus (+)** key is released. As the rate increases, it is displayed in the **Status Bar** at the bottom of the main analysis window (see Figure 3-4). The higher the rate, the faster the scroll speed will be and vice versa. The new rate selected will be used with the **Scroll Up**, **Scroll Down**, **Scroll Up Fast**, and **Scroll Down Fast** functions until changed.
- **Util > Display Util > Decrease Speed (-):** Selecting the **Decrease Speed** function by pressing the **Minus (-)** key once on the numeric keypad causes the scroll speed rate to decrease one data point. Holding down the **Minus (-)** key causes the scroll speed rate to decrease continuously by one data point until the **Minus (-)** key is released. As the rate decreases, it is displayed in the **Status Bar** at the bottom of the main analysis window (see Figure 3-4). The lower the rate, the slower the scroll speed will be and vice versa. The new rate selected will be used with the **Scroll Up**, **Scroll Down**, **Scroll Up Fast**, and **Scroll Down Fast** functions until changed.
- **Util > Display Util > Start of Tube (Shift + Home):** Selecting the **Start of Tube** function by pressing the **Shift + Home** key combination on the keyboard once causes the cursor on the long strip charts to move to the inspection reference end of the eddy current data file (top).

- **Util > Display Util > End of Tube (Shift + End):** Selecting the **End of Tube** function by pressing the **Shift + End** key combination on the keyboard once causes the cursor on the long strip charts to move to the far-end of the eddy current data file (bottom).
 - **Util > Display Util > Next Tube (Shift + Right Arrow):** Selecting the **Next Tube** function by pressing the **Shift + Right Arrow** key combination on the keyboard once causes the analysis software to load the next eddy current data file. This performs the same function as clicking the **File** button below any Lissajous window (see Figure 3-4).
 - **Util > Display Util > Prev Tube (Shift + Left Arrow):** Selecting the **Prev Tube** function by pressing the **Shift + Left Arrow** key combination on the keyboard once causes the analysis software to load the previous eddy current data file. This performs the same function as right-clicking the **File** button below any Lissajous window (see Figure 3-4).
- **Util > Tools:** Selecting the **Util > Tools** menu item in Figure 3-21 causes a fly-out menu to appear as shown in Figure 3-27. Each item is discussed in detail below.

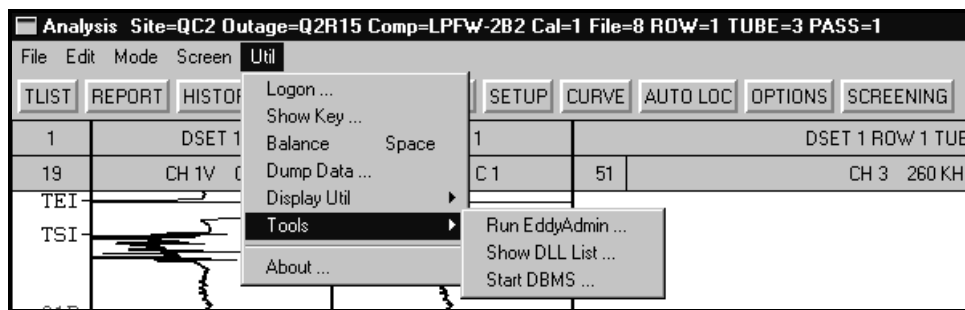


Figure 3-27. Tools Fly-out

- **Util > Tools > Run EddyAdmin ...:** Selecting **Run EddyAdmin ...** from the **Util > Tools** fly-out causes the dialog shown in Figure 3-28 to appear. This dialog provides a method to enter job-specific information that can be easily accessed throughout the EddyVISION32 software modules. It provides a place to permanently store this information only once to avoid the redundancy of having to manually re-enter this information every time it's required. It is best to enter this information during the job preparation stage, which saves time during the actual job and provides a consistent format when these items are entered in the different other dialogs throughout EddyVISION32. For example, entries for sites, users, calibration standards, probes, testers, and probe-pushers are retained in the EddyAdmin tables.

The **Sites** tab, shown in Figure 3-28, provides a method to enter information about each heat exchanger to be inspected. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **TZ** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **TZ** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-28 for example entries.

COMPONENT: Enter a descriptive name for each heat exchanger to be inspected.

SITE CODE: Enter a code for the plant site.

UNIT: Enter the unit number for the plant.

COMP MODEL: Enter (or right-click to select) the component (.cmp) file to be used for the heat exchanger entered in the COMPONENT field.

TZ: Automatically enters the current time zone referenced to Greenwich Mean Time (GMT).

Click here to add a new row or right-click to delete the bottom row.

OWNER: Enter the name of the plant owner.

MATERIAL: Enter a description of the tubing material for this heat exchanger.

NUM	SITE CODE	COMPONENT	UNIT	COMP MODEL	OWNER	MATERIAL	TZ
165	ONS1	1C1N	1	ONS1WBN	DUKE POWER	7/8X .028 SS	-5
166	ONS1	1C1S	1	ONS1WBS	DUKE POWER	7/8X .028 SS	-5
167	ONS1	1C2N	1	ONS1WBN	DUKE POWER	7/8X .028 SS	-5
168	ONS1	1C2S	1	ONS1WBS	DUKE POWER	7/8X .028 SS	-5
169	ONS1	CCW1A	1	ONSCCV	DUKE POWER	3/4X .049 BR	-5
170	ONS1	CONDCLR-1A	1	ONS1CONCLR	DUKE POWER	5/8X .049 SS	-5
171	ONS1	CONDCLR-1B	1	ONS1CONCLR	DUKE POWER	5/8X .049 SS	-5
172	ONS1	EFWPT	1	ONS1EFWPT	DUKE POWER	5/8X .049 BR	-5
173	ONS1	EHC-1A	1	ONS-EHC	DUKE POWER	3/4X .035 SS	-5
174	ONS1	EHC-1B	1	ONS-EHC	DUKE POWER	3/4X .035 SS	-5
175	ONS1	FWHTR1A1	1	ONS1FWHA1	DUKE POWER	3/4X .049 CS	-5
176	ONS1	FWHTR1A2	1	ONS1FWHA2	DUKE POWER	5/8X .035 SS	-5
177	ONS1	FWHTR1B1	1	ONS1FWB	DUKE POWER	3/4X .049 SS	-5
178	ONS1	FWHTR1B2	1	ONS1FWB	DUKE POWER	5/8X .049 BR	-5
179	ONS1	FWPTOC-1A1	1	ONS-FWPTOC	DUKE POWER	5/8X .049 AB	-5
180	ONS1	FWPTOC-1A2	1	ONS-FWPTOC	DUKE POWER	5/8X .049 BR	-5
181	ONS1	FWPTOC-1B1	1	ONS-FWPTOC	DUKE POWER	5/8X .049 BR	-5
182	ONS1	FWPTOC-1B2	1	ONS-FWPTOC	DUKE POWER	3/4X .035 SS	-5
183	ONS1	HYDROCLR-1A	1	ONS-HC	DUKE POWER	3/4X .035 SS	-5
184	ONS1	HYDROCLR-1B	1	ONS-HC	DUKE POWER	3/4X .035 SS	-5

Figure 3-28. EddyAdmin Dialog - Sites Tab

The **Users** tab, shown in Figure 3-29, provides a method to enter information about each user, i.e., data analysts and acquisition operators. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **Level** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **Level** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-29 for example entries.

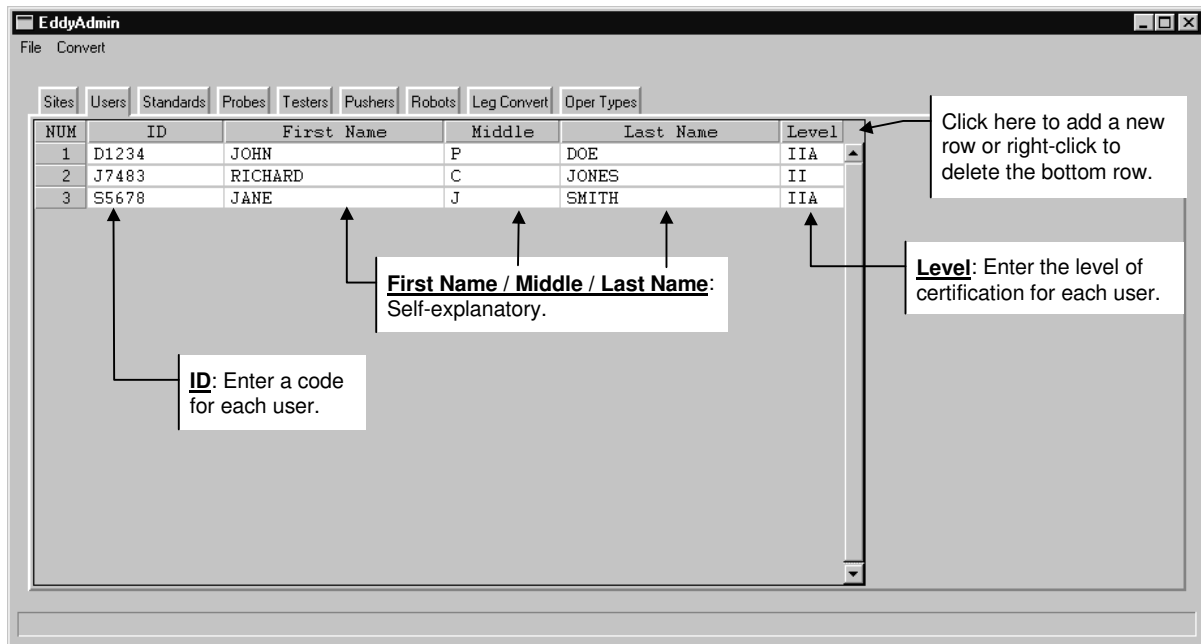


Figure 3-29. EddyAdmin Dialog - Users Tab

The **Standards** tab, shown in Figure 3-30, provides a method to enter information about each calibration standard. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **SN** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **SN** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-30 for example entries.

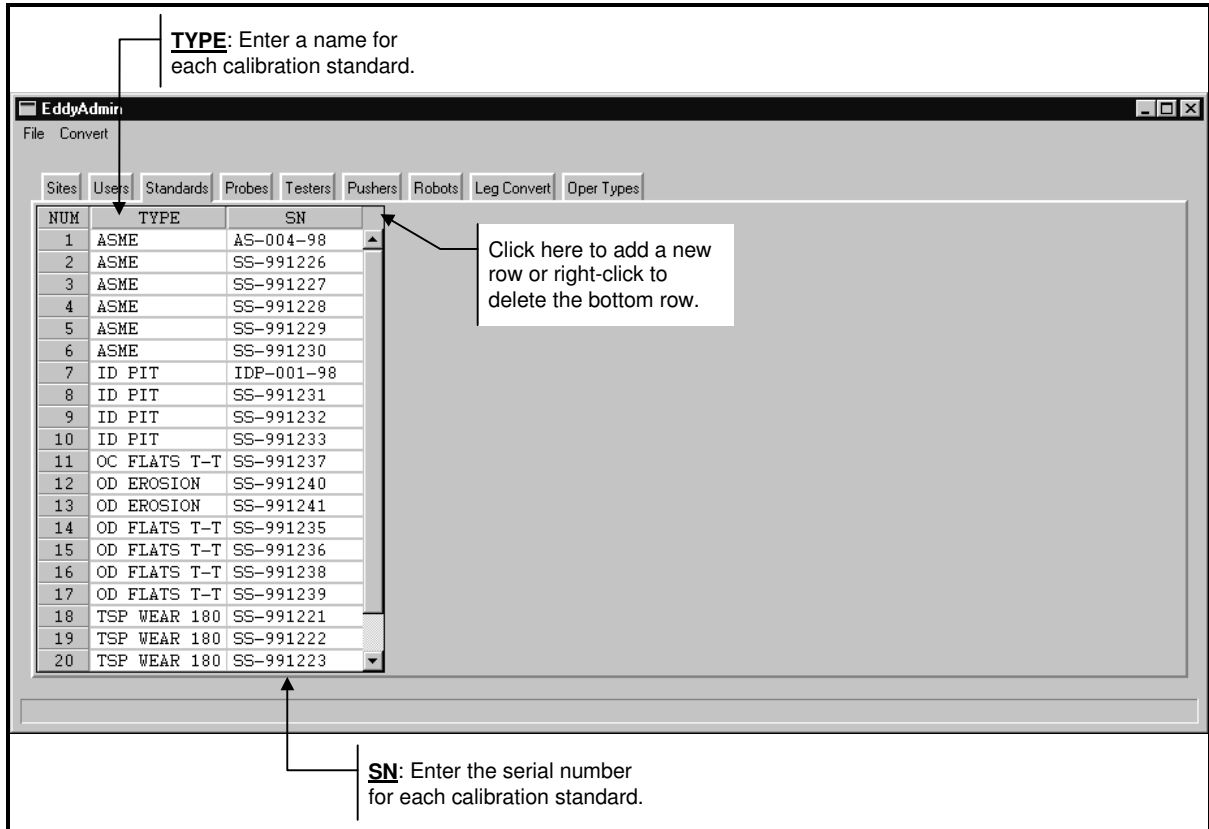


Figure 3-30. EddyAdmin Dialog - Standards Tab

The **Probes** tab, shown in Figure 3-31, provides a method to enter information about each eddy current probe. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **DESC** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **DESC** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-31 for example entries.

MODEL: Enter the model or catalog number for each probe.

VENDOR: Enter the name of the manufacturer for each probe.

Click here to add a new row or right-click to delete the bottom row.

NUM	MODEL	SN	VENDOR	DESC
1	CA-480-ESH/LF	0034-1299	CSI	480 BOBBIN
2	CA-480-ESH/LF	0035-1299	CSI	480 BOBBIN
3	CA-480-ESH/MF	0038-1299	CSI	480 BOBBIN
4	CA-480-ESH/MF	0039-1299	CSI	480 BOBBIN
5	CA-480-ESH/MF	0063-0100	CSI	480 BOBBIN
6	CA-480-ESH/MF	0064-0100	CSI	480 BOBBIN
7	CA-640-ESH/HF	0040-1299	CSI	640 BOBBIN
8	CA-640-ESH/HF	0041-1299	CSI	640 BOBBIN
9	CA-640-ESH/HF	0042-1299	CSI	640 BOBBIN
10	CA-640-ESH/HF	0065-0100	CSI	640 BOBBIN
11	CA-640-ESH/HF	0066-0100	CSI	640 BOBBIN
12	CA-780-ESH/HF	0036-1299	CSI	780 BOBBIN
13	CA-780-ESH/HF	0037-1299	CSI	780 BOBBIN
14	CA-890-ESH/HF	0043-1299	CSI	890 BOBBIN
15	CA-890-ESH/HF	0044-1299	CSI	890 BOBBIN
16	CA-890-ESH/HF	0045-1299	CSI	890 BOBBIN
17	CA-890-ESH/HF	0046-1299	CSI	890 BOBBIN
18	CA-890-ESH/HF	0047-1299	CSI	890 BOBBIN
19	CA-890-ESH/HF	0048-1299	CSI	890 BOBBIN
20	CA-890-ESH/HF	0049-1299	CSI	890 BOBBIN

SN: Enter the serial number for each probe.

DESC: Enter a description for each probe, i.e., size, type, etc.

Figure 3-31. EddyAdmin Dialog - Probes Tab

The **Testers** tab, shown in Figure 3-32, provides a way to enter information about each eddy current tester or instrument. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the SN field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **SN** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-32 for example entries.

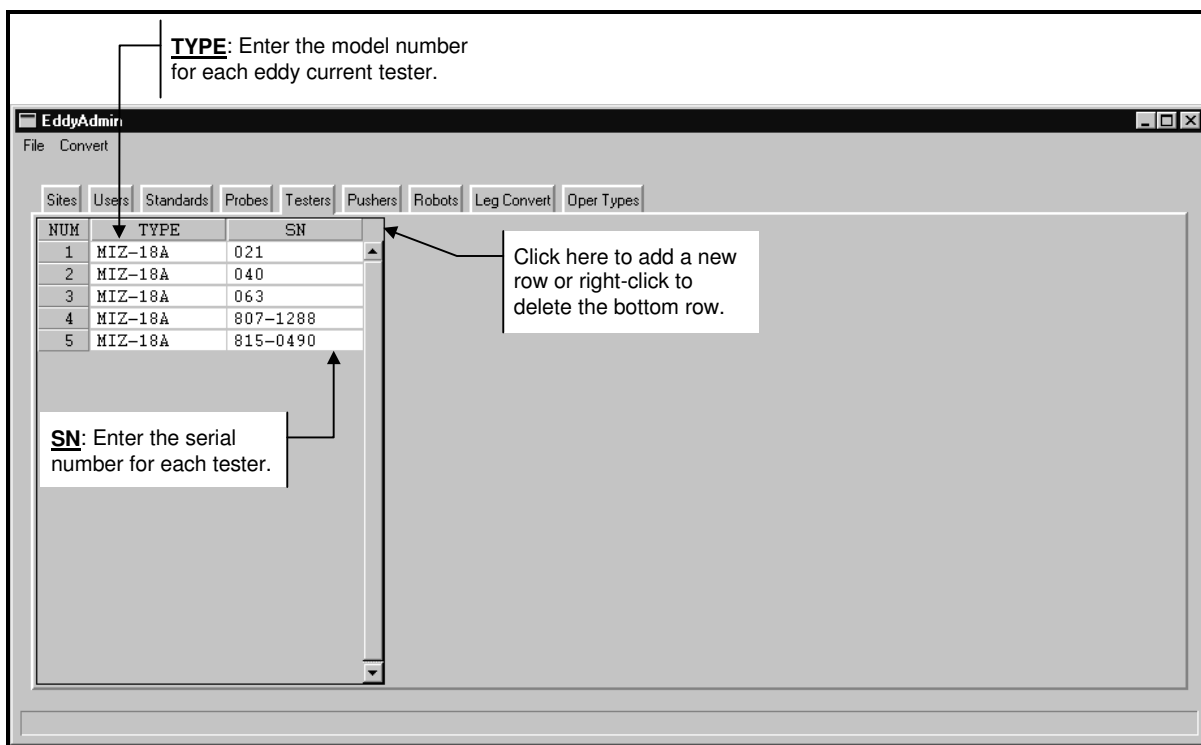


Figure 3-32. EddyAdmin Dialog - Testers Tab

The **Pushers** tab, shown in Figure 3-33, provides a way to enter information about each mechanical probe-pusher. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **SN** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **SN** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-33 for example entries.

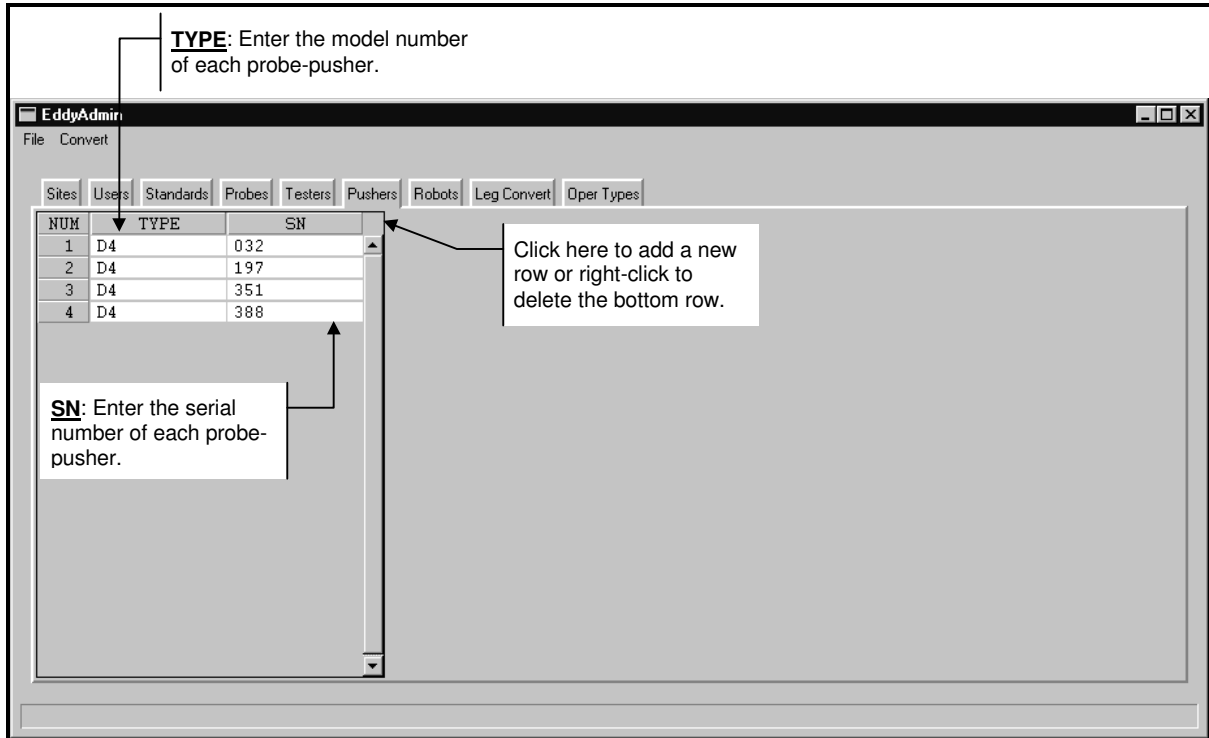


Figure 3-33. EddyAdmin Dialog - Pushers Tab

The **Robots** tab, shown in Figure 3-34, provides a way to enter information about each probe manipulator. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **SN** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **SN** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-34 for example entries.

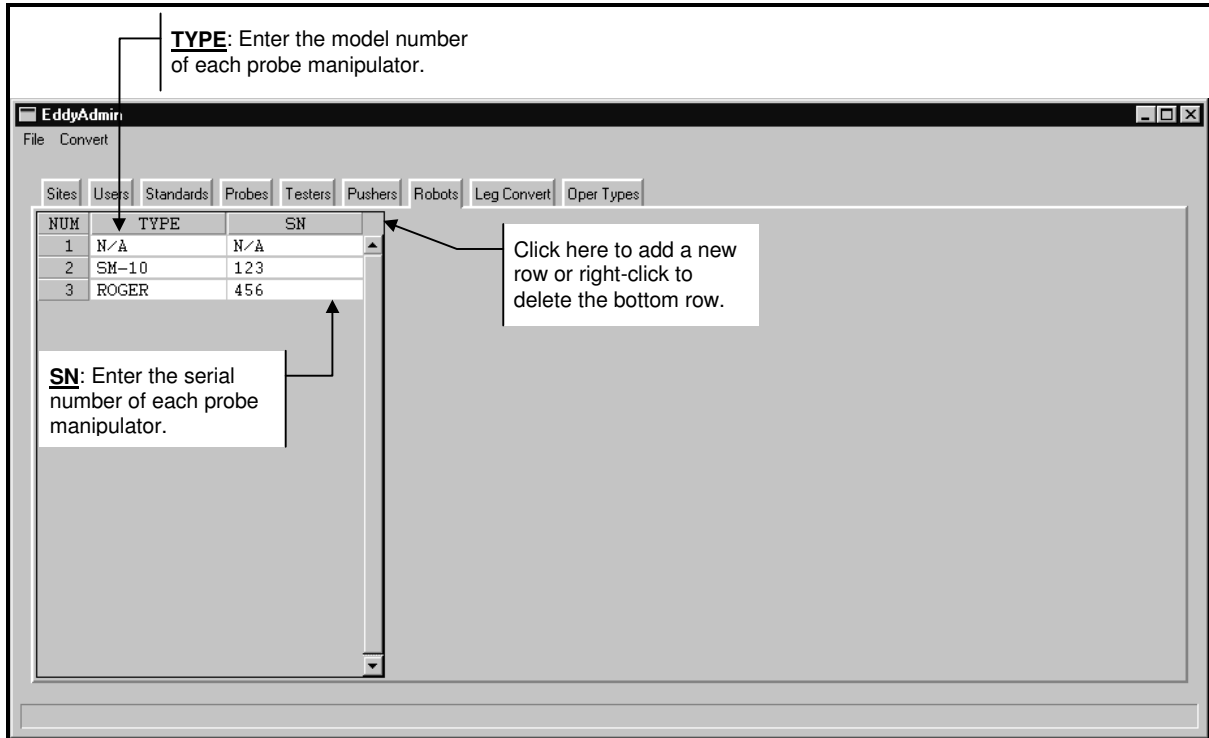


Figure 3-34. EddyAdmin Dialog - Robots Tab

Note: If you've never used EddyVISION32 v2.1 to create .gen files, you can disregard the Leg Convert topic below.

The **Leg Convert** tab, shown in Figure 3-35, provides a way to convert the 'leg name' used in v2.1 .gen files to the correct 'leg number' used in v4.x .cmp files. These settings are used only when converting v2.1 .gen files to v4.x .cmp files using the **Convert** menu (*discussed later*). In v2.1, the 'leg names' in the .gen files were in alpha format; however, v4.x uses fixed integers (numbers) to identify either leg and the U-bend region. As shown in Figure 3-35 under the **NUMBER** column, OUTLET = 0 (zero), INLET = 1, and the UBEND = 2. For example, in a previous v2.1 .gen file, the outlet name may be WEST; therefore, WEST would be entered in the **NAME** field and OUTLET (0) would be selected in the adjacent **NUMBER** field. To add a new row, **click** the small gray box adjacent to the **NUMBER** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. The settings in this dialog are ignored unless a convert routine is being performed. Review Figure 3-35 for example entries.

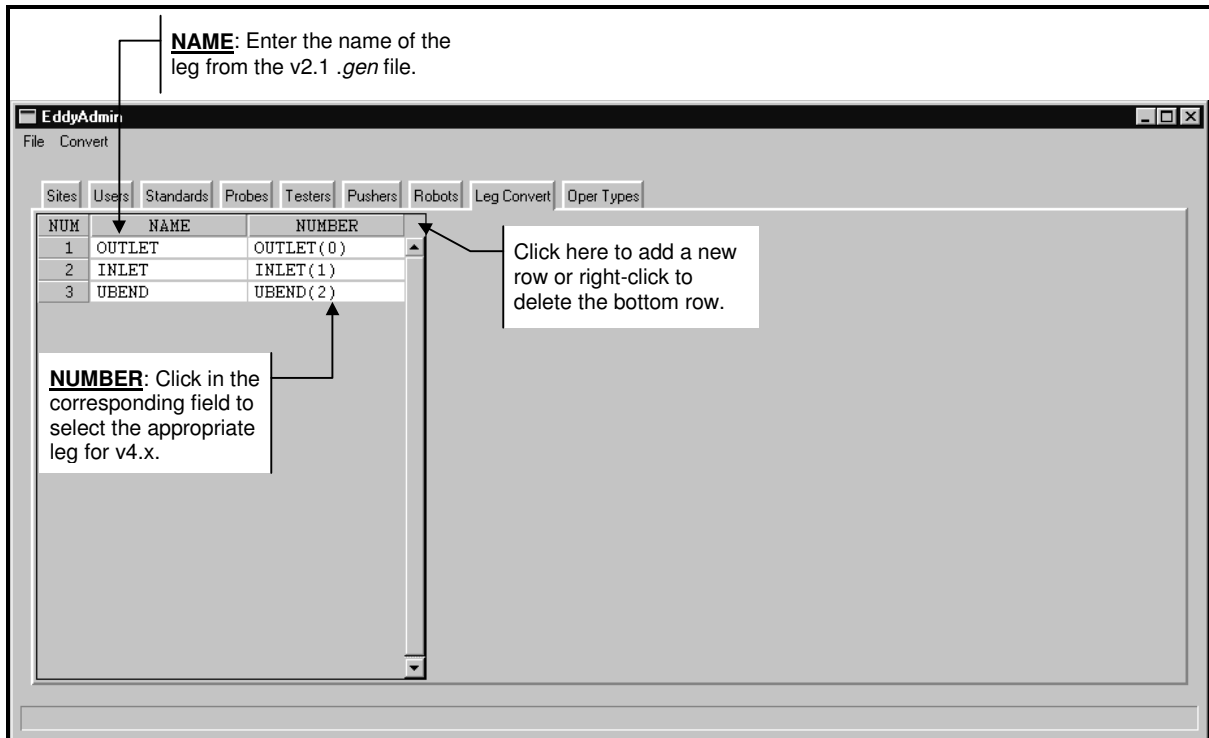


Figure 3-35. EddyAdmin Dialog - Leg Convert Tab

The **Oper Types** tab, shown in Figure 3-36, provides a way to assign operator types or designations for a given job. Any desired value can be entered. Typical types are shown. The **ZETEC EQUIV** field only needs to be entered if analyzing EddyNet™ data. Press **Enter** after each entry to move the cursor to the next field. A new row will appear after **Enter** is pressed in the **ZETEC EQUIV** field. In addition, a new row may be entered by **clicking** the small gray box adjacent to the **ZETEC EQUIV** column header as shown. Inversely, the bottom row may be deleted by **right-clicking** the gray box. Review Figure 3-36 for example entries.

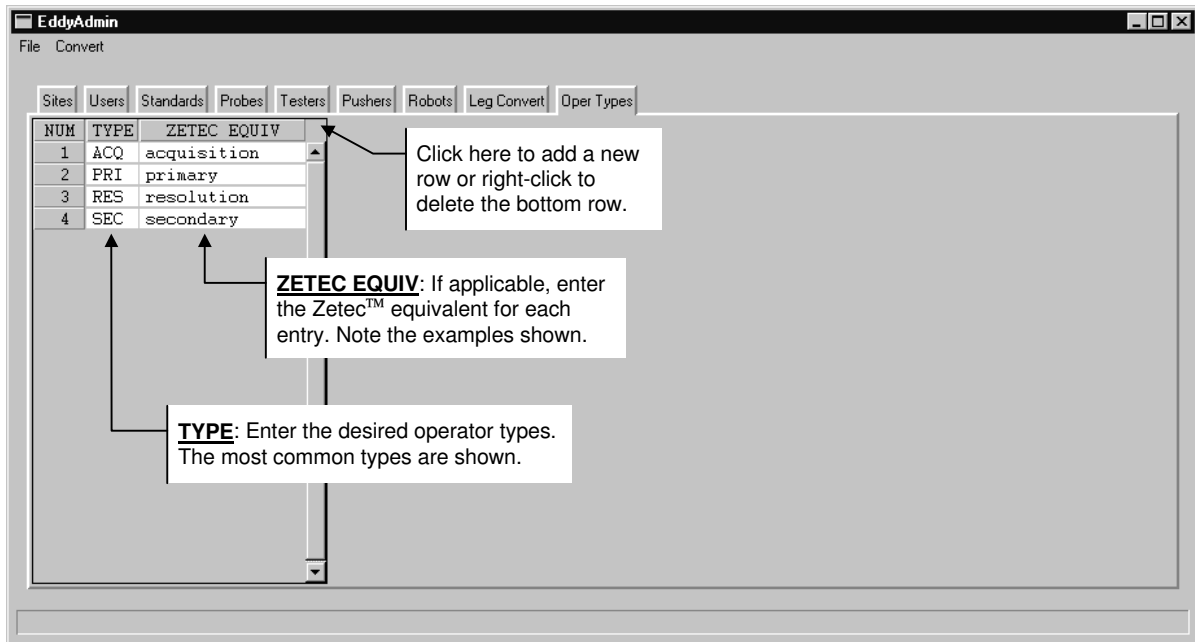


Figure 3-36. EddyAdmin Dialog - Oper Types Tab

The **EddyAdmin** dialog contains two (2) menu selections shown in Figure 3-37. To print all the tables in **EddyAdmin**, select **File > Print All Tables ...**. To quit **EddyAdmin**, select **File > Exit ...**, a message will appear asking if you are sure you wish to quit, click **Yes** to exit or **No** to keep **EddyAdmin** open. During **Exit ...**, if changes have been made to any of the tables, a message will appear for each table that was modified, asking if you wish to save the changes. Click **Yes** to save or **No** to ignore the changes for any given table.

