Free Format Log Data Entry

HM11-560

Implementation
Engineering Operations - 1

Free Format Log Data Entry

HM11-560
8/95

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About This Publication

This publication explains the process of entering Free Format Log configuration data through the TDC 3000^X Universal Station. It should be used in conjunction with the Free Format Log Forms.

This publication supports Release 500 software.

Change bars are used to indicate paragraphs, tables, or illustrations containing changes that have been made to this manual effective with release 500. Pages revised only to correct minor typographical errors contain no change bars.

Table of Contents

INTRODUCTION
Section 1

This manual tells how to build, edit, and compile Free Format Logs using the Universal Station and a limited set of commands. Information in this manual includes Log Building entries (Section 2), a description of the Engineering Keyboard (Section 3), Data Entry Procedures (Section 4), and the Free Format Log commands and abbreviations in Appendixes A and B.

A companion publication, *Free Format Log Form Instructions,* explains how to plan and design Free Format Logs, using standard paper forms (see references).

Free Format Logs provide a way to generate a printed report that contains current (at the time of printing) system-variable data. Figures 1-1 and 1-2 illustrate typical Free Format Logs.

Free Format Logs are usually designed by process engineers. The engineer can also do the actual data entry, or this part can be turned over to someone familiar with Universal Station data-entry procedures, especially if the standard forms are used. In either case, the instructions, commands, and suggestions in this manual should help to accomplish the data-entry work.

The system allows a maximum of 400 Free Format Logs and up to 100 reports (in any combination), which can consist of standard logs, printed trends, journals, and reports.

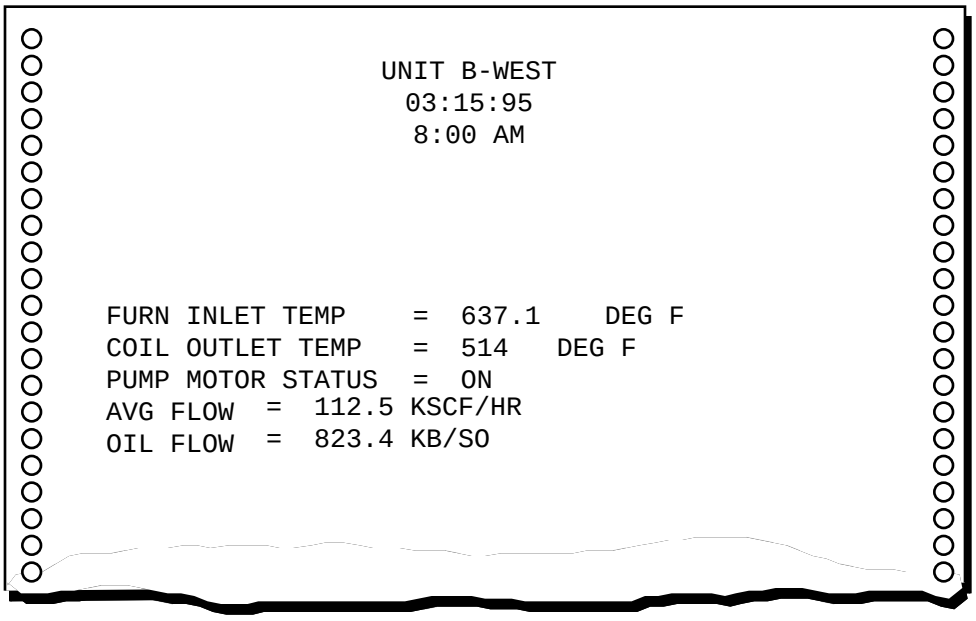


Figure 1-1 — Typical Free Format Log new

1.1 EQUIPMENT NEEDED

To build Free Format Logs, you will need a working Universal Station with either a floppy or cartridge disk drive, or a working History Module (HM). The Universal Station must be running the Engineering Personality or the Universal Personality and you must select the Free Format Log-function from the Engineering Main Menu. The Free Format Log Builder uses a limited version of Picture Editor software; therefore, the Picture Editor functions are frequently referenced in this manual.

NOTE

Floppy or Cartridge Disks should be prepared before you build the logs. Refer to the *Command Processor Operation* manual (see References) for the **Create/Format** commands, or use the Removable Media Initialization function on the System Menu.

```
                    EAST UNIT LOG

                     TEMPERATURE    LEVEL       PUMP
       ITEM             DEG C      PER CENT    STATUS

CRUDE INPUT             30.7                   OFF
1'ST SETTLING TANK      34.0         78.9
2'ND SETTLING TANK      28.2         84.3
STACK TEMPERATURE       47.4
OUTPUT                  25.9                   ON
```

Figure 1-2 — Free Format Log with Columns 1663

1.2 REFERENCES

Free Format Logs can be built without using the standard forms, but these forms provide both a convenient way to plan the log and a check to make sure that all needed information is available at data-entry time.

The *Free Format Log Form Instructions* manual explains how to use the configuration forms and provides reference information for use with the variables. Appendix A in this manual lists the commands used to build Free Format Log displays. The *Picture Editor Reference Manual* provides a complete description of those commands.

Title	Publication No.	Binder
Free Format Log Form Instructions	HM12-560	Implementation/Engineering Operations - 1
Free Format Log Configuration Forms:	HM88-560	Implementation/ Configuration Forms
Consisting of:		
• Free Format Log Configuration Form	HM88-561	Implementation/ Configuration Forms
• Values Information For Free Format Log	HM88-562	Implementation/ Configuration Forms
The following Picture Editor Forms:	SW88-550	
• Variants	SW88-556	Implementation/ Configuration Forms
• Subpictures	SW88-557	Implementation/ Configuration Forms
• Subpicture Detail	SW88-558	Implementation/ Configuration Forms
• Values	SW88-553	Implementation/ Configuration Forms
Picture Editor Reference Manual	SW09-550	Implementation/Engineering Operations - 2
System Startup Guide - Cartridge Drive	SW11-504	Implementation/Startup & Reconfiguration - 1
Command Processor Operation	SW11-507	Implementation/Startup & Reconfiguration - 1

OVERVIEW
Section 2

This section describes the major steps in the data-entry process used to build Free Format Logs.

2.1 LOG BUILDING OVERVIEW

The data-entry process consists of using the Engineering Keyboard to enter the commands and data that put characters, numbers, etc. on the screen. This procedure is described briefly in the following paragraphs, and Section 4 of this manual contains a detailed description of the data-entry procedure.

2.1.1 Display Data Entry

The data-entry session begins by selecting the Free Format Log function on the Engineering Menu.

For Free Format Log building, the data-entry process consists of some or all of the following major steps:

- entering text information
- entering Values
- entering Variants
- building Subpictures
- storing/compiling the log display

2.1.2 Entering Text Information

Text information is typed into the display from the Engineering Keyboard. Figure 2-1 illustrates a typical display with the entries used to produce the log shown by Figure 1-1 in the previous section. Text entries can be modified, copied, or moved by executing suitable editing commands.

2.1.3 Entering Values

Values provide "live" numbers or status information from the process. In Figure 1-1, Values are shown in bold print.

After executing an Add Value command, the next step is to select the position for each Value. In Figure 2-1, small crosses (+) show where Values will appear in the printed log. Each Value that you use has a corresponding screen form where you must specify a point that supplies information for that Value. Other screen-form entries describe how the Value is to appear on the screen. Screen-form entries are fully described in Section 4 of this manual.

2.1.4 Entering Variants

Variants call different text strings or Subpictures into the display, depending on process conditions. A Boolean equation is evaluated to determine exactly what happens.

Variants are entered much like Values, i.e., by selecting a location on the display and filling in an associated screen form. Only one of the text strings or Subpictures is visible when the log is built; switching can only take place at operating time.

2.1.5 Entering Subpictures

Subpictures are generally built so the same or a similar image can be used repeatedly without rebuilding it each time. Free Format Log subpictures can contain only text, Values, Variants, or other Subpictures that contain those objects.

Subpictures are built and stored much like any other display They can then be added (repeatedly if desired) to other displays by specifying the locations where you want them to appear. The subpicture can also be called into the display by a Variant. To do this, you must specify the conditions and the subpicture name in the associated Variant statement.

2.1.6 Storing and Compiling Logs

Free Format Log displays can be stored, read back, and modified at any time throughout the building phase. They must be compiled onto a media available to the operating system (typically the History Module) before they can be used by the operating personality. Tasks 26 and 29 in the *System Startup Guide* (see References) show how Free Format Logs are configured into the system. Points that you refer to must exist in the system database.

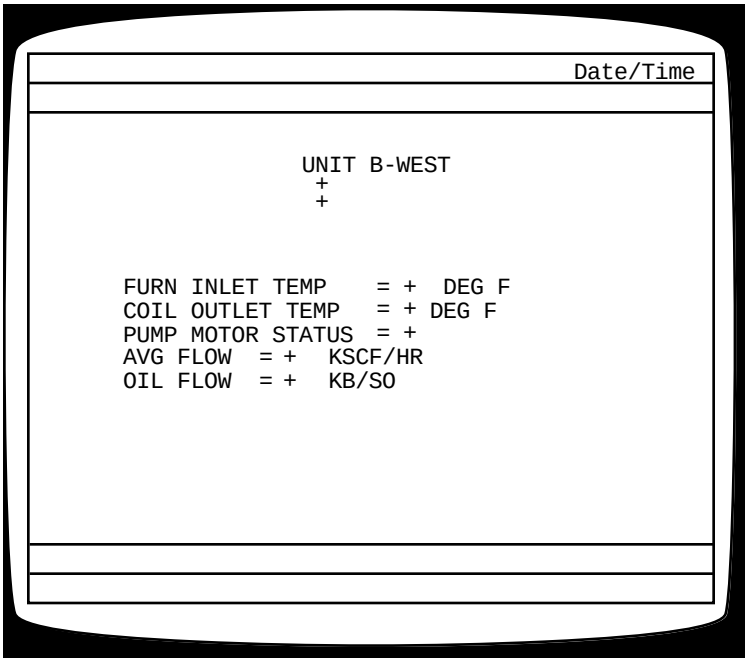


Figure 2-1 — Free Format Log Display with Text Entries 1780

ENGINEERING KEYBOARD
Section 3

This section describes the Engineering Keyboard and how each of the keys is used.

3.1 USING THE ENGINEERING KEYBOARD

The Engineering Keyboard is used to manipulate displays, enter text, and enter the commands needed to build Free Format Logs. In addition to the normal letter/number keys, the following keys are used, as described below, with the Free Format Log display (see Figure 3-1).

3.1.1 Principal Keys

Cursor keys—Arrow keys at the left side of the keyboard allow cursor movement in any of four indicated directions. These are dual-use keys. The TAB function on these keys is enabled by simultaneously pressing a Control key and the desired arrow key. The cursor function is enabled when one or more arrow keys are pressed, but none of the Control keys are pressed The cursor continues to move as long as an arrow key or keys are held down. Two adjacent cursor keys can be pressed simultaneously to cause diagonal movement.

