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Summary of Changes

This revision of “WEStation Historian (HSR) User’s Guide” (U0-8500) has been updated to include information related to software release 8.5 and later. The changes include:

- Information was added on using the WEStation WDPF **Admin Tool** and **Init Tool** to configure the software packages through the Graphical User Interfaces (GUIs).
- **Section 3. HSR Subsystems**: the Standard MMI to Historian Interface information was added.
- **Section 13. HSR Engineering Tools** was added to discuss the Point Information Editor, the Data Analysis Manager, and the Laboratory Data User Interface.
- **Appendix B. Optical Jukebox Management** describes Optical Jukebox Functionality.

All sections may include additional miscellaneous reorganization, corrections, clarifications, and additions.

Section 1. Introduction

1-1. Overview

The WEStation Historian, or the Historical Storage and Retrieval (HSR) Station, consists of a number of subsystems designed to collect and store different types of data from either the Information Highway or the WDPF® Westnet II™ Data Highway. This data can be stored on hard disk or archived for long-term storage.

The HSR Station collects and stores historical data for:

- WDPF process point values
- Alarm history data
- Laboratory history data
- Operator events
- Sequence of events (SOE) data
- ASCII messages
- Files

The HSR Station also provides various user interface windows to view this historical data.

This document describes the HSR subsystems and their functions and configuration. It also describes how to use the HSR user interface windows.

1-2. Contents of this Document

This document is organized into the following sections.

- **Section 1. Introduction** describes the organization of the manual and provides a list of additional reference documents.
- **Section 2. HSR Station Overview** provides background information about the operation of HSR Station.
- **Section 3. HSR Subsystems** describes the various functions that make up the core of the HSR.

- **Section 4. Using the Init and Admin Tools** describes how to access the WDPF Init and Admin Tools to access the HSR GUIs.
- **Section 5. Configuration** describes the GUI parameters used to configure the HSR Station.
- **Section 6. History Point Information Compiler** describes the directives and point declaration statements used to compile the HSR Station functions.
- **Section 7. HSR User Interfaces Overview** describes the layout and functionality of the windows used to retrieve data.
- **Section 8. Station Maintenance User Interfaces** describes how to use the Station Status/Control window to display the status of the HSR Station, and also describes how to use the Archive Manager window to display drive status and volume usage statistics.
- **Section 9. Historical Trend Display User Interface** describes how to use the Trend Display window to configure, display, and store historical trends.
- **Section 10. Point Data Reviews** describes the Point Review, Event Review, and Event Trigger List windows.
- **Section 11. Message Data Reviews** describes the Alarm Review, Operator Event Review, ASCII Review, and SOE Review windows.
- **Section 12. Historical File List User Interface** describes how to use the File List window to display historical files.
- **Section 13. HSR Engineering Tools** describes utilities to perform engineering analysis functions: the Point Information Editor, the Data Analysis Manager, and the Laboratory Data User Interface.
- **Section 14. HSR Library Routines** describes the standard library routines used to develop custom C language applications that retrieve historical data.
- **Section 15. Start-up Operation** describes the Station Manager Subsystem functionality.
- **Appendix A. HSR Disk Space Management** provides a general description of the algorithm for disk space allocation and deletion of archived or unarchived files.
- **Appendix B. Optical Jukebox Management** describes Optical Jukebox Functionality.

1-3. Additional Reference Documents

Table 1-1 lists additional reference documentation that may be helpful while using the Historian WEStation User's Guide.

Table 1-1. Reference Documentation

Document Number	Title	Description
M0-8005	Drop Installation Manual	Provides information on required hardware and software.
U0-0131	Record Types User's Guide	Describes the WDPF record types.
U0-0135	Distributed Processing Unit (DPU) Introduction and Configurations	Describes the DPU and possible configurations.
U0-8100	Operator WEStation User's Guide	Provides information on using the HSR Station user interfaces at the Operator WEStation.
U0-8110	Operator WEStation Configuration Manual	Provides instructions for configuring the Operator WEStation.
U0-8200	Engineering WEStation User's Guide	Provides information on entering configuration parameters and configuration/pic file data at the Engineering WEStation.
U0-8205	System Point Directory User's Guide	Provides information on the System Point Directory.
U0-8300	Defining and Configuring WEStations	Provides information on defining and configuring WEStations (for software Level 8.5 and later).
U0-8400	WEStation Log Server User's Guide	Provides information on printing reports, user interface output, screen copies, etc.
	P-STAT User Manuals	Provides information on using the P-STAT product with the HSR Engineering Tool, the Data Analysis Manager.

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Section 2. HSR Station Overview

2-1. Section Overview

This section provides a brief overview of the HSR Station and its functions and defines some basic terminology and concepts needed to understand and effectively use the HSR Station.

The following topics are discussed:

- Background information (Section 2-2).
- Functional overview (Section 2-3).
- Historical file management (Section 2-4).
- Generalized data flow (Section 2-5).
- Data recovery (Section 2-6).
- Configuration (Section 2-7).

2-2. Background Information

The following are some basic concepts and terminology common to all HSR functions:

- **Data collection** refers to gathering and storing of data by the HSR through scanning the WDPF Highway, receiving information through the General Purpose Message queue, or over the Ethernet Highway. Some types of data are collected unconditionally while other data is collected by filtering through collection criteria. Data that is collected and stored without interruption is continuous data. This type of data applies to the Main and Long Term History subsystems.
- **Data type** refers to the kind of data collected by the HSR. The three types of data collected by the HSR are Numerical Point data, Message data, and File data. These data types are defined as follows:

  Numerical Point data is confined to the Main History, Long Term History, Laboratory History, Point Attribute History, and Event History subsystems. This type of data is scanned off of the WDPF Highway, except for Laboratory History which has its data provided via ethernet.

Message data is collected by the SOE History, Alarm History, Operator Event History, and ASCII History subsystems. This data is sent to the HSR via the General Purpose Message queue, except for Alarm History, which obtains its data through an Ethernet connection to either a Log Server or an MMI.

File data is restricted to the File History subsystem, which receives the data via the Ethernet Highway.

- **Data flow** is the progression or flow of data from the original source to hard disk and then to removable media (optical disk).
- **File management** refers to the type of scheme used to collect, store, and maintain data. The Historical File System is the file management scheme used by most HSR Station history subsystems.
- **Data retrieval** refers to selective obtainment of data by searching files for information/data meeting specific criteria. Filtering capabilities vary based on the current user interface.
- **Configuration** refers to the customization of the system. It is done using the GUIs available from the WDPF Admin Tool. Please refer to Section 5 for information on configuration.
- **Data recovery** is a process that allows lost data to be restored. Recovery involves filling in any gaps in the time period for which history data was being stored. Recovery can only be performed when two redundant HSR stations exist.

2-3. Functional Overview

HSR station functions provide the capability to collect, store, and retrieve point data, messages, and files.

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Table 2-1 lists some of the capabilities provided by various HSR functions.

Table 2-1. Capabilities Provided by HSR Functions

Capability	HSR Functions
Collect, store, and retrieve point data.	Provided by the following subsystems: • Main • Long Term • Event • Laboratory Data History
Collect, store, and retrieve message and file data.	Provided by the following subsystems: • Alarm • Operator Event • ASCII • SOE • File History
View, print, and/or save to a local file the following: • Point data (in reviews or trends) • Message data (in reviews) • File data (directory listing or display of ASCII files)	Provided by: • HSR user interface windows at the Operator WEStation.
Trending capability to display on Classic MMI, getting data from a WEStation HSR.	Provided by: • SMHI Subsystem
Development of customized retrieval applications running on a Computation Server drop.	Supported by HSR library routines.
Data file recovery.	Provided by redundant partner HSR station.
Storage and retrieval of historical data files to/from rewritable removable media or Write Once Read Many (WORM) media.	Provided by: • Archive Manager Subsystem
Storage and retrieval of historical data using an HP optical jukebox.	Provided by: • Archive Manager Subsystem

Note

Because users can develop a customized system by choosing from the various subsystems (described in Section 3), all capabilities listed above might not be incorporated into a system.

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2-4. Historical File Management

2-4.1. Overview

In the Historical File System, each file represents a period of time during which the HSR Station function has collected and stored data. Therefore, a historical data file exists for the entire time that an HSR function was operating.

Nearly all of the HSR Station history subsystems follow the Historical File System data file management scheme that is defined in the following section. The Event History subsystem is the exception in that a Historical File is only created if a configured Event has occurred (that is, “a trip”).

After a data element is collected (and possibly filtered and/or sorted), it is placed into the current, open data file (the active file). Refer to Figure 2-1 and Figure 2-2. An active file continues to fill until a file closing event occurs (refer to Section 2-4.3 for file closing rules).

During uninterrupted operation, successive data files are moved from the local hard drive to the “secondary” disk area, and then to the archival media.

If, for any reason, an HSR function temporarily ceases to function, then in a redundant configuration, the data recovery is activated to fill in any gaps of data. Data recovery is discussed in Section 2-6.

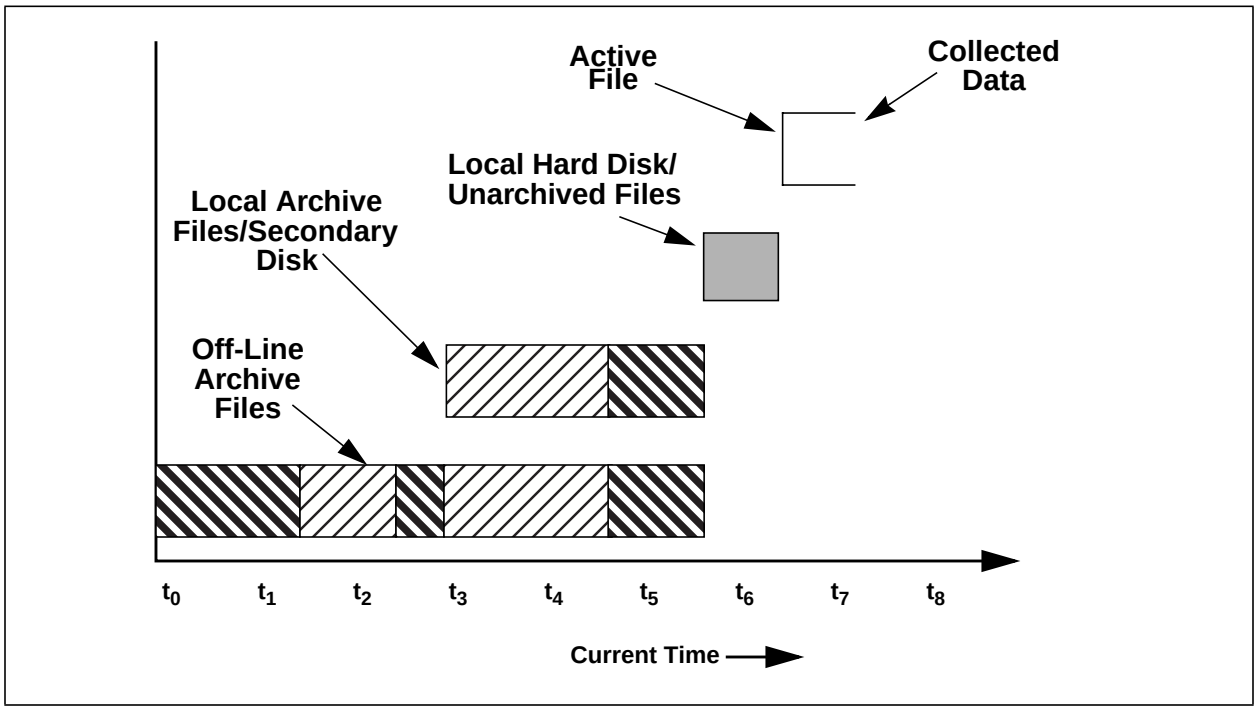

Figure 2-1. Time Scale of Active and Archival Media, Continuous Data

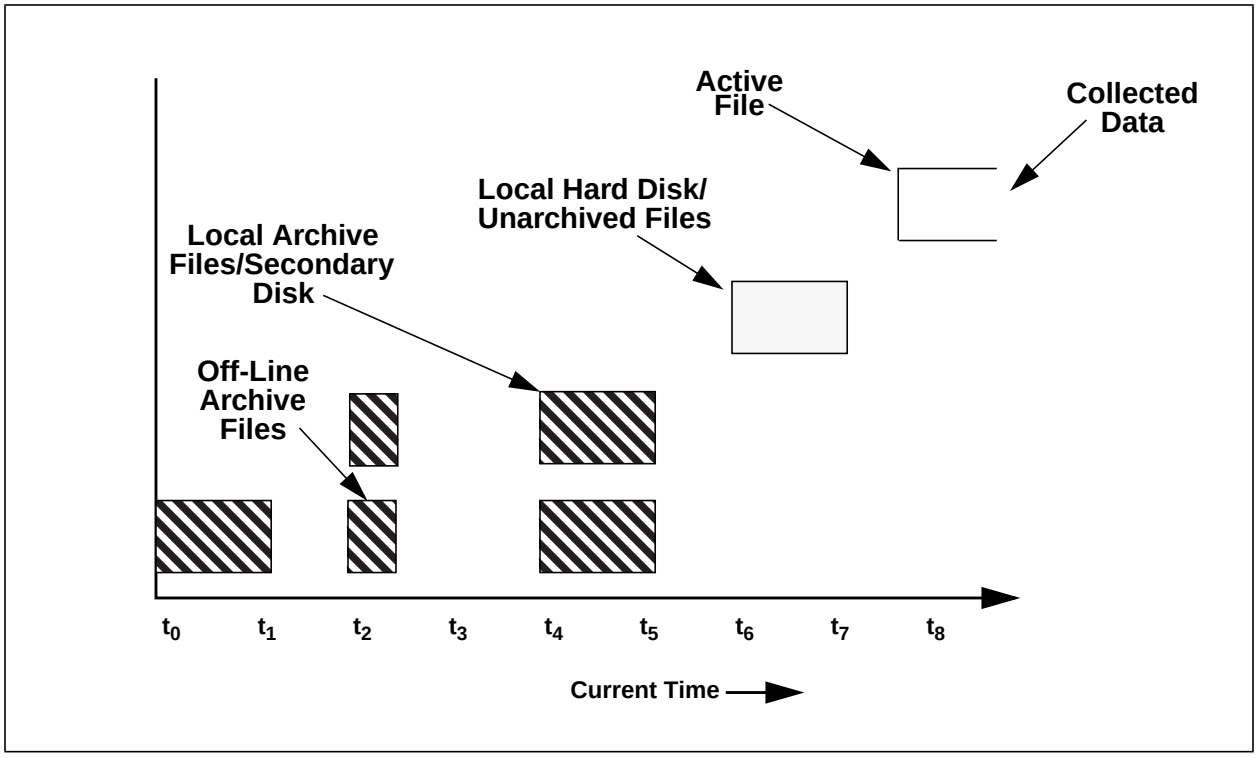

Figure 2-2. Time Scale of Active and Archival Media, Event Data

2-4.2. Data Movement/File Closing

The movement of data in the HSR is done in the following manner:

1. Data moves from the collected source into an **internal buffer** specific to the subsystem.

2. From the internal buffer, data is then transferred to the **active history file** for each subsystem. This file typically spans a day but can be configured to close more or less frequently.

3. After the criteria for closing the active file is met (refer to Section 2-4.3 for rules as to when active files can close), the **active file** is closed and a **new one** opened so as to not disrupt the collection of data.

4. The recently closed active file is then moved to a complete area where it awaits archiving.

5. The Archive Manager subsystem then takes the file out of the complete area and transfers it to two places:

   - First, the file is written to the **secondary partitions**.

     The secondary partitions are most commonly configured to be the extra hard disk(s) on the HSR WEStation.

   - Second, the data is written to **optical disk**.

     Data is written to the optical disk immediately after the write to the secondary disks. The recently closed file can be written to the optical disk only when the following two conditions apply:

     — The Archive Manager must be running.

       If the Archive Manager is shutdown and restarted, migration requests are issued for all historical files that have not been written to the optical drive. When the Archive Manager returns to a running state, the files are then written to the optical drive.

     — The optical disk must have the current writable volume in the drive.

       If the current optical volume is not in the drive, then an Attention message will be displayed instructing the operator to insert the current optical volume in the drive.

     A more detailed discussion of optical disks and the Archive Manager can be found in Section 3.

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2-4.3. File Closing Criteria

An active file continues to fill until a file closing event occurs. Any one of the following events may trigger a file closing event:

- Elapsed time period

  This is configurable using the following WDPF Admin Tool settings:

  Function: Define Software Configuration
  Filter: Historical Storage/Retrieval
  Topic: HSR Local Hard Disk Parameters
  Displays: File Close Time
  File Close Period
  Items: Main History
  Long Term History
  Lab History
  SOE History
  Point Attribute
  Alarm History
  ACSII Message History
  Operator Event History
  File History

  See Section 5 for additional details on these parameters.

- File size limits exceeded

  This is configurable using the following WDPF Admin Tool settings:

  Function: Define Software Configuration
  Filter: Historical Storage/Retrieval
  Topic: HSR Local Hard Disk Parameters
  Displays: Hard Disk Space Limits
  Hard Disk Space Targets
  Items: Main History
  Long Term History
  Lab History
  Event History
  SOE History
  Point Attribute
  Alarm History
  ACSII Message History
  Operator Event History
  File History

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The history files will be sized to the megabytes specified with these parameters. See Section 5 for additional details on these parameters.

- HSR station shutdown or restart
- Subsystem shutdown or restart
- Data recovery

2-5. Generalized Data Flow

Figure 2-3 shows the progression of data from the WDPF Highway or external sources through the archiving of data to removable media.

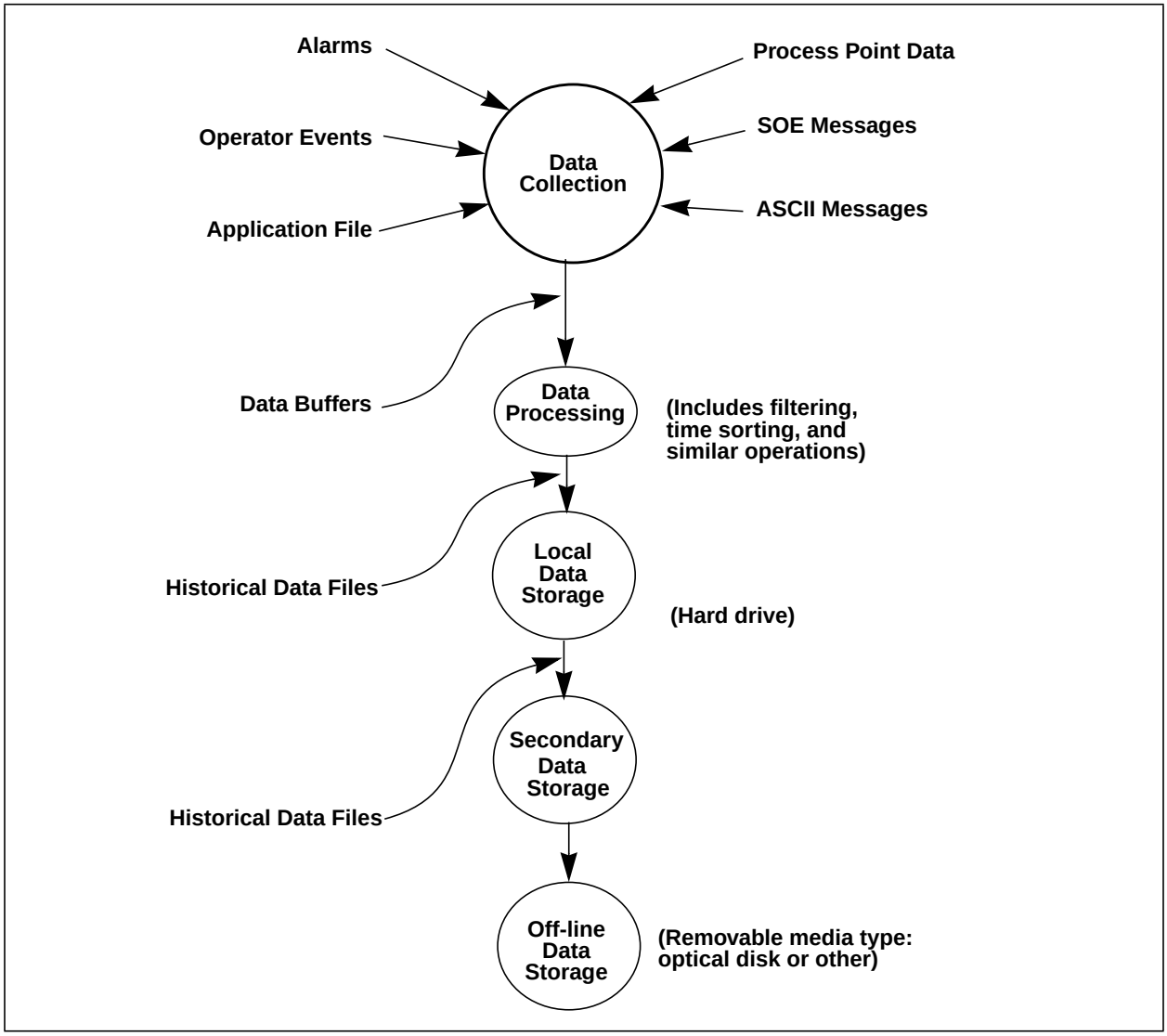

Figure 2-3. Generalized HSR Data Flow

The various forms of process data arrive at the HSR station via the Westnet II Data Highway or an Ethernet Information Highway (see Table 2-2). Depending on the type of data gathered, the information may either be collected unconditionally or filtered by passing certain collection criteria. The data may also be required to be time sorted before passing into historical data files. The user cannot retrieve time-sorted data until the sorting has been completed.

As time advances, the historical data files progress to a local data archive or to an optional removable media optical drive.

Table 2-2 lists the various data collection sources.

Table 2-2. Data Collection Sources

Data Type	Transmission Medium	Originating Drop
Alarms	Ethernet, Data Highway	MMI or Log Server
ASCII Messages	Data Highway	Computation Server/Data Link
Application Files	Ethernet	MMI and Log Server
Operator Event Messages	Data Highway	Any
Process Point Data	Data Highway	Any point originator (such as DPU or Computation Server)
SOE Messages	Data Highway	DPU

2-5.1. Data Collection

There are three data types collected by the HSR:

- Point data
- Message data
- File data

Point Data

Point data consist of process point values and status which are broadcast over the Westnet II Data Highway by Distributed Processing Units (DPUs) and other point originating drops.

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Point data is collected and evaluated through scans done in the software. The occurrences that can cause the HSR to store point data include:

- Change in status or change in value greater than the specified deadband.
- Trigger event.
- Elapsed time period.

Point data is collected by the following HSR subsystems (for additional information about point data collection, refer to the individual subsystem descriptions found in Section 3):

- Main History
- Long Term History
- Event History
- Point Attributes History
- Laboratory Data History

Typical point broadcast frequencies are either 0.1 or 1.0 seconds (as defined in the point database (see "System Point Directory User's Guide" (U0-8205)).

Data collected and stored without interruption is termed *continuous*. Typically, the data stored for the Main and Long Term History functions (and the message-based history functions) are continuous.

To minimize file size requirements at the 0.1 second scan rate, data is typically stored only on the occurrence of an event such as a change in the value of a significant input (for example, a plant trip), leaving gaps of time not covered by historical files. This type of data is considered to be *non-continuous* data.

The user may configure which points are included in two different history file types. The first file type reads point information once per second, while the other file type reads information once every tenth of a second. Because of the repeated file types, users can recover critical data even if one data stream has been interrupted. By using this backup structure, the user also collects information at multiple resolutional frequencies.

For example, in a power plant application, boiler temperature may be found in Main or Long Term History and also in Event History files, providing data at 0.1-second resolution during disturbances and at 1.0-second resolution for other times.

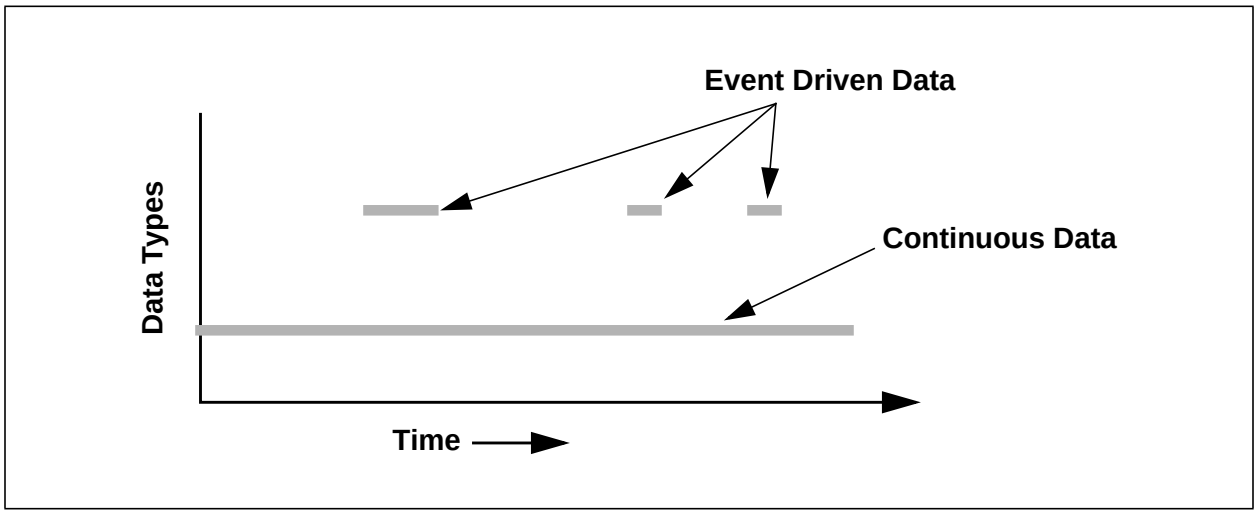

Figure 2-4. Time Scale of Continuous vs. Event Data

Message Data

HSR software continuously scans for message data.

Table 2-3 lists the various subsystems that collect message data, as well as the types of message collected by each.

Table 2-3. Message Data Collection

HSR Subsystem	Message Type Collected
Alarm History	Alarms
Operator Event History	Operator Events
ASCII Message History	ASCII messages
SOE Message History	SOE messages.

For additional information about each of these message-based subsystems, refer to the individual subsystem descriptions found in Section 3.

File Data

Certain WDPF applications can generate files to be stored in archives. Examples of file data include: Generated Log Server reports, shift logs, and similar reports.

File data is restricted to the File History subsystem. For additional information regarding file data collection, refer to the File History subsystem description found in Section 3.

2-5.2. Data Processing

Data from many sources may be stored unconditionally in HSR files; however, some data may receive processing to check conditions for storage.

For example, digital point data may be filtered through a chattering suppression algorithm in the SOE History subsystem, and analog point data may be filtered based on deadband values in the Main and Long Term History subsystems.

All message data (Alarms, ASCII Messages, Operator Events) with the exception of SOE data is stored unconditionally and immediately, and is therefore available for queries.

For SOE data coming from multiple DPUs, the HSR software ensures that all messages from all DPUs are sorted in the correct time sequence before the messages are stored. However, while sorting, some messages may be temporarily inaccessible.

Once data has been written to the local hard drive, it is termed *active* and is available for retrieval.

2-5.3. Data Retrieval

The most common retrieval requests are from users who want to obtain data for a specified time interval. After specifying a time range, the user may search the Historical data files for:

- specific points
- groups of points
- specific events
- similar criteria

The user may specify the search specifications for data retrieval through a variety of user interfaces. These user interfaces are detailed in this document from Section 7 through Section 13.

Each available user interface is designed to retrieve only specific types of data. For example, Operator Event Review is responsible for retrieving Operator Event messages via the Operator Event History subsystem.

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Selection of Redundant HSR for Retrieval Requests

When processing a retrieval request, the HSR system searches for the most appropriate, available HSR to fulfill that request.

HSR selection is geared toward the fastest processing of the request and is based on the following criteria:

- HSR state
- HSR activity level

The HSR state may be one of the following:

- Running
- Running/Unrecovered
- Running/Recovering
- Unavailable
  - — Stopped
  - — Not Configured
  - — Failed
  - — Subsystem Error

The activity level is simply the number of pending retrieval requests.

Table 2-4 lists the most likely HSR conditions and the resultant HSR responses.

Table 2-4. HSR Request Priority

Conditions	Responses
Two or more HSRs running **(Better state criterion)**	• **Running** will have priority over **Running/Recovering**. • **Running** will have priority over **Running/Unrecovered.** • Any active status will have priority over any inactive status.
Fewer requests pending **(Activity criterion)**	The least busy HSR will get the current request.
One HSR is running	Only that HSR is available, and the request is sent there.
Both HSRs are running and recovering	Primary HSR first, and then Partner if necessary.

Retrieval Processing

Depending on the requested time span and search criteria, the HSR software may check four different storage areas while performing a retrieval request (see Figure 2-1):

- Active
- Local Hard Disk
- Secondary Hard Disk
- Off-line archive

Note

Prior to storage in the Active and/or Archival areas, the data may have undergone some processing (as described in Section 2-5.1).

2-6. Data Recovery

Using paired HSR stations assures that no data will be lost if an HSR unexpectedly fails or goes off-line.

Each partnered station collects and stores data in parallel with the other, so either station may respond to retrieval requests. This reduces the probability that data will be missed due to system failures. When recovering data, any data lost by one HSR is restored from the other, once again making the two equal.

Because recovery can be a lengthy process, subsystem data collection activities are automatically started before recovery begins.

The benefits of starting data collection activities before recovery is initiated are the following:

- Allows normal operation to resume as quickly as possible.
- Aids recovery because any data collected by the partner while recovery is in progress will also be generated by the recovering subsystem. This eliminates the need for the recovery process to restore them later.

2-6.1. Recovery Overview

A recovery operation will be performed any time a history subsystem loses, and then restores contact with its corresponding partner HSR. Such a situation may occur for the following reasons:

- An HSR reboot.
- An HSR restart.
- A history subsystem stop, followed by a restart (for any reason).

The restoration procedures following any one of these occurrences are nearly identical. However, when a particular station is restarted, the steps that must be performed are unique.

Note

Each history subsystem within an HSR executes its recovery actions independent from and in parallel with the other history subsystems. In addition, simultaneous recovery by corresponding subsystems on the partner HSR is possible.

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2-6.2. Normal Recovery

History data is typically stored within a predefined history period covering a specified time interval.

In the normal operation of the software, any gaps in the history period are noted by the issuance of an error message from the failed drop. The recovery software responds to the error by filling in the gap of “lost” data, as shown in Figure 2-5.

In this graphic, the data was lost during the history period between T1 and T2. As soon as the primary is restarted (whether by the system or the user), the recovery software automatically proceeds to re-create all lost information for all subsystems.

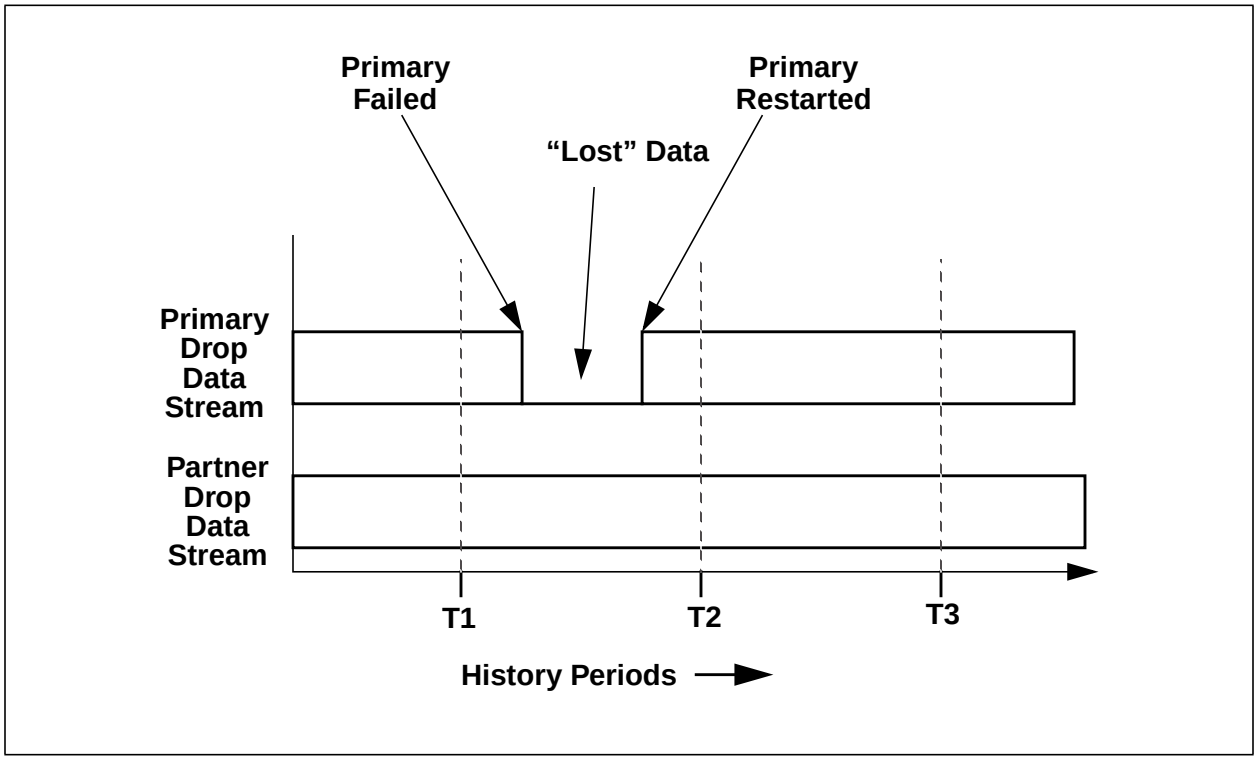

Figure 2-5. Normal Data Recovery

Note

If both HSRs are down, no recovery is possible because both data streams have ceased. No data has been stored; therefore, no data can be copied.

2-6.3. Special Situation Recovery

The recovery algorithm also handles the following special cases:

- Copying a file during a recovery operation fails while in progress.
- Transferring Alarm, File and/or Laboratory Data from the generating station fail while in progress.
- Transforming Laboratory Data fails while writing the corresponding history file.
- Collecting Main, Long Term, Operator Event, Sequence of Events, ASCII message, or Event History data fails before a file is normally closed.
- Generating a point attribute file fails while in progress.

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2-7. System Configuration

The section provides a brief description of the various system configurations supported by the HSR and discusses the software configuration required to run the HSR.

2-7.1. Supported System Configurations

Various system configurations are listed in Table 2-5.

Table 2-5. Supported HSR Configurations

System Configuration	Functionality
HSR without a CRT	Can run all HSR subsystems to collect, store, and retrieve point data, messages, and files. HSR maintenance and retrieval user interfaces can be performed remotely at an SDS (Software Development Station).
HSR with a CRT	Can run all HSR subsystems to collect, store, and retrieve point data, messages, and files.With display capabilities, the HSR maintenance and retrieval user interfaces can be accessed locally for status, subsystem start-up/shutdown, archive control, and some retrieval functions.
Operator WEStation	Provides access to the HSR User Interfaces in order to review point data, status, trends, and other stored information.
Software Development Station	Can run the HSR User Interfaces. Also the HSR subsystems can be run in Data Analysis mode (Read-only access to data stored on the local archival removable media drive).
HSR and Log Server	Combines the historical data capabilities of the HSR with the Report Generation of the Log Server. A reduced point capacity is required.
HSR/Log Server Stand-Alone	Combines the historical data capabilities of the HSR with the Report Generation of the Log Server. Also, this configuration supports local report building and drop configuration. This drop is intended as an add-on to existing WDPF systems. This drop can also allow trending on a classic MMI by retrieving data from the HSR and displaying it on the MMI (SMHI subsystem). A significantly reduced point capacity is required.

2-7.2. Software Configuration

There are two types of software configuration to be performed prior to running the HSR:

- Point Information configuration (refer to "System Point Directory User's Guide" (U0-8205) for additional information).
- HSR subsystem and user interface configuration using XRM parameters (refer to Section 5 and Section 6 for various XRM operational parameters).

Point Information Configuration

Point data is configured in two different places:

1. Creating the **spd.dir** (as described in "System Point Directory User's Guide" (U0-8205)).
2. Developing the HSR point configurations (as described in Section 6).

If changes have been made in the HSR PIC file (**hsrpicfile.src**), the affected subsystems appear tagged in the HSR status/control user interface window. The procedure to have these subsystems recognize the new pic configuration files is covered in Section 6.

HSR Subsystem and User Interface Configuration

The XRM configuration files, which are required to configure the HSR subsystem and user interface, are defined in Table 2-6:

Table 2-6. XRM Configuration Files

XRM Configuration File	Description
CONFIG.HSR	Written to from the various configuration GUIs. Contains parameters to initialize the operational parameters for the various software functions that make up the HSR.
CONFIG.HSRUI	Contains parameters to initialize the parameters for the HSR user interface windows that retrieve historical data from the HSR Station.
CONFIG.HSRLIB	Contains parameters to initialize the library functions managing the retrieval of historical data from an HSR Station.

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Section 3. HSR Subsystems

3-1. Section Overview

This section discusses the various HSR subsystems and their functions. The HSR subsystems are as follows:

- Main History subsystem (Section 3-2).
- Long Term History subsystem (Section 3-3).
- Event History subsystem (Section 3-4).
- Point Attributes History subsystem (Section 3-5).
- Alarm Message History subsystem (Section 3-7).
- Laboratory Data History subsystem (Section 3-6).
- Operator Event History subsystem (Section 3-8).
- ASCII Message History subsystem (Section 3-9).
- SOE Message History subsystem (Section 3-10).
- File History subsystem (Section 3-11).
- Archive Manager subsystem (Section 3-12).
- HSR Station Manager (Section 3-13).
- Standard MMI to Historian Interface (Section 3-14).

3-2. Main History Subsystem

The Main History subsystem collects, stores, and retrieves data for up to 16,357 process points on the WDPF Data Highway. This subsystem also provides data for the following WDPF functions.

- The **Historical Point Review** window displays, prints, or files a review of points in Main History, Long Term History, and Laboratory History data storage. Up to 16 specific points or points grouped by characteristics can be reviewed over a specified period of time. For information on using the **Historical Point Review** window, see Section 10.
- The **Historical Trend Display** window displays up to 8 points from Main History, Long Term History, and Laboratory History storage in trends of a user-specified time interval. For information on using the **Historical Trend Display** window, see Section 9.
- The Log Server Report Generator generates a report based on points in Main History, Long Term History, and Laboratory History. For information on using the Log Server, see "WEStation Log Server User's Guide" (U0-8400).

Note

The same point cannot exist in the Main, Long Term, and Laboratory Data subsystems at the same time.

For information on configuring Main History, Long Term History, and Laboratory History subsystems, see Section 5.

3-2.1. Data Collection

The Main History subsystem scans each point every second for changes in status or value. All Main History points must be normal Time Division Multiplexing (TDM) highway points. Record types supported by this subsystem include the following:

AB AC AI AL AM BG BN DC DI DL DM DU GP PB VC

Data collection for a point occurs when the following criteria is met:

- Change in point status condition. Status items include scan set/reset, alarm status, quality, high or low limit, and cut-out. (See "Record Types User's Guide" (U0-0131) for a complete list of status items.)

- Change in point value, where the new value is greater than the deadband value set for the point.
- User-defined collection time interval has elapsed. If there is no change in either point value or status, then users may define a collection interval after which the current value/status of a point will be collected. The interval specified is applied to all points.

The collection process stores a data sample in a sample queue for each Main History point that satisfies the collection criteria. When the sample queue buffer is full, sample data is discarded and an HSR fault condition occurs. The discarded samples are marked so the next sample for that point indicates a loss of data. This scenario of the buffer becoming full is extremely rare.

The number of samples stored for a point in a five-minute period is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Main History Collection Parameters
Item: Maximum Samples in 5 Minutes

This limit applies to all point record types except analog points and Drop Status Records. This prevents points that are changing rapidly (for example, chattering (see Section 3-10)) from storing excessive numbers of history samples in the history files.

Note

The maximum point count capability may be reduced by any of the following factors: process activity, processor type, and combined WEStation functionality (such as an HSR and Log Server combination).

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3-2.2. Data Storage

The storage process stores the samples from the collection sample queue into Main History files. Samples are stored into the currently active history file. This file is closed at a user-configurable period, and a new active history file is opened. When the Main History file is closed, it is scheduled for archival to removable media.

The Main History storage process maintains a record of all available Main History files (including archived files). The stored data is accumulated in history files until disk limits are reached. At this time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). These accumulated data files are available for data retrieval processing.

The Main History storage process will also handle a shift in highway time. Although a time gap in sample data occurs when time shifts forward, no data is lost. However, when time shifts backward, duplicate data may be collected (data samples with the same time stamp as data that was previously stored). As data is retrieved for reports, only the most recently collected samples for any given instant in time are used and the original data samples are ignored.

3-2.3. Data Retrieval

Retrieval functions support review and periodic historical data extraction. Review retrieval supports the extraction of the actual stored data values filtered by various sort specifications (such as scan status or value quality). Periodic retrieval supports the extraction of re-created periodic values or computed periodic calculated values (such as max/minimums or averages). See Section 9 and Section 10.

The Main History periodic retrieval process provides time interval data that is typically used in reports and trends. Available processing types include interval and summary processing, such as average, maximum, minimum, time of maximum, time of minimum, integration, summing, and digital run-times. For information on these processing types, see Section 9.

3-3. Long Term History Subsystem

The Long Term History subsystem collects, stores, and retrieves point data for up to 600 process points on the WDPF Data Highway. This subsystem also provides data for the following functions:

- The **Historical Point Review** window displays, prints, or files a review of points in Long Term History, Main History, and Laboratory History Data storage. Up to16 specific points or points grouped by characteristics can be reviewed over a specified period of time. For information on using the **Historical Point Review** window, see Section 10.
- The **Historical Trend Display** window displays up to 8 points from Main History, Long Term History, and Laboratory History storage in of a user-specified time interval. For information on using the **Historical Trend Display** window, see Section 9.
- The Log Server Report Generator can create hard copy output based on points in the Main History, Long Term History, and Laboratory History. For information on using the Log Server, see "WEStation Log Server User's Guide" (U0-8400).

Note

The same point cannot exist in both the Main, Long Term, and Laboratory Data subsystems at the same time.

3-3.1. Data Collection

The Long Term History subsystem scans each point every second for changes in status or value. All Long Term History points must be normal Time Division Multiplexing (TDM) highway points. Record types supported by this subsystem include the following:

AB AC AI AL AM BG BN DC DI DL DM DU GP PB VC

Data collection for a point occurs when the following criteria is met:

- Change in point status condition. Status items include scan set/reset, alarm status, quality, high or low limit, and cut-out. (See "Record Types User's Guide" (U0-0131) for a complete list of status items).

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- Change in point value, where the new value is greater than the deadband value set for the point.
- User-defined collection time interval has elapsed. If there is no change in either point value or status, then users may define a collection interval after which the current value/status of a point will be reported. The interval specified is applied to all points.

The collection process stores a data sample in a sample queue for each Long Term History point which satisfies the collection criteria. When the sample queue buffer is full, sample data is discarded and an HSR fault condition occurs. The discarded samples are marked so the next sample for that point indicates a loss of data. This scenario of the buffer becoming full is extremely rare.

The maximum number of samples stored for a point in a five minute period is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Long Term History Collection Parameters
Item: Maximum Samples in 5 Minutes

This limit applies to all point record types except analog points and Drop Status Records. This prevents points which are changing rapidly (for example, chattering) from storing excessive numbers of history samples in the history files.

3-3.2. Data Storage

The storage process stores the samples from the collection sample queue into Long Term History files. Samples are stored into the currently active history file. This file is closed at a user configurable period and a new active history file is opened. When the Long Term History file is closed, it is scheduled for archival to removable media.

The Long Term History storage process maintains a record of all available Long Term History files (including archived files). The stored data is accumulated in history files until disk limits are reached. At this time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). These accumulated data files are available for data retrieval processing.

The Long Term History storage process will also handle a shift in operating system time. Although a time gap in sample data occurs when time shifts forward, no data is lost. However, when time shifts backward, duplicate data may be collected (data samples with the same time stamp as data that was previously stored). As data is retrieved for reports, only the most recently collected samples for any given instant in time are used and the original data samples are ignored.

3-3.3. Data Retrieval

Retrieval functions support review and periodic historical data extraction. Review retrieval supports the extraction of the actual stored data values filtered by various sort specifications (such as scan status or value quality). Periodic retrieval supports the extraction of re-created periodic values or computed periodic calculated values (such as max/minimums or averages). See Section 9 and Section 10.

The Long Term History periodic retrieval process provides time interval data that is typically used in reports and trends. Available processing types include interval and summary processing, such as average, maximum, minimum, time of maximum, time of minimum, integration, summing, and digital run-times. For information on these processing types, see Section 9.

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3-4. Event History Subsystem

The Event History subsystem collects, stores, and retrieves point data for up to 300 process points on the WDPF Highway. These points are specified as **event points** in the Point Information file (**hsrpicfile.src**).

This subsystem also provides data for the following WDPF functions:

- The **Historical Event Review** window displays, prints, or files a review of points in Event History storage. The user can view 16 different points for a specified period of time. The points can either be specific or grouped by characteristic. For information on using the **Historical Event Review** window, see Section 10.
- The **Historical Trend Display** window displays up to 8 points from Event History storage in a user-specified time interval. For information on using the **Historical Trend Display** window, see Section 9.
- The **Log Server Report Generator** can create hard copy output based on points in the Event History files. For information on using the Log Server, see "WEStation Log Server User's Guide" (U0-8400).
- The Main History, Long Term History, or Laboratory data subsystems can also collect event points. This would give 1 second resolution in addition to 0.1 second resolution.

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3-4.1. Event History Subsystem Configuration

Event Configuration Parameters

The following configuration parameters are available to configure the Event History subsystem in the following displays and GUIs using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval

GUI (Topic)	Display	Parameter
HSR Collection Parameters	Event History Collection Parameters	Maximum Number of Points
		Delay Between Triggers (Minutes)
HSR Local Hard Disk Parameters	Hard Disk Space Limits	Event History
	Hard Disk Space Targets	Event History
HSR Secondary Hard Disk Parameters	Archive Enable	Event History
	Delete Unarchived Files	Event History
HSR Retrieval Parameters	Limits on Concurrent Retrievals (Number)	Event History
	Good Quality Limit (Percent)	Event History
	Bad Quality Limit (Percent)	Event History

For details regarding the configuration parameters listed, refer to Section 5.

Because of the 0.1-second collection, the Event History subsystem has a hard limit of 300 points.The maximum number of points is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Event History Collection Parameters
Item: Maximum Number of Points

Refer to Section 5 for details of this limit.

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Point Information Compiler (PIC) Directives

The Event History subsystem uses the Point Information Compiler (PIC) subsystem to define the points which are to be collected. The following PIC directives are unique to Event History points:

TRIG_FLAG:	Specifies whether or not the point is a trigger.
TRIG_STATE:	Specifies the digital value to trip the trigger.
GP_BIT:	Specifies which bit(s) in a packed group record type are to be used as a trigger. Refer to U0-0131 for details on record types.
PB_BIT:	Specifies which bit(s) in a packed digital record type are to be used as a trigger. Refer to U0-0131 for details on record types.

Points can be collected by Event History even if they already exist in Main, Long Term or Laboratory data files.

In addition to points in the **hsrpicfile.src**, points can be dynamically added by the HSRUI Point Information Edit tool. The Point Information Edit tool allows the user to modify sample points and triggers for the running Event History. See Section 13 for the details on Point Information Edit.

3-4.2. Data Collection

The Event History subsystem scans and stores each event point (including up to 20 event digital points) every 0.1 second, regardless of a change in status or value. The Event History scan yields a file that contains all of the point values, unlike the Main or Long Term History subsystems which only stores changes in status or values outside of the deadband.

Because of the short collection period (0.1 second) and the volume of data, the Event History subsystem cannot be configured with more than 300 points (refer to Section 3-4.1). All Event History points must be normal Time Division Multiplexing (TDM) highway points. Record types supported by this subsystem include the following:

AB AC AI AL AM BG BN DC DI DL DM DU GP PB VC

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The Event History function collects points at 0.1-second intervals. This is not sufficient to guarantee the collection of every value of a point, which is changing at a 0.1-second interval. Although the Event History subsystem collects at that interval, the HSR cannot guarantee synchronization between the Data Highway, the UNIX® Operating System, and the event collection process. The maximum interval between updates of correct data will be 0.2 seconds.

3-4.3. Data Storage

Due to the volume of disk space needed for an event file, the Event History subsystem does not store data continuously like the Main or Long Term History subsystems. Collected data is stored only for the 20 minutes before and 40 minutes after an event.

Event trigger points are defined in the **hsrpicfile.src** file (see Section 3-4.1). The triggers define digital point(s) and values. When one of the defined points change into a zero or one (0 or 1) depending on the user configuration, the Event History subsystem recognizes the event and moves into the post-event state. The post-event state will cause the Event History subsystem to store 40 minutes worth of data before saving the file permanently.

During an event, the event history subsystem performs the following functions, as shown in Figure 3-1:

- Continuously stores data.
- Stores the information gathered before the event.
- Stores the information gathered after the event.

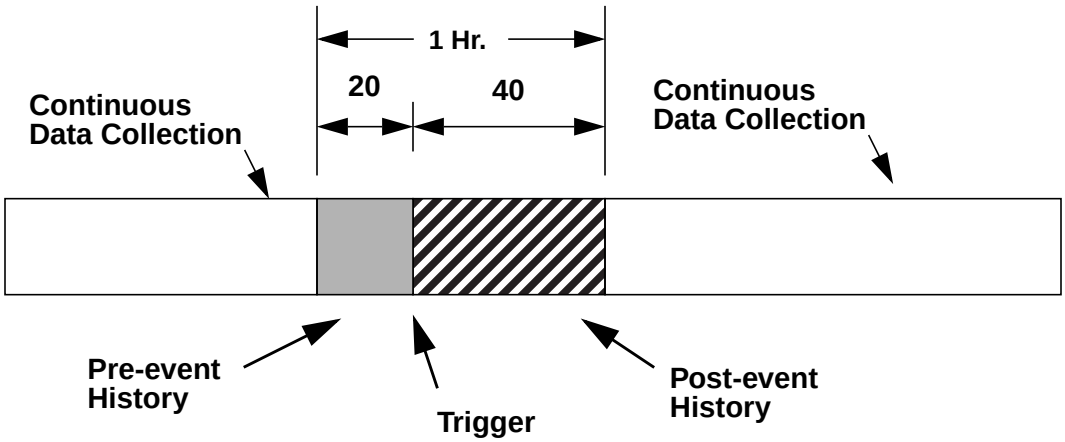

Figure 3-1. Triggering

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Even though the other subsystems cover longer continuous periods with more points, Event History files are comparatively larger than other subsystem's history files. There are two primary reasons for this:

- Event History stores every value that is collected.
- Event History collects point samples ten times a second.

First Trigger

In order to fulfill the 20-minute pre-event data requirement, the Event History subsystem is continuously recording information. This information is stored in an active file, which, because of the nature of the subsystem, contains history data for a 1-hour period. The subsystem keeps updating the 20 minute pre-event data so that only the most recent 20 minutes is being stored. Therefore, if at 1:00, the system begins to record, and there are no events reported, then at 1:20, the system begins to overwrite the data from 1:00.

Second Trigger

Event History can also recognize an additional trigger once an initial trigger has been activated. Therefore, the system was already recording post-event history data when the second trigger occurred. When a second trigger is recognized (not in the black-out period) by the Event History subsystem, the subsystem records an additional 40 minutes of post-event history data (see Figure 3-2). This gives a maximum coverage period of 1 hour and 40 minutes.

Blackout Period

If the user wants the system to ignore additional triggers for a certain period of time after an initial trigger, they may configure a black-out period using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Event History Collection Parameters
Item: Delay Between Triggers (Minutes)

All triggers during the black-out period are ignored by the system. Figure 3-2 shows the area affected by a black-out period.

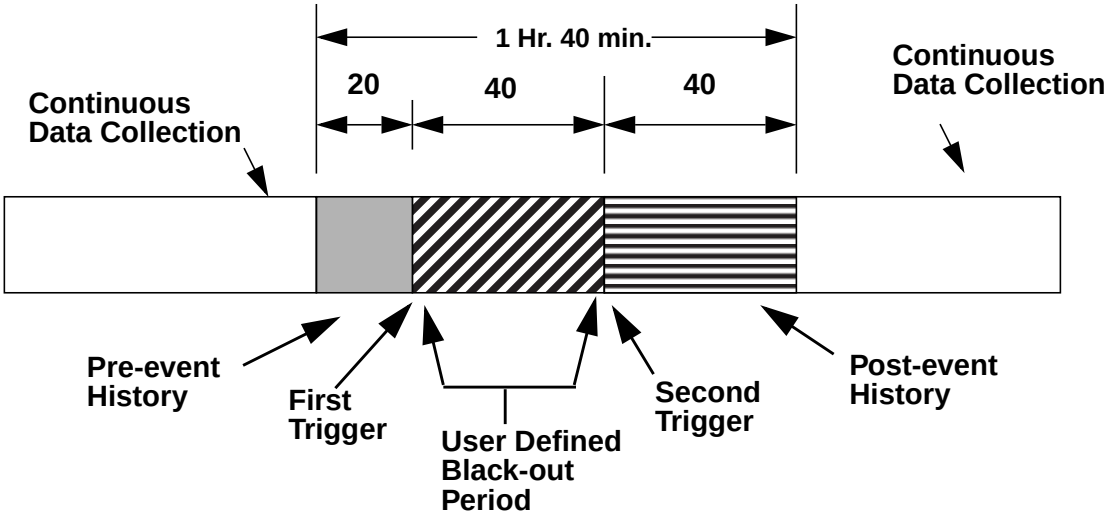

Figure 3-2. Two Triggers

Event History pre-event history is limited to the data that has been stored since the subsystem start-up. The pre-event history may not be the full 20 minutes if the subsystem has not been running that long. Regardless of the pre-event history length, the post event history is limited to 40 minutes after the last recognized event (or 40 minutes after the first event, if a second event did not occur). There may be many different triggers hit during one day, and each event is handled in the same way as the first and second triggers.

Controlling Event History Storage in Archives

Note

In order to avoid problems with event history retrievals, it is important to balance the disk space limits for all the subsystems.

Because of the size of these files, special consideration should be given to setting the hard disk space limit. The limit is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Local Hard Disk Parameters
Display: Hard Disk Space Limits
Item: Event History

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The minimum size should allow for 1 hour and 40 minutes of collection of the maximum number of points. This maximum is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Event History Collection Parameters
Item: Maximum Number of Points

When disk space is needed, the Archive Manager selects large files (such as the Event files) to be deleted. As a result, it is possible that no event files will be available on hard disk, thereby slowing historical retrievals.

Refer to the following sections for details:

Section	Information
Section 3-12	details about the Archive Manager Subsystem.
Section 5	details about the **Delete Unarchived Files** parameter.
Appendix A	details about calculating disk space limits.

Data stored beyond the normal 1 hour coverage requires a second file. The primary file containing the data regarding the first trigger is called an EVENT1 file. The secondary file containing the data stored beyond the 1 hour is called an EVENT2 file. The EVENT2 file is heavily dependent on the EVENT1 file, so, if the Archive subsystem deletes an EVENT1 file, then the corresponding EVENT2 file is also deleted. This will only impact retrievals if the data is not stored on removable media. Please refer to Section 3-12 for a detailed discussion on the Archive Manager and how it relates to removable media and secondary storage management.

3-4.4. Data Retrieval

The user can retrieve and sort both review data and periodic historical data. For example, the user might request information only recorded for a certain trigger type.

Data can be retrieved with the following user interfaces:

- Historical Trend Display (see Section 9)
- Point Data Reviews (see Section 10)
- Event Trigger List (see Section 10)

As explained in Section 3-4.3, data is continuously collected and stored into the active file. This file contains the last hour's data. This data is available for both reviews and trends at all times.

Because the Event History does not maintain a continuous history of point samples, the HSR user interface Event Trigger List is provided to determine the covered periods. Refer to Section 10-6 for details on the HSR user interface Event Trigger List tool.

3-4.5. General Message Display (GMD) Messages

The following subsections describe the messages sent by the Event History subsystem to the GMD.

Operational Messages

The following messages may be sent to the GMD during the operation of the Event History subsystem. The situations that generate these messages do not force the subsystem to shutdown. The messages do, however, notify the operator of some limitation of functionality. See the descriptions that follow for the impact of the individual messages.

- **Exec Overrun Elapse t**

  where

  t = time interval from last collection.

  This message informs the operator that some data loss may have occurred. If t > 100,000, then data loss has occurred. This loss results from the collection process taking longer than 1/10 of a second. For every full multiple of 100,000, 1 set of point samples have been lost. This will be apparent during the retrieval process.

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- **Timing: [E:e, O:o, U:u, S:u, T:s]: Elapse t**

  where

  e = number of samples extracted.

  o = number of overruns of samples.

  u = number of underruns in samples.

  u = slippage in usecs for this timing.

  s = total slippage from subsystem start-up.

  t = time interval from last collection.

  This message informs the operator that the collection process has slipped. Slippage is when the collection process does not wake up within 100 microseconds of the expected 100-millisecond interval. This message implies a heavily loaded system. This will have little or no impact on data collection.

- **exceeded overflow buffer**
  buffer overflow
  missed n samples

  where

  n = number of samples that were missed.

  These messages denote a problem with updating the active event file. There are two distinct processes that are responsible for collecting history data. See Section 3-4.8 for details. The collection process is collecting at the correct interval. However, due to system loading, the update process is not storing the data on the disk fast enough. This will result in loss of data, which will impact the retrievals. The gap will be apparent in the retrieval as a gap in data. This message is not fatal; however, it does imply a system configuration problem.

- **pid table full**
  too many active request

  The Event History subsystem, like all other subsystems, will only allow a limited number of retrievals to be active at any one given time. This ensures that the system does not become overloaded to the point that the HSR cannot collect and store the point samples. This message signifies that the number of retrievals has reached the maximum and another retrieval was requested.

- **Error establishing an RPC connection (p)**

  where

  p = name of the partnered drop.

  This message denotes a communication problem with the partner HSR. This message will appear every time the Event History subsystem attempts to communicate with the partner. See Section 3-4.6 for information on communication problems between HSRs. This problem usually occurs when the partner is shut down or unoperational.

- **Header start time is less than the previous SHC time**

  This message denotes that a backward time shift has occurred. See Section 3-4.7 for a further discussion regarding the impact.