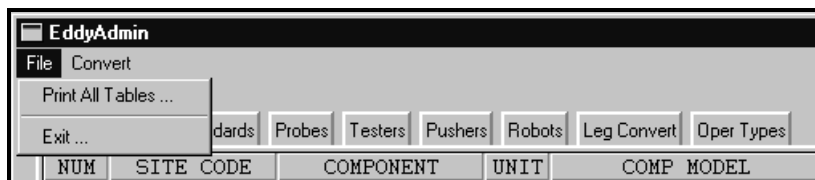


Figure 3-37. EddyAdmin Dialog - File Menu

The **Convert** menu contains several utilities for converting certain v2.1 files to v4.x format. Selecting **Models** from the fly-out allows you to select v2.1 *.gen* files for conversion to v4.x *.cmp* files. These source *.gen* files are undisturbed during this process. The new corresponding *.cmp* files are stored in the same directory as the *.gen* files.

Selecting any of the remaining choices automatically imports v2.1 tables into the appropriate **EddyAdmin** tables. These v2.1 table files must be present in the `\corestar\config\dbms_subdirectory` for the import to take place. The file names are: *equip.mdb*, *users.mdb*, *site.mdb*, and *probes.mdb*. These source *.mdb* files are undisturbed during this process.

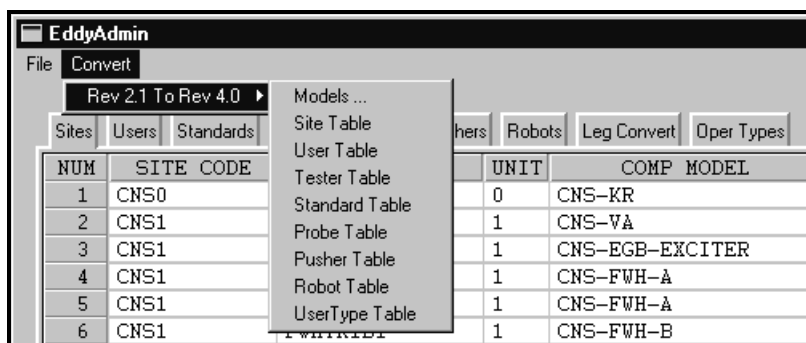


Figure 3-38. EddyAdmin Dialog - Convert Menu

- **Util > Tools > Show DLL List ...:** Selecting **Show DLL List ...** from the **Util > Tools** fly-out menu causes the dialog shown in Figure 3-39 to appear. This dialog displays all processes that are currently running on your PC. Clicking on a process in the upper part of the dialog displays all the associated *.dll* (dynamic link library) files in the lower part of the dialog that are currently resident in the PC's memory. This feature can be useful when troubleshooting software conflicts. The **File** menu contains only one (1) selection, **Print ...**, which prints the currently selected process and associated DLL list.

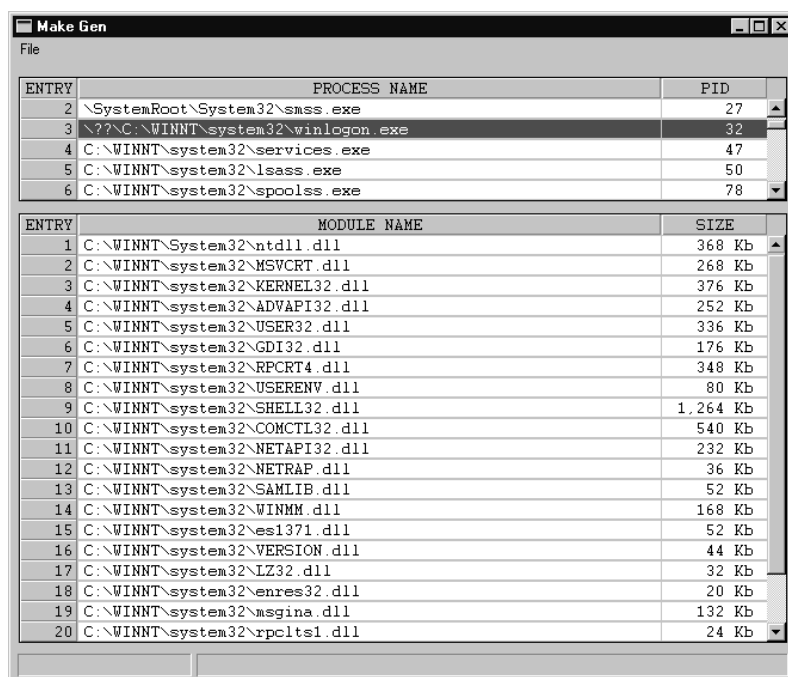


Figure 3-39. Show DLL List Dialog

- **Util > Tools > Start DBMS ...:** Selecting **Start DBMS ...** from the **Util > Tools** fly-out menu shown in Figure 3-27 simply starts the EddyVISION32 DBMS (Database Management) Software. The software and a valid security key for the DBMS software module must be installed on the computer in order for the DBMS software to run.
- **Util > About:** Selecting the **Util > About** menu item shown in Figure 3-27 displays a dialog containing information *about* the EddyVision32 software currently installed on the computer, including: version identification, build date/time, copyright, and contact information.

Special Buttons

This topic will discuss the purpose and use of each specialized button located along the top of the main analysis window immediately below the pull-down menus. Review Figure 3-40 for a brief description about the purpose of each button.

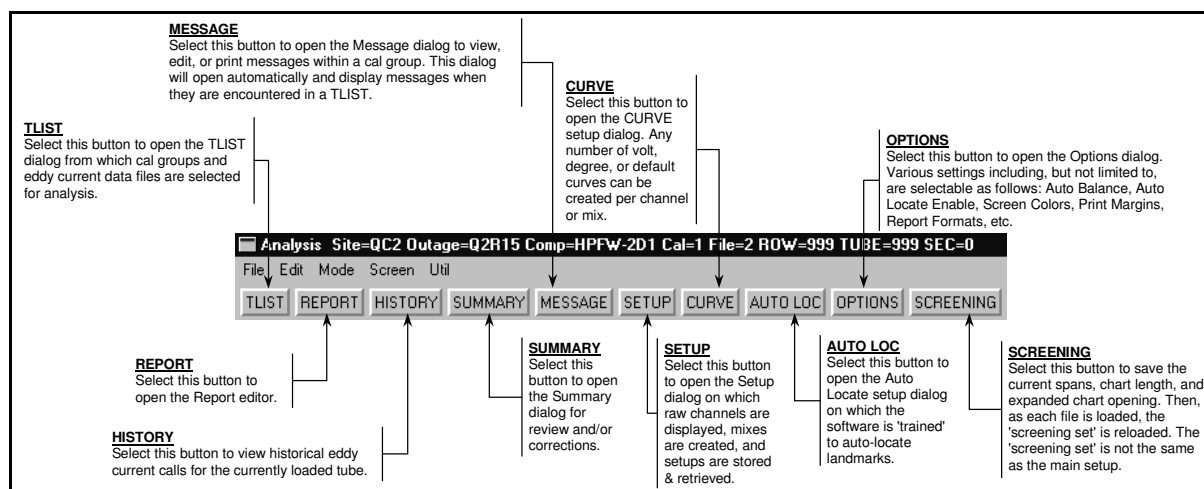


Figure 3-40. Special Purpose Buttons

TLIST Button

Selecting the **TLIST** (*short for Tube List*) button in Figure 3-40 causes the dialog shown in Figure 3-41 to appear. This interface is used to:

- ❑ select the type (mode) of data to be analyzed;
- ❑ select the data directory of the eddy current cal groups and data to be analyzed;
- ❑ select the 'data set' (up to 4 opened concurrently) into which data will be loaded;
- ❑ print the 'TLIST' of an opened cal group;
- ❑ copy all files of a cal group to a specified drive;

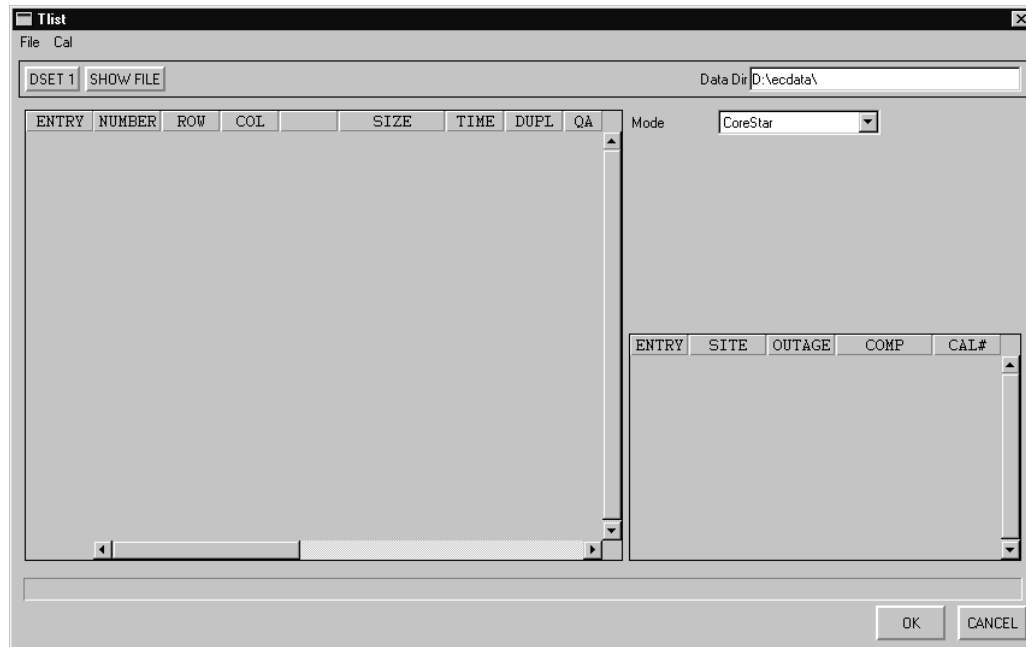


Figure 3-41. TLIST Dialog

Selecting the Eddy Current Data-type

The EddyVISION32 Analysis software can be used to analyze numerous types of eddy current data collected with a variety of commercially available instruments. The software initially defaults to CoreStar's native data-type at startup. To select a different data-type to be analyzed, **click** on the drop-down box next to **Mode**. A list of available eddy current data-types (modes) will be displayed as shown in Figure 3-42. Simply **click** on the desired data-type.

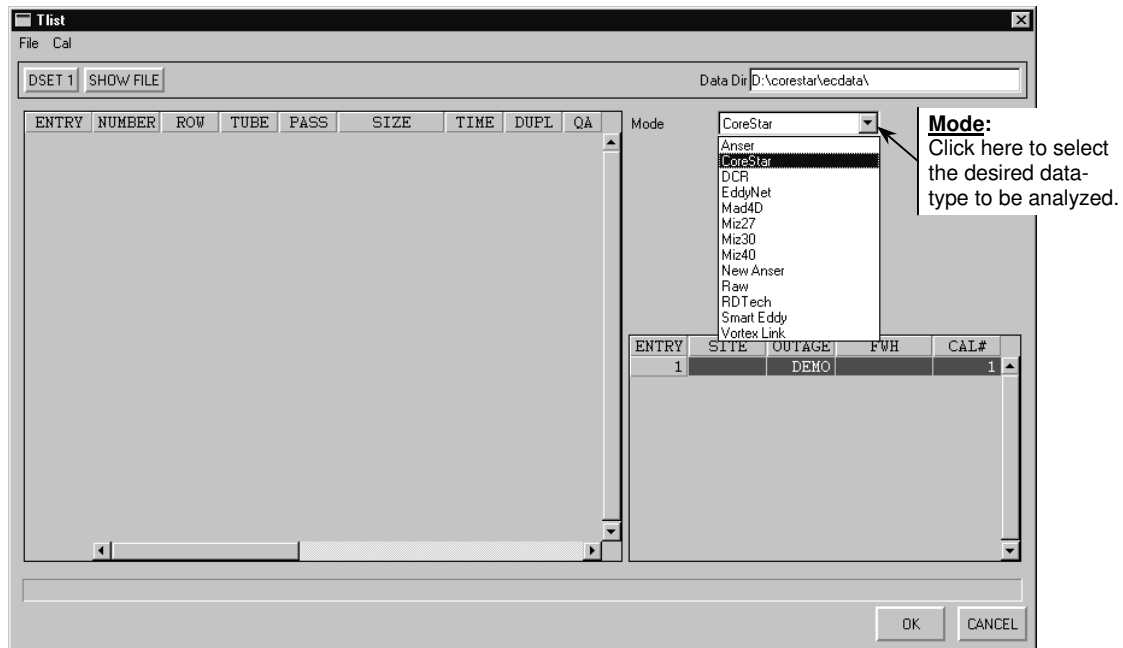


Figure 3-42. Eddy Current Data-type Selection

Selecting the Eddy Current Data Directory

The software initially defaults to a data directory named: *c:\corestar\ecdata*. The data may reside in this default directory, on a different drive on the same computer, or on a shared network drive. To select a different data directory, **right-click** in the **Data Dir** box shown in Figure 3-43. The **Open** dialog appears as shown. Using this dialog, select the drive and directory where the desired eddy current data is located. Select the level of the directory just above the cal groups, tapes, reels, etc. as applicable. When CoreStar's native data-type is used, only the *x:\corestar\ecdata* directory need be selected.

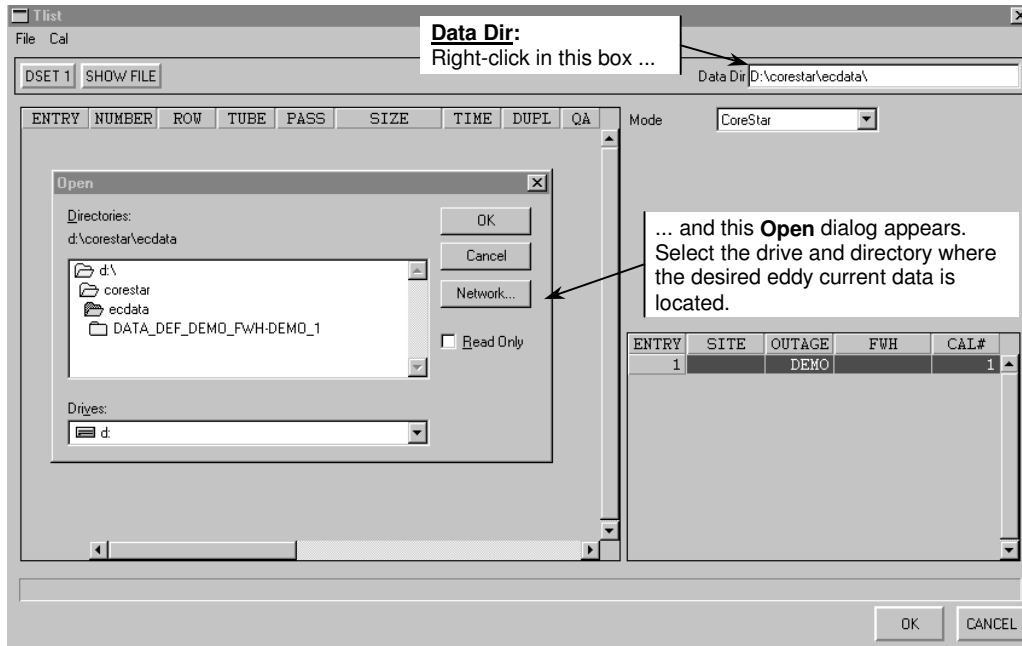


Figure 3-43. Eddy Current Data Directory Selection

After clicking **OK** in the **Open** dialog in Figure 3-43, the software will return to the **TLIST** dialog with the cal groups displayed (listed) as shown in Figure 3-44.

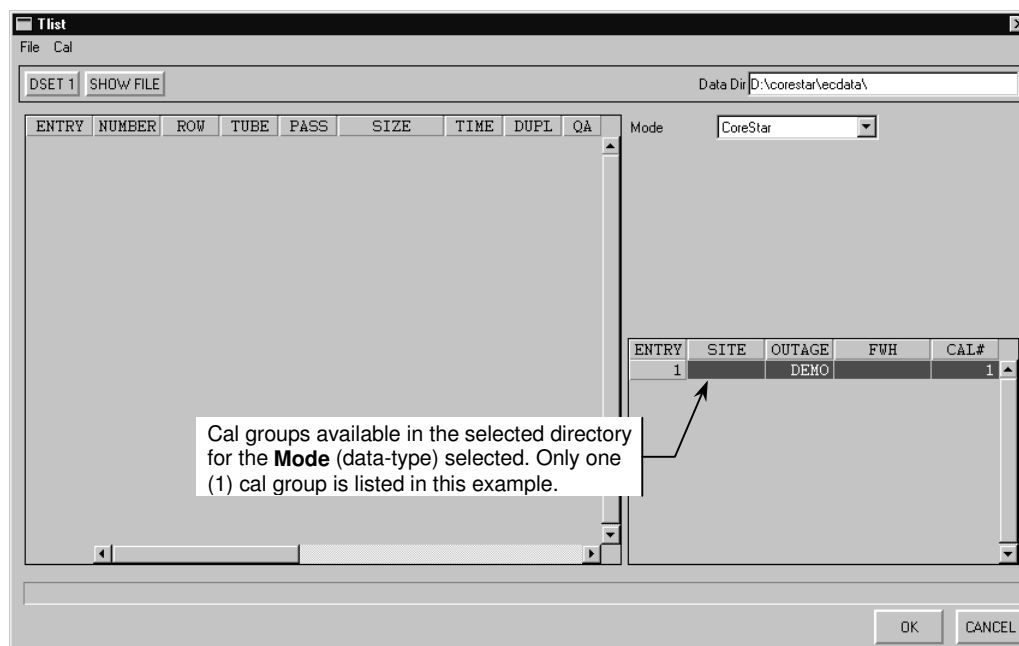


Figure 3-44. Cal Group Listing Display

Opening a Cal Group

After selecting the **Mode** (data-type) and the **Data Dir**, the available cal groups should be listed on the **TLIST** dialog as shown in Figure 3-44. To open a cal group, simply **double-click** the desired cal group entry from the list. The **Cal Information** dialog shown in Figure 3-45 may appear depending on the data-type selected.

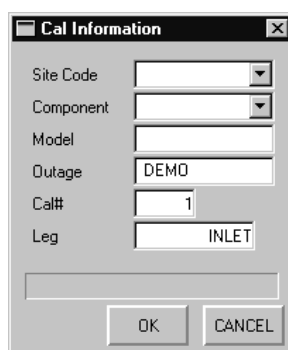


Figure 3-45. Cal Information Dialog

As shown in Figure 3-46, **click** the drop-down box next to the **Site Code** field, and select the appropriate **Site Code** for the data to be analyzed. The **Site Codes** displayed come from the **EddyAdmin > Sites** table discussed earlier in this section. If the desired **Site Code** is not present, open **EddyAdmin** and create or edit the appropriate entry.

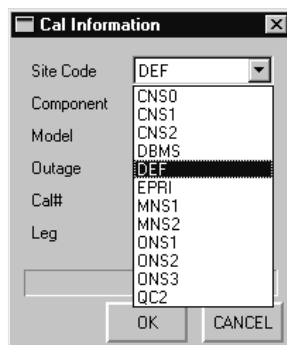


Figure 3-46. Cal Information Dialog - Site Code Drop-down Box

Next, **click** the drop-down box next to **Component** and select the appropriate heat exchanger for the data to be analyzed. Only the components associated with the selected **Site Code** will be displayed in the drop-down box. The **Components** displayed come from the **EddyAdmin > Sites** table discussed earlier in this section. If the desired **Component** is not present, select **Util > Tools > Run EddyAdmin ...** from the main analysis window and create or edit the appropriate entry. For the example, shown in Figure 3-47, the site *DEF* is selected which has only one (1) component (*FWH-1A*) listed in the **EddyAdmin > Sites** table. The **Model** is the name of the *.cmp* file (without the *.cmp* extension) associated with the selection in the **Component** field. The **Model** field cannot be edited, but rather is filled-in automatically based on entries in the **EddyAdmin > Sites** table.

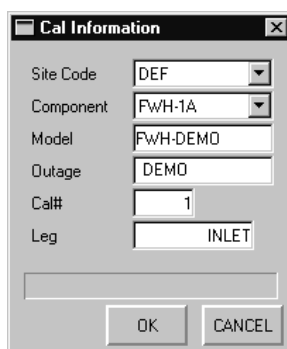


Figure 3-47. Cal Information Dialog - Filled-in

For the CoreStar native data-type, the **Outage**, **Cal#**, and **Leg** ...fields are filled-in automatically based on the name of the data subdirectory. In the example shown in Figure 3-47, the data subdirectory is named,

\\DATA_DEF_DEMO_FWH-1A_1

where,

DATA = Identifies the subdirectory as CoreStar data-type;

DEF = Site Code;

DEMO = Outage;

FWH-1A = Component;

1 = **INLET** Leg (0 [zero] = **OUTLET**);

If required, the **Outage** value in the **Cal Information** dialog may be edited manually. In addition, the **Cal#** and **Leg** fields may be toggled to different values as required. The **Cal#** and **Leg** fields are increment / decrement boxes. This is obvious because when the mouse pointer is positioned over either box, it turns into an up-down arrow (⇅). A **click** increases the **Cal#** value by one while a **Shift+click** increases the value by ten. A **right-click** decreases the **Cal#** value by one and a **Shift+right-click** decreases the value by ten. **Clicking** or **right-clicking** the **Leg** field will toggle between **INLET** and **OUTLET**. Increment / decrement boxes are used throughout CoreStar's software products, and are common among similar software products manufactured by other companies. Once all the fields on the **Cal Information** dialog are filled-in, click **OK**.

After clicking **OK** on the **Cal Information** dialog, the **TLIST** dialog will display the available cal groups based on the entries in the **Cal Information** dialog. To open a cal group, simply **double-click** the desired cal group from the list shown (see Figure 3-48). Only one (1) cal group is available in the example shown in the figure. If other cal groups were present, they would be listed as well.

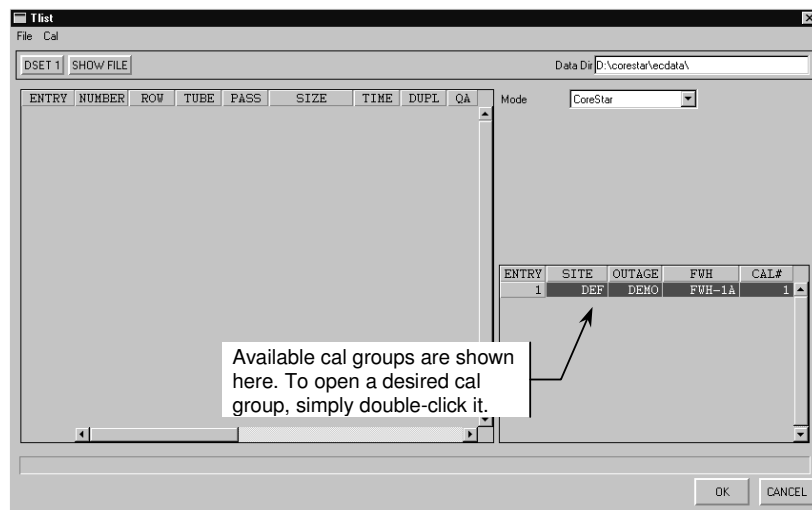


Figure 3-48. TLIST Dialog after Completing the Cal Information Dialog

The eddy current data files for the selected (highlighted) cal group are now displayed on the left side of the dialog. To load a data file for analysis, simply **double-click** the desired entry on the **TLIST**.

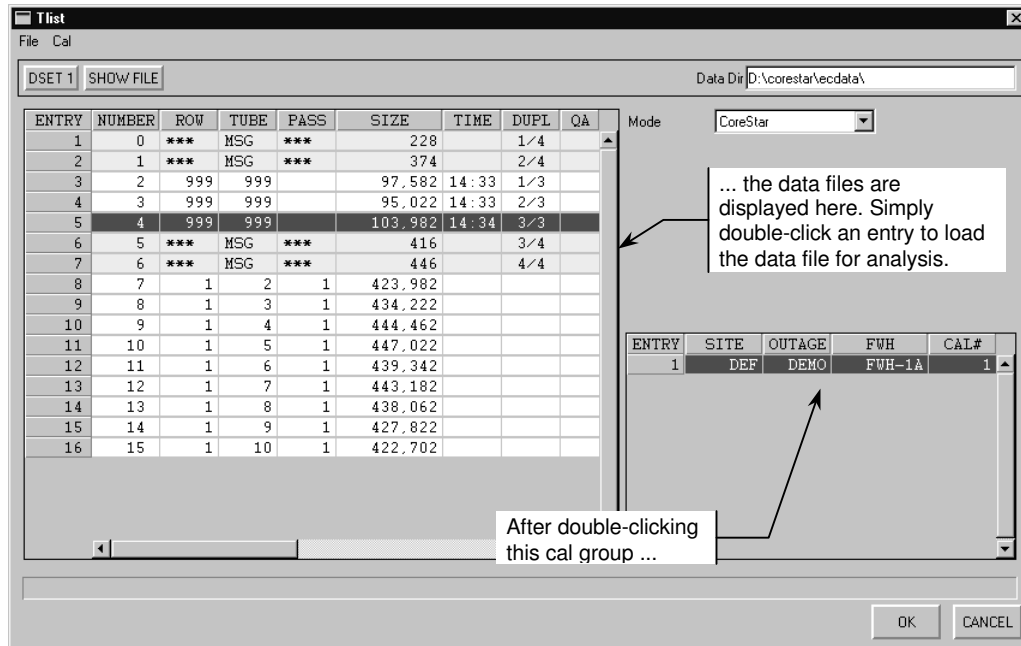


Figure 3-49. Opened Cal Group in TLIST Window

TLIST Columns Defined

The **TLIST** shown in Figure 3-49 has more columns than the typical DDA-4 **TLIST** of the past. All the column names of the **TLIST** (left half of dialog) are listed below along with a description of each. Not all the columns are visible in Figure 3-49; however, the remaining fields can be viewed using the lower horizontal scroll bar.

Column Name	Description
ENTRY	This column sequentially numbers each data and message file in an opened cal group regardless of the file NUMBER described below. The ENTRY column provides a quick method of determining how many files are contained in an opened cal group.
NUMBER	This column displays each file number in an opened cal group in ascending order. The file number is determined from the actual file name and data-type currently in use. For CoreStar's native data-type, the file number is the first four (4) digits of each data and message file. For example, the data file <i>0375_001_009_000.DAT</i> would be displayed as NUMBER "375" in the TLIST; however, the ENTRY value for this file may be a completely different number since it's independently assigned (See ENTRY above).
ROW ¹	Displays the row number of each data file.
COL ¹	Displays the column number of each data file.
SEC ¹	Displays the section number of each data file, if applicable.
SIZE	Displays each data and message file size in bytes.
TIME	Displays the actual acquisition time in the format HH:MM for each data file encoded as 999 999.
DUPL	Indicates the number and total number of duplicate row and column entries. For example, Figure 3-49 shows that ENTRY #3 is the first of 3 calibration runs encoded as 999 999 within the opened cal group, i.e., 1/3.
QA	Displays the total number of report entries for a given file; therefore, it's an indicator of whether a data file has been analyzed or not.
CREATE TIME ²	Displays the actual file creation time and date in the format HH:MM:SS MM/DD/YY for each file in an opened cal group.
FILE NAME ²	Displays the complete current path and file name for each file in an opened cal group.

1. The names of these columns vary based on the selected component file (.cmp). When .cmp files are created using the MakeComp software module, the names for ROW, COL, and SEC may be user-defined. Figure 3-49 shows these names as: ROW, TUBE, & PASS, which originate in the .cmp file for this example.
2. These columns cannot be viewed unless the TLIST is scrolled to the right.

- ❑ **TLIST > DSET 1 Button:** The **TLIST** dialog in Figure 3-49 contains a button along the top of the dialog called **DSET 1**, abbreviation for data set. This button allows the user to open up to four (4) cal groups concurrently. This is handy when doing historical comparisons. The **TLIST** dialog initially defaults to **DSET 1**. To open another cal group in another data set, **Shift+click** the **DSET 1** button until the desired data set number appears. Next, open the additional cal group using the same method as previously described.

Note: Only report entries for DSET 1 may be entered to the eddy current report since only one report can be active during each analysis session.

- ❑ **TLIST > SHOW FILE Button:** The **TLIST** dialog in Figure 3-49 contains another button along the top of the dialog called **SHOW FILE**. This function is only useful when analyzing ANSER-type data. Clicking the **SHOW FILE** button displays a typical ANSER header information dialog similar to the one shown in Figure 3-50 for the data file highlighted in the **TLIST**.

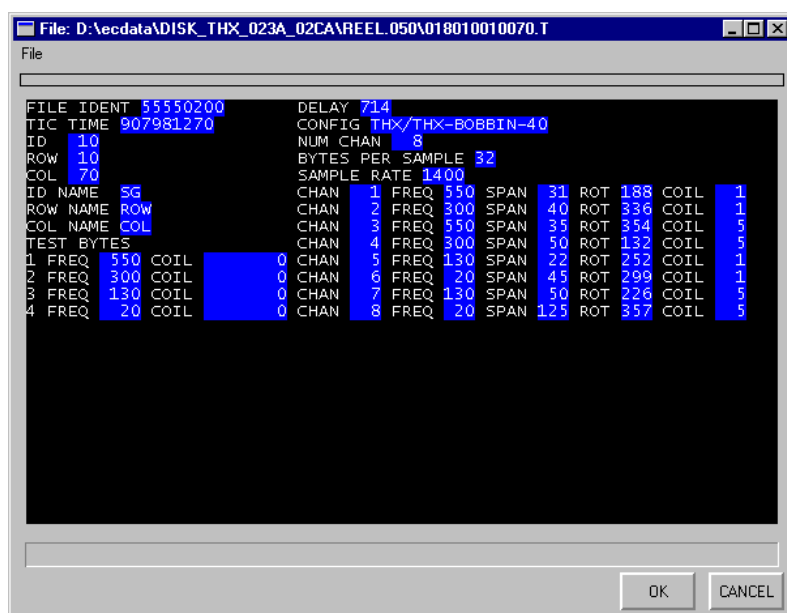


Figure 3-50. SHOW FILE Dialog

The **SHOW FILE** dialog contains one pull-down menu named **File** as shown in Figure 3-51.