The cursor appears on the screen as either a rectangle or a cross hair. The rectangle represents the screen space allocated for alphanumeric character cells, while the cross hair is used for graphic work (for example, drawing lines). For Free Format Log displays, only the rectangular cursor should be used. If, somehow the cross-hair cursor appears, switch back to the rectangular cursor by pressing the F1 key (pressing F1 switches between the cross-hair cursor, and the rectangular cursor).

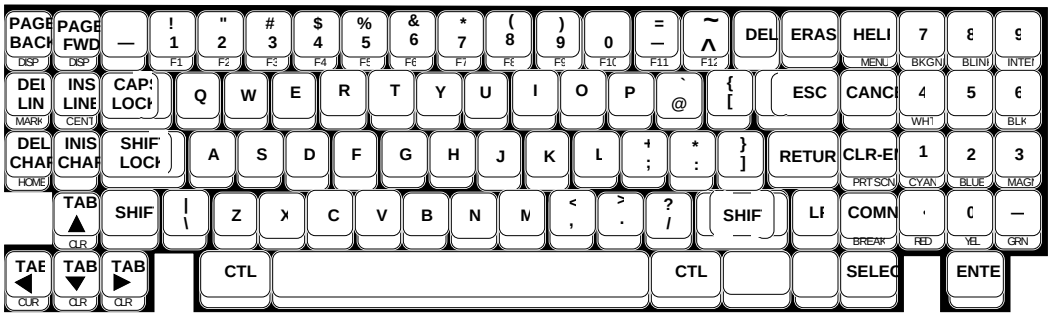


Figure 3-1 — Engineering Keyboard 1196

For systems with the touch-screen option, the cursor can be moved by touching the screen. The cursor jumps to the position indicated by your finger.

ENTER—After typing a command, and later after entering command-specific information, pressing the ENTER key signals that the last entry is complete and should be acted upon. Thus, the ENTER key both begins and ends a command.

SELECT—When choosing coordinate points, this key signals the system to accept the information at the point where the cursor is positioned.

DEL—Certain commands require that you enter one or more coordinate points on the screen. The DELETE (DEL) key allows you to delete the last coordinate point entered and re-enter a different point. If all coordinate points are successively erased, the command is terminated.

CANCEL—CANCEL is a request to cancel the previous user action. In general, this key cancels the current command. If the Picture Editor is waiting for command input and the cancel key is pressed, the effects of the last operation are canceled. For example, if the last command was used to add text, pressing CANCEL causes the text entered with that command to disappear from the picture; pressing the cancel key again causes the text to return (that is, the cancel operation is canceled). This key allows switching between the current display and the last display.

Letters, Numbers, Symbols—The alphanumeric character keys are used to do the following:

- enter text into the display (using the **Add Text** command)
- enter command data
- fill in forms on the screen

Alphabetic characters can be entered in either uppercase or lowercase for all of the above.

INSERT/DELETE CHARACTERS—These keys are useful to correct typing errors when entering commands or filling in a screen form. INSERT CHARACTER is an alternate-action key. When the key is pressed and locked down, you can enter characters at the cursor location, ahead of existing text. Press the key again to return to normal operation. Each time the DELETE CHARACTER key is pressed, it erases the character under the cursor. The INSERT CHARACTER key should not be used while either the Add Text or Modify Text command is active.

PAGE FWD/PAGE BACK and DISP FWD/DISP BACK—The Page Forward/Page Backward keys roll the edit region up or down by one half screen (12 lines). The Display Forward/Display Backward keys roll the edit region right or left by one half screen (40 columns). Refer to Figure 4-2 in the next section for a conceptual drawing of the edit region/drawing area relationship.

ESCAPE—The Escape key allows you to switch to the Command Processor from the Free Format Log Builder (for example, to use a Command Processor function). When you are ready to return to the FFL Builder, press the MENU key.

INSERT LINE/DELETE LINE—These keys are useful for deleting/copying and inserting blocks of text. You can delete/copy and insert text using the following method:

1. Move the cursor to the beginning of the text you want to copy or delete.

2. Hold down CTRL and press DEL LINE. This places an invisible marker at the cursor location to mark the start of the text block.

3. Move the cursor to the end of the text you want to copy or delete.

4. To delete only, press DEL LINE and the text disappears.

5. To copy, first delete the text as described in steps 1 through 4. The deleted text is held in temporary memory. Without moving the cursor, press INS LINE to make the text reappear. The text is now ready to copy elsewhere.

6. To insert, move the cursor to the position where you want to add the text, then press INS LINE. You can repeatedly insert the text block until you choose another text block to delete or copy.

HELP/CANCEL—When the edit region is on screen, you can press the HELP key to see a list of Log Builder commands, data formatting information, abbreviations, and collector names. You can press the Page Forward/Page Backward keys to move through all the Help information displays. Press Cancel to return to the previous display.

DATA ENTRY INFORMATION AND PROCEDURES
Section 4

This section describes the display format and the procedures used to enter data.

4.1 FREE FORMAT LOG BUILDING

This section explains the process of building a complete Free Format Log display. You should be familiar with the general procedure as described in Section 2 and use of the engineering keyboard as described in Section 3 of this manual.

4.1.1 Entering the Log Builder

The Picture Editor is a function of the Universal Personality and that personality must be running in the Universal Station. The Universal Personality (UP) contains both an engineering section and an operator section. Press the MENU key (hold down CTL and press HELP) to call up the Engineering Main Menu.

If you are using a Universal Work Station (UWS) or a Micro TDC Station, keep the following differences in mind. The station must have an Engineering Keyboard connected. You may have to press the PF1 key to enable engineering entry functions (i.e., enable Engineering Keylock). Although these stations do not have touchscreens, you will find it easy to move the cursor with the mouse or track ball and you can use the ENTER and SELECT keys on these devices to duplicate those same functions on the Engineering Keyboard.

With the Engineering Main Menu displayed on the Universal Station's screen, use the engineering keyboard's cursor keys to position the cursor at the words FREE FORMAT LOG. Then press the SELECT key. If the touchscreen option is available, just touch the words **FREE FORMAT LOGS** on the menu. Selecting the Free Format Log function calls in a limited version of Picture Editor Software that is loaded at this point and must, therefore, either be on the History Module or available in the active floppy or cartridge disk drive. A display similar to Figure 4-1 should appear on the screen.

4.1.1.1 Edit Region

The edit region shown in Figure 4-1 is the current work area that is available to build the log. As shown by Figure 4-2, the total available work surface is much larger than the edit region, but only 28 lines by 80 columns appear on the screen at a time, with 80 columns and 24 lines usable for log building. Figure 4-2 shows the initial position of the edit region when the Log Builder is started or after executing a NEW command. Because the printer output is 132 columns wide by 66 lines long, you will need to move the edit region around to use the total work area. This can be done with the Set Roll command or the PAGE/FWD/BACK and DISP FWD/BACK keys as explained later.

4.1.1.2 Communications Lines

The two lines at the top and the two lines at the bottom of Figure 4-1 are called communications lines. The commands and messages that appear on the command lines provide communication between the user and the Log Builder. These lines appear during log building and editing sessions, but do not appear on the printed log.

Top line—Date/Time—The current date, time, and station number appear at the right-end of the top line.

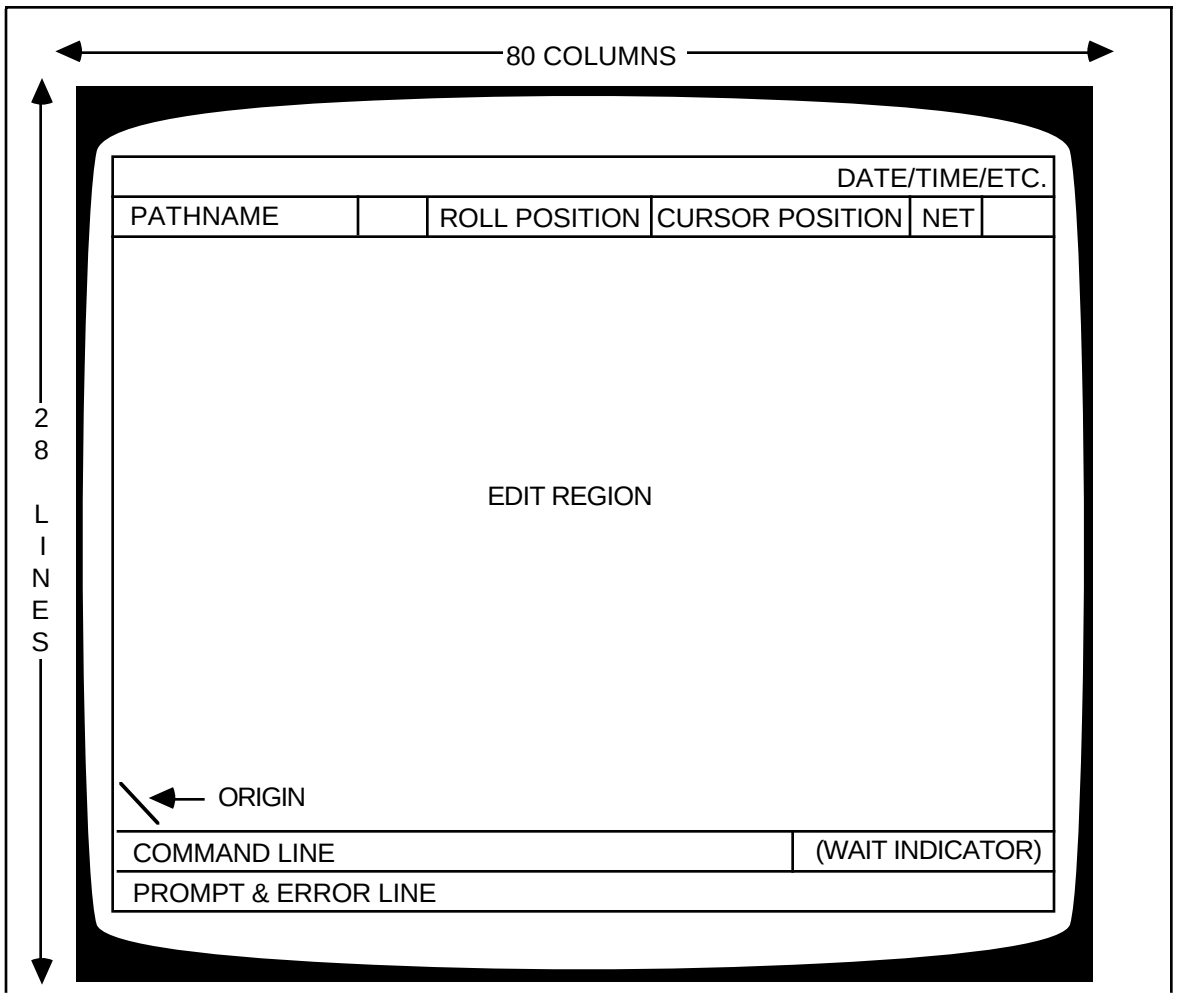


Figure 4-1 — Display Net 1637

Second line—The information here is called current settings and shows

- The pathname (if one has been established) for use with Read/Write/Compile commands. Initially this area shows the software revision level. Refer to the Set Pathname command for more information.