Configuration Messages

The following messages are sent to the GMD upon start-up due to a configuration problem.

- **Invalid HSR.Event.SecondTriggerDelay - Defaulting to 0**

This message is not fatal. If this message is displayed, the delay between triggers is set to 0. This delay is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: Event History Collection Parameters
Item: Delay Between Triggers (Minutes)

See Section 3-4.1 for additional details on the XRM parameters.

- **ArchiveHostname not specified**

  This message is not fatal but will impact retrievals. Any data not available on the hard disks cannot be retrieved. In addition to retrievals, the collection process will not be able to copy the historical data to the optical disk.

3-4.6. Event History Subsystem in Partner Configuration

In a partner configuration, the Event History subsystem behaves differently during recover than the other HSR subsystems. The behavior during recovery is dependent on the partner's state.

Partner's State	Result
Post-event history collection state	The Event History subsystem will remain in a "Recovering" state until the partner finishes the collection. This is visible in the HSR user interface status and control tool.
Not in a post-event history collection state	The subsystem will appear to recover and transition into "Running", as seen in the status and control tool. The active file is not transferred from the partner. The active file's start time corresponds to the subsystem start-up time.

When the Event History subsystem finishes collecting post-event data, it contacts the partner to determine which HSR has the greatest coverage. The HSR with the most complete coverage sends a copy of its data to the partner HSR. This ensures the most complete data coverage on both HSRs.

3-4.7. Highway Time Shifts

Time shifts in the Event History subsystem are handled differently than time shifts in other subsystems. Files are NOT closed as in the other HSR subsystems. Unlike other subsystems, Event History modifies the start and end times of the active file depending on the trip state of the Event History subsystem.

If a time shift occurred in a pre-event state, then the start time of the event file must be modified immediately. Otherwise, in a post-event state, a flag is modified and the start time is set relative to the current time at closing. In both cases, the start time is reset to be relative to the time of the last sample in the file. The difference is between the pre-event and post-event time shifts is the time at which the corrective action is taken. For the most part, time shifts are easily detected by the operator through messages displayed in the GMD.

If there is a question regarding the impact of a time shift on a specific Event file, use the HSRUI Event List UI to determine the exact start and end times.

For more information on the handling of forward and backward time shifts, refer to Section 3-10.4.

3-4.8. Event History Software Components and Resources

The following processes comprise the Event History subsystem.

- **Process: event_start**

  The event_start process is started by the Station Manager to start and monitor the Event History process. When Event History subsystem is shutdown, this process is responsible for killing the other process in the Event History subsystem.

- **Process: event_server**

  The event_server process is responsible for answering requests from other subsystems and other Event History processes. These requests include retrieval request from the HSR user interface tools. In order to meet retrieval request (which may take considerable time) and not impact other requests, the event_server will start another server to fulfill each retrieval request.

- **Process: event_collect**

  The event_collect process is responsible for periodically polling the Westnet Data Highway for the point samples. The scanned samples are placed into the sample buffer (see below).

- **Process: event_update**

  The event_update process is responsible for periodically updating the sample buffer (see below) and storing the point samples onto disk in the active file. This process is responsible for initializing the event file at start-up, and after a completed trip cycle.

- **Resource: Sample Buffer**

  The sample buffer is a large piece of shared memory used to pass point samples from event_collect to event_update.

- **Resource: Active File**

  The active file is where event_update stores the samples of information for up to a one-hour period.When the first trigger is completed, this file is renamed by Event History and stored onto hard disk and removable media by the Archive Manager subsystem. The event_update process is continuously writing to this file like a circular queue, such that the oldest samples are being overwritten by the newest samples. Because of the fixed size of this file, a second file is used to store the additional information required by a second trigger.

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3-4.9. HSRLIB Interfaces to the Event History Subsystem

The following functions are available to interface user applications to the Event History subsystem. Each of the following functions have on-line man pages which define the function in detail.

- **HSR_get_evlist** - Obtains event trip information from the HSR Station via shared memory.
- **HSR_get_periodic_event** - Obtains periodic event information from the HSR station via shared memory.
- **HSR_get_periodic_event_file** - Obtains periodic event information from the HSR station via a user-defined file.
- **HSR_get_review_event_file** - Obtains event review data from the HSR station via a user-defined file.

3-5. Point Attributes History Subsystem

The Point Attributes History subsystem collects a subset of WDPF point record fields (such as Point Description, Units, etc.) for the points configured in the Main, Long Term, Laboratory Data, and Event History subsystems. This data is stored separately because it changes infrequently and the data size is relatively large per point. The Point Attribute data can be configured to save at different (slower) intervals that other history subsystems.

The save of a Point Attributes data file can be configured to occur at a different (slower) frequency than the other history subsystems. The point attribute data is used to accompany the historical data values and statuses retrieved from the HSR Station for use in reports, reviews, and trends.

For information on configuring the Point Attributes subsystem, see Section 5.

3-5.1. Data Collection

Point attributes are typically collected once per week.

The collected Point Attributes may include:

- Point name
- Record type
- English description
- Auxiliary description
- Units
- High limit
- Low limit
- Set state
- Reset state

The attributes that can be collected are dependent on the point type. Point record types supported by this subsystem include the following:

AB AC AI AL AM BG BN DC DI DL DM DU GP PB VC

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3-5.2. Data Storage

Point Attribute History files can exist in a local directory or archived in long term storage. Since point attribute data changes infrequently, and the data size is relatively large per point, the Point Attribute file is stored separately from the historical data value and status.

3-5.3. Data Retrieval

Retrieval functions support review and periodic historical data extraction. Review retrieval supports the extraction of the actual stored data values filtered by various sort specifications (such as scan status or value quality). Data can be retrieved with the Historical Trend (see Section 9) or Point Review (see Section 10).

3-6. Laboratory Data History Subsystem

The Laboratory Data History subsystem is responsible for collection, storage, archival and retrieval of user defined point data. This point data is comprised of point names that are contained in the System Point Directory; and values, statuses and time tags that are supplied by the user.

3-6.1. Data Collection

The Laboratory Data History subsystem does **not** scan points for their values and statuses on the highway. Rather, the points and their corresponding values and statuses are provided to this subsystem by the user. Collection of this data is achieved through either the Laboratory Data User Interface (see Section 13-4) or through the Library API (see Section 14).

Record types supported by this subsystem include the following:

AB AC AI AL AM BG BN DC DI DL DM DU GP PB VC

Extended SID types are also supported. These record types work best in this application due to the nature of this data not being periodically broadcast.

Data collection is provided by the user and is always data that has occurred in the past. This means that all timestamps provided for in the point samples will have occurred sometime in the past, typically up to a month prior. No data will be accepted by the collection process if the timestamp of the point sample is in the future.

3-6.2. Data Storage

The storage process stores the sample from the collection sample queue into history files. Since the collection and storage of deferred samples (in the past) is unique to this subsystem, different techniques have to be used to manage the history files. These history files, however, will follow the same rules as the other subsystems for closing, moving, and opening new history files.

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3-6.3. Data Retrieval

Retrieval functions support review and periodic historical data extraction. Review retrieval supports the extraction of actual stored data values filtered by various sort specifications (such as scan status or value quality). Periodic retrieval supports the extraction re-created periodic values or computed periodic calculated values (such as maximums, minimums or averages). See Section 9 and Section 10 for more information.

The Laboratory Data History periodic retrieval process provides time interval data that is used in trends and reports. Available processing types include interval and summary processing (such as average, maximum, minimum, time of maximum, time of minimum, integration, summary, and digital run-times). For more information on these processing types see Section 9.

3-7. Alarm Message History Subsystem

The Alarm Message History function stores and archives WDPF alarm messages so that they may be recalled later in alarm reviews. The **Historical Alarm Review** user interface window can display, print, or file a review of alarm messages in the Alarm Message History files. For information on using the **Historical Alarm Review** window, see Section 11.

Alarm messages arrive via a set of library routines. These alarm messages are sent from a drop(s) configured to scan and send alarms. The stored data is accumulated in history files until the disk becomes full. At this time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). These accumulated data files may be retrieved later. The user may request only the data that matches certain specifications.

For more information on alarm types, see "Operator WEStation User's Guide" (U0-8100). For more information on record types, see "Record Types User's Guide" (U0-0131).

3-7.1. Data Collection

The following alarm point types can be collected by the Alarm Message History function:

- Analog calculated value alarms/returns (AL).
- Analog point alarms/returns/incrementals (AI.)
- Digital calculated value alarms/returns (DL).
- Digital point alarms/returns (DI point).
- Digital point change of state (SC).
- Drop status alarms/returns (DU).
- Packed Alarm Group (BG).

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All collected data is stored chronologically in an Alarm Message History file. This file is closed at either a predetermined time or when it approaches maximum size. Both time and size are configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Local Hard Disk Parameters
Displays: File Close Time
File Close Period
Item: Alarm History

For more information, see Section 5.

3-7.2. Data Storage

Data is stored from the collection sample queue into Alarm Message History files. Samples are stored into the currently active history file. When this file is closed, it is scheduled to be archived to removable media.

The Alarm Message History storage process maintains a record of all available messages (including archived messages). The stored messages are accumulated in history files until the disk becomes full. At this time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). These accumulated data files can be retrieved by the user.

3-7.3. Data Retrieval

Retrieval functions are supported through the Historical Alarm Review user interface (see Section 11). Using this user interface, data can be requested that matches specific criteria.

3-8. Operator Event History Subsystem

The Operator Event History subsystem collects, stores, and retrieves operator event messages originated by other drops (such as Distributed Processing Units (DPUs), Operator WEStations, Engineering WEStations, and Log Servers). Section 11 contains a list of operator event messages with event type numbers, and Table 3-1 provides a listing of the different Operator Event messages.

This subsystem also provides data for operator message reviews at the Operator WEStation. The **Historical Operator Event Review** window can display, print, or file a review of Operator Event messages. For information on using the **Historical Operator Event Review** window, see Section 11.

For information on configuring the Operator Event History subsystem, see Section 5.

3-8.1. Data Collection

An operator event message is generated when any one of the operator actions listed in Table 3-1 occurs.

Table 3-1. Operator Event Messages (Alphabetical Listing)

Alarm Acknowledge	Device Response Failure	Low Incremental Limit Change
Alarm Check Removal	Device Start	Low Limit Change
Alarm Check Restoration	Device Stop	Low-Low Limit Change
Alarm Deadband Change	Device Tag Out Removal	MAC Edit Mode Change
Alarm Release	Device Tagged Out	MMI Logon / Logoff
Alarm Reset	Device Travel Stop	MMI Mode Change
Alarm Shelve	Device Trip Acknowledge	Operator Event Category Type
Alarm Unrelease	Fair Quality Latch	Output Change
Alarm Unshelve	Force Clear	Point Field Change
All Drop DHC Enable Attempt	Good Quality Latch	Poor Quality Latch
All Force Bits Clear	Group Pt Force	Quality Unlatch
All Force Bits Set	Group Pt Force Clear	Scan Removal
Automatic Cutout Disabled / Automatic Cutout Disabled Failed	High-High Limit Change	Scan Restoration
Automatic Cutout Enabled / Automatic Cutout Enabled Failed	High Incremental Limit Change	Set Force Group Pt
Bad Quality Latch	High Limit Change	Setpoint Change
DHC Enable Attempt	Highway Time Change	Subtype Number
DPU Mode Change	Highway Time Transfer	Time Broadcast by CIU
Device Capture Release	Incremental Change	Time Broadcast by MMI
Device Close	Info Highway Command	Time Broadcast by MMI / CIU
Device Lock Out Enable	LS Print Cancellation	Value Enter
Device Lockout Disable	Limit Check Removal	Value Force
Device Open	Limit Check Restoration	

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3-8.2. Data Storage

All collected data is stored chronologically in an Operator Event History file.

3-8.3. Data Retrieval

The **Historical Operator Event Review** window retrieves data from the Operator Event History files. The following operator event data can be retrieved for review:

- All operator event data originated on all drops (or a single drop) over a specified period of time.
- All operator event data with the same event subtypes originated by all drops (or a single drop) over a specified period of time.

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3-9. ASCII Message History Subsystem

The ASCII Message History subsystem collects, stores, and retrieves ASCII messages (GPM Type 70) from the WDPF highway. For information on configuring this function, see Section 5.

This subsystem also provides data for ASCII message reviews at the Operator WEStation. The **Historical ASCII Review** window can display, print, or file a review of ASCII messages.

For information on using the **Historical ASCII Review** window, see Section 11.

3-9.1. Data Collection

The ASCII Message History collection process collects messages originated by other drops. The HSR drop that collects ASCII messages must be defined in the configuration file of the drop that creates the ASCII message (see "Drop Installation Manual" (M0-8005)). For more information on HSR configuration, see Section 5.

3-9.2. Data Storage

The stored data is accumulated in history files until disk limits are reached. At this time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). All collected data is stored chronologically in an ASCII Message History file. For more information on configuration, see Section 5.

3-9.3. Data Retrieval

The accumulated data files are available for data retrieval processing. The user can request information that meets specific criteria. The **Historical ASCII Review** window retrieves data from the ASCII Message History files. The following ASCII message data can be retrieved for review:

- All ASCII messages generated on all drops over a specified period of time.
- All ASCII messages generated on a single drop over a specified period of time.

3-10. Sequence of Events Message History Subsystem

The Sequences of Events (SOE) Message History subsystem collects and time sorts DPU-generated sequence of events (SOE) messages. These messages are formatted into a report for printout at the Log Server and stored into a series of history files on hard disk. This software presently supports 1,400 defined SOE digital points.

The SOE Message History subsystem performs the following functions:

- Monitors DPU message activity and sends message reports to the Log Server to be printed.
- Suppresses messages.
- Detects and identifies first-out messages.

3-10.1. SOE Reports

The SOE function sorts SOE messages by time and stores them in a page buffer. An SOE report is then sent to the Log Server to be printed if the DPU activity is determined to be acceptable; that is, if one of the following conditions (shown in Table 3-2) has been met. DPU activity is considered acceptable if each DPU has an activity count of zero (or if the DPUs are sending up-to-date SOE messages).

Table 3-2. Printing SOE Report Conditions

Conditions	PLUS one of the following
The maximum number of messages have been received since the last report print out. ***OR*** The configured time limit since the oldest message in the page buffer has expired.	A first-out point has not been detected and the most recent message is older than the current time minus the configured first-out search time. ***OR*** A first-out point has been detected and the first-out message has been located ***OR*** A first-out point has been detected and the most recent message is older than the time of the trigger point minus the configured first-out search time.
Page buffer is approaching specified capacity.	No other condition is required.

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3-10.2. First-Out Detection

First-Out Points

First-out points are digital points configured as the events that caused the trigger to occur (such as reactor trip or safety injection). First-out points and their state conditions are configured in the hsrpic file. Refer to Section 6 for information on HSRPIC directives.

The SOE function searches the page buffer for first-out points that occurred during a specified time interval. This is called **first-out detection**.

Trigger Points

Trigger points have two possible states: off and on. The user configures the value (**0** or **1**) in the hsrpic file to indicate which value (**0** or **1**) turns the DPU on or off. Therefore, one DPU might be **on** when the trigger point is set to 1, while a differently configured DPU might be **off** when the trigger value is 1.

Up to three digital points can be designated as trigger points. Each trigger point can have up to 64 first-out points. Different trigger points can have the same first-out points. While trigger points can also be designated as first-out points, a trigger point cannot be a first-out point for itself. If a state condition (zero = off, one = on) is specified, the first-out or trigger point condition will occur only if its value is equal to the state condition.

The search time period begins prior to the occurrence of the trigger. The time of the search is determined during configuration. The search will progress forward in time until the initial first-out point is detected. The first-out point then appears on the SOE report. It is also stored in historical files to later be displayed on the Historical SOE Review user interface window, as described in Section 11.

If multiple triggers occur, a first-out time search is performed for each trigger.

First out points will not be identified on the SOE report if the initial first-out point was already printed, or the point was in an optional suppression condition. Under these conditions, a first-out point may be falsely identified.

Figure 3-3 is a portion of a report section showing detection of a first-out. The second message in the report is the first-out and TRIG01 is the point name for the trigger which initiated the search.

17:07:50.856	13-Jul-95	DI01602	Reset	Pump On-line		
17:07:50.868	13-Jul-95	DI00782	Set	Pump Failed	+– TRIG01	17:07:51.002
17:07:50.937	13-Jul-95	DI00297	Set	Boiler Overheated		
17:07:51.002	13-Jul-95	TRIG01	Set	Turbine Trip		

Figure 3-3. First-Out Detection, One Trigger, as Printed in SOE Report

17:07:50.856	13-Jul-95	DI01602	Reset	Pump On-line		
17:07:50.868	13-Jul-95	DI00782	Set	Pump1 Failed	+– TRIG01	17:07:51.002
17:07:50.870	13-Jul-95	DI00782	Set	Pump2 Failed	+– TRIG02	17:07:51.033
17:07:50.937	13-Jul-95	DI00297	Set	Boiler Overheated		
17:07:51.002	13-Jul-95	TRIG01	Set	Turbine Trip		
17:07:51.033	13-Jul-95	TRIG02	Set	Reactor Trip		

Figure 3-4. First-Out Detection, Two Triggers, as Printed in SOE Report

The sample report section in Figure 3-4 shows the detection of the same first-out for two different triggers. The second message in the report is the first-out and TRIG01 is the point name for the trigger which initiated the search. The third message in the report is also a first out and TRIG02 is the name of the point for the trigger which initiated that search. Note that the event for the point DI00782 occurred only once even though it appears twice in the report.

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3-10.3. DPU Activity Table

The SOE function accesses the DPU Activity table to determine if all first-out, print and storage messages have been received from the DPU. This table includes the time of the most recent SOE message entered into the page buffer for each DPU. An activity counter for each DPU will be set to a nominal value when an SOE message is entered in the page buffer; and it will be decreased by one every second until the count reaches zero.

3-10.4. Time-Shift Handling

Forward Time Shifts

The SOE function handles forward shifts in highway time. In other words, if the current highway time is 3:00, and the system is reset to 4:00, a forward time shift occurs. A **time gap** (marked as "No Data Available" in Figure 3-5) is created when the time shifts forward, so that no data would be retrievable for the period between 3:00 and 4:00. However, no data is lost in a forward time shift.

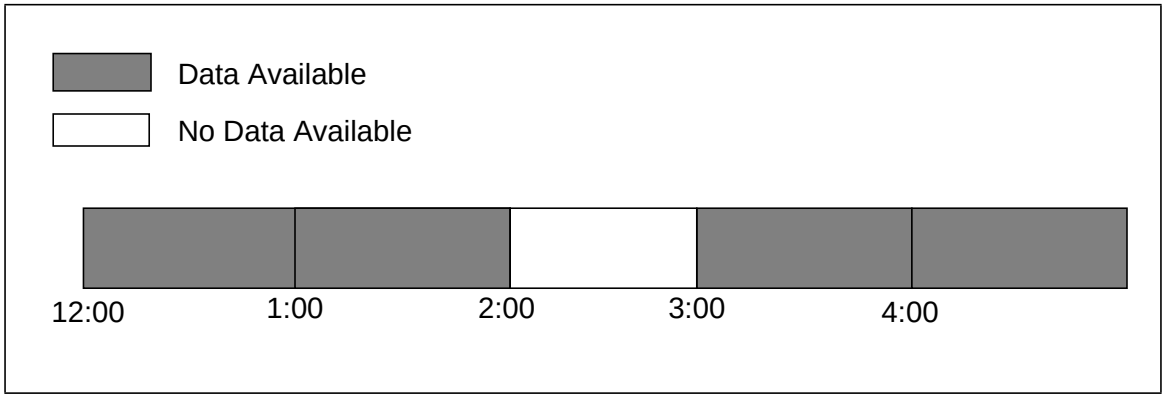

Figure 3-5. Forward Time Shift

Backward Time Shifts

The SOE function can also handle backward shifts in highway time. In other words, if the current highway time is 3:00, and the system is reset to2:00, a backward time shift occurs. **Duplicate data** is created when the time shifts backward because, in this example, there will be two sets of data between 2:00 and 3:00. As the newer set of data (recorded after the time shift) is being recorded, the corresponding data in the original set is marked invalid. Invalid data (marked in Figure 3-6 as Unretrievable Data) cannot be retrieved for reports.

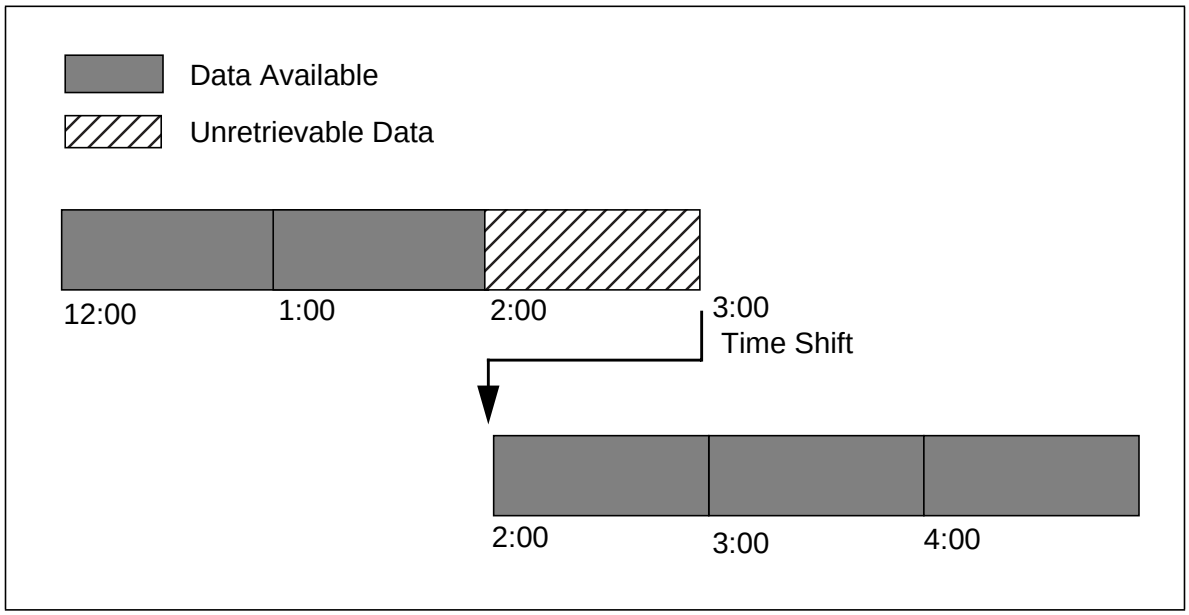

Figure 3-6. Backward Time Shift

3-10.5. SOE Message Suppression Handling

Chattering

The SOE function performs low frequency chattering suppression and restoration. **Chattering** occurs when a digital point changes at a rate which exceeds the maximum value specified in the event counter. (Chattering suppression can be enabled only when the appropriate version of the DPU and a Group 2 QSE card are used. For information on applicable suppression parameters, see Section 5.)

Event Counter

The **event counter** keeps track of the number of events received for each point. The value is defined when **hsrpicfile.src** is compiled. The event counter is incremented each time an event is received for a point and decremented according to the specified decrement time interval.

Low Frequency Suppression

If the event counter reaches the specified maximum, the point is placed in **low frequency suppression.** When low frequency chattering is detected, the SOE function sends a message to the originating DPU to suppress the point. Until the point is restored, the DPU no longer sends that point information to the HSR. The event is then entered into the SOE page buffer. A low frequency suppression enable event is also inserted in the page buffer. It has the same time as the event that caused the suppression to be enabled.

High Frequency Suppression

High frequency suppression is performed by the DPU only. However, the SOE function will receive high frequency suppression event in the SOE page buffer. A high frequency suppression enable event (which has the same time as the event that caused the suppression to be enabled) is also inserted in the page buffer. For more information on high frequency suppression, see "DPU Introduction and Configurations" (U0-0135) and IPU 080.

Page buffer entries, that contain high and low frequency messages, are printed in an SOE report and saved to the current history file.

The SOE subsystem can place an event in high and low frequency suppression simultaneously. The page buffer will show the event and both a high and low frequency suppression message. In this case, the SOE function does not send a message to the DPU.

The broadcast value of a point in high or low frequency suppression is monitored once per second. A point is removed from high frequency suppression when it has been inactive for a specified period of time. The inactive period is configured as one value for all points in high frequency suppression.

A point is removed from low frequency suppression when the event counter reaches zero. The event counter and decrement time interval are configured for each point.

When the suppression restoration conditions are met, the SOE function notifies the DPU and sends an SOE restoration message to the DPU.

3-10.6. SOE Restoration

The SOE History subsystem performs both low and high frequency suppression restoration.

High Frequency Suppression

The broadcast value of each point in high frequency suppression is monitored once per second. When the value of a point has been inactive for a specified number of seconds, the point is removed from suppression. This specified number of seconds is not configurable per point, instead, one value is used for all points in high frequency suppression.

The subsystem removes a point from high frequency suppression by performing the following:

- A message is sent to the originating DPU instructing it to restore event generation for the point.
- A high frequency suppression restoration event for the point is inserted in the page buffer. The time of this event is the time at which the suppression restoration occurs.
- The entry in the internal SOE subsystem list is removed.
- The page buffer entry is printed as part of the current report log and filed in the current history file.

Low Frequency Suppression

The broadcast value of each point in low frequency suppression is also monitored once per second. Each time the value changes, the event counter is incremented. The event counter is reduced by one at regular time intervals. When the event counter reaches zero, the subsystem removes the point from low frequency suppression. Note that the event counter and decrement time interval are the same (as described in Section 3-10.5). Both the event counter and the decrement time interval can be specified individually for each configured point. The subsystem removes the point from low frequency suppression by performing the following:

- A message is sent to the originating DPU instructing it to restore event generation for the point.
- A low frequency suppression restoration event for the point is inserted in the page buffer. The time of this event is the time at which the suppression restoration occurs.
- The entry in the internal SOE subsystem list is removed.
- The page buffer entry is printed as part of the current report log and filed in the current history file.

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Simultaneous High/Low Frequency Suppression

If a point was in both low and high frequency suppression simultaneously, it is removed from suppression when either the low or high frequency suppression restoration condition is met. Two events are added to the page buffer, one describing low frequency suppression restoration and one describing high frequency suppression restoration. Only one message is sent to the DPU instructing suppression to be removed for the point.

Monitoring Incoming DPU Errors

The SOE subsystem also monitors incoming messages for DPU error events. The following table shows the definition of the possible error codes:

Error	System Response
Error Code 6 (DPU Initializing SOE database)	All points from that DPU that are being monitored for SOE suppression restoration will be removed. No message is sent to the DPU, but an event is added to the page buffer for each point removed from suppression.
Error Code 7 (SOE point returned to scan)	The point will be removed from suppression monitoring (if already in this condition). No message is sent to the DPU, but an event is added to the page buffer.
The SOE subsystem receives an event for a point that is currently in either low or high frequency suppression.	Suppression is removed. No message is sent to the DPU, but an event is added to the page buffer.

3-11. File History Subsystem

The File History subsystem accepts requests to store and retrieve generic files to/from a historical file archive. The stored data is accumulated in history files until disk limits are reached. At that time, the oldest data files are deleted according to user-defined parameters based on time and space (see Section 3-12 for a discussion of the archiving of data prior to deletion). These accumulated data files are available for data retrieval processing.

Historical data can be retrieved and sorted with the retrieval functions. Data may be sorted by date, time, or time span.

The **Historical File List** window can generate a list of files or a list of subdirectories archived at the HSR. In addition, this window allows the user to view the contents of a file (such as a report generated by the Log Server), copy the file to a local directory, or print the file contents. For more information on the **Historical File List** window, see Section 12.

3-11.1. File Collection

The File History subsystem stores files from any WEStation. This request contains the file name, the drop number of the originating host, the file path name, and a time stamp. A new filename is derived from this information. The file is then copied to the HSR and given this new filename for internal reference.

3-11.2. File Archive

The File History subsystem archives each file it receives to removable media. A file is archived by issuing an archive command to the Archive Manager, as described in Section 3-12 For more information on archiving, see Section 8.

3-11.3. File Retrieval

Four types of retrieval requests are used by the File History subsystem:

- Retrieve a list of the directories available in the File subsystem of the HSR.
- Retrieve a file stored in the File subsystem of the HSR with a specified time tag.
- Retrieve a list of files stored in the File subsystem of the HSR during a specified time interval.
- Retrieve files by filename and time stamp (not by originating host name).

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For the following file retrievals, the user can specify the desired host name which originated the files in the file history.

- Files retrieved by filename and time stamp from the originating host over a specific time period.
- Files retrieved by a specific filename and time stamp from the originating host over a specific time period.

3-12. Archive Manager Subsystem

The Archive Manager performs the following tasks:

- Supports the archival of historical data files created by the various HSR subsystems.
- Receives and distributes incoming archival and retrieval requests.
- Manages the contents of the magnetic disks drives and their database of history files.
- Manages the contents of the removable volumes and their database of history files.
- Coordinates access to and loading of the removable media drives.
- Performs look-ups of the volume database.
- Performs supervisory tasks.

The HSR Archive Manager function manages the majority of the on-line hard disk data files and all of the on-line and off-line removable media data files. Figure 3-7 graphically shows file storage progression. Text on the following page further explains the movement of file data from “current” to a removable media.

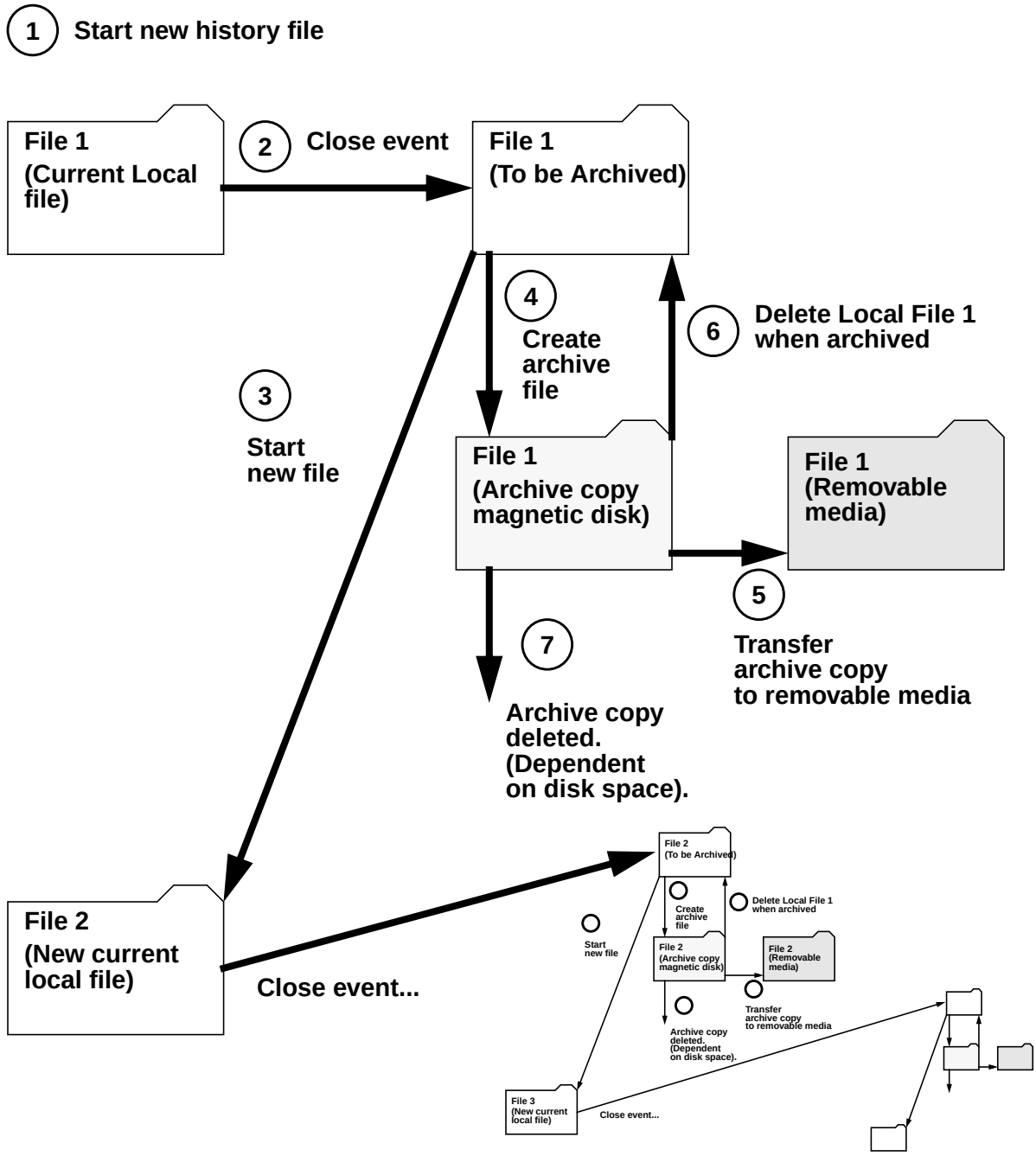

Figure 3-7. Archive Manager Operation

3-12.1. File Movement

The following are the steps that the machine performs to maintain and store historical data files:

1. A new data file is started. Each **history subsystem** maintains a current history file in its local disk area until a close file event takes place.

2. A file can close based on time (see Section 5 for details on configuration) or by reaching a predefined local area disk usage limit.

3. Once a file is closed, a new current file is opened and an **archive request** message is issued to the Archive Manager.

4. A copy of the old local disk file is created on the Archival hard disk partitions (secondary storage).

5. The Archival copy of the data is then copied to the removable media (optical disk).

6. The local copy of the closed file is kept until the history subsystem receives a successful archival message from the Archive Manager. At this time, the local file is deleted.

7. The archive copy of the data files remain on hard disk until the disk usage exceeds limits based on the type of history file being stored (these limits are different than those used to manage the local disk area of the history subsystems). This configuration allows the user to configure the system to maintain a different historical data retention period per data file type (for example, Main versus Long Term).

Archival Media

One currently-supported archive media is a re-writable optical disk drive. The HSR currently supports two different re-writable optical drives, Artecon and Hewlett Packard. The Artecon has a capacity of 500 megabytes per side, and the HP has a capacity of 650 megabytes per side.

Another type of optical drive that is supported by the HSR is a Write Once Read Many (WORM) drive. This drive actually burns the data into the disk which renders it unerasable. The Hewlett Packard drive will support WORM functionality with a different driver package and different physical media.

Jukebox support is also available on the HSR. See Appendix B for details.

3-12.2. Historical Files

Each HSR subsystem processes its current history file into a closed history file. Once the history file is closed, the HSR subsystem sends an archive request to the Archive Manager.

Note

The local closed file will not be deleted until the Archive Manager completes the request.

The history file is then copied from the applicable HSR function to the Archive Manager hard disk (secondary storage area). A request is queued to copy the file to the removable media (tertiary/optical storage area). When more than one history file is in the queue, the files are copied individually to eliminate file fragmentation.

History files remain on the hard disk until the specified disk space or time limits have been reached. The disk space limit is defined to allow the user to maintain different disk limits for each HSR function. The time limit may be defined to allow the user to maintain a different time period for each HSR function.

3-12.3. Volumes

The Archive Manager has the optional capability to maintain two optical volumes of historical information. This is configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Secondary Hard Disk Parameters
Display: Archive Enable
Item: Maximum Samples in 5 Minutes

Refer to Section 5 for additional information.

- A **short-term** volume contains information from **ALL** historical files.
- A **long-term** volume contains information only from the Long Term, Laboratory Data, and Point Attributes historical files. Because of the smaller amount of data, one long-term volume can contain information from a longer time period than a short-term volume.

The **Archive Manager** window at the Operator WEStation provides access to a list of on-line and off-line archived files. For information, see Section 8.

3-13. HSR Station Manager

3-13.1. Functional Overview

The HSR Station Manager provides the following functions for the WEStation HSR:

- Starts the HSR WEStation software on reboot of the station (Section 3-13.2).
- Performs the restart, shutdown, PIC restart, and disable functions (Section 3-13.3).
- Monitors the status of all SHCs in the HSR Station (Section 3-13.3).
- Monitors the status of all HSR subsystems (Section 3-13.3).
- Monitors the HSR Station for the arrival of either of the following:
  - A new HSR configuration file (**CONFIG.HSR** file) (Section 3-13.2).
  - New PIC files from the Software Development Station Query/Download user interface (Section 3-13.3).
- Provides the HSR Station status information to the following (described in Section 3-13.3):
  - HSR Station Status/Control user interface.
  - Functions of the HSR retrieval library, **libhsr.a**.
- Provides the interface to the HSR Station for the following two user interfaces (described in Section 3-13.3):
  - Point Information Edit user interface.
  - Point Information Compare user interface.

3-13.2. Initialization Functions

When the WEStation HSR is rebooted, the HSR Station Manager software is automatically started.

The HSR Station Manager software performs the following initialization functions before entering the run mode:

1. Transfers a new HSR **CONFIG.HSR** configuration file (if it exists) from the **$(WDPF_HOME)/hsr/config/new** directory to the **$(WDPF_HOME)/hsr/config** directory.

2. Accesses the **CONFIG.HSR** file to obtain the settings for all Station parameters (Refer to Section 3-13.4).

3. Sets the appropriate bit in the F9 field in the Drop Status record for all SHCs to indicate that the drop is a WEStation HSR. Refer to "Record Types User's Guide" (U0-0131).

4. Waits until all SHCs are on-line and have received a valid time update.

5. While waiting for the SHC, processes requests from the HSR Status/Control user interface and checks the **$(WDPF_HOME)/hsr/config/new** directory for the presence of either of the following:

   - A new HSR configuration file (**CONFIG.HSR**).

   - New PIC files.

   Note

   The HSR Status/Control user interface will indicate that the HSR is waiting for an SHC to come on-line or to receive a time update.

6. After all SHCs are on-line and have received a time update, does the following:

   - Transfers all newly downloaded PIC files (main.pic, long_t.pic, lab.pic, event.pic, and soe.pic) from the **$(WDPF_HOME)/hsr/config/new** directory to the **$(WDPF_HOME)/hsr/config** directory

   - Starts all subsystems enabled by the Station parameters in the HSR configuration file.

After completing the initialization tasks, the HSR Station Manager software enters the run mode. Refer to Section 3-13.3 for information on functions performed in the run mode.

3-13.3. Run Mode Functions

After the HSR Station Manager software has completed its initialization, it provides the following run mode functions until the HSR Station is disabled:

- Receives and processes restart, shutdown, PIC restart, and disable requests. These requests come from the HSR Station Status/Control user interface (refer to Section 8-2 for additional information on this user interface).
- Monitors the status of all HSR subsystems configured to operate in the station.
- Provides subsystem status and HSR Station status to the HSR Station Status/Control user interface. (Subsystem status is maintained as part of HSR Station status.)
- Monitors the status of all SHCs in the station.
- Provides the status of the SHCs to the HSR Station Status/Control user interface. (SHC status is maintained as part of HSR Station status.)
- Responds appropriately if an SHC requires a time update or goes off-line:
  - — Checks to see if the **If WDPF Highway (SHC/GHC) Goes Offline** parameter is set to **HSR Shuts Down**. This is configurable using the following WDPF Admin Tool settings:

    Function: Define Software Configuration
    Filter: Historical Storage/Retrieval
    Topic: HSR Collection Parameters
    Display: SHC Parameters
    Item: If WDPF Highway (SHC/GHC) Goes Offline

    If the parameter is set to **HSR Shuts Down**, then it shuts down the HSR Station if any of the SHCs go off-line.
  - — If the HSR Station is shutdown due to an SHC going off-line, responds to requests from the HSR Station Status/Control user interface. (It is able to respond in this case since the Station Manager software will still be running.)
- Periodically checks the **$(WDPF_HOME)/hsr/config/new** directory for the presence of either of the following:
  - — A new HSR configuration file (**CONFIG.HSR**).
  - — A new PIC file (main.pic, long_t.pic, lab.pic, event.pic, soe.pic)

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This information is provided as part of the HSR Station status to the HSR Station Status/Control user interface (refer to Section 8-2).

- Provides HSR Station status information to the HSR Station Status/Control user interface and to the functions of the HSR retrieval library, **libhsr.a** (refer to Section 8-2).

  HSR Station status information includes the following:

  — Status of each subsystem operating in the HSR Station.

  — True/False indicator, indicating the status of the SHCs in the HSR Station.

  — True/False indicator for each subsystem, indicating the presence of a new PIC file for that subsystem.

- Receives and processes requests from the Point Information Edit user interface to connect to the HSR Station for a point information edit session.

  Refer to HSR Point Information Edit user interface, Section 13-2 for details on the operation of the Point Information Edit user interface.

- Receives and processes requests from the Point Information Compare user interface to transfer PIC files from the HSR Station.

  See HSR Point Information Compare user interface Section 13-2 for details on the operation of the Point Information Compare user interface.

3-13.4. Configuration Parameters

Use the WDPF Admin Tool to configure the HSR Station Manager software. The following parameters are configurable using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Collection Parameters
Display: SHC Parameters
Item: If WDPF Highway (SHC/GHC) Goes Offline

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Secondary Hard Disk Parameters
Display: Archive Enable
Item: Maximum Samples in 5 Minutes

The HSR Station Manager software accesses the HSR configuration file, edited by using the GUIs, to obtain the settings for these parameters. Refer to Section 5 for details on the HSR configuration and the use of these parameters by the HSR Station Manager.

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3-14. Standard MMI to Historian Interface (SMHI)

3-14.1. Functional Overview

The Standard MMI to Historian Interface (SMHI) subsystem is a gateway between a standard MMI Operators Station (Non-WEStation) and the Historical MMI Point Collection subsystems (Main, Long Term, Lab, and Point Attribute) to be able to trend data collected at the WEStation HSR on a standard Operators Station.

This subsystem does not collect or store any information. Its only function is to repackage and respond to trend requests from a Standard Operators Station.

In order for this subsystem to work correctly all of the following must be true:

- SMHI subsystem is enabled on the HSR.
- Diagram #147 is loaded on the Standard MMI.
- Highway is 6 level software or higher.

Section 4. Using the Init and Admin Tools

4-1. Section Overview

The HSR software configuration will be performed through two utilities that are provided with the WDPF release and appear initially as two icons on a WEStation screen. These utilities are the Init Tool and the Admin Tool.

This section describes the basic functions and definitions of the Init Tool and the Admin Tool for defining and configuring the HSR:

- Init Tool (Section 4-2)
- Admin Tool (Section 4-3)

Note

Detailed instructions for using the Init and Admin Tools can be found in "Defining and Configuring WEStations" (U0-8300).

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4-2. Init Tool Functions

Use the following procedure to enter the Initialization Utility and define an HSR drop:

1. Use the mouse to select the **WDPF Init Tool** icon from the Engineering WEStation screen.

2. Figure 4-1 provides an example of the WEStation Initialization Utility main window that will display on the screen.

   Table 4-1 defines briefly the functions available through this window. Access the Help menu item “Defining the Drop Configuration” for additional information on window functions.

3. Make desired definition changes.

4. Select the **Save Configuration to Disk** button to save the changes to the disk.

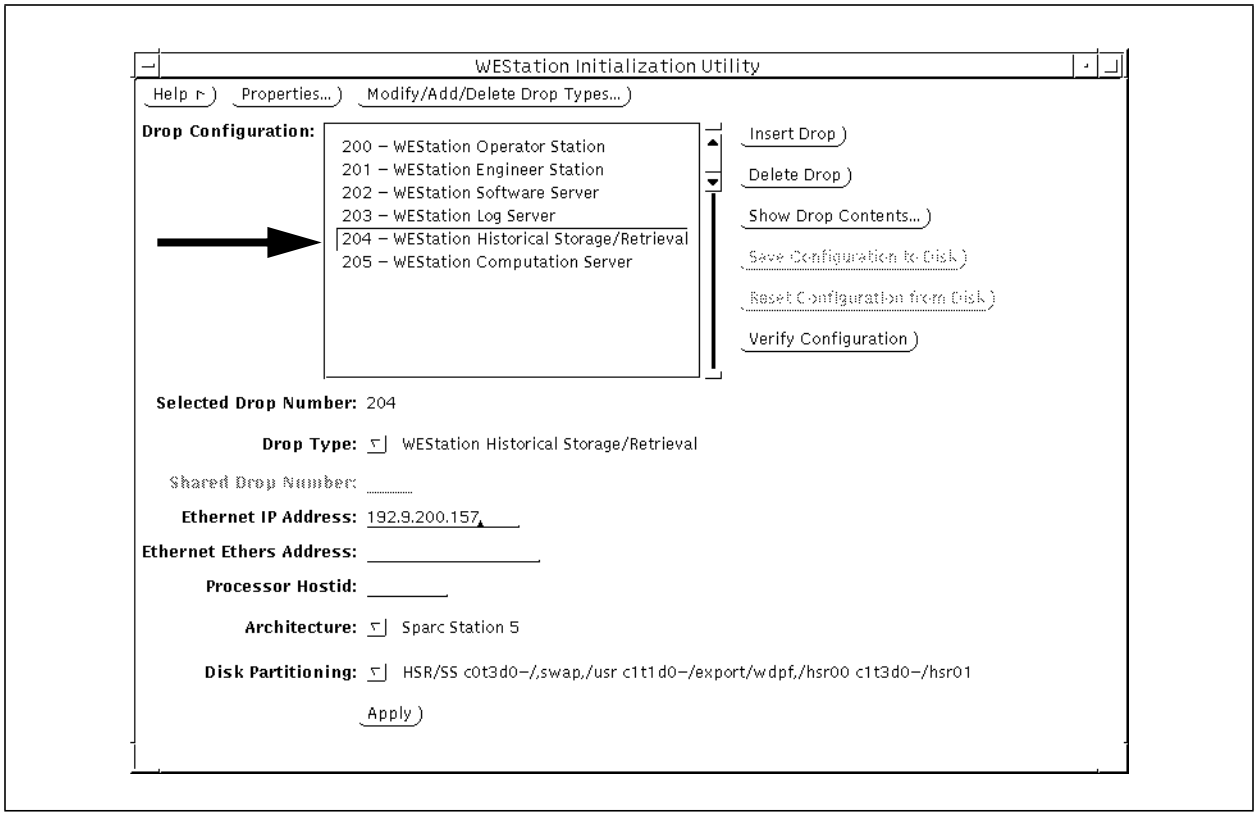

Figure 4-1. WEStation Initialization Utility Window

The main window of the Init Tool contains the following functions:

Table 4-1. Initialization Utility Window Functions

Function	Description
Help Button	Displays a pull right menu that displays information **Help pages** for the Initialization Utility.
Properties Button	Accesses a **pop-up window** that displays the paths where the release software and the project software are located.
Modify /Add /Delete Drop Types Button	Accesses a **pop-up window** that allows the user to specify the software packages for each drop type, and to define new drop types.
Drop Configuration	Scrolling list that shows the **drops that are currently defined** in the project's configuration. Selecting a drop in this scrolling list will determine the drop type that is initially displayed when selecting the **Modify/Add/Delete Drop Types function.**
Selected Drop Number	Displays the **drop number** for the drop that is selected in the Drop Configuration list.
Drop Type	Displays the **drop type** for the drop that is selected in the Drop Configuration list. Also allows user to change selected drop's drop type.
Shared Drop Number	Displays the **shared drop number** for the drop that is selected in the Drop Configuration list. Redundant WEStations and DPUs with TDM Savings require three drop numbers: one for each drop and one drop that they share.
Ethernet IP Address	Displays the **Internet Protocol (IP) address** for the drop that is selected in the Drop Configuration list. If an address is not entered, one will be assigned automatically. For example, 192.9.200.157. Do not use leading zeros.
Ethernet Ethers Address	Displays the **unique hardware address for each Ethernet port** for the drop that is selected in the Drop Configuration list. Format is six two-digit hexadecimal numbers separated by colons. For example, 8:80:3f:f4:7:a9. To determine the Ethers address of a running WEStation, log in as root and enter the following: **ifconfig -a**
Processor Hostid	Displays the **unique hardware address for each processor** for the drop that is selected in the Drop Configuration list. Currently not required. To determine the Processor Hostid of a running WEStation, enter the following: **hostid**
Architecture	Displays the **hardware platform** for the drop that is selected in the Drop Configuration list.

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Table 4-1. Initialization Utility Window Functions (Cont'd)

Disk Partitioning	Displays the **disk partitioning** for the drop that is selected in the Drop Configuration list.
Insert Drop Button	Adds a **new drop** to the configuration.
Delete Drop Button	**Removes a drop** from the configuration.
Show Drop Contents Button	Accesses a **pop-up window** that lists the software packages that are included on the drop that is selected in the Drop Configuration list.
Save Configuration to Disk Button	Writes the **Configuration changes** to the disk. This button is grayed out if there are no changes to be made to the configuration.
Reset Configuration from Disk Button	**Erases** configuration changes to the selected drop, and restores the last configuration for the selected drop that was to be saved to the disk.
Verify Configuration Button	**Verifies** that the system configuration is valid. Any errors are shown in a pop-up window.
Apply Button	**Moves** data from the bottom of the window into the scrolling list.

Note

Initialization Utility functions can be disabled by the System Administrator for security purposes. This will prevent unauthorized users from having write access to the configurable parameters (refer to "Defining and Configuring WEStations" (U0-8300) for information on disabling functions).

4-3. Admin Tool Functions

Use the following procedure to enter the WEStation Admin Tool Utility and configure the HSR software:

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

   Figure 4-2 provides an example of the WEStation Admin Tool main window that will display on the screen.The window's contents will actually depend upon the software packages selected in the system.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select only **Historical Storage/Retrieval** from the **Filter** scrolling list to display a corresponding list of the available configuration parameters in the **Topic** scrolling list.

   Table 4-2 defines the functions available through this window. Access the Help menu item "Defining Configuration" for additional information on window functions.

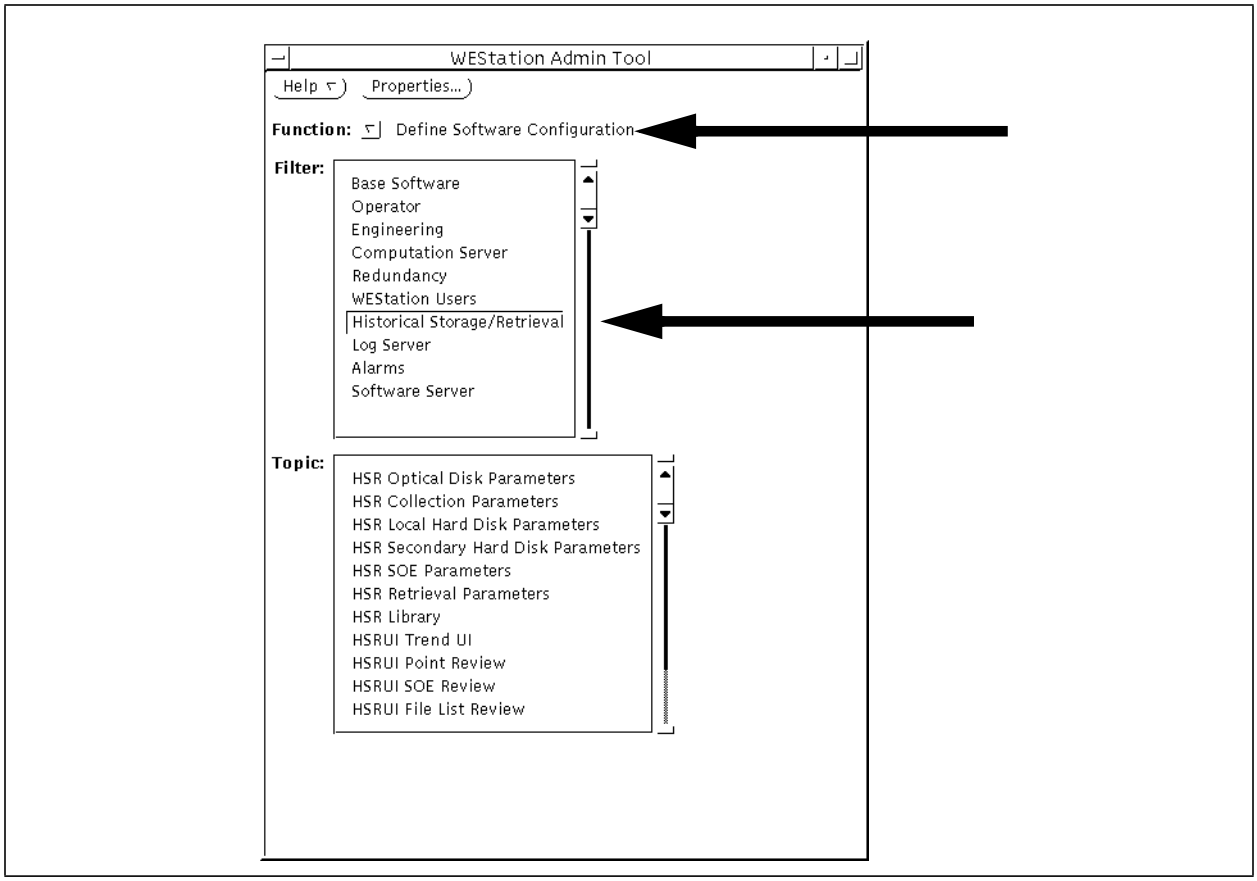

Figure 4-2. WEStation Admin Tool Utility Window

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Table 4-2. Admin Tool Window Functions

Function	Description
Help Button	Displays a pull right menu that displays information Help pages for the Admin Tool.
Properties Button	Accesses a pop-up window that displays the paths where the release software, configuration files, and project software are located (each may be in separate directory trees). Also provides options to preview files before downloading, and whether the “Install” button modifies files, or just checks if the files would be modified.
Function Button	Displays a pull right menu that provides these options: Define Software Configuration Install Configuration on Software Server Maintain Project Data Download Configuration to Drops Each option enables the user to perform different configuration tasks, and provides the applicable windows and buttons to perform these tasks.
Filter Scrolling List	A scrolling list that allows the user to limit the number of items shown in the Topic scrolling list. Selecting items from the Filter scrolling list will display the corresponding configuration parameters in the Topic scrolling list. If no items are selected in the Filter scrolling list, no items will appear in the Topic scrolling list.
Topic Scrolling List	A scrolling list of configurable topics that correspond to specific GUI windows. Selecting a topic displays a GUI window that corresponds to the Topic selected.

4. Select the desired **Topic** from the Topic scrolling list.

   Table 4-3 defines the available topics.

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5. Refer to the appropriate HSR functional section for additional configuration needed for each function:

- HSR Optical Disk Parameters (Section 5-2).
- HSR Collection Parameters (Section 5-3).
- HSR Local Hard Disk Parameters (Section 5-4).
- HSR Secondary Hard Disk Parameters (Section 5-5).
- HSR SOE Parameters (Section 5-6).
- HSR Retrieval Parameters (Section 5-7).
- HSR Library (Section 5-8).
- HSRUI Trend UI (Section 5-9).
- HSRUI Point Review (Section 5-10).
- HSRUI SOE Review (Section 5-11).
- HSRUI File List Review (Section 5-12).
- HSRUI Alarm Message Review (Section 5-13).
- HSRUI Operator Event Review (Section 5-14).
- HSRUI ASCII Message Review (Section 5-15).

6. After the desired configuration changes are complete, the following must be done before the changes will take affect:

    - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.
    - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

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Table 4-3. Historical Storage/Retrieval Topics

Topic	Item	Description
HSR Optical Disk Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Volume Set Time (Days)	Defines period of time for data collection in a volume set before a new volume set is started.
	Jukebox	Determines if jukebox is available
	Jukebox SCSI Address	Defines SCSI address of jukebox autochanger.
	Jukebox Minimum Blank Volumes	Defines minimum number of blank optical volumes (sides) required before an alert message is sent.
	Jukebox Retrieval Attention	If enabled, prompt appears asking for volume containing requested data to be inserted into the jukebox.
	Display:	Selects optical device for configuration.
	Optical Device	Specifies optical device model.
	Device SCSI Address	Defines optical drive SCSI address.
	Device Name	Defines name used for optical device on Archive Manager displays. Default = Optical-Unit-0
	Device Mode	Defines if optical device operates in **Read-only** or **Read/Write** mode.
	Device Shuffle	If enabled, data can be retrieved from volumes not in optical drive

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR Collection Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Display: (The following menu options can be selected)	
	• SHC Parameters (Default)	
	- If WDPF Highway (SHC/GHC) Goes Offline:	Determines if HSR shuts down or not when WDPF Highway goes offline.
	• Main History Collection Parameters	
	- Maximum Number of Points:	Defines maximum number of points that can be configured into Main History subsystem.
	- Minimum Deadband for Collection:	Defines minimum deadband that can be assigned for analog point collected by Main History.
	- Maximum Collection Interval (secs):	Defines maximum time between storage of data samples by Main History subsystem.
	- Maximum Samples in 5 Minutes:	Defines maximum number of samples that can be stored for a point in five minutes.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR Collection Parameters (Cont'd)	Display: (Cont'd)	
	• Long Term History Collection Parameters	
	- Maximum Number of Points:	Defines maximum number of points that can be configured into Long Term History subsystem.
	- Minimum Deadband for Collection:	Defines minimum deadband that can be assigned for analog point collected by Long Term History subsystem.
	- Maximum Collection Interval (secs):	Defines maximum time between storage of data samples by Long Term History subsystem.
	- Maximum Samples in 5 Minutes:	Defines maximum number of samples that can be stored for a point in five minutes.
	• Event History Collection Parameters	
	- Maximum Number of Points:	Defines maximum number of points that can be configured into Event History subsystem.
	- Delay Between Triggers (Minutes):	Defines number of minutes after first event that a second trigger is ignored.
	• Alarm History Collection Parameters	
	- Maximum Number of Collection Handlers:	Defines maximum number of Alarm History collection processes that can run concurrently.

Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR Collection Parameters (Cont'd)	Display: (Cont'd) • File History Collection Parameters - Maximum Number of Collection Handlers:	Defines maximum number of File History collection processes that can run concurrently.
HSR Local Hard Disk Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Display: (The following menu options can be selected)	
	• Hard Disk Space Limits	These parameters define maximum amount of disk space (in megabytes) used by each HSR subsystem
	• Hard Disk Space Targets	These parameters define the amount of disk space (in megabytes) that each HSR subsystem should ideally consume.
	• File Close Time	These parameters define the time of day when the active HSR subsystems history files will be closed.
	• File Close Period	These parameters define the amount of time the HSR subsystem will keep the active history files open.
	• Delete When Local Disk Fills	Defines what happens when local disk fills: **Delete** = Oldest data is deleted **Save** = Collection suspended until additional space is provided.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR Secondary Hard Disk Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Storage Management	Defines type of management used to manage hard disk space: 1. No disk space or period limits. 2. Disk space limits only. 3. Period limits only. 4. Disk space and period limits.
	Number of Hard Disk Partitions	Defines number of partitions reserved for HSR on hard disk.
	Display: (The following menu options can be selected)	
	• Archive Enable (Default)	Enables the archive function for HSR subsystems.
	• Delete When Archive Fills	If enabled, archived files can be deleted if hard disk is full.
	• Hard Disk Space Limits (Mbytes)	Displays disk space limits per subsystem.
	• Hard Disk Period Limits (Days)	Displays disk period limits per subsystem.
	• Exceed Period Limits	Displays whether of not each subsystem's period limits may be exceeded.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR SOE Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Display: (The following menu options can be selected) • Page 1 of 2 (Default)	
	- First Out Processing:	Enables first out detection.
	- First Out Period (secs):	Defines the first out search time.
	- Suppression Processing:	Enables suppression processing.
	- Suppression Period:	Defines the time that a point in suppression must remain unchanged before being removed from suppression.
	- SOE Alarm	Enables SOE alarm when point is suppressed or an overload exists.
	- Drop Fault Alarms	Enables Drop Fault to report SOE alarms.
	- Point Alarm:	Enables Point Alarm to report SOE alarms.
	- Suppression Alarm Point:	Point used to report suppression.
	- Overload Alarm Point:	Point used to report overload.
	- Buffer Full Alarm Point (%)	Defines percent at which internal buffer will be considered critically full.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR SOE Parameters (Cont'd)	Display: (Cont'd) • Page 2 of 2	
	- DPU Inactivity Period	Delay time between last SOE change and generating a report.
	- Maximum Number of DPUs	Defines number of DPUs in the configuration.
	- Maximum SOE Events per Hour:	Defines number of SOE events to process per hour.
	- Print SOE Reports	Enables SOE Reports.
	- Title For Reports (Line 1):	Defines what will be printed on first line of reports. Default = "Westinghouse Electric Corporation, PCD - O'Hara"
	- Title For Reports (Line 2):	Defines what will be printed on second line of reports. Default = "Sequence of Events Report"
	- SOE Events per Report Page	Defines how many events will be printed per page of the report
	- Show Eighth Msec On Reports	Enables 1/8 millisecond division on SOE reports.

Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSR Retrieval Parameters	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Display: (The following menu options can be selected)	
	• Limits on Concurrent Retrievals (Default)	These parameters define the maximum number of concurrent retrievals allowed on each subsystem.
	• Good Quality Limit	These parameters define the good quality limits for Main, Lab, Long Term, and Event history. The quality of an average value is considered good if this percentage of the samples is good.
	• Bad Quality Limit (If the value meets both good and bad quality limits, the quality of the average = Bad; If the value meets neither good nor bad limits, the quality of the average = Poor.)	These parameters define the bad quality limits for Main, Lab, Long Term, and Event history. The quality of an average value is considered bad if this percentage of the samples is bad.
HSR Library	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Maximum Review File Size (Mbytes)	Specifies maximum size for the historical data returned to the library function caller.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI Trend UI	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Display: (The following menu options can be selected) • Window Colors and File Retrieval Options (Default)	
	- Background:	Defines background color for trend windows.
	- Foreground:	Defines foreground color for trend windows.
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	• Plot Colors for Points with Good Quality	These parameters define the plot colors for points with Good quality.
	• Plot Colors for Points with Non-Good Quality	These parameters define the plot colors for points with Not-Good quality.

Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI Trend UI (Cont'd)	Display: (Cont'd)	
	• Miscellaneous Parameters	
	- Grid	Defines grid line colors for Trend Display window.
	- Notation on Logarithmic Plots:	Specifies if log values are displayed in Scientific or Technical Notation (in Technical Notation, exponents are expressed in multiples of 3).
	- XOR Color Offset:	Defines color for plot cross hair and time value hair cursor.
	- Digital Default High Scale:	Defines trend scale top limit for digital points not listed in trend_defaults_file.
	- Digital Default Low Scale:	Defines trend scale bottom limit for digital points not listed in trend_defaults_file.
	• Retrieval Periods	Defines default retrieval periods.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI Point Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Historical Point Review Colors:	Defines background/foreground colors for Point Review window.
	Historical Point Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Name:	Defines local file where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.

Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI SOE Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	SOE Review Colors:	Defines background/foreground colors for SOE Review window.
	SOE Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Name:	Defines local file where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.
	-Maximum Number of DPUs	Defines maximum number of DPUs in the configuration.
	- Eighth Millisecond Enable	Enables 1/8 millisecond division for times of SOE event.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI File List Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Historical File Review Colors:	Defines background/foreground colors for File List Review window.
	Historical File Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.
	-Maximum File Length (Mbytes)	Defines maximum size of file to retrieve from HSR.
	- HSR Directory for Retrievals	Default HSR directory to be searched for files and sub-directories.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI Alarm Message Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Historical Alarm Review Colors:	Defines background/foreground colors for Alarm Message Review window.
	Historical Alarm Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Name:	Defines local file where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI Operator Event Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Historical Operator Event Review Colors:	Defines background/foreground colors for Operator Event Review window.
	Historical Operator Event Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Name:	Defines local file where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.

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Table 4-3. Historical Storage/Retrieval Topics (Cont'd)

Topic	Item	Description
HSRUI ASCII Message Review	Configuration For Drop Number	Select **All** drops or select from a list of drops to apply the Topic changes.
	Historical ASCII Message Review Colors:	Defines background/foreground colors for ASCII Message Review window.
	Historical ASCII Message Review Retrieval Options:	
	- Save File Locally	Enables data retrieved from HSR to be stored locally.
	- Default Directory Name:	Defines local directory where HSR data should be stored.
	- Default File Name:	Defines local file where HSR data should be stored.
	- Default File Ordering	Defines file entry chronological order.
	- Default Review Period	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.

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Section 5. Configuration

5-1. Section Overview

The HSR is configured at the Engineering WEStation. Required configuration of the HSR is defined using Graphical User Interfaces (GUIs).

The HSR configuration GUIs are formatted so that the X Resource Manager (XRM) database functions can recognize them. The XRM routines are used by the HSR Station software to acquire the configuration data when the drop is started. The XRM routines are also used by the Historical Point Information Compiler (hsrpic) to check against the source file input by the user (**hsrpicfile.src**). For details on compiling the Historical Point Information Compiler, see Section 6.

This section describes the GUIs used to configure the HSR. The following topics are included:

- HSR Optical Disk Parameters (Section 5-2).
- HSR Collection Parameters (Section 5-3).
- HSR Local Hard Disk Parameters (Section 5-4).
- HSR Secondary Hard Disk Parameters (Section 5-5).
- HSR SOE Parameters (Section 5-6).
- HSR Retrieval Parameters (Section 5-7).
- HSR Library (Section 5-8).
- HSRUI Trend UI (Section 5-9).
- HSRUI Point Review (Section 5-10).
- HSRUI SOE Review (Section 5-11).
- HSRUI File List Review (Section 5-12).
- HSRUI Alarm Message Review (Section 5-13).
- HSRUI Operator Event Review (Section 5-14).
- HSRUI ASCII Message Review (Section 5-15).

5-2. HSR Optical Disk Parameters

5-2.1. Overview

The **HSR Optical Disk Parameters** GUI defines configuration items that are specific to the archiving of historical data to the optical disk. It is this GUI that will define things such as the type of optical disk, the jukebox available, and SCSI addressing.

5-2.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSR Optical Disk Parameters** from the Topic scrolling list.

   The **HSR Optical Disk Parameters** window will be displayed (as shown in Figure 5-1.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-1. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

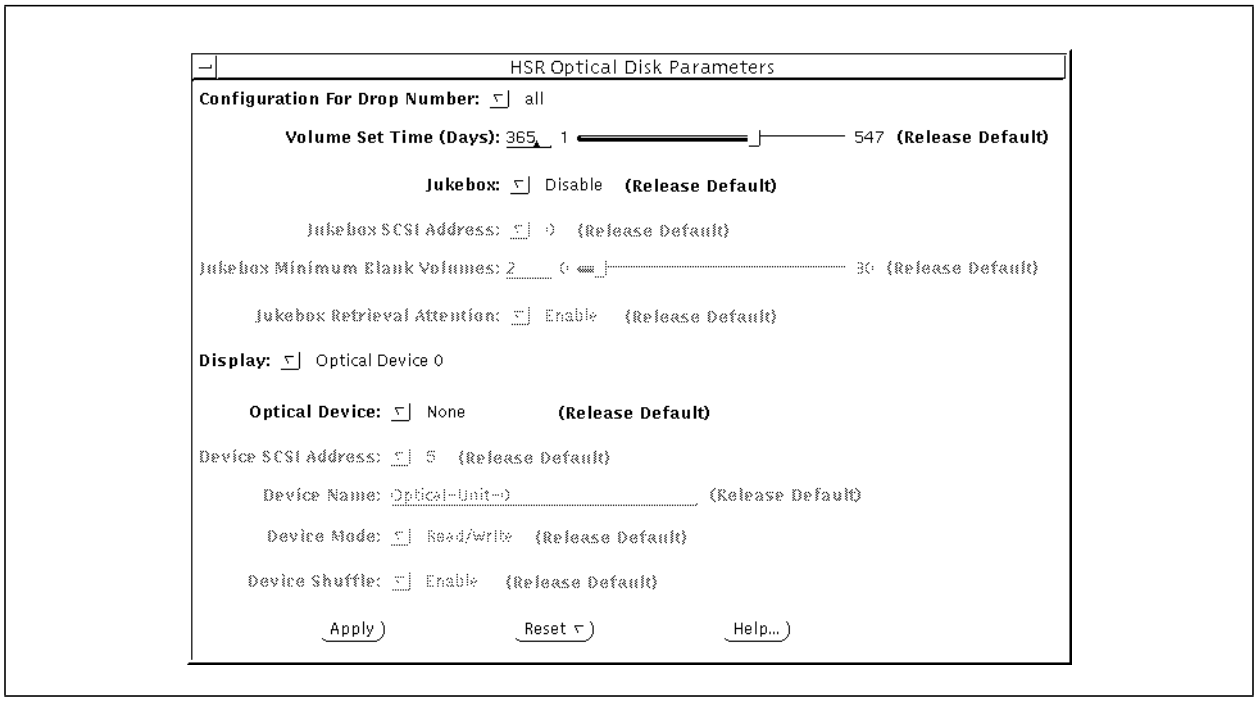

Figure 5-1. HSR Optical Disk Parameters

Table 5-1 lists the available Options for the **HSR Optical Disk Parameters** Topic.

Table 5-1. HSR Optical Disk Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

Table 5-1. HSR Optical Disk Parameters Topic (Cont'd)

Item	Description	Setting Options
Volume Set Time (Days)	Defines period of time for data collection in a volume set before a new volume set is started.	**365** (Default) (Set from scale bar for values from1 through 547)
Jukebox	Determines if jukebox is available	Enable **Disable** (Default)
Jukebox SCSI Address	Defines SCSI address of jukebox autochanger.	**2** (Default) (Choose from list 0 through 6)
Jukebox Minimum Blank Volumes	Defines minimum number of blank optical volumes required before an alert message is sent.	**2** (Default) (Set from scale bar for values from 0 through 30)
Jukebox Retrieval Attention	If enabled, prompt appears asking for volume containing requested data to be inserted into the jukebox.	**Enable** (Default) Disable
Display:	Selects optical device for configuration.	**Optical Device 0** (Default) Optical Device 1
Optical Device	Specifies optical device model.	**None** (Default) Artecon Tahiti HP 1300T
Device SCSI Address	Defines optical drive SCSI address.	**5** (Default) (Choose from list 0 through 6)
Device Name	Defines name used for optical device on Archive Manager displays. Default = Optical-Unit-0	Entry Field **Optical-Unit-0** (Default)
Device Mode	Defines if optical device operates in **Read-only** or **Read/Write** mode.	**Read/Write** (Default) Read Only
Device Shuffle	If enabled, data can be retrieved from volumes not in optical drive	**Enable** (Default) Disable

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5-3. HSR Collection Parameters

5-3.1. Overview

The **HSR Collection Parameters** GUI defines configuration items that are specific to the various collection methods employed by the HSR. Any needed change that involves the collection of data from any subsystem is made through this GUI.

5-3.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSR Collection Parameters** from the Topic scrolling list.

   The **HSR Collection Parameters** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides six different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-2.

   - SHC Parameters (Default) (see Figure 5-2).
   - Main History Collection Parameters (see Figure 5-3).
   - Long Term History Collection Parameters (see Figure 5-4).
   - Event History Collection Parameters (see Figure 5-5).
   - Alarm History Collection Parameters (see Figure 5-6).
   - File History Collection Parameters (see Figure 5-7).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

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Note

If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the "Install Configuration on Software Server" function (described in "Defining and Configuring WEStations" (U0-8300)) to install the changes on the Software Server.

   - Use the "Download Configuration to Drops" function (described in "Defining and Configuring WEStations" (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

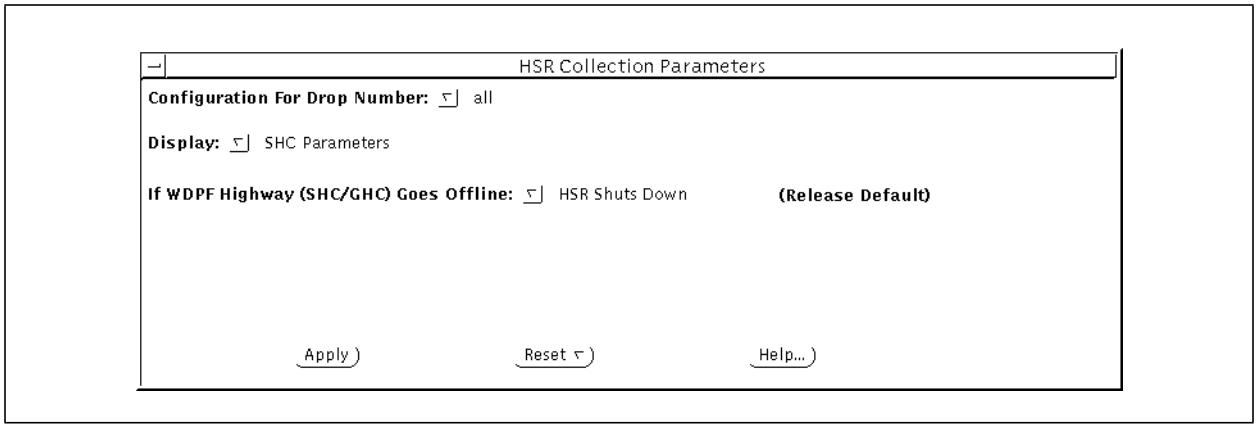

Figure 5-2. HSR Collection Parameters (SHC Parameters Display)

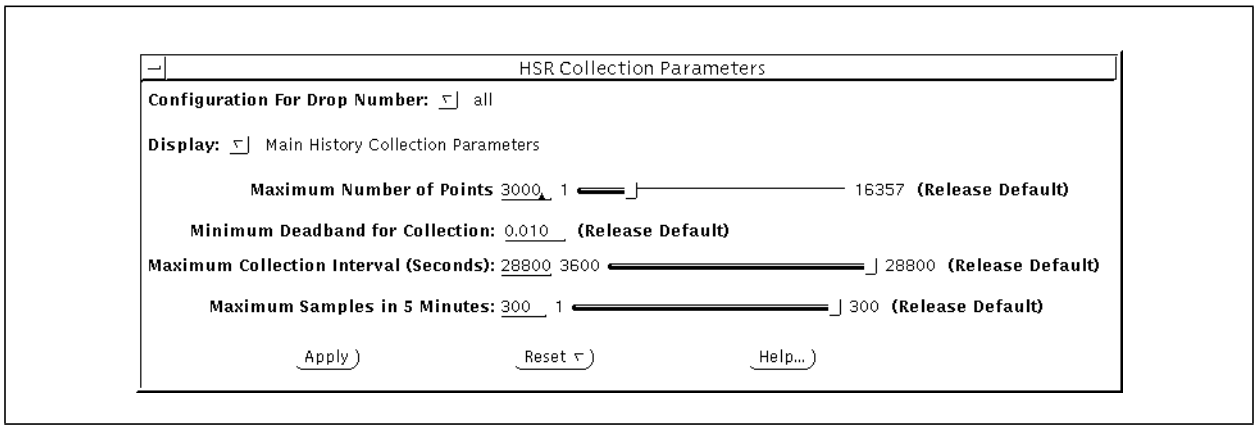

Figure 5-3. HSR Collection Parameters (Main History Collection Parameters Display)

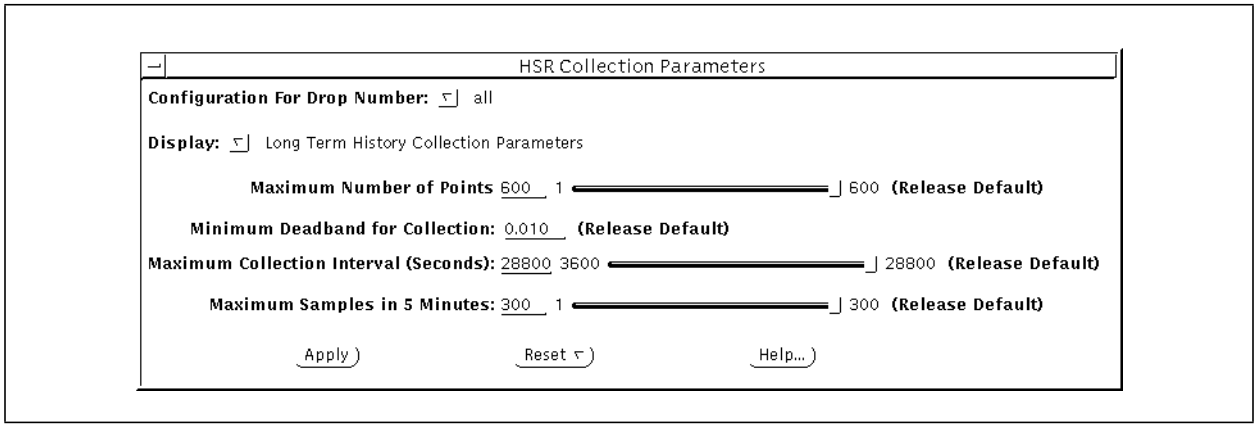

Figure 5-4. HSR Collection Parameters (Long Term History Collection Parameters Display)

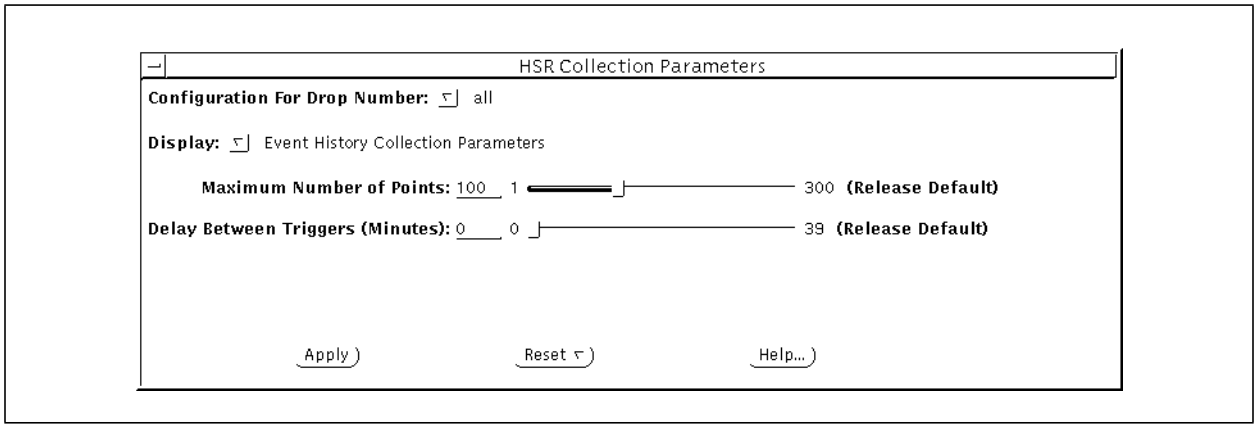

Figure 5-5. HSR Collection Parameters (Event History Collection Parameters Display)

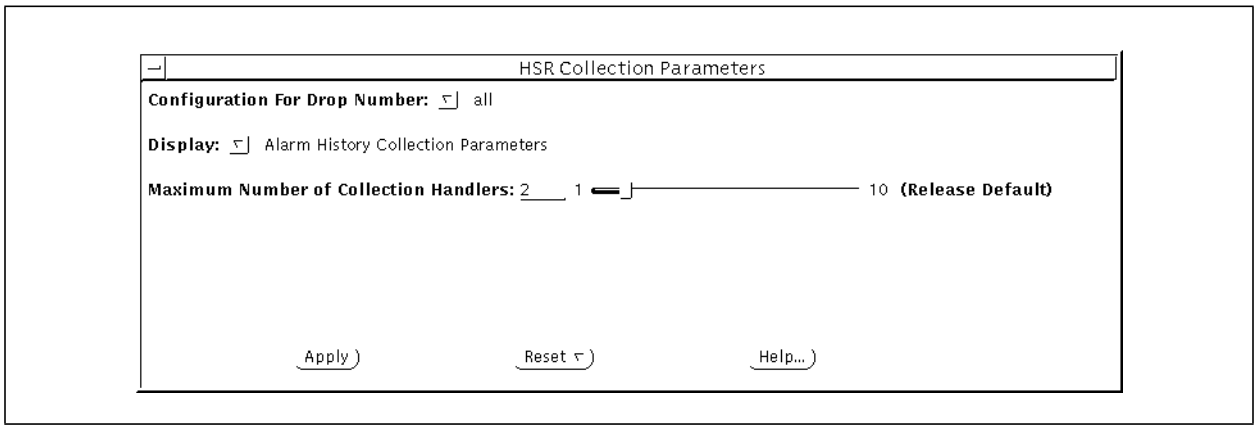

Figure 5-6. HSR Collection Parameters (Alarm History Collection Parameters Display)

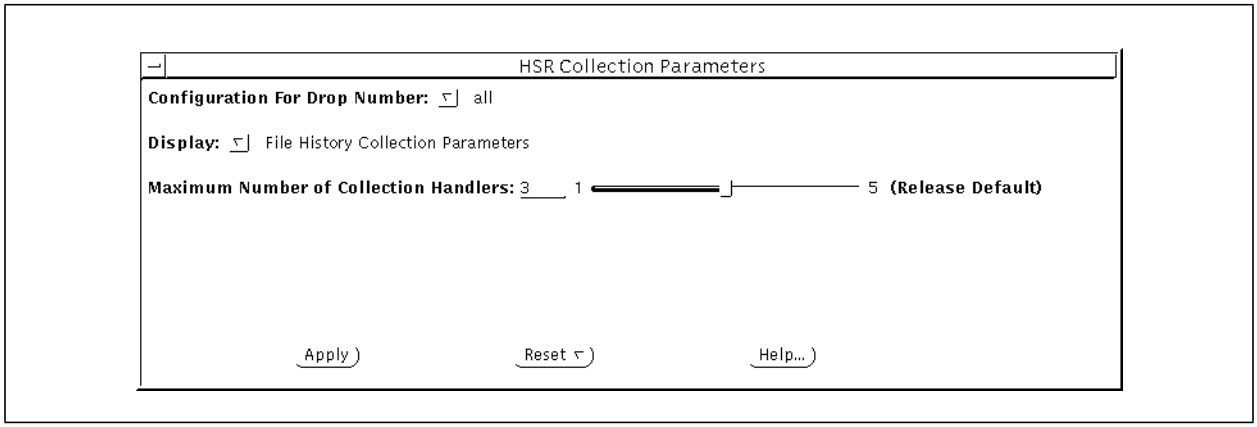

Figure 5-7. HSR Collection Parameters (File History Collection Parameters Display)

Table 5-2 lists the available Options for the **HSR Collection Parameters** Topic.

Table 5-2. HSR Collection Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Display: (The screen displays the following for this option)		
• SHC Parameters (Default) (See Figure 5-2)	**If WDPF Highway (**SHC/GHC**) Goes Offline** determines if HSR shuts down or not when WDPF Highway goes offline.	**HSR Shuts Down** (Default) HSR Continues Collecting
• Main History Collection Parameters (See Figure 5-3)	**Maximum Number of Points** defines maximum number of points that can be configured into Main History subsystem.	**3000** (Default) (Set from scale bar for values from1 through 16357)
	Minimum Deadband for Collection defines minimum deadband that can be assigned for analog point collected by Main History.	Entry Field **0.010** (Default)
	Maximum Collection Interval (secs) defines maximum time between storage of data samples by Main History subsystem.	**28800** (Default) (Set from scale bar for values from 3600 through 28800)
	Maximum Samples in 5 Minutes defines maximum number of samples that can be stored for a point in five minutes.	**300** (Default) (Set from scale bar for values 1 through 300)

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Table 5-2. HSR Collection Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd)		
• Long Term History Collection Parameters (See Figure 5-4)	**Maximum Number of Points** defines maximum number of points that can be configured into Long Term History subsystem.	**600** (Default) (Set from scale bar for values from1 through 600)
	Minimum Deadband for Collection defines minimum deadband that can be assigned for analog point collected by Long Term History subsystem.	Entry Field **0.010** (Default)
	Maximum Collection Interval (secs) defines maximum time between storage of data samples by Long Term History subsystem.	**28800** (Default) (Set from scale bar for values from 3600 through 28800)
	Maximum Samples in 5 Minutes defines maximum number of samples that can be stored for a point in five minutes.	**300** (Default) (Set from scale bar for values 1 through 300)
• Event History Collection Parameters (See Figure 5-5)	**Maximum Number of Points** defines maximum number of points that can be configured into Event History subsystem.	**100** (Default) (Set from scale bar for values from1 through 300)
	Delay Between Triggers (Minutes) defines number of minutes after first event that a second trigger is ignored.	**0** (Default) (Set from scale bar for values from 0 through 39)
• Alarm History Collection Parameters (See Figure 5-6)	**Maximum Number of Collection Handlers** defines maximum number of Alarm History collection processes that can run concurrently.	**2** (Default) (Set from scale bar for values from1 through 10)
• File History Collection Parameters (See Figure 5-7)	**Maximum Number of Collection Handlers** defines maximum number of File History collection processes that can run concurrently.	**3** (Default) (Set from scale bar for values from1 through 5)

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5-4. HSR Local Hard Disk Parameters

5-4.1. Overview

The **HSR Local Hard Disk Parameters** GUI defines options on configuring the behavior of the subsystems when writing data to the local hard drive (for example /usr). This group of parameters will determine how much disk space is consumed on the local hard drive. Parameters specific to closing times of historical files are also included in this GUI.

5-4.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSR Local Hard Disk Parameters** from the Topic scrolling list.

   The **HSR Local Hard Disk Parameters** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides five different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-3.

   - Hard Disk Space Limits (Default) (see Figure 5-8).
   - Hard Disk Space Targets (see Figure 5-9).
   - File Close Time (see Figure 5-10).
   - File Close Period (see Figure 5-11).
   - Delete When Local Disk Fills (see Figure 5-12).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

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Note

If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

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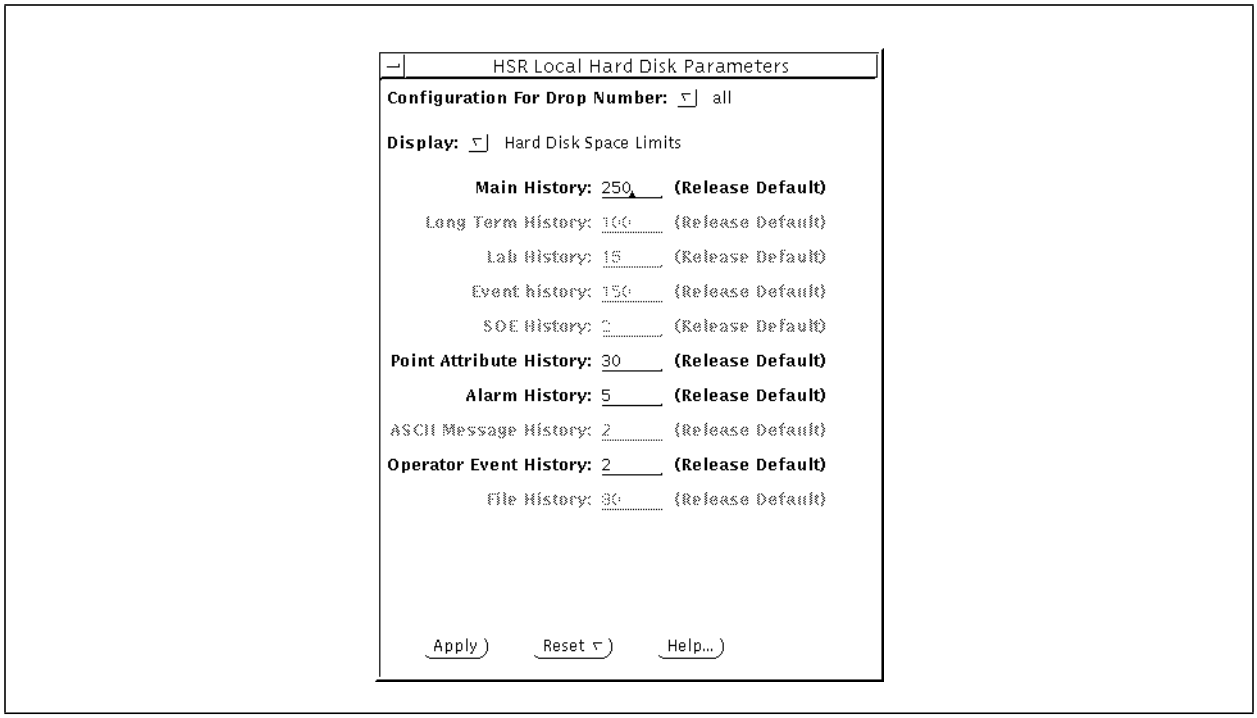

Figure 5-8. HSR Local Hard Disk Parameters (Hard Disk Space Limits Display)

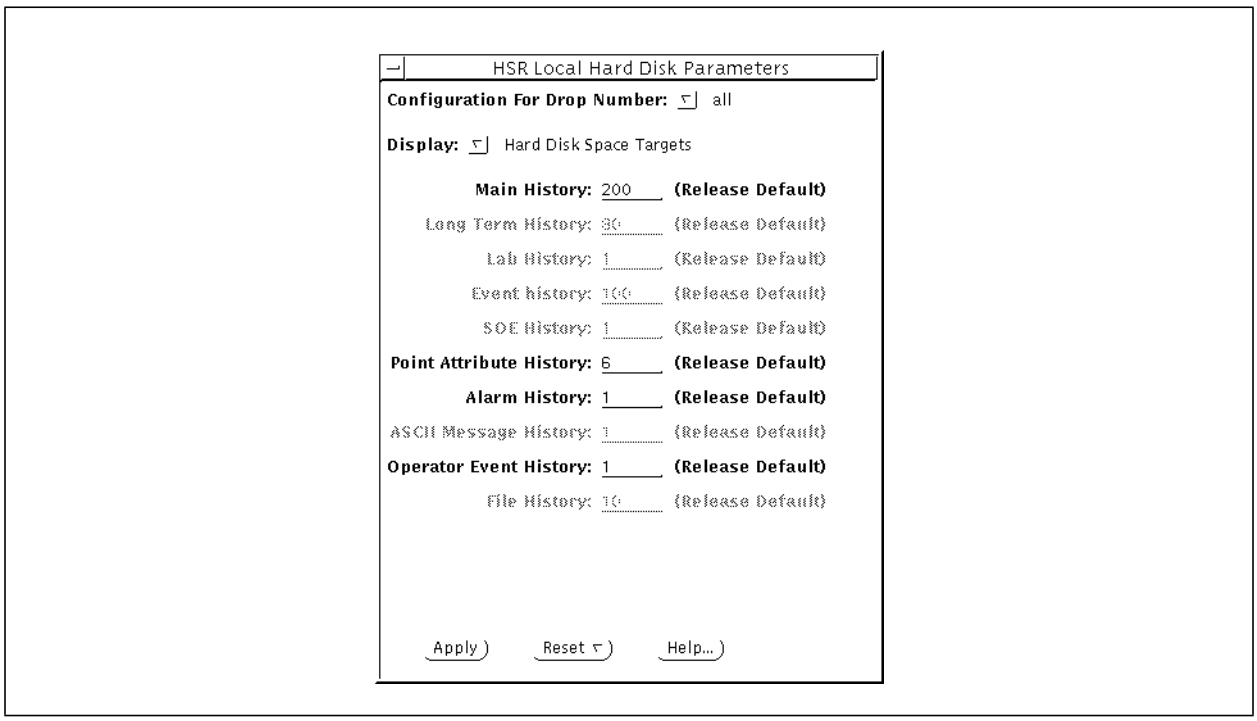

Figure 5-9. HSR Local Hard Disk Parameters (Hard Disk Space Targets Display)

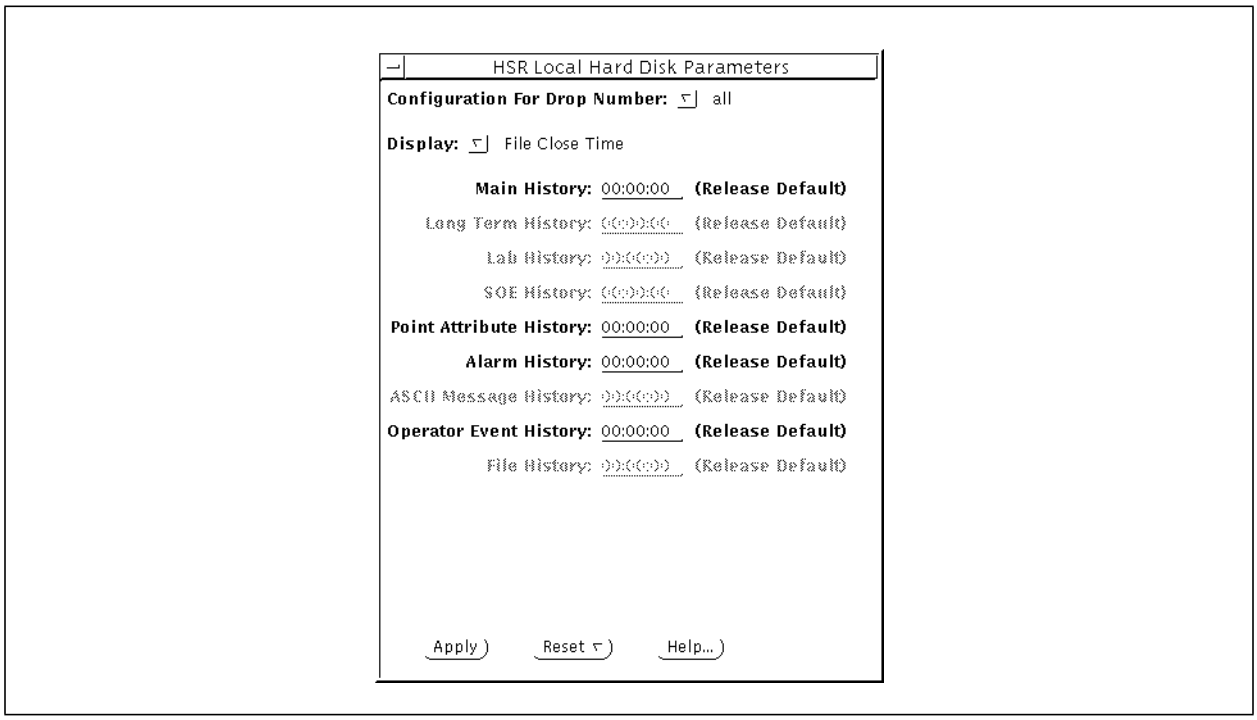

Figure 5-10. HSR Local Hard Disk Parameters (File Close Time Display)

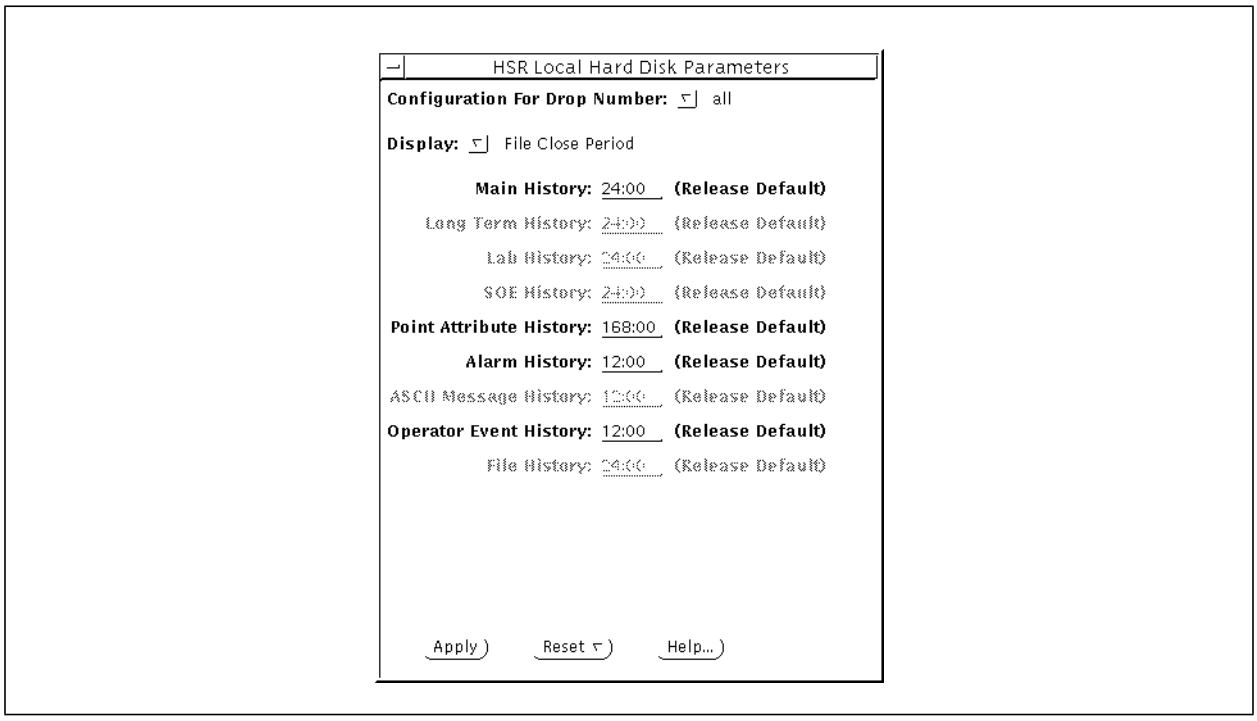

Figure 5-11. HSR Local Hard Disk Parameters (File Close Period Display)

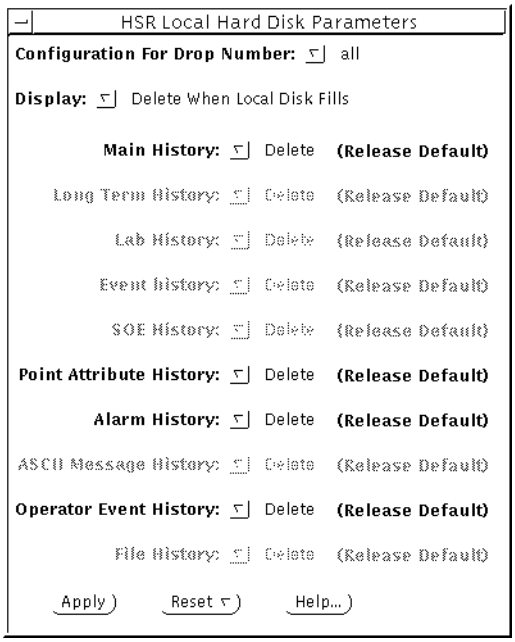

Figure 5-12. HSR Local Hard Disk Parameters (Delete When Local Disk Fills Display)

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Table 5-3 lists the available Options for the **HSR Local Hard Disk Parameters** Topic.

Table 5-3. HSR Local Hard Disk Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Display: (The screen displays the following for this option) • Hard Disk Space Limits (Default) (See Figure 5-8)	These parameters define maximum amount of disk space (in megabytes) used by each HSR subsystem	Entry Fields for All Settings: • Main History: **250** (Default) • Long Term History: **100** (Default) • Lab History: **15** (Default) • Event History: **150** (Default) • SOE History: **2** (Default) • Point Attribute History: **30** (Default) • Alarm History: **5** (Default) • ASCII Message History: **2** (Default) • Operator Event History: **2** (Default) • File List History: **80** (Default)

Table 5-3. HSR Local Hard Disk Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Hard Disk Space Targets (See Figure 5-9)	These parameters define the amount of disk space (in megabytes) that each HSR subsystem should ideally consume.	Entry Fields for All Settings: • Main History: **200** (Default) • Long Term History: **80** (Default) • Lab History: **1** (Default) • Event History: **100** (Default) • SOE History: **1**(Default) • Point Attribute History: **6** (Default) • Alarm History: **1** (Default) • ASCII Message History: **1** (Default) • Operator Event History: **1** (Default) • File History: **10** (Default)
• File Close Time (See Figure 5-10)	These parameters define the time of day when the active HSR subsystems history files will be closed.	Entry Fields with **00:00:00** (Default) for All Settings: • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:

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Table 5-3. HSR Local Hard Disk Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • File Close Period (See Figure 5-11)	These parameters define the amount of time the HSR subsystem will keep the active history files open.	Entry Fields for All Settings: • Main History: **24:00** (Default) • Long Term History: **24:00** (Default) • Lab History: **24:00** (Default) • SOE History: **24:00** (Default) • Point Attribute History: **168:00** (Default) • Alarm History: **12:00** (Default) • ASCII Message History: **12:00** (Default) • Operator Event History: **12:00** (Default) • File History: **24:00** (Default)
• Delete When Local Disk Fills (See Figure 5-12)	Defines what happens when local disk fills: **Delete** = Oldest data is deleted **Save** = Collection suspended until additional space is provided.	For All Settings: **Delete** (Default) Save • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:

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5-5. HSR Secondary Hard Disk Parameters

5-5.1. Overview

The **HSR Secondary Hard Disk Parameters** GUI defines configuration parameters that are specific to the management of the secondary hard disk(s). These are the disks or partitions that are mounted under **/usr/wdpf/hsr/archive/sec/part_0*** .

5-5.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSR Secondary Hard Disk Parameters** from the Topic scrolling list.

   The **HSR Secondary Hard Disk Parameters** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides five different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-4.

   - Archive Enable (Default) (see Figure 5-13).
   - Delete Unarchived Files (see Figure 5-14).
   - Hard Disk Space Limits (Mbytes) (see Figure 5-15).
   - Hard Disk Period Limits (Days) (see Figure 5-16).
   - Exceed Period Limits (see Figure 5-17).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

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Note

If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

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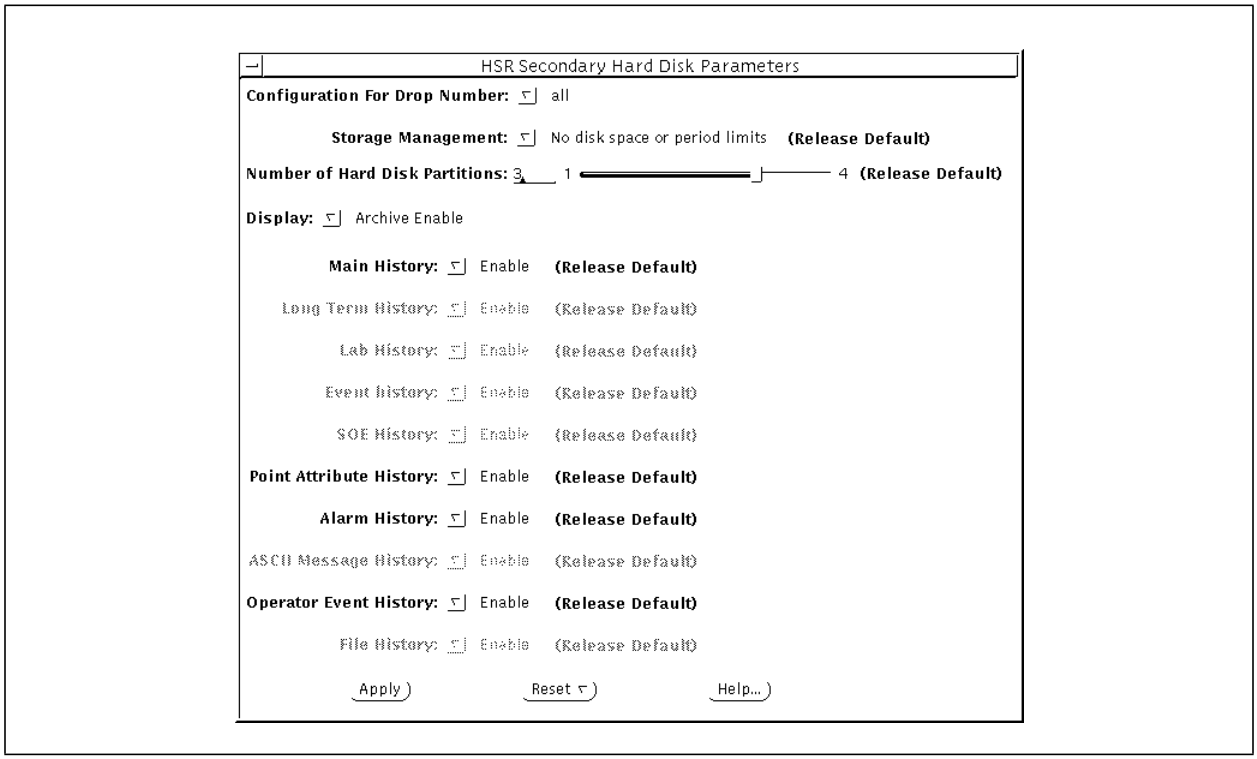

Figure 5-13. HSR Secondary Hard Disk Parameters (Archive Enable Display)

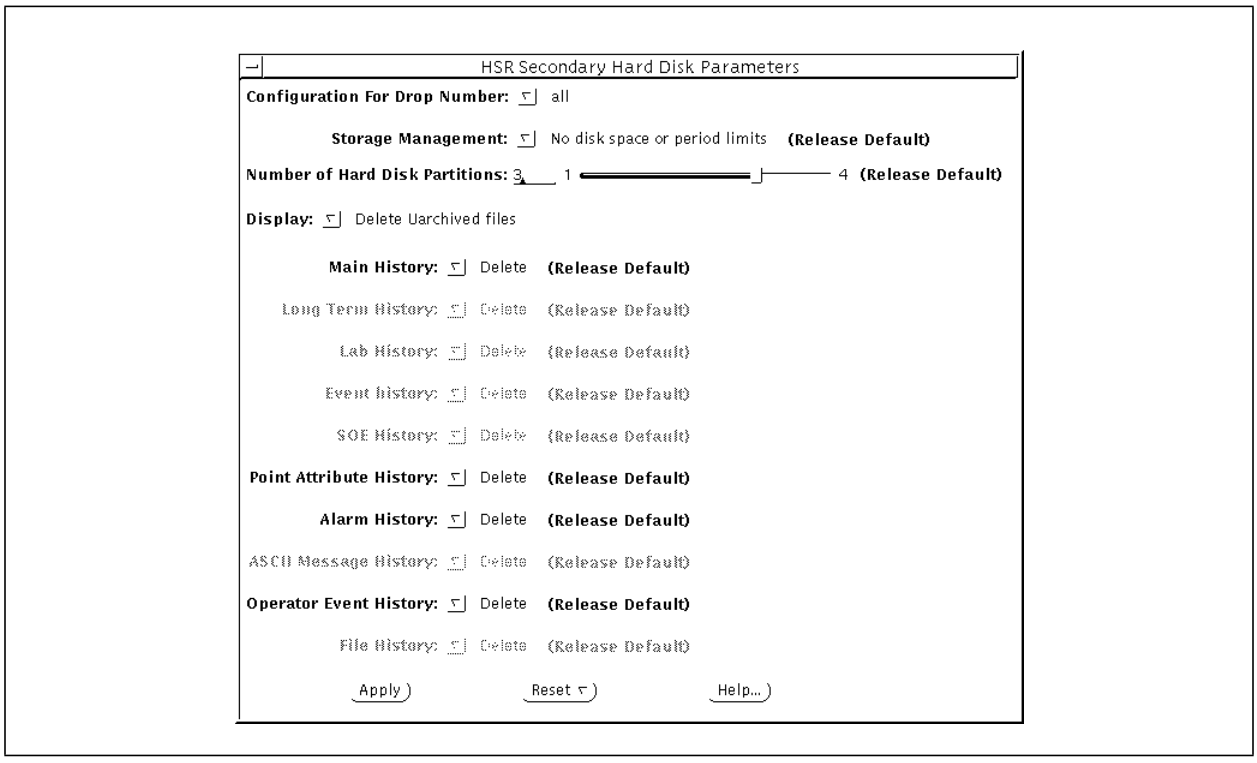

Figure 5-14. HSR Secondary Hard Disk Parameters (Delete Unarchived Files Display)

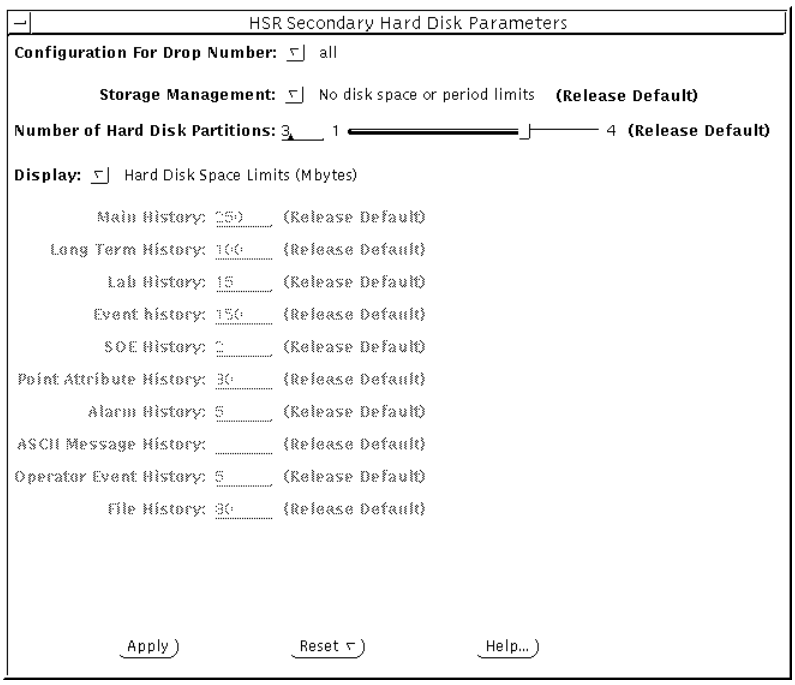

Figure 5-15. HSR Secondary Hard Disk Parameters (Hard Disk Space Limits (Mbytes) Display)

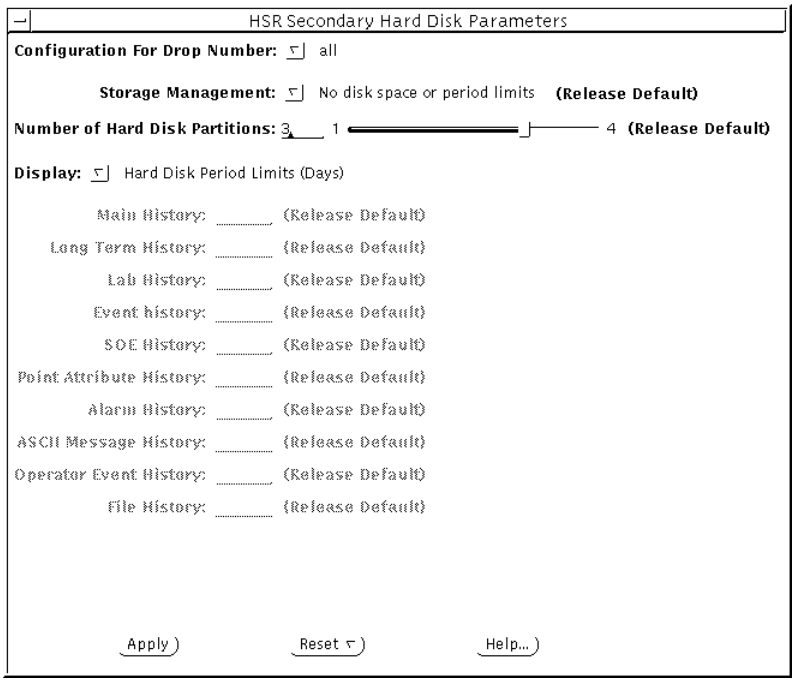

Figure 5-16. HSR Secondary Hard Disk Parameters (Hard Disk Period Limits (Days) Display)

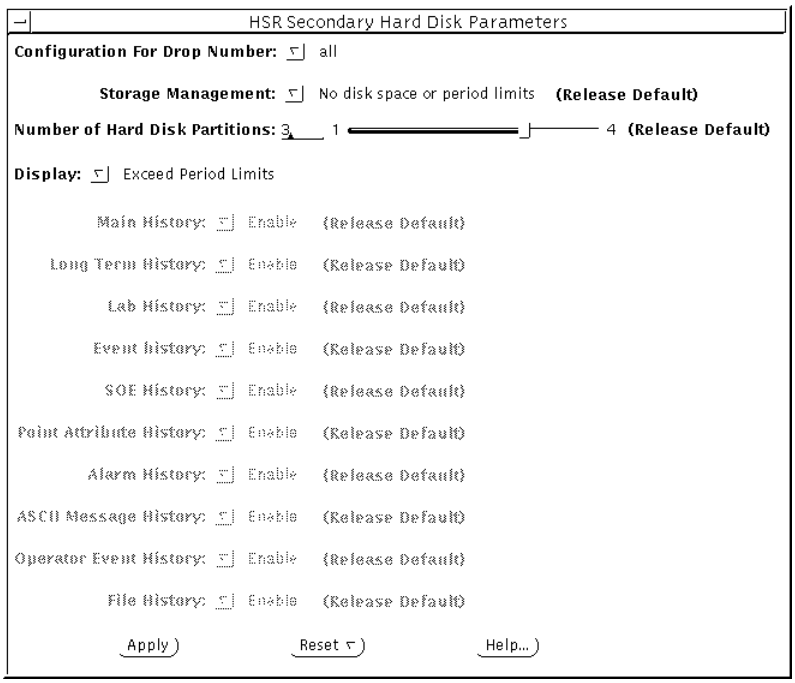

Figure 5-17. HSR Secondary Hard Disk Parameters (Exceed Period Limits Display)

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Table 5-4 lists the available Options for the **HSR Secondary Hard Disk Parameters** Topic.

Table 5-4. HSR Secondary Hard Disk Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Storage Management	Defines type of management used to manage hard disk space: (See Appendix A for additional information.)	• **No disk space or period limits** (Default) • Disk space limits only • Period limits only • Disk space and period limits
Number of Hard Disk Partitions	Defines number of partitions reserved for HSR on hard disk. **Note** **It is imperative that this number is correct for proper Archive operation.**	3 (Default) (Set from scale bar for values from1 through 4)
Display: (The screen displays the following for this option) • Archive Enable (Default) (See Figure 5-13)	Enables the archive function for HSR subsystems. (See Appendix A for additional information.)	For All Settings: **Enable** (Default) Disable • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:

Table 5-4. HSR Secondary Hard Disk Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Delete Unarchived Files (See Figure 5-14)	If enabled, archived files can be deleted if hard disk is full. (May be set for any **Storage Management** option) (See Appendix A for additional information.)	For All Settings: **Delete** (Default) Save • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:
• Hard Disk Space Limits (Mbytes) (See Figure 5-15)	Displays disk space limits per subsystem. (Must be defined for the **Storage Management** options **Disk space and period limits** and **Disk space limits only** options). (See Appendix A for additional information.)	Entry Fields for All Settings: • Main History: **250** (Default) • Long Term History: **100** (Default) • Lab History: **15** (Default) • Event History: **150** (Default) • SOE History: **2** (Default) • Point Attribute History: **30** (Default) • Alarm History: **5** (Default) • ASCII Message History: **2** (Default) • Operator Event History: **2** (Default) • File List History: **80** (Default)

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Table 5-4. HSR Secondary Hard Disk Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Hard Disk Period Limits (Days) (See Figure 5-16)	Displays disk period limits per subsystem. (Must be defined for the **Storage Management** options **Disk space and period limits** and **Period limits only**). (See Appendix A for additional information.)	Entry Field for All Settings: Default = " " • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:
• Exceed Period Limits (See Figure 5-17)	Displays whether of not each subsystem's period limits may be exceeded. (May only be set for the **Storage Management** options **Disk space and period limits** and **Period limits only** options). (See Appendix A for additional information.)	For All Settings: **Enable** (Default) Disable • Main History: • Long Term History: • Lab History: • SOE History: • Point Attribute History: • Alarm History: • ASCII Message History: • Operator Event History: • File History:

5-6. HSR SOE Parameters

5-6.1. Overview

The **HSR SOE Parameters** GUI defines configuration parameters that specifically drive the SOE subsystem. These parameters include everything from collection algorithms to SOE report generation.

5-6.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSR SOE Parameters** from the Topic scrolling list.

   The **HSR SOE Parameters** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides two different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-5.

   - Page 1 of 2 (Default) (see Figure 5-18).
   - Page 2 of 2 (see Figure 5-19).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

Note

If a change is typed in an entry field, press the **Return** key to accept the change.