- **SHOW FILE > File > Open ...** allows the user to select another data file from the current cal group directory. This works the same as selecting an entry on the **TLIST** and **clicking** the **SHOW FILE** button.
- **SHOW FILE > File > Print** sends the currently displayed **SHOW FILE** dialog to the default printer.
- **SHOW FILE > File > Print Setup ...** displays the typical Windows Print Setup window from which the user can check or change printer settings as desired.

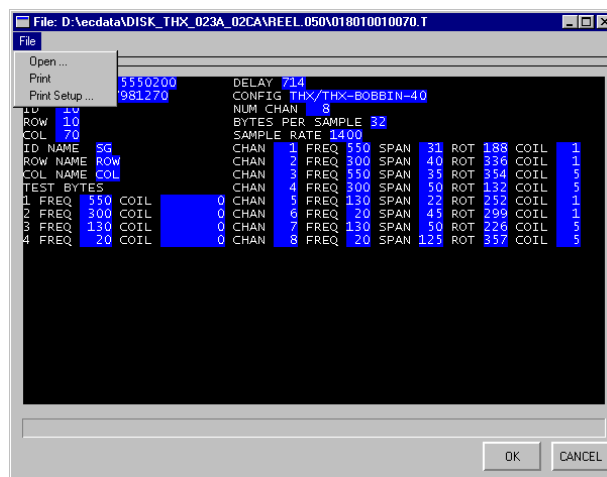


Figure 3-51. File Menu in SHOW FILE Dialog

- ❑ **TLIST Menu Bar:** The **TLIST** dialog has two pull-down menus named **File** and **Cal**. The menus are shown in Figures 3-52 and 3-53.

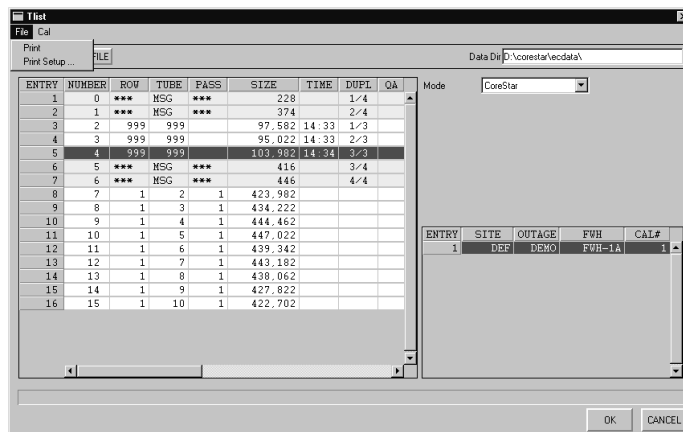


Figure 3-52. File Menu in TLIST Dialog

- **TLIST > File > Print** sends the currently displayed **TLIST** to the default printer.
- **TLIST > File > Print Setup ...** displays the typical Windows Print Setup window from which the user can check or change printer settings as desired.
- **TLIST > Cal > Close ...** closes the currently opened cal group. Closing a cal group is only necessary when changing to a different component, tube material, inspection leg, etc. If the listed cal groups are part of a continuing inspection, then all you need to do to open the next cal group is to **double-click** the desired cal group from the **TLIST**.

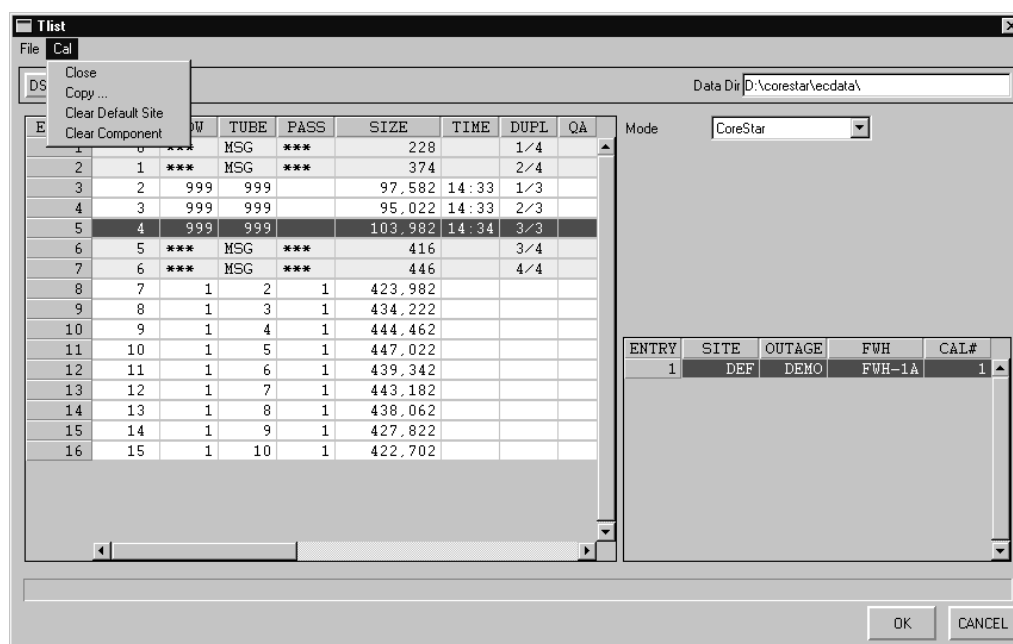


Figure 3-53. Cal Menu in TLIST Dialog

- **TLIST > Cal > Copy ...** causes the **Copy Cal** dialog in Figure 3-54 to appear. As the name implies, this dialog provides a method of copying the currently opened cal group, in its entirety including the complete directory structure, to a drive selected by the user in the **Target Drive** drop-down box. Once the **Target Drive** is selected, **click** the **START COPYING** button to begin the process. Before clicking the **START COPYING** button, ensure that the desired cal group is currently opened, the **Target Drive** is properly selected, and the **Target Drive** contains the necessary media, i.e., ZIP disk, SuperDisk, MO, etc. The currently opened cal group for copying can best be verified by reviewing the information shown in the title bar.

In Figure 3-54, cal group *D:\CORESTAR\ECDATA\DATA_DEF_DEMO_FWH-1A\000001.CAL* will be copied to C:\ drive.

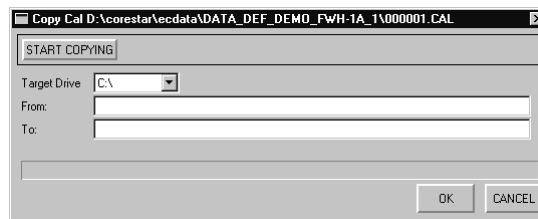


Figure 3-54. Cal Copy Dialog

- **TLIST > Cal > Clear Default Site** (see Figure 3-53) clears the site information that was selected via the **Cal Information** window when a cal group was initially opened. If **Cal > Clear Default Site** is selected, the next time a cal group is **double-clicked**, the **Cal Information** window may appear as if opening the cal group for the first time. This is useful if the incorrect site information was initially selected. For more information, see **Opening a Cal Group** earlier in this section.
- **TLIST > Cal > Clear Component** clears the component information that was selected via the **Cal Information** window when a cal group was initially opened.

REPORT Button

Selecting the **REPORT** button shown in Figure 3-40 causes the **Report Editor** dialog shown in Figure 3-55 to appear. This interface is used to:

- ☐ load an existing eddy current report;
- ☐ view or edit the current report;
- ☐ apply global changes;
- ☐ save the current report;
- ☐ save a copy of the current report to a different drive and/or directory;
- ☐ load a backup report;
- ☐ print a report;
- ☐ edit report headers & footers;
- ☐ export the current report to a plain text, ANSER binary, or EddyNet binary file;
- ☐ store or load a report from/to the currently opened cal group directory;

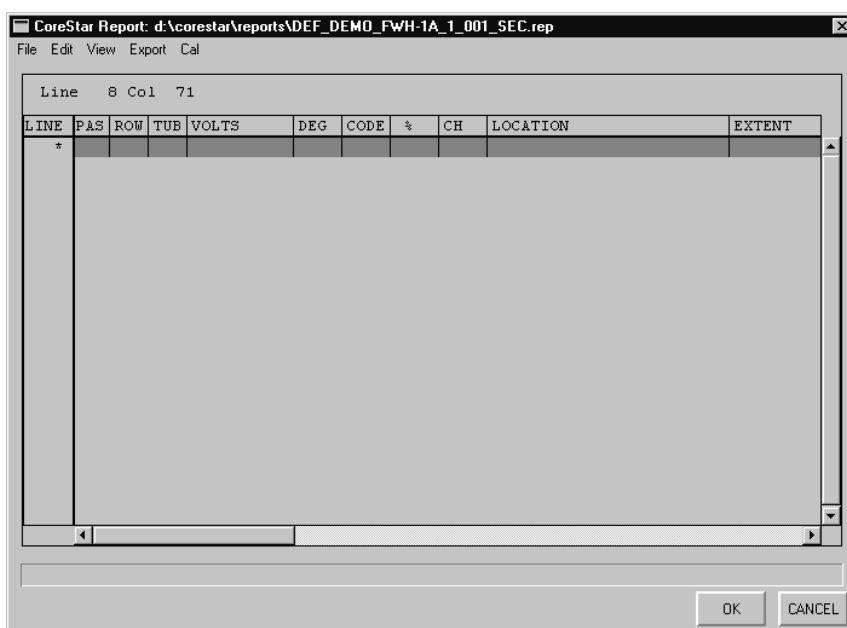


Figure 3-55. Report Editor Dialog

During the normal course of data analysis, the on-screen report shown in Figure 3-4 can be used to view and manually edit report entries without the need to open the **Report Editor**. Many of the same functions of the **Report Editor** are available in the on-screen report.

The **Report Editor** dialog contains a menu bar with five (5) selections as shown in Figure 3-55. They are: **File**, **Edit**, **View**, **Export**, and **Cal**. These menu selections and the choices under each one are discussed in the following topics.

Figure 3-56 shows the contents of the **REPORT > File** menu. Each selection on this menu is discussed below.

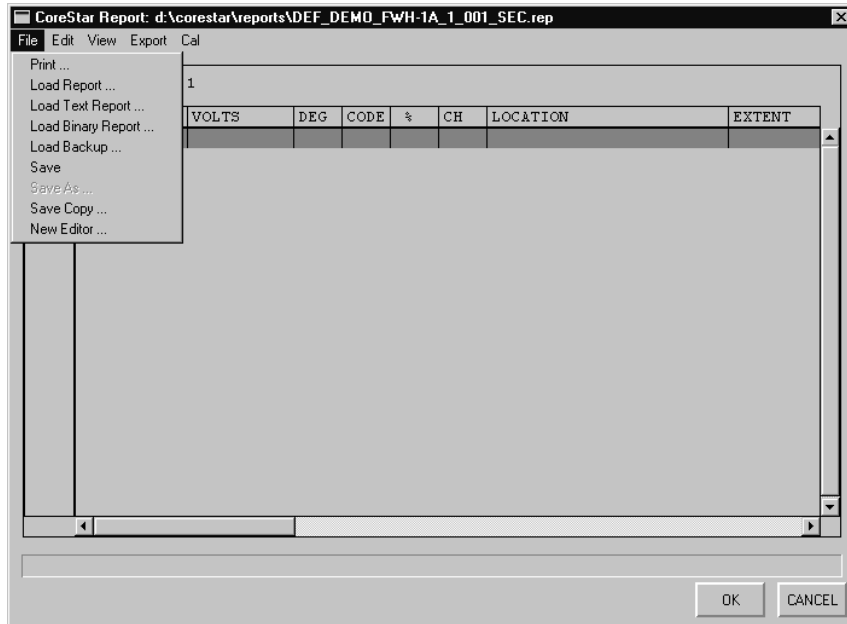


Figure 3-56. File Menu on Report Editor Dialog

- ❑ **REPORT > File > Print ...:** Selecting **Print ...** from the **File** menu displays the typical **Windows Print** dialog from which the user can view or modify printer settings as desired. Once the printer settings are established, clicking **OK** on the **Windows Print** dialog sends the present eddy current report to the printer.
- ❑ **REPORT > File > Load Report ...:** Selecting **Load Report ...** from the **File** menu displays an **Open** dialog. Select the drive, directory, and CoreStar binary report file (.rep) then click **OK** to open the report in the **Report Editor** dialog.
- ❑ **REPORT > File > Load Text Report ...:** Selecting **Load Text Report ...** from the **File** menu displays an **Open** dialog. Select the drive, directory, and text report file (.rpt) then click **OK** to open the report in the **Report Editor** dialog. Example reports in text format include those generated by DDA-4 and ANSER.
- ❑ **REPORT > File > Load Binary Report ...:** Selecting **Load Binary Report ...** from the **File** menu displays an **Open** dialog. Select the drive, directory, and binary report file (.rep) then click **OK** to open the report in the **Report Editor** dialog.

- ❑ **REPORT > File > Load Backup Report ...:** Selecting **Load Backup Report ...** from the **File** menu displays an **Open** dialog. Select the desired backup report file then click **OK** to open the report in the **Report Editor** dialog. Every time a manual edit is done on a report, either in the **Report Editor** or the on-screen report, a backup report is written to the `\corestar\reports` directory. These backup report files are appended with five (5) digits beginning with '00001'.

For example, the backup report file named:

DEF_DEMO_FWH-1A_1_001_SEC.rep.00001

indicates that this is the first backup report file for the report named:

DEF_DEMO_FWH-1A_1_001_SEC.rep.

It is practically impossible to 'lose' a report using EddyVISION32 Analysis. The length of time report backup files are kept on an analysis computer is determined by a setting in the **Options** dialog (*see **Options > Report Tab > Purge Time** later in this section*).

- ❑ **REPORT > File > Save:** Selecting **Save** from the **File** menu simply saves the present report using the same file name to the `\corestar\reports` directory on the local PC. Clicking **OK** on the **Report Editor** dialog performs the same function as well.
- ❑ **REPORT > File > Save As ...:** As shown in Figure 3-56, **Save As ...** on the **File** menu is normally *grayed-out* and not selectable for the present eddy current report. This is intentional in order to avoid the report file name being changed to another naming format that the software will not recognize. The **Save As ...** function is enabled when setting up the report header, footer, probe change, shift change, etc. macros (*see **REPORT > Edit > Macros ...** later in this section*).
- ❑ **REPORT > File > Save Copy ...:** Selecting **Save Copy ...** on the **File** menu displays a **Save As** dialog. This is provided so that a copy of the present eddy current report can be saved to a different drive, network drive, directory, etc. If the name is changed, the new name is accepted and the original eddy current report is undisturbed. This function is handy for saving a copy of the final eddy current report to a network drive that the database administrator has access to for importing reports into the DBMS system.
- ❑ **REPORT > File > New Editor ...:** Selecting **New Editor ...** on the **File** menu opens an additional **Report Editor** dialog. This is handy for loading other reports for editing, saving, and printing without having to close the current cal group and associated eddy current report.

Figure 3-57 shows the contents of the **REPORT > Edit** menu. Each selection on this menu is discussed below.

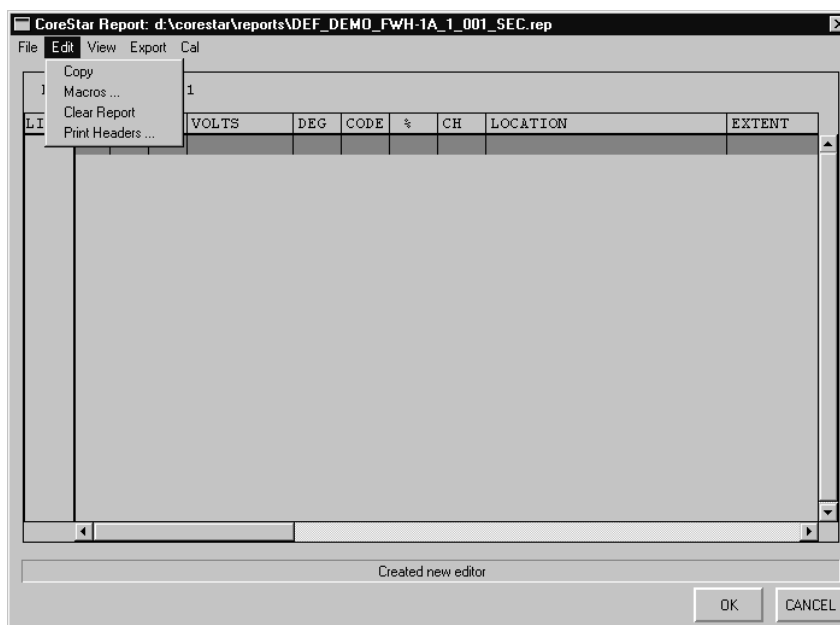


Figure 3-57. Edit Menu on Report Editor Dialog

- ❑ **REPORT > Edit > Copy:** Selecting **Copy** on the **Edit** menu places a copy of the currently highlighted report entry(s) on the present report in the computer's memory. This works much like the typical **Copy** function in most Windows programs. To select a report entry, click on the entry and press **Shift+up arrow** or **Shift+down arrow** on the keyboard. The entry is highlighted in blue. If additional contiguous entries are desired, continue to hold down the **Shift** key while pressing the **up arrow** or **down arrow** to highlight all the entries of interest. Once highlighted, select **Edit > Copy**. Scroll to the entry on the report where the *copied* entries are to be pasted and **click**, then press **Shift + Insert** on the keyboard. The *copied* entries are pasted above this entry. To delete report entries, select the desired entry(s) using the method described above, and press **Delete** on the keyboard. If a mistake is made, **click** the **CANCEL** button on the **Report Editor** dialog. This acts like an **Undo** function.

You can alternatively select a series of report entries by simply **clicking & dragging** over the desired report entries. A blue highlight 'grows' as you drag. You only need to drag and highlight a portion of the desired entries, i.e., you don't have to highlight the entire report entries all the way across.

- ❑ **REPORT > Edit > Macros ...**: Selecting **Macros ...** from the **Edit** menu displays the dialog shown in Figure 3-58. Although this dialog appears similar to the **Report Editor**, its purpose is not the same. This dialog is used to create automated report headers, footers, shift change entries, probe entries, etc. These automated functions are referred to as *macros*. Figure 3-58 shows two (2) example *macros*, one named *MAIN HEADER* and the other named *MAIN FOOTER*. As shown in Figure 3-59, these names appear on a popup menu in the main **Report Editor** (and in the on-screen report) when a **right-click** is executed. Selecting either one from the popup will automatically insert the information specified for that *macro* as shown in Figure 3-60.

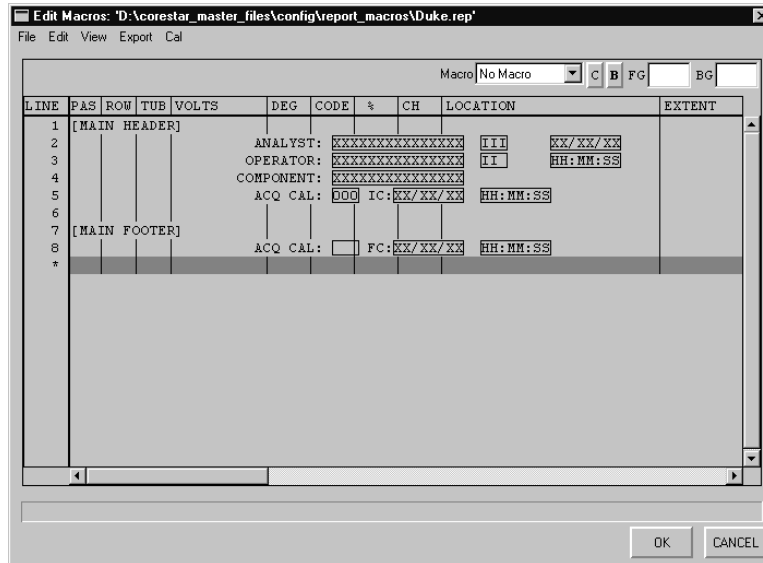


Figure 3-58. Macro Dialog

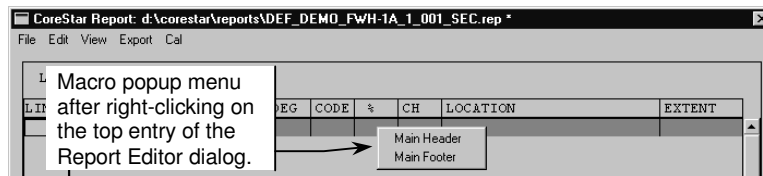


Figure 3-59. Macro Popup on Report Editor

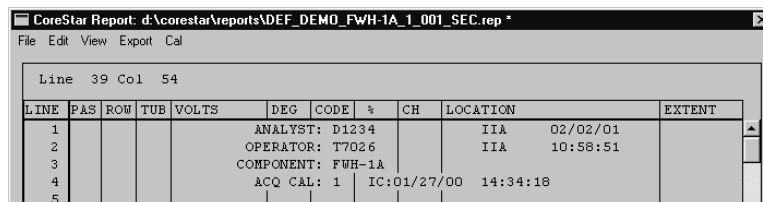
Figure 3-60. Macro Results after Selecting *Main Header* on Popup

Figure 3-61 shows how the desired information is assigned to each *macro box*. Simply **click & drag** across a *macro box* to highlight it, then select the desired information that you want to appear in the selected *macro box* from the **Macro** drop-down box. The data for the choices shown in the **Macro** drop-down box comes from the **Summary**. Selecting **No Macro** from the **Macro** drop-down box causes the border around the selected *macro box* to disappear, i.e., no *macro* assigned.

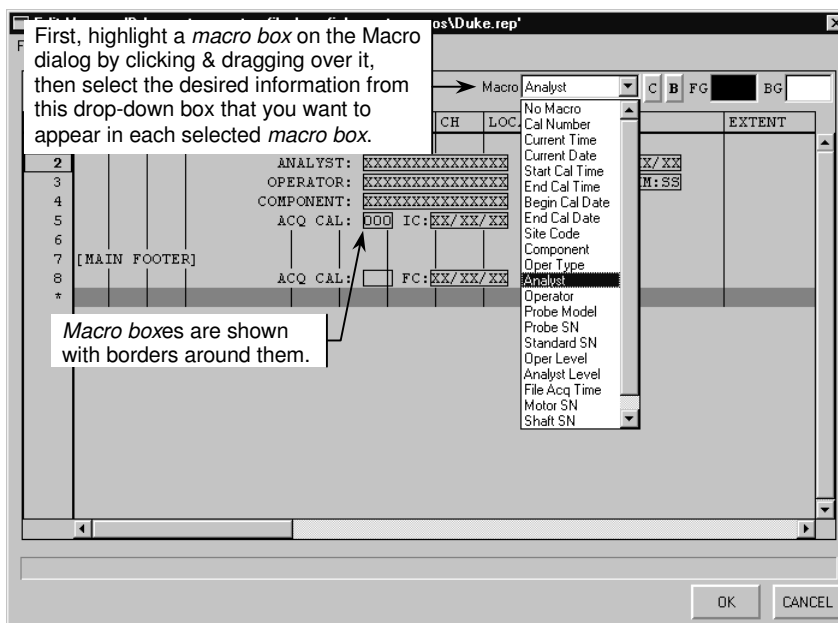


Figure 3-61. Macro Dialog - Macro Drop-down Box

To enter a new *macro* on the **Macro** dialog:

1. **Click** on the bottom (dark gray) line in the **Macro** dialog and press **Insert** on the keyboard to insert a new line;
2. **Click** on the far left column of the newly inserted line;
3. In capital letters, **type** the desired name of the new *macro* enclosed in square brackets, for example, '[NEW MACRO]';
4. **Click** again on the bottom (dark gray) line in the **Macro** dialog and press **Insert** on the keyboard to insert a new line;
5. Using the space bar or mouse, position the blue cursor where you want the first field name to appear. Type the desired field name, for example, 'Analyst ID:'. This is a label to identify the information that will appear in the adjacent *macro box*;

6. Now, **click & drag** the cursor to highlight the horizontal length of the *macro box*. Be sure to allow enough character space so the selected information will fit in the *macro box*;
7. Select the desired information you want to appear in this *macro box* from the **Macro** drop-down, for example, select 'Analyst'. The *macro box* now has a border around it. **Clicking** anywhere in this new *macro box* causes 'Analyst' to be displayed in the **Macro** drop-down box. **Clicking** inside other *macro boxes* will display the *macro* assigned to that *macro box* in the **Macro** drop-down box. It is not necessary to enter X's or other characters in the *macro boxes*. This is done to see how many characters will fit in the box and to confirm that the assigned information will fit;
8. Repeat the above steps to insert additional lines in the new *macro*;
9. Once completed, select **File > Save As ...** and enter a name for the report *macro*. By default, these *macro* files are stored in the \corestar\config\report_macros subdirectory; however, they may be saved to any drive or directory for shared use;

Figure 3-62 shows the newly entered *macro* in the **Macro** dialog.

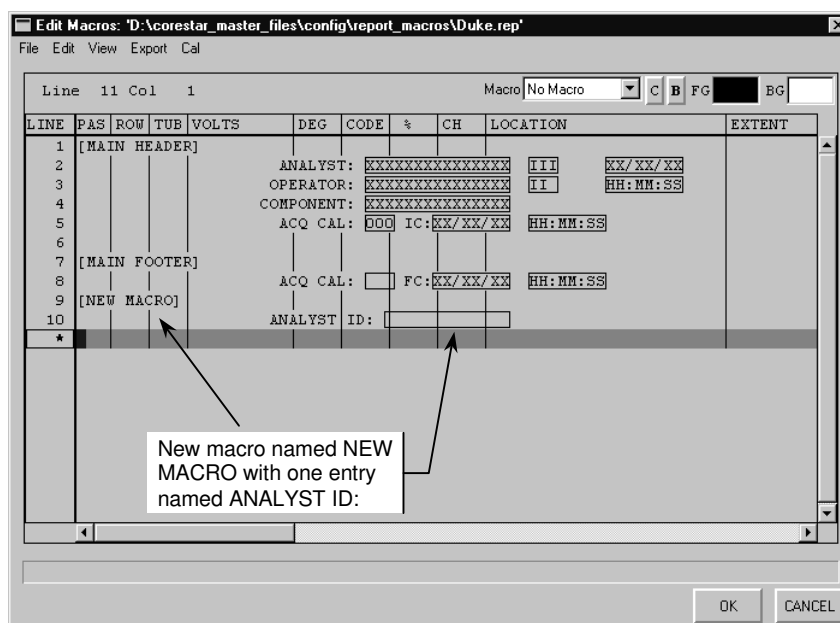


Figure 3-62. Macro Dialog - Newly Added Macro

The new *macro* is now available on the popup menu in the **Report Editor** window as shown in Figure 3-63. The figure also shows the result of selecting 'New Macro' from the popup menu. Note that the information for 'Analyst' is automatically entered, i.e., D1234.

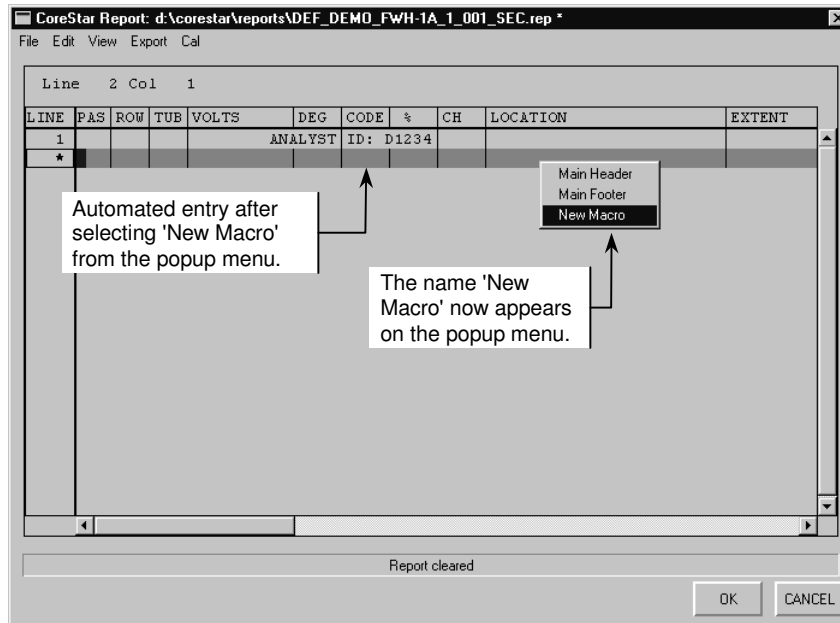


Figure 3-63. Report Editor Dialog - Newly Added Macro

Editing *macros* on the **Macro** dialog:

- To select an entry, **click** on the entry and press **Shift + the up or down arrow key** on the keyboard. The entry is highlighted in blue.
- To select contiguous entries, hold down the **Shift** key while pressing the **up or down arrow key** to highlight all the entries of interest.

Note: Alternatively, *macro* entries may be selected by simply clicking & dragging over the desired report entries. A blue highlight 'grows' as you drag. You only need to drag and highlight a portion of the desired entries, i.e., you don't have to highlight the entire *macro* entries all the way across.

- To delete entries, select the entries and press **Delete** on the keyboard. If a mistake is made, click the **CANCEL** button on the **Macro** dialog. This acts like an **Undo** function;
- To insert a new entry, **click** on an entry and press **Insert** on the keyboard. A new line appear above the cursor location;

- To add or edit field names, simply type. The **Macro** dialog functions much like a simple text editor, i.e., backspace, delete, etc.
- To change the assigned information for a *macro* box, select (highlight) the *macro* box, and select the desired information from the **Macro** drop-down box;
- To delete a *macro* box, select (highlight) the box, and select **No Macro** from the **Macro** drop-down box. The border around the box disappears indicating plain text;
- To change the name of a *macro* as it appears on the popup menu, type over the name of the *macro* (between square brackets).

The **Macro** dialog provides four (4) text enhancement tools. Review to Figure 3-64 for details about these tools and their use.