- **Cursor Position**—When coordinate entry is expected, the cursor-position numbers tell where the cursor is located with respect to the lower left-hand corner of the drawing area. The numbers are shown as follows:

  ```
  C-XX, YY where XX and YY are the current X-Y cursor coordinates in pixel
  units*.
  ```

- **Net**—Current network-mode status. When the status is N-ON the log builder has access to the network to check information about the variables you enter. When the status is N-OFF, network access is disabled. The Set Network command is used to make the switch.

- **Roll Position**—Indicates where the origin of the edit region is located with respect to the bottom left-hand corner of the drawing area (see Figure 4-2). The first number is the X (horizontal) coordinate and the second is the Y (vertical) coordinate. Both numbers are in character units*. The Set Roll command is discussed in a later section.

- **Command Line**—Commands are entered on this line by typing them in from the Engineering Keyboard. Command entry is explained in detail later. At the right-side of the command line, the word WAIT appears when the system is busy (typically during write/read/compile operations).

- **Prompt and Error line**—This line is used to report errors and to ask for additional information. For example, invoking the **Add Value** command causes the message **Enter Value Coordinates** to appear on the prompt/error line. If you incorrectly enter a command, the incorrect part of the entry turns red and an error message appears on the bottom line.

4.1.2 Command Entry

Free Format Log commands are entered through the Engineering Keyboard by typing the command name or its abbreviated form on the command line (see Figure 4-1) and then pressing the ENTER key.

Example: To enter an Add Text command, you would position the cursor to the left-end of the command line and type **ADD TEXT**. Either uppercase or lowercase letters can be used. Press the ENTER key to invoke the command.

*Character units are twice as high as they are wide, and refer to the space allotted for one character. Pixel units are smaller, like a dot over the letter i, and are used with graphical work, for example, when drawing lines. Pixel units do not apply to Free Format Logs, except when interpreting the cursor position. As you move the cursor or the edit region away from the bottom left-hand corner of the drawing area, each vertical-character unit (line) is counted as 16 pixel units and each horizontal-character unit (column) is counted as 8 pixel units.

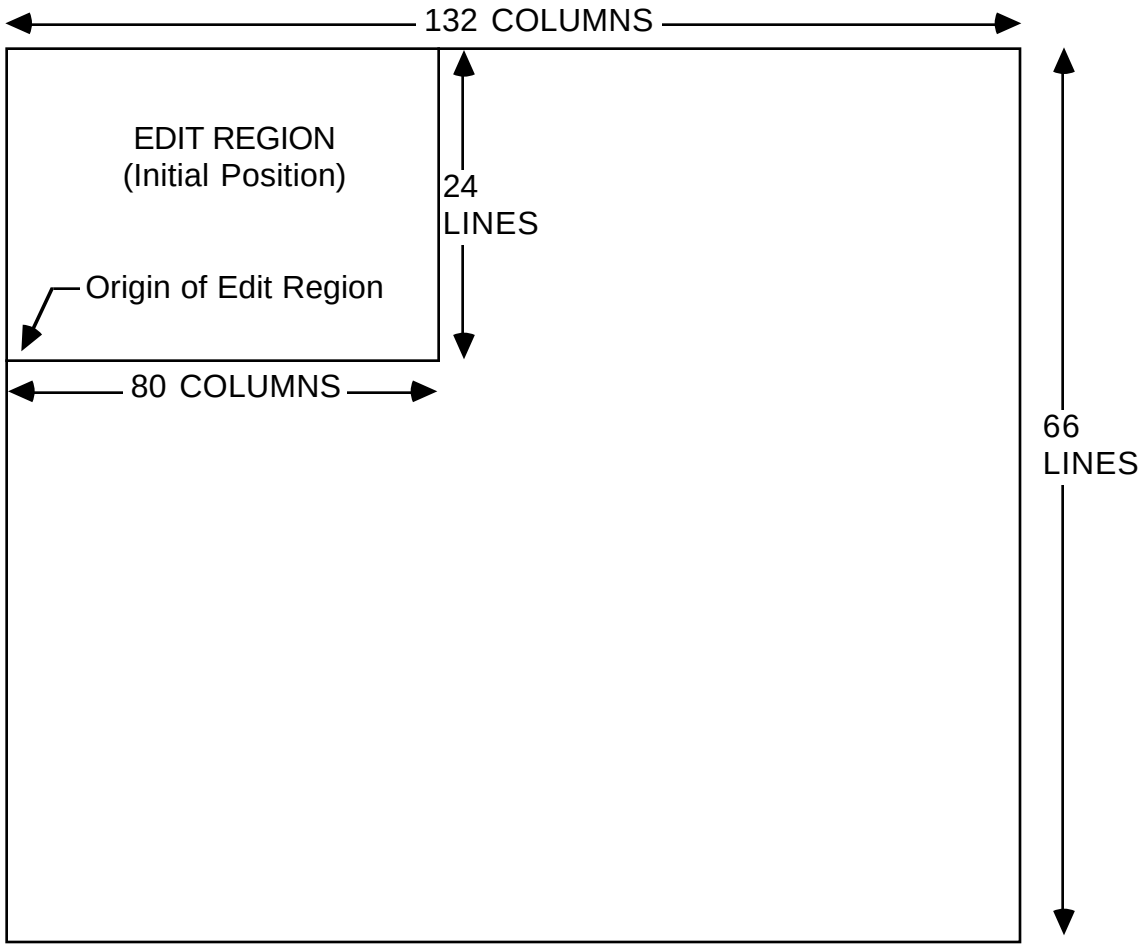


Figure 4-2 — Edit Region in Relation to Total Drawing Area 1781

4.1.2.1 Command Abbreviations

Most command words have an abbreviated form of 1-4 letters that can be used instead of the full command. Both the full command and its abbreviated form(s) are shown in the command descriptions (also see Appendix B). Either the full command or the abbreviated form can be used. For example A T is equivalent to ADD TEXT.

4.1.2.2 Multiple Commands

Multiple commands can be entered by separating the command names with a semicolon. Each command is executed in order. For example, SELECT TEXT;COPY;ADD VALUE.

NOTE

Only a limited set of Picture Editor commands may be used to build Free Format Logs. The legitimate commands are listed and briefly described in Appendix A. Refer to the *Picture Editor Reference Manual* for complete descriptions of the commands (see References).

4.1.2.3 Specifying Locations

Invoking some commands causes a prompt for one or more screen coordinates, for example, coordinates for the Value locations during the Add Value command.

Coordinates can be entered in these ways:

- By moving the cursor to the desired screen location with the cursor keys, then pressing the SELECT key.
- By touching the screen at the desired points (if the Universal Station has the touch-screen option).
- By typing the X-Y coordinates (in pixel units) on the command line following the command, for example,

  ```
  ADD VALUE 160 80
  ```

  Coordinate information for the last method is specified in X-Y pairs (more than one X-Y pair can be specified). In the Add Value example, X=160, Y=80, specifies the coordinate in pixel units with respect to the lower left-hand corner of the drawing area. The lower left-hand corner of the drawing area has the X-Y coordinate 0, 0. From this point to the desired location, count each column as 8 pixel units and each line as 16 pixel units. Multiple coordinates are entered as X_1 Y_1 X_2 Y_2 .

Throughout the remainder of this publication (with one exception), the assumption is that coordinates are specified by moving the cursor to the desired location by using the touch screen, or cursor controls, or both. The exception is the Set Roll command, which is explained later.

4.1.2.4 Errors

If you see that the command is typed incorrectly before pressing the ENTER key, use the cursor keys to back up, then type over the incorrect part of the command.

If you typed a command incorrectly (or an unacceptable form of the command) and have already pressed the ENTER key, an error message appears on the screen and the incorrect part of the command is changed to red. The command is not executed. To recover, retype the command information correctly, then press ENTER.

4.1.3 Data Entry Procedures

4.1.3.1 Preparation

Before data-entry time, each Free Format Log should have been laid out on an *HM88-561* or similar paper form, such as shown by Figure 4-3. Look over the forms to determine what work needs to be done. The *HM88-561* form shows how the finished log should appear.

The code inside each circle is called a **key** and refers to a specific entry on a support form. For example, key V-1 refers to Value 1 on the *HM88-562* Value Information form. Also note that the Free Format Log forms can be numbered, and make sure that the support forms that you use correspond to the proper Free Format Log form. Sometimes there will be several log forms in the same package. Each log form usually has one or more related support forms.