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6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

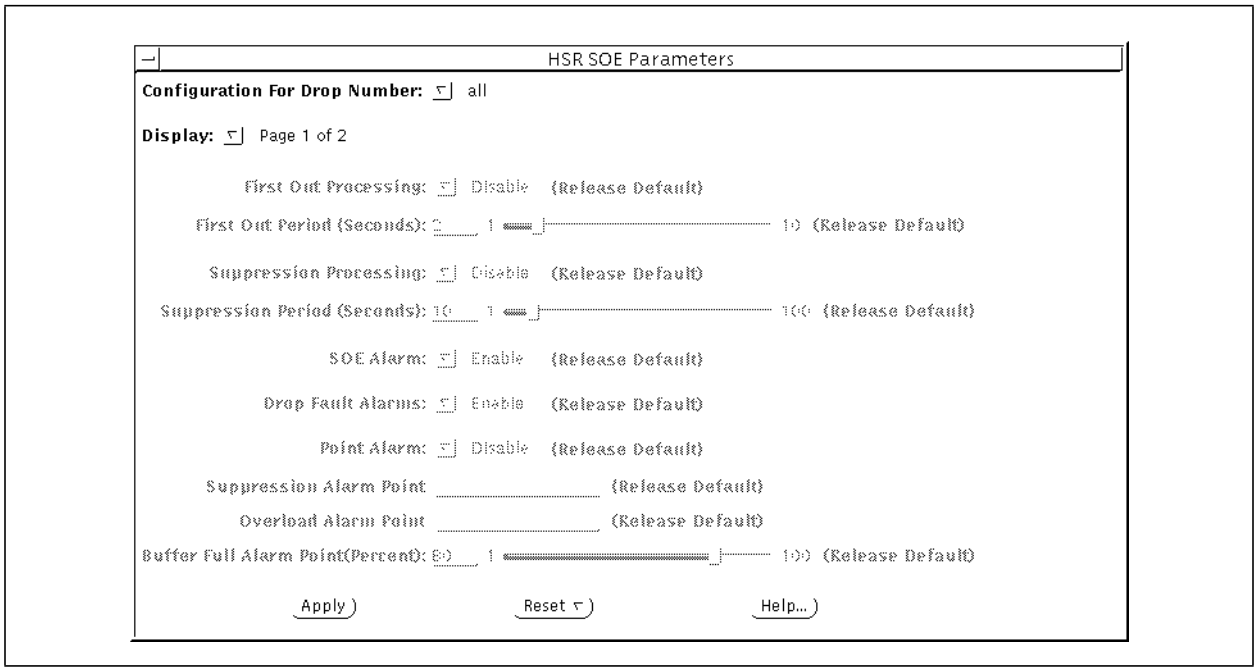

Figure 5-18. HSR SOE Parameters (Page 1 of 2 Display)

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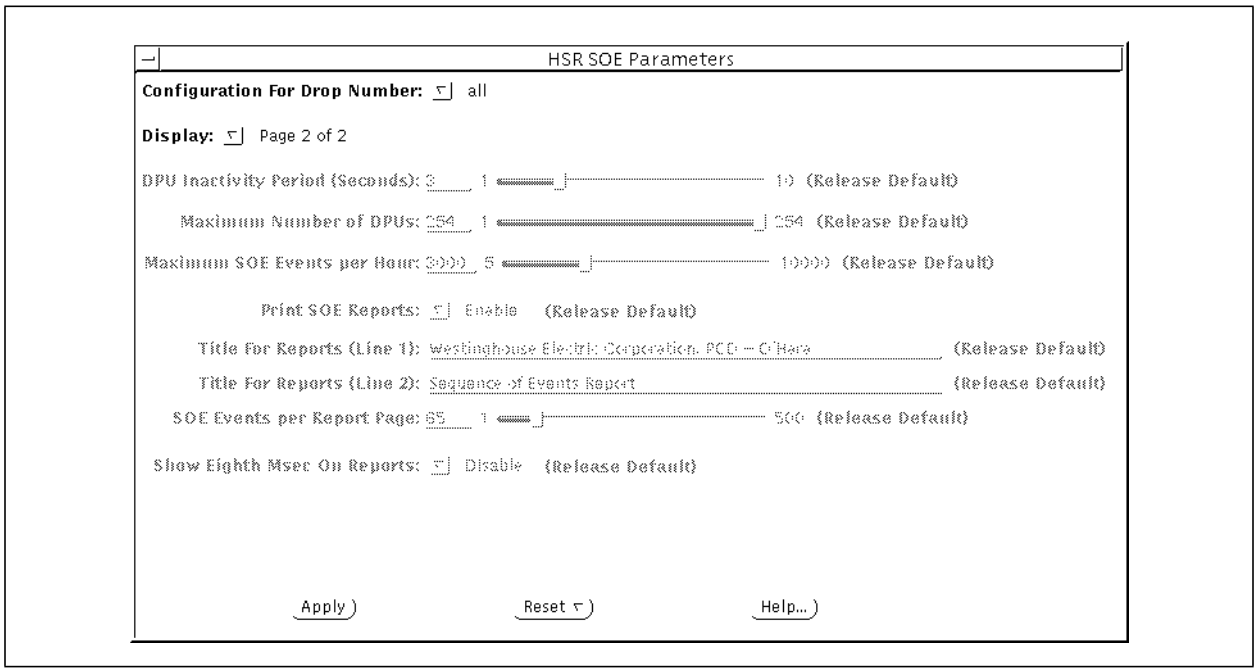

Figure 5-19. HSR SOE Parameters (Page 2 of 2 Display)

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Table 5-5 lists the available Options for the **HSR SOE Parameters** Topic.

Table 5-5. HSR SOE Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Display: (The screen displays the following for this option) • Page 1 of 2 (Default) (See Figure 5-18)		
	First Out Processing enables first out detection.	Enable **Disable** (Default)
	First Out Period (Seconds) defines the first out search time.	**2** (Default) (Set from scale bar for values from1 through 10)
	Suppression Processing enables suppression processing.	Enable **Disable** (Default)
	Suppression Period (Seconds) defines the time that a point in suppression must remain unchanged before being removed.	**10** (Default) (Set from scale bar for values from1 through 100)
	SOE Alarm enables SOE alarm when point is suppressed or an overload exists.	**Enable** (Default) Disable
	Drop Fault Alarms enables Drop Fault to report SOE alarms.	**Enable** (Default) Disable
	Point Alarm enables Point Alarm to report SOE alarms.	Enable **Disable** (Default)
	Suppression Alarm Point selects the point used to report suppression.	Entry Field Default = “ ”
	Overload Alarm Point selects the point used to report overload.	Entry Field Default = “ ”
	Buffer Full Alarm Point (Percent) defines percent at which internal buffer will be considered critically full.	**80** (Default) (Set from scale bar for values from1 through 100)

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Table 5-5. HSR SOE Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Page 2 of 2 (See Figure 5-19)	**DPU Inactivity Period (Seconds)** sets the delay time between last SOE change and generating a report.	**3** (Default) (Set from scale bar for values from1 through 10)
	Maximum Number of DPUs defines the maximum number of DPUs in the configuration.	**254** (Default) (Set from scale bar for values from1 through 254)
	Maximum SOE Events per Hour defines the maximum number of SOE events to process per hour.	**3000** (Default) (Set from scale bar for values from 5 through 10000)
	Print SOE Reports enables SOE Reports.	**Enable** (Default) Disable
	Title For Reports (Line 1) defines what will be printed on first line of SOE reports.	Entry Field **Westinghouse Electric Corporation, PCD - O'Hara** (Default)
	Title For Reports (Line 2) defines what will be printed on second line of SOE reports.	Entry Field **Sequence of Events Report** (Default)
	SOE Events per Report Page defines how many events will be printed per page of the report.	**65** (Default) (Set from scale bar for values from1 through 500)
	Show Eighth Msec On Reports enables 1/8 millisecond division on SOE reports.	Enable **Disable** (Default)

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5-7. HSR Retrieval Parameters

5-7.1. Overview

The **HSR Retrieval Parameters** GUI defines configuration parameters specific to the operation of retrievals across subsystems.

5-7.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSR Retrieval Parameters** from the Topic scrolling list.

   The **HSR Retrieval Parameters** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides three different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-6.

   - Limits on Concurrent Retrievals (Number) (Default) (see Figure 5-20).
   - Good Quality Limit (Percent) (see Figure 5-21).
   - Bad Quality Limit (Percent) (see Figure 5-22).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

Note

If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the "Install Configuration on Software Server" function (described in "Defining and Configuring WEStations" (U0-8300)) to install the changes on the Software Server.

   - Use the "Download Configuration to Drops" function (described in "Defining and Configuring WEStations" (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

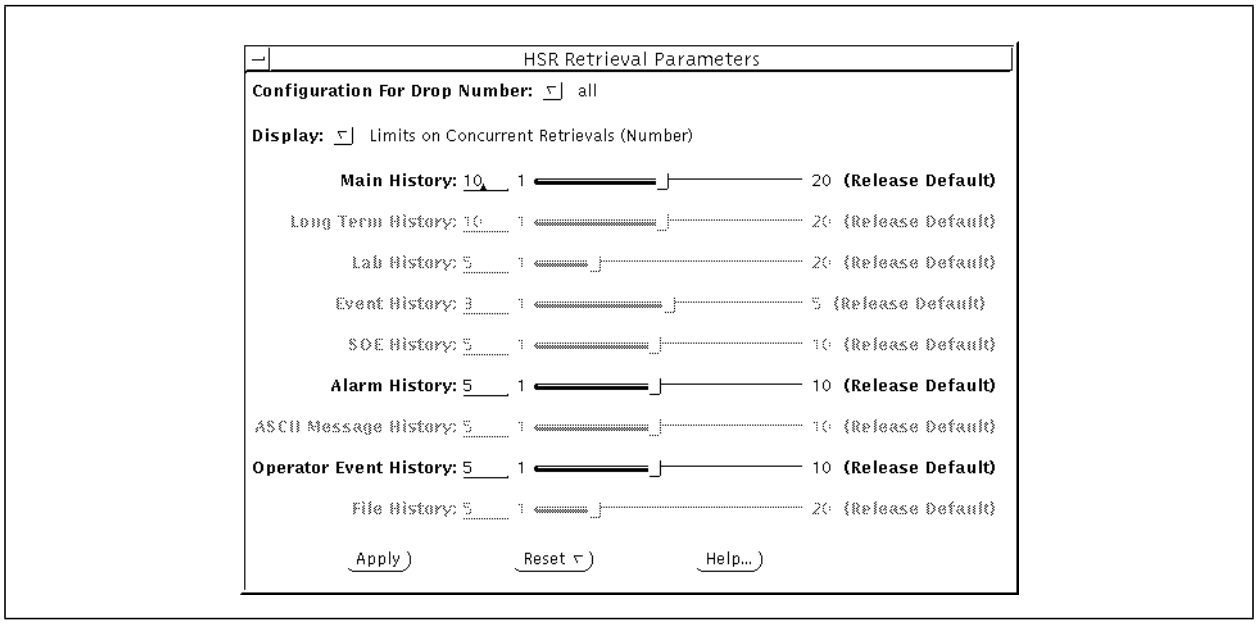

Figure 5-20. HSR Retrieval Parameters (Limits on Concurrent Retrievals (Number) Display)

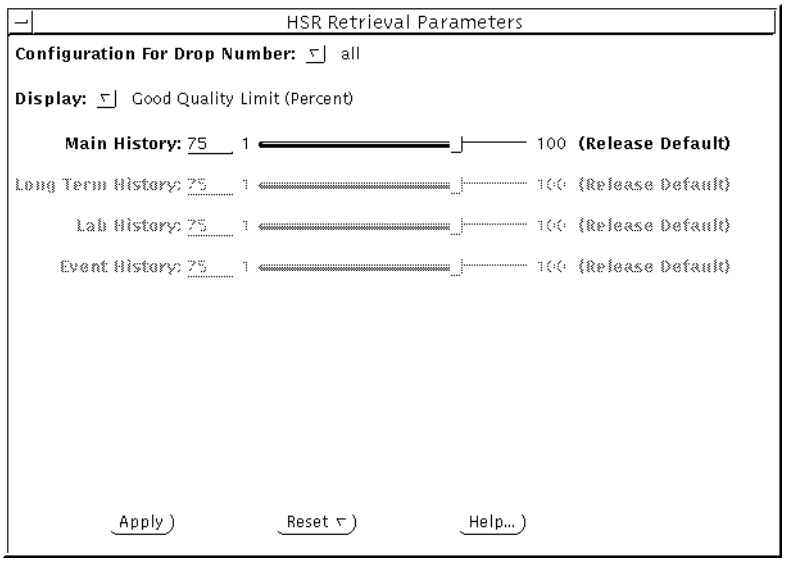

Figure 5-21. HSR Retrieval Parameters (Good Quality Limit (Percent) Display)

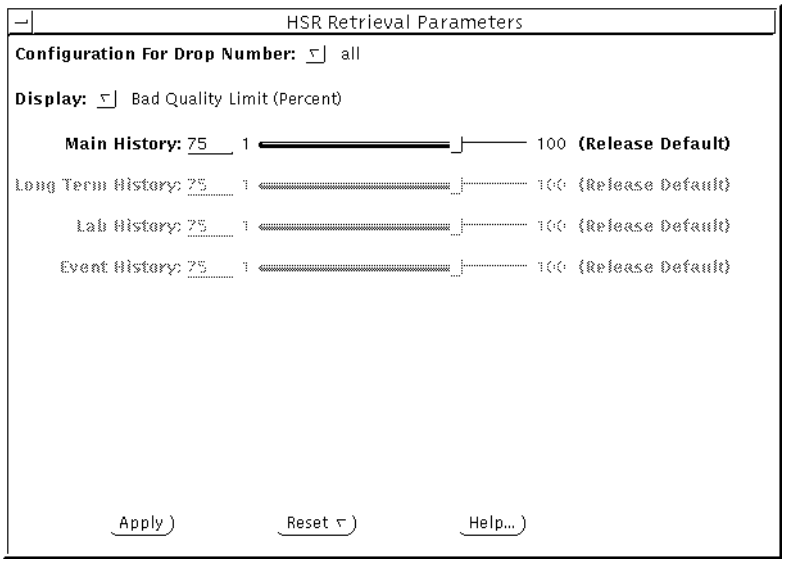

Figure 5-22. HSR Retrieval Parameters (Bad Quality Limit (Percent) Display)

Table 5-6 lists the available Options for the **HSR Retrieval Parameters** Topic.

Table 5-6. HSR Retrieval Parameters Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Display: (The screen displays the following for this option) • Limits on Concurrent Retrievals (Number) (Default) (See Figure 5-20)	These parameters define the maximum number of concurrent retrievals allowed on each subsystem.	• Main History: **10** (Default) (Set from scale bar for values from 1 through 20) • Long Term History: **10** (Default) (Set from scale bar for values from 1 through 20) • Lab History: **1** (Default) (Set from scale bar for values from 1 through 20) • Event History: **1** (Default) (Set from scale bar for values from 1 through 5) • SOE History: **1** (Default) (Set from scale bar for values from 1 through 10) • Alarm History: See SOE History • ASCII Message History: See SOE History • Operator Event History: See SOE History • File List History: See Lab History

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Table 5-6. HSR Retrieval Parameters Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Good Quality Limit (Percent) (See Figure 5-21)	These parameters define the good quality limits for Main, Lab, Long Term, and Event history. The quality of an average value is considered good if this percentage of the samples is good.	For All Settings: **75** (Default) (Set from scale bar for values from1 through 100) • Main History: • Lab History: • Long Term History: • Event History:
• Bad Quality Limit (Percent) (See Figure 5-22)	These parameters define the bad quality limits for Main, Lab, Long Term, and Event history. The quality of an average value is considered bad if this percentage of the samples is bad.	For All Settings: **75** (Default) (Set from scale bar for values from1 through 100) • Main History: • Lab History: • Long Term History: • Event History:

5-8. HSR Library

5-8.1. Overview

The **HSR Library** GUI defines configuration parameters that deal specifically with which HSR(s) to communicate to on a retrieval operation. Also included in this GUI is management of the amount of data returned on a retrieval.

5-8.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSR Library** from the Topic scrolling list.

   The **HSR Library** window will be displayed (as shown in Figure 5-23.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-7. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

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7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

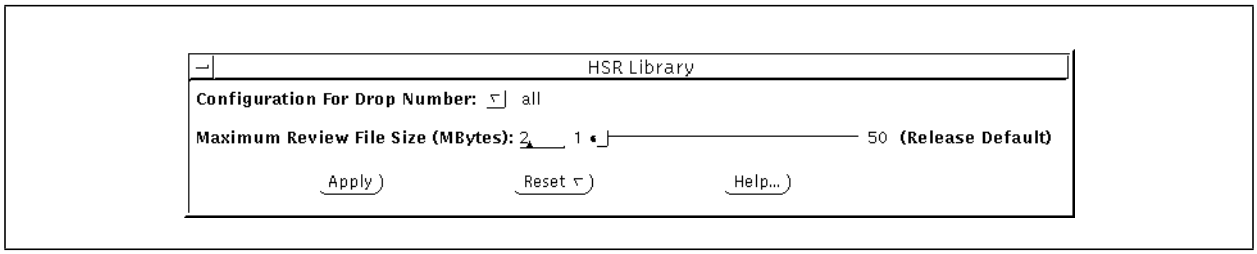

Figure 5-23. HSR Library

Table 5-7 lists the available Options for the **HSR Library** Topic.

Table 5-7. HSR Library Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Maximum Review File Size (MBytes)	Specifies maximum size for the historical data returned to the library function caller.	**2** (Default) (Set from scale bar for values from1 through 50)

5-9. HSRUI Trend UI

5-9.1. Overview

The **HSRUI Trend UI** GUI defines configuration parameters specific only to the HSR Trend UI.

5-9.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSRUI Trend UI** from the Topic scrolling list.

   The **HSRUI Trend UI** window will appear. The parameters that are displayed belong to the **Display** topic that is currently selected from the Display pull-down menu. The Display menu provides five different setting groups that will display in the window.

   These display choices are illustrated in the following figures and are described in Table 5-8.

   - Window Colors and File Retrieval Options (Default) (see Figure 5-24).
   - Plot Colors for Points with Good Quality (see Figure 5-25).
   - Plot Colors for Points with Non-Good Quality (see Figure 5-26).
   - Miscellaneous Parameters (see Figure 5-27).
   - Retrieval Periods (see Figure 5-28).
5. Make the desired changes in the selected **Display** menu Topic configuration window. If necessary, use the Help button to display pages that describe the fields on the configuration window.

Note

If a change is typed in an entry field, press the **Return** key to accept the change.

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6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. If additional configuration changes are desired, select the appropriate **Display** menu item and repeat Steps 5 and 6.

8. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

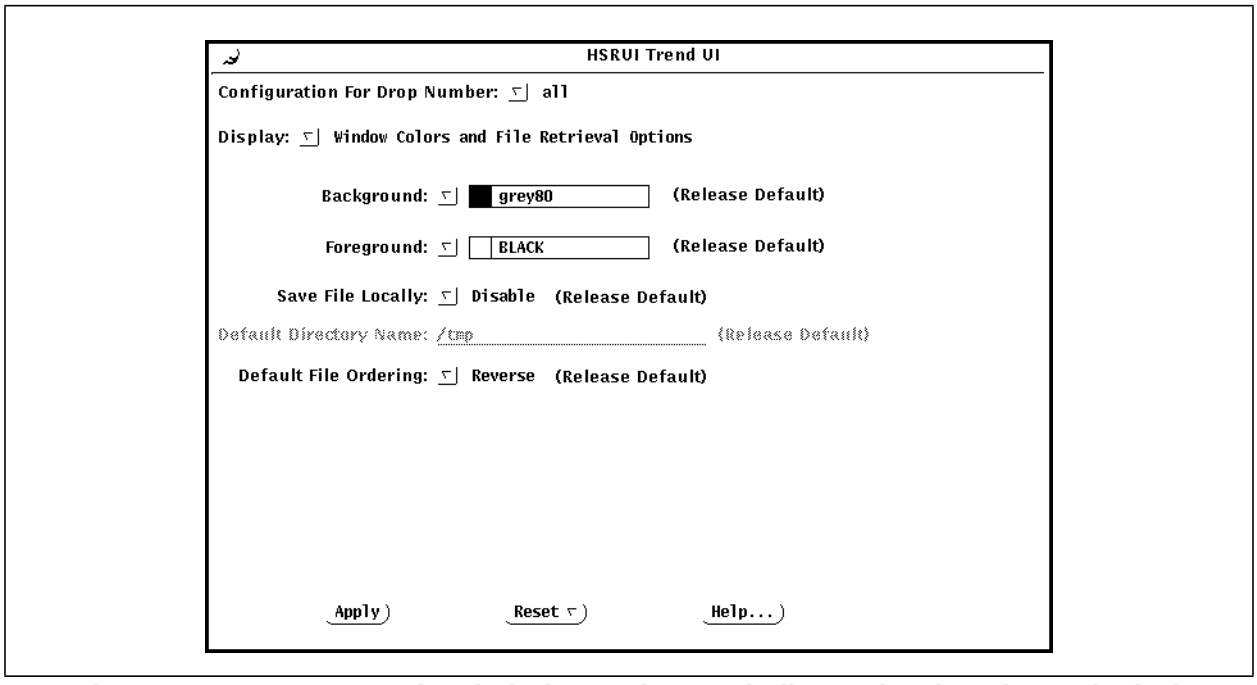

Figure 5-24. HSRUI Trend UI (Window Colors and File Retrieval Options Display)

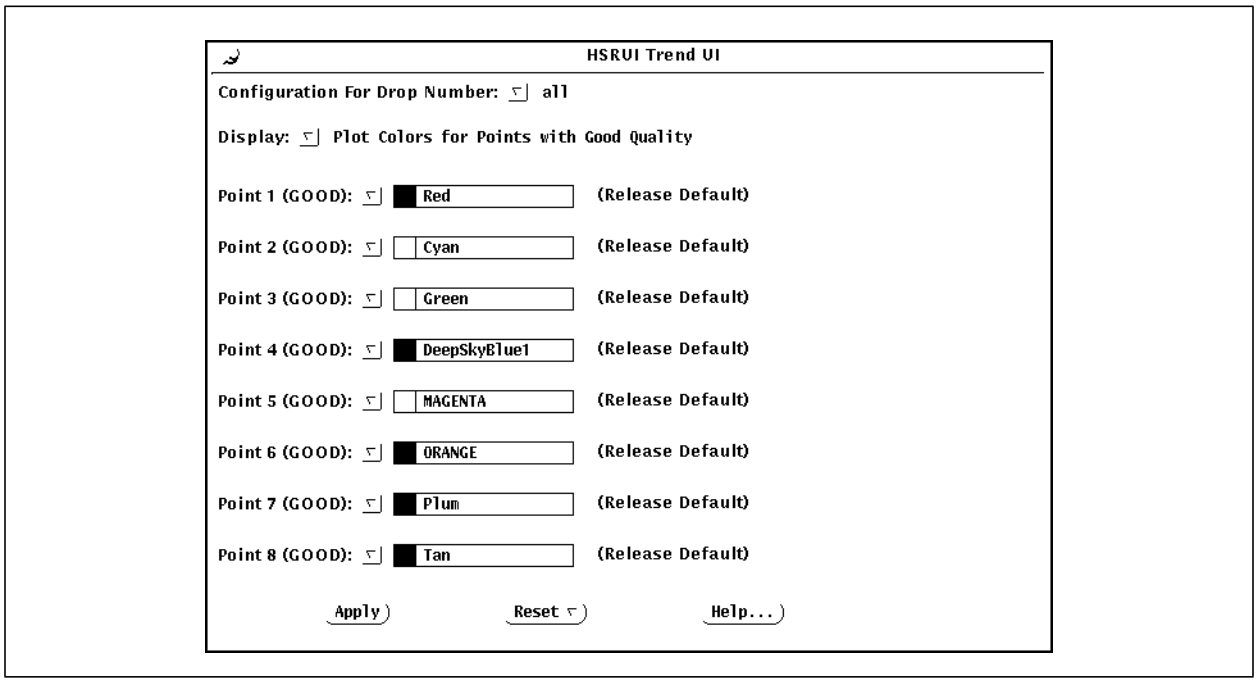

Figure 5-25. HSRUI Trend UI (Plot Colors for Points with Good Quality Display)

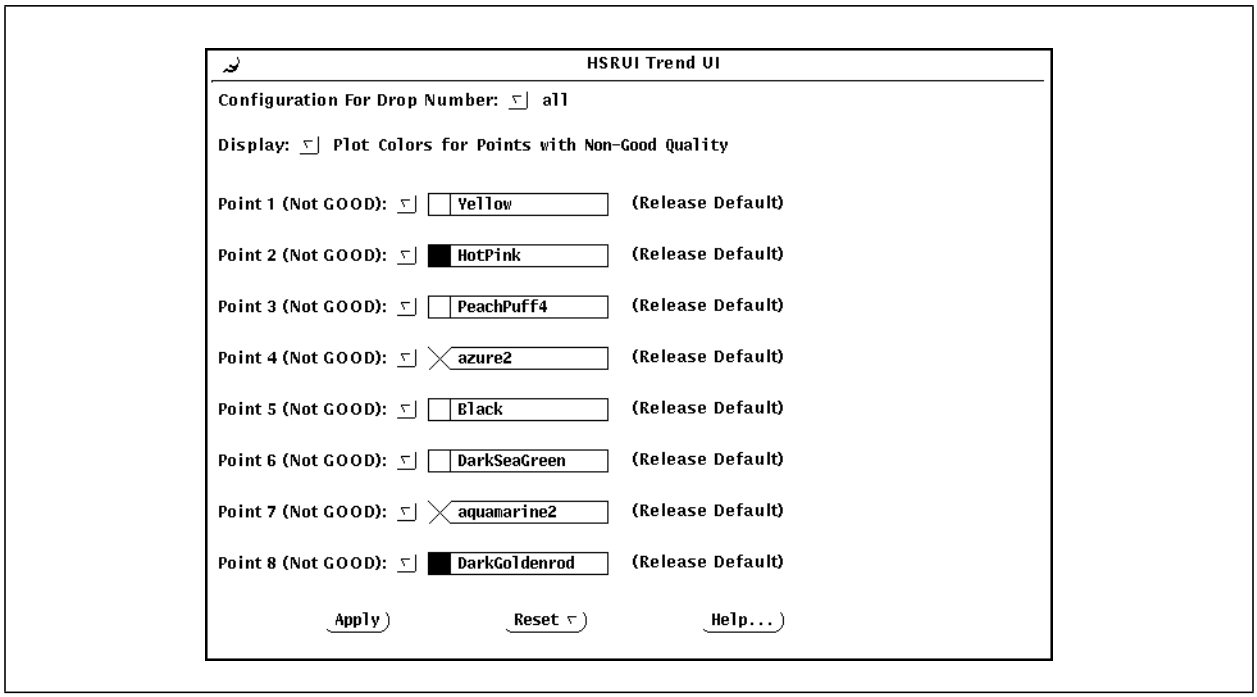

Figure 5-26. HSRUI Trend UI (Plot Colors for Points with Non-Good Quality Display)

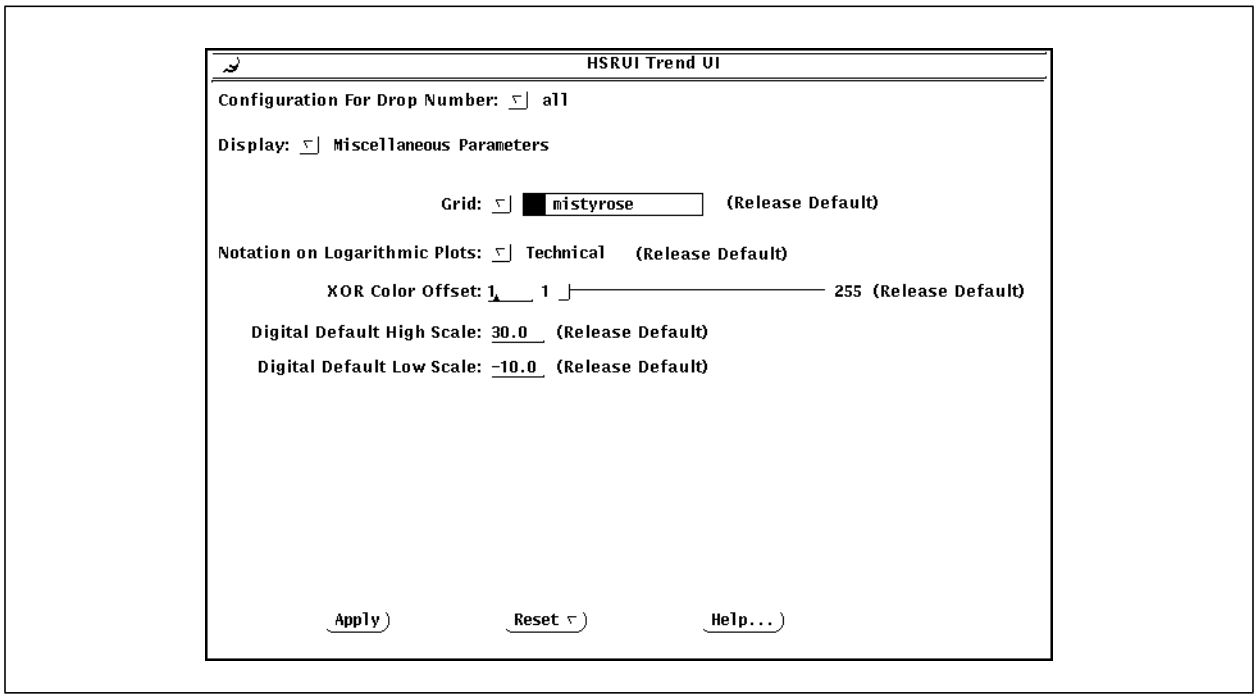

Figure 5-27. HSRUI Trend UI (Miscellaneous Parameters Display)

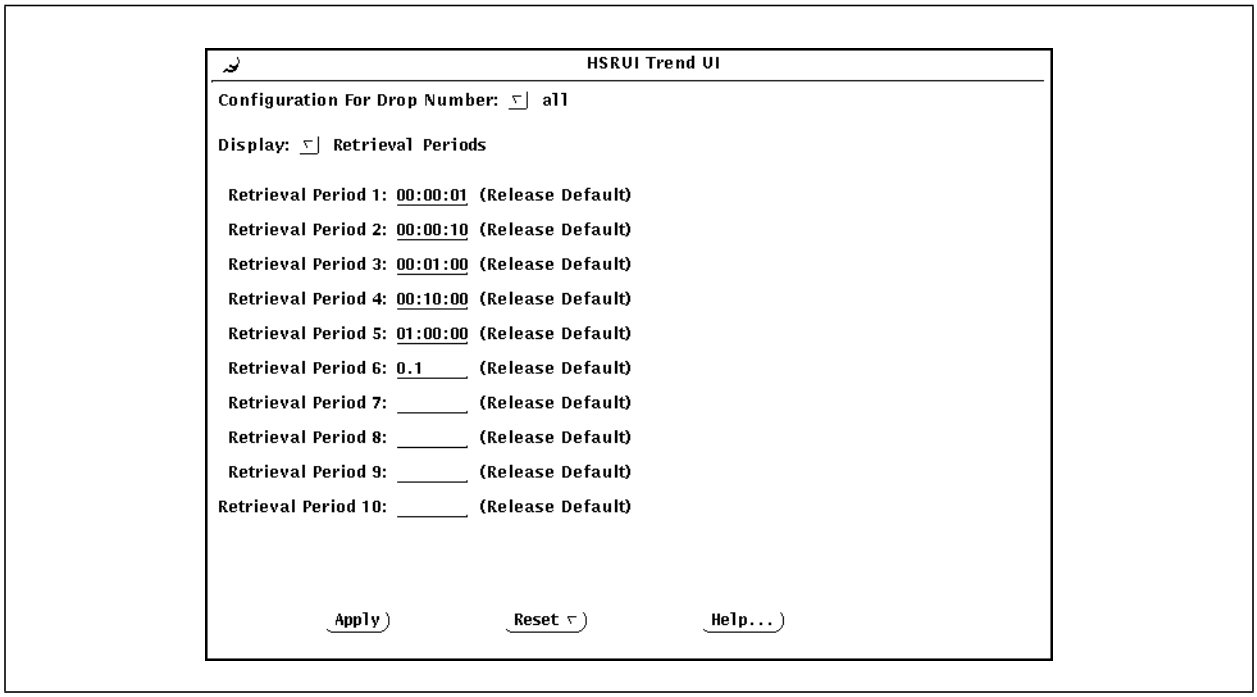

Figure 5-28. HSRUI Trend UI (Retrieval Periods Display)

Table 5-8 lists the available Options for the **HSRUI Trend UI** Topic.

Table 5-8. HSRUI Trend UI Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Display: (The screen displays the following for this option) • Window Colors and File Retrieval Options (Default) (See Figure 5-24)	Defines background color for trend windows. Defines foreground color for trend windows. Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines file entry chronological order.	Select from a Change Color list to change any of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default) • Save File Locally Enable **Disable** (Default) • Default Directory Name: Entry Field "**/tmp**" (Default) • Default File Ordering Forward **Reverse** (Default)
• Plot Colors for Points with Good Quality (See Figure 5-25)	These parameters define the plot colors for points with Good quality.	• Point1 (GOOD): **Red** (Default) • Point2 (GOOD): **Cyan** (Default) • Point3 (GOOD): **Green** (Default) • Point4 (GOOD): **DeepSkyBlue1** (Default) • Point5 (GOOD): **Magenta** (Default) • Point6 (GOOD): **Orange** (Default) • Point7 (GOOD): **Plum** (Default) • Point8 (GOOD): **Tan** (Default)

Table 5-8. HSRUI Trend UI Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Plot Colors for Points with Non-Good Quality (See Figure 5-26)	These parameters define the plot colors for points with Not-Good quality.	• Point1 (Not Good): **Yellow** (Default) • Point2 (Not Good): **HotPink** (Default) • Point3 (Not Good): **PeachPuff4** (Default) • Point4 (Not Good): **azure2** (Default) • Point5 (Not Good): **Black** (Default) • Point6 (Not Good): **DarkSeaGreen** (Default) • Point7 (Not Good): **aquamarine2** (Default) • Point8 (Not Good): **DarkGoldenRod** (Default)
• Miscellaneous Parameters (See Figure 5-27)	Defines grid line colors for Trend Display window. Specifies if log values are displayed in Scientific or Technical Notation (in Technical Notation, exponents are expressed in multiples of 3). Defines color for plot cross hair and time value hair cursor. Defines trend scale top limit for digital points not listed in trend_defaults_file. Defines trend scale bottom limit for digital points not listed in trend_defaults_file.	• Grid **mistyrose** (Default) • Notation on Logarithmic Plots: **Technical** (Default) Scientific • XOR Color Offset: **1** (Default) (Set from scale bar for values from1 through 255) • Digital Default High Scale: Entry Field **30.0** (Default) • Digital Default Low Scale: Entry Field **-10.0** (Default)

Table 5-8. HSRUI Trend UI Topic (Cont'd)

Item	Description	Setting Options
Display: (Cont'd) • Retrieval Periods (See Figure 5-28)	Defines default retrieval periods.	• Retrieval Period 1: Entry Field **00:00:01** (Default) • Retrieval Period 2: Entry Field **00:00:10** (Default) • Retrieval Period 3: Entry Field **00:01:00** (Default) • Retrieval Period 4: Entry Field **00:10:00** (Default) • Retrieval Period 5: Entry Field **01:00:00** (Default) • Retrieval Period 6: Entry Field **0.1** (Default) • Retrieval Periods 7, 8, 9, 10: Entry Field Default = " "

5-10. HSRUI Point Review

5-10.1. Overview

The **HSRUI Point Review** GUI defines configuration parameters specific only to the HSR Point Review UI.

5-10.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSRUI Point Review** from the Topic scrolling list.

   The **HSRUI Point Review** window will be displayed (as shown in Figure 5-29.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-9. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

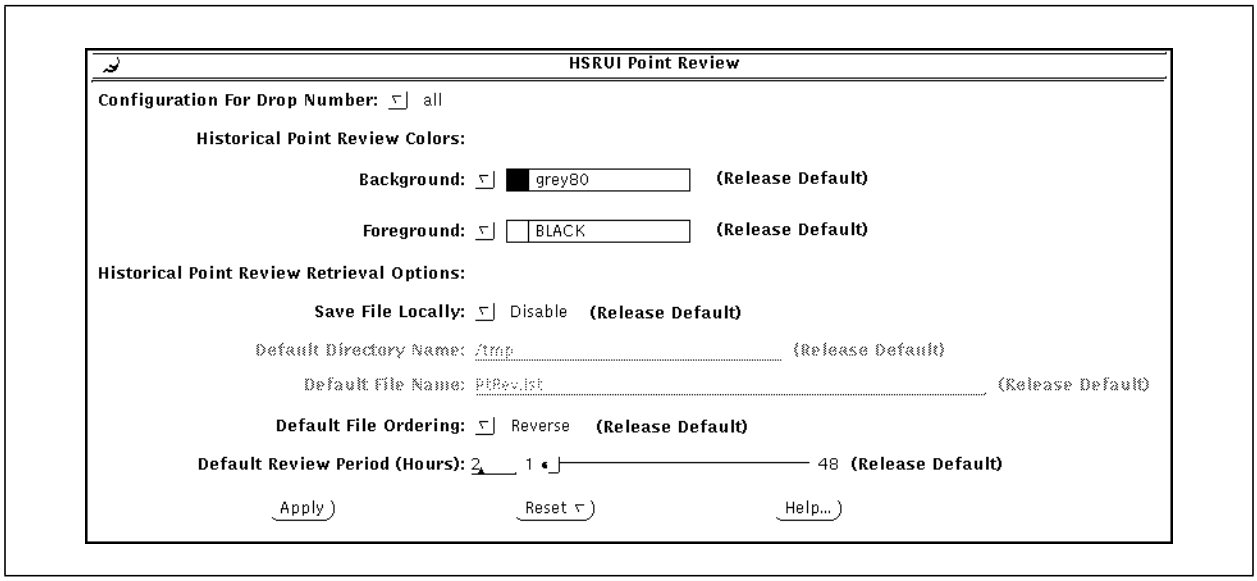

Figure 5-29. HSRUI Point Review

Table 5-9 lists the available Options for the **HSRUI Point Review** Topic.

Table 5-9. HSRUI Point Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.
Historical Point Review Colors:	Defines background/foreground colors for Point Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
Historical Point Review Retrieval Options:	Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines local file where HSR data should be stored. Defines file entry chronological order. Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.	• Save File Locally Enable **Disable** (Default) • Default Directory Name: **/tmp** (Default) • Default File Name: **PtRev.lst** (Default) • Default File Ordering Forward **Reverse** (Default) • Default Review Period (hours): **2** (Default) (Set from scale bar for values from1 through 48)

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5-11. HSRUI SOE Review

5-11.1. Overview

The **HSRUI SOE Review** GUI defines configuration parameters specific only to the HSR SOE Review UI.

5-11.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSRUI SOE Review** from the Topic scrolling list.

   The **HSRUI SOE Review** window will be displayed (as shown in Figure 5-30.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-10. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

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7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

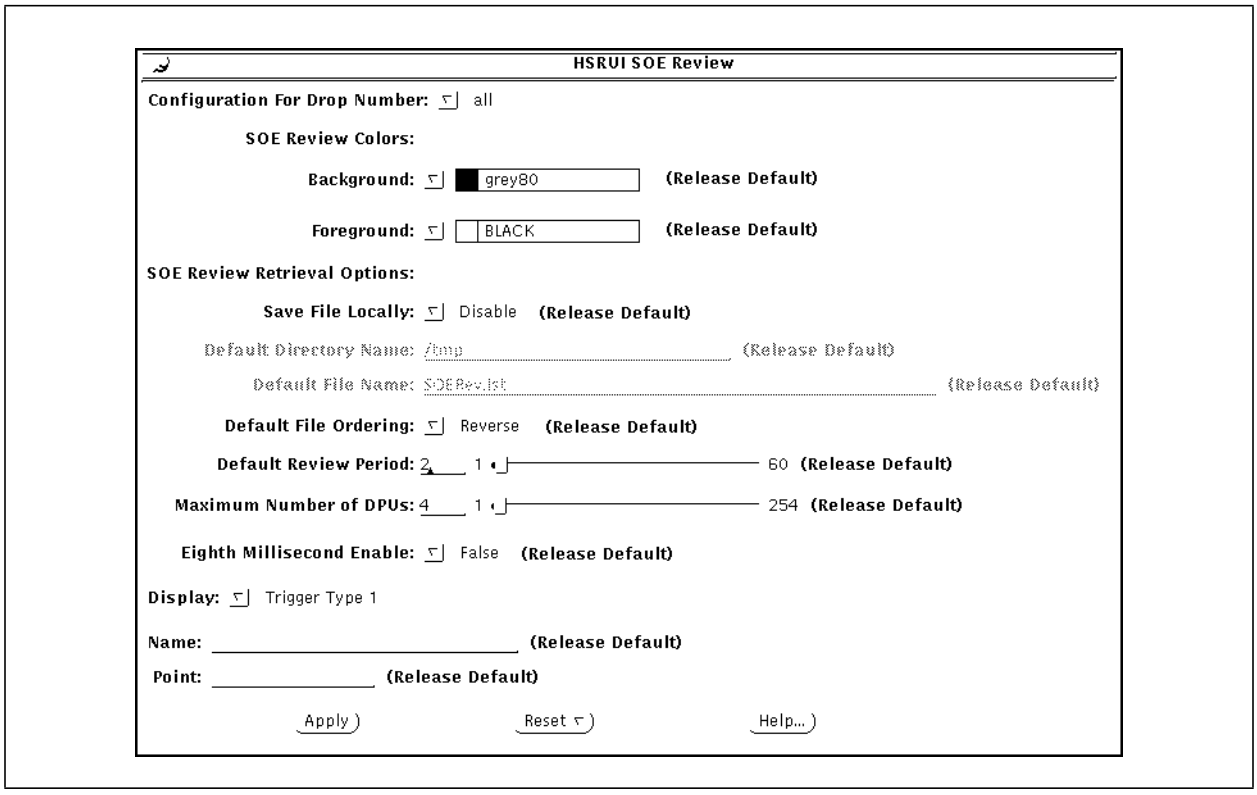

Figure 5-30. HSRUI SOE Review

Table 5-10 lists the available Options for the **HSRUI SOE Review** Topic.

Table 5-10. HSRUI SOE Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

Table 5-10. HSRUI SOE Review Topic (Cont'd)

Item	Description	Setting Options
SOE Review Colors:	Defines background/foreground colors for SOE Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
SOE Review Retrieval Options:	Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines local file where HSR data should be stored. Defines file entry chronological order. Defines amount of time in Default Review Period. The start time for data retrieval is equal to current time minus the Default Review Period. Defines maximum number of DPUs in the configuration. Enables 1/8 millisecond division for times of SOE event.	• Save File Locally Enable **Disable** (Default) • Default Directory Name: **/tmp** (Default) • Default File Name: **SOERev.lst** (Default) • Default File Ordering Forward **Reverse** (Default) Default Review Period: **2** (Default) (Set from scale bar for values from1 through 60) • Maximum Number of DPUs: **4** (Default) (Set from scale bar for values from1 through 254) • Eighth Millisecond Enable: True **False** (Default) • Display: (Choose from list Trigger Type1 through Trigger Type10) **Trigger Type 1** (Default) • Name: Entry Field Default = " " • Point: Entry Field Default = " "

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5-12. HSRUI File List Review

5-12.1. Overview

The **HSRUI File List Review** GUI defines configuration parameters specific only to the HSR File List Review UI.

5-12.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSRUI File List Review** from the Topic scrolling list.

   The **HSRUI File List Review** window will be displayed (as shown in Figure 5-31.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-11. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

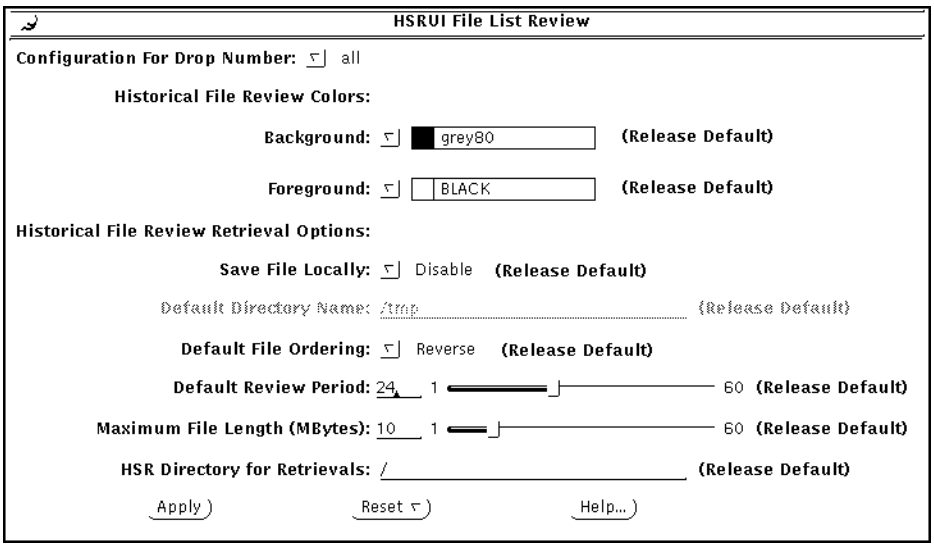

Figure 5-31. HSRUI File List Review

Table 5-11 lists the available Options for the **HSRUI File List Review** Topic.

Table 5-11. HSRUI File List Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

Table 5-11. HSRUI File List Review Topic (Cont'd)

Item	Description	Setting Options
Historical File Review Colors:	Defines background/foreground colors for File List Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
Historical File Review Retrieval Options:	Enables data retrieved from HSR to be stored locally.	• Save File Locally Enable **Disable** (Default)
	Defines local directory where HSR data should be stored.	• Default Directory Name: **/tmp** (Default)
	Defines file entry chronological order.	• Default File Ordering Forward **Reverse** (Default)
	Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.	Default Review Period: **24** (Default) (Set from scale bar for values from1 through 60)
	Defines maximum size of the file to retrieve from HSR.	• Maximum File Length (Mbytes): **10** (Default) (Set from scale bar for values from1 through 60)
	Default HSR directory to be searched for files and subdirectories.	• HSR Directory for Retrievals: **/** (Default)

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5-13. HSRUI Alarm Message Review

5-13.1. Overview

The **HSRUI Alarm Message Review** GUI defines configuration parameters specific only to the HSR Alarm Message Review UI.

5-13.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSRUI Alarm Message Review** from the Topic scrolling list.

   The **HSRUI Alarm Message Review** window will be displayed (as shown in Figure 5-32.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-12. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

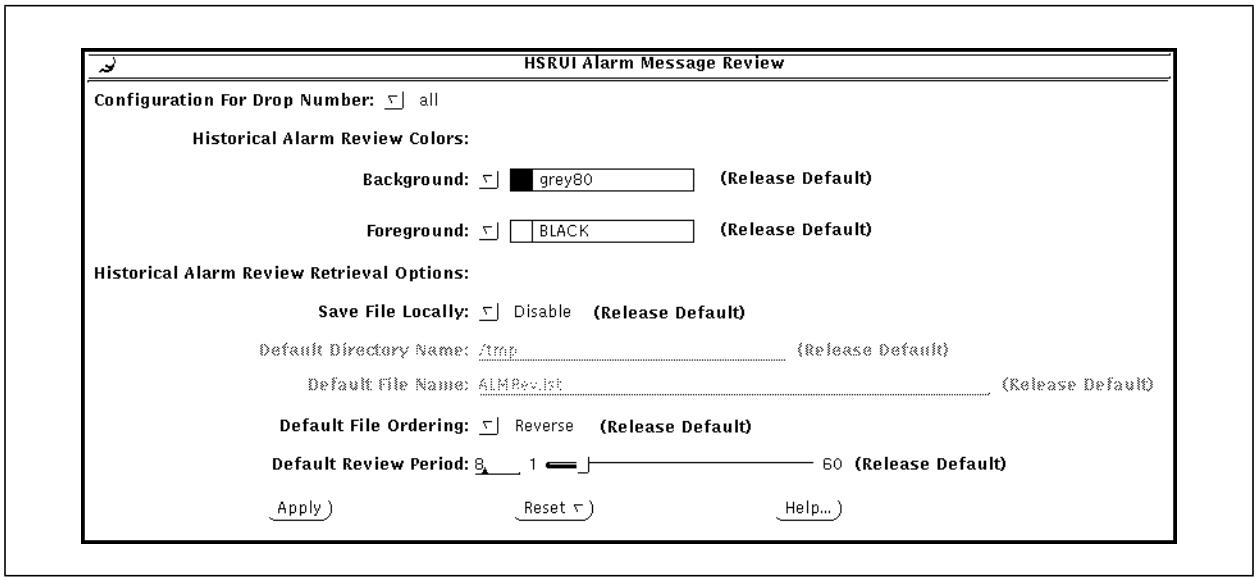

Figure 5-32. HSRUI Alarm Message Review

Table 5-12 lists the available Options for the **HSRUI Alarm Message Review** Topic.

Table 5-12. HSRUI Alarm Message Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

Table 5-12. HSRUI Alarm Message Review Topic (Cont'd)

Item	Description	Setting Options
Historical Alarm Review Colors:	Defines background/foreground colors for Alarm Message Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
Historical Alarm Review Retrieval Options:	Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines local file where HSR data should be stored. Defines file entry chronological order. Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.	• Save File Locally Enable **Disable** (Default) • Default Directory Name: **/tmp** (Default) • Default File Name: **ALMRev.lst** (Default) • Default File Ordering Forward **Reverse** (Default) Default Review Period: **8** (Default) (Set from scale bar for values from1 through 60)

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5-14. HSRUI Operator Event Review

5-14.1. Overview

The **HSRUI Operator Event Review** GUI defines configuration parameters specific only to the HSR Operator Event Review UI.

5-14.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.

2. Select the **Define Software Configuration** from the pull down Function menu.

3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.

4. Select **HSRUI Operator Event Review** from the Topic scrolling list.

   The **HSRUI Operator Event Review** window will be displayed (as shown in Figure 5-33.

5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-13. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.

6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

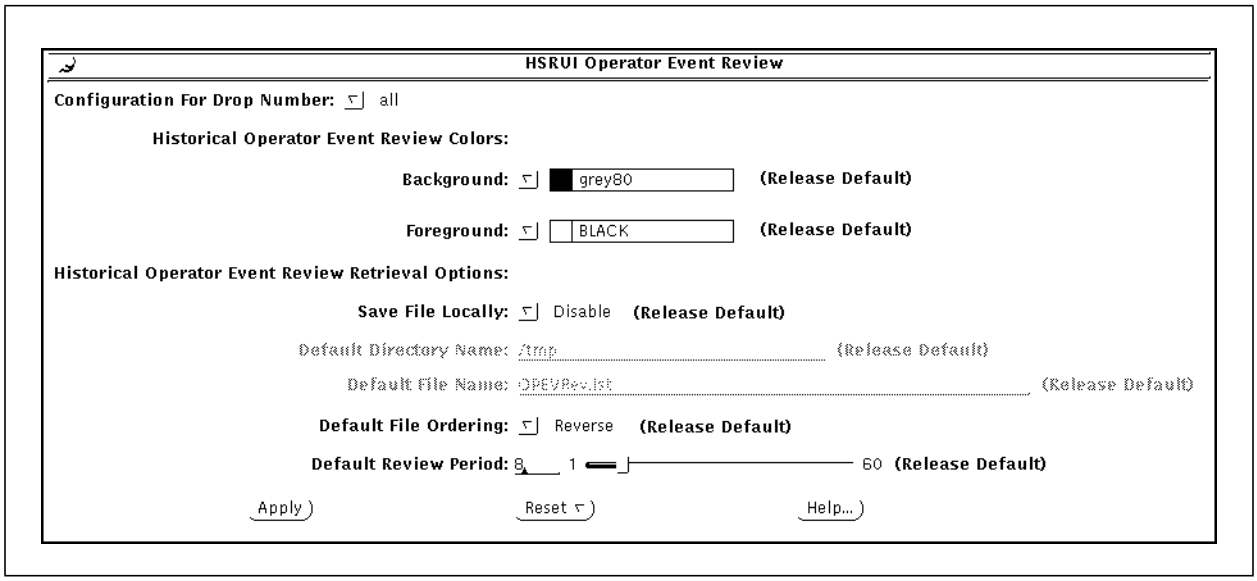

Figure 5-33. HSRUI Operator Event Review

Table 5-13 lists the available Options for the **HSRUI Operator Event Review** Topic.

Table 5-13. HSRUI Operator Event Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

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Table 5-13. HSRUI Operator Event Review Topic (Cont'd)

Item	Description	Setting Options
Historical Operator Event Review Colors:	Defines background/foreground colors for Operator Event Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
Historical Operator Event Review Retrieval Options:	Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines local file where HSR data should be stored. Defines file entry chronological order. Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.	• Save File Locally Enable **Disable** (Default) • Default Directory Name: **/tmp** (Default) • Default File Name: **OPEVRev.lst** (Default) • Default File Ordering Forward **Reverse** (Default) Default Review Period: **8** (Default) (Set from scale bar for values from1 through 60)

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5-15. HSRUI ASCII Message Review

5-15.1. Overview

The **HSRUI ASCII Message Review** GUI defines configuration parameters specific only to the HSR ASCII Message Review UI.

5-15.2. Procedure

1. Use the mouse to select the **WDPF Admin Tool** icon from the Engineering WEStation screen.
2. Select the **Define Software Configuration** from the pull down Function menu.
3. Select the **Historical Storage/Retrieval Filter** from the Filter scrolling list.
4. Select **HSRUI ASCII Message Review** from the Topic scrolling list.

   The **HSRUI ASCII Message Review** window will be displayed (as shown in Figure 5-34.
5. Make the desired changes in the Topic configuration window. The setting options are described in Table 5-14. If necessary, use the Help button to display pages that describe the fields on the configuration window.

   Note

   If a change is typed in an entry field, press the **Return** key to accept the change.
6. After the configuration is completed, select one of the following:

   Apply button to save the changes that were made

   OR

   Reset pull-down menu with the following options:
   - **Use Values from Last Apply** (reverts settings to last applied settings)
   - **Review all Entered Data** (displays a list of all the entries that have been applied and allows the user to remove these entries).

7. After all the desired configuration changes are complete, the following must be done before the changes will take affect:

   - Use the “Install Configuration on Software Server” function (described in “Defining and Configuring WEStations” (U0-8300)) to install the changes on the Software Server.

   - Use the “Download Configuration to Drops” function (described in “Defining and Configuring WEStations” (U0-8300)) to download the modified files from the Software Server to the appropriate drops.

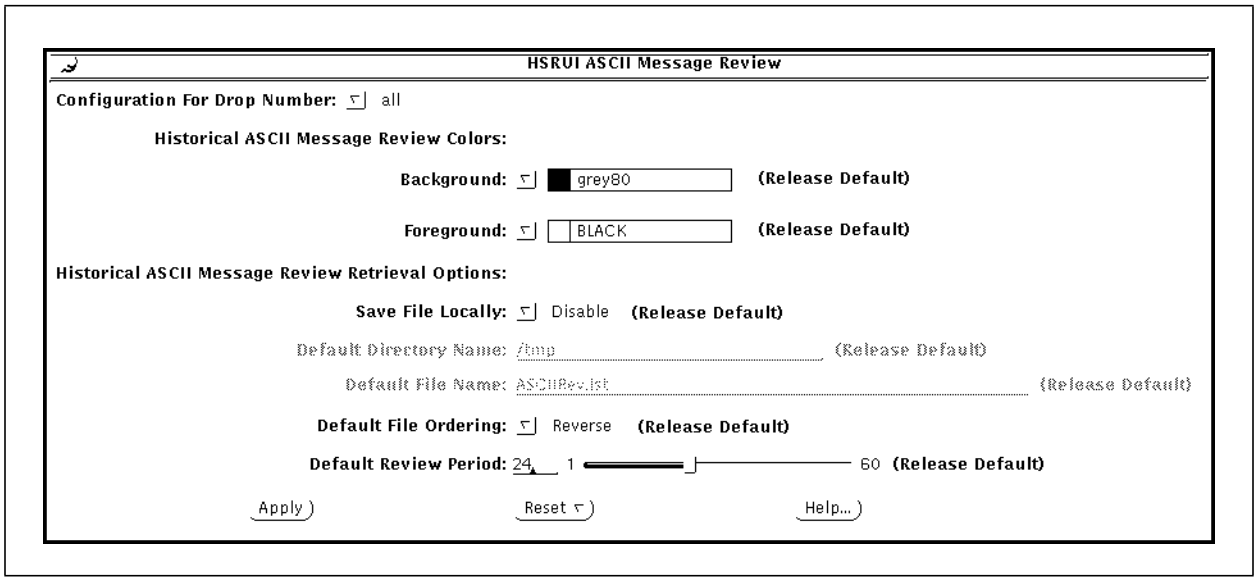

Figure 5-34. HSRUI ASCII Message Review

Table 5-14 lists the available Options for the **HSRUI ASCII Message Review** Topic.

Table 5-14. HSRUI ASCII Message Review Topic

Item	Description	Setting Options
Configuration For Drop Number		**All** (Selects all drops to apply the changes for this Topic.)
		Select from a list of drops to apply the changes for this Topic.

Table 5-14. HSRUI ASCII Message Review Topic (Cont'd)

Item	Description	Setting Options
Historical ASCII Message Review Colors:	Defines background/foreground colors for ASCII Message Review window.	Select from a Change Color list to change either of the default colors below. • Background: **grey80** (Default) • Foreground: **BLACK** (Default)
Historical ASCII Message Review Retrieval Options:	Enables data retrieved from HSR to be stored locally. Defines local directory where HSR data should be stored. Defines local file where HSR data should be stored. Defines file entry chronological order. Defines amount of time in Default Review Period. When a review window is first displayed, the start time for data retrieval is equal to current time minus the Default Review Period.	• Save File Locally Enable **Disable** (Default) • Default Directory Name: **/tmp** (Default) • Default File Name: **ASCIIRev.lst** (Default) • Default File Ordering Forward **Reverse** (Default) Default Review Period: **24** (Default) (Set from scale bar for values from1 through 60)

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Section 6. History Point Information Compiler

6-1. Section Overview

The History Point Information Compiler source file (**hsrpic**) and its source file (**hsrpicfile.src**) are used to define the points that are collected, stored, and retrieved by various HSR functions. Additional point-related information, referred to as historical attributes, are also defined in this file.

This file is made up of compiler directive statements and point declaration statements.

This section describes the statements used in the **hsrpicfile.src** file. The following topics are included:

- History Point Information Compiler file format (Section 6-2).
- Format for Database Compiler Statements (Section 6-3).
- Compiler and directive statements (Section 6-4).
- Compiling the source file (Section 6-5).
- hsrpicfile error and warning messages (Section 6-6.).

Compiler statements are used in a text source file to define point information. The sample source file in Figure 6-1 illustrates the format and syntax of the **hsrpic** compiler source file statements.