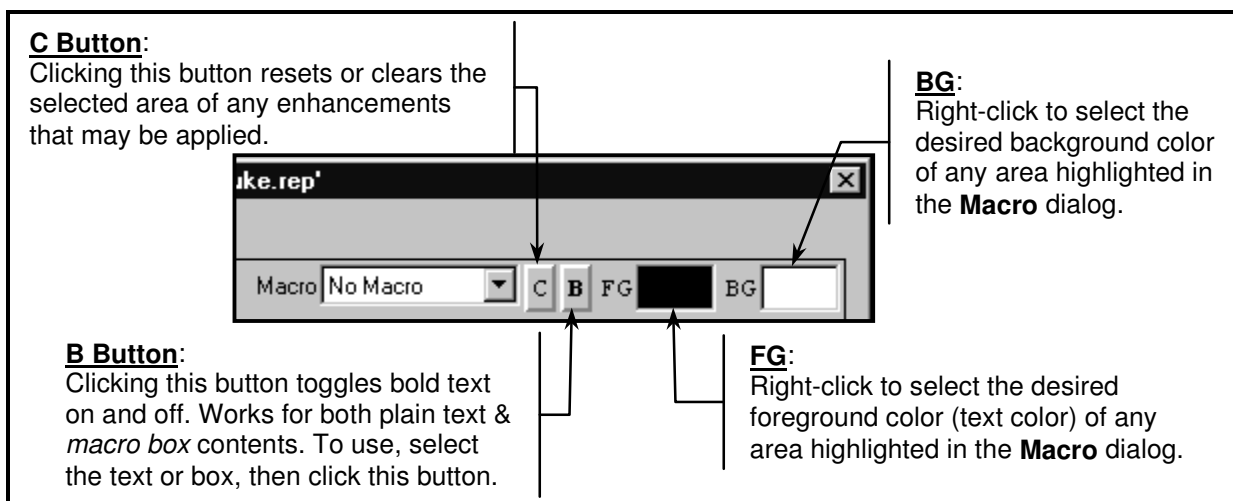


Figure 3-64. Macro Dialog - Text Enhancement Tools

The remaining menu selections in the **Macro** dialog have no effect on the *macros* and are specific to the **Report Editor** dialog functions.

- ❑ **REPORT > Edit > Clear Report:** Selecting **Clear Report** from the **Edit** menu shown in Figure 3-57 deletes or *clears* the present eddy current report in its entirety from the **Report Editor** dialog. If an existing report is inadvertently cleared using this function, click the **CANCEL** button. This causes the message box shown in Figure 3-65 to appear. Click **No** to *cancel* the changes. Click the **Report** button, and the **Report Editor** dialog appears with the original unedited report intact.

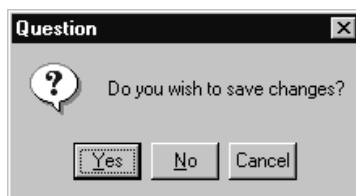


Figure 3-65. Message Box After Clicking CANCEL on the **Report Editor** Dialog

- ❑ **REPORT > Edit > Print Headers ...:** Selecting **Print Headers ...** from the **Edit** menu shown in Figure 3-57 displays the **Print Options** dialog shown in Figure 3-66. The **Headers** tab provides an area for the **Report Title**, **Report Header**, and **Page Header** to be entered and formatted as desired. The various text controls, i.e., font, size, alignment, etc., are self-explanatory. Experiment with this dialog until you get the results desired.

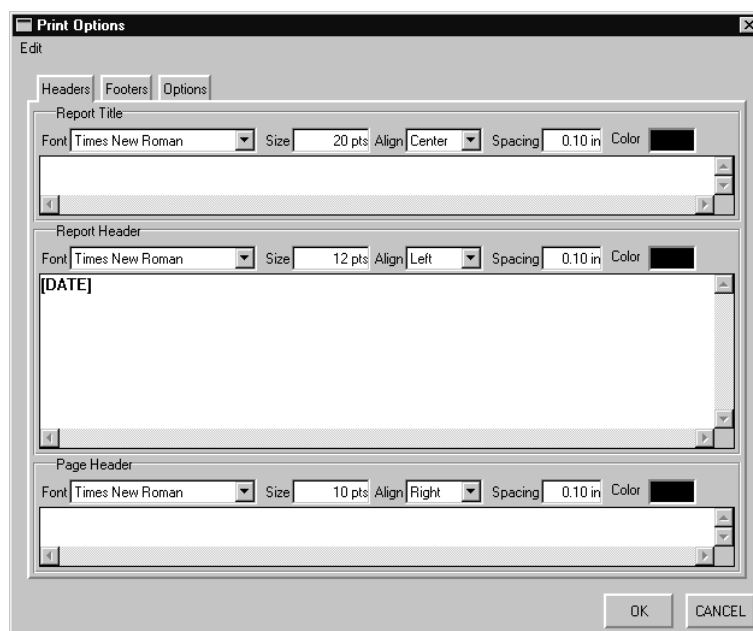


Figure 3-66. Print Options Dialog - Headers Tab

The **Footers** tab shown in Figure 3-67 provides an area for the **Report Body** (Courier New font strongly recommended), **Page Footer**, **Report Footer**, and **Report Version** to be entered and formatted as desired. The various text controls, i.e., font, size, alignment, etc., are self-explanatory. As with the **Headers** tab, experiment with this dialog until you get the results desired.

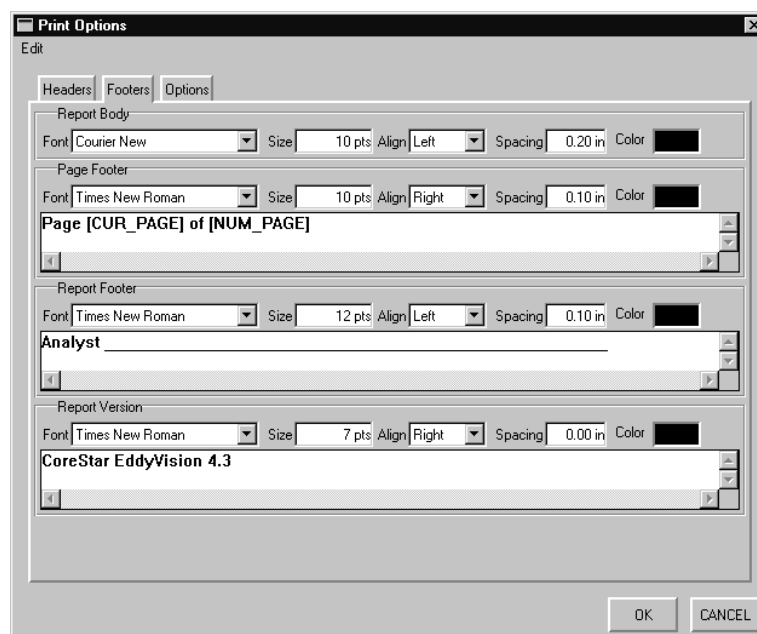


Figure 3-67. Print Options Dialog - Footers Tab

The **Options** tab shown in Figure 3-68 allows margin settings to be adjusted as desired. These are increment-decrement fields. To change a value, position the cursor over a field and **click** or **right-click**. Enabling or disabling **Draw Separators** turns the printed report's form lines on (enabled) or off (disabled). When **Draw Separators** is enabled, the selection button turns green and appears depressed as shown in Figure 3-68. The default setting is on.

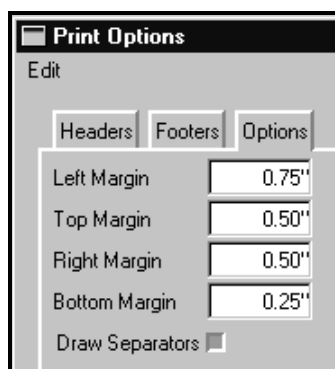


Figure 3-68. Print Options Dialog - Options Tab

The **Edit** menu on the **Print Options Dialog** shown in Figure 3-69 contains only one (1) selection named **Set Defaults**. Selecting **Set Defaults** resets all the values in the **Print Options Dialog**, including all three (3) tabbed dialogs, to the default values shown in Figures 66 through 68. Note that some of the values are enclosed in square brackets ([]). This indicates an automated *macro* function. For example, the *macro* **[DATE]** shown in Figure 3-66 automatically inserts the current date when the report is printed. Other common system macros include: **[DATETIME]**, **[NUM_PAGE]**, **[CUR_PAGE]**, **[MONTH]**, and **[YEAR]**.

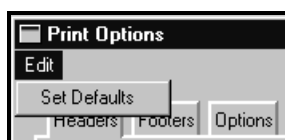


Figure 3-69. Print Options Dialog - Edit Menu

Figure 3-70 shows the contents of the **REPORT > View** menu, which contains only (1) selection, discussed below.

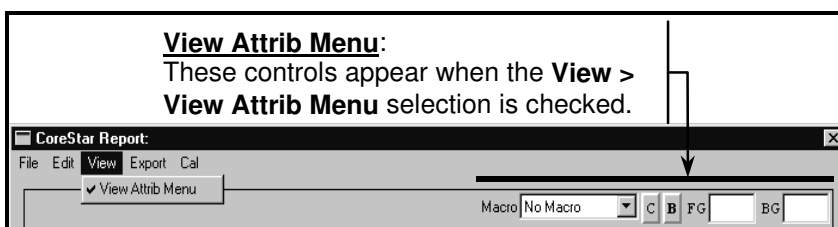


Figure 3-70. View Menu on Report Editor Dialog

- ❑ **REPORT > View > View Attrib Menu:** Selecting **View Attrib Menu** from the **View** menu toggles the text enhancement controls shown in Figure 3-70 on and off. If the **View Attrib Menu** selection is checked (as shown), then the controls appear (as shown); otherwise, the menu item is unchecked and the controls are not displayed. These controls work the same as those previously discussed in the *macro* section (*see Macros > Enhancement Tools*). These enhancements can only be applied to headers, footers, and other message-type entries in the report. Tube report entries cannot be enhanced. Furthermore, the **Macro** drop-down box has no effect within the **Report Editor** dialog, but rather is used in the **Macro** dialog discussed earlier.

Figure 3-71 shows the contents of the **REPORT > Export** menu, which contains three (3) selections. They are: **Plain Text ...**, **Anser Binary ...**, and **EddyNet Binary ...**.

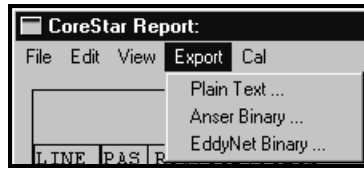


Figure 3-71. Export Menu on Report Editor Dialog

- ❑ In each case, the present eddy current report may be exported as follows:
 - select the desired format from the **Export** menu;
 - a **Save As** dialog appears;
 - select the desired path, i.e., drive and directory;
 - type the desired filename (a suggested filename and extension are displayed automatically);
 - click **Save** to export the report in the new format;

The newly exported report file can now be accessed via the desired software. Furthermore, the original eddy current report is undisturbed and still exists in the `\corestar\reports` subdirectory on the analysis computer.

Figure 3-72 shows the contents of the **REPORT > Cal** menu, which contains two (2) selections. They are: **Store Report to Cal** and **Load Report from Cal**.



Figure 3-72. Cal Menu on Report Editor Dialog

- ❑ **REPORT > Cal > Store Report to Cal:** Selecting **Store Report to Cal** from the **Cal** menu on the **Report Editor** shown in Figure 3-72 places a copy of the present eddy current report to the same drive and directory where the currently opened cal group is located. During data analysis, the working eddy current report is automatically stored in the `\corestar\reports` subdirectory on the analysis computer. Once the cal group is analyzed and the eddy current report edited and finalized, select **Cal > Store Report to Cal** to store the final report in the cal group it relates to.

- ❑ **REPORT > Cal > Load Report From Cal:** Selecting **Load Report from Cal** from the **Cal** menu on the **Report Editor** shown in Figure 3-72 loads the report for the currently opened cal group. You must be logged on as the same analysis type, i.e., pri, sec, res, etc., in order to load the report; otherwise, a message may appear indicating that no report exists for the analysis type that you're currently logged in as. Alternatively, you can use the **File > Load Report ...** menu selection (*discussed earlier*) to load the report from the cal group directory.

Global Editing

During the final editing stage of an eddy current report, it may be desired to perform a global edit, i.e., change entries in certain columns of the report from one value to another. EddyVISION32 provides two (2) global editing dialogs. Depending on the field to be edited, the appropriate dialog will appear. As an example in Figure 3-73, the **EXTENT** field header was **right-clicked** causing the **Global Edit** dialog shown to appear. This particular dialog type automatically appears when text editing is required. The desired entry in the **EXTENT** column was **first** clicked; therefore, the current value in the field is displayed in the **From** field on the **Global Edit** dialog as shown, i.e., **16B TEI**. Simply enter the new value in the **To** field and click **OK** to change all the matching values in this column to the new value.

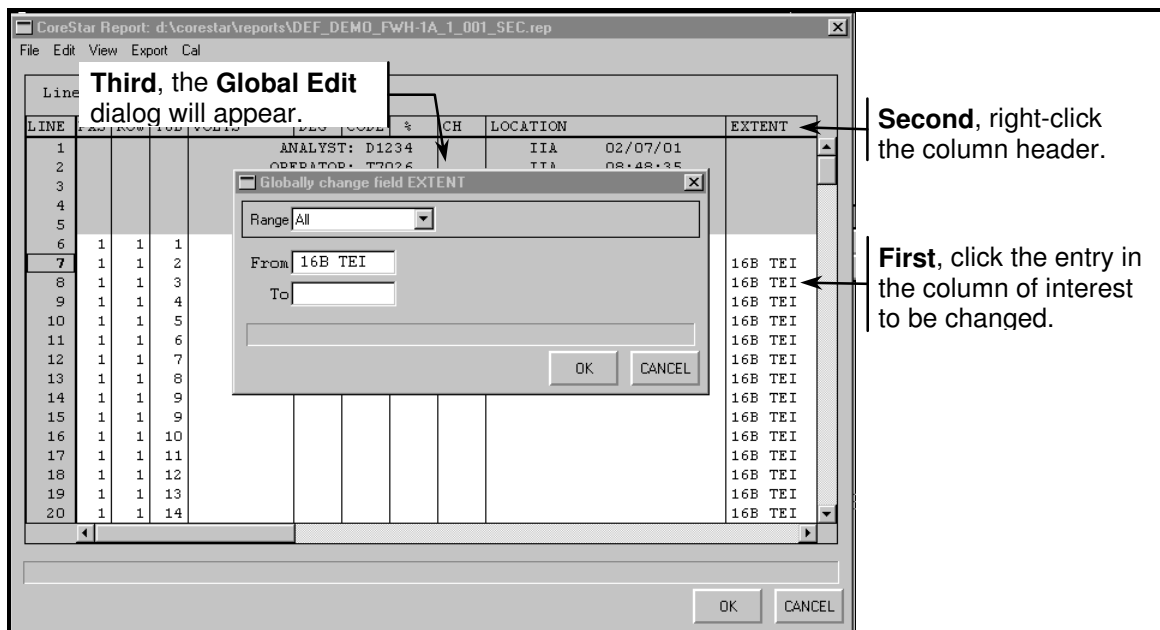


Figure 3-73. Global Edit Dialog

Figure 3-74 shows that the range of the changes may be limited based on the selection in the **Range** drop-down box as shown.

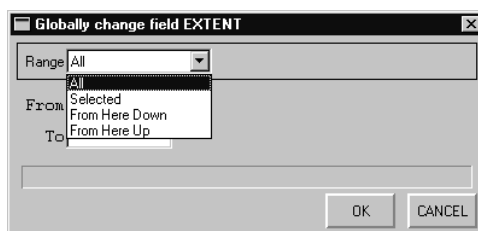


Figure 3-74. Range Selections in the Global Edit Dialog

- **All:** Changes *all* the entries to the new value in the **To** field that match the value in the **From** field for the column selected;
- **Selected:** Changes only the *selected* entry to the new value in the **To** field for the column selected;
- **From Here Down:** Changes *all the entries from the selected entry to the end of the report* to the new value in the **To** field that match the value in the **From** field for the column selected;
- **From Here Up:** Changes *all the entries from the selected entry to the top of the report* to the new value in the **To** field that match the value in the **From** field for the column selected;

Carefully review the report after performing global edits to ensure the results are as expected. If the desired results are not obtained, click the **CANCEL** button on the **Report Editor** dialog, click **No** on the message box that appears, click the **REPORT** button to open the **Report Editor**, and try again. Clicking **CANCEL** then clicking **No** on the message box acts like an **Undo** function which discards any changes to the report.

When other certain column headers are right-clicked (*for example OPERATOR*), the **Report Update** dialog shown in Figure 3-75 appears. This dialog works much in the same way as the **Global Edit** dialog discussed above, however it provides drop-down boxes from which selections are be made. The selections available in the drop-down boxes originate from the **EddyAdmin** tables (*discussed earlier*) and the **Summary**. The **Outage** field is entered from the keyboard while the **Cal** and **Sec** fields are increment-decrement boxes. The small button beside each field name turns green and appears depressed when selections, other than those that exist in the report, are made. This indicates the fields that will be changed to the new selection for those fields. Once all the fields are set as desired, click **OK** to apply the changes; otherwise, click **CANCEL**.

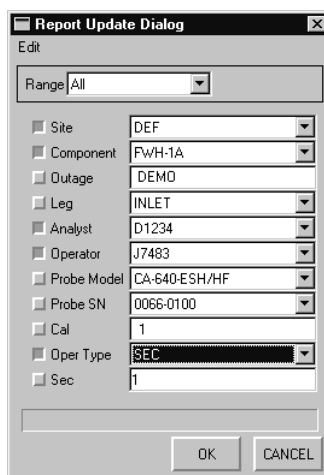


Figure 3-75. Report Update Dialog

The **Range** drop-down box shown in Figure 3-76 works in the same way as the **Range** drop-down box shown in Figure 3-74 for the **Global Edit** dialog. Please review that discussion for details.

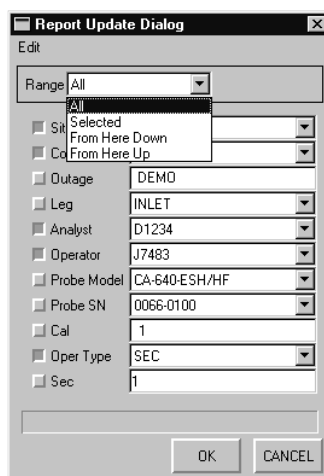


Figure 3-76. Range Selections in the Report Update Dialog

As shown in Figure 3-77, the **Report Update** dialog has one (1) menu named **Edit**, which contains two (2) selections. They are: **Use Defaults** and **Use Defaults For Invalid**.

Introduction: There are three (3) types of report entries: the *initial* entry, the *modified* entry, and the *default* entry. The *initial* entry comes from the currently selected row in the report being modified. When the **Report Update** dialog is activated, the *modified* entry is set equal to the *initial* entry. The *modified* entry is the one whose values are displayed and will be used for a global edit. Whenever **OK** is clicked, the *modified* entry is stored as the new *default* entry. As any of the fields are changed on **Report Update** dialog, the small button beside each field name turns green and appears depressed for any value that differs from the *initial* value. For example, if the **Site** field contains *DEF* and it's changed to *ABC*, the small button beside the **Site** field turns green and appears depressed. If **OK** is clicked, *ABC* is then stored as the new *default* entry for the **Site** code.

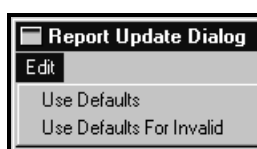


Figure 3-77. Report Update Dialog - Edit Menu

- **Report Update Dialog > Edit > Use Defaults:** Selecting **Use Defaults** from the **Edit** menu in the **Report Update** dialog resets the values in all the fields of the **Report Update** dialog to *default* entries (see explanation in **Introduction** above).
- **Report Update Dialog > Edit > Use Defaults For Invalid:** Sometimes not all of the information is filled-in for certain report formats. Selecting **Use Defaults For Invalid** from the **Edit** menu in the **Report Update** dialog leaves valid information in any fields unchanged, but replaces any invalid information with the appropriate *default* entry. For example, if the **Site** entry is not present in the currently selected report format, you can select the applicable **Site** code to make it valid, then fill-in the rest of the **Report Update** dialog using **Set Defaults For Invalid** (see explanation in **Introduction** above).

HISTORY Button

Clicking the **HISTORY** button shown in Figure 3-40 causes the dialog shown in Figure 3-78 to appear. This feature allows **Past** and **Current** history files to be loaded and viewed while analyzing data. Currently, only history files for CoreStar, SuperTubin, and EIMS are supported. The history file-type to be used is specified in the **Options** dialog discussed later in this section (*see OPTIONS > History*). The software can be set to automatically display the **History** dialog when a call exists in the currently loaded history file as each tube file is loaded for analysis (*see OPTIONS > History*). If a historical call exists when a tube file is loaded, the cursor on the long strip chart moves to the approximate location of the historical call provided the landmarks in use match those that were used in the history file.

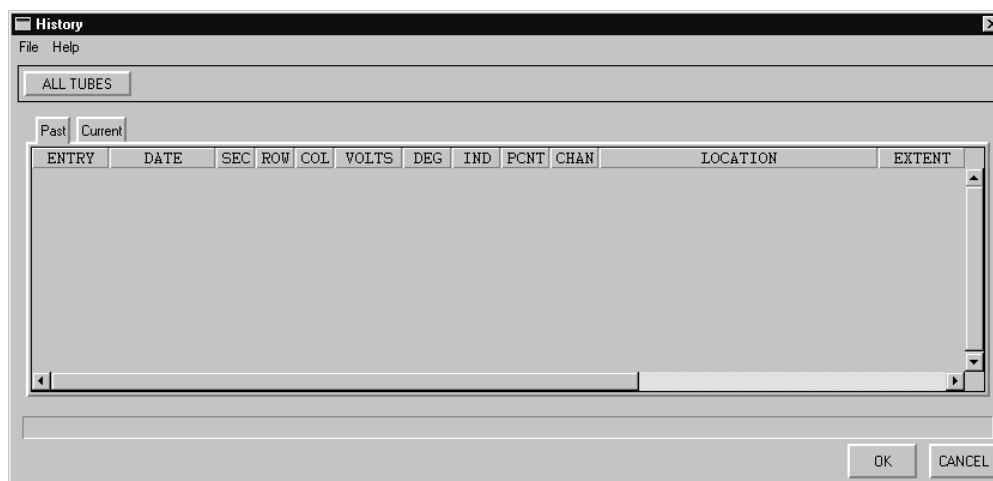


Figure 3-78. History Dialog

As shown in Figure 3-79, the **File** menu on the **History** dialog contains four (4) menu selections as shown. They are: **Print**, **Print Setup ...**, **Load Past ...**, and **Load Current ...**. These menu items are discussed below.



Figure 3-79. History Dialog - File Menu

- ❑ **HISTORY > File > Print:** Selecting **Print** from the **File** menu on the **History** dialog shown in Figure 3-79 immediately sends the currently displayed history list (*Past or Current*) to the printer. The specified printer is setup using the **File > Print Setup ...** dialog discussed next.

- ❑ **HISTORY > File > Print Setup ...:** Selecting **Print Setup ...** from the **File** menu on the **History** dialog shown in Figure 3-79 displays the typical Windows **Print** dialog on which the user can view and modify the printer settings as desired.
- ❑ **HISTORY > File > Load Past ...:** Selecting **Load Past ...** from the **File** menu on the **History** dialog shown in Figure 3-79 displays an **Open** dialog. Select the drive, directory, and *past* history (.hst) file for the format selected in the **Options** dialog (*see OPTIONS > History*). Figure 3-80 shows the **History** dialog after loading a CoreStar-format *past* history file.

ENTRY	DATE	SEC	ROW	COL	VOLTS	DEG	IND	PCNT	CHAN	LOCATION	EXTENT
1	07/05/1999	0	33	37	0.30	133°	NQI		3	001 +35.35	001 LTE
2	07/05/1999	0	33	37	0.38	99°	NQI		3	001 +36.82	001 LTE
3	07/05/1999	0	33	37	0.29	101°	NQI		3	001 +19.75	001 LTE
4	07/05/1999	0	33	37	0.54	74°	NQI		3	001 +23.46	001 LTE
5	07/05/1999	0	41	45	0.92	139°	NQI		3	001 +35.31	001 LTE
6	07/05/1999	0	41	45	0.76	51°	NQI		3	001 +33.28	001 LTE
7	07/05/1999	0	41	45	0.40	48°	NQI		3	001 +37.67	001 LTE
8	07/05/1999	0	41	45	0.69	38°	NQI		3	001 +37.41	001 LTE
9	07/05/1999	0	41	45	0.60	105°	NQI		3	001 +40.80	001 LTE
10	01/06/2000	0	42	26	5.64	27°		68%	1 C14	+0.39	HTE CTE

Sort by row, col, indication

Figure 3-80. History Dialog with Past History Loaded

- ❑ **HISTORY > File > Load Current ...:** Selecting **Load Current ...** from the **File** menu on the **History** dialog shown in Figure 3-79 displays an **Open** dialog. Select the drive, directory, and *current* history (.cur) file for the format selected in the **Options** dialog (*see OPTIONS > History*). Figure 3-81 shows the **History** dialog after loading a CoreStar-format *current* history file. The current history is typically used when analyzing additional eddy current data for retests during the current job activity. It assists the analyst in knowing where to look for the indication(s) called during previous analysis of the tube.

ENTRY	DATE	SEC	ROW	COL	VOLTS	DEG	IND	PCNT	CHAN	LOCATION	EXTENT
1	01/06/2000	0	42	26	0.42	167°		5%	1 C12	+0.44	HTE CTE
2	01/06/2000	0	42	26	1.75	18°		45%	1 C12	+0.29	HTE CTE
3	01/06/2000	0	42	26	5.64	27°		68%	1 C14	+0.39	HTE CTE
4	01/06/2000	0	43	25	0.15	164°		9%	1 C12	+0.35	HTE CTE
5	01/06/2000	0	43	25	0.55	1°		3%	1 C12	+13.57	HTE CTE
6	01/06/2000	0	43	25	5.67	37°		93%	1 C14	+0.96	HTE CTE
7	01/06/2000	0	43	25	0.55	1°		3%	1 C12	+14.60 TO C12 +16.83	HTE CTE
8	01/04/2000	0	43	25	0.45	149°		27%	M1 C13	+0.00	HTE CTE
9	01/06/2000	0	43	25	0.55	1°		3%	1 C12	+13.57	HTE CTE
10	01/06/2000	0	44	25	5.71	24°		60%	1 C13	-0.09	HTE CTE

Figure 3-81. History Dialog with Current History Loaded

As shown in Figure 3-82, the **Help** menu on the **History** dialog contains only one (1) menu selection as shown. It is: **Show EIMS Fields**. This menu item is discussed below.

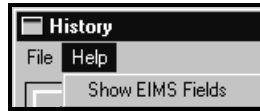


Figure 3-82. History Dialog - Help Menu

- ❑ **HISTORY > Help > Show EIMS Fields:** Selecting **Show EIMS Fields** from the **Help** menu on the **History** dialog shown in Figure 3-82 displays a text file that's designed to assist database management administrators with exporting history files from the Zetec EIMS database management system in the properly delimited text file format.

The **ALL TUBES** button on the **History** dialog shown in Figure 3-83 causes all the tubes in the currently loaded history file for the tab selected to be displayed. If the **ALL TUBES** button is depressed, it turns green, and changes to **CUR TUBE** indicating that only the historical calls, if any, for the tube file currently being analyzed will be displayed. In Figure 3-83, figure (a) shows *all tubes* loaded into **Past** history while figure (b) shows only calls from the **Past** history file for the *current tube* being analyzed. In this example, no calls are being displayed in figure (b) for the current tube since none exist for the current tube in this sample history file.

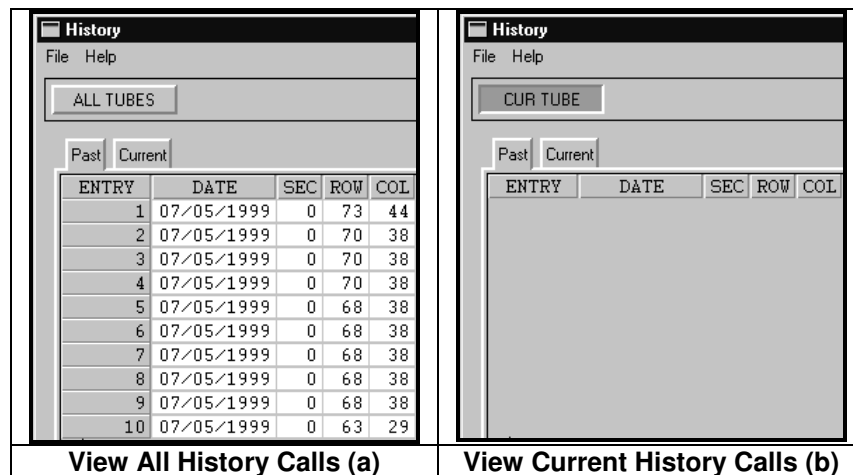


Figure 3-83. History Dialog - Viewing ALL TUBES vs. CUR TUBE History

Clicking either the **Past** or **Current** tabs in Figure 3-83 causes the historical calls to be displayed as appropriate. Applicable **Past** and/or **Current** history files must be loaded in order to view historical calls under either tab.

Finally, the **History** dialog provides a sorting feature. As various columns headers are clicked, the currently displayed history list is sorted. The sorting criteria is reported in the **Status Bar** at the bottom of the dialog. See the **Status Bar** in Figure 3-80 for an example.

SUMMARY Button

Clicking the **SUMMARY** button shown in Figure 3-40 causes the dialog shown in Figure 3-84 to appear. The information displayed in this dialog is typically entered during acquisition. As each tube file from a cal group is loaded, the first part of the file, called the *header*, contains this information. The *header* provides information about the current site and job, including, but not limited to: plant site, component this data is for, the component file (.cmp) used, the outage, the reel or cal group number, the acquisition time and date, the leg from which the data was acquired, the **User ID** for the acquisition operator, the calibration standards used, inspection frequencies used, and more. Furthermore, **Summary** values must exist in the **EddyAdmin** table on the analysis computer, else a message box(es) will appear warning the user which entries are missing. In addition, the matching component (.cmp) file must exist in the \corestar\comp subdirectory. The menu bar selections are discussed below.

SITE CODE	DEF	COMP	FVH-1A	CHAN	FREQ	SPAN	ROT	COIL	CTX
MODEL	FVH-DEMO			1	560.000	32	81°	1 D	1
OWNER	CORESTAR			2	560.000	60	260°	5 A	1
OUTAGE	DEMO	DATE	01/27/2000	3	260.000	29	297°	1 D	2
REEL	1	LEG	INLET	4	260.000	20	123°	5 A	2
PROBE	CA-640-ESH/HF	SN	0066-0100	5	130.000	20	198°	1 D	3
LENGTH	60 FT	EXT	60 FT	6	130.000	45	27°	5 A	3
VENDOR	SSI			7	30.000	3	119°	1 D	4
EXT TYPE	CSI			8	30.000	20	258°	5 A	4

Figure 3-84. Summary Dialog

As shown in Figure 3-85, the **File** menu on the **Summary** dialog contains only one (1) menu choice called **Print ...**, which is discussed below.