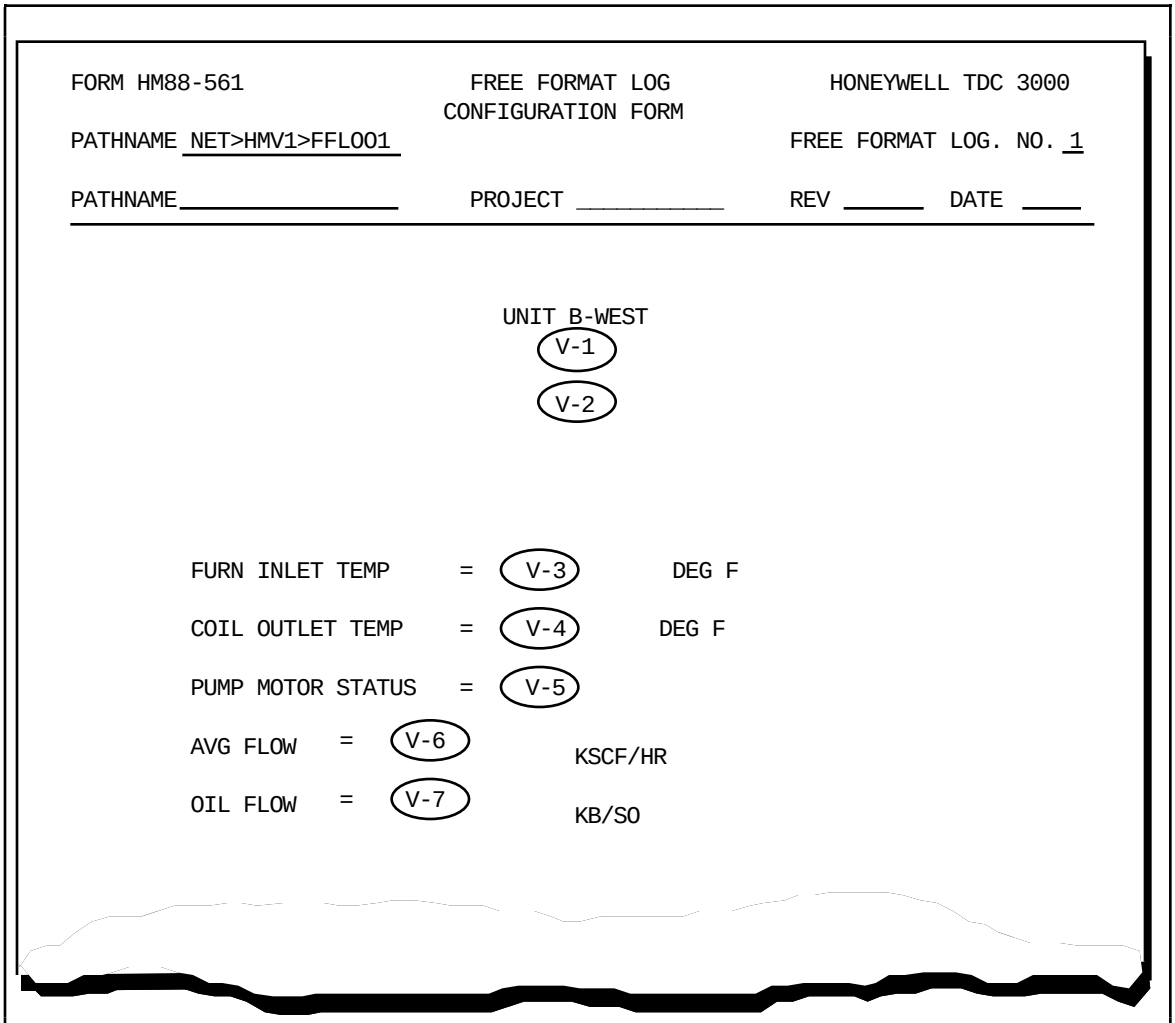


Figure 4-3 — Typical Log on HM88-561 Paper Configuration Form new

Simple logs with only a few Values may have the support information written right on the *HM88-561* (or similar) Free Format Log form and, therefore, do not require a support form. After becoming familiar with Value entries, you will easily recognize this type of information and use it to build the desired log. This manual presumes that the standard forms were used and that for each Free Format Log there is one, *HM88-561* Log form and one, *HM88-562* Value Information form. You may also have other support forms.

NOTE

1. Any time you need or wish to clear the screen and start over, execute a NEW command.

2. If the Universal Station is disconnected from the Local Control Network, disable network searching by executing the command SET NETWORK OFF.

4.1.3.2 Edit Region Control

Throughout the log-building process you must make sure that the edit region is positioned over the proper part of the drawing surface. The edit region is initially positioned in the upper left-hand corner (see Figure 4-2). The roll-position indicator on the second line will indicate R-0, 42 when you enter the log builder (refer to the discussion on communications lines for an explanation of the roll-position numbers).

There are two ways to move the edit region over the drawing area. One way, as shown in Figure 4-4, is to use the Set Roll command. To do this, type SET ROLL xxx yyy (or the abbreviated command form S R xxx yyy) on the command line and press the ENTER key. The letters xxx and yyy represent the roll coordinates, (for example, 52 42 are needed to move to the second position). The roll coordinates for each display position in Figure 4-4 are shown on the line leading to that position. The resulting roll-position indication is shown at the top of the display. Each display overlaps slightly. Rather than move from left to right, top to bottom, as illustrated, you can roll to any display position you want by executing a Set Roll command with the proper coordinates.

The second way to move around the edit region is to use the PAGE FWD/PAGE BACK keys and the DISP FWD/DISP BACK keys. The Page Forward/Page Backward keys roll the edit region up or down by one half screen (12 lines). The Display Forward/Display Backward keys roll the edit region right or left by one half screen (40 columns).

4.1.3.3 Grid Overlay

It is easier to tell where the edit region is positioned on the drawing area if you turn on the grid overlay. Grid lines appear for every 5th line and column; every 10th line and column is numbered. To turn the grid on, execute the command Set Grid On. When the log is built, execute the command Set Grid Off.

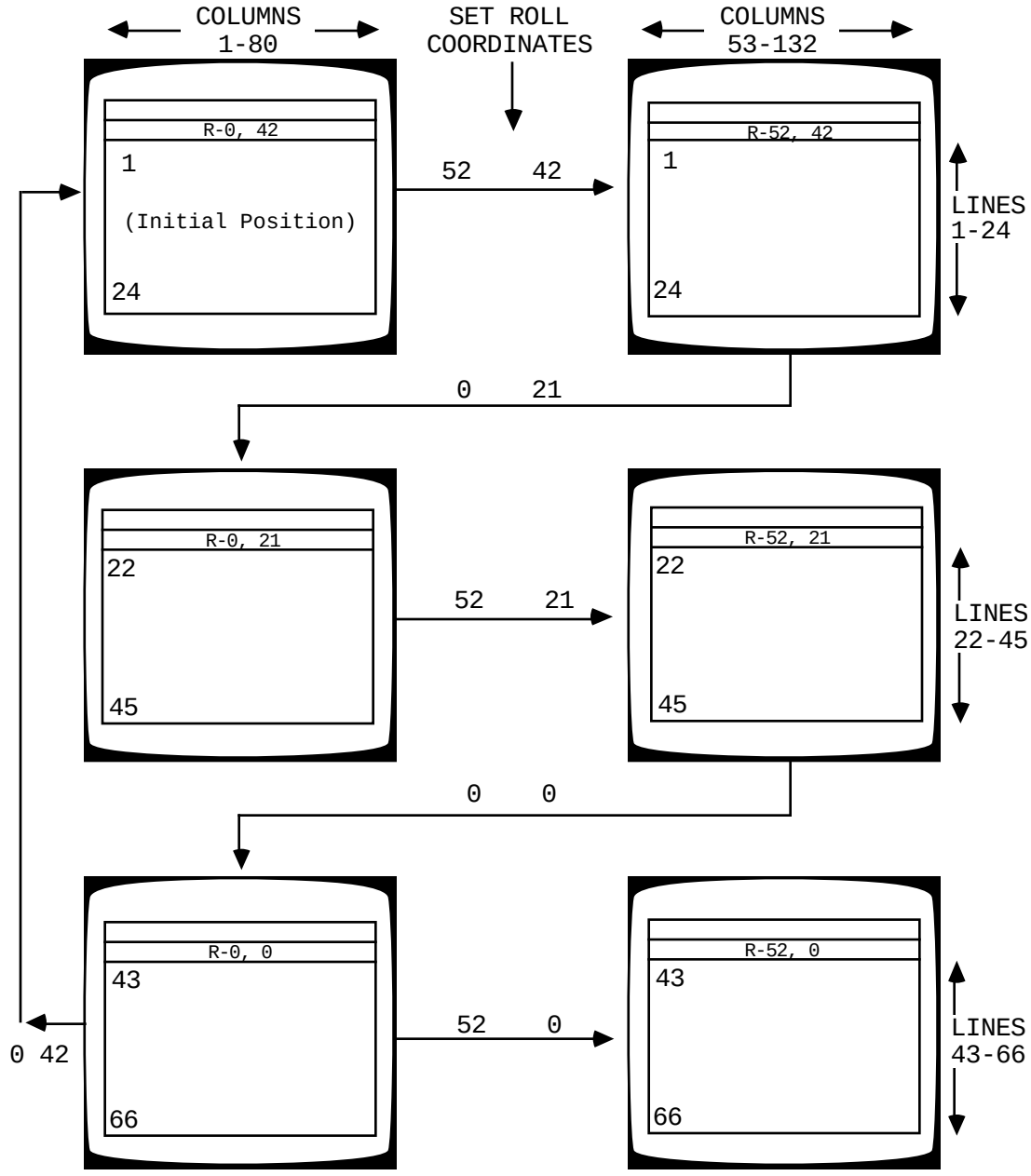


Figure 4-4 — Rolling the Edit Region Over the Working Area 1783

4.1.4 The Sequence of Building

There is a preferred order for building Free Format Logs. If Subpictures are used, they should be built first and added to the main display to obtain proper spacing for other objects. Otherwise, text is inserted first, then Values and/or Variants are added. Values take up different amounts of horizontal space; therefore, you must allow room for the maximum number of digits, especially if the Value is followed by more text (example: TEMP = XXX DEG F, FLOW = XX GAL/HR). With experience, you will be able to allow proper spacing for Value digits between the text. Until you become familiar with formats, the best method is to insert all leading text, then insert all Values, and finally, add text labels, engineering units, and so on., to the right of the Value (for example, DEG F, GAL/HR, etc.).

Sometimes a label is placed over a column of Values and spacing is not a problem (as shown in Figure 1-2). In such cases, all of the text can be entered, followed by all of the Values. The remainder of this section explains the log-building process.

Variants also reserve different amounts of space, depending on how long a text string or how large a subpicture they call into the display. As with values, you may need to fit text around them. Subpictures referenced by a Variant must exist before the Variant is built.

Presently, most Free Format Logs contain text and Values, therefore these objects are covered in the most detail.

4.1.4.1 Text Entry

Type **ADD TEXT** (or the abbreviated form A T) on the Command Line and press the ENTER key.

Move the cursor to the desired location in the edit region and type in text from the Engineering Keyboard. More than one line of text can be entered with a single command if desired. When the text has been typed in, press the **ENTER** key to complete the command. Additional text can be added with subsequent Add Text commands. If you make a mistake, refer to the discussion on editing commands. Copy text into the display exactly as shown on the paper configuration form.

During text entry, note that a **text object** is considered to be a group of characters that touch horizontally (including space characters). If you use the cursor-positioning keys instead of the space-bar to separate words or characters, you are creating separate text objects. This is seldom important in Log Building, but is pointed out to explain why parts of a line of text may be affected differently by the Select command. The Select command is discussed in the section on editing.

Figure 4-5 shows how text on the form shown in Figure 4-3 was entered into the display. In this case, all text shown was entered with a single Add Text command. Text to the right of the Values can be entered at the same time as the other text if you are careful to allow proper spacing, but the most foolproof way is to come back and enter the remaining text after the next step.

4.1.4.2 Value Entries

Position the cursor at the left end of the Command Line and type ADD VALUE (or the abbreviated form A V); then press the ENTER key. The prompt Enter Value Coordinates appears.