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```
/TITLE `HSR Station Point Information Example’
/LIST
; Everything to the right of a semicolon is a comment
;
; Keywords which control the compiler are identified by
; a slash
; Assign points to Main History with a default deadband
; of 1 percent
/DEF HISTORY=MAIN DEADBAND=1.0 DB_ALG=PCT_RANGE
; Point name statements can be combined on a single line
BAOR001, BAOR002, BAOR003, BAOR004, BARV001, BARV002
; The next points historical attribute values supersede
; those specified in the /DEF statement above
BARV003 DEADBAND=10.0 DB_ALG=STANDARD
BARV004 DEADBAND=2.0 DB_ALG=PCT_RANGE
; The following points historical attributes are all
; specified in the point declaration statement.
; No defaults are used.
/NODEF
 CAOR001 HISTORY=MAIN DEADBAND=100.0 DB_ALG=STANDARD
 CAOR002 HISTORY=MAIN DEADBAND=100.0 DB_ALG=STANDARD
 BDOR001 HISTORY=MAIN ;This is a digital. No deadband required.
 BDOR002 HISTORY=MAIN ;This is a digital. No deadband is
required.
 DROP100 HISTORY=MAIN ;This is drop status pt. No deadband is
; required.
 PB001001 HISTORY=MAIN ; This is a packed digital. No deadband
is
; required.
GP100S01 HISTORY=MAIN ; This is a packed group. No deadband
; is required.
; The following points are assigned to the Long Term
; History subsystem. These points cannot be duplicated
; in the Main or Lab Data subsystems.
/DEF HISTORY=LONGTERM DEADBAND=5 DB_ALG=PCT_RANGE
 DAFDWA
 DALEVL
 DASETP
 DASTMF
/DEF HISTORY=LONGTERM
 DROP210
 DROP212
 GP100S02
 P0010911
 DC001PK6
```

Figure 6-1. Sample hsrpicfile.src File

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```
; The following points are assigned to the Laboratory Data
; History subsystem. These points cannot be duplicated
; in the Main or Long Term History subsystems.
 /DEF HISTORY=LAB_DATA
 PAALM01 ; Analogs do not require a deadband for Lab Data
 PAALM02
 SDALM09 ; Nor do digitals.
 SDALM10
; The following points are assigned to the Event History
; subsystem. None of these are triggers.
 /DEF HISTORY=EVENT TRIG_FLAG=0 TRIG_STATE=0
 BAOR001 ; Points that are collected by other subsystems
 BAOR002
 BDOR001 ; can also be collected by the Event History.
 BDOR002
; This point is an event trigger. It will initiate the save
; of the Event History buffer when it is set to 1.
 SDALM13 TRIG_FLAG=1 TRIG_STATE=1
; This point is also an event trigger.It will initiate the save of
; the Event History buffer when bit 10 of the point is set to 1.
PB100SO2 TRIG_FLAG=1 TRIG_STATE=1 PB_BIT=10
; The following points are assigned to the SOE History subsystem.
; These points must be digital points with DI record types and
; can also be collected by other subsystems. Default values
; for suppression and restoration parameters are specified.
 /DEF HISTORY=SOE LF_SUPP=25 LF_REST=65
 SDSOE01
 SDSOE02
 SDSOE03
 SDSOE04
 SDSOE05
 SDSOE06
 SDSOE07
 SDSOE08
; The following SOE points are considered potential causes
; for the trip #1 trigger point.
 /DEF HISTORY=SOE LF_SUPP=25 LF_REST=65 TRIP1_CAUSE=1
TRIP1_CAUSE_STATE=1
 SDSOE09
 SDSOE10
 SDSOE11
 SDSOE12
 SDSOE13
 SDSOE14
; The following point is the trip #1 trigger point.
SDSOE16 HISTORY=SOE TRIP1_TRIGGER=1 TRIP1_STATE=1 TRIP1_CAUSE=0
LF_SUPP=5 LF_REST=10
/END
; The end statement terminates the compile, all text following
; is ignored, a warning is issued and the ignored line is listed.
```

Figure 6-1. Sample hsrpicfile.src File (Cont'd)

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6-2. hsrpic Source File Format

The **hsrpic** source file is made up of compiler directive statements and point declaration statements with historical attributes which define the data collected and stored by the HSR. These statements are described in Section 6-4.

This section discusses the following items and the guidelines for their use in the **hsrpic** compiler source file:

- Characters (Section 6-2.1)
- Character strings (Section 6-2.2)
- Constants (Section 6-2.3)
- Line format (Section 6-2.4)
- Point names (Section 6-2.5)

6-2.1. Characters

The following characters are acceptable in the **hsrpic** compiler source file:

- Alphabetic Characters (**a** through **z** and **A** through **Z**).
- Numeric Characters (**0** through **9**).
- Special Characters are acceptable as the following:
  - — Comma (,) to separate list elements and/or indicate a continued statement.
  - — Plus sign (+) to indicate a positive number.
  - — Minus sign (-) to indicate a negative number.
  - — Semicolon (;) to indicate the beginning of a comment line.
  - — Equal sign (=) to indicate equivalent elements.
  - — Slash (/) must be entered before a hsrpic declaration command.
  - — Single quote (') to delineate a character string.

6-2.2. Character Strings

A character string is any sequence of valid printable characters enclosed in single quotes ('). The valid range is 1 to 50 characters, unless stated otherwise.

To use the single quote character within a string, it must be indicated with back-to-back single quotes as shown in the following example:

'123''456' will result in 123'456

6-2.3. Constants

The hsrpic compiler recognizes **integer** and **real** constants.

- Integer Constants

Integer constants are positive or negative (signed) values between –32767 and +32767. They are written without a decimal point and may consist of one to five digits (each digit may be between 0 - 9). Leading zeroes are ignored.

Unsigned integer constants are unsigned values between 0 and 65535. They are written without a decimal point and may consist of one to five digits (each digit may be between 0 - 9). Leading zeroes are ignored.

- Real Constants

Real constants are represented in either decimal or scientific notation.

Decimal notation represents the number with an optional sign, an integer part, a decimal point, and a fractional part. Both the integer and fractional parts may contain a sequence of zero to eight decimal digits.

If an integer is used to specify a value for a real number field, it will be converted automatically to real number format (that is, 34 will be converted to 34.0).

Scientific notation permits easy representation of very large or very small real numbers. Numbers are represented with an optional sign, an integer part, a decimal point, and a fractional part, followed by the exponent. The exponent (power of 10) is indicated by the letter E, an optional sign, and one or two decimal digits ranging in value from –37 to +38. The minimum value is 8.43E–37, and the maximum value is 3.37E+38.

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Examples

The following examples are numbers written using scientific notation.

```
  10.0
–10.0
  1.0E37
–1.0E–33
```

6-2.4. Line Format

A hsrpic statement is free format, and blanks may be used anywhere. To continue a statement on multiple lines, a comma must be used at the end of each line except the last.

6-2.5. Point Names

The following rules must be followed to ensure valid point names:

1. Point names must be defined in the System Point Directory (**spd.dir**). For more information on defining point names, "System Point Directory User's Guide" (U0-8205).
2. A point name must be a sequence of 1 to 8 characters for points on an **eight-character network**.
3. A point name must be a sequence of 1 to 16 characters for points on an **extended-tag network**.
4. Characters may be any combination of alphabetic, numeric (0 - 9), or special punctuation characters (seeTable 6-1).

Caution

WEStation drops that interface with Standard or PCH drops (software prior to 8-Level) must observe the point naming conventions for Standard systems.

Refer to "MAC Application Utilities" (U0-0136) or "PCH General Utilities" (U0-2415) for point naming guidelines.

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5. Point names are not case-sensitive. Lower case characters will be converted to upper case.

   For example, point name **A0113** is considered the same as **a0113**.

6. A point name **cannot** be a reserved word, or contain reserved characters.

   - For a listing of reserved graphic words, refer to "WEStation Graphics Language Reference Manual" (U0-8211).
   - For a listing of reserved point name characters, refer to Table 6-2.
   - For guidelines on entering valid point names for use with a MAC program loader, refer to "MAC Application Utilities User's Guide" (U0-0136).

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Table 6-1. Valid Point Name Characters

Character	ASCII (in HEX)	Character	ASCII (in HEX)	Character	ASCII (in HEX)
!	21	;	3B	P	P
"	22	<	3C	Q	51
#	23	=	3D	R	52
’	27			S	53
(	28	>	3E	T	54
)	29	?	3F	U	55
+	2B	A	41	V	56
-	2D	B	42	W	57
.	2E	C	43	X	58
/	2F	D	44	Y	59
0	30	E	45	Z	5A
1	31	F	46	[	5B
2	32	G	47	]	5D
3	33	H	48	^	5E
4	34	I	49	_	5F
5	35	J	4A	‘	60
6	36	K	4B	{	7B
7	37	L	4C	|	7C
8	38	M	4D	}	7D
9	39	N	4E		
:	3A	O	4F		

Table 6-2. Reserved Point Name Characters

Character	ASCII (in HEX)	Character	ASCII (in HEX)	Character	ASCII (in HEX)
$	24	*	2A	\	5C
%	25	,	2C	~	7E
&	26	@	40		

6-3. Format for Database Compiler Statements

The hsrpic compiler statements fall into two categories:

- **Compiler directives** are indicated by a slash (/). They are used to control the formatting of the list file, and to direct the compiler to define the default values.

  Examples are TITLE, LIST/NOLIST, DEF/NODEF, PAGE, and END statements.

- **Point Declaration statements** require no indicator. They are used to define the fields required to identify a point and specify the history file where it will be collected, plus other optional fields. If desired, they can override current default values for point fields.

  Comment lines (indicated by semicolons (;)) may also appear in the database compiler source file and list file.

6-3.1. hsrpic Statement Definitions

All of the available command line statements are described on the following reference pages. The statements are presented in alphabetical order as follows:

- Directives
  - — DEF
  - — END
  - — LIST
  - — NOLIST
  - — NODEF
  - — PAGE
  - — TITLE
- Point Declaration Statements
- Historical Attributes
  - — DB_ALG
  - — DB_K_VAL
  - — DB_N_VAL

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— DEADBAND

— GP_BIT

— HISTORY

— LF_REST

— LF_SUPP

— PB_BIT

— TRIG_FLAG

— TRIG_STATE

— TRIPn_CAUSE

— TRIPn_CAUSE_STATE

— TRIPn_STATE

— TRIPn_TRIGGER

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6-4. Compiler and Directive Statements

The following pages detail the use and syntax of the compiler and directive statements.

DEF

Description

DEF allows the user to specify default values for any historical attributes for a WDPF process point in an hsrpic source file. The values specified in a /DEF statement will override any previously defined default values for that attribute.

Syntax

/DEF
OR
/DEF [*attribute* = *value*….]

where:

attribute	=	Valid historical attribute
value	=	Valid value for attribute (for example, a real number for DEADBAND)

If the DEF statement is not specified or if record attributes are not used with the DEF statement, the system default values are used.

Rules

1. Default values can be specified for any user-initialized historical attribute. These default values specified for the historical attributes are used for all subsequent point declaration statements until the next DEF statement overrides the current default values (or until the NODEF statement clears the values). If the attribute is not valid for the subsequent point declaration statement, it is ignored and a warning message is logged to the list (.lst) file.

2. The DEF statement can be used anywhere in the hsrpic source file and it can be specified more than once in the source file.

3. All points specified in point declaration statements after the DEF statement use the new default values specified in the DEF statement. If no attributes are specified with the DEF statement, the compiler expects the parameters to be specified in the following point declaration statements. If no attributes are specified in either the DEF or point declaration statements, an error is logged to the list (.lst) file when one is expected.

Example

```
/DEF HISTORY=MAIN DEADBAND=1.0 DB_ALG=PCT_RANGE
AMXI01
AMXI02
AMXI03 DEADBAND=1.25 DB_ALG=STANDARD
```

In this example, the /DEF directive specifies that subsequent points will be collected in the Main History with an analog point deadband of 1.0 percent of the point's operating range. These default values are used for points AMXI01 and AMXI02; for point AMXI03, a fixed deadband of 1.25 is specified (overriding the defaults specified for the DEADBAND and DB_ALG historical attributes).

END

Description

END defines the logical termination of an hsrpic source program. The compiler ignores any statements found after an END statement and generates a warning message.

Syntax

/END

Rule

1. An END statement is required in every hsrpic source program.

Example

```
/END
```

Description

LIST specifies whether or not the input source should be written to the list file. The output listing file consists of a header on each page (title, page number, HSRPIC compiler version, date and time of compile), a line numbered list of the input source file (optional), warning messages and error messages.

LIST or NOLIST are non-echo statements; that is, they are not included in the output listing file (if /LIST is specified).

Syntax

/LIST
OR

/NOLIST

Rules

1. The LIST statement is optional.
2. The default is /NOLIST; in this case, only errors and warnings are written the list file.
3. Multiple LIST and NOLIST statements can be used anywhere in the source file.
4. The LIST or NOLIST statements turn on or off the writing of the listing file. For example, if LIST is specified in the beginning of the source file to start outputting to the listing file, the listing file is written to until NOLIST (or the end of the source file) is found.

Example

```
/LIST
:
/NOLIST
:
```

In this example, all subsequent lines after the /LIST (except non-echo statements) are listed in the listing file, until /NOLIST. All lines after /NOLIST are not listed in the listing file.

NODEF

Description

NODEF disables the use of defaults. This has the following effects:

- Clears all the historical attributes defined by the previous DEF statement.
- Specifies that the required historical attributes must be included in any subsequent point declaration statement (until the next /DEF statement).

Syntax

/NODEF

Rules

1. There are no parameters for the NODEF statement.
2. The NODEF statement is in effect until a DEF statement is found.
3. The NODEF statement can be used anywhere in the input source file and it can be specified more than once in a source file. If NODEF is specified, errors are generated if any point declaration statement does not have ALL of its required historical attributes defined.

Example

```
/NODEF
```

Description

PAGE allows the user to insert a page eject in the output listing file. If the NOLIST option is specified, the PAGE statement is ignored and no error or warning message is generated.

PAGE is a non-echo statement; that is, it is not included in the output listing file (if /LIST is specified).

Syntax

/PAGE

Rules

1. There are no parameters for the PAGE statement. It can be used anywhere in the input source file.
2. Multiple PAGE statements can be used within one source file.

Example

```
/PAGE
```

TITLE

Description

TITLE assigns a title to identify the source and output files. The title is copied to the output listing file.

TITLE is a non-echo statement, it is not included in the output listing file (if /LIST is specified).

Syntax

/TITLE [‘*text*’]

where:

text = String of alphanumeric or special characters with up to 75 characters, enclosed in single quotes. If text is not specified, the title will be all blanks.

This is an optional statement. The default is a blank line.

Rules

1. The TITLE statement can be used anywhere in the input source file.
2. Multiple TITLE statements are allowed, the new TITLE replaces the previously specified TITLE in the next page of the output listing file.

Example

```
/TITLE 'Project Number 29 Version A'
```

This statement will place the phrase in single quotes at the top of the next page of the output listing file.

Description

Point declaration statements define WDPF process points and all their historical attributes in an hsrpic source file. The statement consists of the point names and the historical attribute statements used to define the point's historical attributes (for example, history subsystem where the point will be collected).

Various historical attributes may be required depending on the value assigned to the HISTORY attribute. Required attributes may be omitted from the point declaration statement if they have been included in the previous DEF statement.

Syntax

pt-name [*attr=value*]…

where:

pt-name	=	Valid WDPF process point name.
attr	=	Valid user-initialized historical attribute name for the specified history type (HISTORY attribute). Any number of valid historical attributes for the point may be specified in a single point declaration statement.
value	=	Valid data value to assign to the specified historical attribute of the point. This value may be a real constant, an integer constant, or a text string.

The default values for each of the attributes will be the default values specified in a previous /DEF statement. If no default is specified, an error may occur.

Rules

1. The HISTORY attribute must be specified for each point declaration statement. (See the HISTORY reference page in this section for more information.)
2. The user may define a default value by using a DEF statement (for example, /DEF HISTORY= EVENT). If not default is specified, an error will occur.
3. There should be no blank spaces between **attr=** and **value**.

Example

```
A100 HISTORY=EVENT TRIG_FLAG=0 TRIG_STATE=0
```

In this example, the point record A100 is collected by the Event History function with assigned values for TRIG_FLAG and TRIG_STATE. (This point is not a trigger point).

Description

DB_ALG specifies the type of deadband algorithm used by the Main History or Long Term History functions for collection of analog points. The DB_ALG attribute specifies how the deadband value (DEADBAND attribute) is used:

- DEADBAND is interpreted as a value in engineering units.
- DEADBAND is interpreted as a percentage of the operating range of the point.
- DEADBAND is calculated as a ratio of the previously stored value.
- DEADBAND is used as an argument in calculating logarithmic or exponential deadbands.

Syntax

DB_ALG = *algorithm type*

where:

algorithm type = Any of the following:

FLOW
LOG
PCT_RANGE
POWER
RADIATION
RATIO
STANDARD

For definitions of these algorithm types, see “Rules” section below.

Rules

1. Any value assigned to DB_ALG is only valid for analog points.
2. A default value for DB_ALG can be defined with the DEF statement.

3. A DB_ALG assignment is required for all analog points with a HISTORY attribute equal to MAIN or LONGTERM.

4. The DB_ALG values have the following definitions and rules:

FLOW	1. A comparison is made between the current collection deadband and the results of the current and previous stored process values raised to the power specified by 1/DB_N_VAL. 2. The collection deadband is calculated as follows: DEADBAND * (DB_K_VAL**1/DB_N_VAL) 3. Only up to 300 points can be selected between both the Main History and Long Term History functions. 4. DB_N_VAL is fixed at 0.5.
LOG	1. A comparison is made between the current collection deadband and the logarithms of the current and previously stored process values. 2. The collection deadband is calculated as follows: DEADBAND * DB_K_VAL 3. Only up to 300 points can be selected between both the Main History and Long Term History functions.
PCT_RANGE	1. DEADBAND value is interpreted as a percentage of the operating range defined by the full scale value (point record field TB) minus the its minimum scale value (point record field BB). 2. DEADBAND value cannot be greater than 100.
POWER	1. A comparison is made between the current collection deadband and the results of the current and previous stored process values raised to the power specified by 1/DB_N_VAL. 2. The collection deadband is calculated as follows: DEADBAND * (DB_K_VAL**1/DB_N_VAL) 3. Only up to 300 points can be selected between both the Main History and Long Term History functions.

RADIATION	1. A comparison is made between the current collection deadband and the logarithms of the current and previously stored process values. 2. The collection deadband is calculated as follows: DEADBAND * DB_K_VAL 3. Only up to 300 points can be selected between both the Main History and Long Term History functions. 4. DB_N_VAL is fixed at 10.0.
RATIO	1. The collection deadband is recalculated every time the process value differs from the last stored value by the amount specified by DEADBAND. The new collection deadband must be calculated to be a percentage of the new collection's value. 2. Only up to 300 points can be selected between both the Main History and Long Term History functions.
STANDARD	1. DEADBAND value is interpreted in engineering units.

Example

```
A100 HISTORY=LONGTERM DEADBAND=2.0 DB_ALG=LOG DB_N_VAL=10.0
DB_K_VAL=1.0
```

DB_K_VAL

Description

DB_K_VAL specifies a value which is used by the special deadband algorithms FLOW, POWER, RADIATION, and LOG for analog points. See **DB_ALG** attribute for more information.

Syntax

DB_K_VAL = *x*

where:

x = A positive real constant.

Rules

1. The DB_K_VAL attribute is only necessary when choosing a RADIATION, LOG, POWER, or FLOW deadband algorithm and is ignored in all other cases.
2. A default value for DB_K_VAL can be defined with the DEF statement.

Example

```
A100   HISTORY=MAIN DEADBAND=2.0   DB_ALG=FLOW    DB_K_VAL=1.0
```


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Description

DB_N_VAL specifies a value which is used by the special deadband algorithms POWER and LOG for analog points. See **DB_ALG** attribute for more information.

Syntax

DB_N_VAL = *x*

where:

x = A positive real constant.

Rules

1. The DB_N_VAL attribute is only necessary when choosing a LOG or POWER deadband algorithm and is ignored in all other cases.
2. A default value for DB_N_VAL can be defined with the DEF statement.
3. If DB_ALG=FLOW, then the value for N is fixed at 0.5 and DB_N_VAL need not be specified.
4. If DB_ALG=RADIATION, then the value for N is fixed at 10.0 and DB_N_VAL need not be specified.
5. The DB_N_VAL attribute represents the base of the log for the RADIATION algorithm.

Example

```
HISTORY=MAIN   DEADBAND=2.0    DB_ALG=POWER    DB_N_VAL=2.0
DB_K_VAL=1.0
```

DEADBAND

Description

DEADBAND specifies the collection deadband for analog points to be collected by the Main History or Long Term History functions. The collection deadband defines the amount that a point's value must change from the point's previously stored value, before a new sample is stored into a historical data file. This attribute is used in conjunction with DB_ALG and other related historical attributes.

Syntax

DEADBAND = *x*

where:

x = A positive real constant.

Rules

1. DEADBAND is valid only for analog points.
2. A DEADBAND value assignment is required for all analog points with a HISTORY attribute equal to MAIN or LONGTERM.
3. DEADBAND must be assigned a positive, non-zero value.
4. If the DB_ALG attribute is assigned a value of STANDARD, the DEADBAND value is interpreted in engineering units.
5. If the DB_ALG attribute is assigned a value of PCT_RANGE, the DEADBAND value is interpreted as a percentage of the operating range defined by the point's full scale value (point record field TB) minus its minimum scale value (point record field BB).
6. If the DB_ALG attribute is assigned a value of RADIATION, LOG, FLOW, or POWER, then the DEADBAND value is used in conjunction with DB_N_VAL and DB_K_VAL in calculating a new collection deadband.
7. A default value for DEADBAND can be defined with the DEF statement.

Example

```
A100    HISTORY=MAIN    DEADBAND=2.0    DB_ALG=STANDARD
```

Description

GP_BIT is used along with the TRIG_FLAG attribute when a packed group (GP) point is defined as an event trigger. The GP_BIT statement is to be used to trigger the save of Event History collection buffer. For information on the Event History function, see Section 5.

Syntax

GP_BIT = *x*

where:

x = Integer from 0 through 15

Rules

1. The GP_BIT historical attribute is only valid for points with a HISTORY attribute equal to EVENT and a TRIG_FLAG attribute equal to 1.
2. The GP_BIT historical attribute is only valid for points with a GP record type.
3. A default value for GP_BIT can be defined with the DEF statement. If no GP_BIT attribute is specified (either in a point declaration statement or a /DEF statement), the system default value is 0.

Example

```
GP101 HISTORY=EVENT TRIG_FLAG=1   TRIG_STATE=0   GP_BIT=4
```

HISTORY

Description

HISTORY specifies the HSR function which collects, stores, and retrieves data on specified points. Point assignments can be specified for the following HSR functions: Main History, Long Term History, Laboratory Data, Event History, and SOE.

Syntax

HISTORY = *HSR function*

where:

HSR function	=	Any of the following HSR functions: MAIN, LONGTERM, LAB_DATA, EVENT, SOE.

Rules

1. Every point in the source file must have a valid HISTORY attribute value.

2. A default value for HISTORY can be defined with the DEF statement.

3. The number of points per HSR function are counted and compared against a limit. For the SOE points, this limit is fixed at 1400. For the Laboratory Data points, this limit is fixed at 1000. For the other HSR functions, this limit is configurable using the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSR Collection Parameters
   Displays: Main History Collection Parameters
   Long Term History Collection Parameters
   Event History Collection Parameters
   Item: Maximum Number of Points

   See Section 5 for additional details on these parameters.

4. Points with an attribute value of SOE must have a point record type of DI.

5. Points with an attribute of SOE cannot be verified that they are configured as SOE points.

6. Points cannot be duplicated among the Main History, Long Term History, and Laboratory Data functions. However, points specified for one of these functions can also be assigned to the Event History or SOE functions.

Example

```
S100 HISTORY=SOE
```

LF_REST

Description

LF_REST specifies the low frequency chattering suppression restoration period for an SOE point (HISTORY attribute equal to SOE). The value represents the number of seconds between decrements of the SOE message counter. For more information on chattering, see Section 3.

Syntax

LF_REST = *x*

where:

x = Integer from 1 to 299 (inclusive).

Rules

1. The LF_REST attribute is valid only for points with a HISTORY attribute equal to SOE.
2. The LF_REST is used only when the value of LF_SUPP is greater than zero.
3. A default value for LF_REST can be defined with the DEF statement.

Example

```
S100 HISTORY=SOE LF_SUPP=15 LF_REST=2
```

Description

LF_SUPP specifies the low frequency chattering limit for a point with its HISTORY attribute equal to SOE. The limit represents the SOE message activity for the specified point. When the activity surpasses the limit, the SOE messages for the point are suppressed.

Syntax

LF_SUPP = *x*

where:

x = Integer from 4 to 99 (inclusive) or 0.

If LF_SUPP is specified as zero, low frequency chattering suppression is not performed for the point.

Rules

1. The LF_SUPP attribute is valid only for points with a HISTORY attribute equal to SOE.

2. A default value for LF_SUPP can be defined with the DEF statement.

Example

```
S101 HISTORY=SOE LF_SUPP=50 LF_REST=20
```

PB_BIT

Description

PB_BIT is used along with the TRIG_FLAG attribute when bits of a packed digital (PB point record type) point is defined as an event trigger. The PB_BIT statement is to be used to trigger the save of Event History collection buffer. For information on the Event History function, see Section 5.

Syntax

PB_BIT = *x*

where:

x = Integer from 0 through 31.

Rules

1. The PB_BIT historical attribute is only valid for points with a HISTORY attribute equal to EVENT and a TRIG_FLAG attribute equal to 1.
2. A default value for PB_BIT can be defined with the DEF statement. If no PB_BIT attribute is specified (either in a point declaration statement or a DEF statement), the system default value is 0.
3. The PB_BIT historical attribute is only valid for points with a PB record type.

Example

```
PB201 HISTORY=EVENT TRIG_FLAG=1 TRIG_STATE=0 PB_BIT=21
```

Description

TRIG_FLAG specifies whether the point is to trigger a save of the Event History buffer, or the point is to be a collected Event History point.

Syntax

TRIG_FLAG = *Boolean value*

where:

Boolean value = 0 (point is not a trigger)
1 (point is a trigger)

Rules

1. A TRIG_FLAG value assignment is required for all points with a HISTORY attribute equal to EVENT.
2. If TRIG_FLAG is assigned a value of 0, the point is a collected point.
3. A default value for TRIG_FLAG can be defined with the DEF statement.
4. If TRIG_FLAG is assigned a value of 1, the point is identified as an Event History trigger, and it is not used as a collected point.
5. A value of 1 for TRIG_FLAG is only valid for digital, packed digital or packed group points.
6. Up to 20 event triggers may be defined. These 20 triggers may be any combination of digital points, packed digital bits, or packed group digital bits can be assigned with the TRIG_FLAG attribute equal to a value for 1.

Example

```
GP100 HISTORY=EVENT TRIG_FLAG=1 TRIG_STATE=0 GP_BIT=8
```

TRIG_STATE

Description

TRIG_STATE specifies the digital value which triggers a save of the Event History buffer. TRIG_STATE must be specified for event trigger points. See the TRIG_FLAG reference page for more information.

Syntax

TRIG_STATE = *x*

where:

x = 0 or 1

Rules

1. A TRIG_STATE value assignment is required for all points with a HISTORY attribute equal to EVENT and a TRIG_FLAG attribute equal to 1.
2. If TRIG_STATE is assigned a value of 0, the Event History buffer is saved when a transition to a value of 0 (zero) occurs.
3. If TRIG_STATE is assigned a value of 1, the Event History buffer is saved when transition to a value of 0 (zero) occurs.
4. A default value for TRIG_STATE can be defined with the DEF statement.

Example

```
D200 HISTORY=EVENT TRIG_FLAG=1 TRIG_STATE=1
```

TRIPn_CAUSE

Description

TRIP*n*_CAUSE indicates that the point is to be assigned to the group of points that are possible causes (first-out points) of the corresponding SOE trip point (see **TRIPn_TRIGGER** attribute for additional information). For more information on first-out points, see Section 3.

Syntax

TRIP*n*_CAUSE = *x*

where:

n = Integer from 1 to 3 (inclusive).

x = 0 or 1

Rules

1. Up to 65 points can be identified as causes to each of the three trip points.
2. If TRIP*n*_CAUSE =1, then TRIP*n*_CAUSE_STATE must be specified.
3. A default value for TRIP*n*_CAUSE can be defined with the DEF statement.

Example

```
S301 HISTORY=SOE TRIP2_CAUSE=1
```

TRIPn_CAUSE_STATE

Description

TRIP*n*_CAUSE_STATE specifies the digital value which is used to qualify a potential first-out point (see TRIP*n*_CAUSE attribute). If the value of the TRIP*n*_CAUSE point is equal to the value specified by the TRIP*n*_CAUSE_STATE attribute, that TRIP*n*_CAUSE point is considered a valid cause point for a first-out SOE message search. For more information on first-out points, see Section 3.

Syntax

TRIP*n*_CAUSE_STATE = *x*

where:

n = Integer from 1 to 3 (inclusive).

x = 0 or 1, or the character “X.”

Rules

1. TRIP*n*_CAUSE_STATE is valid only for SOE points.
2. If TRIP*n*_CAUSE_STATE is assigned a value of 0, the TRIP*n*_CAUSE point is considered a valid cause if its value is 0.
3. If TRIP*n*_CAUSE_STATE is assigned a value of 1, the TRIP*n*_CAUSE point is considered a valid cause if its value is 1.
4. If TRIP*n*_CAUSE_STATE is assigned a value of X, the TRIP*n*_CAUSE point is considered a valid cause regardless of its value.
5. A TRIP*n*_CAUSE_STATE value assignment is required for all points with a HISTORY attribute equal to SOE and a TRIP*n*_CAUSE attribute equal to 1.
6. A default value for TRIP*n*_CAUSE_STATE can be defined with the DEF statement.
7. A value of X is not valid for a non-SOE point.

Example

```
S301 HISTORY=SOE TRIP2_CAUSE=1 TRIP2_CAUSE_STATE=0
```

Description

TRIP*n*_STATE specifies the digital value that initiates a first-out SOE message search by the SOE History function. For more information on first-out points, see Section 3. This attribute can only be used with a corresponding trip trigger. If the trigger point specified had a digital value as defined by the TRIP*n*_STATE directive then the trigger has been fulfilled.

Syntax

TRIP*n*_STATE = *x*

where:

n = Integer from 1 to 3 (inclusive).

x = 0 or 1, or the letter "X."

Rules

1. A TRIP*n*_STATE value assignment is required for all points with a HISTORY attribute equal to SOE and a TRIP*n*_TRIGGER attribute equal to 1.
2. If TRIP*n*_STATE is assigned a value of 0, the first-out SOE message search is initiated when the point's value is 0.
3. If TRIP*n*_STATE is assigned a value of 1, the first-out SOE message search is initiated when the point's value is 1.
4. If TRIP*n*_STATE is assigned a value of X, the first-out SOE message search is initiated regardless of the point's value.
5. A value of X is not valid for a non-SOE point.

Example

```
S301 HISTORY=SOE TRIP3_TRIGGER=1 TRIP3_STATE=0
```

TRIPn_TRIGGER

Description

TRIP*n*_TRIGGER defines the point which is to be monitored for the initiation of a first-out SOE message search. The search begins when the value of the point is equal to the value assigned to the TRIP*n*_STATE attribute.

Syntax

TRIP*n*_TRIGGER = *x*

where:

n = Integer from 1 to 3 (inclusive).

x = 0 or 1

Rules

1. There can be up to three SOE trip points.
2. TRIP*n*_TRIGGER may only be defined for digital points with HISTORY=SOE.
3. The same trip number cannot be used for more than one point (for example, TRIP1_TRIGGER=1 cannot be an attribute for S100 and S200).

Example

```
S100 HISTORY=SOE TRIP1_TRIGGER=1 TRIP1_STATE=1
```

6-5 Compiling the Source File

The History Point Information Compiler (hsrpic) is used to do the following:

- Compile a WDPF HSR Station source file containing point assignments and associated parameters.
- Create the output files that specify the point-related configuration data necessary for the HSR Station history functions.

The HSR Station source file is used to define all the process points received by the HSR Station, and it defines the history function which will collect and store the data for those points. Additionally, the source file contains various point-related parameters, such as the collection deadband for the Main History function points. For more information, see Section 3.

The hsrpic compiler performs the following functions:

- Parses the point information from the source file.
- Checks the point definitions in the System Point Directory (**spd.dir**).
- Checks for errors in the source file and outputs any error messages to a list file.
- Generates the point information (PIC) data files to be used by the HSR Station to initialize its data collection tables.

6-5.1. Generating the PIC Files

Use the following procedure to generate the PIC files:

1. Access the WDPF Admin Tool (described in "Defining and Configuring WEStations" (U0-8300)).
2. Select the following:

   Function: Maintain Project Data
   Filter: Historical Storage/Retrieval
   Topic: HSR PIC Files

3. Select the **View/Edit File** button. The source file will be loaded and can be viewed or edited.
4. Select the applicable drop(s) that need the PIC files.
5. Select **Write to Disk** from the **File Utilities** Menu to save the file.

6. Select **Compile** from the **File Utilities** Menu to save the file. This creates the PIC files (as described in Section 6-5.3) and installs them on the Software Server.

7. Select the following from the WDPF Admin Tool window:

   Function: Download Configuration to Drops
   Filter: Historical Storage/Retrieval
   Topic: Applicable drop(s)

8. Select the **Download** button. This loads the PIC files on the appropriate drops.

9. Select the **Restart Application on Drops** button ***OR*** the **Bootstrap Drops** button.

Note

PIC files can also be generated by using commands at the command line prompt (as described in Section 6-5.2).

6-5.2. Compiler Command Line

The following illustrates the command line syntax used to compile the **hsrpic** source file.

```
hsrpic [-g] [-l listfile] [-p spd_filename] [-c config_filename] hsrpicfile.src
```

where:

-g	=	Used to generate the PIC files (only if there are no errors).
-l listfile	=	Used to specify the name of the list file.
-p spd_filename	=	Used to specify the name of the System Point Directory file.
-c config_filename	=	Used to specify the name of the configuration file.

- If the **-g** option is not set, the hsrpic compiler checks the validity of the source file. The output data files are not generated.
- If the **-g** option is set, hsrpic generates the PIC files only if no errors exist.
- The default list file name is the name of the source file with a **.lst** extension (instead of **.src**).

- The default System Point Directory file is: **$WDPF_HOME/shc/config/spd.online**.
- The default configuration file is: **$WDPF_HOME/hsr/config/CONFIG.HSR**.

Note

The PIC files will be generated only for those functions which have point information specified in the source file. The resultant PIC files must be copied to the **$WDPF__HOME/hsr/config/new** directory of the HSR Station(s).

See Section 6-5.3 for a description of possible output files.

6-5.3. Files Generated by hsrpic

The files generated by hsrpic will be located in the directory where the source resides:

```
$WDPF_HOME/hsr/pic/bin/hsrpic
```

As described in Section 5, the configuration GUIs contain the configuration data required by the HSR Station processes. The hsrpic compiler must use the same file that is used by the target station so that appropriate error checking can be performed (for example, check for maximum point count limits).

After the source file has been successfully compiled, up to six files are generated. These files are created in the current working directory and should be downloaded to the appropriate HSR Station directory (as described in Section 6-5.1).

- **main.pic** is the PIC file that is generated for the Main History function.
- **long_t.pic** is the PIC file that is generated for the Long Term History function.
- **lab.pic** is the PIC file that is generated for the Laboratory Data History function.
- **event.pic** is the PIC file that is generated for the Event History function.
- **soe.pic** is the PIC file that is generated for the SOE Message History function.
- **hsrpicfile.lst** is the list file that is generated. The name of this file is specified by the user. Any error or warning messages detected during compilation produce a message that appears beneath the line where the error was detected.

- **spd.online** is the on-line WDPF point directory file used for error checking and obtaining point information that is stored in the PIC files.

A sample of the list file generated by hsrpic is shown in Figure 6-2.

```
***HSRPIC LISTING-VERSION 1.1*** PAGE 1
       Fri Aug 28 20:44:48 1992
LINE STATEMENTS
3 ; Everything to the right of a semicolon is a comment
4 ;
5 ; Keywords which control the compiler are identified by a slash
6 ; Assign points to Main History with a default deadband of 1 percent
7
8 /DEF HISTORY=MAIN DEADBAND=1.0 DB_ALG=PCT_RANGE
9 BAOR001
10 BAOR002
11 BAOR003
12 BAOR004
13 BARV001
14 BARV002
15
16 ; The next points' historical attribute values supersede
17 ; those specified in the /DEF statement above
18 BARV003 DEADBAND=10.0 DB_ALG_RADIATION DB_K_VAL=3.0
19 BARV004 DEADBAND=2.0 DB_ALG=RATIO
20
21 ; The following points historical attributes are all specified in
22 ; the point declaration statement.
23 ; No defaults are used.
24 /NODEF
25 CAOR001 HISTORY=MAIN DEADBAND=100.0 DB_ALG=STANDARD
26 CAOR001 HISTORY=MAIN DEADBAND=100.0 DB_ALG=POWER DB_N_VAL=2.0
       DB_K_VAL=3.0
27 BDOR001 HISTORY=MAIN ; This is a digital. No deadband is required.
28 BDOR002 HISTORY=MAIN ; This is a digital. No deadband is required.
29 DROP100 HISTORY=MAIN ; This is drop status pt. No deadband is required.
30 PB001001 HISTORY=MAIN ; This is a packed digital. No deadband is required.
31 GP100S01 HISTORY=MAIN ; This is a packed group. No deadband is required.
```

Figure 6-2. Sample hsrpic List File

```
32
33 ; The following points are assigned to the Long Term
34 ; History subsystem. These points cannot be duplicated
35 ; in the Main or Lab Data subsystems.
36 /DEF HISTORY=LONGTERM DEADBAND=5.0 DB_ALG=PCT_RANGE
37 DAFDWA
38 DALEVL
39 DASETP
40 DASTMF
41 /DEF HISTORY=LONGTERM
42 DROP210
43 DROP212
44 GP100S02
45 P0010911
46 DC001PK6
47
48 ; The following points are assigned to the Laboratory Data History
49 ; subsystem. These points cannot be duplicated in the Main or
50 ; Long Term History subsystems.
51 /DEF HISTORY=LAB_DATA
52 PAALM01; Analogs do not require a deadband for Lab Data
53 PAALM02
54 SDALM09 ; Nor do digitals.
55 SDALM10
56
57 ; The following points are assigned to the Event History
58 ; subsystem. None of these are triggers.
59 /DEF HISTORY=EVENT TRIG_FLAG=0 TRIG_STATE=0
60 BAOR001 ; Points that are collected by other subsystems
61 BAOR002
62 BDOR001 ; can also be collected by the Event History.
63 BDOR002
64
65 ; This point is an event trigger. It will initiate the save
66 ; of the Event History buffer when it is set to 1.
67 SDALM13 TRIG_FLAG=1 TRIG_STATE=1
68
69 ; This point is also an event trigger. It will initiate the save of
70 ; the Event History buffer when bit 10 of the point is set to 1.
71 PB100SO2 TRIG_FLAG=1 TRIG_STATE=1 PB_BIT=10
72
73 ; This point is also an event trigger. It will initiate the save of
74 ; the Event History buffer when bit 0 of the packed digital point
75 ; is set to 1.
76 PB100SO2 TRIG_FLAG=1 TRIG_STATE=1
```

Figure 6-2. Sample hsrpic List File (Cont'd)