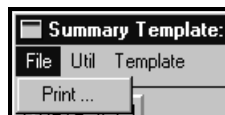


Figure 3-85. Summary Dialog - File Menu

- ❑ **SUMMARY > File > Print ...:** Selecting **Print...** from the **File** menu on the **Summary** dialog shown in Figure 3-85 displays a typical Windows **Print** dialog on which the user can view and modify the printer settings as desired. Afterwards, clicking **OK** on this **Print** dialog immediately sends the currently displayed **Summary** to the printer.

As shown in Figure 3-86, the **Util** menu on the **Summary** dialog contains three (3) menu choices. They are: **Clear Header**, **Update Config**, and **EddyAdmin ...**, which are discussed below.

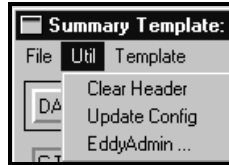


Figure 3-86. Summary Dialog - Util Menu

- ❑ **SUMMARY > Util > Clear Header:** Selecting **Clear Header** from the **Util** menu on the **Summary** dialog shown in Figure 3-86 causes the information in most of the fields of the **Summary** dialog to be *cleared* while other fields are set to default values. This function is typically used more so during acquisition vs. data analysis.
- ❑ **SUMMARY > Util > Update Config:** Selecting **Update Config** from the **Util** menu on the **Summary** dialog shown in Figure 3-86 causes the configuration displayed to be updated. The configuration settings are displayed with a yellow background in the upper right area of the **Summary** dialog. These settings include channels, inspection frequencies, span settings, rotation settings, coils in use, etc. The configuration settings are typically set during acquisition vs. data analysis.
- ❑ **SUMMARY > Util > EddyAdmin ...:** Selecting **EddyAdmin ...** from the **Util** menu on the **Summary** dialog shown in Figure 3-86 starts the **EddyAdmin** utility. For information on the purpose and use of the **EddyAdmin** utility, please see the topic **Util > Tools > Run EddyAdmin** discussed earlier.

As shown in Figure 3-87, the **Template** menu on the **Summary** dialog contains only one (1) *active* menu choice named **Edit ...**, which is discussed below. The other choices on the **Template...** menu are grayed-out indicating that they are *inactive*. These items become *active* once the **Template** is opened for editing.

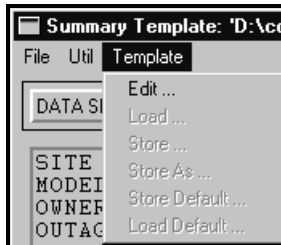


Figure 3-87. Summary Dialog - Template Menu

- SUMMARY > Template > Edit ...:** Selecting **Edit ...** from the **Template** menu on the **Summary** dialog shown in Figure 3-87 opens the **Template** dialog shown in Figure 3-88. This dialog is used to edit the design of the **Summary** as desired by the user. **Field Labels** may be edited by simply typing over the existing label. For example, to change the **Field Label** named *REEL* shown in Figure 3-88 to *CAL GROUP*, simply position the cursor at the beginning of the existing label named *REEL* and type over it with the label named *CAL GROUP*. **Field Labels** are plain text and are shown as black text on a gray background in Figure 3-88.

Field Label →

Color Controls →

Macro Field →

NUM	FG	BG
1		
2		
3		
4		
5		

Figure 3-88. Summary Template Dialog

The **Color Controls** shown in Figure 3-88 may be used to change background (**BG**) and foreground (**FG**) colors as desired. There are five (5) preset color schemes; however, any color within any color scheme may be changed by right-clicking the desired color box within the **Color Controls**, and selecting the new color. These five (5) color schemes are assigned to certain areas of the **Summary Template** as described below:

- NUM 1:** Controls the color assignments for the general dialog. In Figure 3-88, clicking on the general gray area within the dialog causes the **NUM 1** button beside the first color scheme to appear depressed as shown.
- NUM 2:** Controls the color assignments for all *macro* fields. In Figure 3-88, clicking in any *macro* field causes the **NUM 2** button beside the second color scheme to appear depressed.

- **NUM 3:** Controls the color assignments of the configuration settings in the upper right area of the dialog. In Figure 3-88, clicking in the configuration settings area causes the **NUM 3** button beside the third color scheme to appear depressed.
- **NUM 4 & NUM 5:** User-defined color controls. To use, **click & drag** over a desired area on the **Summary Template** dialog, then release. This creates a marquee box around the selected area. Next, **click** either the **NUM 4** or **NUM 5** button beside the desired color scheme to be used for the selected area. If a different color is desired, **right-click** the appropriate color box within **NUM 4** or **NUM 5**, and select the new color.

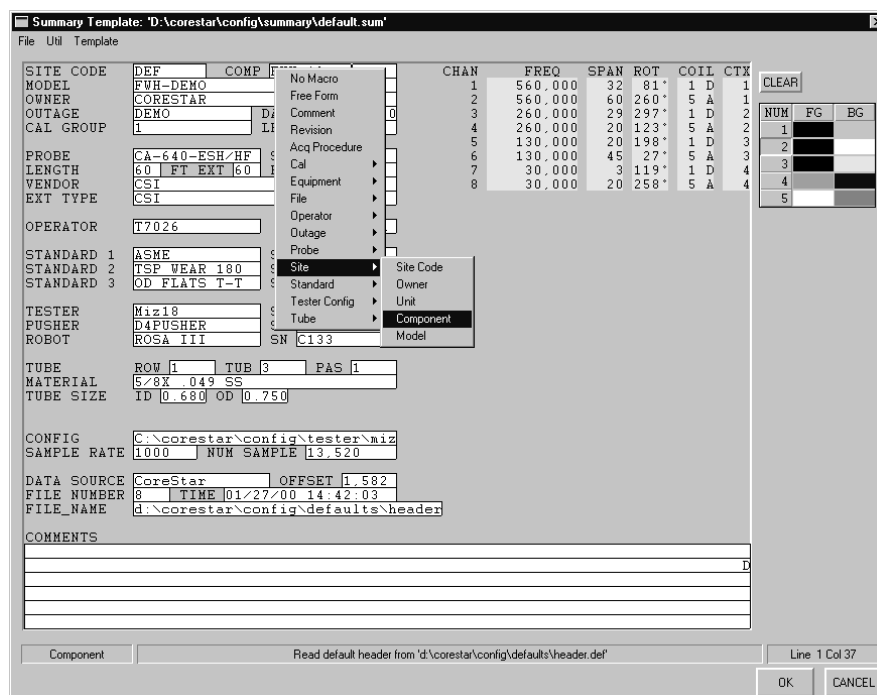


Figure 3-89. Summary Template Dialog - Assigning Macros to Fields

The value that resides in each information field (the white boxes on the **Template** dialog) is assigned using the *macro* popup shown in Figure 3-89. For example, in Figure 3-89, the **COMP** information field was **right-clicked** causing the *macro* popup to appear. Note the term *Component* appears on the left side of the **Status Bar** at the bottom of the dialog. This indicates that this field is already assigned the *Component* macro. Highlighting an information field and selecting **No Macro** from the popup resets the selected area to plain text. To create a new information field, **click & drag** the cursor to select the area of the new field, and release. A marquee box will appear. **Right-click** in the marquee box, and select the desired *macro* value to assign to the new field.

The **Clear** button above the **Color Controls** is used to reset a selected area on the **Template** dialog to plain text. To *clear* an area and reset it to plain text, **click & drag** the cursor over the area to be cleared, and release. A marquee box will appear around the selected area. **Click** the **Clear** button. If at anytime an error is made in the redesign effort, simply **click** the **CANCEL** button on the **Template** dialog to exit the dialog without saving the changes.

As shown in Figure 3-90, the **Template** menu on the **Template** dialog contains five (5) *active* menu choices. They are: **Load ...**, **Store ...**, **Store As ...**, **Store Default ...**, and **Load Default ...**, which are discussed below. The other choice, **Edit ...**, is grayed-out indicating that it is *inactive*.

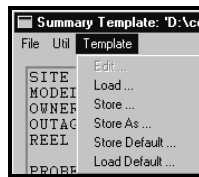


Figure 3-90. Template Dialog - Template Menu

- ❑ **Template > Load ...:** Selecting **Load ...** from the **Template** menu on the **Template** dialog shown in Figure 3-90 displays an **Open** dialog which defaults to the `\corestar\config\summary` subdirectory. Select the desired summary template file (*.sum*) to be used and click **OK** on the **Open** dialog.
- ❑ **Template > Store ...:** Selecting **Store ...** from the **Template** menu on the **Template** dialog shown in Figure 3-90 saves the current summary template file to the `\corestar\config\summary` subdirectory using the same filename.
- ❑ **Template > Store As ...:** Selecting **Store As ...** from the **Template** menu on the **Template** dialog shown in Figure 3-90 displays a **Save As** dialog which defaults to the `\corestar\config\summary` subdirectory. Type a new filename for the current summary template file, including the *.sum* extension, and click **OK** on the **Save As** dialog to save the new summary template file with the new filename.
- ❑ **Template > Store Default ...:** Selecting **Store Default ...** from the **Template** menu on the **Template** dialog shown in Figure 3-90 saves the current summary template to the `\corestar\config\summary` subdirectory as the default template file to be used until **Store Default ...** is executed again. Clicking **OK** performs the same function as well.
- ❑ **Template > Load Default ...:** Selecting **Load Default ...** from the **Template** menu on the **Template** dialog shown in Figure 3-90 opens the current default summary template file from the `\corestar\config\summary` subdirectory.

Note: During publication of this manual, the Summary dialog is being considered for redesign in lieu of a simpler version in which the Template feature may be removed.

Overriding Summary Fields

During certain instances, the information in some of the information fields on a given **Summary** for a cal group may need to be changed and overridden or *forced*. Each time a tube file is loaded within a cal group, *header* information is reloaded into the **Summary**. Due to this, if the **Summary** contains the incorrect information in a field(s) that was encoded at the time of acquisition, it will be necessary to correct the field(s) and override the **Summary** for the given cal group. Typically, errors by acquisition may include incorrect selections for: the component, the *.cmp* file, the site, the leg, the operator ID, etc. To correct these errors, **right-click** the incorrect field(s). The available selections from the applicable **EddyAdmin** table will be displayed in a drop-down list as shown in the example in Figure 3-91 for the **Site** code. **Click** the correct selection from the list for each incorrect field in order to set the **Summary** as desired. Once the **Summary** is corrected, **click** the **OVERRIDE HEADER** button to force the changes. The header information contained in each tube file remains unmodified. The **Summary** remains *overridden* until the **OVERRIDE HEADER** button is disabled. Be sure to disable the **OVERRIDE HEADER** button before opening a new cal group. This way the default *header* for the new cal group will be displayed and changes, if necessary, can be made. Good communications, updated **EddyAdmin** tables, and matching *.cmp* files between data acquisition and analysis computers will lessen the necessity of *overriding* the **Summary**.

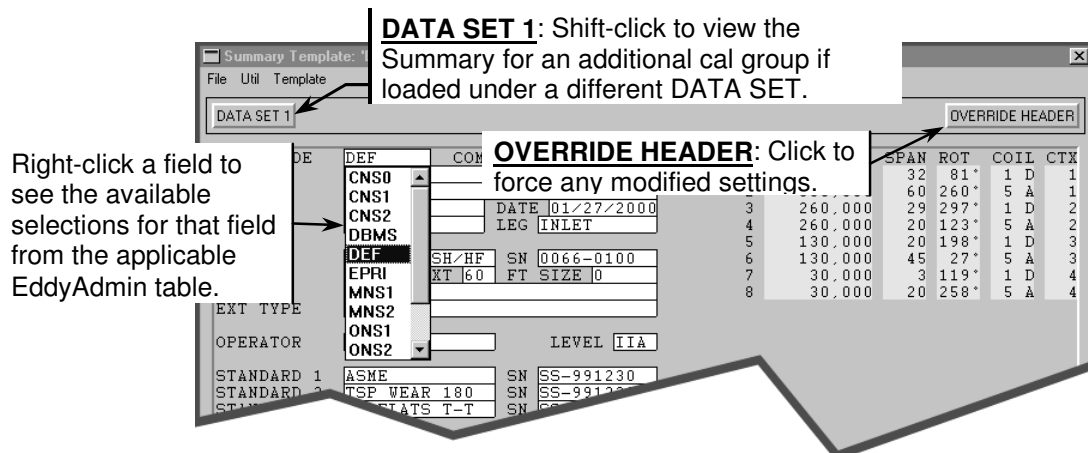


Figure 3-91. Partial Summary Dialog - Changing & Overriding Values

The **DATA SET 1** button shown in Figure 3-91 is used to view the **Summary** of another cal group loaded under another **DATA SET**. For more information about loading addition concurrent cal groups under different data sets, please see the topic **TLIST > DSET 1 Button** discussed earlier in this section.

MESSAGE Button

Clicking the **MESSAGE** button shown in Figure 3-40 causes the dialog shown in Figure 3-92 to appear. In addition, when a message file is loaded from the **TLIST**, this dialog also appears automatically and displays the message entered by acquisition. Messaging is a useful tool available in most eddy current acquisition applications used by the inspection industry. It's a way for acquisition to relay important information about tube data as it is acquired. Information about plugged tubes, obstructed or restricted tubes, position verifications, start of cal, etc., are some of the more common messages. Review Figure 3-92 for details about the use and various controls on the **Message** dialog.

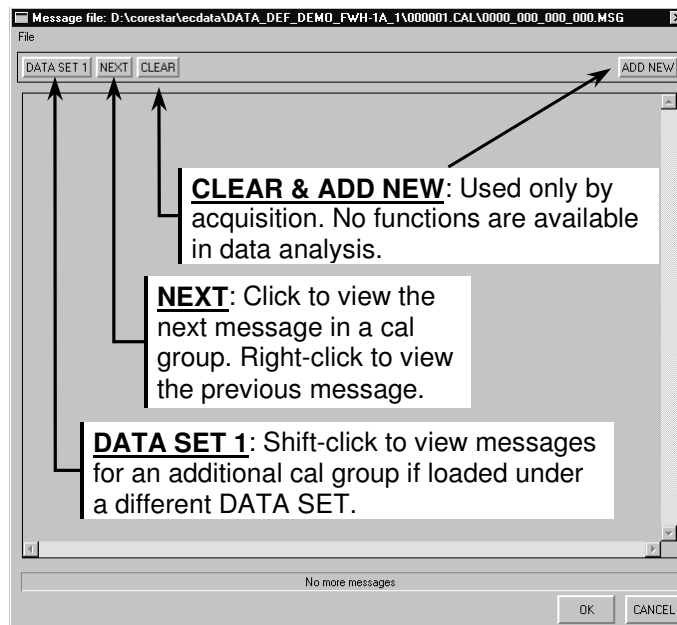


Figure 3-92. Message Dialog

The **Message** dialog contains only one (1) menu as shown in Figure 3-93. The **File** menu contains two (2) selections. They are: **Update Message** and **Print**.



Figure 3-93. Message Dialog - File Menu

- ❑ **MESSAGE > File > Update Message:** The **Update Message** feature on the **File** menu in the **Message** dialog shown in Figure 3-93 is used only by acquisition and is not available during data analysis. Selecting **Update Message** during analysis displays a message box stating this fact.

- ❑ **MESSAGE > File > Print:** Selecting **Print** on the **File** menu in the **Message** dialog shown in Figure 3-93 displays a typical Windows **Print** dialog on which the user can view and modify the printer settings as desired. Afterwards, clicking **OK** on this **Print** dialog immediately sends the currently displayed message to the printer.

SETUP Button

Clicking the **SETUP** button shown in Figure 3-40 causes the dialog shown in Figure 3-94 to appear. This dialog is used to view *raw* inspection frequencies for the currently selected cal group via the **DATA SET 1** button, setup & perform **Mixes**, and setup & apply **Filters**. The menu bar features will be discussed first.

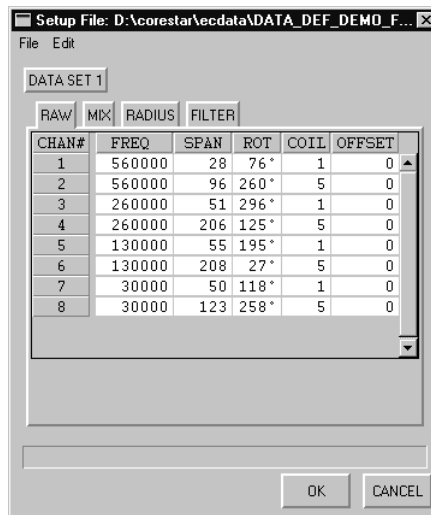


Figure 3-94. Setup Dialog

The **Setup** dialog contains two (2) menu selections as shown in Figure 3-94. They are: **File** and **Edit**. The available choices under each of these menus are discussed below.

- ❑ **SETUP > File > Store Cal Setup:** Selecting **Store Cal Setup** from the **File** menu on the **Setup** dialog shown in Figure 3-95 saves the current setup to a file (.set) in the currently opened cal group subdirectory. The filename format is: *xxx.set*, where *xxx* is the analysis-type that the user is currently logged in as. The analysis-type is displayed in the upper right corner of the **Main Analysis** window. Examples are: *pri.set*, *sec.set*, *res.set*, etc.

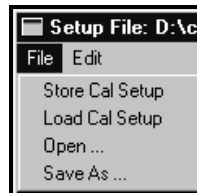


Figure 3-95. Setup Dialog - File Menu

- ❑ **SETUP > File > Load Cal Setup:** Selecting **Load Cal Setup** from the **File** menu on the **Setup** dialog shown in Figure 3-95 loads the setup the file (*if present*) from the currently opened cal group subdirectory. This function 'looks' for a setup filename based on the analysis-type that the user is currently logged in as. If none exists, a message box appears informing the user of this fact. The analysis-type is displayed in the upper right corner of the **Main Analysis** window. Examples: 1) if you are currently logged in as *PRI* and a *pri.set* exists in the currently opened cal group, the setup file will be loaded, 2) if you are currently logged in as *SEC* and a *pri.set* exists in the currently opened cal group, the setup file will not be loaded and message box will appear, 3) if you are currently logged in as *PRI* and a *sec.set* exists in the currently opened cal group, the setup file will not be loaded and message box will appear, etc.
- ❑ **SETUP > File > Open ...:** Selecting **Open ...** from the **File** menu on the **Setup** dialog shown in Figure 3-95 displays a typical Windows **Open** dialog directed to the `\corestar\setup` subdirectory. Select a desired setup file (*.set*) and click **OK** to load the setup. This provides a way to share setup files between users. If the desired setup file is located on a different drive, in a different directory, or on a shared network drive, simply change to the preferred directory and load the setup file. After loading a shared setup file, be sure to select **File > Store Cal Setup** to save the setup file to the cal group. This ensures that the appropriate filename (*pri.set*, *sec.set*, *res.set*, etc.) will automatically be assigned for the analyst-type currently in use.
- ❑ **SETUP > File > Save As ...:** Selecting **Save As ...** from the **File** menu on the **Setup** dialog shown in Figure 3-95 displays a typical Windows **Save As** dialog directed to the `\corestar\setup` subdirectory. Enter any desired name for the setup filename and click **OK** to save. This provides a way to share setup files between users. The setup file may be saved to a different drive, a shared network drive, or other directory as specified by the user.
- ❑ **SETUP > Edit > Zero Data Offsets:** Selecting **Zero Data Offsets** from the **Edit** menu on the **Setup** dialog shown in Figure 3-96 resets any existing axial coil offsets to zero. For example, if you are analyzing data from a probe that has more that one set of coils separated by some distance, the data from one coil(s) can be lined-up or *offset* to coincide with the data of the other coil. Selecting **Zero Data Offsets** simply resets any axial coil offsets to zero as if no *offset* has been applied.



Figure 3-96. Setup Dialog - Edit Menu

The **Setup** dialog contains four (4) tab selections as shown in Figure 3-97. They are: **RAW**, **MIX**, **RADIUS**, and **FILTER**. Each tab and their use are discussed below.

- ❑ **SETUP > RAW Tab:** The **RAW** tab on the **Setup** dialog is shown in Figure 3-97. This dialog displays the channel settings for the currently opened cal group and:
 - inspection frequencies in Hertz (Hz) under the **FREQ** column;
 - span settings in the **SPAN** column;
 - rotation settings in the **ROT** column;
 - coil number for each channel in the **COIL** column, and;
 - axial offset, if any, in the **OFFSET** column (*Coil 5 is currently offset by 15 data points in Figure 3-97*);

The **RAW** dialog only displays information of which none can be changed.

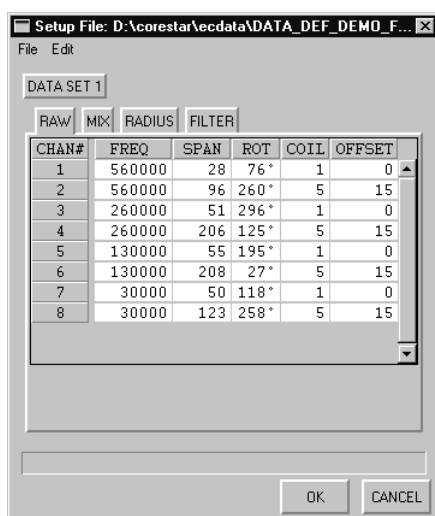


Figure 3-97. Setup Dialog - RAW Tab

- ❑ **SETUP > MIX Tab:** The **MIX** tab on the **Setup** dialog is shown in Figure 3-98. This dialog displays current mix settings, if any, and is used to create new mixes. Figure 3-98 shows two (2) mix or process channels. **Raw** channels 1 and 3 are combined for Mix# 1 while **Raw** channels 4 and 6 are combined for Mix# 2. Up to three (3) channels may be selected for any given mix channel.

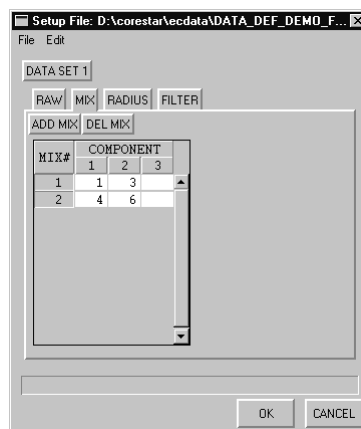


Figure 3-98. Setup Dialog - MIX Tab

To create a new mix:

- Click the **ADD MIX** button and a new empty mix channel will appear at the bottom of the **MIX** dialog as shown in Figure 3-99;
- Click or right-click the empty fields in the **COMPONENT 1, 2, and 3** columns to display the desired mixing combination. Ensure that the signal of interest to be mixed out, i.e., tube support, dent, etc., is displayed in the Lissajous window on the **Main Analysis Window**;
- Click the corresponding **MIX#** button to perform the mix;

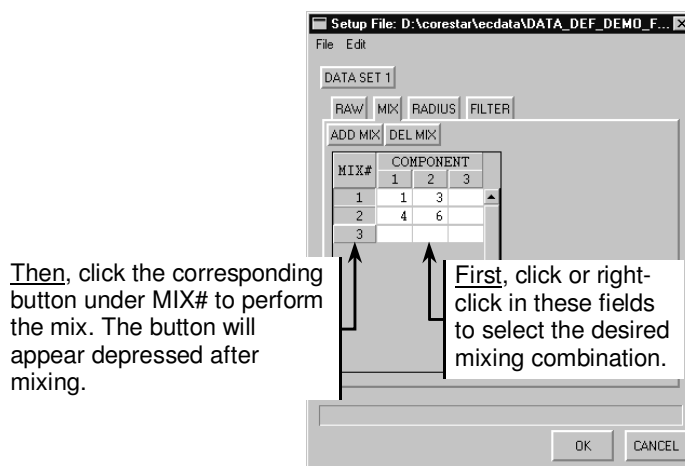


Figure 3-99. Setup Dialog - MIX Tab - Adding a Mix (Process) Channel

To delete a mix channel, **click** the **DEL MIX** button. The bottom mix channel will be deleted. Currently, there is not a method to delete any other mix channel other than the bottom one. Therefore, to delete the first mix, the ones below it will have to be deleted first.

- ❑ **SETUP > RADIUS Tab:** The **RADIUS** tab on the **Setup** dialog is shown in Figure 3-100. This dialog is used during rod control cluster assembly (RCCA) and other similar inspections where profilometry-type probes are in use, i.e., 8 X 1, etc. Since these settings are very specialized, please contact technical support if the use of this dialog is required.

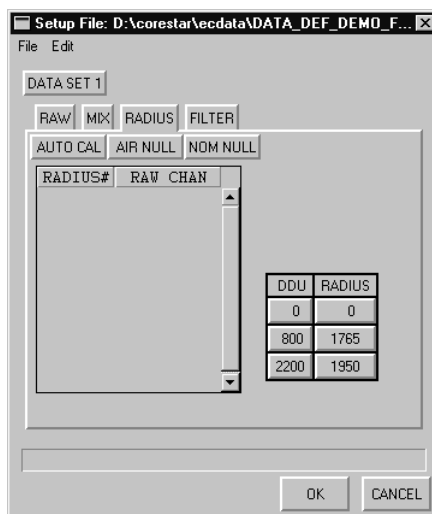


Figure 3-100. Setup Dialog - RADIUS Tab

- ❑ **SETUP > FILTER Tab:** The **FILTER** tab on the **Setup** dialog is shown in Figure 3-101. This dialog displays current filter settings, if any, and is used to create new filtered channels. Filtering is useful for signal smoothing, filtering out extraneous noise, etc. Figure 3-101 shows two (2) filter channels. Filter# 1 is setup with a 10% low-pass by a 100% high-pass 3rd order bandpass filter for raw channel number 1. Filter# 2 is setup with a 0% low-pass by a 70% high-pass 2nd order bandpass filter for mix channel M1. The **ORDER** value controls the smoothing effect of the filter. Higher orders smooth signals more while lower orders smooth signals less. The effect of the **LO PASS** (low) and **HI PASS** (high) settings are shown in Table 3-1:

Filter	Effect of Higher Setting:	Effect of Lower Setting:
LO PASS	Tends to suppress slow forming signals.	Tends <i>not</i> to suppress slow forming signals.
HI PASS	Tends <i>not</i> to suppress fast forming signals.	Tends to suppress fast forming signals.

Table 3-1. Effects of Low and High Pass Filter Settings

Definitions:

- **High-pass Filter:** A wave filter having a single transmission band extending from some critical, or cutoff, frequency other than zero, up to infinite frequency.
- **Low-pass Filter:** A filter network, which passes all frequencies below a specified frequency with little or no loss but discriminates strongly against higher frequencies.

Source: Dictionary of Electronics, Howard W. Sams & Co., Inc., Indianapolis, Indiana - Fourth Printing - 1975

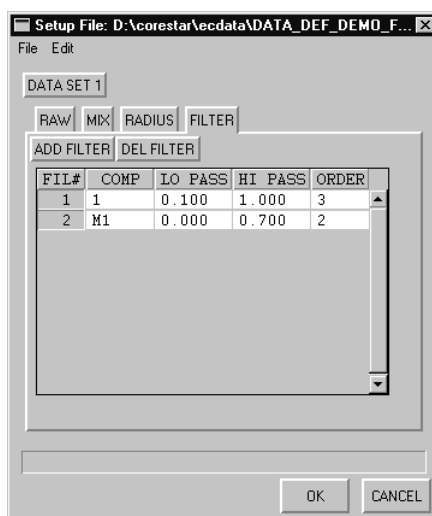


Figure 3-101. Setup Dialog - FILTER Tab

To create a new filter channel:

- **Click** the **ADD FILTER** button shown in Figure 3-101 and a new empty filter channel will appear at the bottom of the **FILTER** dialog - much like the **MIX** dialog discussed in the previous topic;
- **Click** or **right-click** the **COMP** field to display the desired channel to be filtered;
- **Click** or **right-click** the **LO PASS** and **HI PASS** fields for the desired filter specifications;
- **Click** or **right-click** the **ORDER** field for the desired order of the filter;
- Finally, **click** the corresponding **FIL#** button to the left of the filter entry to activate the filter;

To delete a filter channel, **click** the **DEL FILTER** button. The bottom filter channel will be deleted. Currently, there is not a method to delete any other filter channel other than the bottom one. Therefore, to delete the first filter, the ones below it will have to be deleted first.

CURVE Button

Clicking the **CURVE** button shown in Figure 3-40 causes the dialog shown in Figure 3-102 to appear. This dialog is used to create desired calibration curves. An unlimited number of curves as well as multiple curve-types may be created per channel. Review Figure 3-102 for a detailed overview of the **CURVE** dialog.

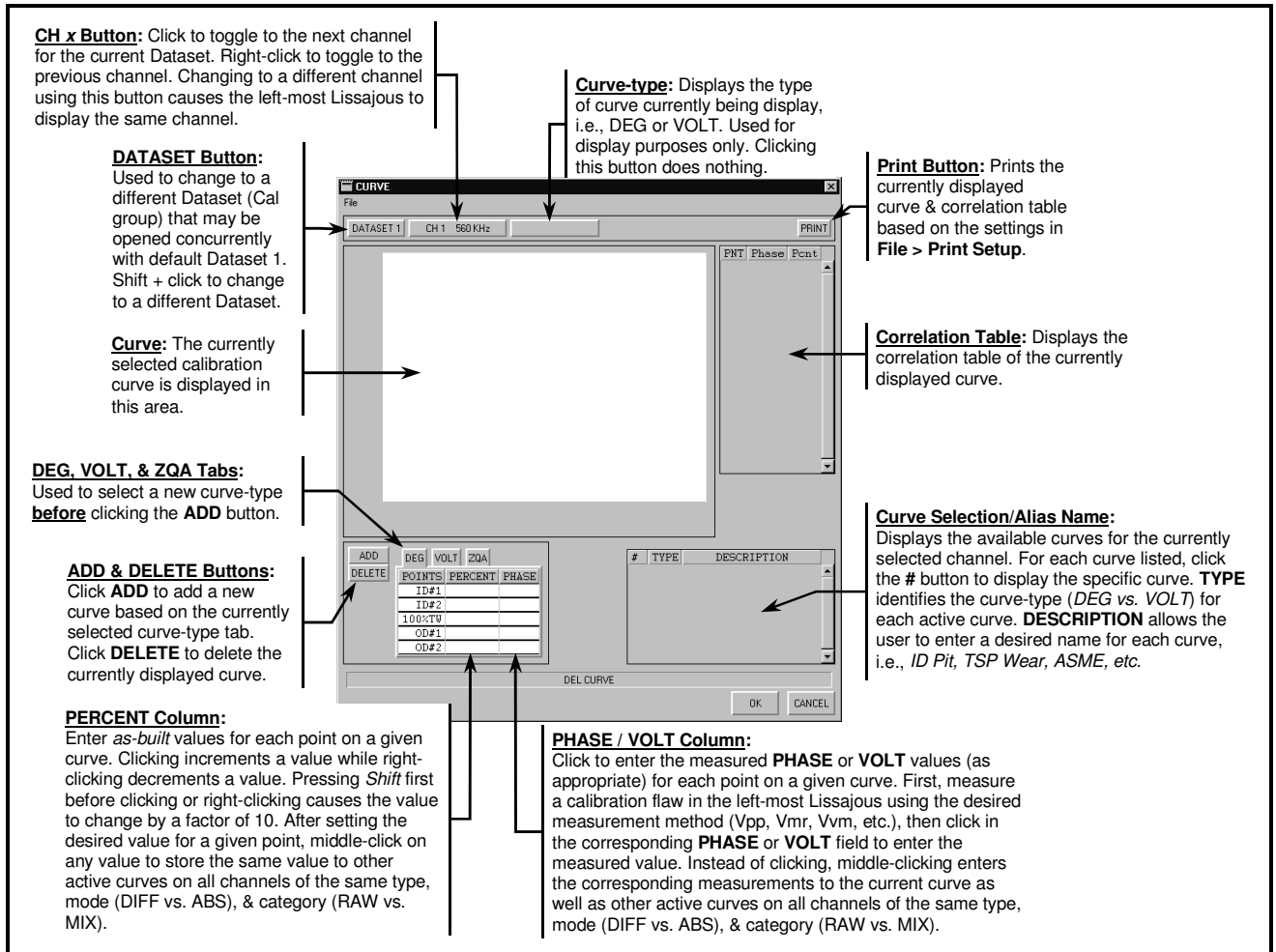


Figure 3-102. Curve Dialog

The **CURVE** dialog contains only one (1) menu selection as shown in Figure 3-103. **File > Print Setup ...** is discussed below.