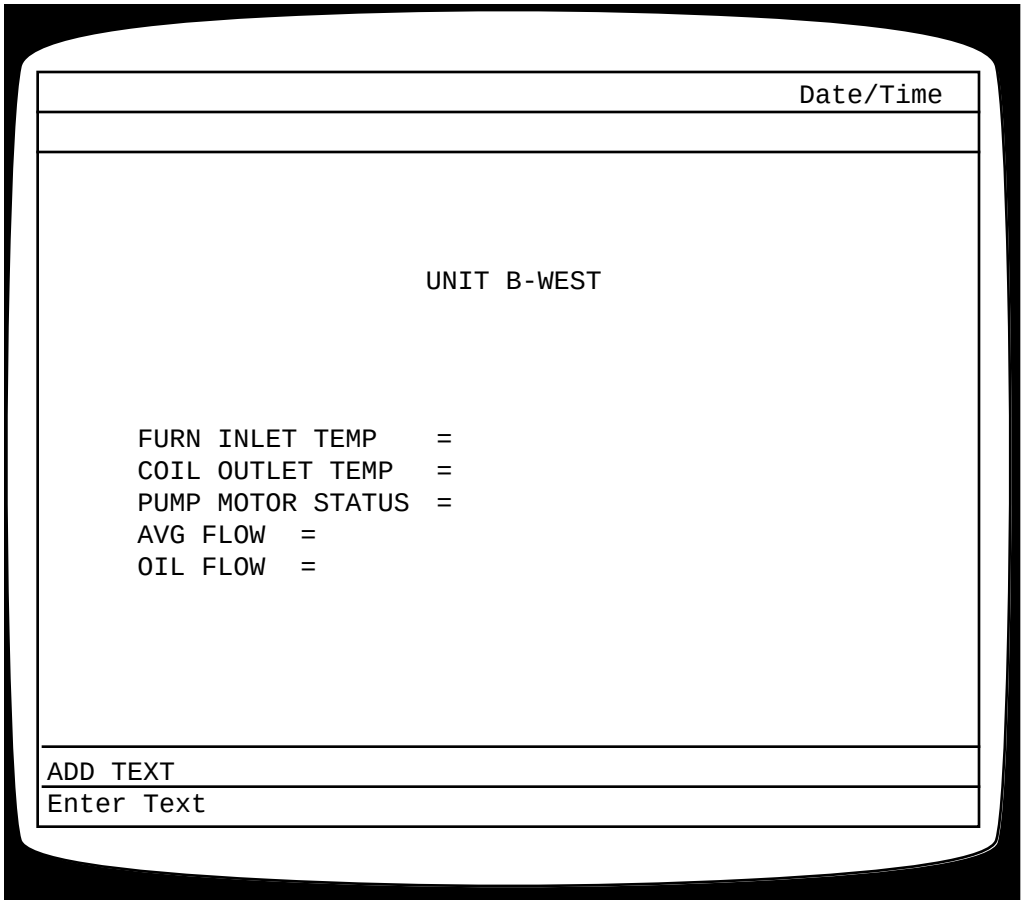


Figure 4-5 — Text Entries in the Display 1784

Move the cursor to the screen location where the first Value should appear and press the SELECT key. Thereafter, the position is marked by a cross. Make a note of the cursor coordinates shown on the communication line before proceeding.

All Value locations can be entered with a single command by continuing in this manner (or you can enter them one at a time). When the SELECT key is pressed, or the touch screen is touched, each Value position is marked with a cross (see Figure 4-6). When all locations have been specified, press the ENTER key.

Next, a screen form appears. You must fill in one screen form to describe each Value. The first screen form corresponds to the first entered Value location and so forth (the X, Y coordinates should correspond with the mental note you made when selecting the Value's location). Refer to the appropriate *HM88-562* Value Information form and enter the **Expression** for V-1. Figure 4-7 illustrates a screen form where the expression A100.PV was entered.

Comments—you can add comments to explain the expression. Comments must be enclosed in curly braces { }. Example: `A100.PV + 2 {safety margin = 2}`.

You may also encounter a prompt for the **variable-type,** or **format,** or both. If so, enter the information listed on the *HM88-562* form for that Value by typing over the default Value on the screen form. When type or format information is not specified on the *HM88-562* form, accept the default Value as presented on the screen form.

Date/Time Format—If you specify either a date or time for the variable-type, the log builder presents a time format (`TIMEHH:MM:SS:ENDTIME`). If you want a date format, or a different time format, type in the desired format (you can press DEL LINE to clear the entry). The Help display provides format information, or refer to Appendix A in the *Picture Editor Reference Manual.*

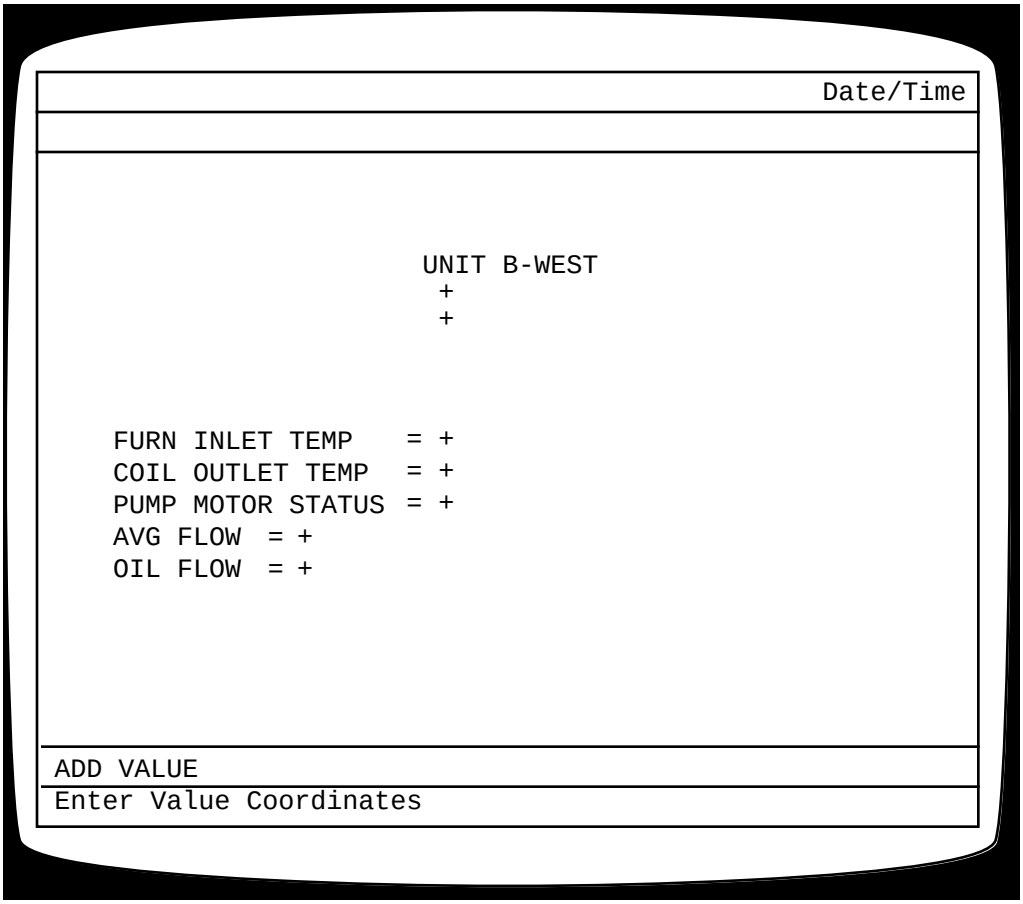


Figure 4-6 — Value Entries in the Display 1785

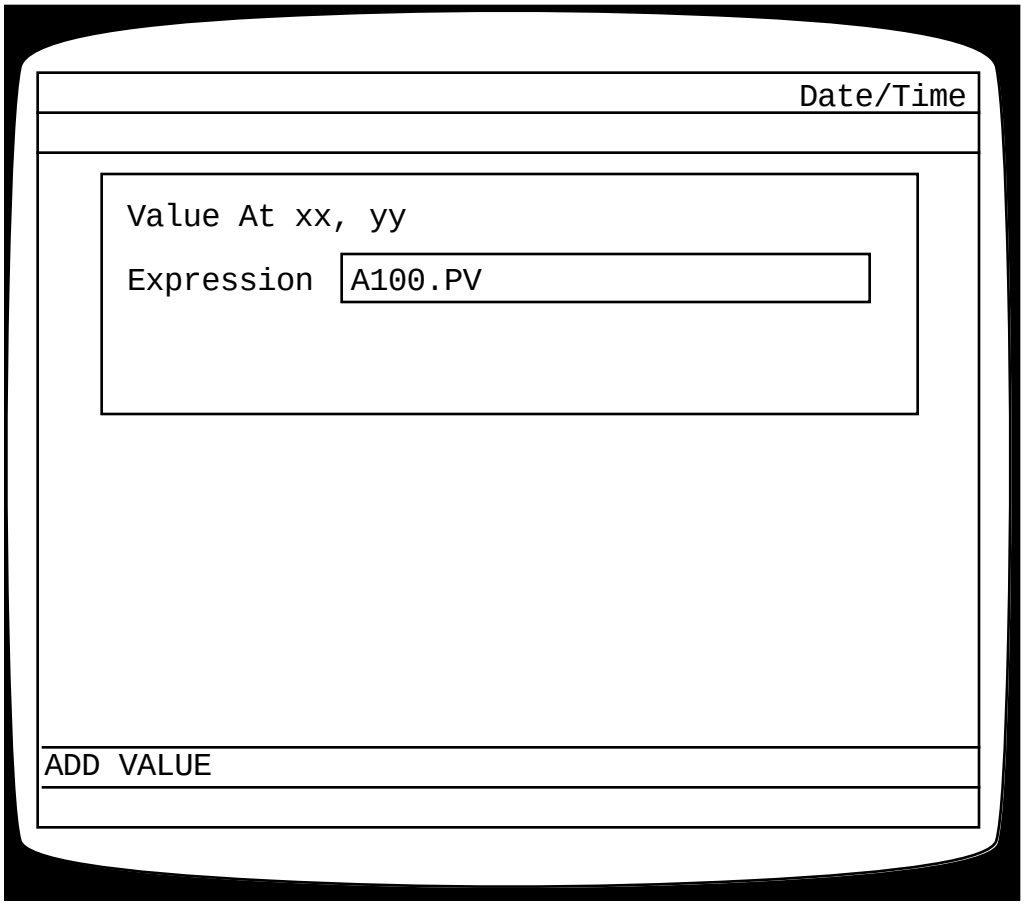


Figure 4-7 — Entering the Value Expression 1786

When all of the screen form entries have been completed (or the defaults accepted), press the ENTER key. The next appropriate screen form appears. When all screen forms for all Values have been completed, the full log display returns.