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```
77
78 ; The following points are assigned to the SOE History subsystem.
79 ; These points must be digital points with DI record types and
80 ; can also be collected by other subsystems. Default values for
81 ; suppression and restoration parameters are specified.
82 /DEF HISTORY=SOE LF_SUPP=25 LF_REST=65
83 SDSOE01
84 SDSOE03
85 SDSOE04
86 SDSOE05
87 SDSOE06
88 SDSOE07
89 SDSOE08
90
91 ; The following SOE points are considered potential causes for
92 ; the trip #1 trigger point.
93 /DEF HISTORY=SOE LF_SUPP=25 LF_REST=65 TRIP1_CAUSE=1 TRIP1_CAUSE_STATE=1
94 SDSOE09
95 SDSOE10
96 SDSOE11
97 SDSOE12
98 SDSOE13
99 SDSOE14
100
101 ; The following point is the trip #1 trigger point.
102 SDSOE16 HISTORY=SOE TRIP1_TRIGGER=1 TRIP1_STATE=1 TRIP1_CAUSE=0
       LF_SUPP=5 LF_REST=10
103
104 /END
105 ; The end statement terminates the compile, all text
106: @@ WARNING----this statement found after /END (ignored)
107 ; following is ignored.
108: @@ WARNING----this statement found after /END (ignored)
109
```

Figure 6-2. Sample hsrpic List File (Cont'd)

6-6. hsrpic Error and Warning Messages

Table 6-3 lists the possible error and warning messages that may appear in the list file. Error messages result in no output files being generated. Warning messages typically result in output files still being generated. Messages displayed during compile are also found in this table.

Table 6-3. hsrpic Error and Warning Messages

Message	Description
** ERROR----a point cannot be both trigger point and cause digital	A point cannot be both a trip trigger (TRIPn_TRIGGER=1) and a trip cause (TRIPn_CAUSE=1).
** ERROR----Causes specified but no trigger specified	Causes (TRIPn_CAUSE) are specified for SOE but no trigger is defined.
** ERROR----DEADBAND% cannot be greater than 100	When the deadband will be interpreted as a percentage (DB_ALG=PCT_RANGE), the DEADBAND value must be less than or equal to 100.
** ERROR----DEADBAND ALGORITHM is not valid	The algorithm selected for deadband calculation is not valid. Choose between the supported algorithms of: FLOW, LOG, PCT_RANGE, POWER, RADIATION, RATIO, and STANDARD.
** ERROR----DEADBAND ALGORITHM was not selected	A deadband algorithm is required for all analog points defined for MAIN and LONG TERM.
** ERROR----DEADBAND cannot have zero value	DEADBAND value must be greater than zero.
** ERROR----DEADBAND CONSTANT VALUE is not valid	A positive real number must be specified for the N value.
** ERROR----DEADBAND K VALUE was not selected	The deadband algorithm chosen requires the specification of a K value. This is true for algorithms FLOW, LOG, POWER, and RADIATION.
** ERROR----DEADBAND N VALUE of 0 (zero) is invalid for LOG algorithm	An N value for the deadband algorithms of LOG, LONGTERM, and MAIN is invalid.
** ERROR----DEADBAND N VALUE was not selected	The deadband algorithm chosen requires the specification of an N value. This is true for algorithms POWER and RADIATION.

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Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
** ERROR----DEADBAND not specified	This attribute is required for all analog points (AI, AL, AC, AM record types) that have the HISTORY attribute equal to MAIN or LONGTERM.
** ERROR----Exceeded max number of variable deadband points	Points specified for LONGTERM and MAIN that are configured with the algorithms for FLOW, LOG, POWER, RADIATION, and RATIO
** ERROR----HISTORY not specified	This attribute is required for all point declaration statements. It may be specified by setting a default value with a /DEF statement.
** ERROR----GP_BIT specified only for GP points and TRIG_FLAG=1	The packed group (GP) bit number is only specified for event trigger points (HISTORY=EVENT and TRIG_FLAG=1).
** ERROR----ILLEGAL DIRECTIVE	An invalid directive was specified.
** ERROR----invalid DEADBAND value specified	The value must be a positive real constant. For more information, see DEADBAND attribute.
** ERROR----invalid directive	Slash character (/) is present, but the following keyword is not a recognized directive.
** ERROR----invalid parameter	Invalid parameter specified in source file.
** ERROR----invalid point name	Check point name rules in Section 6-2.5 to verify correct usage.
** ERROR----invalid GP_BIT value specified (GP_BIT: 0 ~ 15)	The packed group bit value must be an integer from 0 to 15 (inclusive).
** ERROR----invalid history type	Invalid history type specified. Must be MAIN, LONGTERM, LAB_DATA, EVENT, or SOE.
** ERROR----invalid LF_REST value specified	The low frequency chattering restoration value must be an integer from 1 to 299 (inclusive).
** ERROR----invalid LF_SUPP value specified	The low frequency chattering suppression value must be an integer from 4 to 99 (inclusive).
** ERROR----invalid TRIG_FLAG value specified	The trigger flag value must be 0 (point is not an event trigger) or 1 (point is an event trigger).
** ERROR----invalid TRIPn_CAUSE_STATE value specified	The value must be a digital state (0 or 1).

Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
** ERROR----invalid TRIG_STATE value specified	The value must be a digital state (0 or 1).
** ERROR----invalid TRIPn_CAUSE value specified	The trip cause value must be 0 (point is a first-out point) or 1 (point is not first-out point).
** ERROR----invalid TRIPn_STATE value specified	The trip state value must be a digital state (0 or 1).
** ERROR----invalid TRIPn_TRIGGER value specified	The trip trigger value must be 0 (point is a trip trigger point) or 1 (point is not a trip trigger point).
** ERROR----LF_REST not specified	The low frequency chattering restoration attribute is required for all points with the HISTORY attribute equal to SOE.
** ERROR----LF_REST out of range	The low frequency chattering restoration attribute value must be an integer within the range 1 to 299 (inclusive).
** ERROR----LF_SUPP not specified	The low frequency chattering suppression attribute is required for all points with the HISTORY attribute equal to SOE.
** ERROR----LF_SUPP out of range	The low frequency chattering suppression attribute value must be an integer within the range 4 to 99 (inclusive).
** ERROR----More than one point specified for the same trigger	Cannot specify two different points for the same trigger.
** ERROR----no. of cause digitals per trigger exceeded the maximum	No more than 65 cause-digitals per trip trigger can be specified.
** ERROR----no. of event points exceeded the maximum	The number of points with the HISTORY attribute equal to EVENT exceeds the maximum amount specified. This is defined by the following WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR Collection Parameters** **Display: Event History Collection Parameters** **Item: Maximum Number of Points**
** ERROR----no. of first-out-triggers exceeded the maximum	Only three first-out triggers may be specified.

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Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
** ERROR----no. of lab points exceeded the maximum	The number of points with the HISTORY attribute equal to LAB_DATA exceeds the fixed limit of 1000.
** ERROR----no. of long term points exceeded the maximum	The number of points with the HISTORY attribute equal to LONGTERM exceeds the amount specified. This is defined by the following WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR Collection Parameters** **Display: Long Term History Collection Parameters** **Item: Maximum Number of Points**
** ERROR----no. of main points exceeded the maximum	The number of points with the HISTORY attribute equal to MAIN exceeds the maximum amount specified. This is defined by the following WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR Collection Parameters** **Display: Main History Collection Parameters** **Item: Maximum Number of Points**
** ERROR----no. of SOE points exceeded the maximum	The number of points with the HISTORY attribute equal to SOE exceeds the fixed limit of 1400.
** ERROR----not in point directory	The point is not listed in the System Point Directory.
** ERROR----invalid PB_BIT value specified (PB_BIT: 0 ~ 31)	The packed digital bit value must be an integer from 0 to 31 (inclusive).
** ERROR----PB_BIT specified only for PB points and TRIG_FLAG=1	The packed digital (PB) bit number is only specified for event trigger points (HISTORY=EVENT and TRIG_FLAG=1).
** ERROR----points with TRIG_FLAG=1 must be digital, packed digital or packed group points	Digital points must be digital (DI, DL, DC, or DM), packed digital (PB), or packed group (GP).
** ERROR----read error on source file	Invalid source file.

Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
** ERROR----repeated point	The same point cannot be collected by more than one of the following: Main History (HISTORY=MAIN), Long Term History (HISTORY=LONGTERM), or Laboratory History (HISTORY=LAB_DATA).
** ERROR----reserved point name	For a list of reserved names, see Section 6-2
** ERROR----SOE points must be DI points	SOE points (HISTORY=SOE) must be of DI record type.
** ERROR----SPD get point info failed	The point is not listed in the System Point Directory.
** ERROR----specification error on TRIPn_CAUSE or TRIPn_CAUSE_STATE	The value for these attributes must be 0 or 1.
** ERROR----specification error on TRIPn_TRIGGER or TRIPn_STATE	The value for these attributes must be 0 or 1.
** ERROR----syntax error: missing ',' or blanks might be inserted beside '='	Statement delimiter is missing or not in expected location. Verify that equal sign character (=) is present, that no blanks have been inserted next to the equal sign, and that a comma (,) is present at the end of the line (if the statement continues on the next line or between statements (if multiple statements are on one line).
** ERROR----total trigger points specified exceeded the maximum: 20	Only 20 points can be specified as trip points assigned a value of 1 for the TRIG_FLAG attribute.
** ERROR----TRIG_FLAG not specified	This attribute is required for all points with the HISTORY attribute equal to EVENT.
** ERROR----TRIPn_CAUSE_STATE expected	The attribute was specified for a point without a TRIPn_CAUSE attribute.
** ERROR----TRIPn_CAUSE expected	The attribute was specified for a point without a TRIPn_CAUSE_STATE attribute.
** ERROR----TRIPn_STATE and TRIPn_CAUSE specified for the same point	A point cannot be both a trip trigger (TRIPn_STATE specified) and a trip cause (TRIPn_CAUSE=1).

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Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
** ERROR----TRIG_STATE not specified	The trigger state must be specified for trigger points (points with the HISTORY attribute equal to EVENT and the TRIG_FLAG attribute equal to 1).
** ERROR----TRIPn_STATE expected	Point specified as trip point (TRIPnTRIGGER=1) must have trip state specified.
** ERROR----TRIPn_TRIGGER and TRIPn_CAUSE specified for the same point	A point cannot be both a trip trigger (TRIPn_TRIGGER=1) and a trip cause (TRIPn_CAUSE=1).
** ERROR----TRIPn_TRIGGER specified but no TRIPn_trigger given	A trip state (TRIPn_STATE) was specified for a point not defined as a trigger point (no TRIPn_TRIGGER attribute was found).
@@ WARNING----all parameters ignored for LAB_DATA subsystem	HISTORY is the only attribute used for LAB_DATA points.
@@ WARNING----DB_N_VAL not needed for this algorithm (ignored)	An N value was specified for a deadband algorithm that does not require one. The algorithms that do note need and N value are: FLOW, PCT_RANGE, POWER, RADIATION, RATIO.
@@ WARNING----DEADBAND ALGORITHM ignored for this point record type	A deadband algorithm is only required for analog points defined in MAIN and LONGTERM.
@@ WARNING----DEADBAND ALGORITHM not valid for this history type (ignored)	A deadband algorithm is only required for analog points defined in MAIN and LONGTERM.
@@ WARNING----first out enabled is not set in CONFIG.HSR	A trigger was specified for SOE but the HSR configuration file has first out detection disabled.
@@ WARNING----duplicated point (ignored)	The point is duplicated within the same HISTORY type or between HISTORY types of MAIN, LONGTERM or LAB_DATA.
@@ WARNING----frequency is not 0.1 seconds	Points with a HISTORY type of EVENT should be broadcast with a frequency of 0.1 second as this is the collection rate of the Event History subsystem.
@@ WARNING----GP_BIT ignored	This attribute is not valid for this HISTORY or point type. (Only used for packed group event triggers.)

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Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
@@ WARNING----LF_SUPP and LF_REST ignored	These attributes are not required for this HISTORY type. (Only used for SOE History.)
@@ WARNING----maximum SOE DPUs exceeded	The number of DPUs that originate SOE points exceeds the amount specified. This is defined by the following WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR SOE Parameters** **Display: Page 2 of 2** **Item: Maximum Number of DPUs**
@@ WARNING----missing /END statement	END statement is required.
@@ WARNING----PB_BIT ignored	This attribute is not valid for this HISTORY or point type. (Only used for packed digital event triggers.)
@@ WARNING----statements were found after /END (ignored)	Extraneous statements were found following the /END statement and were ignored.
@@ WARNING----suppression is not enabled in CONFIG.HSR	Chattering suppression is specified (non-zero value for LF_SUPP attribute) but the chattering suppression feature is not enabled in the HSR Station configuration file.
@@ WARNING----title name length exceeds the limit	The title is limited to 75 characters.
@@ WARNING----title name not specified	TITLE will default to blank if not specified.
@@ WARNING----TRIG_STATE 1 is invalid if TRIG_FLAG 0 (ignored)	If the point is not a trigger (TRIG_FLAG=0), a value of 1 for trigger state is invalid.
@@ WARNING----TRIG_STATE and TRIG_FLAG ignored	The trigger point attributes are not required for this HISTORY type. (Only used for Event History.)
The following messages may be displayed during compile:	
ERROR ON CLOSING FILE: picfile	Error occurred when attempting to close the specified pic file.
ERROR ON CLOSING LIST FILE	An error occurred while attempting to close the listing file.

Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
ERROR ON CLOSING SPD FILE	An error occurred while attempting to close the System Point Directory file.
ERROR ON CLOSING SOURCE FILE	An error occurred while attempting to close the source file.
FATAL ERROR: INTERNAL INCONSISTENCY DETECTED	An internal software inconsistency that prevented further operation was detected.
FATAL ERROR ON OPENING FILES	Either the source, listing, or System Point Directory file failed to open
FATAL ERROR ON OPENING FILE: picfile	Error occurred when attempting to open the specified pic file.
FATAL ERROR ON READING EOF	Unexpected end of file detected when reading the source file.
FATAL ERROR: READING OF CONFIGURATION FILE	Error occurred while attempting to read the HSR Station configuration file (CONFIG.HSR).
HSR.SOE.FIRST-OUT-ENABLE NOT DEFINED IN CONFIGURATION FILE	The configuration parameter **First Out Processing**: is not set to **Enable**. It must be enabled to determine if SOE First Out parameters are required in the source file. It is accessed through the WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR SOE Parameters** **Display: Page 1 of 2** **Item: First Out Processing**
HSR.SOE.SUPPRESS-ENABLE NOT DEFINED IN CONFIGURATION FILE	The configuration parameter **Suppression Processing**: is not set to **Enable**. It must be enabled to determine if SOE First Out parameters are required in the source file. It is accessed through the WDPF Admin Tool settings: **Function: Define Software Configuration** **Filter: Historical Storage/Retrieval** **Topic: HSR SOE Parameters** **Display: Page 1 of 2** **Item: Suppression Processing**
INVALID SOURCE FILE NAME	The source file entered does not have a valid database filename.

Table 6-3. hsrpic Error and Warning Messages (Cont'd)

Message	Description
PARSING hsrpicfile.src	This will be output when all files have been successfully opened and the parsing of the source file has started.
SYNTAX ERROR IN SOURCE FILE NAME	The source filename must have ".src" as the file extension.
WARNINGS ##	The number of warnings generated during the parsing of the source file.
WDPF_HOME UNDEFINED	The environment variable $WDPF_HOME is used to locate the default System Point Directory and the default HSR configuration file.

Section 7. HSR User Interfaces Overview

7-1. Section Overview

This section gives a general overview of the operation of the HSR User Interface windows. Specific details of individual HSR User Interfaces will be provided in later sections.

7-2. Operator WEStation - Historical User Interfaces

The following material briefly describes the Operator WEStation historical user interface functions.

7-2.1. HSR Station Status/Control User Interface

This HSR Station Maintenance user interface function can be invoked with either the control mode selected or in a “status only” mode. Refer to Section 8-2 for instructions on using this interface.

Control Mode

When selected in control mode, this user interface provides the ability to manually direct the HSR Station to execute subsystem commands such as shutdowns, restarts or point information reconfiguration (**PIC** restarts). In addition to the control functions, this window-based function provides basic operation status of the various configured HSR Station functions. The valid operating statuses of the subsystems are:

- Running.
- Stopped.
- Subsystem Error.
- Station Manager Error.
- Running/Recovering (Redundant Only).
- Running/Unrecovered (Redundant Only).

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Status Only Mode

This user interface function is the same as that described above except that it allows the user at the Operator's Station to obtain the basic operation status of the various configured HSR Station subsystems. However, the user may not initiate any subsystem commands.

7-2.2. Historical Point Review User Interface

The Historical Point Review user interface function provides capabilities similar to the Operator WEStation's Point Search function, except that the data displayed is from historical data - not live data. The historical data is retrieved from the Main, Long Term, and Laboratory Data subsystems of the HSR Station along with the point record field data from the Point Attribute subsystem.

The user can specify a search for data based on various sorts such as points that were in alarm, sensor alarm, timed-out, scan removed, scan set, limit/alarm check removed, or had entered values. A review of all point value changes or values changes with a specific quality (bad, fair, poor or good) can also be obtained.

The user can specify up to 16 points or use a characteristic group as with the Point Search function. The historical time range for the search must be specified as well as where the data from the HSR Station is to be returned: the window display, a Log Server Printer, or a disk file. See "WEStation Log Server User's Guide" (U0-8400) for more information on printing.

Refer to Section 10-3 for instructions on using the Historical Point Review user interface.

7-2.3. Historical Event Review User Interface

The Historical Event Review user interface function is identical to the Historical Point Review function, except that its data is retrieved from the HSR Stations' Event History subsystem. The data returned is time tagged to 100 millisecond precision.

Refer to Section 10-4 for instructions on using the Historical Event Review user interface.

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7-2.4. Historical SOE Review User Interface

The Historical SOE Review user interface function is to provide the user with a window-based function for performing an SOE message data extraction from the HSR Station's historical data files. The user can specify a time range for which to extract SOE messages as well as sort options to “filter” unwanted messages.

The user can indicate that only those SOE messages found for a single point or originated by a single DPU be returned. Or a special First-out retrieval can be requested which will return 100 SOE messages that occurred around the time of a First-out trigger event. A list of points currently in suppression can also be viewed. The historical time range for the search must be specified as well as where the data from the HSR Station is to be returned: the window display, a Log Server Printer, or a disk file. See “WEStation Log Server User’s Guide” (U0-8400) for more information on printing.

Refer to Section 11-5 for instructions on using the Historical SOE Review user interface.

7-2.5. Historical Trend User Interface

The Historical Trend user interface function provides the user with capabilities similar to the Operator WEStation’s Real-time Trend function, except that the data displayed is from historical data - not live data. The historical data is retrieved from the Main, Long Term, and Laboratory Data subsystems of the HSR Station along with point record field data from the Point Attribute subsystem.

As with the Real-time Trend, up to eight points can be selected for display in various layouts: horizontal combined, vertical combined, vertical side-by-side, quadrant, and X-Y plot (see Section 9 for more information on trend displays). Points can be identified to have temporary user-defined process range limits as well as logarithmic or linear scales. Trends can be drawn within subgroups (subdivided areas within one window) and with shading to a specified baseline value. The Cursor Value display feature allows the user to select a position on the graph and obtain the values and time for the points displayed on the Trend window. A Tabular Trend window is also available to display the numerical information used to draw the trend graph.

As with other historical user interface functions, the user must specify a time range. However, additional methods allow the specification of either the start time and end time or the start time or end time along with a sample processing period.

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This processing period defines the time interval between successive trend samples (600 are available for display). The processing period method is useful to specify the time period over which samples should be mathematically processed (for example, 10 second averages). The processing types available are:

Actual Bit Values	Actual Values
Maximum Values	Minimum Values
Averaged Value	Integrated Values
Run Times	State Transitions (Toggles)

Additional features provide the capability to page forward and backward in time or to expand or decrease the time range around a user-selected trend position.

Refer to Section 9-2 for instructions on using the Historical Trend user interface.

7-2.6. Historical Alarm Message Review User Interface

The Historical Alarm Message Review user interface function provides capabilities similar to the other WEStation's Historical Review functions. It provides a window-based interface for specifying a search for Historical Alarm Message data and presents this information to the user in displayed, printed or filed lists. The historical data is retrieved from the Alarm Message subsystem at the HSR Station.

The user can request a search for alarm messages that occurred over a specified period of time, based on various sorts such as:

- All alarms
- All alarms for a single point
- All alarms for a specified point type (for example, analogs and drop status alarms)
- All alarms for a specified alarm type (for example, TIMEOUT, HIGH WORSE)
- Alarms that originated from a specific drop.

The user specifies the historical time range and the sort criteria as well as where the data from the HSR Station is to be returned: the window display, a Log Server Printer, or a disk file.

Refer to Section 11-2 for instructions on using the Historical Alarm Message Review user interface.

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7-2.7. Historical Operator Event Message Review User Interface

The Historical Operator Event Message Review user interface function provides capabilities similar to the other WEStation's Historical Review functions. It provides a window-based interface for specifying a search for operator event messages (GPM Type 18) and presents this information to the user in displayed, printed or filed lists. The historical data is retrieved from the Operator Event Message subsystem at the HSR Station.

The user can request a search for messages that occurred over a specified period of time based on various sorts such as:

- All operator event messages that originated from either all drops or a specific drop.
- A set of specific message types from either all or a single drop.
- A set of grouped message types from either all or a single drop.
- A specific point name found inside an operator event message.

The user specifies the historical time range and the sort criteria as well as where the data from the HSR Station is to be returned: the window display, a Log Server Printer, or a disk file.

Refer to Section 11-3 for instructions on using the Historical Operator Event Message Review user interface.

7-2.8. Historical ASCII Message Review User Interface

The Historical ASCII Message Review user interface function provides capabilities similar to the other WEStation's Historical Review functions. It provides a window-based interface for specifying a search for ASCII (GPM Type 70) messages and presents this information to the user in displayed, printed or filed lists. The historical data is retrieved from the ASCII Message subsystem at the HSR Station.

The user can request a search for ASCII messages that occurred over a specified period of time. Sorts such as all ASCII messages or all ASCII messages that originated from a specific drop may be performed.

The user specifies the historical time range and the sort criteria as well as where the data from the HSR Station is to be returned: the window display, a Log Server Printer, or a disk file.

Refer to Section 11-4 for instructions on using the Historical ASCII Message Review user interface.

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7-2.9. Event Trigger List User Interface

The Event Trigger List user interface window gives the user the ability to extract information about what Event data files have been saved at the HSR Station, the point(s) that initiated the save, the time of the trigger, and the time range covered by the data file. This search can be restricted to a user specified time range.

Refer to Section 10-6 for instructions on using the Event Trigger List user interface.

7-2.10. Historical File List User Interface

The Historical File List user interface window provides file and directory search functions along with the ability to view, print, copy, or concatenate the selected files. Files can be searched based on a user specified time range and/or by the originating drop.

Refer to Section 12 for instructions on using the Historical File List user interface.

7-2.11. Archive Manager User Interfaces

The Archive Manager user interfaces provide capabilities of viewing the organization of data contained on optical disks. This set of user interfaces will also provide information and temporary reconfiguration utilities on the optical drive unit(s) themselves. All of these Archive Manager user interfaces can be accessed through the Archive General Status screen.

Refer to Section 8-3 for instructions on using the Archive Manager user interfaces.

7-2.12. HSR Point Information Editor User Interface

The HSR Point Information Editor user interface gives the user the ability to change HSR point configuration on-line. This includes adding and deleting points, modifying deadband information and locating which subsystem is configured for a particular point. Changes made through this user interface are applied to the appropriate subsystem(s) immediately.

This user interface also has the ability to display statistics as to how frequently, and for what reason points have been collected.

Refer to Section 13-2 for instructions on using the HSR Point Information Editor user interface.

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7-2.13. HSR Laboratory History - Data Entry User Interface

This user interface allows the user to send deferred point data to the Laboratory Data History subsystem. This point data is defined as value, status, and time stamp of a point or set of points. This user interface also provides a retrieval function for Laboratory Data.

Refer to Section 13-4 for instructions on using the HSR Laboratory History- Data Entry user interface.

7-2.14. HSR Data Analysis Manager User Interface

The HSR Data Analysis Manager user interface provides an interface into a third party data analysis package. P-STAT is the data analysis package that is currently integrated into this user interface and provides additional retrieval capabilities in addition to the other point retrieval user interfaces previously described.

Refer to Section 13-3 for instructions on using the HSR Data Analysis Manager user interface.

7-2.15. Additional User Interfaces on the Soft Keyboard

Two additional functions on the Operator WEStation's soft keyboard allow the creation of a date/time or time-only string for use in historical user interface functions' entry fields.

- The date/time mode gives the user the capability to enter an absolute time using the numeric keypad on the left side of the window. Two buttons at the bottom provide the ability to set the date and time to the current time value or to reset the hours, minutes and seconds to midnight for the date specified. This mode also provides the ability to modify the time string by relative time amounts via a slider bar.
- The time-only mode provides the ability to create a time string of hours, minutes and seconds.

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7-3. Entering Data in HSR User Interface Windows

Data can be entered in the HSR user interface windows at the Operator WEStation using the standard keyboard or the soft keyboard. In addition to an alphanumeric and numeric keyboard, the soft keyboard contains a date and time keyboard. The keyboard window is accessed from any data entry field (such as the **Filename** or **Start Time** fields) in an HSR user interface window. This section provides instructions on how to access the soft keyboard. For more information, refer to "Operator WEStation User's Guide" (U0-8100).

1. Middle click on the desired data entry field, as shown in Figure 7-1.

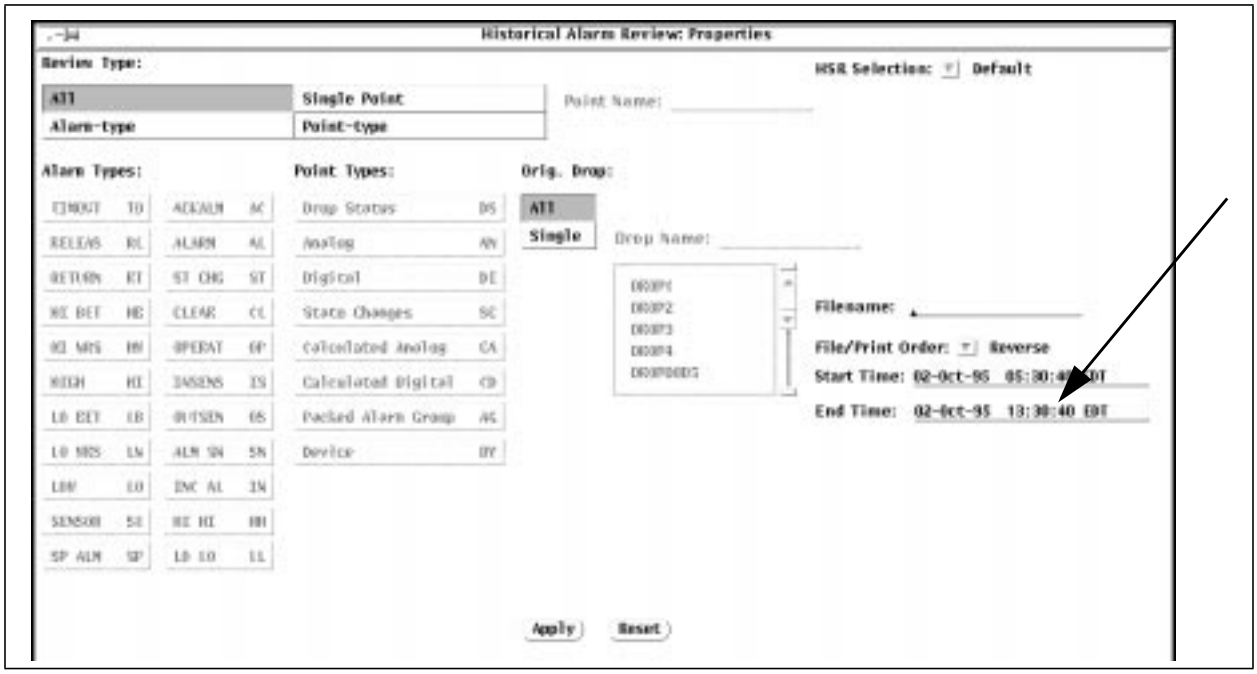