- ❑ **CURVE > File > Print Setup ...**: Selecting **Print Setup ...** from the **File** menu on the **CURVE** dialog shown in Figure 3-103 causes the standard **Windows Print Setup** dialog to appear. Print properties, i.e., landscape, portrait, printer, etc., may be set as desired using this dialog as with any other Windows-based software. These settings affect only how and where calibration curves and correlation tables are printed.

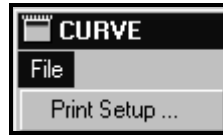


Figure 3-103. Curve Dialog - File Menu

To create a new calibration curve:

1. With a calibration standard data file loaded, click the **CURVE** button to bring up the **CURVE** dialog shown in Figure 3-102;
2. Position the **CURVE** dialog to the right of the left-most Lissajous so that the Lissajous is fully visible;
3. **Click** or **right-click** the **Channel Button** (see Figure 3-102) at the top of the **CURVE** dialog until the desired eddy current channel is displayed. Note: As the **Channel Button** is **clicked** through the available channels, the left-most Lissajous changes to the same channel. The **Channel Button** should be the only channel selection method used during calibration curve setup;
4. **Click** either the **DEG** or **VOLT** tab to indicate the desired curve-type. The **ZQA** tab provides a *canned* phase vs. depth curve and should not be used unless verified against the *as-built* dimensions of the calibration standard in use;
5. **Click** the **ADD** button located to the left of the **DEG** tab to add a new blank curve of the type selected in step 4;
6. In the left-most Lissajous, locate and center the first calibration flaw of interest. For a standard **DEG** curve, the most likely flaw would be the 100% ASME hole;
7. **Click** in the Lissajous window once to measure the flaw **Vpp** (Volts peak-to-peak). The **Vpp** measurement is indicated by the appearance of red circles on the eddy current signal. **Click** in the Lissajous window a second time to measure the flaw **Vmr** (Volts Maximum Rate of Change). The **Vmr** measurement is indicated by the appearance of small green circles in addition to the red **Vpp** circles on the eddy current signal. If a **VOLT** curve is being setup, the second click will measure the flaw **Vvm** (Volts Vertical-

- maximum) instead of **Vmr** and is indicated by the appearance of yellow circles;
8. Once the signal of interest is measured as desired in step 7 above, **click** the field under the **PHASE** or **VOLT** column next to the corresponding **PERCENT** field to enter the measured **PHASE** or **VOLT** value (as appropriate) for the current flaw. For example, if the 100% ASME hole is being added to a **DEG** curve, **click** the field under the **PHASE** column beside the **PERCENT** field showing '100'. This field shows a descriptor of '100%TW' under the **POINTS** column;
 9. After completing step 8, note that the measured phase angle value (or voltage value if creating a volt curve) now appears in the **PHASE** or **VOLT** field that was clicked;
 10. Repeat the process until all calibration points are added. Figure 3-104 shows a completed **DEG** curve for a typical ASME standard using the 100, 60, and 20% flaws;

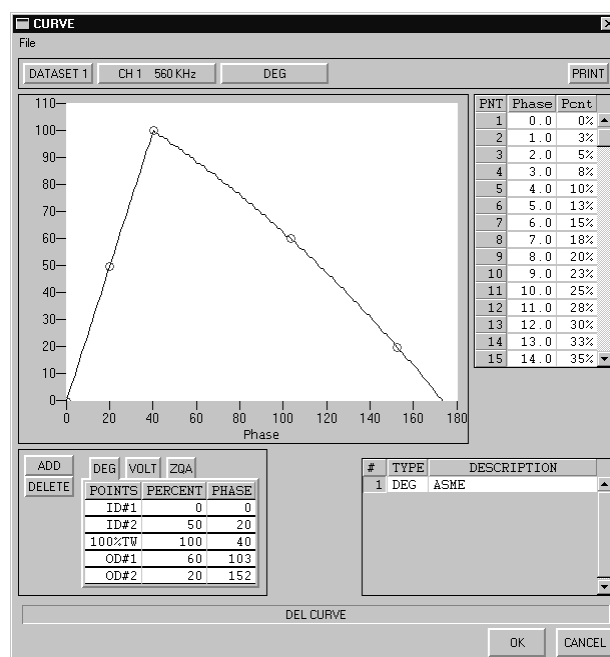


Figure 3-104. Curve Dialog - Typical DEG Curve (ASME)

In Figure 3-104, note that the unique name *ASME* has been entered in the **DESCRIPTION** field for this calibration curve. This is a useful feature when more than one curve is created for a given channel. When this curve is in use, this name will appear in the status bar on the **Main Analysis** screen.

To enter *as-built* depths for calibration curve points, simply **click** (increment) or **right-click** (decrement) in the desired field under the **PERCENT** column. For example, to change the 60% flaw to a depth of 58%, **right-click** the field under the **PERCENT** column beside the **OD#1** point until the value 58 appears. Additionally, holding down the **Shift** key first then **clicking** or **right-clicking**, changes the values by a factor of 10.

AUTO LOC Button

Clicking the **AUTO LOC** button shown in Figure 3-40 causes the dialog shown in Figure 3-105 to appear. This dialog is used to *train* the Analysis software to recognize, locate, and label the landmarks (support structures) for each data file as it is loaded. **Auto Locate** must be enabled on the **Display** tab of the **Options** dialog (*discussed in the next topic*) for **Auto Locate** to function automatically. The available landmarks reside in the current component file (.cmp) in use, which is setup in the **EddyAdmin - Sites** table (*see the menu description for Util > Tools > Run EddyAdmin ... earlier in this section*) and encoded in the **Summary**. To add, delete, or otherwise edit landmarks, modify the associated .cmp file using the **MakeComp** software. For guidance on using the **MakeComp** software, please refer to the *Technical Reference Manual for the MakeComp Program Module*. Review Figure 3-105 for a general overview of the **AUTO LOC** dialog. Each component of the **Auto Locate** dialog is discussed in detail following Figure 3-105.

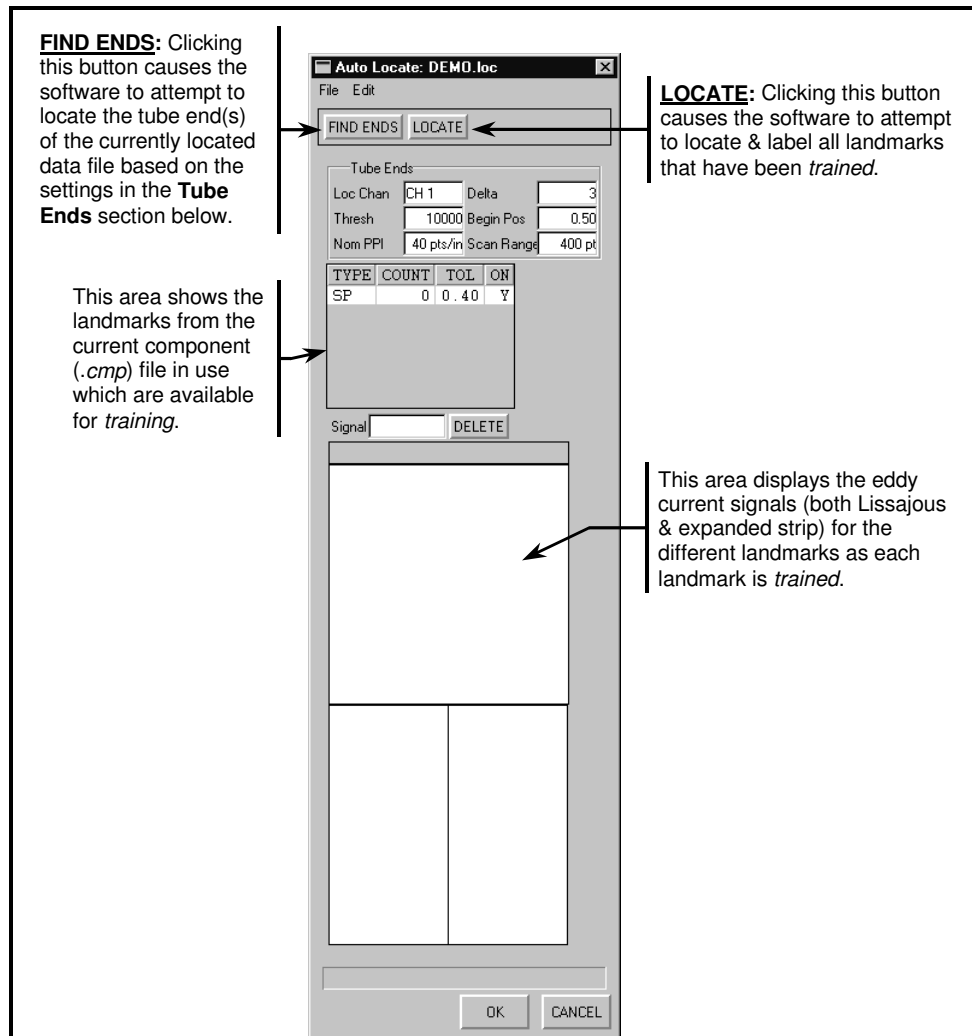


Figure 3-105. Auto-locate Dialog

The **Auto Locate** dialog contains two (2) menu selections, **File** and **Edit**, as shown in Figure 3-106. The **File** menu contains three (3) selections, which are discussed below.

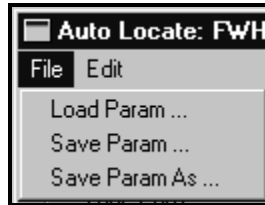


Figure 3-106. Auto Locate Dialog - File Menu

- ❑ **Auto Locate > File > Load Param ...:** Selecting **Load Param ...** from the **File** menu on the **Auto Locate** dialog shown in Figure 3-106 displays a standard **Open** dialog. Any previously saved **Auto Locate** parameter file (.loc) may be loaded (opened) and used as desired.

The default directory for **Auto Locate** parameter files is `\corestar\config\auto_locate\`; however, these files, as with any other file-type, may be saved and retrieved from any drive or directory as desired.

- ❑ **Auto Locate > File > Save Param ...:** Selecting **Save Param ...** from the **File** menu on the **Auto Locate** dialog shown in Figure 3-106 saves the currently open parameter file along with any changes to the same file name. If no file name has been assigned to the current parameter file, clicking **File > Save Param ...** saves the current parameter settings to `\corestar\config\auto_locate\default.loc`.
- ❑ **Auto Locate > File > Save Param As ...:** Selecting **Save Param As ...** from the **File** menu on the **Auto Locate** dialog shown in Figure 3-106 displays a standard **Save As** dialog which allows the user to assign a new name to the current parameter file. Furthermore, the file may be saved to the default directory as well as any other drive and/or directory as desired.

The **Edit** menu on the **Auto Locate** dialog contains four (4) selections as shown in Figure 3-107. The **Edit** menu selections are discussed below.



Figure 3-107. Auto Locate Dialog - Edit Menu

- ❑ **Auto Locate > Edit > Sort Signals:** Selecting **Sort Signals** from the **Edit** menu on the **Auto Locate** dialog shown in Figure 3-107 sorts or groups the signals used for training by landmark-type. For example, it groups all the *SP* types together, all the *BAF* types together, and so on. This function is beneficial for the user to examine all the signals of a given landmark-type that have been added to the *training set*.
- ❑ **Auto Locate > Edit > Clear LocBar:** Selecting **Clear LocBar** from the **Edit** menu on the **Auto Locate** dialog shown in Figure 3-107 clears all landmark labels from the location bar or area on the left side of the Main Analysis screen (see Figure 3-4).
- ❑ **Auto Locate > Edit > Clear Training Set:** Selecting **Clear Training Set** from the **Edit** menu on the **Auto Locate** dialog shown in Figure 3-107 clears or deletes all the signals in the *training set* from memory. A confirmation message is displayed before the *training set* is actually cleared. This is handy while *training Auto Locate* on a new data set using a different component file and/or different inspection frequencies.
- ❑ **Auto Locate > Edit > Clear History:** Selecting **Clear History** from the **Edit** menu on the **Auto Locate** dialog shown in Figure 3-107 clears the history list stored in a file located in and named: `\corestar\config\defaults\autoloc_history.def`. **Auto Locate** maintains a list of the *.loc* files in the *autoloc_history.def* file that have been used and saved by site, model, and component (see *Util > Tools > Run EddyAdmin ... > Sites Tab* earlier in this section). This feature allows the software to automatically load the proper *.loc* file when a cal group is opened for a site, model, and component that has been previously analyzed on the same computer.

The **Auto Locate** dialog contains two (2) buttons as shown in Figure 3-108. The functions of these buttons and the fields located in the **Tube Ends** section are discussed below.

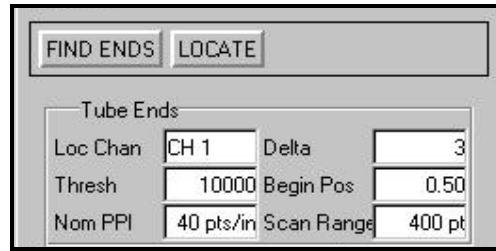


Figure 3-108. Auto Locate Dialog - Buttons & Tube Ends Section

- ❑ **Auto Locate > FIND ENDS Button:** Clicking the **FIND ENDS** button on the **Auto Locate** dialog shown in Figure 3-108 causes the software to attempt to locate the tube end(s) of the currently located data file based on the settings in the **Tube Ends** section.
- ❑ **Auto Locate > LOCATE Button:** Clicking the **LOCATE** button on the **Auto Locate** dialog shown in Figure 3-108 causes the software to attempt to locate & label all landmarks that have been *trained*.

The **Tube Ends** section of the **Auto Locate** dialog is discussed below. Note that all of the following settings interact with the others for finding the best auto-locating combination.

- ❑ **Auto Locate > Tube Ends > Loc Chan:** Clicking or right-clicking in the **Loc Chan** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the eddy current channel the software will use to locate the tube end(s) of the currently located data file. Choose a channel that has high sensitivity to the tube end exit signal such as a high frequency differential channel.
- ❑ **Auto Locate > Tube Ends > Thresh:** Clicking or right-clicking in the **Thresh** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the tube end threshold value by increments of ten. Holding down the **Shift** key while clicking or right-clicking changes the value in increments of one hundred. The value range is from 1 to 30,000. The software uses this value to locate the tube end(s) of the currently located data file. Choose a starting value in the center of the range, i.e., 15,000, and click the **FIND ENDS** button. If the software correctly locates and labels the tube end(s), then no further adjustment should be required. If the software doesn't locate the tube end(s), then decrease the **Thresh** value by 1,000 and try again. Continue this process until the software correctly locates and labels the tube end(s). If the software incorrectly locates and labels signals other than the tube end(s), increase the value in increments of 1,000 until the tube end(s) are located correctly. The **Loc Chan** may have to be changed to a different channel in order to find the best combination.

- ❑ **Auto Locate > Tube Ends > Nom PPI:** Clicking or right-clicking in the **Nom PPI** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the value by one. Holding down the **Shift** key while clicking or right-clicking changes the value in increments of ten. **PPI** is an abbreviation for *points-per-inch*. This value is used to calculate the location of the remaining landmarks after a minimum of two (2) landmarks have been located - typically, the tube ends. After two (2) valid landmarks are located and labeled (either automatically or manually) in the landmarks strip on the **Main Analysis** screen, moving the cursor between these landmarks causes the software to report the nominal data points-per-inch in the status bar along the bottom of the **Main Analysis** screen. Adjusting the **Nom PPI** value on the **Auto Locate** dialog to a similar value may improve the auto-locating function for the current data set.
- ❑ **Auto Locate > Tube Ends > Delta:** Clicking or right-clicking in the **Delta** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the value by one. Holding down the **Shift** key while clicking or right-clicking changes the value in increments of ten. The value ranges from 1 to 20. In most cases, the default setting of 3 is adequate. The **Delta** function is used to improve auto-locating in cases where significant background noise may be encountered in a data set. The **Delta** function averages background noise, which helps to separate the landmark responses from the noise there by making the landmarks more prominent and easier for **Auto Locate** to detect. Basically, the higher the noise level, the higher the **Delta** value may have to be adjusted.
- ❑ **Auto Locate > Tube Ends > Begin Pos:** Clicking or right-clicking in the **Begin Pos** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the value by increments of 0.05 or 5%. Holding down the **Shift** key while clicking or right-clicking changes the value in increments of 0.5 or 50%. The value ranges from 0.05 to 0.95 or 5% to 95%. In most cases, the default setting of 0.5 (50%) is adequate. **Begin Pos** defines the location within a data file where **Auto Locate** begins its landmark search. To have **Auto Locate** begin its landmark search in the middle of a data file, set this value to the default setting of 0.5. **Auto Locate** searches from the **Begin Pos** in both directions simultaneously. If the files of a given data set consistently have long *dead periods* recorded at the beginning or end of each file, then the **Begin Pos** value can be adjusted accordingly to help compensate and improve auto-locating. *Dead periods* are instances where eddy current data is being recorded, but the probe is not yet in motion.
- ❑ **Auto Locate > Tube Ends > Scan Range:** Clicking or right-clicking in the **Scan Range** field on the **Auto Locate** dialog shown in Figure 3-108 increments or decrements the value by one. Holding down the **Shift** key while clicking or right-clicking changes the value in increments of ten. The value ranges from 1 to 1,000. In most cases, a default setting of 300 is adequate. This value represents the number of data points **Auto Locate** uses during its landmark search. Too small a **Scan Range** value and some landmarks may be missed while too large a value may cause **Auto Locate** to mislabel some landmarks. A good practice is to find the low value where the landmarks *hit*, then find the high value where the landmarks still *hit*, then set the **Scan Range** value in the center of this range.

The **Landmarks Training** section of the **Auto Locate** dialog shown in Figure 3-109 is discussed below. This section contains settings used to *train* the software to automatically recognize, locate, and label valid landmarks other than tube ends within each data file of a data set.

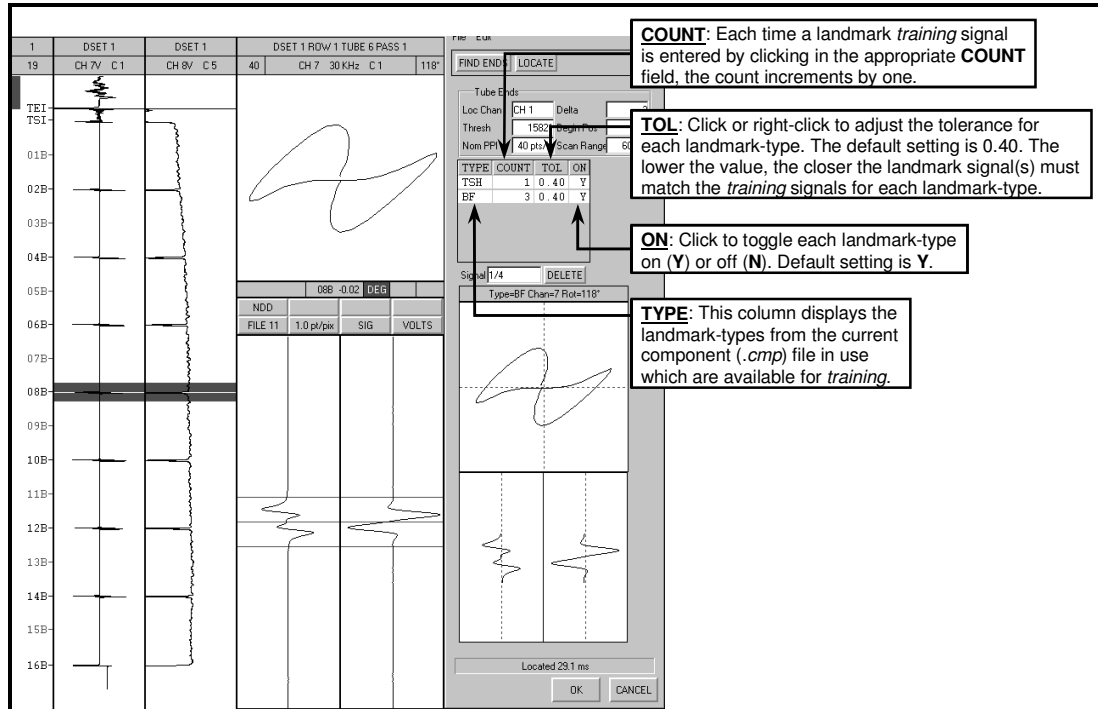


Figure 3-109. Auto Locate Dialog - Landmarks Training Section

- ❑ **Auto Locate > Type:** The **Type** column simply displays landmarks from the currently loaded component (.cmp) file that are available to be *trained*. Clicking in a **Type** field does nothing.
- ❑ **Auto Locate > Count:** The **Count** column displays an integer equivalent to the number of *training* signals, which have been provided to the software during the *training* process. To assign a *training* signal, center the desired landmark in the left-most Lissajous window and expanded chart on the **Main Analysis** screen using the desired eddy current channel, then **click** once in the appropriate **Count** field for that landmark. The **Count** field increments by one (1). For example in Figure 3-109, a baffle plate signal on channel #7 was centered in the expanded chart then the count field was clicked. This action caused the software to display the *training* signal in the Lissajous and expanded chart on the **Auto Locate** dialog as shown. Furthermore, the **Signal** field incremented by one (1). **Clicking** or **right-clicking** in the **Signal** field allows the user to review *training* signals which have been provided to the software during the *training* session. Additional *training* signals may be provided to the *training set* at anytime from any desired channel. **Clicking** the **Delete** button while a *training* signal is displayed deletes or clears the currently displayed *training* signal from the *training set*.

- ❑ **Auto Locate > TOL:** The **TOL** column displays the tolerance value for a given landmark type. In Figure 3-109, a **TOL** value of *0.40* is displayed which is the default **TOL** setting. **Clicking** in the **TOL** field for a given landmark-type increases the value by *0.01* while **right-clicking** decreases the value by the same. Holding down **Shift** before **clicking** or **right-clicking** the **TOL** field changes the value by *0.10*. The lower the value, the closer the given landmark signals must match the training signal for a given landmark. A higher value relaxes the tolerance.
- ❑ **Auto Locate > ON:** Click the **ON** column to toggle each landmark-type on (**Y**) or off (**N**). The default setting is **Y (On)**. This is a handy function when troubleshooting a *training set*.

General Guidance for Auto Locating

Note in Figure 3-109 that **Auto Locate** has located and labeled the valid landmarks within the data file. This is obvious since the landmark labels are displayed along the landmark strip in the left-most strip of the **Main Analysis** screen. Landmarks that are present in the current data file are displayed in *white* while those that are not present are displayed in *red*. For example, baffle plate *04B* is present and labeled; however, baffle plate *05B* is not present and the software displays *05B* in *red* in the general location along the data file where this baffle plate would be if it were present.

When setting up a new training set, it's a good idea to select **Auto Locate > Edit > Clear Training Set**. Next, start with the **Tube Ends** section by adjusting the values accordingly and **clicking** the **FIND ENDS** button until the software locates and labels the tube end(s). Next, *train* the software to recognize each landmark by providing *training* signals for each landmark-type in the **Landmarks Training** section and **clicking** the **LOCATE** button. Remember that all **Auto Locate** values and settings are interactive and may have to be adjusted until **Auto Locate** performs as desired. With a little practice, the user will be able to easily and quickly setup **Auto Locate** for any component.

OPTIONS Button

Clicking the **OPTIONS** button shown in Figure 3-40 causes the dialog shown in Figure 3-110 to appear. This dialog is used to adjust user settings affecting how the analysis software acts during use. The settings and functions for each tab on the **OPTIONS** dialog are presented in detail in the following figures. Changes to the settings on the **OPTIONS** dialog are accepted by **clicking** the **OK** button. If the user wishes to discard all changes, **click** the **CANCEL** button.

*Note: The **File** menu on the **OPTIONS** dialog performs no functions at publication of this manual.*