Values are now represented in the display somewhat as shown in Figure 4-8, (depending on the format). At this time, Values appear as a string of characters equal to the field width of the final Value object. If the format is Real, a string of *R*s is used, if the format is Integer, a string of *I*s is used, etc. The letters represent all of the positions where numbers or text could appear. In any case, you can now determine where any remaining text (for example, PSI) should be entered in relation to the Value. Figure 4-9 shows the final text entries.

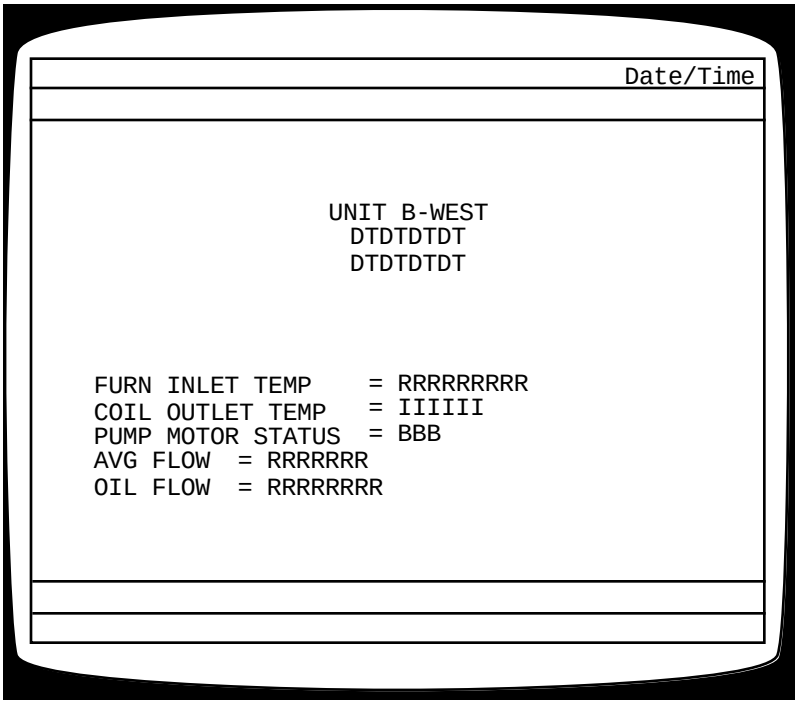


Figure 4-8 — The Display After Value Screen Form Entries 1787

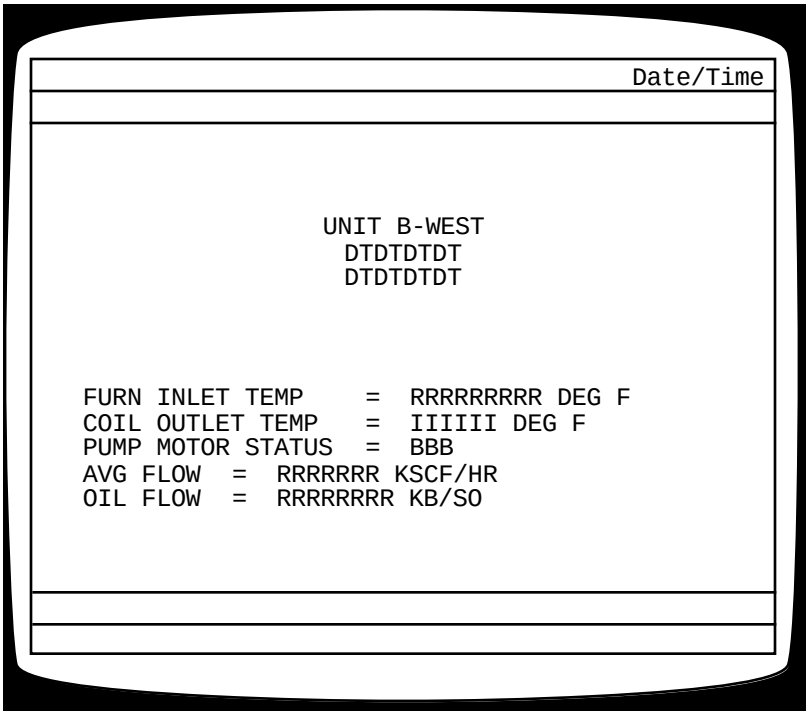


Figure 4-9 — The Display After Final Text Entries 1788

4.1.4.3 Variant Entries

Variants are indicated by VR- keys on the Log Configuration form. Variants are used to switch the display image between two or more objects. You cannot observe this switching until operating time, but you will see one of the objects at the chosen locations when the command is completed. After invoking the Add Variant command, use the cursor to specify locations where you want the Variants to appear. The selection procedure is the same as described for Values. Each location is marked by a cross. When all locations have been selected, press ENTER. The Log Builder will present a screen form for each Variant (see Figure 4-10). Refer to the paper VR support form *(SW88-556)* and enter the information as listed for each Variant. If a text string is called for, it must be enclosed in quotes. If a subpicture is called for, it must be preceded by the word subpicture (or subpic, or sub, or s). The Log Builder may or may not request type-information, but if it does, this information should also be entered as it appears on the VR form.

Comments—you can add comments to explain the sequences. Comments must be enclosed in curly braces { }.

When all the form entries are completed, press the ENTER key. One of the Subpictures or text strings will appear in the picture. If parts of the display near the Variant are blanked out, one of the objects may take more room than you have allowed. In this case, move adjacent objects further away. In close cases, you may be able to adjust the subpicture's origin slightly with the SET ORIGIN command to obtain a perfect fit.

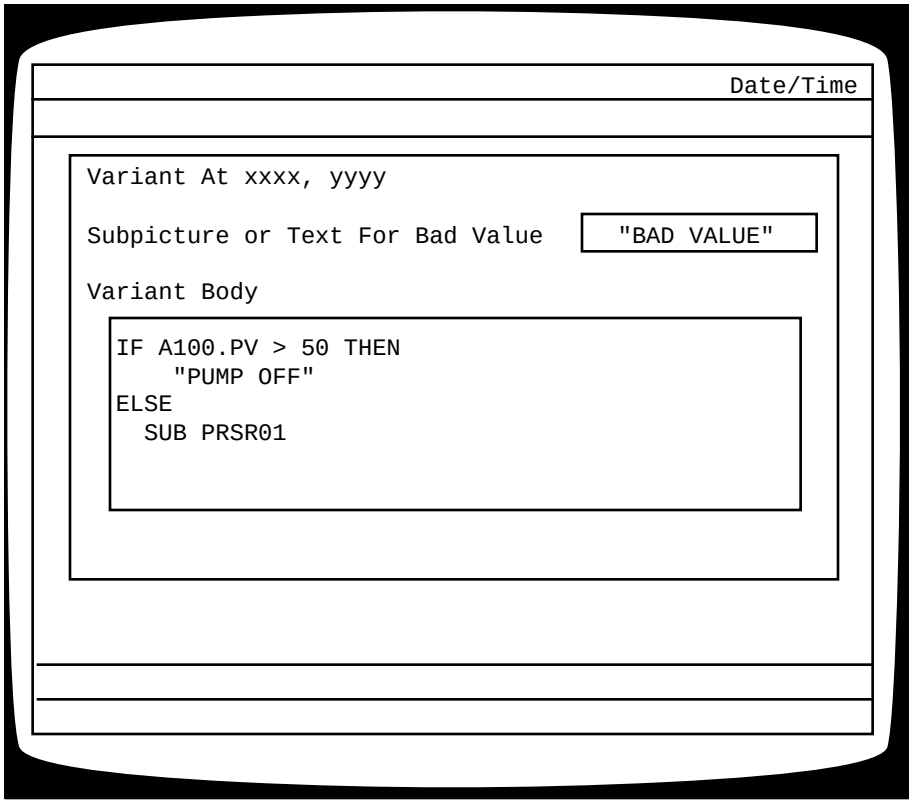


Figure 4-10 — Entering Variant Information 1789

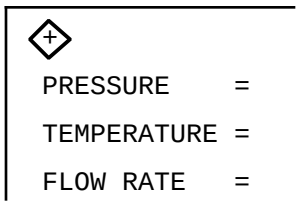
4.1.4.4 Subpictures

Subpictures are simply pictures built for use in other displays. They can be added to other displays or called in by a Variant as process conditions require. As used in Free Format Logs, Subpictures can contain only text, Values, Variants or Subpictures that contain those objects. Subpictures are built and stored much like any other picture and become Subpictures when added to another display. To avoid confusion, they are referred to as Subpictures throughout this discussion. You may want to study the Subpicture section of the *Picture Editor Reference Manual* (see References); however, keep in mind that only the objects listed above are allowed in Free Format Log Subpictures. Graphical objects and Application Subpictures are not allowed.

Build each subpicture as shown on the *SW88-557,* Subpicture (S) form, using the techniques already described and the techniques described in the following sections. There will probably be keys on the S form that refer to *SW88-553,* Values forms or *SW88-556,* Variants forms.

After building each subpicture, add an origin (see the Set Origin command). You can place the origin anywhere, but typically you will put it somewhere that is easy to remember when you fit it into another display. When you add the subpicture to a display, a message will appear on the prompt line: **Enter Subpicture Coordinates**. The coordinates you specify correspond to the subpicture's origin (but the origin does not appear in the picture).

For a simple subpicture like the following, the origin (diamond shaped object) could be placed as shown near the first line. If this subpicture is added into another display several times, it would be relatively easy to remember that the subpicture will take up so many lines and columns relative to the origin.



Subpictures can be stored with a **Write** command at any time while you work on them. When you think a subpicture is finished try to compile it. Refer to the **Compile** command and use the pathname indicated on the subpicture form. If the subpicture has errors, it will be redrawn with the faulty objects **selected**. When you have corrected the errors, the subpicture should compile unless it contains parameters (discussed more, later in this section). In that case, you will get the message **Cannot Compile Subpicture** and you should then use a **Write** command to store it (also refer to the Verify command description in the *Picture Editor Reference Manual*). There is no requirement to compile the subpicture; the purpose is to check it for errors before it is used. Note that the **compile** command automatically writes to a source file as part of the command execution.

If several similar Subpictures are needed, you can store the first one, modify the screen image as needed (or read it back later), and store the changed subpicture with a different filename. If you need to change an existing subpicture, refer to the Replace Subpicture command later in this section.

4.1.4.4.1 Parameters

If the S form lists one or more parameters, some expression in the subpicture is being specified as a parameter. Parameters begin with an & character (e.g., &A). When you store a subpicture with a parameter, the Picture Editor presents a form on the screen requesting a prompt word-string for each parameter (see Figure 4-11). Refer to the S form and type in the prompt word-string for each parameter. Figure 4-11 shows an example where the words Point ID? were used as the prompt word-string.

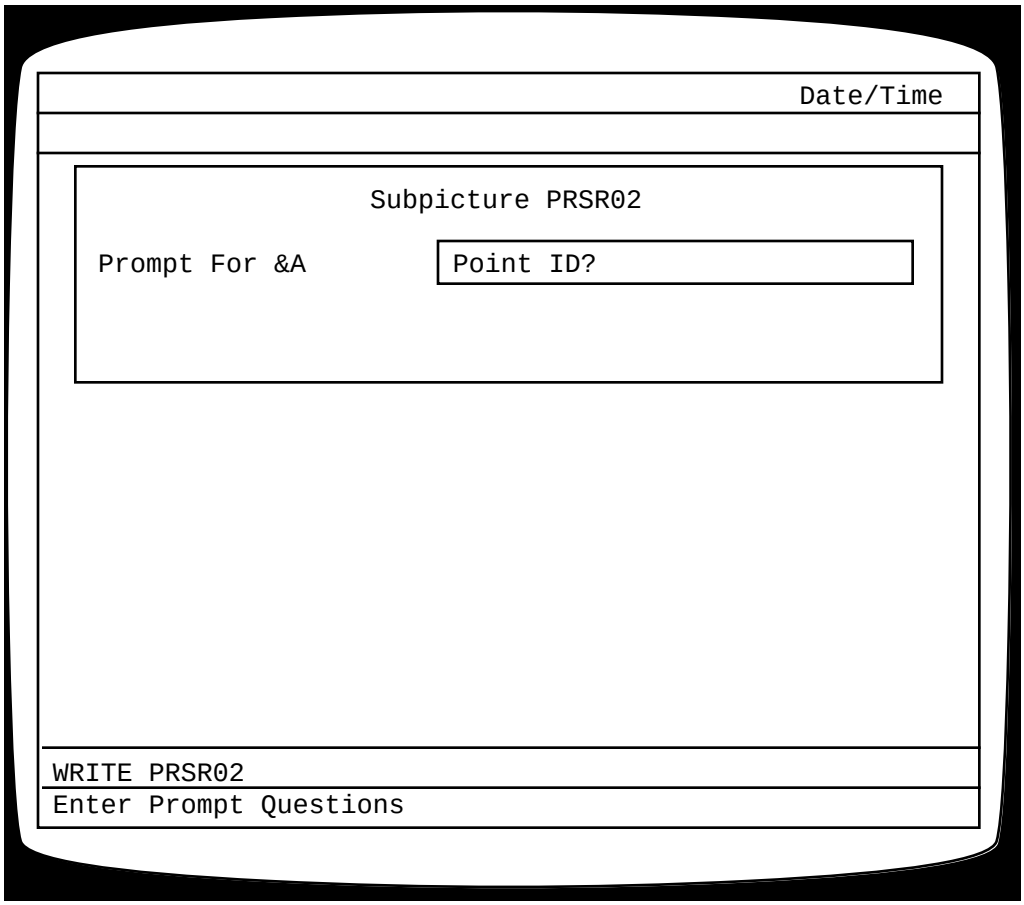


Figure 4-11 — Storing a Subpicture with Parameters 1790

4.1.4.4.2 Using Subpictures

The **Add Subpicture** command is used to add Subpictures to Custom Graphic Displays as needed. After invoking this command, use the cursor to indicate where you want the subpicture's origin (the origin does not show at operating time). If the Subpicture contains a parameter, the Log Builder will present a form with the prompt word-string that you entered when storing the subpicture.

The word string used in this example was **Point ID**? (see Figure 4-12). You must answer the question by typing in whatever is listed as the response for that subpicture's prompt on the Subpicture Detail form (paper form SD). For this example, A100.PV was typed in as the Point ID.

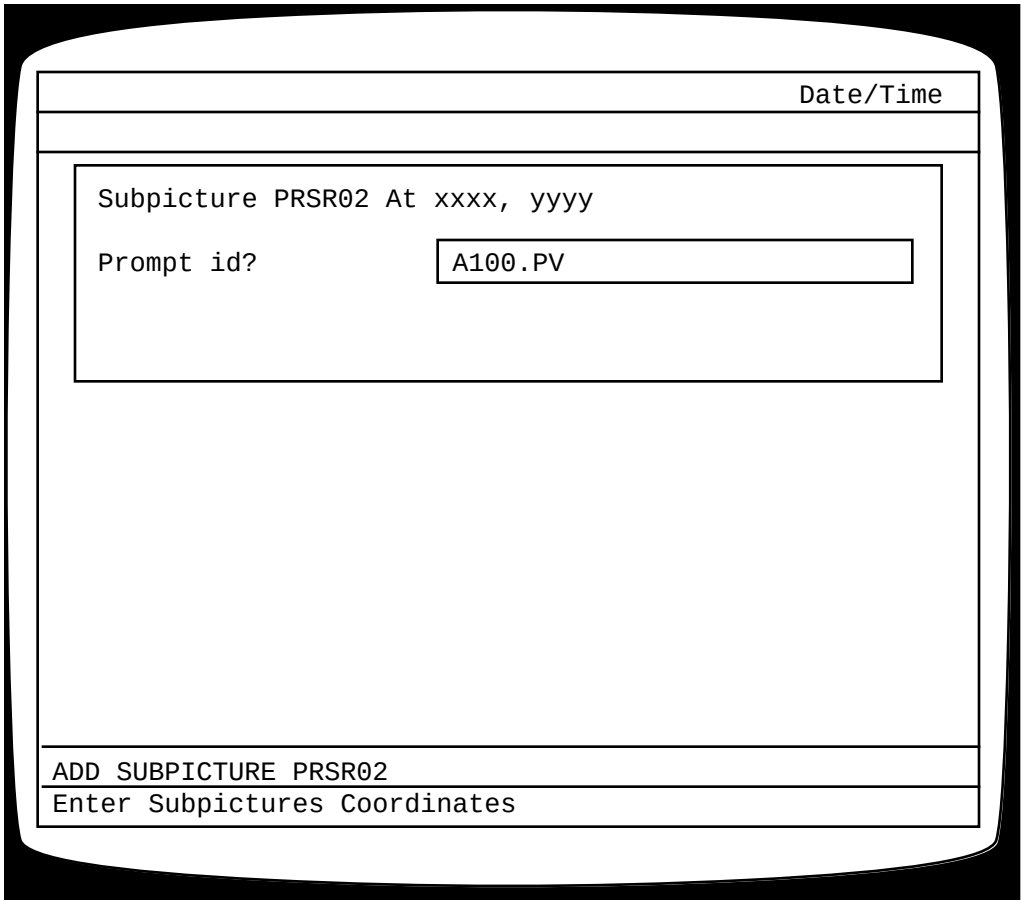


Figure 4-12— Prompt Form When Adding Subpicture to Display 1791

4.1.5 Editing the Free Format Log

The following commands are fully described in the *Picture Editor Reference Manual* (see References) and the discussion in this section is intended to help you understand when to use them. Note that a text object is a horizontal string of text, and may or may not include adjacent space characters. Different text objects will exist wherever the cursor positioning keys were used to separate text. Each Value is a Value object. A log display can be edited before it is stored in a source file, or read back later and edited.

NEW—The New command clears the screen. Use it when starting to build a new log display.

END—Use the End command to exit from the Picture Editor (i.e., return to the Engineering Menu).

SELECT/DESELECT—The Select command is used to identify an object (e.g., a text or Value object) on the screen. Once **Selected**, the object can be moved, copied, modified, or deleted by commands that affect **Selected** objects. The text or Value object is automatically deselected after being copied, moved, etc. You can also execute the Deselect command, which is the opposite of the Select command (i.e., deselects **Selected** objects).

COPY—The Copy command duplicates a selected object (or group of objects) at another location on the display.

MOVE—The Move command moves a selected object (or group of objects) to another location on the display.

DELETE—This command deletes a selected object or objects from the display.

MODIFY—Modify commands are used to modify objects on the screen. The object must first be **Selected**. Entries on the Value screen-form can be changed by Selecting the Value and then invoking the Modify Value command. Modify Variant works the same way to modify Variant screen-forms. Use the Modify Text command to change **selected** text and then type or space over the characters, but do not use the Insert Character key. Another way to correct text is to delete and retype the words. Modify Subpicture is used to change parameters on the Subpicture Information Form, not to modify the subpicture. If you need to revise an existing subpicture, refer to the Replace Subpicture command in the *Picture Editor Reference Manual*.

Set Network—If you are working at a Universal Station that is not connected to an active network, you should execute the command **Set Network Off.** Otherwise, the system will try to check variable types through the network. When the network becomes available, reverse the effect by executing the command **Set Network On.** Network On/Off status is shown on the second communication line as N-ON or N-OFF.

Select String—you can use this command to locate a text string while building or modifying a log. For example the command Select "A100" will find all occurrences of that text string and select it. You can then modify the string or cancel.

Comments—you can add comments to the log that explain something about the log or for any other purpose. The comments do not appear at operating time, but you can read them whenever the Free Format Log builder is in use (for example, when building or revising the log). Use the Define Comment command to open the port. Type in the comments and press Enter. Repeat this procedure to read comments stored with the log source file.

Replace Subpicture—One copy of the subpicture is stored with every Free Format Log where it is used. The same is true if a subpicture is referenced (called for) by a Variant . Thereafter, to change a subpicture, you must delete the subpicture image in every log where you want the change to appear. Also delete every reference to that subpicture on variant screen forms (use the Modify Variant command). This action eliminates the subpicture copy stored with the picture. Then add the changed subpicture back to the Free Format Log display(s) and variant screen forms.

An easier way to change a subpicture is with the Replace Subpicture command. First, build and save a new subpicture, or modify and save the old base subpicture. Call up the log with the subpicture you wish to replace. To replace the old subpicture PSR01 with the modified subpicture PSR01, type in the command: REPLACE SUB PSR01 PSR01

Every occurrence of the old subpicture PSR01 is replaced by the revised subpicture PSR01. If you build a new subpicture and store it under a different file name(e.g., PSR03), you will have to type: REPLACE SUB PSR01 PSR03 and the result will be the same. Section 4 in the *Picture Editor Data Entry* manual provides some examples.

4.1.6 Saving the Log Display

The log displays that you build can be saved as described in the following paragraphs. Several situations are common. If you must stop work on a log and continue it later, you will want to save the work by writing it to removable media (floppy or cartridge disk), or to a temporary storage area in a History Module. When a log is completed you should compile it onto the History Module, if there is one, or onto a floppy or cartridge disk that will be available to the operating system (e.g., the one that contains the Area Database.). You should also save a back-up copy of the logs on floppy or cartridge disks.