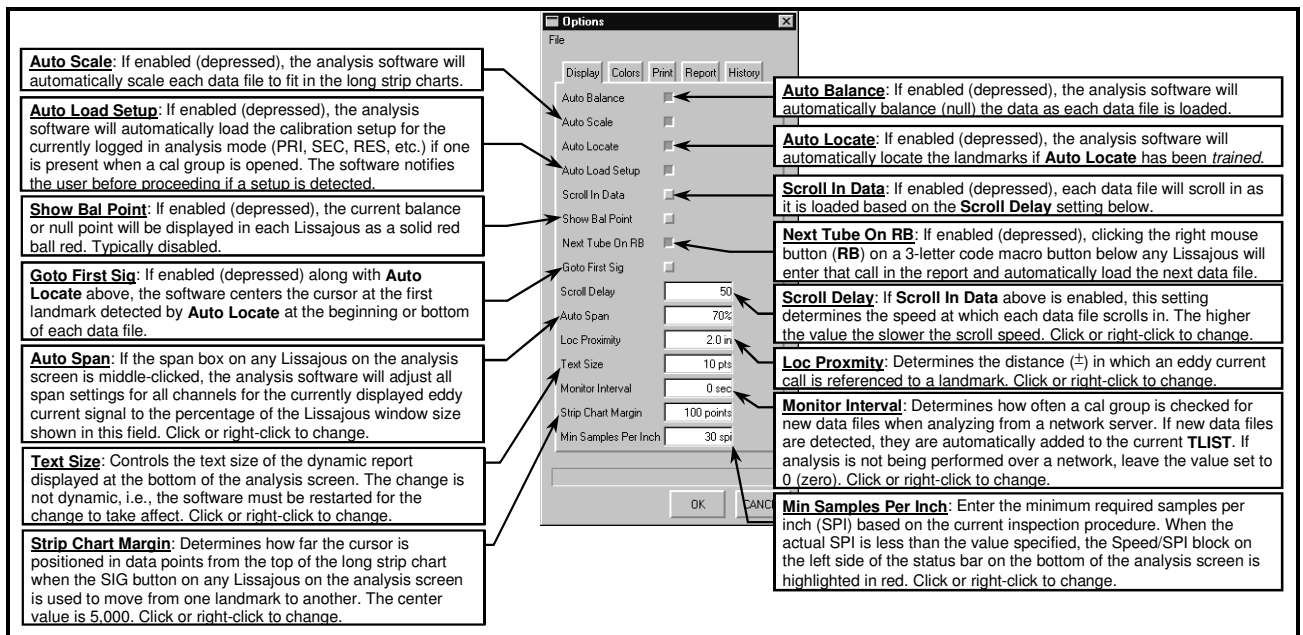


Figure 3-110. OPTIONS Dialog - Display Tab

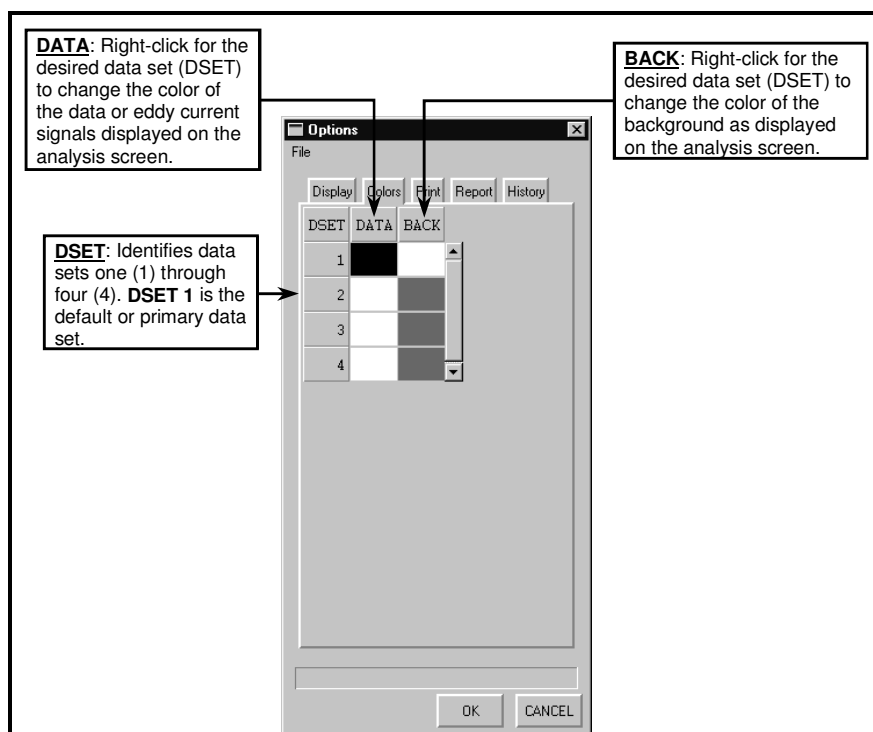


Figure 3-111. OPTIONS Dialog - Colors Tab

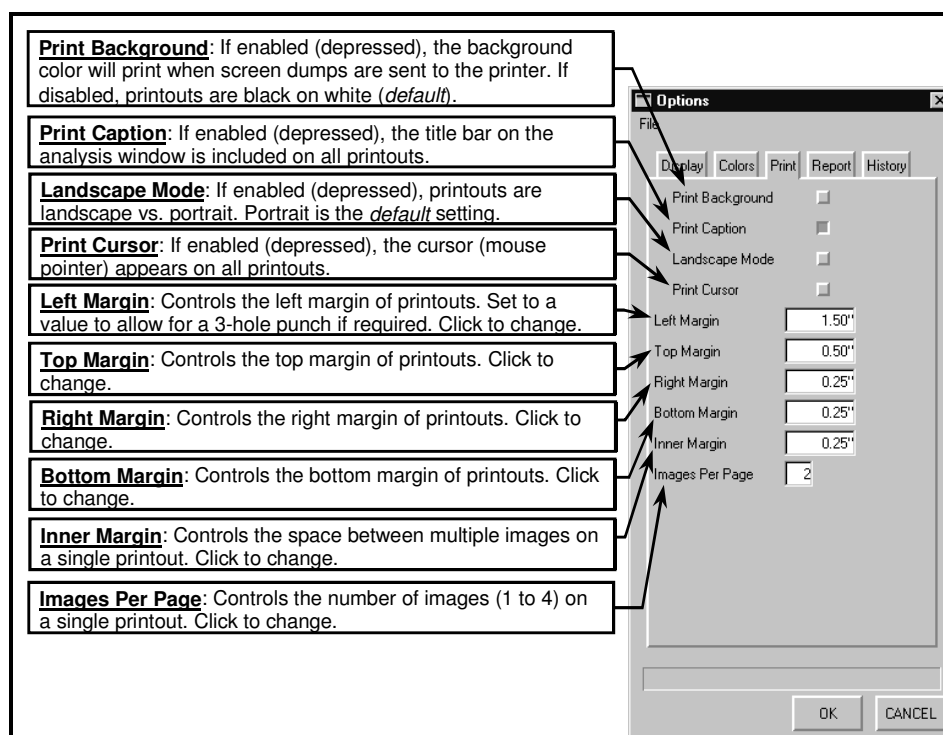


Figure 3-112. OPTIONS Dialog - Print Tab

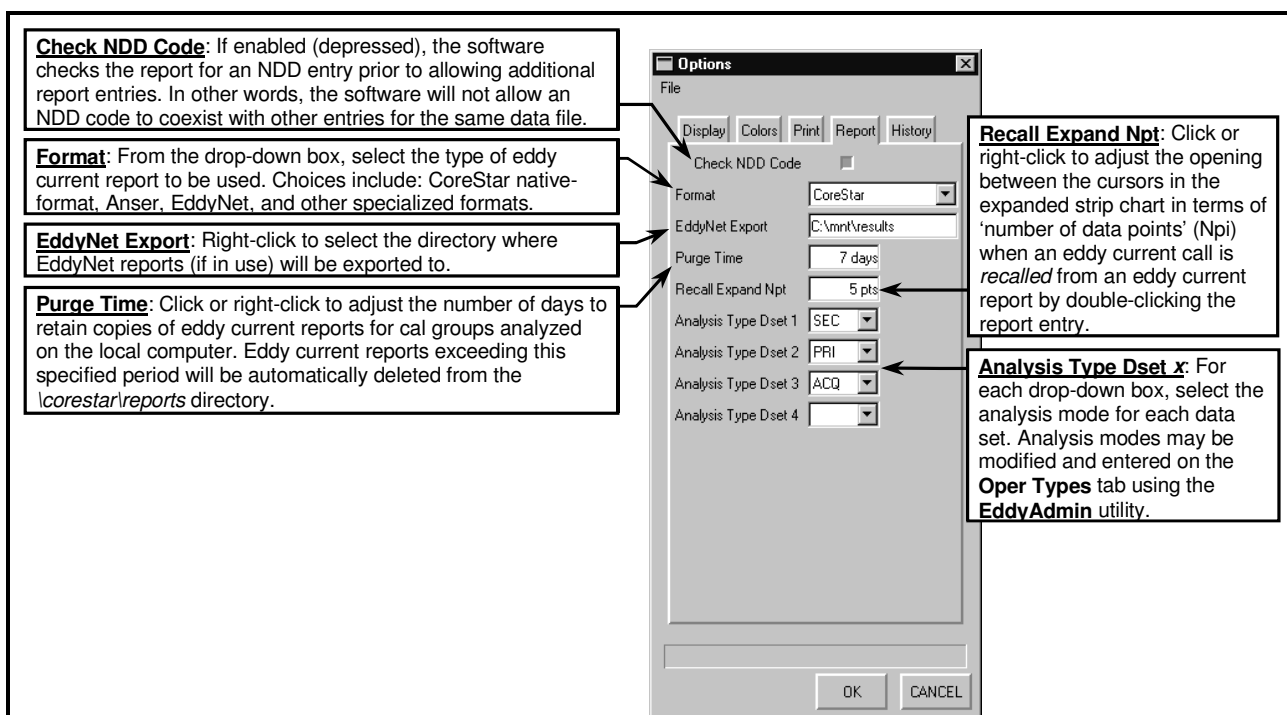


Figure 3-113. OPTIONS Dialog - Report Tab

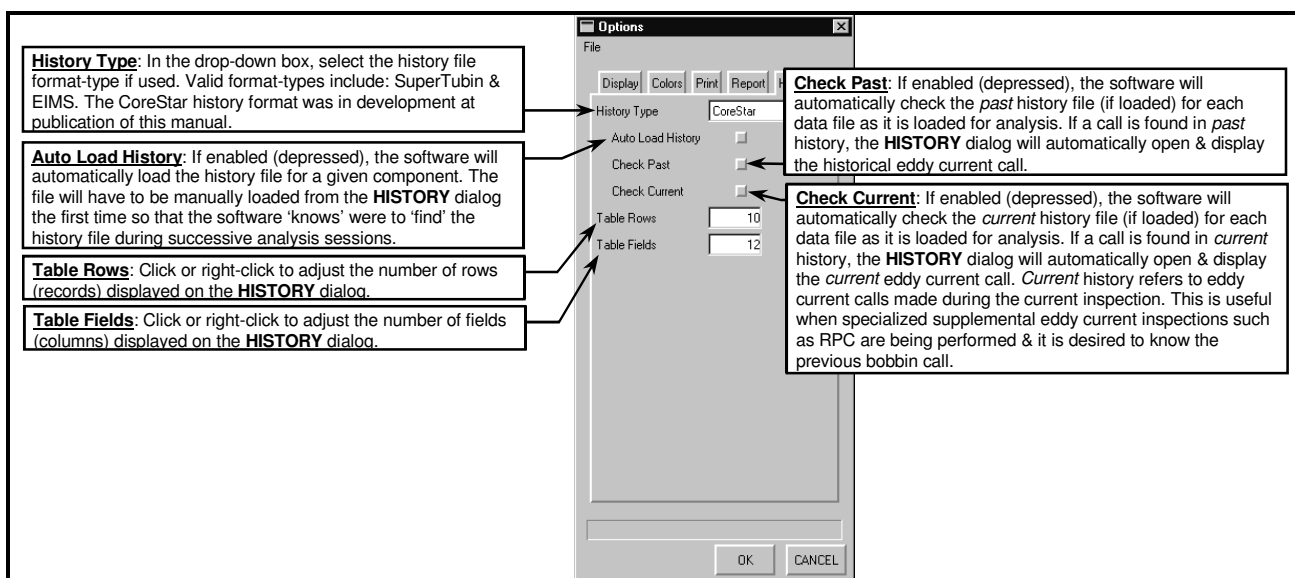


Figure 3-114. OPTIONS Dialog - History Tab

SCREENING Button

Clicking the **SCREENING** button shown in Figure 3-40 causes the following settings to be saved in a file named `\corestar\temp\screening.set`:

- Span settings;
- Rotation settings;
- Expanded chart window opening;
- Lissajous channel assignments;
- Long strip channel assignments;
- Long strip chart zoom settings;

With **Screening** enabled, the `screening.set` file is automatically reloaded as each data file is loaded. The **Screening** setup may be adjusted anytime by simply making the desired changes, and toggling the **SCREENING** button off (*raised*) then back on (*depressed*).

Section 4: General Analysis Functions

This section provides details about the various analysis tools available while performing eddy current data analysis on the **Main Analysis** screen. It will cover the most common tasks performed by the analyst including, but not limited to:

- balancing or nulling;
- adjusting span settings;
- rotating signals;
- zooming features;
- making various signal measurements;
- making report entries;
- selecting different correlation curves for the same channel;
- selecting desired channels for viewing in Lissajous' & long strip charts;
- setting up 3-letter code macro buttons;

Balancing or Nulling

To balance or null the eddy current data (*see Figure 4-1*):

- **Right-click** in any Lissajous window;
- Press the **Space** bar on the keyboard;
- **Shift+right-click & drag** in any Lissajous in order to manually move an eddy current signal to the location desired;

Adjusting Span Values

To modify the span or size of a given signal (*see Figure 4-1*):

- **Click** in the span box to increase the signal size (decreases the span value);
- **Right-click** in the span box to decrease the signal size (increases the span value);
- **Middle-click** in the span box to auto-fit all signals within the Lissajous windows (***Auto Scale must be enabled on the OPTIONS > Display Tab***);
- **Shift + click** in the span box then **left-drag** within the Lissajous to manually adjust the size or span of the signal;

Adjusting Signal Rotations

To change the rotation or phase angle of a given signal (*see Figure 4-1*):

- **Shift + click** in the **Rotation Adjust** box then left-drag within the Lissajous to manually adjust the signal phase angle as desired. A 40° red vector appears on the Lissajous as a guide. Alternatively, first measure the signal phase angle using Vpp or Vmr as desired, then perform the same step above. The measured phase angle will update in real-time in the measurement grid of the Lissajous as the signal is rotated;

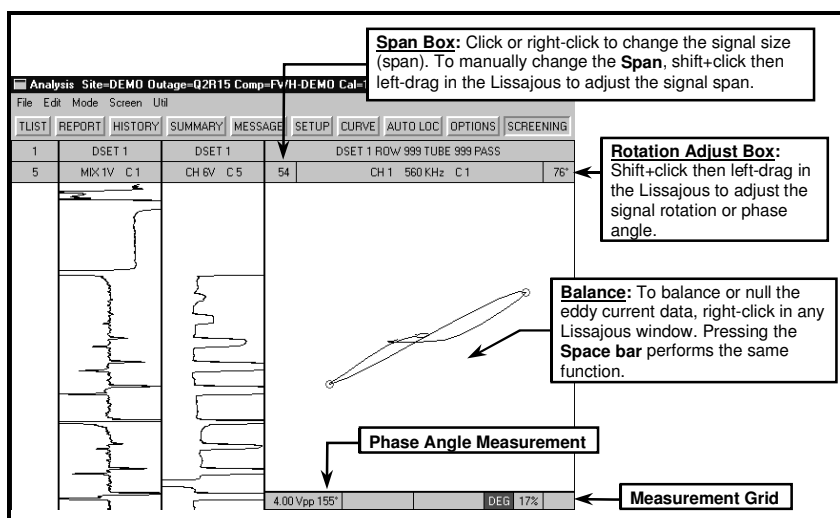


Figure 4-1. Balancing and Adjusting Spans or Rotations

Changing Lissajous and Long Strip Chart Channels

To change a channel to be viewed either in a Lissajous or a long strip chart (*see Figure 4-2*):):

- **Click** or **right-click** the title of a Lissajous window or long strip chart. Channels change sequentially in channel number order;
- **Shift + click** or **Shift + right-click** the title of a Lissajous window or long strip chart. Channels change sequentially in coil number order;
- **Middle-click** the title of a long strip chart to toggle between the vertical (V) and horizontal (H) signal component;

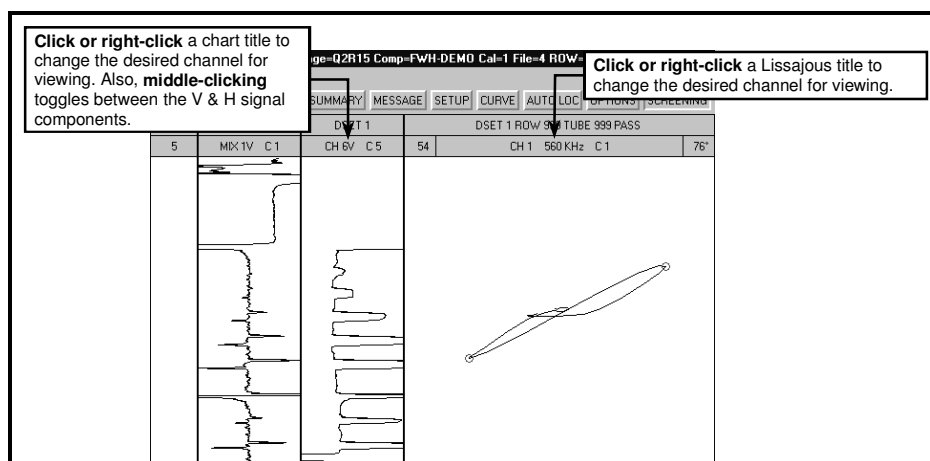


Figure 4-2. Selecting Channels for Viewing in Lissajous' & Long Strip Charts

Changing Data Sets for Lissajous' and Long Strip Charts

To change the data set to be viewed in either a Lissajous or a long strip chart (*see Figure 4-3*):

- **Shift + click** or **Shift + right-click DSET** above the title of a Lissajous window or long strip chart;

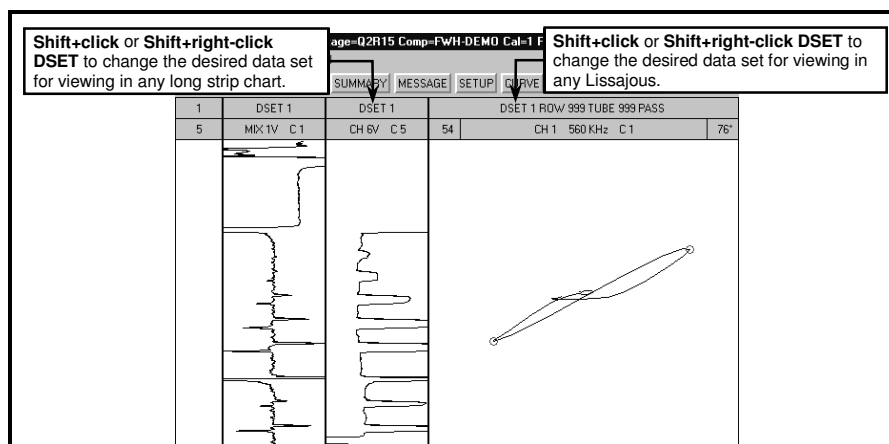


Figure 4-3. Selecting Different Data Sets (DSET) for Viewing in Lissajous' & Long Strip Charts

Moving the Cursor Bar on a Long Strip Chart

To move the red cursor bar within a long strip chart (see Figure 4-4):

- **Click** a different location along a long strip chart;
- **Click & drag** the cursor bar to the desired location in a long strip chart;
- Press the **Up** (↑) arrow or the **Down** (↓) on the keyboard to move the cursor bar along the long strip charts. The speed of the cursor bar can be adjusted by pressing the + (plus) or - (minus) key on the numeric keypad on the keyboard (see *Util > Display Util menu in Section 3 for more information*);
- If the landmarks for a given data file are auto-located & labeled, **click** the **SIG** button (see Figure 4-4) to move up to the next landmark and **right-click** the **SIG** button to move down to the previous landmark;

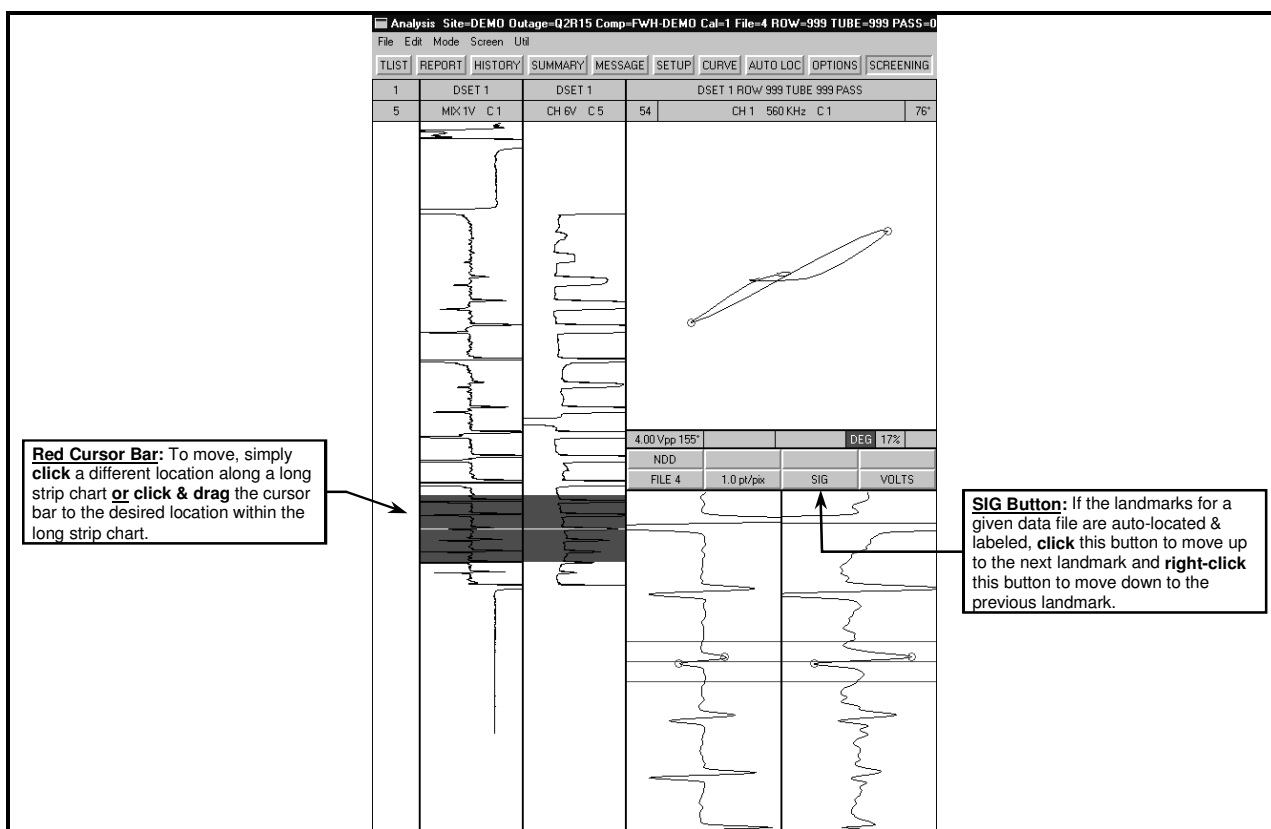


Figure 4-4. Moving the Red Cursor Bar within a Long Strip Chart

Zooming In or Out on a Long Strip Chart

To zoom in or out within a long strip chart (*see Figure 4-5*):

- **Right-click** the **Zoom Box** in the upper left corner of the long strip chart to zoom in or magnify;
- Alternatively, first **click** the start of the desired range to be zoomed in on, then **right-click** the other end of the desired range;
- **Click** the **Zoom Box** to zoom out on a long strip chart;
- **Middle-click** the **Zoom Box** to auto-fit a data file within a long strip chart;
- Alternatively, **middle-click** within any long strip chart to auto-fit a data file;

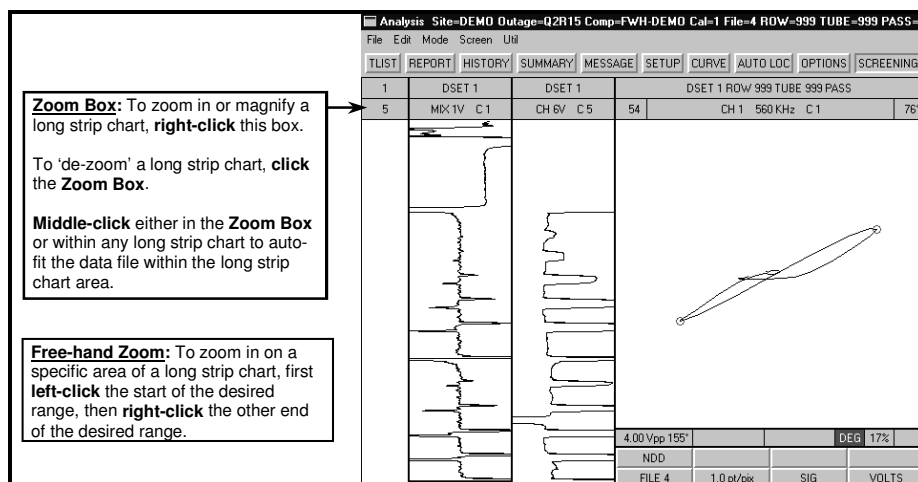


Figure 4-5. Zooming In or Out on a Long Strip Chart

Manipulating Data within the Expanded Strip Chart

Refer to Figure 4-6 for details regarding the expanded strip chart.

- **Click & drag** in the expanded strip chart to move the data as desired;
- **Right-click & drag** in the expanded strip chart to move the upper and lower red cursor lines equally inward and outward in order to 'trim down' on a desired signal. This action defines the signal displayed in the Lissajous above;
- To move the upper or lower cursor independently, **Shift+right-click & drag** above the centerline for the upper cursor and below the centerline for the lower cursor. This feature is beneficial for irregular shaped absolute signals;
- **Clicking or right-clicking the Points/Pixel button** (*see Figure 4-6*) compresses or expands the amount of data displayed in the expanded strip chart, respectively;

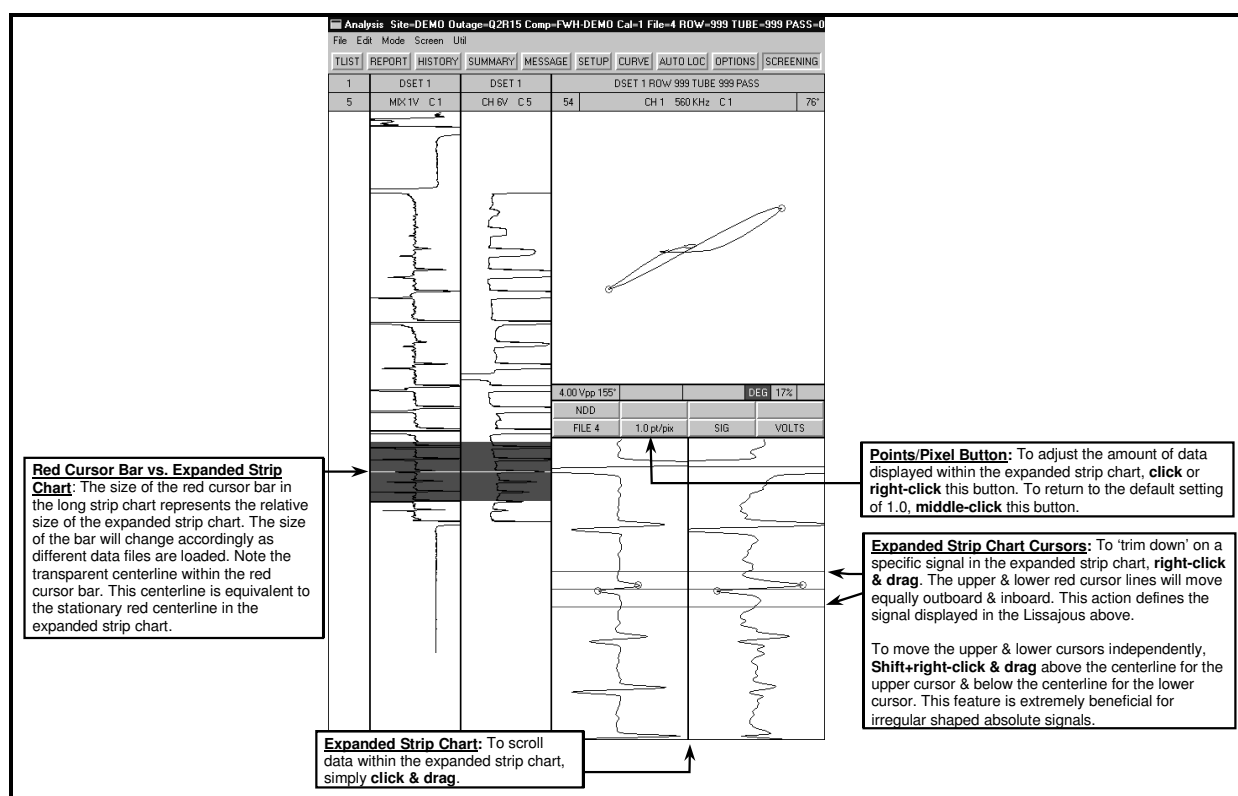


Figure 4-6. The Expanded Strip Chart

Assigning & Using 3-letter Code Macro Buttons

To assign 3-letter codes to the macro buttons located below each Lissajous (see Figure 4-7):

- To assign a 3-letter code to one or more of the three (3) available macro buttons under each Lissajous, **Shift+click** or **Shift+right-click** one of the macro buttons until the desired 3-letter code is displayed. The desired 3-letter code must exist in the **Defect List** (see **Edit > Defect List ...** earlier in this section). Then, to make a call, simply **click** the appropriate macro button. *Note: The **NDD** macro button is fixed and cannot be changed;*

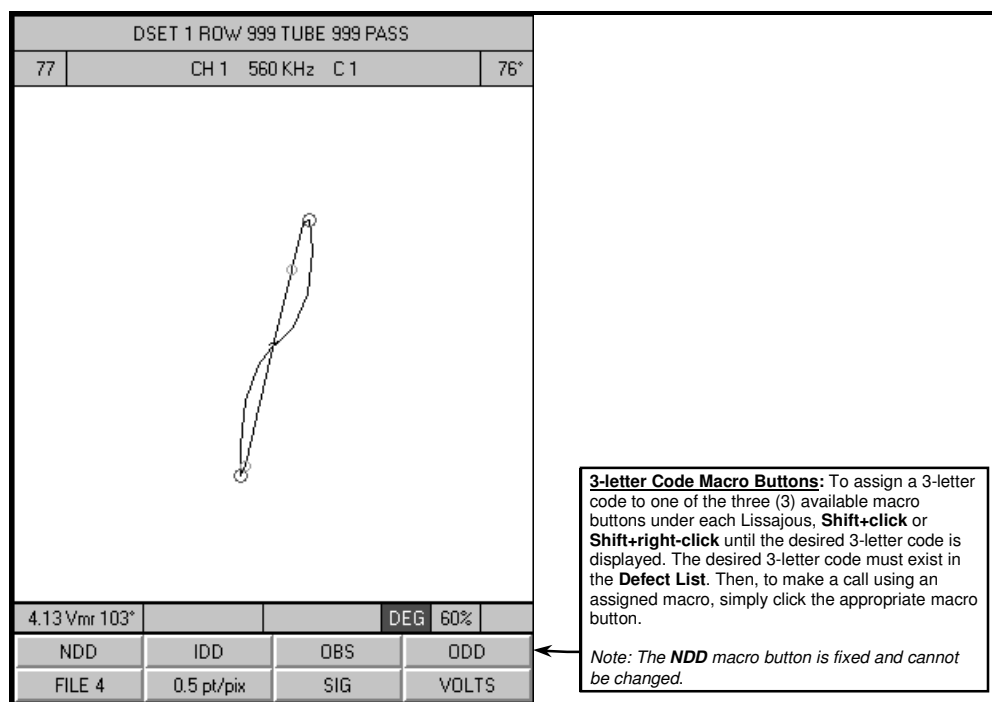


Figure 4-7. Assigning 3-letter Codes to Macro Buttons

Making Calls without Using 3-letter Code Macro Buttons

To make a call without using a 3-letter code macro button (see Figure 4-8):

- **Click or right-click the 3-letter Code Box** until the desired code appears. Then, **click the Percent Box** to enter the call to the report;
- Alternatively, **middle-click the 3-letter Code Box** & type the desired 3-letter code;

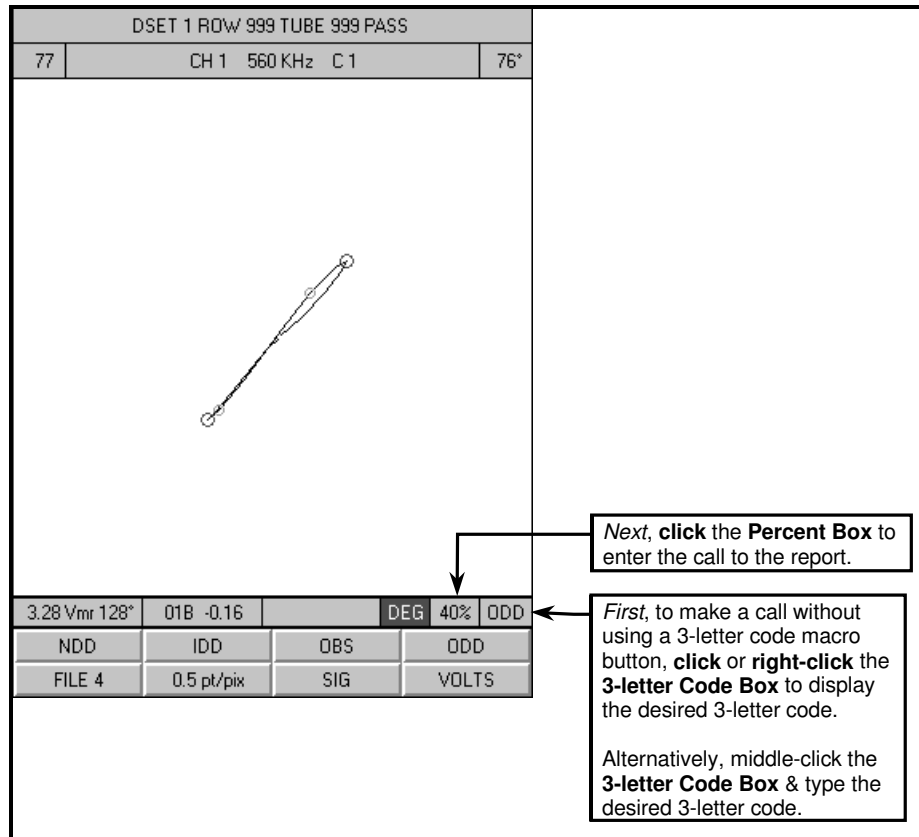


Figure 4-8. Making Calls without Using 3-letter Code Macro Buttons

Selecting Different Correlation Curves for the Same Channel

To select and use a different correlation curve when more than one (1) curve is setup for the same channel (see Figure 4-9):

- **Click or right-click** on the **Curve-type Box** below any Lissajous. The curve-type and the name of the curve (if assigned on the **Curve** dialog) selected will appear in the center of the status bar along the bottom of the **Main Analysis** screen;

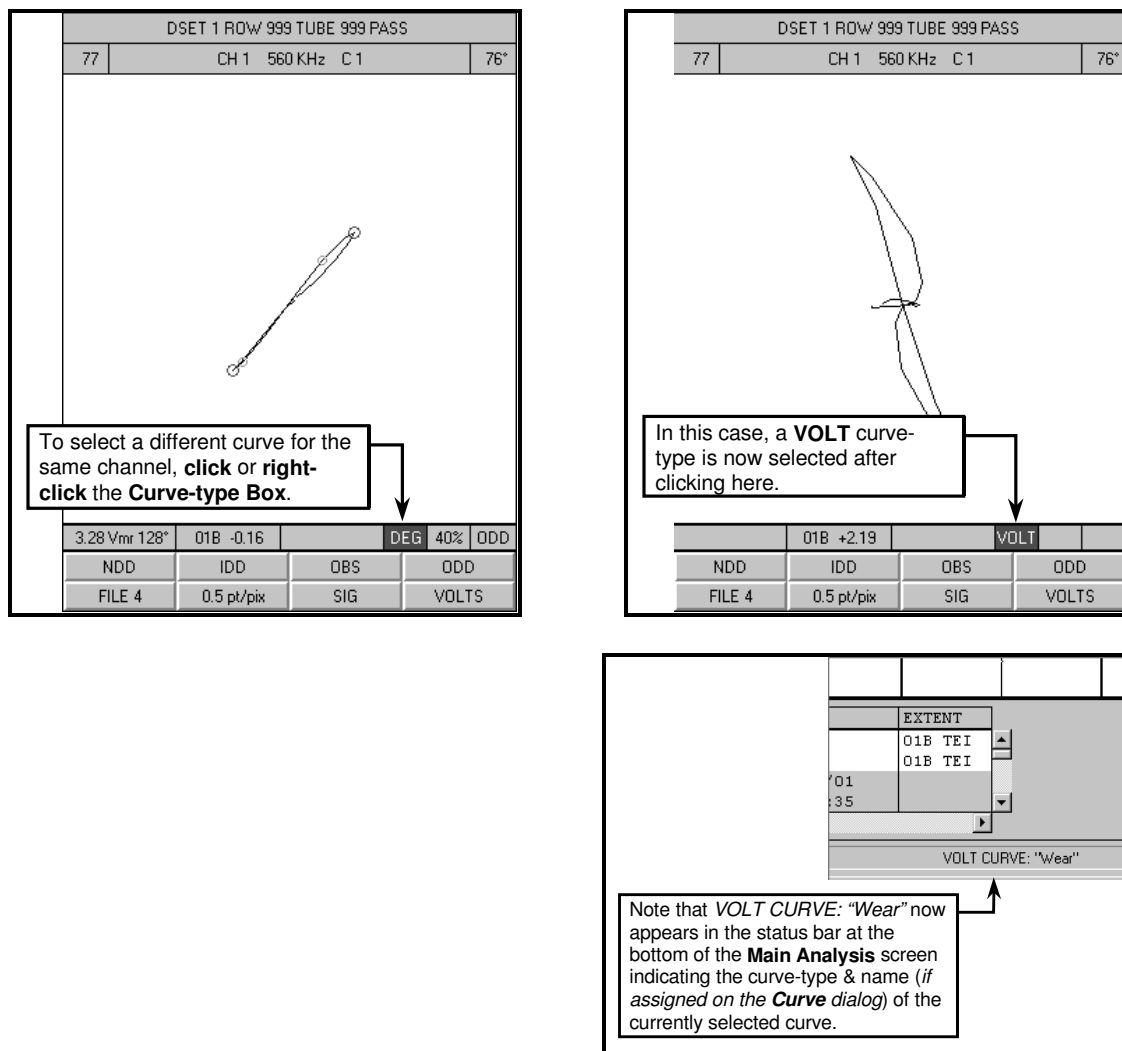


Figure 4-9. Selecting Different Correlation Curves for the Same Channel

Measuring Eddy Current Signals

To measure an eddy current signal (*see Figure 4-10*):

- **Click** once in any Lissajous to measure **Volts peak-to-peak (Vpp)**. Red circles appear on the eddy current signals in all the Lissajous' indicating a **Vpp** measurement. Holding down the **Shift** key first before clicking once results in an inverted **Vpp** phase measurement;
- **Click** twice in any Lissajous to measure **Volts MaxRate (Vmr)**. Small green circles along with the red **Vpp** circles appear on the eddy current signals in all the Lissajous' indicating a **Vmr** measurement. Holding down the **Shift** key first before clicking twice results in an inverted **Vmr** phase measurement.