4.1.6.1 Setting the Pathname

The pathname tells where to store, read, or compile the display. Look for an assigned pathname on the *HM88-561 Configuration Form*. Before executing a Write, Read, or Compile command, use the Set Pathname command to establish the current pathname. Once a current pathname is established, the file name can be changed by appending that part to the Write, Read, or Compile command. For example, if the current pathname is NET>HMV1>**FFL001**, executing WRITE **FFL002** writes to source file NET>HMV1>FFL002. The pathname can also be appended to the command to specify the pathname. Example: WRITE $F1>VOL1>FFL001. In these examples, NET indicates the local control network, HMV1 is a user volume/directory name on the History Module, $F1 refers to removable media drive number 1, VOL1 is a floppy or cartridge disk volume or directory-name, and FFL001 is a file name.

4.1.6.2 Storing into a Source File

A Write command is used to store the log in a source file. The pathname tells where to store the log (i.e., the device, volume/directory, and file). Note that the entire drawing area is stored by a Write or Compile command. If you read the log back, the edit region is automatically rolled to the same position as it was when the log was stored; therefore, to avoid confusion, you should have a recognizable section of the log on the screen before executing a Write or Compile command.

4.1.6.3 Compiling the Log Display

Log displays must be compiled before they can be used in the Operating personality. To Compile a log display, execute the command **COMPILE** (in this case, the current pathname specifies where the log is stored). The Compile command can also specify a pathname (e.g., `COMPILE NET>HMV1>FFL001`).

The compile command writes both an object file and a source file (or overwrites any existing files that have the same pathname so both the source file and object file are current). Only the object file is needed for the operating system, but it cannot be modified later. For modification, you need the source file. If you saved the source file on removable media, you can use the file utilities functions to delete it from the HM and save space (the source file has the suffix .DS; the object file has the suffix .FO). Refer to the *Command Processor Operation* manual for details. If later modifications to the log are necessary, read in the source file, make the changes, and recompile the log.

Cannot Compile—If you get this message, examine the display for a selected object. Check your references to points and parameters in that object. If that doesn't work, try executing a Verify command. Verify tries to make certain that the data type is known for every variable in the log. Refer to the *Picture Editor Reference Manual* for complete information on the Verify command. Finally, an object that is off-screen may be selected, but you can't see it. You should be able to execute a modify command and get some information on the object or use a delete command if you want to eliminate it.

CAUTION

The log you want to compile must be on-screen when you execute the Compile command. The specified source file is overwritten with whatever is currently on the screen. When you change a log that previously compiled OK, consider first compiling to a temporary file so that if the changed log contains errors, the old source is preserved.

Second Pathname—If the paper form contains a second pathname, use the Command Processor to copy the log's object file to the other media. Example: if the second pathname is NET>HMV2>FFL001 (where HMV2 is a directory on a second HM), execute the command: CP NET>HMV1>FFL001.FO NET>HMV2>= -d.

Abstract Overflow—This indicates that the log contains too many objects. Consider dividing the information between two or more logs.

Multiple Compile Command—This function provides a way to compile many Free Format Log files with a single command. You must build a list with file names of the logs you want compiled. The logs do not have to be on screen to compile, in this case, and a results file shows if the logs compiled successfully. The Multiple Compile command (MCOMP) is especially useful when a number of logs are revised. Refer to the *Picture Editor Reference* manual Compile commands for additional information.

4.1.6.4 Reading A Source File

The Read command retrieves a previously stored log display from a source file. The pathname specifies the media, location, and file name. Once read, the display can be changed and rewritten or recompiled with the appropriate commands.

4.1.6.5 Printed Record

The Print command can be used to obtain a listing of all objects in the log currently on the screen, including expressions, formats, coordinates, etc. Make sure the printer is ready, then type **PRINT $Pn** on the command line (n is the printer number). To print part of a log, select the objects you want to print, then type the command PRINT $Pn SEL. In this case only, a description of only the selected object(s) is printed.

You can also print to a file by substituting a file pathname for $Pn. Various options allow you to specify what is printed.

You can build a list that contains file names of the Free Format Logs you want printed and then use the MPRINT (Multiple Print) command to print their contents to a file. Refer to the Print commands in the *Picture Editor Reference* manual for detailed information.

4.2 System Configuration

After the logs are compiled, you need to tell the system where they are stored by an entry in the Area Database Pathname Catalog. The Pathname Catalog allows you to specify up to 10 search paths to the log/picture files (for example, to different volumes or media). You must enter a search path or paths to your compiled logs. You can also enter file names for up to 200 Free Format Logs (and pictures) that you want to keep in resident US memory. The system tries to keep as many of the specified files as possible in US memory.

When loading a US with the Operator or Universal Personality, the system searches each path specified by the Pathname Catalog for the logs/schematics you want in resident US memory and attempts to load them in the order specified. At operating time, when a Free Format Log is called, the system looks for it in resident memory first and then, if necessary, searches each path for the log.

The Title Summary Display shows which Free Format Logs (and schematics) actually became memory resident. The default US schematic memory area (which also can contain Free Format Logs) is 72 K words. You may be able to increase the amount of US memory allocated for logs and custom schematics, if necessary, to fit in more files or larger files. After an FFL is compiled, you can list its .FO file to determine the size. The configuration entry for External Schematic Memory is described in subsection 3.6, Table 3-5 of the *Network Configuration Form Instructions.*

Names and paths should be entered in the Area Pathname Catalog at configuration time if known. Task 29 in the *System Startup Guide, Cartridge Drive* in the *Implementation/Startup & Reconfiguration - 1* binder describes this process. If there are later changes to the Pathname Catalog, it can be reconstituted, changed, and reloaded. The *Data Entity Builder* manual in the *Implementation/Engineering Operations - 1* binder describes the process. If you change the External Schematic Memory size for a configured US node, use the reconfiguration instructions provided in Table 7-42 of the *Network Configuration Form Instructions* manual to load the change into the US.

COMMANDS
Appendix A

This appendix lists and describes the Picture Editor commands needed to build Free Format Logs.

A.1 COMMAND INDEX

Free Format Logs are built and edited by executing a series of Picture Editor commands. Section 4 of this manual explains how and when to enter the commands. The following table lists all of the commands that are valid for use in Free Format Logs (see Appendix B for abbreviations). The *Picture Editor Reference Manual* describes these commands in detail. If any other commands are used, the log display will not compile.

Most commands consist of two parts as defined where the prefix and suffix intersect in the table. For example, Add Text. For those commands, such as **scale**, that do not need a suffix, the first column of the index is blank.

Table A-1 — Command Index Matrix

Command / Prefix \ Suffix		Collection	Compile	Grid	Network	Origin	Pathname	Print	Roll	Source File	"String"	Subpicture	Text	Textsize	Value	Variant
Add												X	X		X	X
Compile	X									X						
Copy	X											X	X		X	X
Delete	X											X	X		X	X
Deselect	X											X	X		X	X
Define Comt.	X															
End	X															
Modify	X											X	X		X	X
Move	X											X	X		X	X
Multiple			X					X								
New	X															
Print	X															
Read	X									X						
Replace												X				
Select	X										X	X	X		X	X
Set		X		X	X	X	X		X					X		
Verify	X															
Write	X									X						

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New

A.1.1 Command Descriptions

This section very briefly describes the legitimate commands that can be used to build Free Format Logs. The *Picture Editor Reference Manual* describes these commands in detail.

- **Add Subpicture** Adds a previously built subpicture into the display.
- **Add Variant** Adds a Variant into the display. At operating time, a Boolean expression is evaluated and switches text or subpictures into the log.
- **Add Text** Allows text input from the Engineering Keyboard into the edit region.
- **Add Value** Adds an update region (live numbers or status) to the display.
- **Compile** Stores the current display in a source file and compiles the source file into an object file; flags errors.
- **Define Comment** Allows you to enter comments that document the log (comments are only visible in the source file).
- **End** Used to end the log-building session and return to the Engineering Main Menu.
- **Multiple Compile** Compiles all of the source files on a list. Provides a list of successfully compiled files.
- **Multiple Print** Prints all of the Free Format Log files on a list to a file. There is no output to a printer.
- **New** Clears the screen. Sets default color/intensity, etc., conditions.
- **Print** Prints a text listing of the contents of the log currently on the screen.
- **Read** Reads in a previously built display.
- **Replace Subpicture** Replaces all specified subpictures in a Free Format Log with another specified subpicture.
- **Select** Selects existing objects (such as text, Value, or Variants) in the display for subsequent manipulation by other commands. If followed by a text string (in quotes), the command attempts to locate and select the specified string of text in the configuration data for subsequent manipulation by other commands.
- **Set Collection** Allows change of update rate (at runtime) for display variables.
- **Set Network** Enables/disables variable type-checking through the local control network.

- **Set Pathname** Specifies the storage device and file name for the picture.
- **Set Roll** Rolls the edit region over the drawing area.
- **Verify** Clears up problems in a Free Format Log that may not allow it to compile. Verify Prompt command allows step by step changes.
- **Write** Stores the display currently on the screen in a source file.

The following commands can be used alone or with the qualifiers text, or Value.

- **Deselect** Reverse of select—allows deselection of objects.
- **Move** Moves selected text or Values within the display.
- **Copy** Copies selected text or Values within the display.
- **Delete** Deletes selected text or Value locations within the display.
- **Modify** Modifies selected text or Value screen-form entries.

ABBREVIATIONS
Appendix B

This appendix lists the abbreviations used with Picture Editor commands to build Free Format Logs.

Abbreviations are shown in parentheses ( ).

B.1 COMMAND PREFIXES

ADD	(A)		
COMPILE	(COMP)	(COM)	
COPY	(COP)	(C)	
DELETE	(DEL)	(D)	
DESELECT	(DES	(DS)	
END	(E)		
MODIFY	(MOD)	(M)	
MOVE	(MOV)		
NEW	(N)		
READ	(REA)	(RD)	(R)
REPLACE	(REPL)	(REP)	(RE)
SELECT	(SEL)		
VERIFY	(V)	(VER)	
WRITE	(W)		

B.2 COMMAND SUFFIXES

COLLECTION	(COL)	(C)	
CONDITION	(COND)	(C)	
FILE	(F)		
GRID	(GRI)	(GR)	(G)
PATHNAME	(PATH)	(P)	
PROMPT	(P)		
SUBPICTURE	(SUBPIC)	(SUB)	(S)
TEXT	(TEX)	(T)	
TEXTSIZE	(SIZE)	(TS)	
VALUE	(VAL)	(V)	
VARIANT	(VAR)		
NETWORK	(NET)	(N)	

B.3 MISCELLANEOUS ABBREVIATIONS

BOOLEAN	(L)	(B)
DATE TIME	(TIME)	(DATE)
ENUMERATION	(ENUM)	(E)
INTEGER	(INT)	(I)
MCOMP		
MPRINT		
NUMBER	(NUM)	(R)
PARAMETER	(PARAM)	(P)
STRING	(S)	
UNKNOWN	(U)	

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