Note: If a Volt curve is setup for a given channel, the second click will produce a Volts VertMax (Vvm) measurement. A Vvm measurement is indicated by yellow circles appearing on the eddy current signals in all the Lissajous;

- **Right-click** in the **Measurement Box** in any Lissajous and select the desired measurement-type from the drop-down list. Afterwards, clicking in the **Measurement Box** will continue to produce the selected measurement-type;
- **Middle-click & drag** in any Lissajous to perform a **Guess Angle (Vga)** measurement. A green vector appears in the Lissajous while performing a **Vga** measurement;
- **Alt+click** in any Lissajous in order to independently measure an eddy current signal;

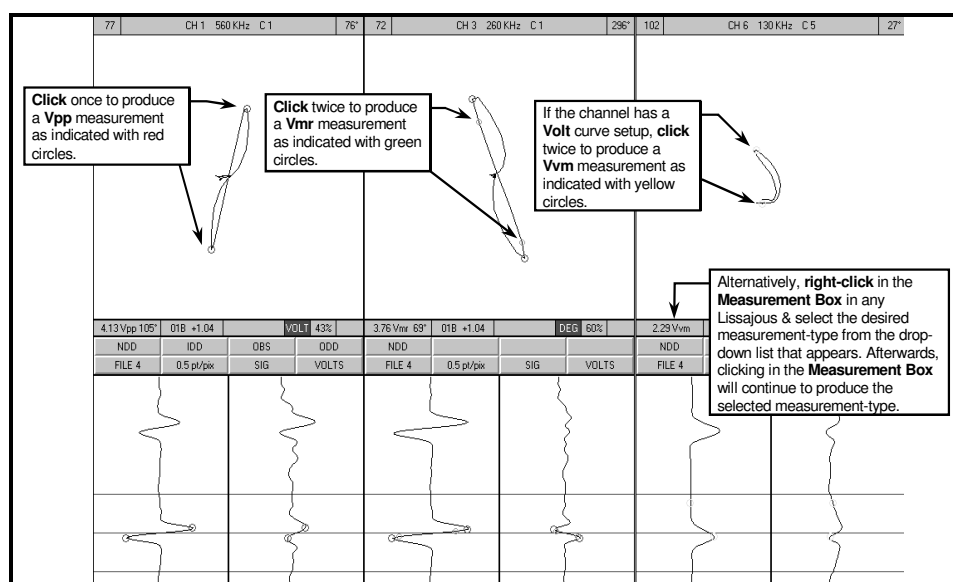


Figure 4-10. Measuring Eddy Current Signals

Setting Volts

To set the relative voltage level for a given an eddy current signal (*see Figure 4-11*):

- Click the **VOLTS** button in any Lissajous. The **Set Volts** dialog will appear as shown;
- **Select** the calibration flaw that will be used to set the relative voltage for the desired channel(s) so that it's displayed in the same Lissajous window;
- **Measure** the signal using the measurement desired, i.e., **Vpp**, **Vmr**, **Vvm**, etc.
- On the **Set Volts** dialog, select the **Propagate** method, the channel(s) or coil which this voltage will be applied to in the **Which Chans** area, **click** or **right-click** the **Volts** field to *dial in* the desired reference voltage to be used for the currently measured eddy current signal, then **click OK**. Review Figure 4-11 for additional details;

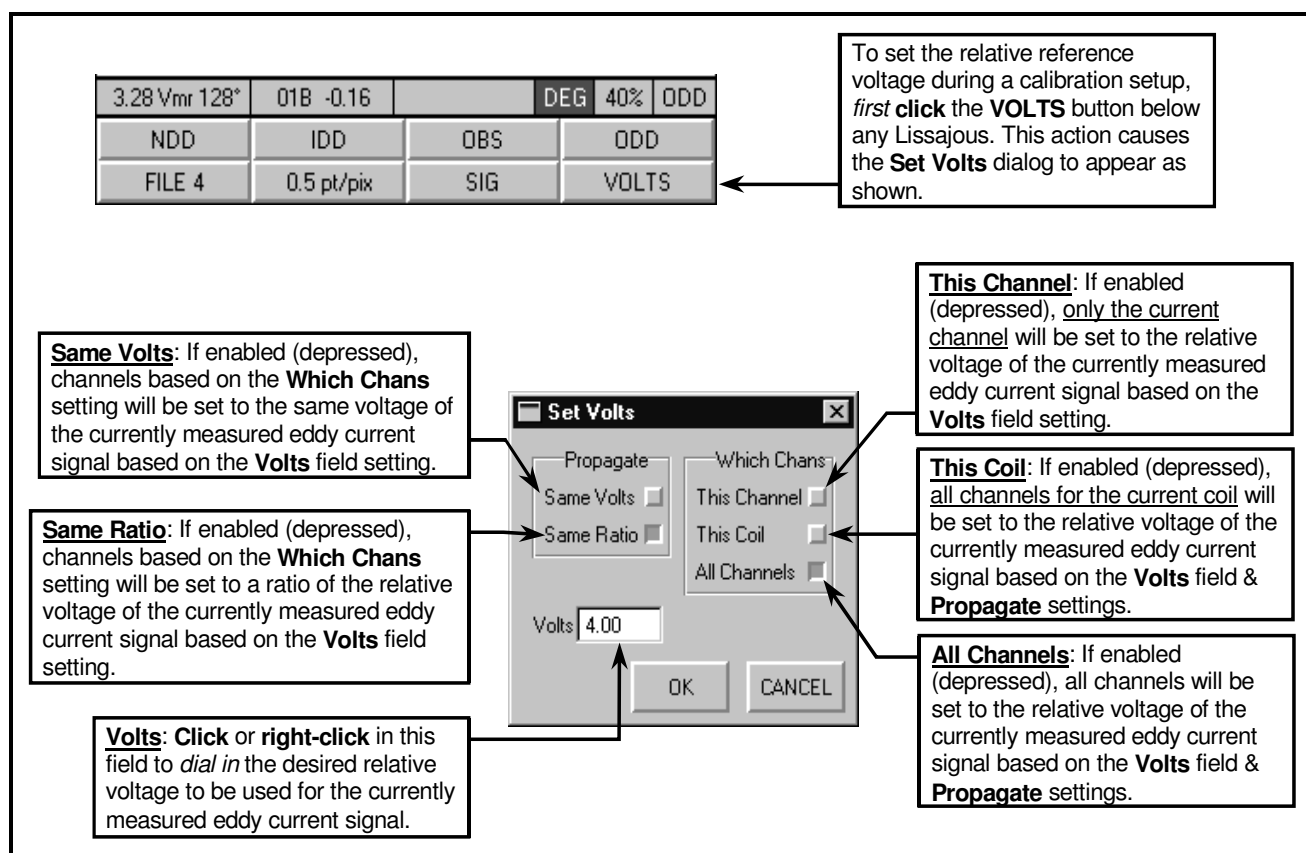


Figure 4-11. Setting Volts

Axially Offsetting Eddy Current Signals

It is sometimes necessary to axially offset the eddy current signal responses from one coil to another so that the same signal responses for the same flaw line up. Such offsets are typically used with data recorded using probe-types which have more than one set of coils separated by some distance. To axially offset the data for a coil (*see Figure 4-12*):

- **Shift+Middle-click & drag** within the expanded strip chart of the coil to be axially offset;
- To cancel an axial offset and return to normal mode, select **SETUP > Edit > Zero Data Offsets**;

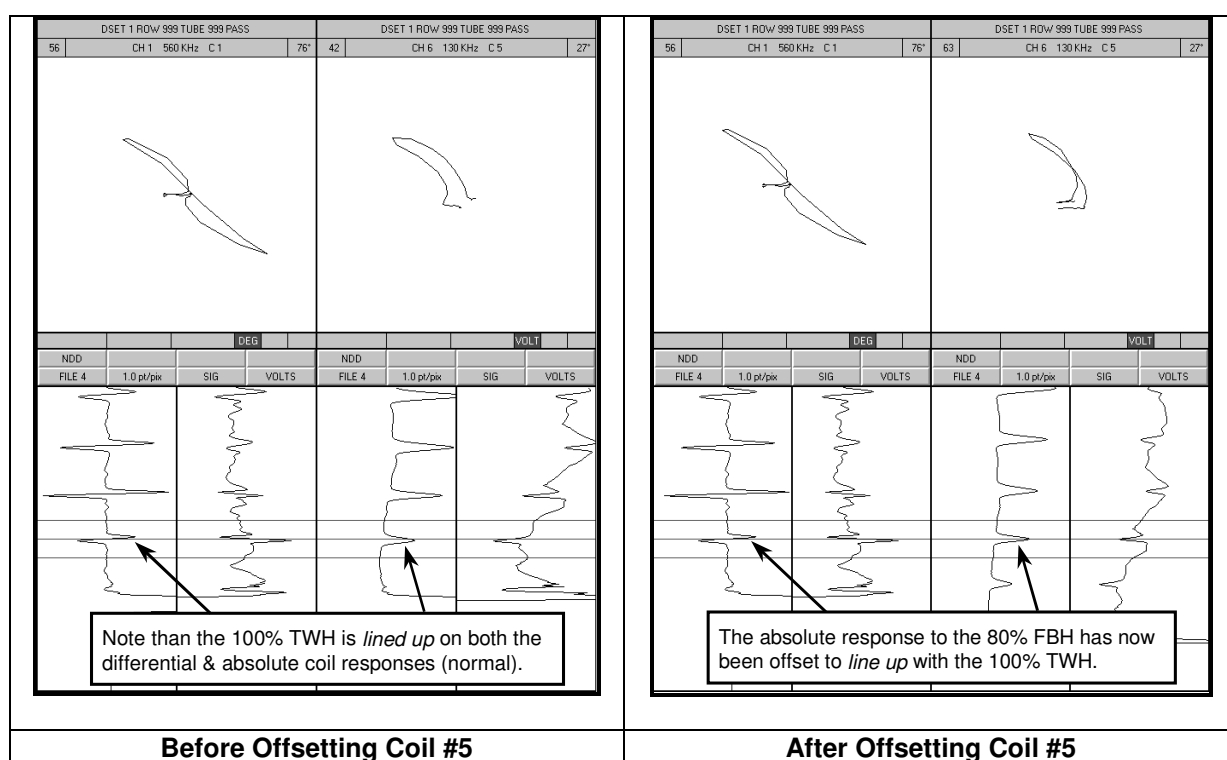


Figure 4-12. Axial Offset Example

Using a Manual Scale

To use a manual scale, first review the **Edit > Landmarks ...** topic in Section 3 and setup the desired **User Defined** landmarks as described in that topic. Once two or more *manual* landmarks are present in the **User Defined** landmarks table, follow the steps below to manually set and use these landmarks versus using the **System** landmarks from the component (.cmp) file. Refer to the five (5) steps shown in Figure 4-13 for additional details.

- Position the red cursor bar at the first landmark to be labeled;
- **Right-click** in the landmark strip to display the **System** landmarks dialog;
- **Shift+click** the title of the landmarks dialog to switch to the **User** landmarks dialog;
- **Click** the applicable landmark from the **User** landmarks dialog;
- Position the red cursor bar at the next landmark to be labeled;
- **Right-click** in the landmark strip to display the **User** landmarks dialog;
- **Click** the applicable landmark from the **User** landmarks dialog for this landmark;

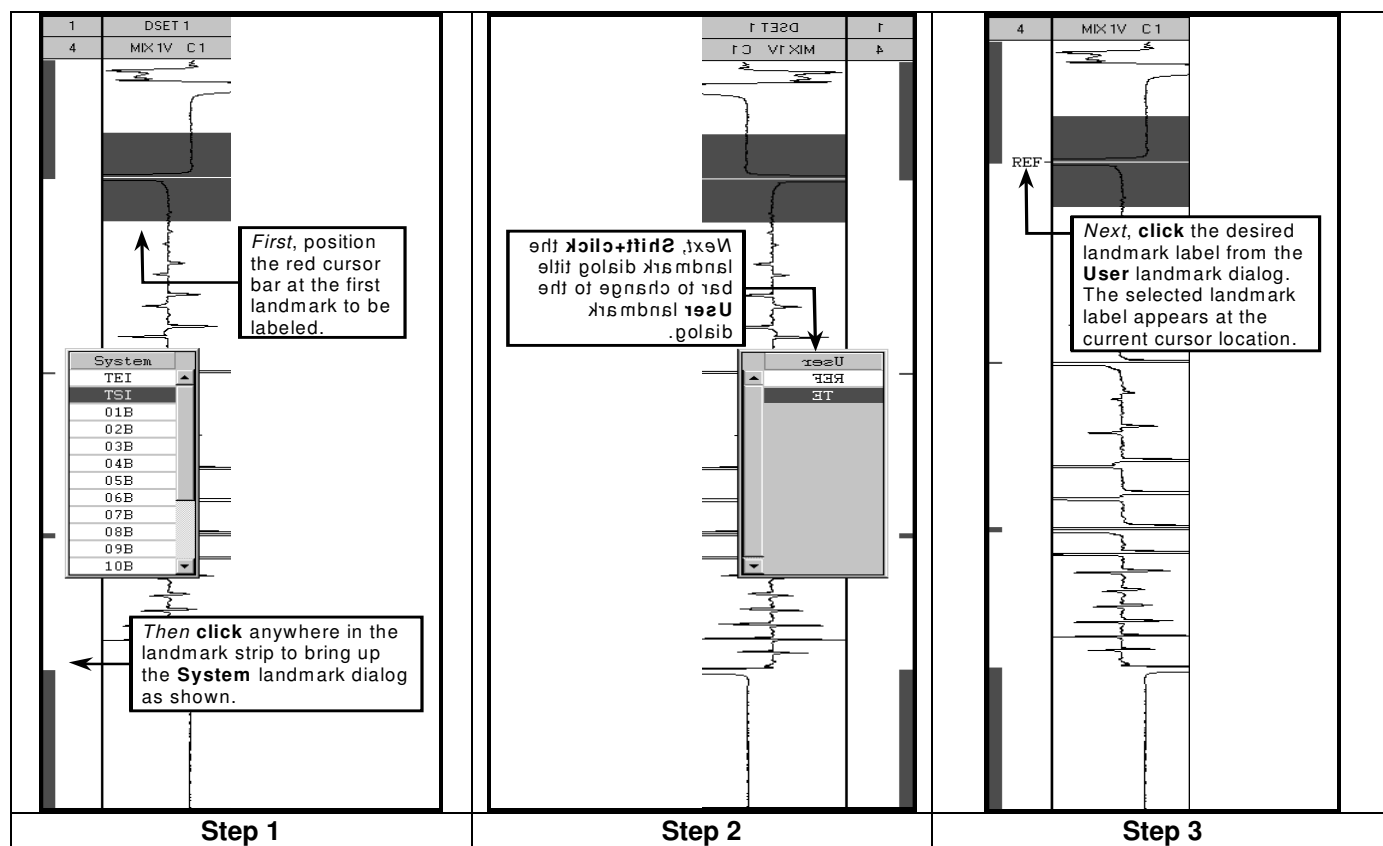


Figure 4-13. Using User Defined Landmarks

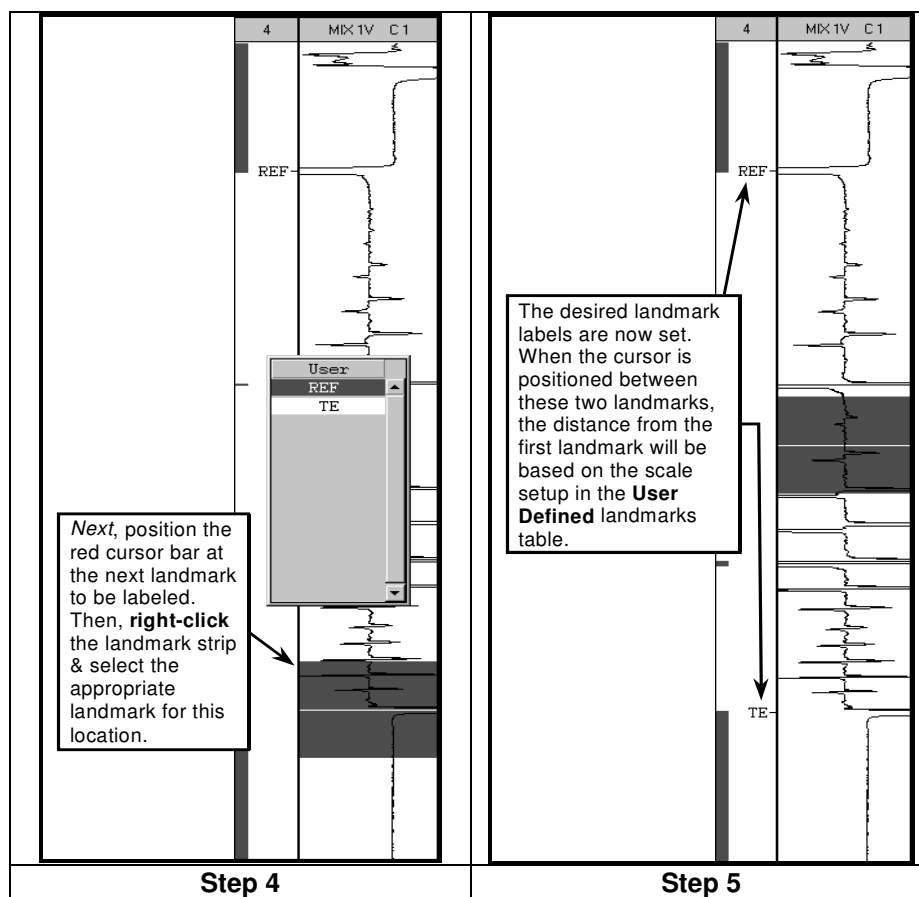


Figure 4-13 (cont'd). Using User Defined Landmarks

Manually Using System Landmarks

Sometimes it may be necessary to manually label a landmark. For example, if **Auto Locate** mislabels one or more landmarks, it may be necessary to remove the invalid labels and manually insert the correct labels for the landmarks affected.

To remove a landmark label from the landmark strip:

- **Middle-click** any landmark label;

To insert a landmark label on the landmark strip:

- **Center** the landmark to be labeled in the expanded strip chart;
- **Right-click** in the landmark strip to display the **System** landmarks dialog;
- **Click** the applicable landmark label from the **System** landmarks dialog;
- Repeat these steps until all the desired landmarks are labeled as desired;

From-To Measurements

Some eddy current indications are long and gradual - especially damage mechanisms such as steam erosion, tube-to-tube wear, etc. If it is desired to include the affected range of the damage indication, a **From-To** measurement may be performed. Refer to Figures 4-14 through 4-16.

To make a **From-To** measurement:

1. Position the red cursor bar in the long strip chart at the beginning of the indication. Refine the location in the expanded strip;
2. **Shift+click** in the **Location** box in any Lissajous. The **From** part of the **From-To** measurement will appear in the box & in the **Status Bar** below;

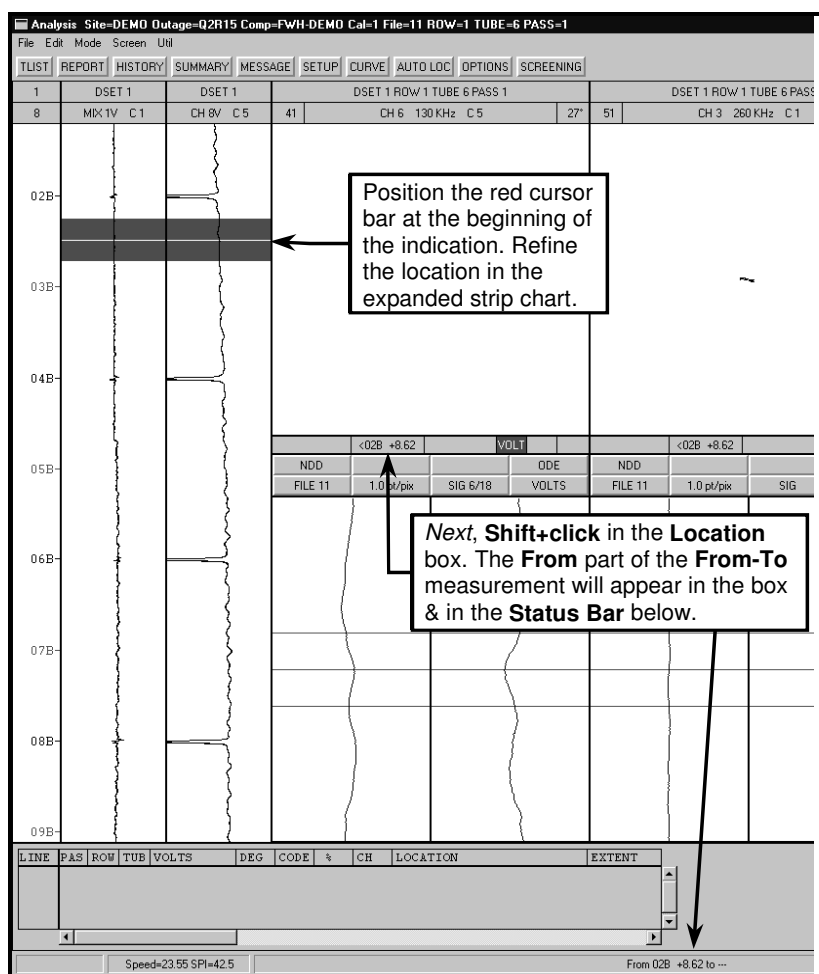


Figure 4-14. From-To Measurement -Steps 1 and 2

3. Position the red cursor bar in the long strip chart at the end of the indication. Refine the location in the expanded strip;
4. **Shift+right-click** in the **Location** box in any Lissajous. The **To** part of the **From-To** measurement will appear in the box. The complete **From-To** range now appears in the **Status Bar** below;

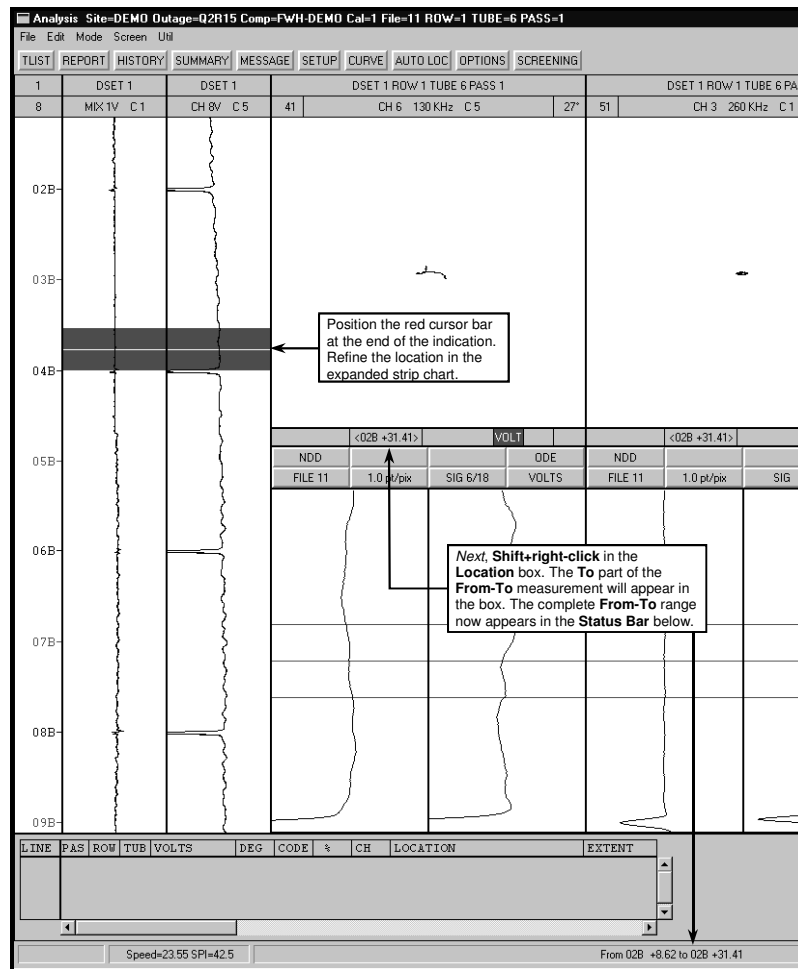


Figure 4-15. From-To Measurement -Steps 3 and 4

5. Position the red cursor bar in the long strip chart to the center of the indication and refine the location in the expanded strip chart. If the length of the indication exceeds the expanded strip chart, **click** the **Points/Pixel** button in any Lissajous in order to *compress and fit* the total indication within the expanded chart. **Measure** the indication as desired, i.e., **Vpp**, **Vmr**, **Vvm**;
6. Make the call. Note that the location field for the new report entry now contains the **From-To** range;
7. The **From-To** measurement mode stays active until cancelled. To cancel the **From-To** measurement mode, **middle-click** the **Location** box on any Lissajous;

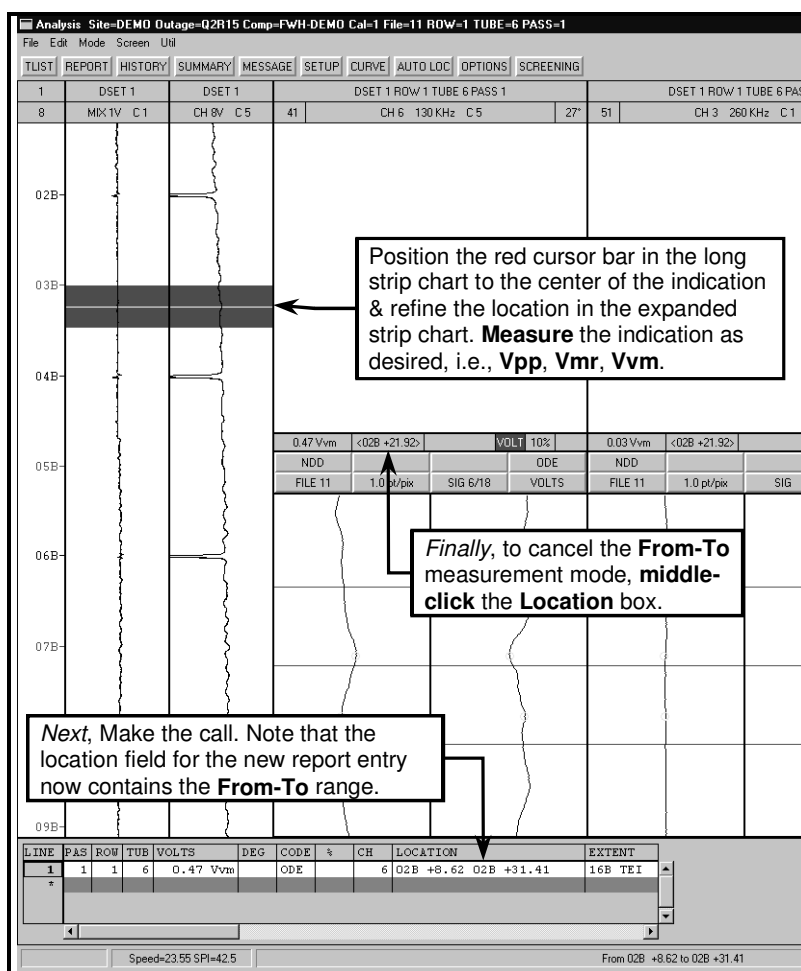


Figure 4-16. From-To Measurement -Steps 5 through 7

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