Figure 7-1. Accessing the Soft Keyboard

The soft keyboard appears, as shown in Figure 7-2. Once the data is entered in this window, it can be dragged and dropped into the desired data field.

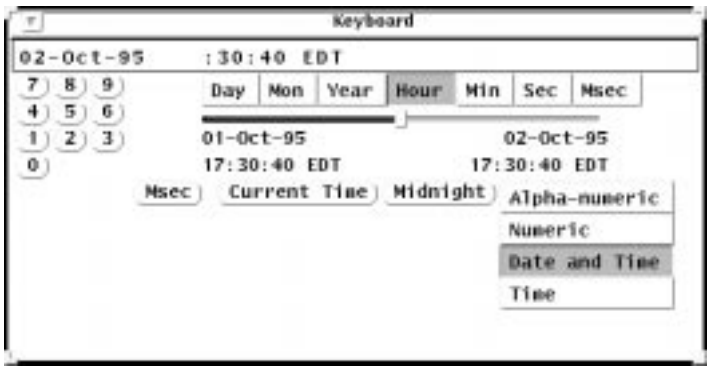

Figure 7-2. Time Data Entry Soft Keyboard

7-4. Elements of HSR User Interfaces

While the individual HSR interfaces may show cosmetic differences in their appearance, all use the following to specify data retrieval:

- **Time Range (Start Time and End Time) fields** - Specify the start and end times.
- **HSR Selection field**- Chooses the HSR on which to perform the search. Typical choices include default, local, or any other drop configured as an HSR.
- **Filename field** - Selects the file where the retrieved data is to be stored for later retrieval or review.
- **Point Specification (Point Name and Point Type) fields** - Define the points on which to obtain data.
- **Apply, Begin, Reset buttons** - Used to signify that the request is complete and to begin processing. **Reset** allows users to more rapidly recover from incorrectly specified search parameters.

7-4.1. Time Range

For all historical data retrievals, a start and end time must be specified through the user interface.

Entry fields for Start Time and End Time may appear on the main user interface window, or on the **Properties** or **Modify** window. When the applicable window is initially displayed, default values will be shown in these fields (as illustrated in Figure 7-3).

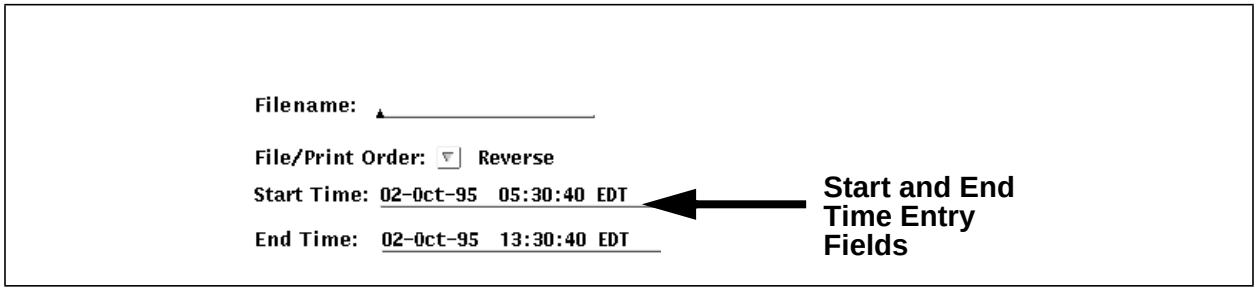

Figure 7-3. Specify Start and End Times

Note that the time values are usually in the form: **DD-MMM-YY hh:mm:ss ZZZ**

For SOE retrievals, milliseconds are used also: **DD-MMM-YY hh:mm:ss.mmm ZZZ**

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To select a different time range, enter a new start and/or end time using the standard keyboard or soft keyboard. (Refer to Section 7-3 and "Operator WEStation User's Guide" (U0-8100) for more detailed information on entering time values in user interface windows.)

Notes

1. For SOE data retrievals, the time can also include an 1/8 millisecond division. This division can be enabled by using the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Item: Eighth Millisecond Enable

2. The default end time is the current system time (at the time that the **Properties** window is displayed). The default start time is a specified number of hours prior to the end time. The length of this review period can be configured by using the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topics: Any applicable HSRUI topic
   Item: Default Review Period

3. Valid range of years is: 1970 - 2037.

For more information on these configuration parameters, see Section 5.

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7-4.2. HSR Selection

A pull-down menu is provided (in the upper right corner of each window) which allows the operator to select a specific HSR Station from which to retrieve the data:

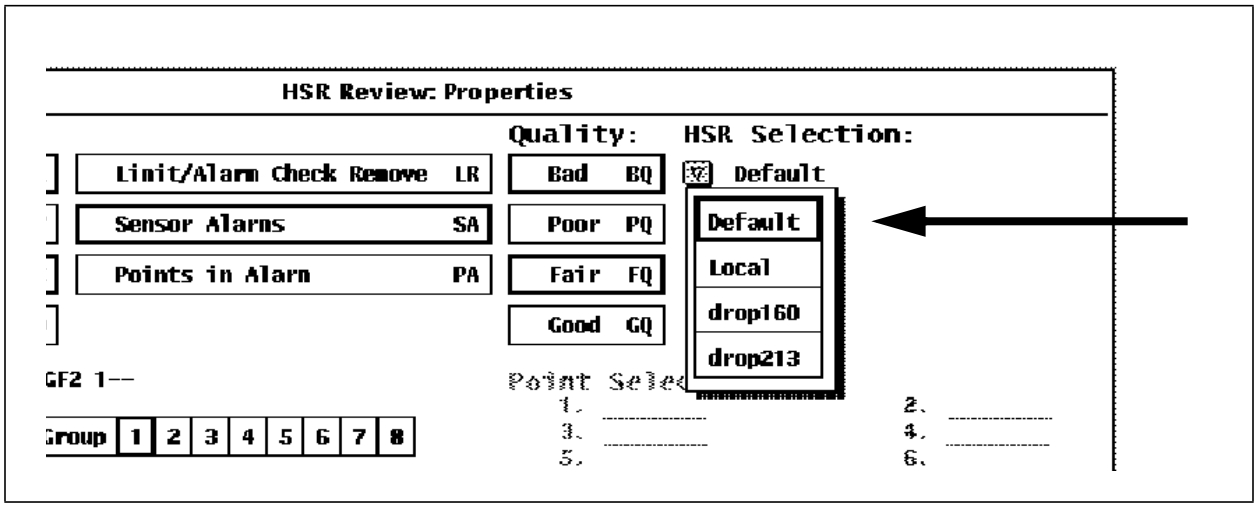

Figure 7-4. Pull-Down HSR Selection Menu

- If performing a historical data retrieval from a local optical disk at an Engineering WEStation (Data Analysis Mode), select the **Local** option.
- Requests may be directed to a specific HSR Station to assist in testing or troubleshooting.

In most cases, the **HSR Selection** field may be left as **Default** (the initially displayed option). When Default is selected in a redundant configuration, the configured primary and partner drops will be checked to see if the applicable subsystem is running. If both drops are available, the request will be directed to whichever drop is less busy.

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7-4.3. Filename

When the retrieved data is to be saved to a file, the path and file name may be specified on the applicable window (typically the **Properties** window).

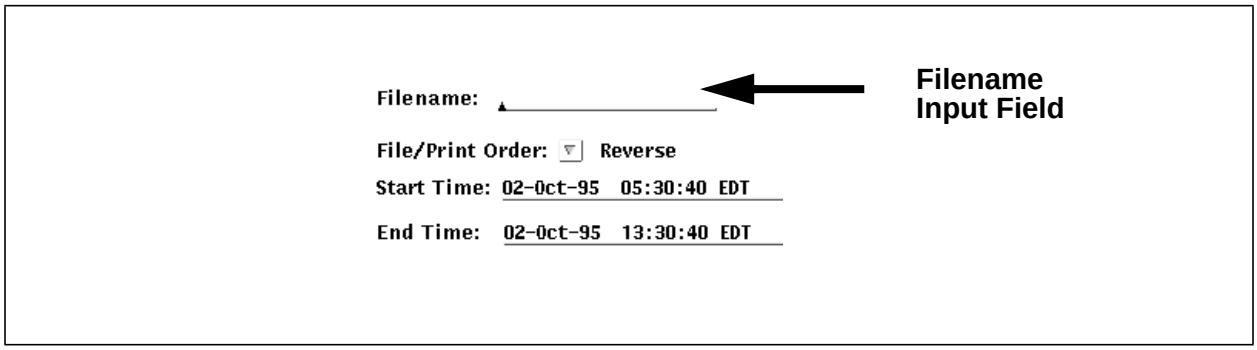

Figure 7-5. Filename Specification

Note

1. If the station is not configured to allow saving retrieved data to a file, the **Filename** entry field will be grayed-out. This option is enabled by using the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: Any applicable HSRUI topic
   Item: Save File Locally

2. If no file name is specified on the Properties window, the default path and file name will be used. These defaults are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: Any applicable HSRUI topic
   Items: Default Directory Name
   Default File Name

7-4.4. Apply, Reset, and Begin Buttons

Apply

Apply has different functionality depending of the particular application.

1. Prior to clicking on **Apply**, users typically will have assigned all the required (and default) parameters for a retrieval request.

2. Clicking on **Apply** takes all request parameters from the current user interface screen and puts them in a file. Execution of the request is initiated only after the **Begin** button has been used.

Note

For any Historical Trend, processing begins immediately after the **Apply** button has been hit.

Reset

The **Reset** button changes the properties entered on the current user interface window to the most recently stored values. If no stored values exist, then the default parameters are used. (See Section 5 for information on setting these defaults).

Begin

Once the desired retrieval parameters have been set with the **Apply** button, **Begin** issues the retrieval request to the appropriate HSR subsystem.

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Section 8. Station Maintenance User Interfaces

8-1. Section Overview

This section describes the user interface windows which can be used to view or control the HSR Station status, including control of the optical disk drives. The following topics are included:

- HSR Station Status/Control window (Section 8-2).
- Archive Manager User Interface windows (Section 8-3).

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8-2. Station Status/Control Window

The **HSR Station Status and Control** user interface (**HSR Station Status/Control** window) allows the user to display the status of the HSR Station in two modes.

- The **Status** mode displays the current operating status of the HSR Station primary and partner drops.

  Figure 8-1 represents an example of the **HSR Station Status/Control** window in the Status (read-only) mode.

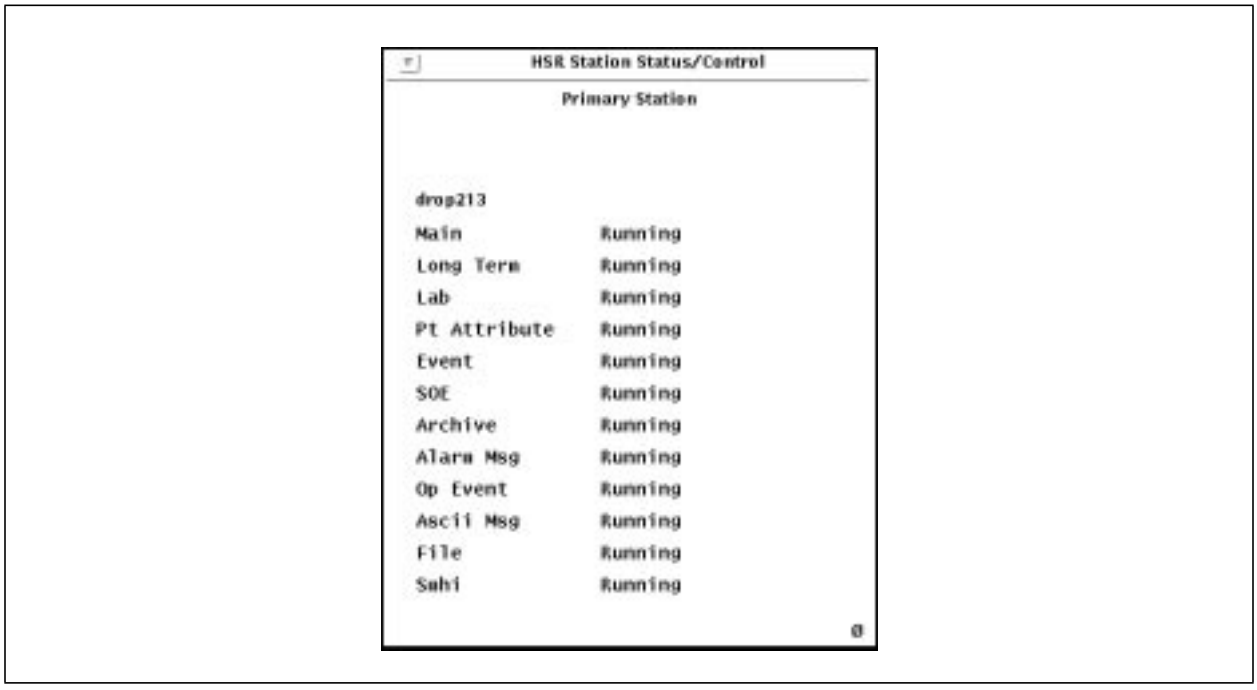

Figure 8-1. Status Mode

- The **Control** mode displays the current status and enables the user to manually shut down and restart the HSR Station or individual HSR functions.

  Figure 8-2 represents an example of the **HSR Station Status/Control** window in the Control mode.

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Figure 8-2. Control Mode

This section provides instructions for using both modes of the **HSR Station Status/Control** window.

The following topics are included in this section.

- Accessing the **HSR Station Status/Control** window (Section 8-2.1).
- Restarting all selected HSR Stations, or all selected HSR functions (Section 8-2.2).
- Shutdown all selected HSR Stations (Section 8-2.4).
- Shutdown all selected HSR functions (Section 8-2.5).
- Restarting selected HSR Station with a new PIC file (Section 8-2.6).
- Disable selected HSR stations (Section 8-2.7).
- Viewing the Status mode (Section 8-2.8).
- Listing of **HSR Station Status/Control** window messages (Section 8-2.9).

8-2.1. Accessing the Station Status/Control Window

Use the following procedure to access the **HSR Station Status/Control** window. This document assumes that the user is accessing the **HSR Station Status/Control** window at the Operator WEStation.

1. Open the **Station Status/Control** icon.

2. The **Station Status/Control** window (in the applicable mode) appears.The example below shows the window in Control mode where both a primary station and partner station have been defined. (Other examples in this book reflect an HSR configured with one drop and not partnered for redundancy). The check box allows the user to select one (or more) station(s). To select all items in the list, click on the check box next to Primary Station or Partner Station. To select individual items, first select **Subsystem** for the Function Select option, then click on the check box next to the desired subsystem.

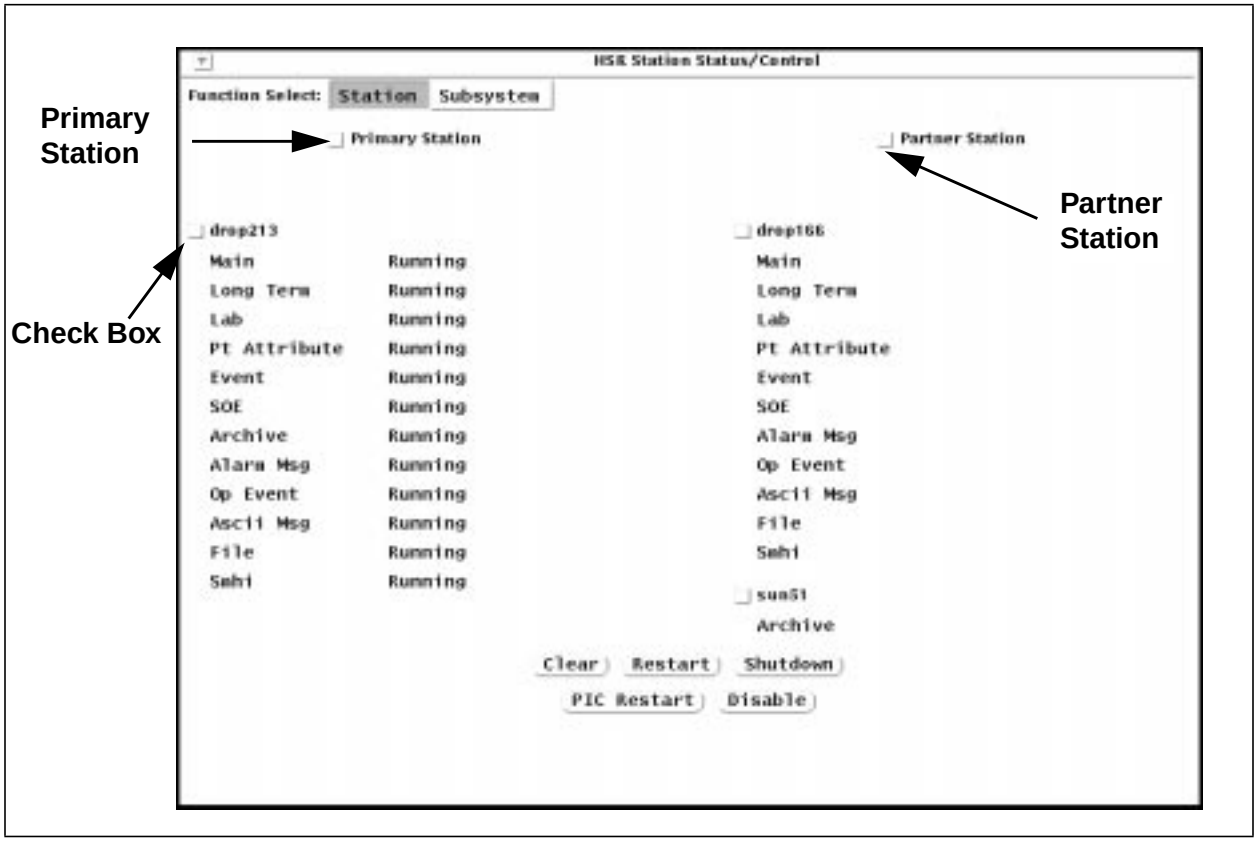

Figure 8-3. HSR Station Status/Control Window

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Note

The Control mode may not be accessible to all users. For more information, contact the System Administrator.

8-2.2. Restarting an HSR Station

Use the following procedure to restart an HSR Station that is stopped or running.

1. Select **Station** from the **Function Select** option boxes.
2. Select the check box for the desired HSR station(s), as shown in Figure 8-4. (Note that only HSR functions running on the primary station are shown in this example.)

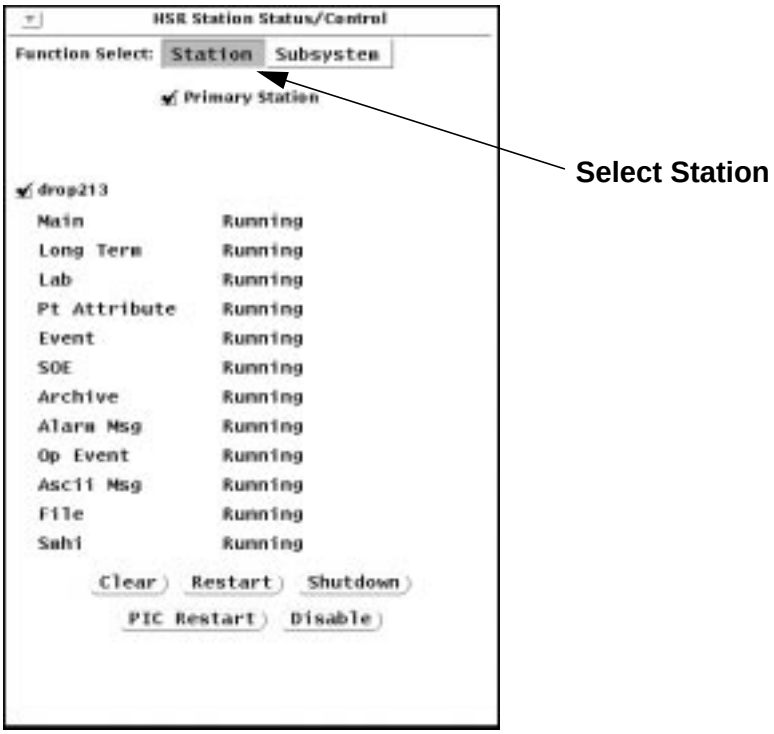

Figure 8-4. Select Station Option

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3. Select the **Restart** button. A warning message appears, as shown in Figure 8-5.

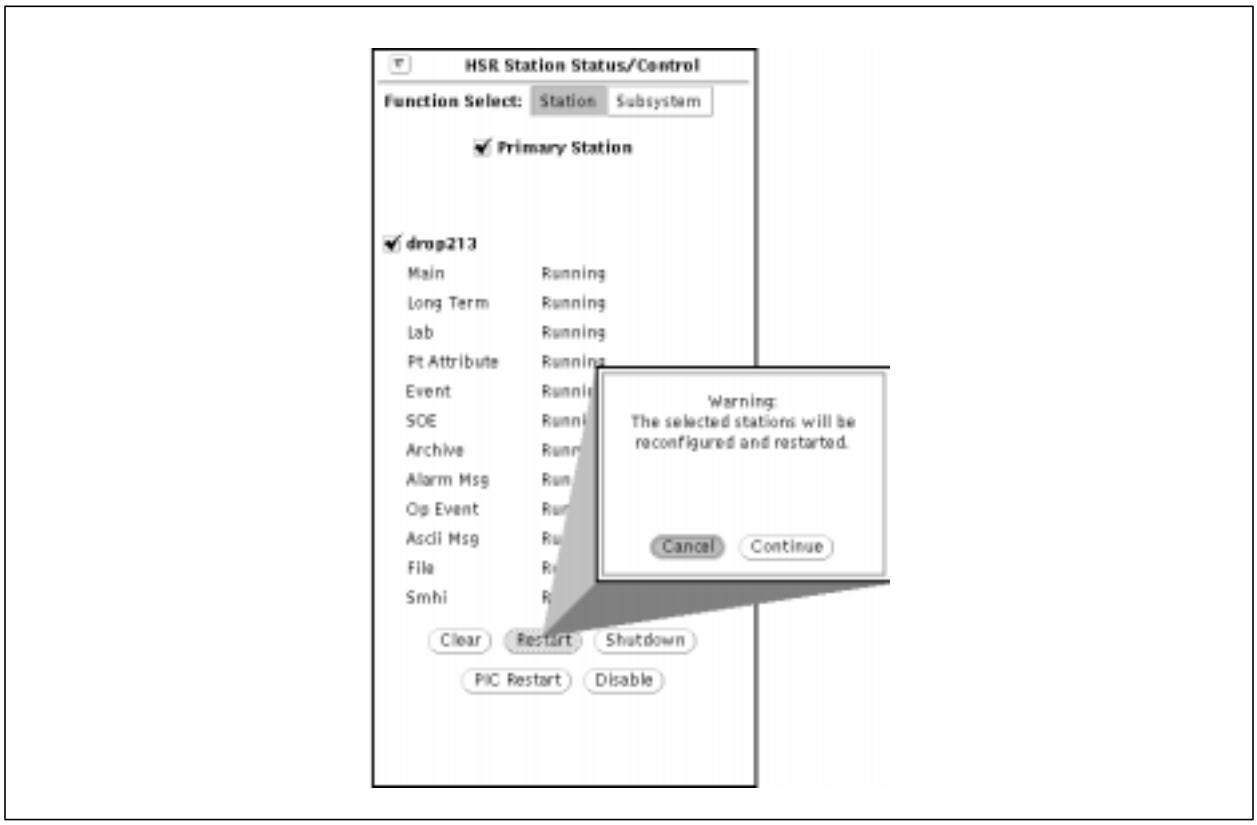

Figure 8-5. Reconfiguration and Restart Warning Message

4. Select the **Continue** button to restart the HSR Station(s). The following message appears:

   `Function completed: drop#`

   where # is the drop number of the selected HSR Station. This message indicates that the HSR has successfully received the restart command and is in the process of executing it.

Note

To cancel the restart request, select the **Cancel** button.

5. Once the HSR Station has been restarted, the window should display **Running** for all functions. For a list of error messages that may occur in this window, see Section 8-2.9.

8-2.3. Restarting Individual HSR Functions

Use the following procedure to restart an individual HSR function that is stopped or running.

1. Select **Subsystem** from the **Function Select** option boxes.
2. Select the check box for the desired HSR function, as shown in Figure 8-6.

Figure 8-6. Function Select Option

3. Select the **Restart** button. A warning message appears as shown in Figure 8-7.

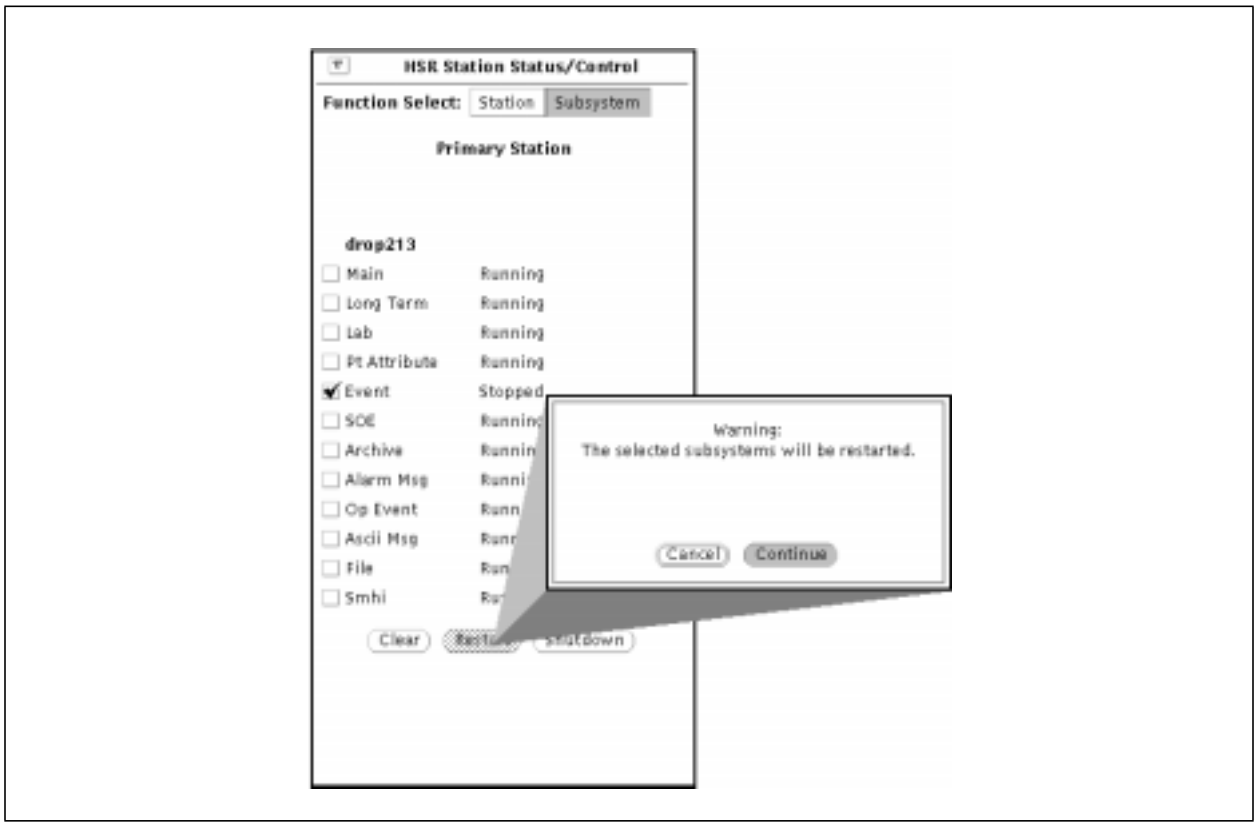

Figure 8-7. Restart Warning Message

4. Select the **Continue** button to restart the HSR functions. This message appears:

   `Function completed: drop#`

   where # is the drop number of the selected HSR Station. This message indicates that the HSR has successfully received the restart command and is in the process of executing it.

Note

To cancel the restart request, select the **Cancel** button.

5. Once restarted, the selected functions should now display Running. For a list of error messages that may occur in this window, see Section 8-2.9.

8-2.4. Shutting Down an HSR Station

When the Station Status/Control Window is in control mode, an HSR Station (or individual HSR functions) running on the primary (or partner) station can be shut down.

Use the following procedure to shut down the selected HSR Station.

1. Select **Station** from the **Function Select** option boxes.
2. Select the check box for the desired HSR Station.
3. Select the **Shutdown** button. A warning message appears, as shown in Figure 8-8.

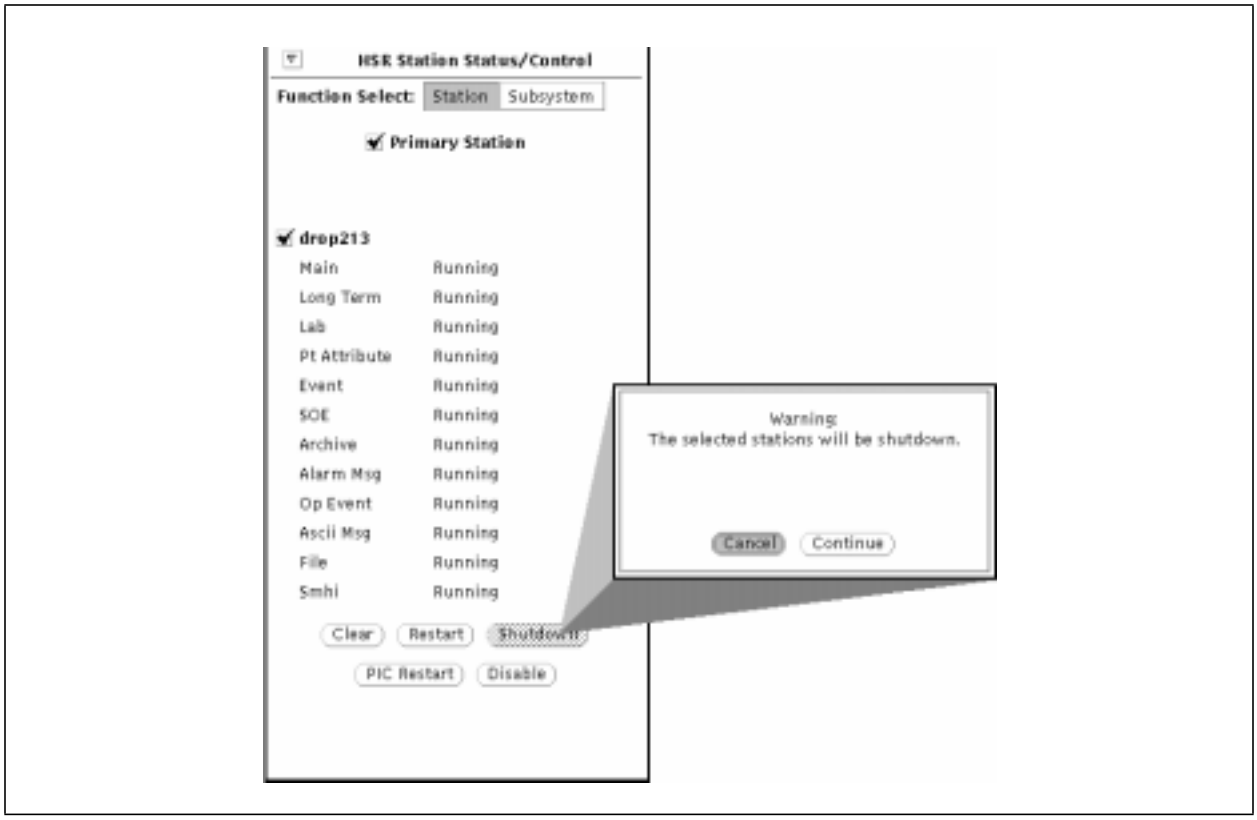

Figure 8-8. Shutdown Warning Message

4. Select the **Continue** button to shut down the HSR Station. This message appears:

   `Function completed: drop#`

   where # is the drop number of the selected HSR Station. This message indicates that the HSR has successfully received the shutdown command and is in the process of executing it.

Note

To cancel the shut down request, select the **Cancel** button.

5. Once the HSR Station has been shut down, the window should display **Stopped** for all functions selected. For a list of error messages that may occur in this window, see Section 8-2.9

8-2.5. Shutting Down Individual HSR Functions

Use the following procedure to shut down individual HSR functions.

1. Select **Subsystem** from the **Function Select** option boxes.
2. Select the check boxes for the desired HSR functions.
3. Select the **Shutdown** button. A warning message appears as shown in Figure 8-9.

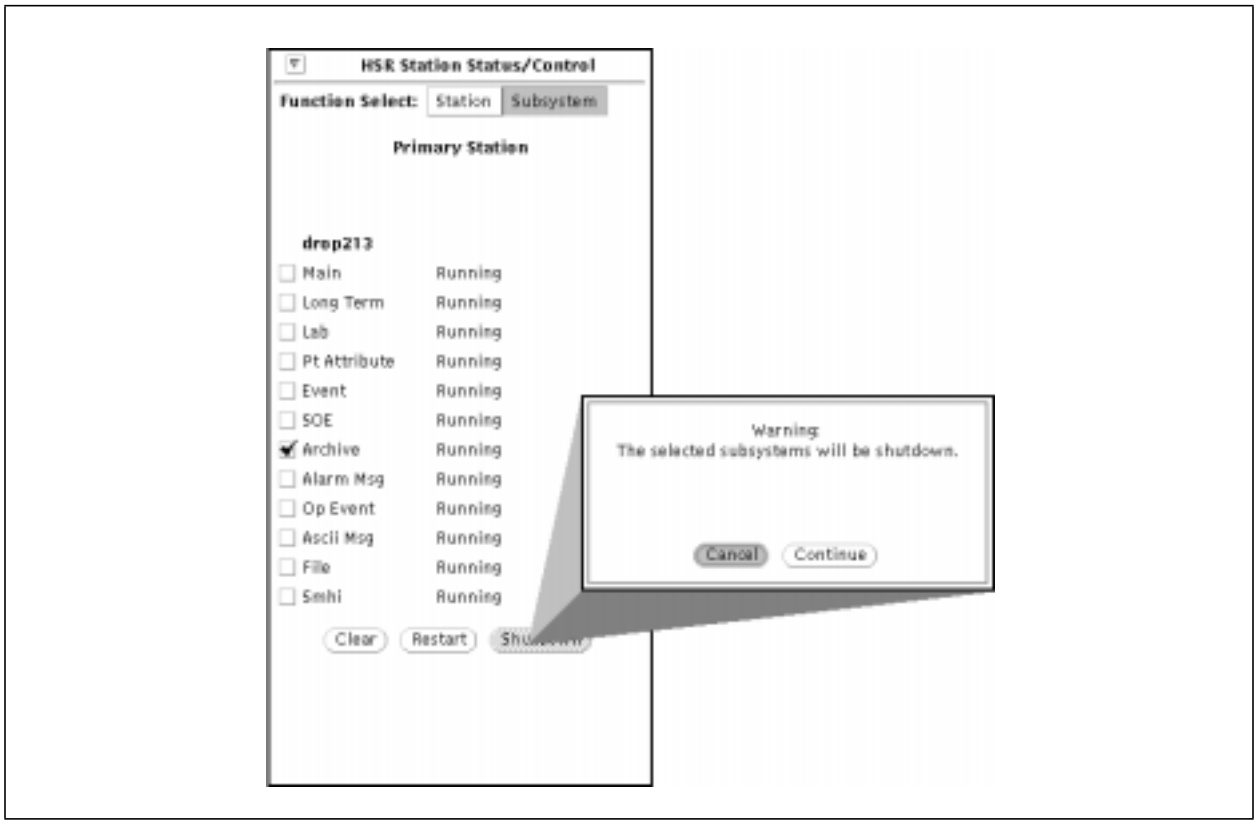

Figure 8-9. Shutdown Warning Message

4. Select the **Continue** button, this message appears:

   `Function completed: drop#`

   where # is the drop number of the selected HSR Station. This message indicates that the HSR has successfully received the shutdown command and is in the process of executing it.

   Note

   To cancel the shut down request, select the **Cancel** button.

5. Once the HSR function(s) have been shut down, the window displays **Stopped.** For a list of error messages that may occur in this window, see Section 8-2.9.

8-2.6. Restarting With New HSR PIC Files

When the **HSR Station Status/Control** window is in the Control mode, HSR functions with modified PIC files can be restarted. The HSR PIC file (hsrpicfile.src) lists the points to be collected by the specific HSR functions. When the PIC file is changed and downloaded to the HSR substation (using the **Maintain Project Data** function of the WDPF Admin Tool), the subsystem with the modified PIC file displays **Running/PIC** in the window. This message notifies the user that a new PIC file exists. The HSR subsystems affected by the modified PIC files must be restarted in order to use the new information.

Use the following procedure to restart the functions that have modified PIC files.

1. Select **Station** from the **Function Select** option boxes.
2. Select the check box for the desired HSR station.

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3. Select the **PIC Restart** button. A warning message appears, as shown in Figure 8-10.

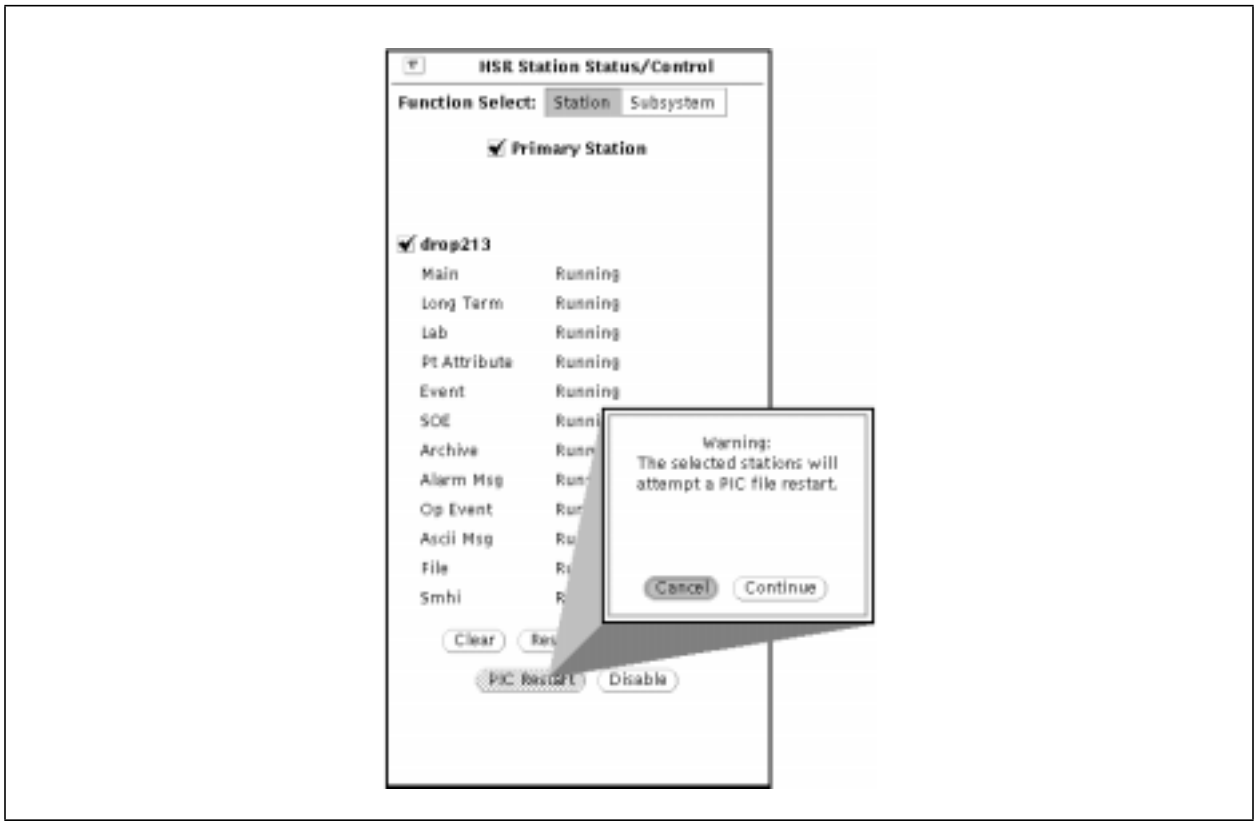

Figure 8-10. PIC File Restart Warning

4. Select the **Continue** button to restart the HSR Station PIC files. The following message appears:

   `Function completed: drop#`

   where # is the drop number of the selected HSR Station. This message indicates that the HSR has successfully received the PIC restart command and is in the process of executing it.

   Note

   To cancel this function, select the **Cancel** button.

5. Once the PIC files have been updated, the window should display **Running**.

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8-2.7. Disabling HSR Stations

When the Station Status/Control window is in control mode, the selected HSR Station can be disabled. Be sure to shut down all functions in the selected HSR Stations before disabling the HSR Station. After being disabled, the HSR Station cannot be restarted with the Restart button. It can only be restarted by rebooting. Use the following procedure to disable an HSR Station.

1. From the Station Status/Control window, select **Station** in the **Function Select** option boxes.
2. Select the check box for the desired HSR station.
3. Select the **Disable** button. A warning message appears, as shown in Figure 8-11.

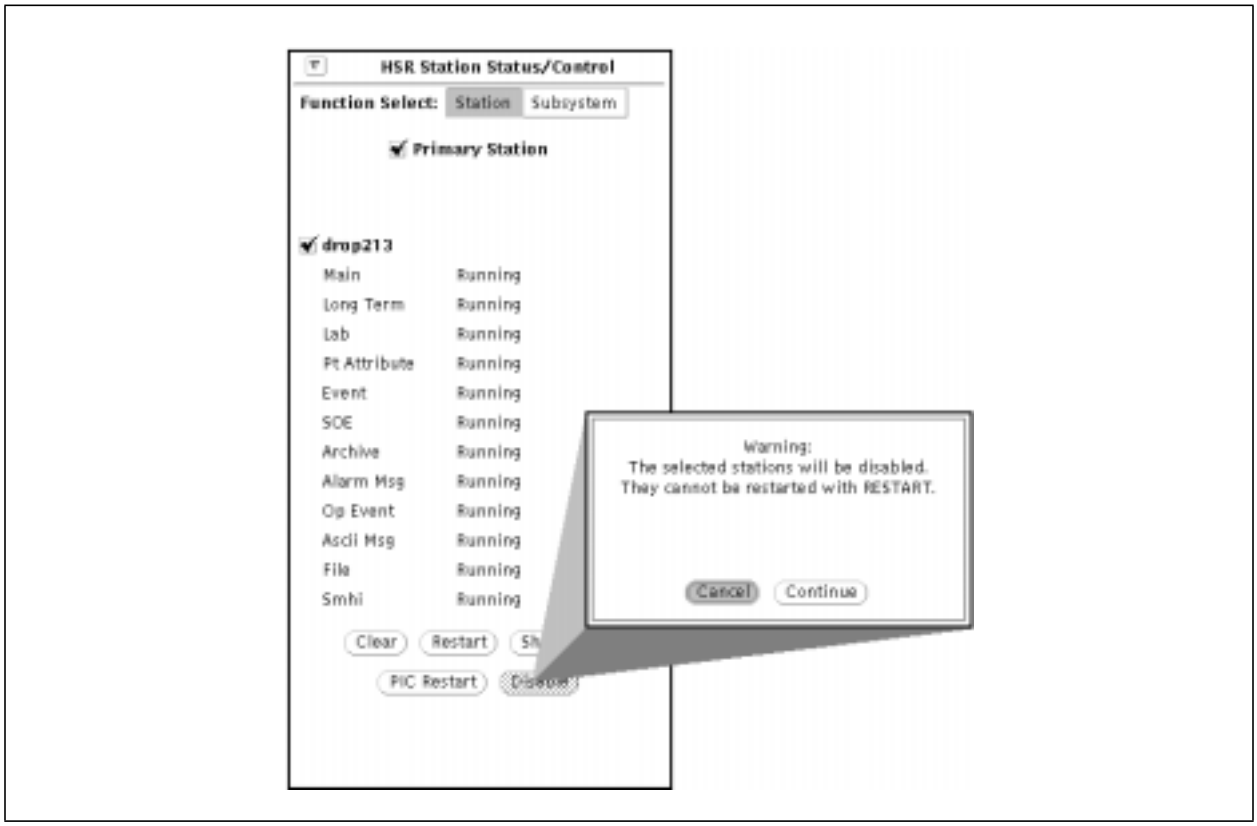

Figure 8-11. Disable Station Warning Message

4. Select the **Continue** button to disable the HSR Station(s). If the shutdown is successful, the following message appears:

   `Function completed: Station is shutdown: drop#`

   where # is the drop number of the selected HSR Station.

If the station has NOT been shut down, the following message appears:

`Station is not shutdown: drop#`

where # is the drop number of the selected HSR Station.

Note

To cancel this function, select the **Cancel** button.

5. Once the HSR Station has been disabled, the station status goes blank. For a list of error messages that may occur in this window, see Section 8-2.9.

8-2.8. Viewing the Status Mode

The Status mode (as shown in Figure 8-12) of the **HSR Station Status/Control** window displays the current status of individual HSR functions. The status indicates which HSR functions are running, stopped, or an error has been detected. The current status updates every three seconds.

Figure 8-12. Status Mode

If the status appears grayed-out, the Station Manager was unable to respond to the status request, or an error occurred with the updating function. If the HSR Station has been disabled, no status is displayed. Messages may occur when the Station Manager has detected an error with selected HSR functions.

8-2.9. Station Status/Control Window Messages

Messages that may appear when using the **HSR Station Status/Control** window are shown in Table 8-1.The **HSR Station Status/Control** window shows the status of the Drops and the subsystems. The status of the drop is listed following the drop name.

The possible drop status conditions are listed in Table 8-1.

Table 8-1. Drop Status

Status	Description/User Action
Offline	The HSR station is no longer on the Westnet highway. **User Action**: The highway must be enabled and the HSR restarted. (See Section 8-2.2).
Update Time	The HSR station requires a time update.
CONFIG	This indicates that a new CONFIG.HSR file exists for this HSR station.
Stn Mgr Error: 10	The Station Manager failed to copy the PIC files.
Stn Mgr Error: 11	The Station Manager failed to start the HSR function(s).
Stn Mgr Error: 12	The Station Manager failed when an error occurred while starting the HSR.
Stn Mgr Error: 13	The Station Manager failed to stop requested HSR function(s).
Stn Mgr Error: 14	The Station Manager failed to connect to the HSR function(s).
Subsystem error	The HSR function(s) stopped due to an internal, unrecoverable error.

If multiple messages are to be displayed, the messages will be appended together and delimited by a slash (/).

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The **HSR Station Status/Control** window also shows the status of the subsystems as seen in Table 8-2. Subsystem status is listed following the subsystem name.

Table 8-2. Subsystem Status

Status	Description/User Response
Not configured	The subsystem is not defined in the **CONFIG.HSR** file at the station. **User Action**: Check the **CONFIG.HSR** file to verify that the subsystem has been included in this file. (See Section 5 for more information).
Running	The subsystem is running. **User Action**: None required.
Recovering	The subsystem is running, and recovering files from its partner. **User Action**: None required.
Stopped	The subsystem is stopped. **User Action**: This message may appear from several causes. If it appears as a result of a Shut-Down command, no user response is a required. If it appears as a result of drop failure, the drop may have to be restarted. (See Section 8-2.2 for more information).
Unrecovered	The subsystem is running and waiting to recover files from its partner.

If multiple messages are to be displayed, the messages will be appended together and delimited by a slash (/) (similar to drop status).

8-3. Archive Manager User Interface Windows

The Archive Manager user interface windows provide access to the process that archives historical data files. The Archive Manager main window, **Archive: General Status** window, displays drive status and volume usage statistics from the Archive Manager primary or partner (or local) drop.

8-3.1. Displaying General Status Information

The Archive Manager window is accessed at the Operator WEStation. Use the following procedure to display general status information.

1. Open the Archive Manager icon. The **Archive: General Status** window appears, as shown in Figure 8-13.

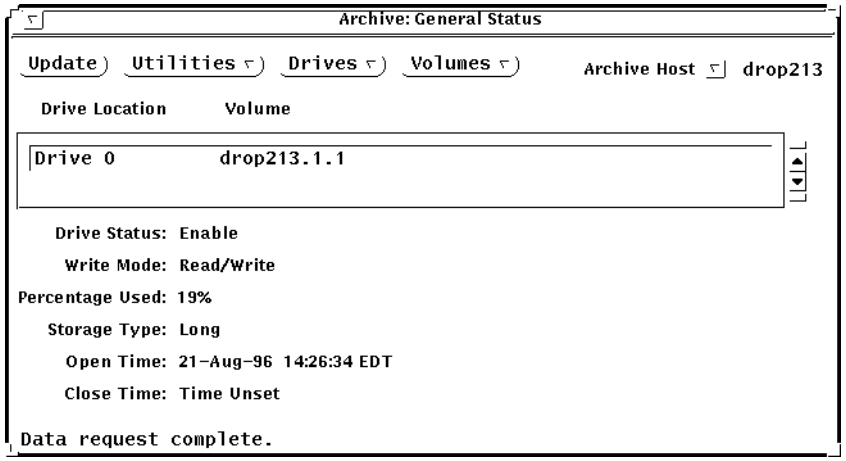

Figure 8-13. General Status Display

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2. From the **Archive: General Status** window, pull down the **Archive Host** menu, as shown in Figure 8-14.

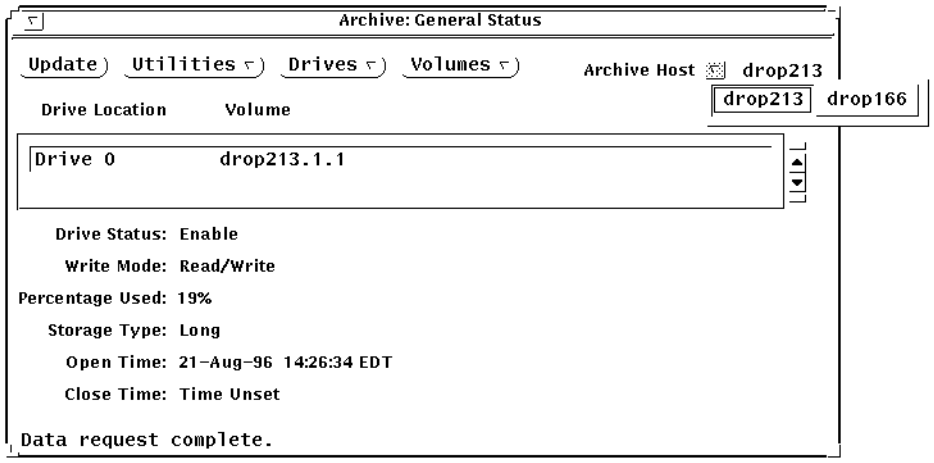

Figure 8-14. Archive Manager Host Menu

3. Select the applicable drop.

Note

If the Archive Manager is not configured on either the primary or partner drop, the **Archive Host** menu displays the local drop.

4. Select the **Update** button. The appropriate information for the selected drop appears on the window, as shown in Figure 8-15.

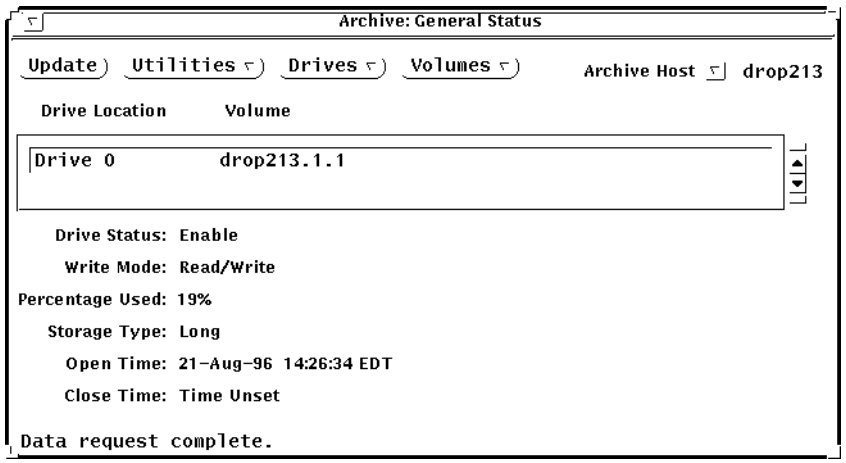

Figure 8-15. Update Button

Note

If the HSR is currently configured with a long- term and a short-term volume, volume usage for both is displayed in the **Volume Usage** field.

8-3.2. Using Utility Functions

The Utility functions of the Archive Manager window allow the user to display the open and close times of historical files for each HSR function. It also provides a window that displays instructions for loading archive volumes. Use the following procedure to access the **Utilities** menu.

1. From the **Archive: General Status** window, pull down the **Utilities** menu, as shown in Figure 8-16.

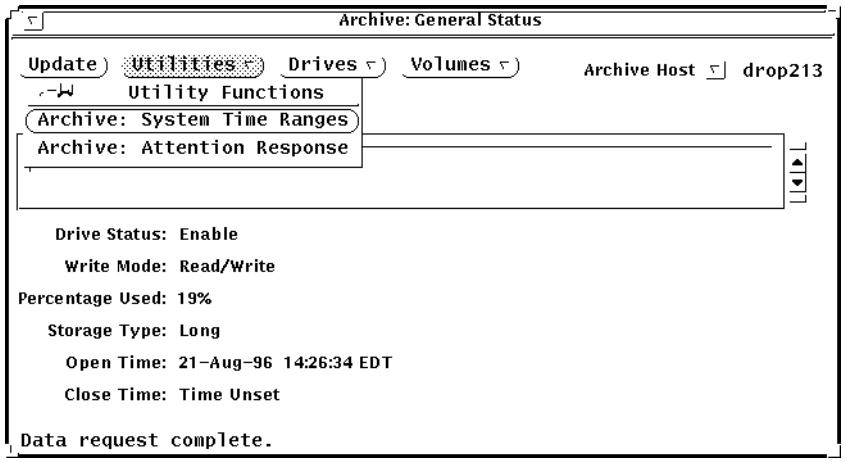

Figure 8-16. Utilities Menu

2. Select one of the following utility functions:

   - **System Time Ranges**
   - **Attention Response**

System Time Ranges

The **System Time Ranges** window displays two storage areas of historical data for each HSR function:

- The **secondary** storage area refers to archived files still located on disk.
- The **tertiary** storage area refers to archived files.

Use the following procedure to display time ranges for the HSR functions.

1. Select **System Time Ranges** from the **Utilities** menu. The **Archive: System Time Ranges** window appears, as shown in Figure 8-17.

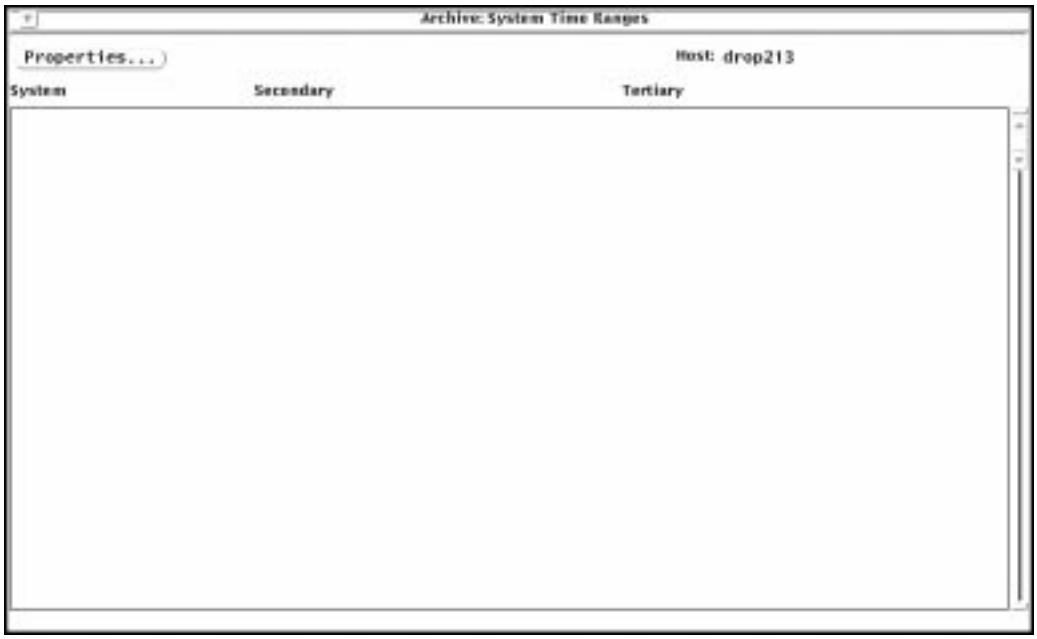

Figure 8-17. Archive: System Time Ranges Window

2. Select the **Properties** button. The **System Time Ranges: Properties** window appears, as shown in Figure 8-18.

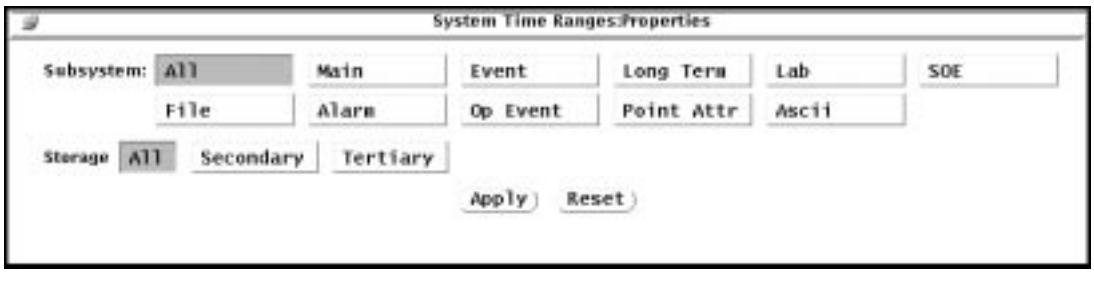

Figure 8-18. System Time Ranges: Properties Window

3. Select one or more HSR Functions to view from the **Subsystem** option boxes.

Note

Select the highlighted function to unmark it.

4. Select one or more storage areas to view from the **Storage** option.

5. Select the **Apply** button. The applicable information appears on the **Archive: System Time Ranges** window, as shown in Figure 8-19.

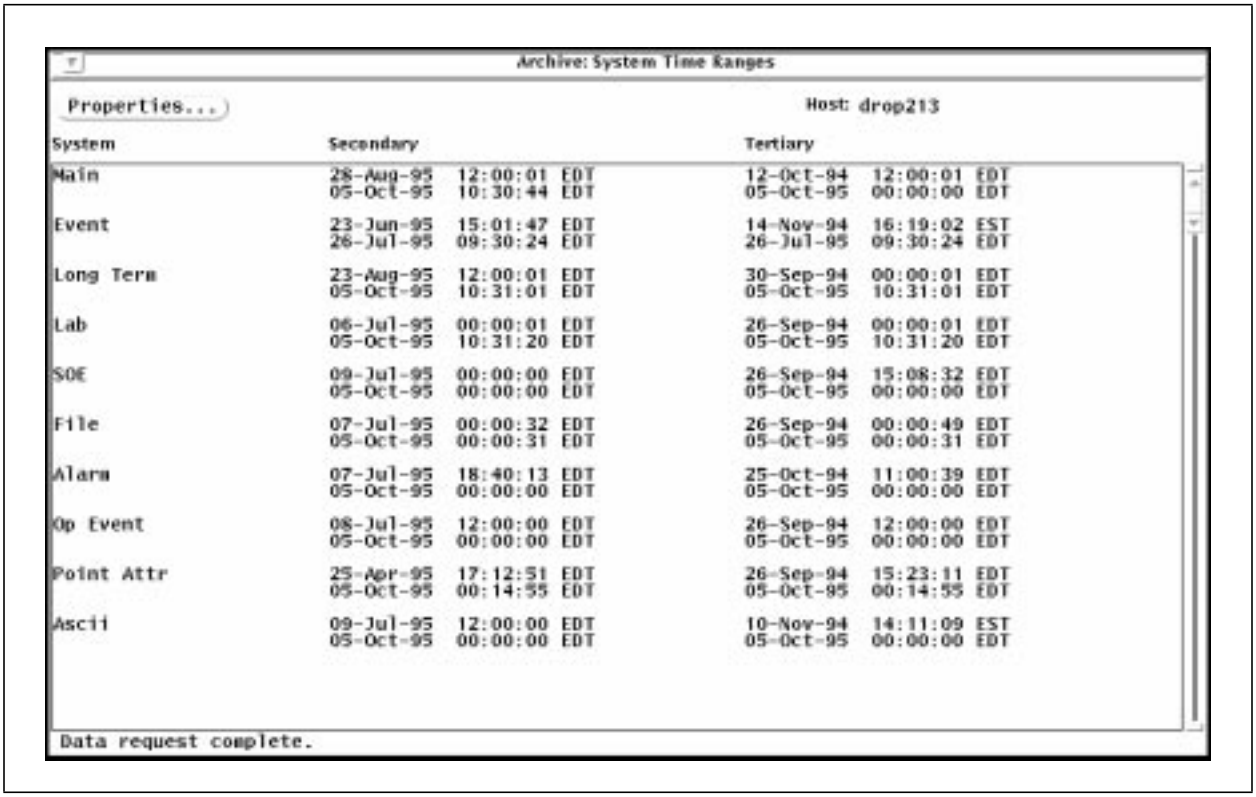

Figure 8-19. Archive: System Time Ranges Window (All HSR functions)

Attention Response

The **Archive: Attention Response** window alerts the user when a different volume needs to be loaded. The Archive Manager is checked periodically to see if there are any attentions pending. There are two types of Attentions:

- **Load Attention** displays instructions for loading a new volume (blank or existing) in the drive.

- **Confirm Attention** displays a message when an existing formatted volume was inserted in the drive when a blank one was requested.

Each drop can have two **Load Attentions** and two **Confirm Attentions**. Use the following procedure to view the Attention Response window.

1. Select **Attention Response** from the **Utilities** menu. The **Archive: Attention Response** window appears, as shown in Figure 8-20.

Figure 8-20. Archive: Attention Response Window

Note

The Archive Manager periodically checks all drops (primary, partner, and local) for attentions. To force an update, select the **Update** button.

The attention response user interface periodically checks the Archive Manager on the primary and partner HSR stations.

The **Properties** button will display a subwindow as shown in Figure 8-21. These options allow the **Attention Response** window to do the following functions respectively:

1. Be viewable when an icon.
2. Close window automatically when attention is addressed.
3. Restrict which hosts to check for attentions.

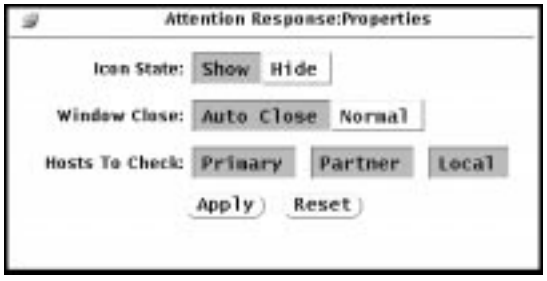

Figure 8-21. Archive: Attention Response: Properties Window

The **Attention Response** user interface may also run locally. Locally is defined as running on a drop other than the HSR (where the local host name does not match either the Primary or Partner HSR station names). In the Local mode, the **Attention Response** user interface communicates with the Archive Manager on the Local Host which is assumed to be present when the HSR software runs in the Data Analysis mode.

4. If attentions exist, they appear in the window, as shown in Figure 8-22. Perform the action and select the **Apply** (**Overwrite**) button when finished.

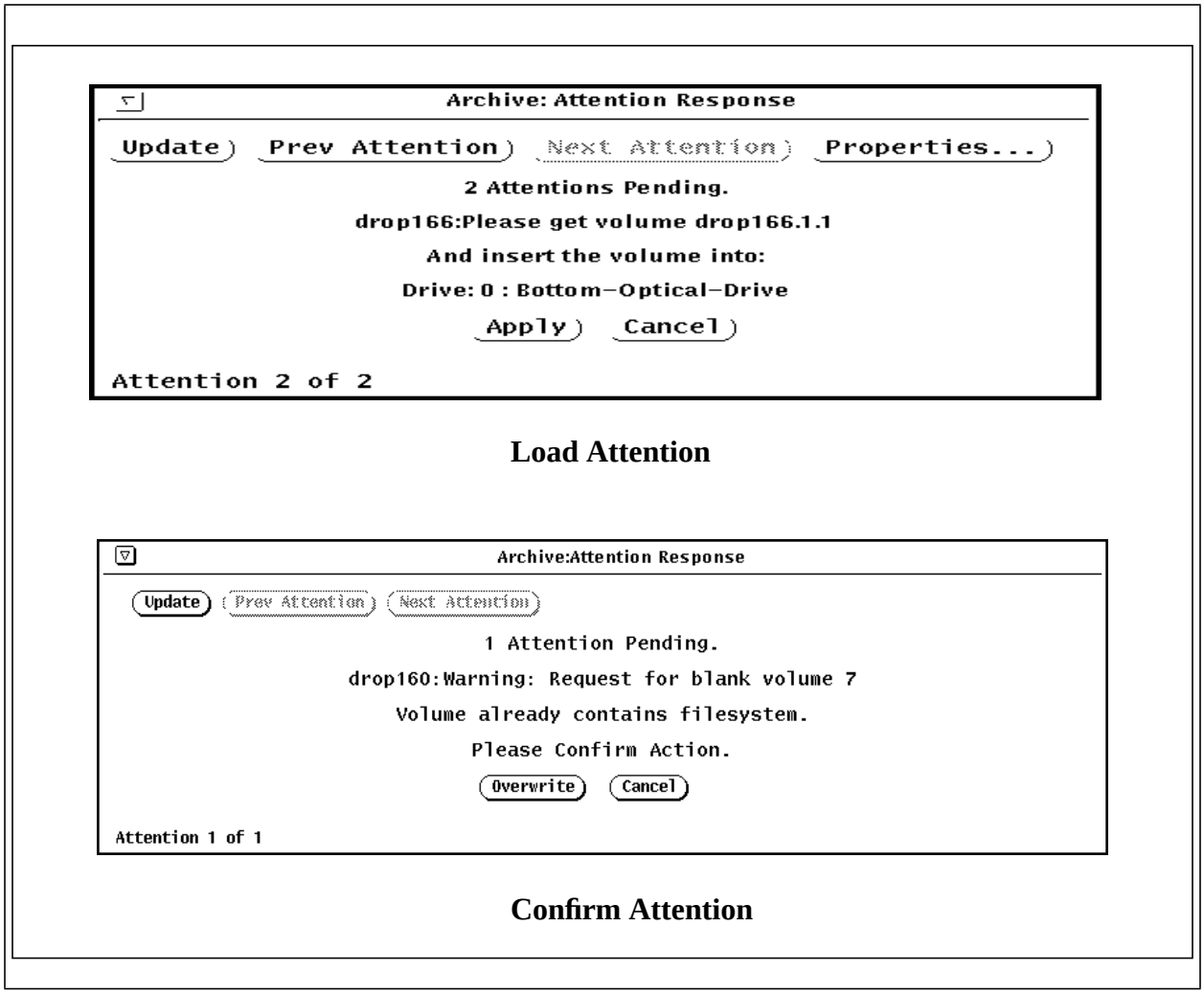

Figure 8-22. Archive: Attention Response Window, with Existing Attentions

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Note

The **Previous Attention** and **Next Attention** buttons are active when there are multiple attentions.

8-3.3. Using the Drive Functions

The Drive Functions of the Archive Manager window allow the user to control certain parameters for the selected drive, such as enabling the drive, determining if the drive has read only or read/write capabilities, and if the drive allows shuffling. Use the following procedure to access the **Archive: Drive Status** window.

1. From the **Archive: General Status** window, pull down the **Drive Functions** menu, as shown in Figure 8-23.

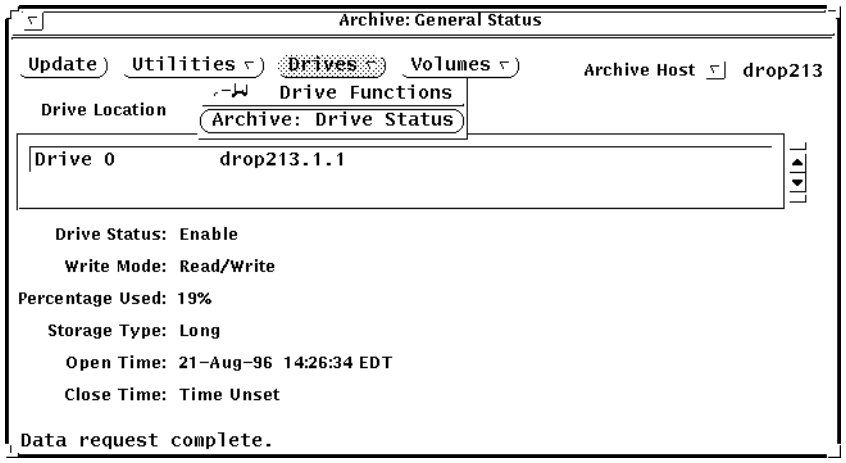

Figure 8-23. Drive Functions Menu

2. Select **Drive Status**. The **Archive: Drive Status** window appears, as shown in Figure 8-24.

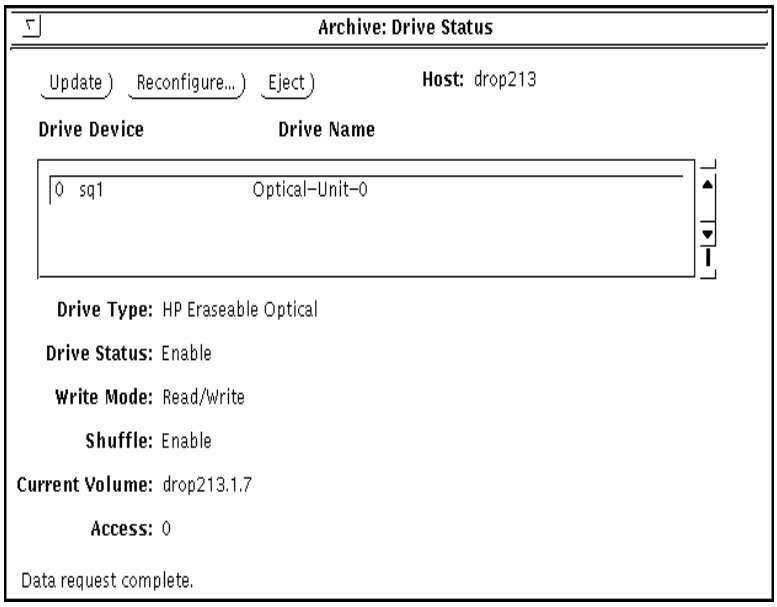

Figure 8-24. Archive: Drive Status Window

3. Select the **Update** button. The drive number, device name, and text description of the device are displayed in this window, as shown in Figure 8-25. The parameters shown in this window are modified on the **Drive Status: Modify Drive Configuration** window.

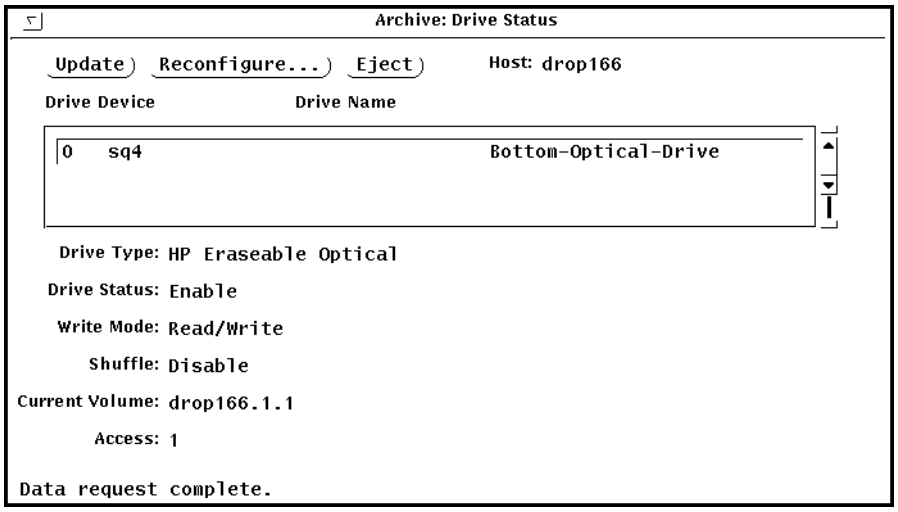

Figure 8-25. Update Button

Modifying Drive Status Parameters

From the **Modify Drive** window, the drive status, write mode, and shuffle parameters can be modified. The remaining parameters can be modified in the **HSR Optical Disk Parameters** GUI (see Section 5 for more information). Use the following procedure to modify Drive Status parameters.

1. From the **Drive Status** window, select the **Reconfigure** button. The **Drive Status: Modify Drive Configuration** window appears, as shown in Figure 8-26.

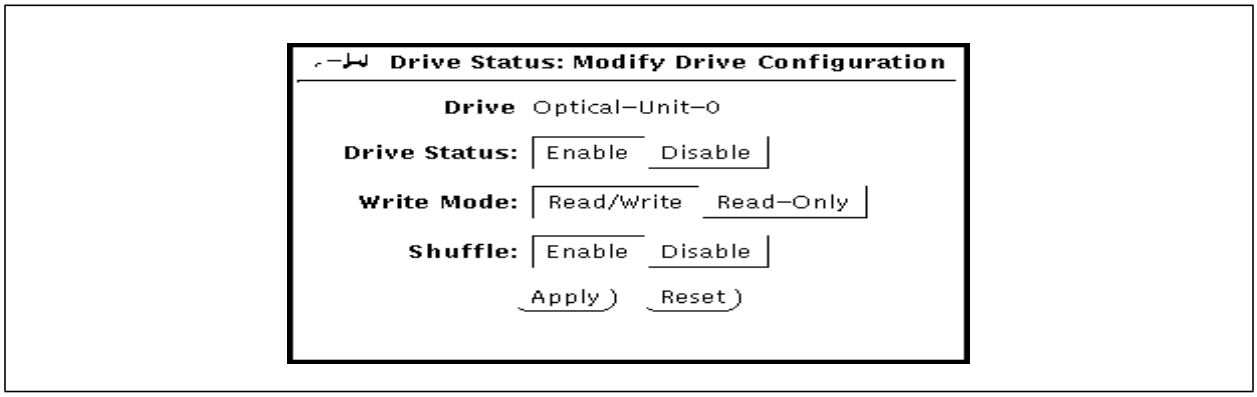

Figure 8-26. Drive Status: Modify Drive Configuration Window

2. Select the applicable option for each parameter.
   - **Drive Status** determines whether the drive is enabled. Note that a disabled drive is not used by the Archive Manager.
   - **Write Mode** determines whether the drive has read/write or read only capabilities.
   - **Shuffle** determines whether data can be retrieved from a volume other than the current volume.
3. Select the **Apply** button. The **Archive: Drive Status** window now displays the new parameters.

Note

If the HSR has a Jukebox then the drive Status screen will **not** appear as described. See Appendix B for Jukebox information.

8-3.4. Using the Volume Functions

The **Volume Functions** of the Archive Manager window allow the user to obtain information concerning a volume or volume set by accessing the volume database. (The volume database is comprised of two tables: Volume Set Table and Volume Table.) Use the following procedure to access the Volume Functions menu.

1. From the **Archive: General Status** window, pull down the **Volume Functions** menu, as shown in Figure 8-27.

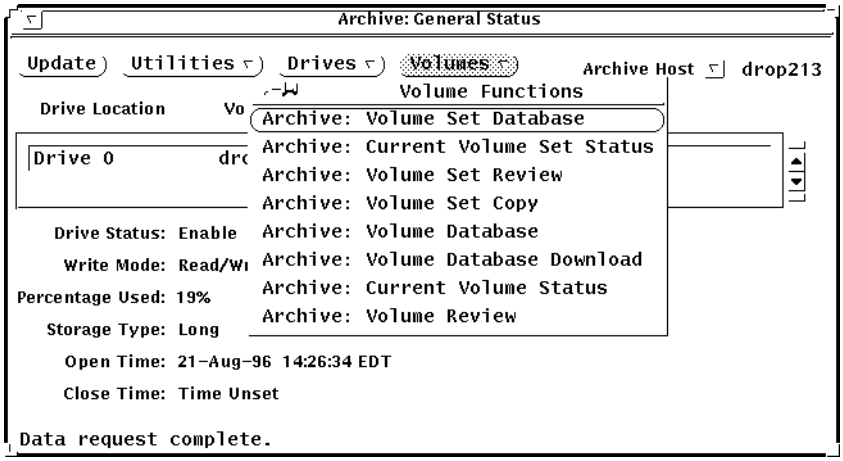

Figure 8-27. Volume Functions Menu

2. Select one of the following volume functions:

   - Volume Set Database
   - Current Volume Set Status
   - Volume Set Review
   - Volume Set Copy
   - Volume Database
   - Volume Database Download
   - Current Volume Status
   - Volume Review

In the **Volume Functions** windows, fields that require an alphanumeric entry (such as Start Time and End Time) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

Volume Set Database

The **Archive: Volume Set Database** window displays general information about the volume set as a whole unit (as compared to the **Archive: Volume Database** window which displays information about individual volumes in the set). Use the following procedure to access the **Archive: Volume Set Database** window.

1. Select **Volume Set Database** from the **Volume Functions** menu. The **Archive: Volume Set Database** window appears, as shown in Figure 8-28.

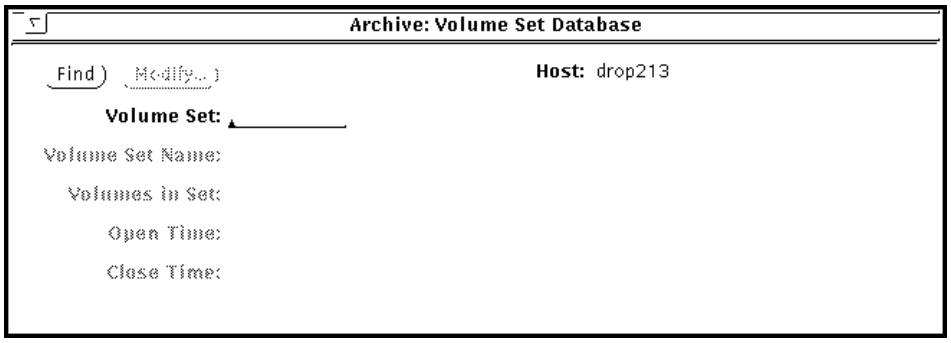

Figure 8-28. Archive: Volume Set Database Window

2. Enter the volume set number in the **Volume Set** field.

3. Select the **Find** button. The information applicable to the volume set appears in the window, as shown in Figure 8-29.

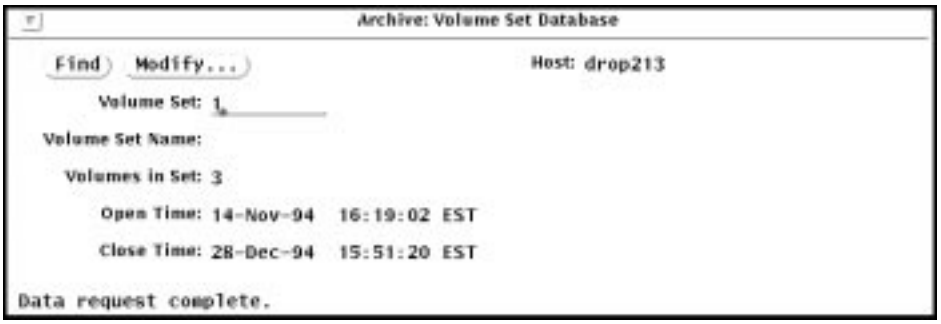

Figure 8-29. Find Button

The name of the volume set can be changed using the **Volume Set Database: Modify** window, as described in the following text.

Modifying the Volume Set Name

The text description of the volume set can be changed to display a new name on the **Volume Set Database** window.

1. From the **Volume Set Database** window, select the **Update** button. The **Volume Set Database: Modify** window appears, as shown in Figure 8-30.

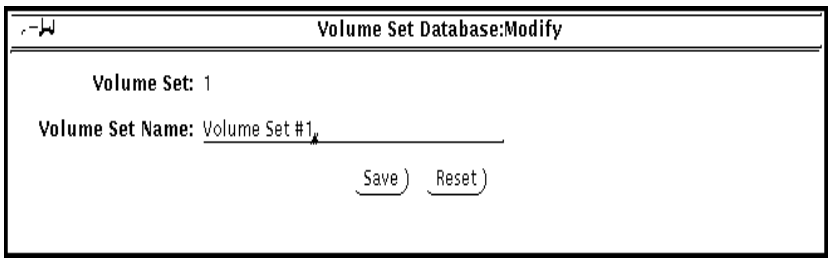

Figure 8-30. Volume Set Database Modify Window

2. Enter the new text in the **Volume Set Name** field. The volume name can contain up to 30 alphanumeric characters.

3. Select the **Save** button. The following message box appears:

   ```
   Please confirm update.
   ```

4. Select the **Update** button. The new name now appears in the **Volume Set Database** window.

Note

Select the **Reset** button before updating to display the current volume set name.

Current Volume Set Status

The **Archive: Current Volume Set Status** window displays information about the current **volume set**. A current volume set contains the volume that is being used to archive files. This window also provides the ability to modify the current close time of the volume set. Use the following procedure to access the Current Volume Set Status window.

1. Select **Current Volume Set Status** from the **Volume Functions** menu. The **Archive: Current Volume Set Status** window appears.

2. Select the **Update** button. The applicable information appears in the **Archive: Current Volume Set Status** window, as shown in Figure 8-31. If the close time of the volume set is to be modified, proceed to Step 3.

Figure 8-31. Update Button

3. From the **Archive: Current Volume Set Status** window, select the **Force Volume Set Close Time** button. The **Current Volume Set: Force Close Time** window appears, as shown in Figure 8-32.

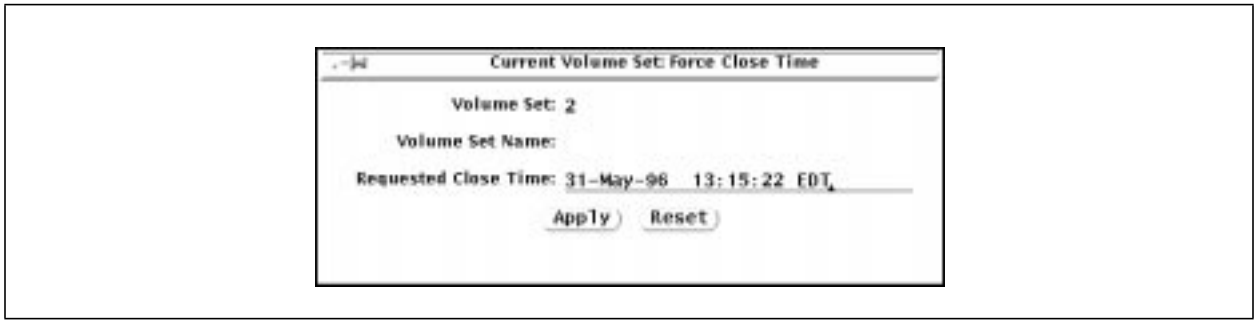

Figure 8-32. Current Volume Set: Force Close Time Window

4. Enter the new close time in the **Close Time** field using the following format:

DD-MMM-YY hh:mm:ss

5. Select the **Apply** button. The following message appears:

```
Please Confirm Update.
```

6. Select the **Update** button. The new close time now appears in the **Archive: Current Volume Set Status** window.

Note

Select the **Reset** button before updating to display the current volume close time.

To view the volume set in detail, the **Archive: Volume Set Database** window can be accessed from the **Archive: Current Volume Set Status** window.

Volume Set Review

The **Archive: Volume Set Review** window displays volume set information from the drop selected on the **Archive: General Status** window. This information includes the open and close times of all volumes in a set (or one volume within a set). Use the following procedure to access the **Archive: Volume Set Review** window.

1. Select **Volume Set Review** from the **Volume Functions** menu. The **Archive: Volume Set Review** window appears, as shown in Figure 8-33.

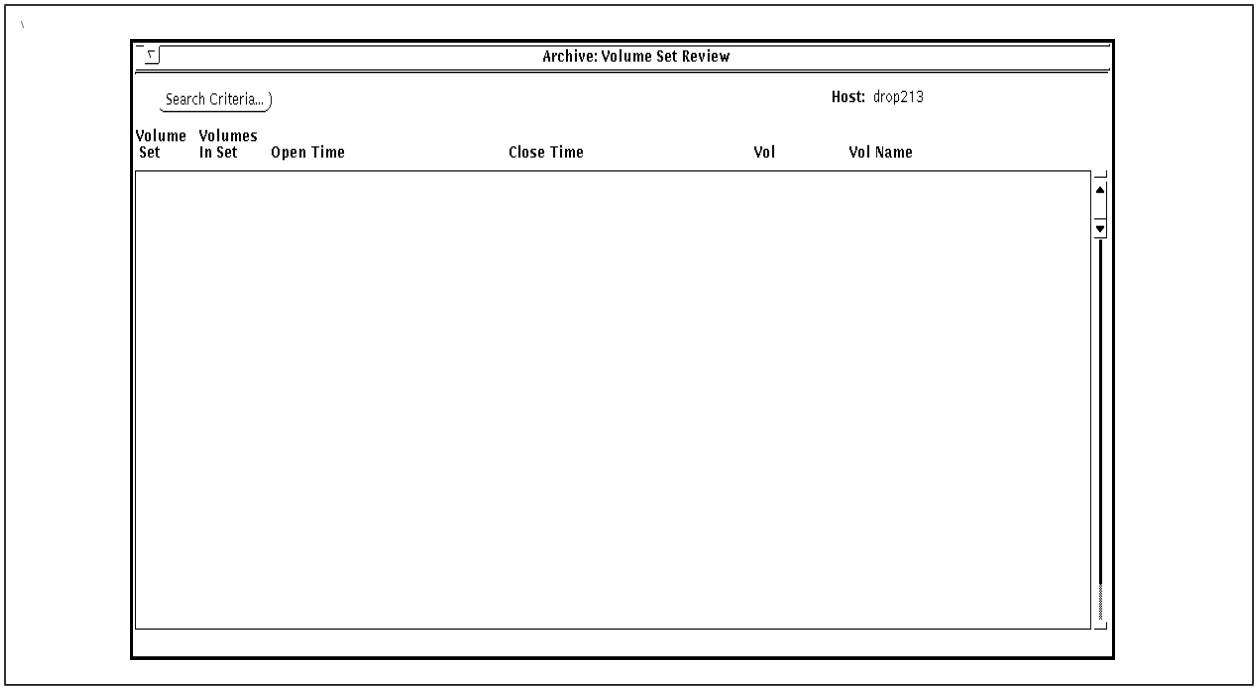

Figure 8-33. Archive: Volume Set Review Window

2. Select the **Search Criteria** button. The **Volume Set Review: Properties** window appears, as shown in Figure 8-34.

Figure 8-34. Volume Set Review: Properties Window

3. Select one volume set review method from the **Volume Set** option.

   - **All** reviews all volumes in all volume sets.
   - **Current** reviews all volumes in the current volume set.
   - **Specify** reviews a specific volume set.

4. If specify was selected for a specific volume set, enter the volume set number in the **Volume Set** field.

Note

Multiple volume sets can be entered using the following format: **1,2,3**.

5. The **Volume** option determines whether additional volume information appears on the **Archive: Volume Set Review** window. Select **Show** to display the volume information.

6. The **Start Time** field is optional. It is used to search every volume set opened after the specified time. If applicable, enter the start time in the **Start Time** field using the following format:

   DD-MM-YY hh:mm:ss

7. The **End Time** field is optional. It is used to search every volume set before the specified time. If applicable, enter the end time in the **End Time** field, using the following format:

   `DD-MMM-YY hh:mm:ss`

   Notes

   1. The **Start Time** and **End Time** fields are optional and therefore can be left blank.
   2. To specify a range, enter both a start time and end time.

8. Select the **Apply** button. The volume set information appears in the **Archive: Volume Set Review** window. This message appears in the window:

   `Retrieving records from database.`

   The following figures are examples of the **Archive: Volume Set Review** window.

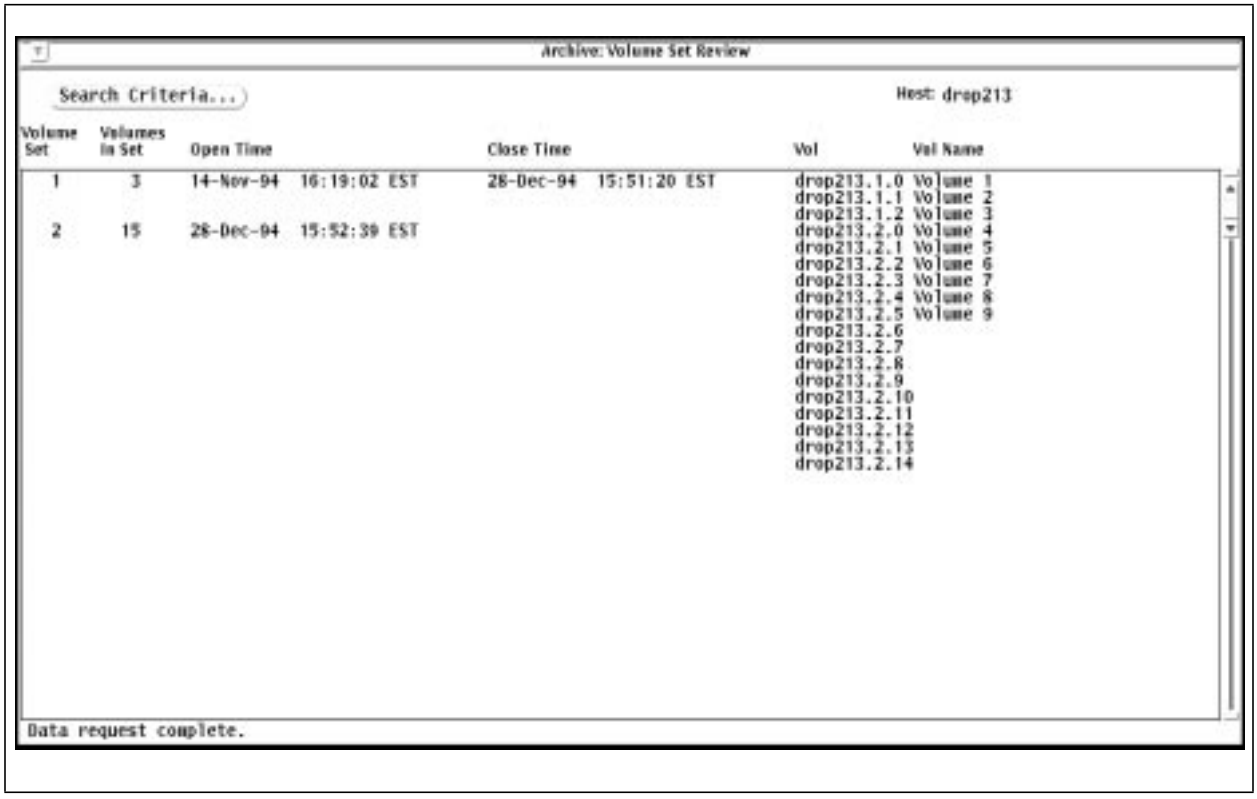

Figure 8-35. Archive: Volume Set Review Window (Show)

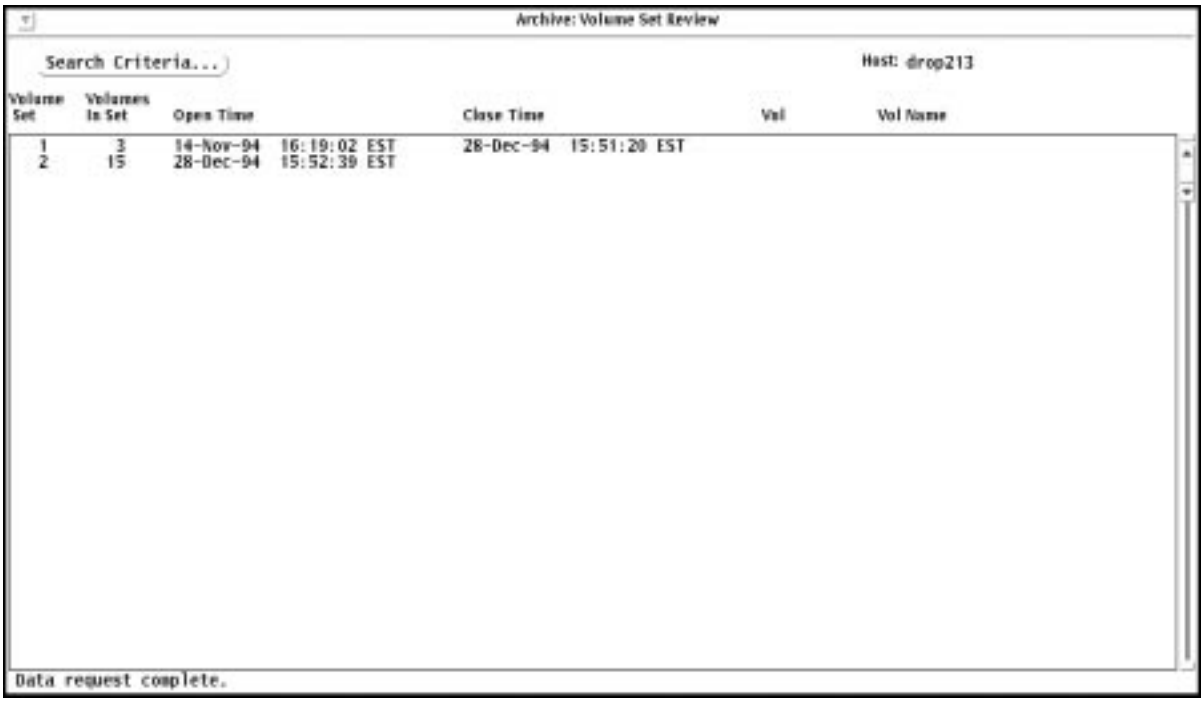

Figure 8-36. Archive: Volume Set Review Window (Hide)

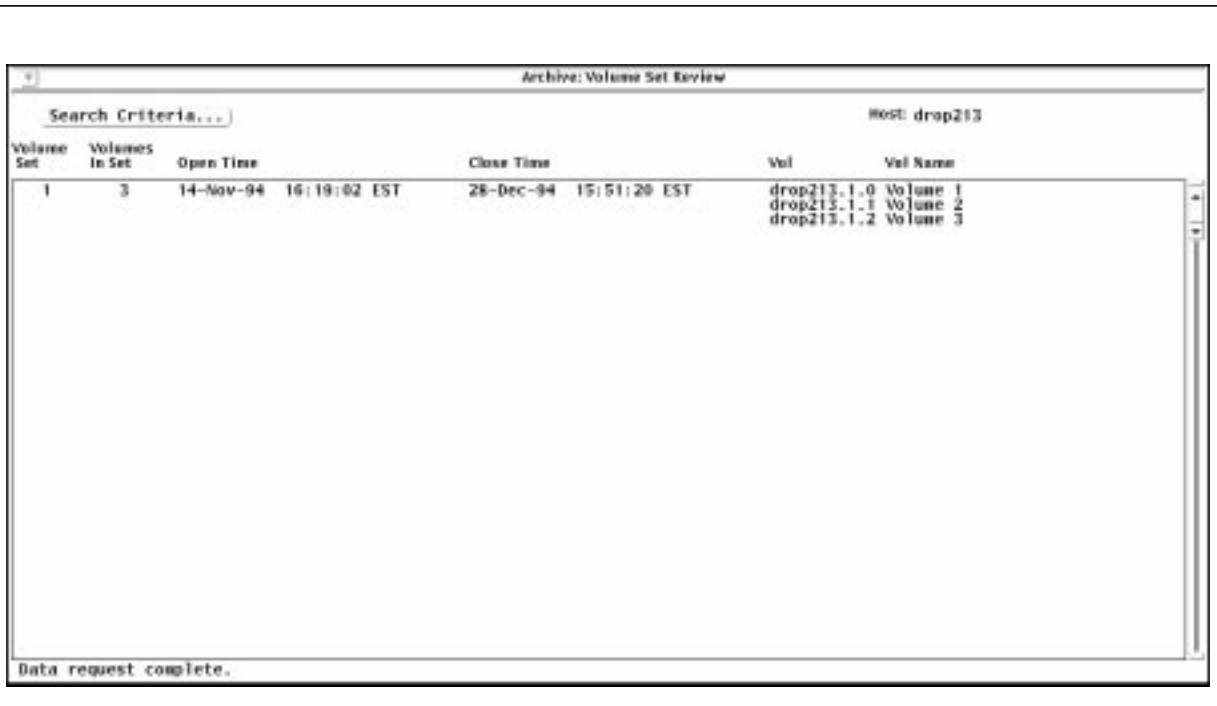

Figure 8-37. Archive: Volume Set Review Window (Specific Volume Set)

Volume Set Copy

The **Volume Set Copy** function is used to copy an entire set of optical volumes to a backup set of opticals. This procedure requires an identical number of blank volumes as the number of volumes that have already been written to in the set.

Volume Database

The **Archive: Volume Database** window displays pertinent information about a volume within a set. Use the following procedure to view the **Archive: Volume Database** window.

1. Select **Volume Database** from the **Volume Functions** menu. The **Archive: Volume Database** window appears, as shown in Figure 8-38.

Figure 8-38. Archive: Volume Database Window

2. Enter the volume number in the **Volume** field.

3. Select the **Find** button. The information applicable to the volume appears in the **Archive: Volume Database** window, as shown in Figure 8-39.

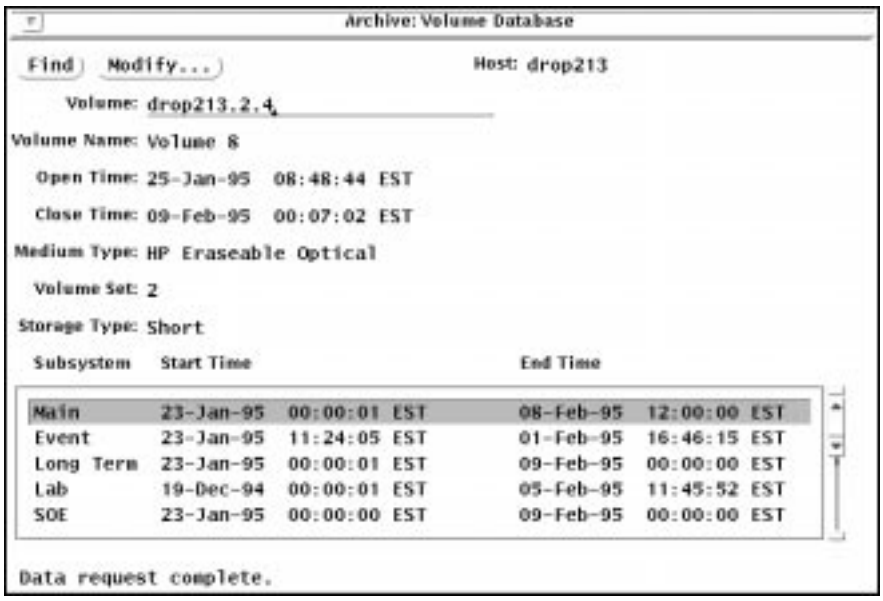

Figure 8-39. Volume Database Window

If the name of the volume is to be changed, proceed to Step4.

4. From the **Archive: Volume Database** window, select the **Update** button. The **Volume Database: Modify** window appears, as shown in Figure 8-40.

Figure 8-40. Volume Database: Modify Window

5. Enter the new text in the **Volume Name** field. The volume name can contain up to 30 alphanumeric characters.

6. Select the **Save** button. The following message appears:

   `Please confirm update.`

7. Select the **Update** button. The new name now appears in the **Archive: Volume Database** window.

Note

Select the **Reset** button before updating to display the current volume name.

Volume Database Download

The **Volume Database Download** function is used to migrate a volume database from an optical disk to the hard disk. This operation is **ONLY** necessary when the HSR software is run in "Data Analysis Mode" on the Software Development Station.

Current Volume Status

The **Archive: Current Volume Status** window displays information about the current volume. This window also provides the ability to modify the current close time of the volume. Use the following procedure to access the **Archive: Current Volume Status** window.

1. Select **Archive: Current Volume Status** from the **Volume Functions** menu. The **Archive: Current Volume Status** window appears.

2. Select the **Update** button. The applicable information appears in **Archive: Current Volume Status** window, as shown in Figure 8-41.

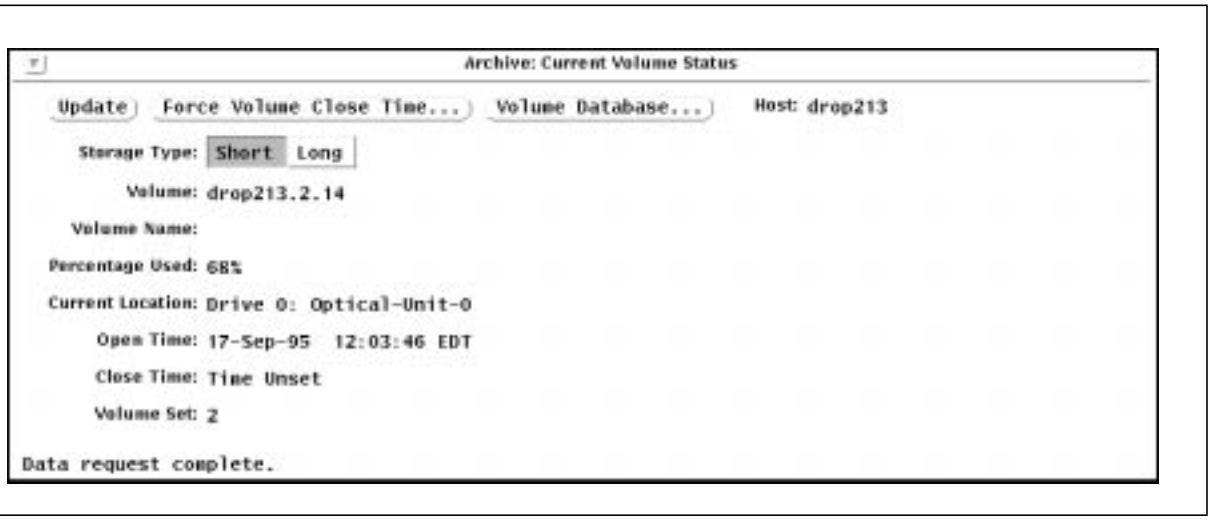

Figure 8-41. Update Button of the Archive: Current Volume Status Window

If the close time of the volume is to be modified, proceed to Step 3.

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3. From the **Archive: Current Volume Status** window, select the **Force Volume Close Time** button. The **Current Volume: Force Close Time** window appears, as shown in Figure 8-42.

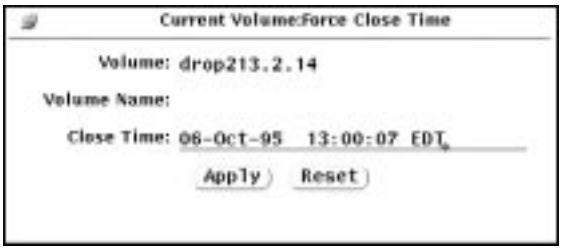

Figure 8-42. Current Volume: Force Close Time Window

4. Enter the new close time in the **Close Time** field using the following format:

   `DD-MMM-YY hh:mm:ss`

5. Select the **Apply** button. The following message appears:

   `Please Confirm Update.`

6. Select the **Update** button. The new close time now appears in the **Archive: Current Volume Status** window.

Note

Select the **Reset** button before updating to display the current volume close time.

To view the volume in detail, the **Archive: Volume Database** window can be accessed from the **Archive: Current Volume Status** window. For more information, see Section 8-3.4.

Volume Review

The **Archive: Volume Review** window displays volume information from the drop selected on the **Archive: General Status** window. This information includes the start and end times for the archived files for each HSR function. Use the following procedure to access the **Archive: Volume Review** window.

1. Select **Volume Review** from the **Volume Functions** menu. The **Archive: Volume Review** window appears, as shown in Figure 8-43.

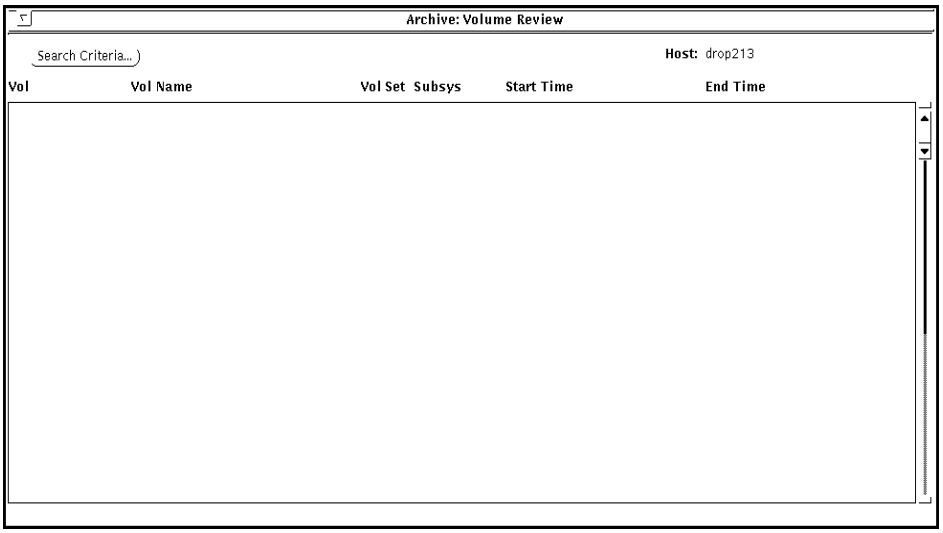

Figure 8-43. Archive: Volume Review Window

2. Select the **Search Criteria** button. The **Volume Review: Properties** window appears, as shown in Figure 8-44.

Figure 8-44. Volume Review: Properties Window

3. Select one volume set review method from the **Volume** option.

   - **All** reviews all volumes.
   - **Current** reviews the current volume.
   - **Specify** reviews a specific volume.

4. If specify was selected, enter the specific volume number in the **Volume** field.

Note

Multiple volumes can be entered using the following format: **1,2,3**.

5. Select one volume set review method from the **Volume Set** option.

   - **All** reviews all volumes in all volume sets.
   - **Current** reviews all volumes in the current volume set.
   - **Specify** reviews a specific volume set.

6. If specify was selected, enter the volume set number in the **Volume Set** field.

Note

Multiple volume sets can be entered using the following format: **1,2,3**.

7. The **Volume** option determines whether additional volume information appears on the **Archive: Volume Review** window. Select **Show** to display the volume information.

8. The **Start Time** field is optional. It is used to search every volume opened after the specified time. If applicable, enter the start time in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

9. The **End Time** field is optional. It is used to search every volume before the specified time. If applicable, enter the end time in the **End Time** field, using the following format:

   `DD-MMM-YY hh:mm:ss`

Notes

1. The **Start Time** and **End Time** fields are optional, and therefore can be left blank.
2. To specify a range, enter both a start time and end time.

10. Select the **Apply** button. The volume set information appears in the **Archive: Volume Review** window. The following message appears in the window:

    `Retrieving records from database.`

    The following figures are examples of the **Archive: Volume Review** window.

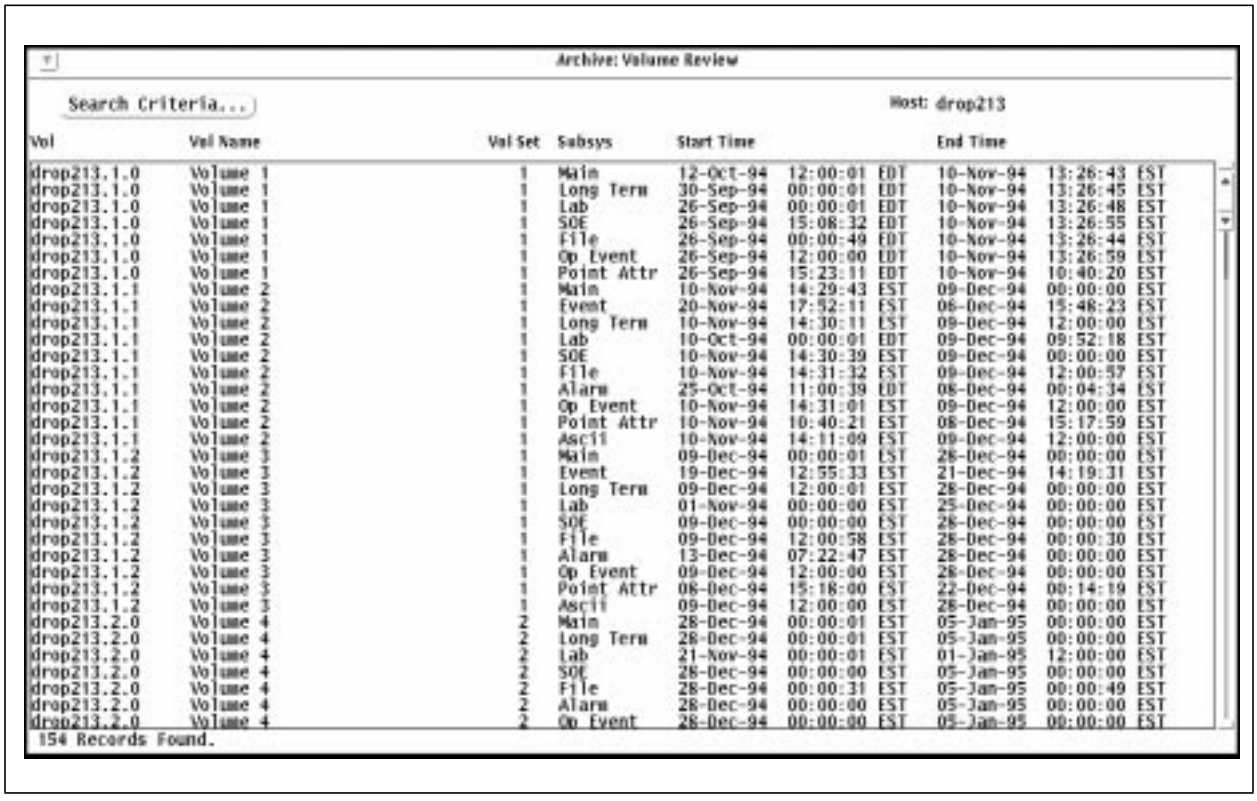

Figure 8-45. Archive: Volume Review Window (All)

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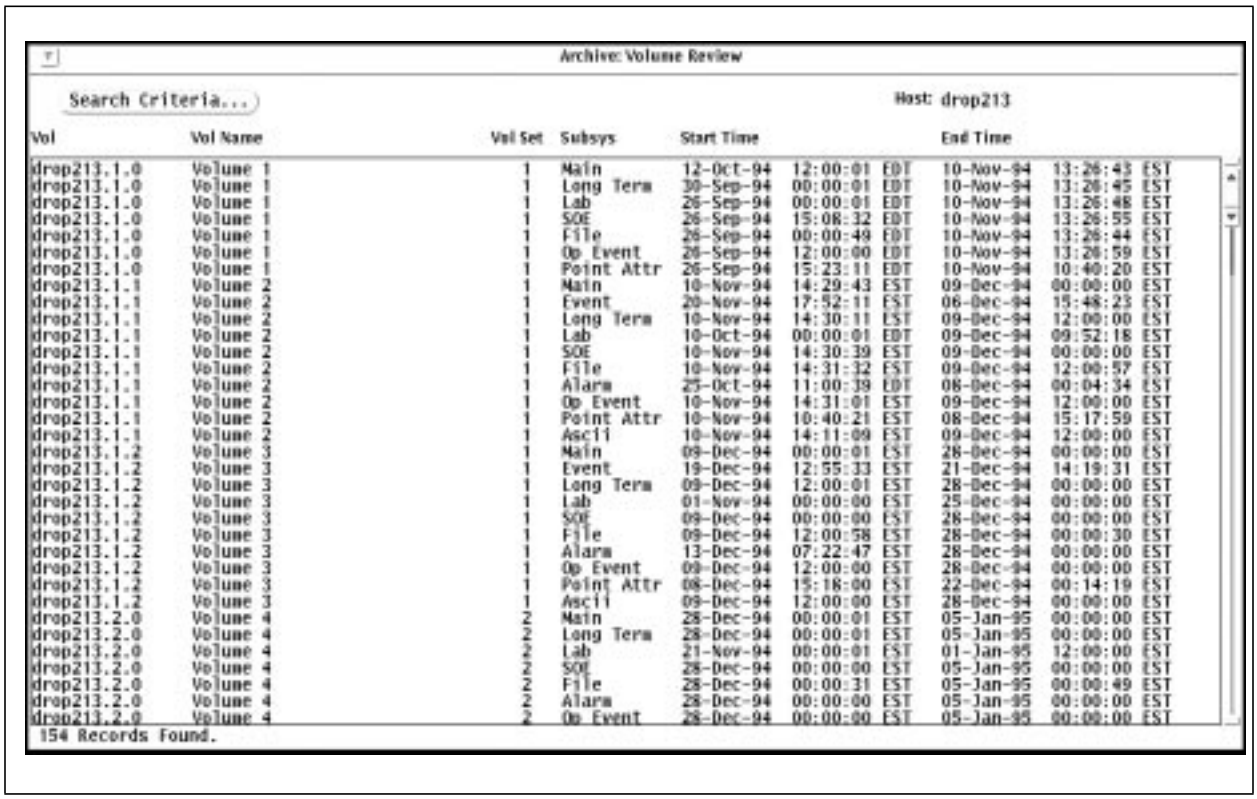

Vol	Vol Name	Vol Set	Subsys	Start Time	End Time
drop213.1.0	Volume 1	1	Main	12-Oct-94 12:00:01 EDT	10-Nov-94 13:26:43 EST
drop213.1.0	Volume 1	1	Long Term	30-Sep-94 00:00:01 EDT	10-Nov-94 13:26:45 EST
drop213.1.0	Volume 1	1	Lab	26-Sep-94 00:00:01 EDT	10-Nov-94 13:26:48 EST
drop213.1.0	Volume 1	1	SOE	26-Sep-94 15:08:32 EDT	10-Nov-94 13:26:55 EST
drop213.1.0	Volume 1	1	File	26-Sep-94 00:00:49 EDT	10-Nov-94 13:26:44 EST
drop213.1.0	Volume 1	1	Op Event	26-Sep-94 12:00:00 EDT	10-Nov-94 13:26:59 EST
drop213.1.0	Volume 1	1	Point Attr	26-Sep-94 15:23:11 EDT	10-Nov-94 10:40:20 EST
drop213.1.1	Volume 2	1	Main	10-Nov-94 14:29:43 EST	09-Dec-94 00:00:00 EST
drop213.1.1	Volume 2	1	Event	20-Nov-94 17:52:11 EST	06-Dec-94 15:48:23 EST
drop213.1.1	Volume 2	1	Long Term	10-Nov-94 14:30:11 EST	09-Dec-94 12:00:00 EST
drop213.1.1	Volume 2	1	Lab	10-Oct-94 00:00:01 EDT	09-Dec-94 09:52:18 EST
drop213.1.1	Volume 2	1	SOE	10-Nov-94 14:30:39 EST	09-Dec-94 00:00:00 EST
drop213.1.1	Volume 2	1	File	10-Nov-94 14:31:32 EST	09-Dec-94 12:00:57 EST
drop213.1.1	Volume 2	1	Alarm	25-Oct-94 11:00:39 EDT	08-Dec-94 00:04:34 EST
drop213.1.1	Volume 2	1	Op Event	10-Nov-94 14:31:01 EST	09-Dec-94 12:00:00 EST
drop213.1.1	Volume 2	1	Point Attr	10-Nov-94 10:40:21 EST	08-Dec-94 15:17:59 EST
drop213.1.1	Volume 2	1	Ascii	10-Nov-94 14:11:09 EST	09-Dec-94 12:00:00 EST
drop213.1.2	Volume 3	1	Main	09-Dec-94 00:00:01 EST	28-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	Event	19-Dec-94 12:55:33 EST	21-Dec-94 14:19:31 EST
drop213.1.2	Volume 3	1	Long Term	09-Dec-94 12:00:01 EST	28-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	Lab	01-Nov-94 00:00:00 EST	25-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	SOE	09-Dec-94 00:00:00 EST	28-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	File	09-Dec-94 12:00:58 EST	28-Dec-94 00:00:30 EST
drop213.1.2	Volume 3	1	Alarm	13-Dec-94 07:22:47 EST	28-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	Op Event	09-Dec-94 12:00:00 EST	28-Dec-94 00:00:00 EST
drop213.1.2	Volume 3	1	Point Attr	08-Dec-94 15:18:00 EST	22-Dec-94 00:14:19 EST
drop213.1.2	Volume 3	1	Ascii	09-Dec-94 12:00:00 EST	28-Dec-94 00:00:00 EST
drop213.2.0	Volume 4	2	Main	28-Dec-94 00:00:01 EST	05-Jan-95 00:00:00 EST
drop213.2.0	Volume 4	2	Long Term	28-Dec-94 00:00:01 EST	05-Jan-95 00:00:00 EST
drop213.2.0	Volume 4	2	Lab	21-Nov-94 00:00:01 EST	01-Jan-95 12:00:00 EST
drop213.2.0	Volume 4	2	SOE	28-Dec-94 00:00:00 EST	05-Jan-95 00:00:00 EST
drop213.2.0	Volume 4	2	File	28-Dec-94 00:00:31 EST	05-Jan-95 00:00:49 EST
drop213.2.0	Volume 4	2	Alarm	28-Dec-94 00:00:00 EST	05-Jan-95 00:00:00 EST
drop213.2.0	Volume 4	2	Op Event	28-Dec-94 00:00:00 EST	05-Jan-95 00:00:00 EST

154 Records Found.

Figure 8-46. Archive: Volume Review Window (Specified HSR Function)

8-3.5. Archive Manager User Interface Messages

Messages that may appear when using the Archive Manager window are shown in Table 8-3. (These messages appear in the bottom left corner of the applicable Archive Manager window.)

Table 8-3. Archive Manager Messages

Message	Description
# Records found.	Displays the number of records found for a Volume Set Review or a Volume Review.
Cannot communicate to the Archive Manager.	The Archive Manager drop selected on the General Status window is not running.
Cannot get client host name.	Requested client is not on the system, has not been properly configured as an identifiable HSR or may be failed.
Error converting time.	An incorrect date format was entered in the Start Time or End Time fields on the applicable Volume Functions window.
Invalid date.	A date returned by the Archive Manager was invalid.
Invalid volume entered.	Requested volume does not exist on the system. No data can be retrieved from the volume as specified.
No information meets specified criteria.	Information requests from the Volume Review and Volume Set Review windows do not exist. (For example, volume set 101 is requested, but does not exist.)
Request for information from Archive Manager failed.	The Archive Manager cannot supply the requested information.
Volume number must be a numeric.	The volume number specified in the Volume field on the applicable Volume Functions window must be numeric.

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Section 9. Historical Trend Display User Interface

9-1. Section Overview

This section provides instructions for using the **Historical Trend Display** window. For information on configuration, see Section 5. The following topics are included:

- Overview of Historical Trend Display function (Section 9-2).
- Accessing the Historical Trend Display window (Section 9-3).
- Creating historical trends (Section 9-4).
- Defining historical trend groups (Section 9-5).
- Displaying historical trend groups (Section 9-6).
- Viewing point value (Section 9-7).
- Zooming a time interval (Section 9-8).
- Paging through trend displays (Section 9-9).
- Shifting historical trends (Section 9-10).
- Displaying historical tabular trends (Section 9-11).
- Listing of historical trend information messages (Section 9-12).

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9-2. Historical Trend Display Function

The Historical Trend Display user interface (**Historical Trend Display** window) extracts historical data from the HSR Main History, Long Term History and Laboratory History data files to display graphical and numerical trends.

The **Historical Trend Display** window allows the user to display up to eight points in several different graphical layouts and up to 600 values per point in a tabular trend. Figure 9-1 through Figure 9-5 show the different graphic layouts.

Note

The **Historical Trend Display** window also provides access to trends using **live** data. For information on live trends, see "Operator WEStation User's Guide" (U0-8100).

- Points in a trend can be determined by the user or pre-defined trend groups. Both historical and live trend groups may be defined during configuration or modified with the Trend Group's window. For more information, see "Engineering WEStation User's Guide" (U0-8200).
- Points can be identified to have temporary high and low scales, as well as logarithmic or linear scales.
- Trend displays show the point names and values, high and low scales, and other information.
- Up to four **Historical Trend Display** windows can be displayed at one time; however, only one trend can be active. A check mark appears in the select check box when a window is active. The trend groups are displayed on or saved from the active **Historical Trend Display** window.

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Notes

1. When a trend icon is gathering data, it will appear grayed out. As soon as the trend has completed its acquisition/computation, the icon will clear.
2. If a trend has been closed to an icon, that icon will reopen only after manually invoking that icon unless the trend is being displayed from the **Trend Groups** window. The Historical Trend icon will automatically open when displayed from the **Trend Groups** window. This feature is consistent with similar functionality of the HSR software. The manual opening procedure prevents trend or other information from unintentionally obscuring parts of the display.

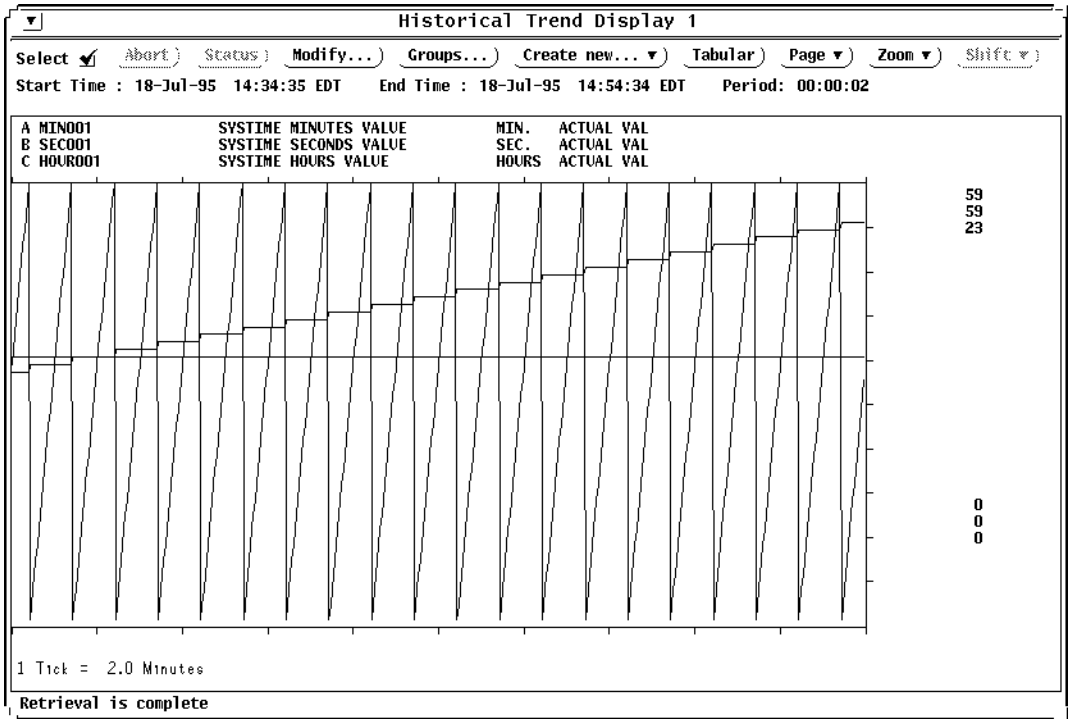

Figure 9-1. Horizontal Combined Trend

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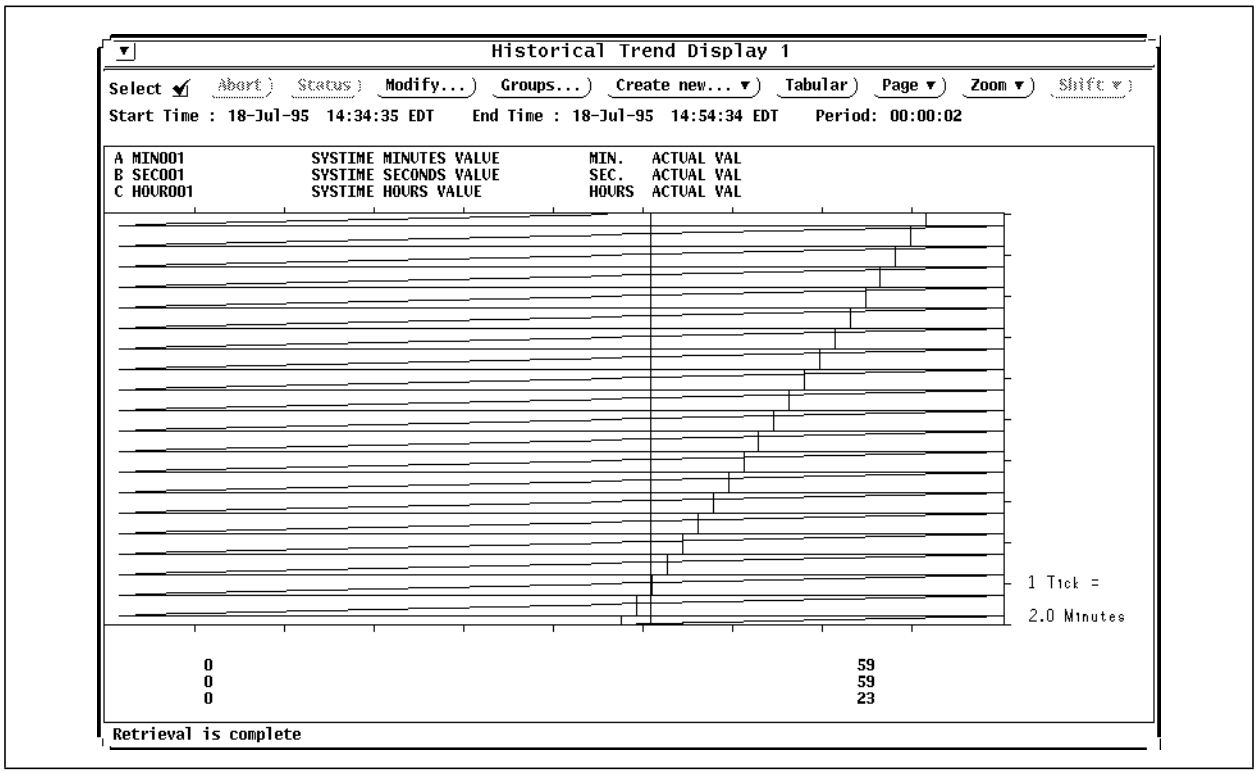

Figure 9-2. Vertical Combined Trend

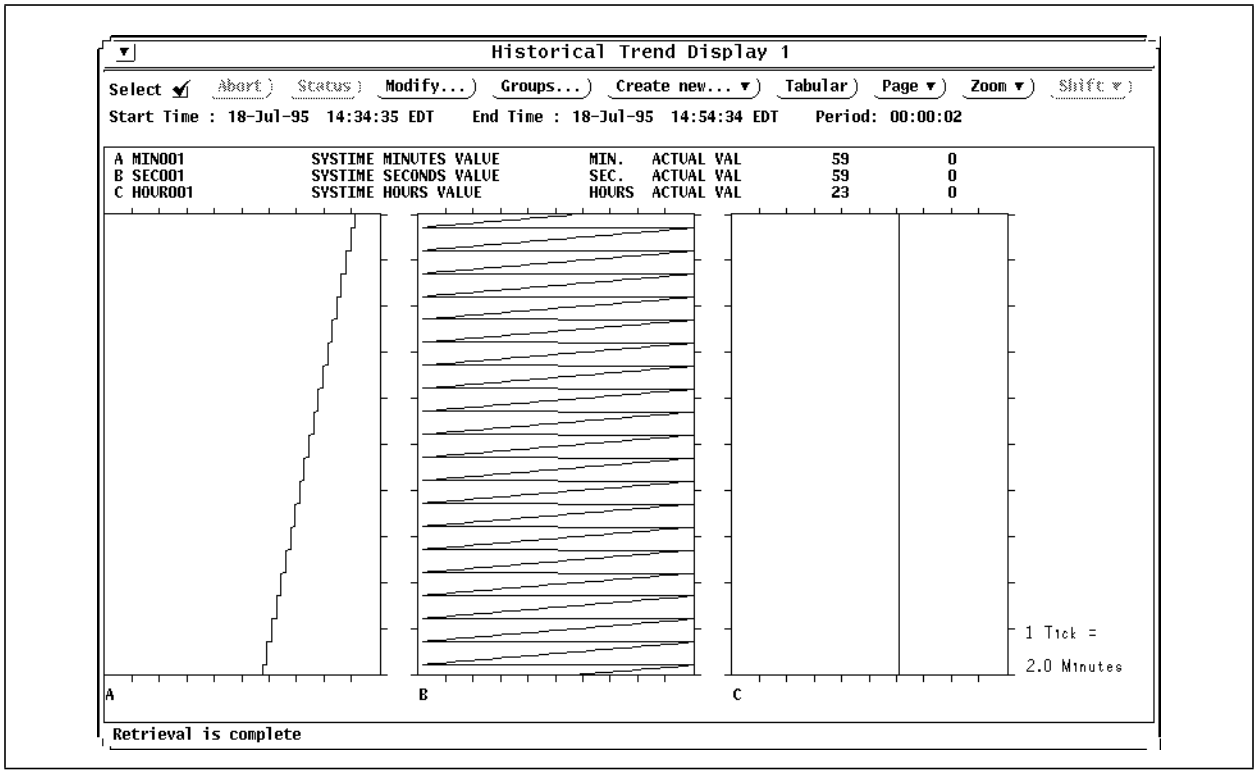

Figure 9-3. Vertical Side-by-Side Trend

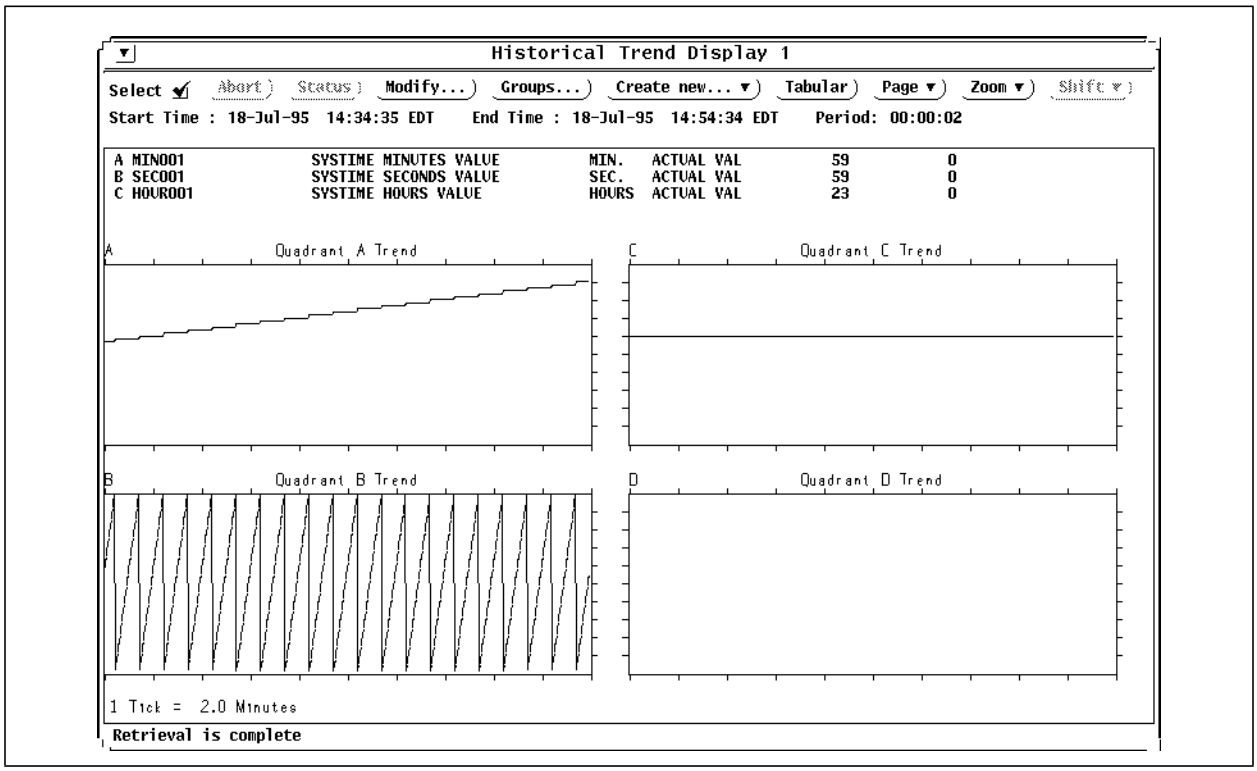

Figure 9-4. Quadrant Trend

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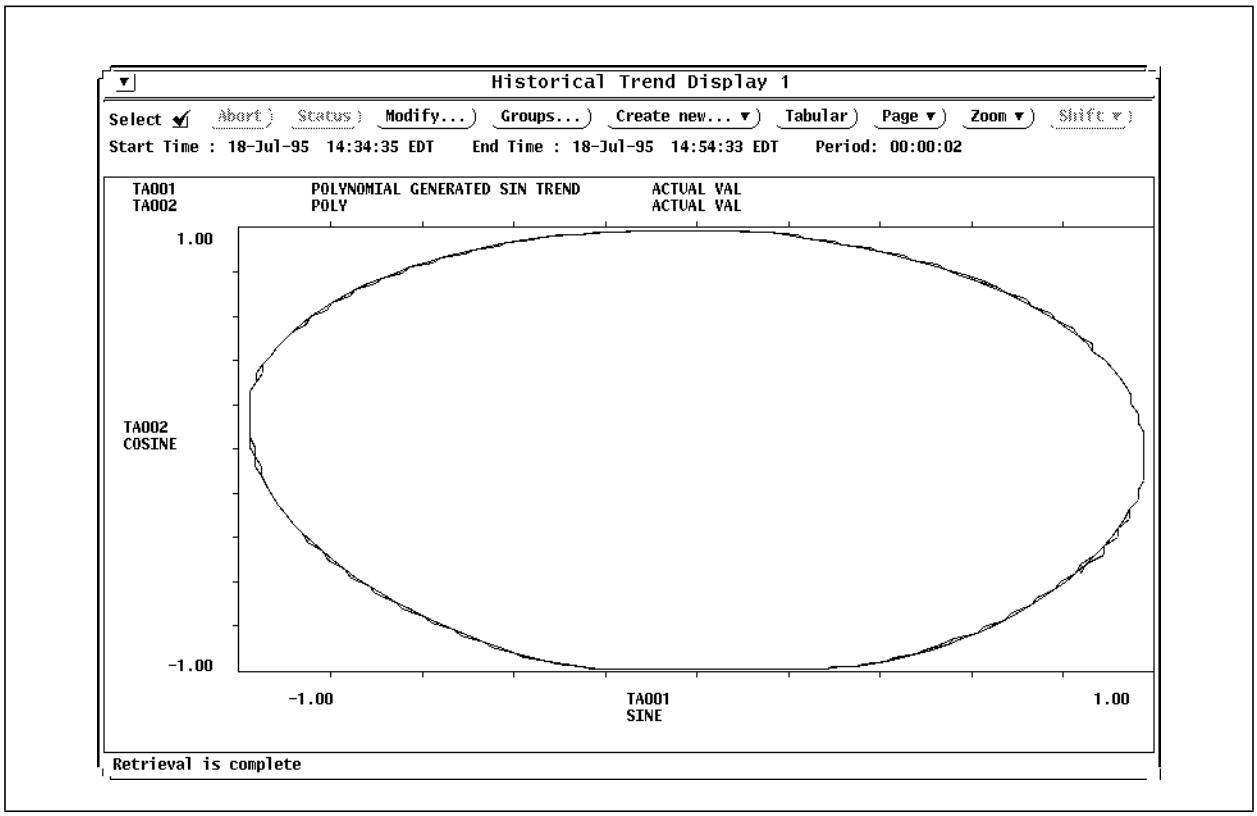

Figure 9-5. X-Y Trend

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9-3. Accessing the Historical Trend Window

This document assumes the **Historical Trend Display** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical Trend Display** window:

1. Open the **Historical Trend Display** icon.
2. The **Historical Trend Display** window appears, as shown in Figure 9-6.

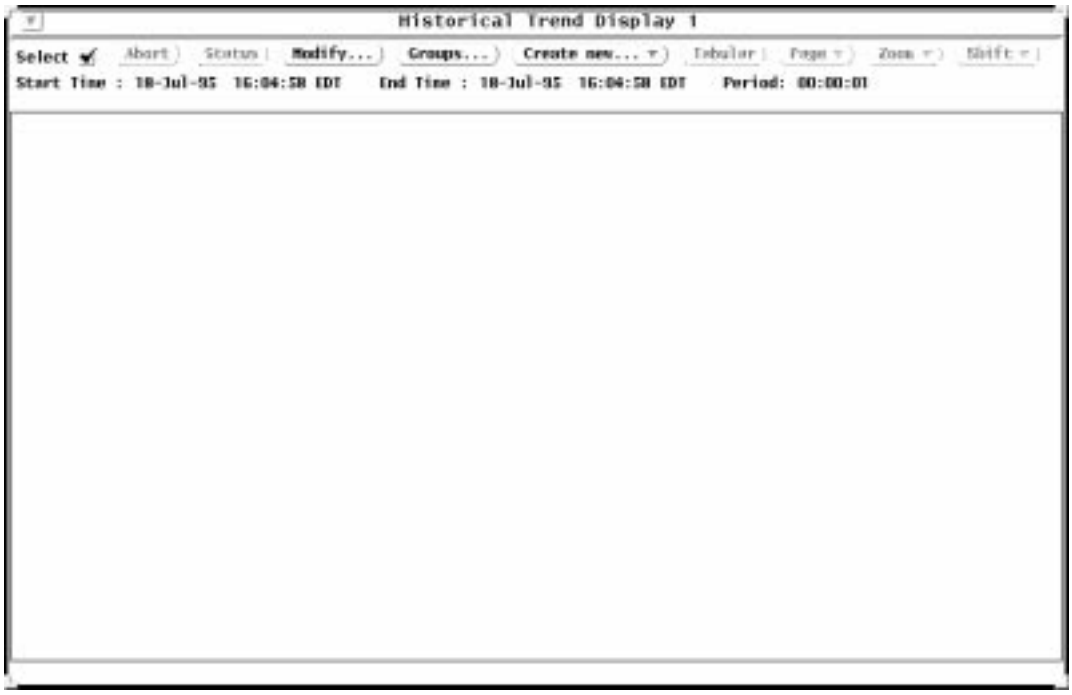

Figure 9-6. Historical Trend Display Window

Two other Ways to access the Historical Trend Display window

1. Display the live trend
   - — Select **Historical Trend** from the **Create new** menu
   - — The **Historical Trend Display** window appears, as shown in Figure 9-6.

OR

2. From the **Trend Groups** window,
   - — Select a group
   - — Select **Historical Trend** from the **Display** button menu.

9-4. Creating Historical Trends

From the **Historical Trend Display** window Figure 9-6, select the **Modify** button. The **Historical Trend Display: Modify** window appears, as shown in Figure 9-7.

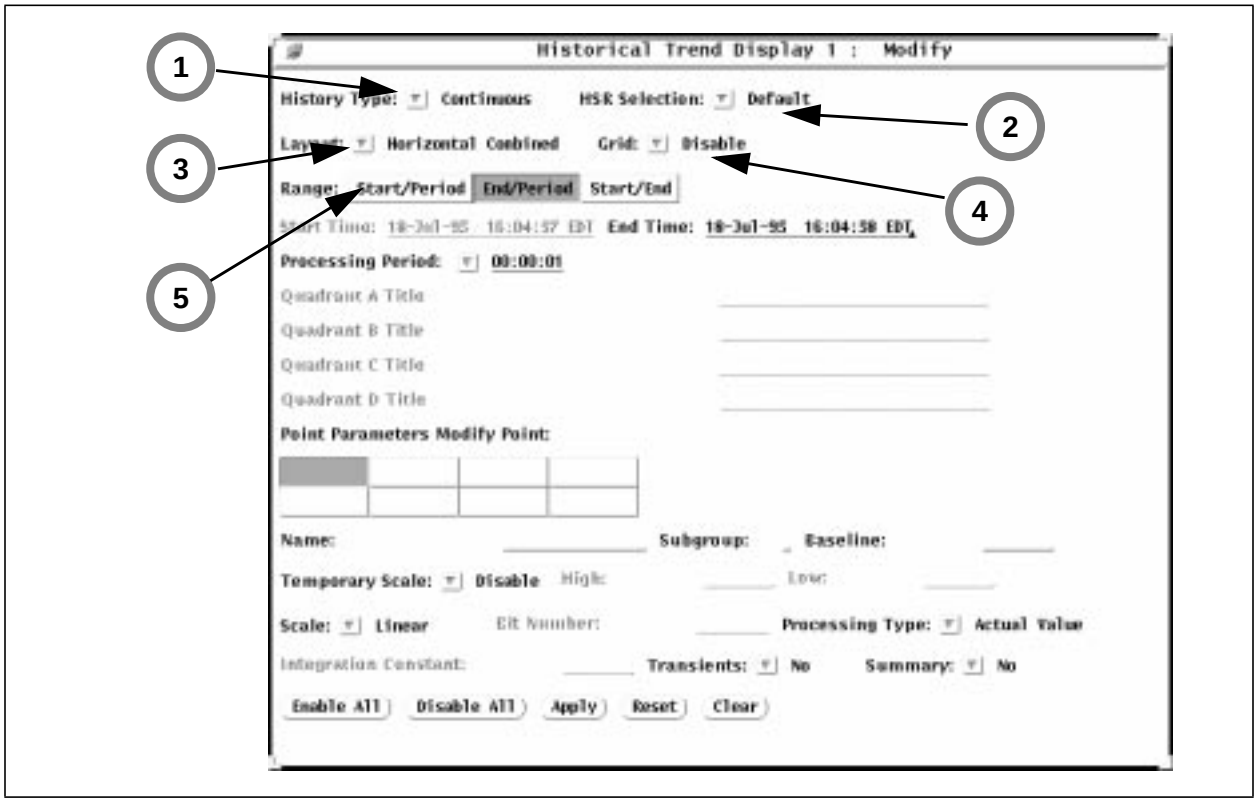

Figure 9-7. Historical Trend Display: Modify Window (Steps 1-5)

The **Historical Trend Display: Modify** window allows the user to specify properties for historical trends. The **Historical Trend Display: Modify** window consists of two parts:

- The first half of the window contains general fields which apply to the entire trend, such as trend layout, time range, and processing period.
- The second half of the window contains information pertaining to individual point names, such as point subgroup, high and low temporary scales, and point processing type.

Historical Trend Creation

Use the following procedure to create historical trends. (The numbers in gray circles correspond to the numbered steps.)

Note

Fields that require an alphanumeric entry (such as **Point Name**, **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

1. Pull down the **History Type** menu. Select the applicable history type. This selection determines the type of historical subsystems to which the trend data requests will be sent. The history types are as follows:

   - Continuous - obtain data from Main/Long Term/Lab
   - Event - obtain data from Event History

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the trend information.

3. Pull down the **Layout** menu. Select a trend layout type. The trend layout types are as follows:

   - **Horizontal Combined** displays selected points in one graph, with time located on the horizontal axis. The most recent values are displayed on the right side of the trend as shown in Figure 9-1.
   - **Vertical Combined** displays selected points in one graph, with time located on the vertical axis. The most recent values are displayed at the top of the trend as shown in Figure 9-2.
   - **Vertical Side-By-Side** displays selected points in individual graphs with time located on the vertical axis. The most recent values are displayed at the top of the trend as shown in Figure 9-3.
   - **Quadrant** displays selected points (up to 8) in four different graphs as shown in Figure 9-4.
   - **XY Plot** displays the values of one point verses the values of another point in a line graph as shown in Figure 9-5.

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4. Pull down the **Grid** menu. This option displays grid lines on the trend graph.

5. From the **Range** options, select a time range. The time ranges are as follows:

   - **Start/Period** allows the start time and processing period of the trend request to be defined. (The end time cannot be changed.)
   - **End/Period** allows the end time and processing period of the trend request to be defined. (The start time cannot be changed.)
   - **Start/End** allows the start time and end time of the trend request to be defined.

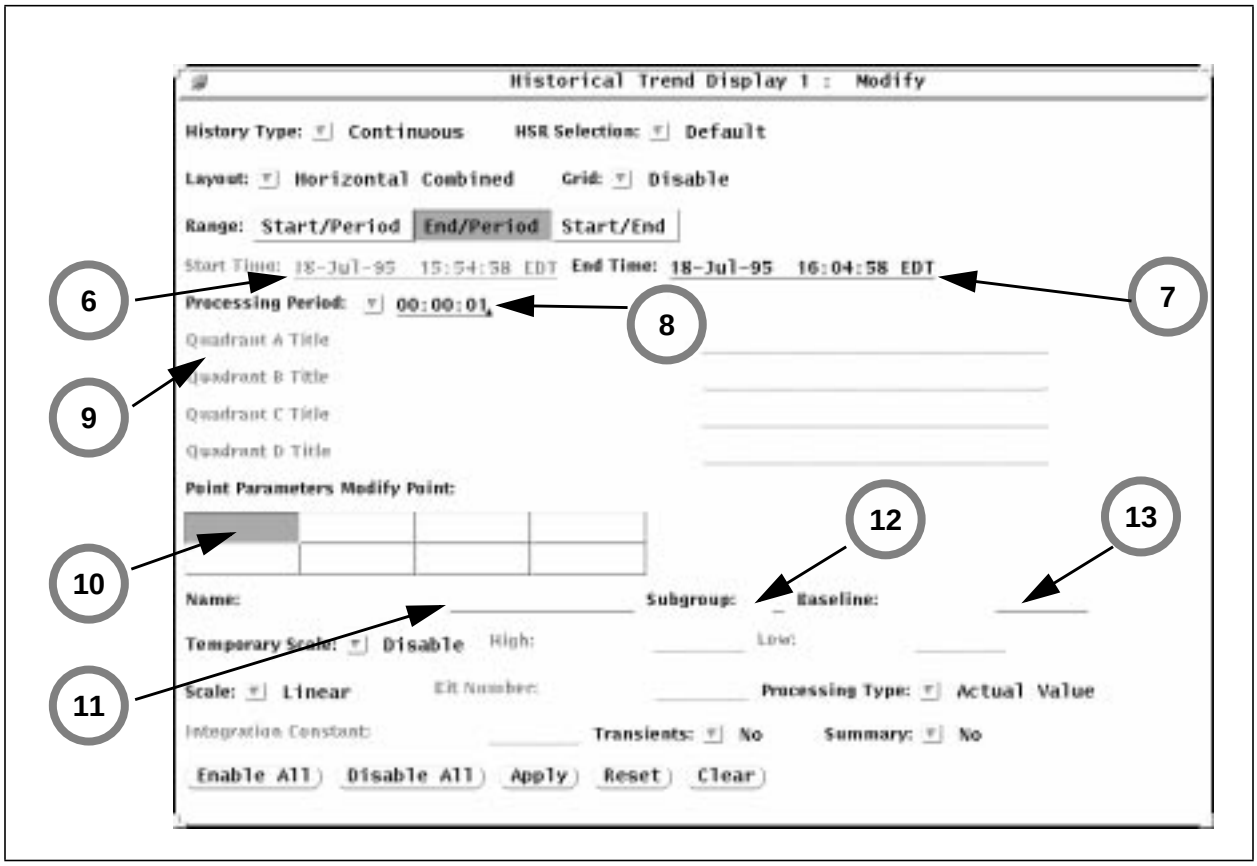

Figure 9-8. Historical Trend Display: Modify Window (Steps 6 - 13)

For steps 6 through 13, refer to Figure 9-8.

6. Enter the start time of the trend display in the **Start Time** field, using the following format:

DD-MMM-YY hh:mm:ss [zzz]

The start time is the oldest time of the historical data to be displayed in a trend. This field is applicable only if the range selected is **Start/Period** or **Start/End**.

7. Enter the end time in the **End Time** field, using the following format:

   DD-MMM-YY hh:mm:ss [zzz]

   The end time is the latest time of the historical data to be displayed in a trend. This field is applicable only if the range selected is **End/Period** or **Start/End**.

8. Enter the processing period in the **Processing Period** field.

   OR

   Pull down the **Processing Period** menu, and select a processing period. The processing period is the time interval between successive trend samples.This field is applicable only if the range selected is **Start/Period** or **End/Period**.

   If the history type is **Event**, the processing period is a floating point value (0.1 - 6.0). If the history type is **Continuous**, the processing period is a time string such as:

   00:00:01 (Ten minute trend - one second between trend samples)
   00:00:10 (Thirty minute trend - ten seconds between trend samples)
   00:01:00 (10 hour trend - one minute between trend samples)
   00:10:00 (100 hour trend - ten minutes between trend samples)
   01:00:00 (25 day trend - one hour between trend samples)

   The entries displayed under the Processing Period are configurable by using the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Trend UI
   Display: Retrieval Periods

9. If the trend layout is Quadrant, the user can enter a title for each quadrant trend in the Quadrant A through D title fields. Up to 30 characters may be entered for each title. The titles will appear above each quadrant trend.These fields are only applicable to the quadrant trend layout.

10. At the **Point Parameters Modify Point** field, select a box to determine the point position on the trend graph. Up to eight points can be displayed on a historical trend.

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When a new point position is selected, the information for the point in the previous choice box is read and verified. If syntax errors are found (for example, invalid scales were entered for a logarithmic point), the previous choice box is selected again to allow the user to correct the errors. A new position cannot be selected until the information for the current position is found to be error-free.

11. Enter the desired point name in the **Name** field. Once the point name is selected, additional point information can be entered, such as subgroup, baseline value, temporary high and low scales, and processing type.

12. Enter a subgroup (A-H) in the **Subgroup** field. The **Subgroup** field is used to show various trend groupings on Vertical Side-by-Side and Quadrant trends.

    - Vertical Side-by-Side (range A to H). There is one vertical trend displayed for each subgroup that has at least one point assigned to it. Multiple points within the same subgroup are displayed in the same vertical trend.

    - Quadrant (range A to D). There is one quadrant trend for each subgroup. Four quadrant trends are always displayed in a single window. A subgroup outside the range of A to D will give an error, and the point will not be displayed.

13. Enter the baseline value in the **Baseline** field. The **Baseline** field is applicable to all trend layouts except for XY plots. All points in a trend have an independent baseline. The area between the trend line and the baseline is shaded with the same color as the trend line. To disable baseline shading, leave this field blank. The first point position in the trend has top priority when shading is present. The last point position has the lowest priority.

    - The point high scale value becomes the baseline when the baseline is greater than the point high scale.

    - The point low scale value becomes the baseline when the baseline is less than the point low scale.

    - For logarithmic points, the baseline value must be greater than zero.

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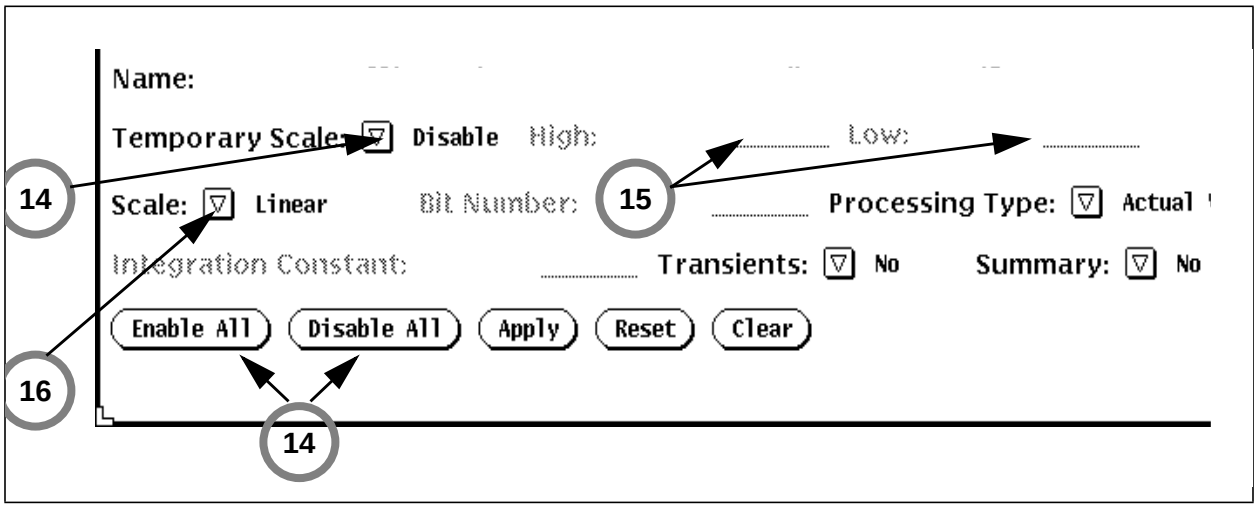

Figure 9-9. Historical Trend Display: Modify Window (Steps 14 - 16)

For Steps 14 through 16, refer to Figure 9-9.

14. Pull down the **Temporary Scale** menu. This option enables the user to view a trend line in lesser or greater detail by setting different top and bottom scale values. Each trend point has its own set of temporary high and low scales.

    - To enable the temporary scale for one point in the **Point Parameters Modify Point** option boxes, select the **Enable** button.
    - To enable the temporary scale for all points in the **Point Parameters Modify Point** option boxes, select the **Enable All** button. This option allows the user to enter high and low scale values for each point.
    - To disable the temporary scale for one point in the **Point Parameters Modify Point** option boxes, select the **Disable** button.
    - To disable the temporary scale for all points in the **Point Parameters Modify Point** option boxes, select the **Disable All** button. This option grays out the high and low scale values for each point.
    - Scales for points with temporary scale enabled are shown in reverse video on the **Trend Display** window.

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15. Enter the temporary scale values in the **High** and **Low** fields. (Note that the **High** and **Low** fields are grayed-out when the **Temporary Scale** option is disabled.)

    - **High Scale** represents the top boundary of the trend. The high scale must be represented as a positive or negative integer, floating point, or in scientific or technical notation. (For example, scientific (1.0e2, -1.0E+2, 1.0E-2), technical (100e0, 10e3, 10E6).)
    - **Low Scale** represents the bottom boundary of the trend. The low scale must be represented as a positive or negative integer, floating point, or in scientific or technical notation. (For example, scientific (1.0e2, -1.0E+2, 1.0E-2), technical (100e0, 10e3, 10E6).)

    Notes

    If temporary scales are **not** used, the trend will use TB (top bar) and BB (bottom bar) for analog points and the values defined in the **Digital Default High Scale** and **Digital Default Low Scale** parameters. These digital parameters are configurable by using the following WDPF Admin Tool settings:

    Function: Define Software Configuration
    Filter: Historical Storage/Retrieval
    Topic: HSRUI Trend UI
    Display: Miscellaneous Parameters
    Items: Digital Default High Scale
    Digital Default Low Scale

    Digital points differ from analog points in that digital points always have a value of 0 (off) or 1 (on). The high and low scale values specified for digital points indicate the position of the trend line on the window and the height of the trend.

    Consider the following example. For analog points, if the high scale = 100, and the low scale = 0, then a value that changes from 50 to 52 appears as a small rise in the trend graph. On the other hand, if the high scale = 55, and low scale = 50, the same change appears as a large rise in the trend graph.

16. Pull down the **Scale** menu. Select a linear or logarithmic scale.

    Note

    When a Logarithmic scale is selected and Temporary Scales are enabled, the high scale, low scale, and baseline values must be greater than zero.

For Step 17, refer to Figure 9-10.

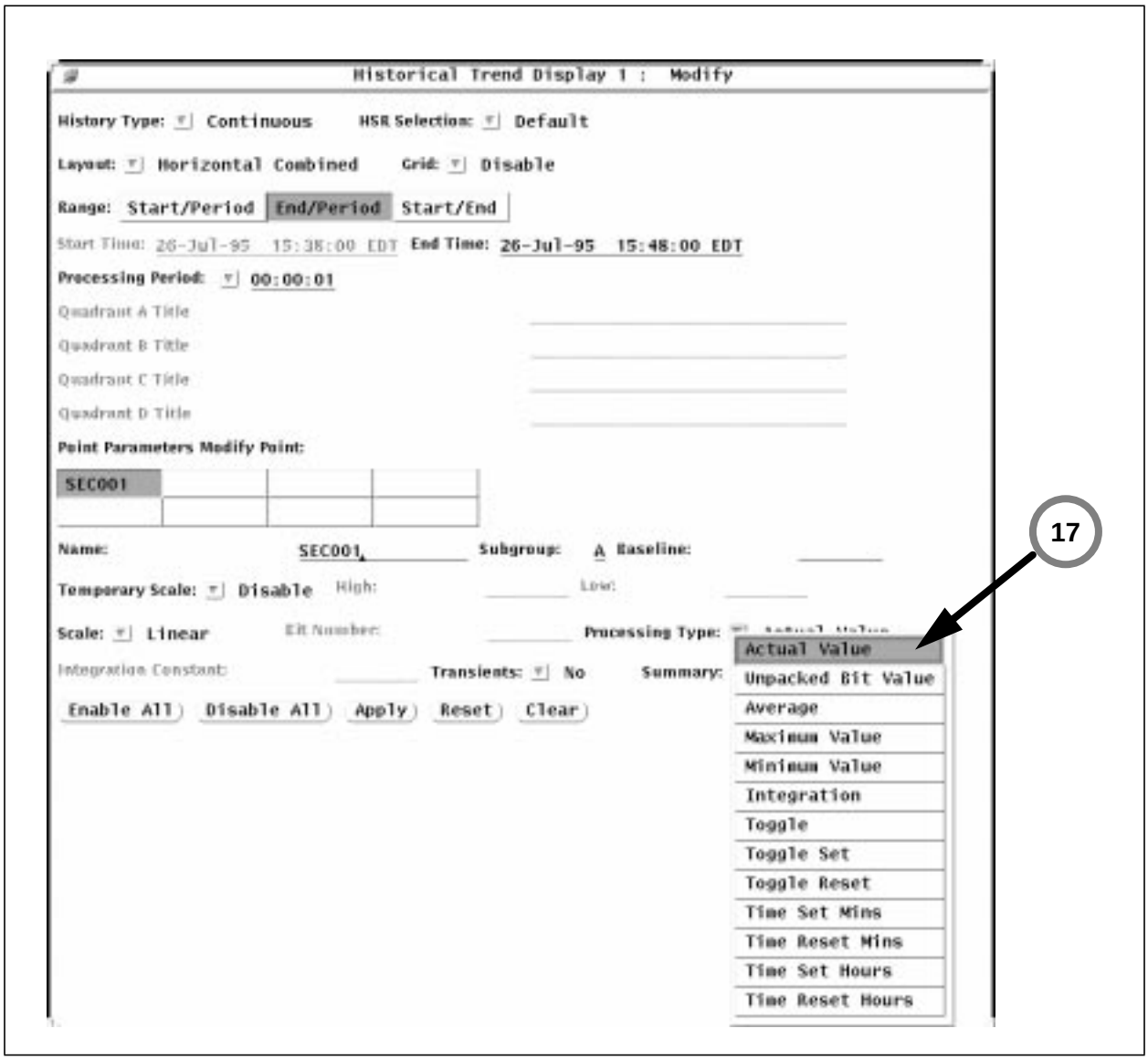

Figure 9-10. Historical Trend Display: Modify Window (Step 17)

17. Pull down the **Processing Type** menu as shown in Figure 9-10. Select the applicable types. The types are as follows:

    - **Actual Value** displays the actual value of the specified process point at the end of each individual processing period.
    - **Unpacked Bit Value** displays the actual value of a selected bit of the specified process point at the end of each individual processing period.
    - **Average** displays the average value of the specified process point over each individual processing period.

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- **Maximum Valu**e displays the maximum value of the specified process point over each individual processing period.
- **Minimum Value** displays the minimum value of the specified process point over each individual processing period.
- **Integration** displays the integral of the specified process point with respect to seconds, multiplied by the specified integration constant, over each individual processing period.
- **Toggle** displays the number of state changes for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Toggle Set** displays the number of state changes to the Set state for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Toggle Reset** displays the number of state changes to the Reset state for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Time Set Mins** displays the number of minutes which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Set state over each individual processing period.
- **Time Reset Mins** displays the number of minutes which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Reset state over each individual processing period.
- **Time Set Hours** displays the number of hours which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Set state over each individual processing period.
- **Time Reset Hours** displays the number of hours which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Reset state over each individual processing period.

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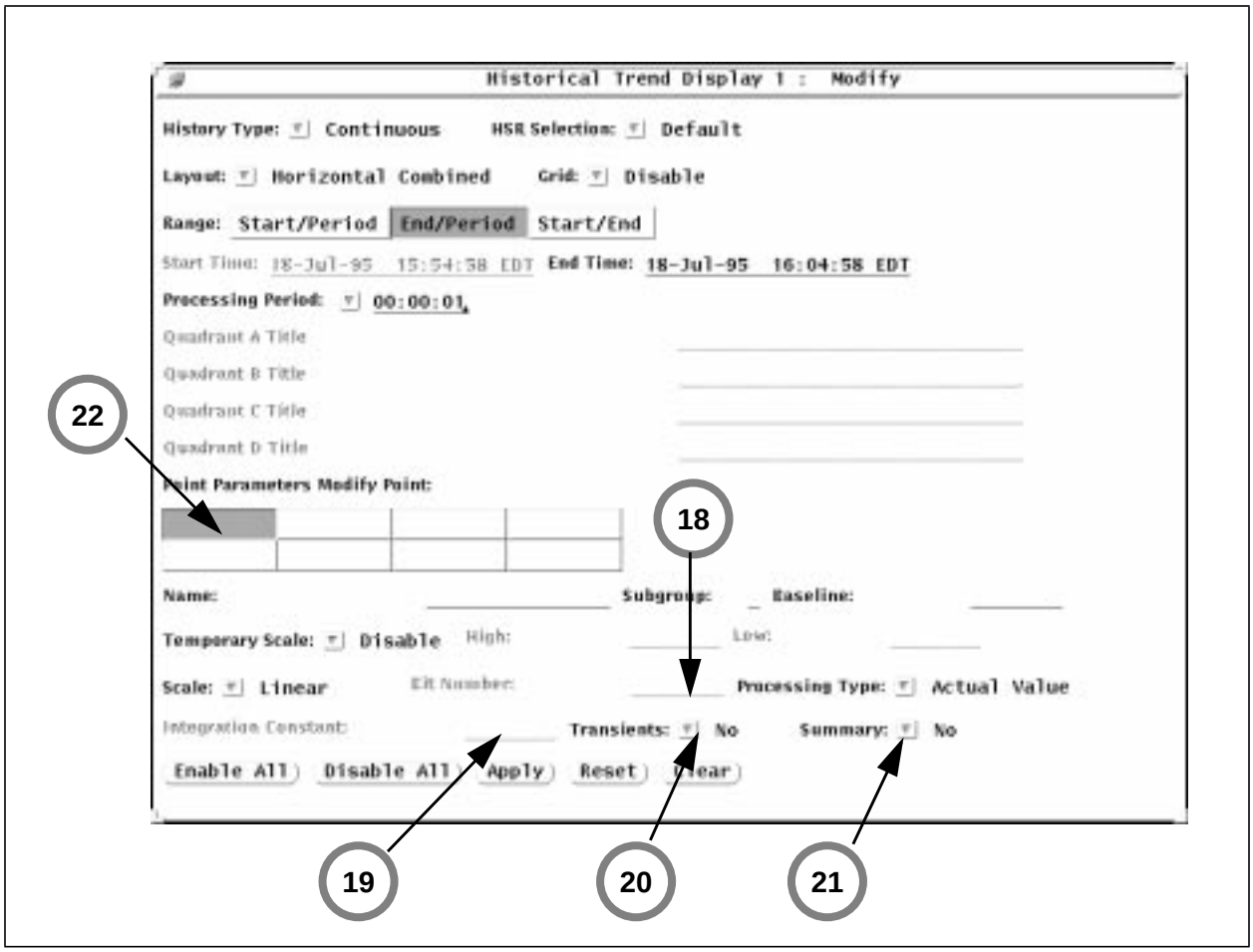

Figure 9-11. Historical Trend Display: Modify Window (Steps 18 - 22)

For Steps 18 through 22, refer to Figure 9-11.

18. Enter a bit number (0-31) in the **Bit Number** field. This field is not applicable to all processing types. (The bit number is retrieved for GP, PB, VC, and DU point record types.)

19. Enter the integration constant, in the **Integration Constant** field. This field is only applicable when the processing type is **Integration**.

20. Pull down the **Transients** menu. Selecting **Yes** causes the second digital average value (0 or 1) of any 3 consecutive values in the trend data that are the same to be changed to the opposite state if the second digital average value was not in the same state for its entire processing period

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The transient option does not show true data, and is meant to bring out digital state changes that would otherwise remain hidden on trends of digital points for processing periods greater than 1 second. A trend around the time of the digital activity should be performed, with the processing period decreased and the transient option disabled to show the true digital states. (This option is applicable only when the processing type is **Average Value**.)

21. Pull down the **Summary** menu. Select **Yes** to include a summary section. The summary consists of data for each point, such as averages, maximums, and minimums.

22. When all information for the point has been entered, select the next choice box for the **Point Parameters Modify Point** field. (Or select the **Apply** button.) The point name now appears in the highlighted box if no errors were found in the entered data.

Repeat Steps 10 through 22 until all point information has been entered. Select the **Apply** button to request the trend. The following message appears in the bottom of the **Historical Trend Display** window:

```
Retrieval is in progress.
```

The **Historical Trend Display:Retrieval Status** window is displayed. This window gives the current status of the retrieval in relation to percentage complete. This window also lists the retrieval drops. This window disappears when the retrieval is complete.

The requested trend appears in the selected **Historical Trend Display** window and the footer message is updated following the message:

```
Retrieval is complete.
```

9-5. Trend Groups

The **Trend Groups** window allows the user to view, modify, create, or display trend groups. The list of trend groups appears in the scrollable list.

A trend group is a previously defined set of points with the same trend display parameters. A trend group can consist of up to eight different points and all points in a trend group will have identical group parameters. However, each point in a trend group may have unique point parameters.

Note

As an alternative to using the **Trend Groups** window, groups can be defined in the **trend_groups_file** and then downloaded to the drop. See "Operator WEStation Configuration Manual" (U0-8110) for more information on the **trend_groups_file**.

Use the following procedure to display the **Trend Groups** window.

1. Select the **Groups** button from the **Historical Trend Display** window (See Figure 9-6).

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The **Trend Groups** window appears, as shown in Figure 9-12.

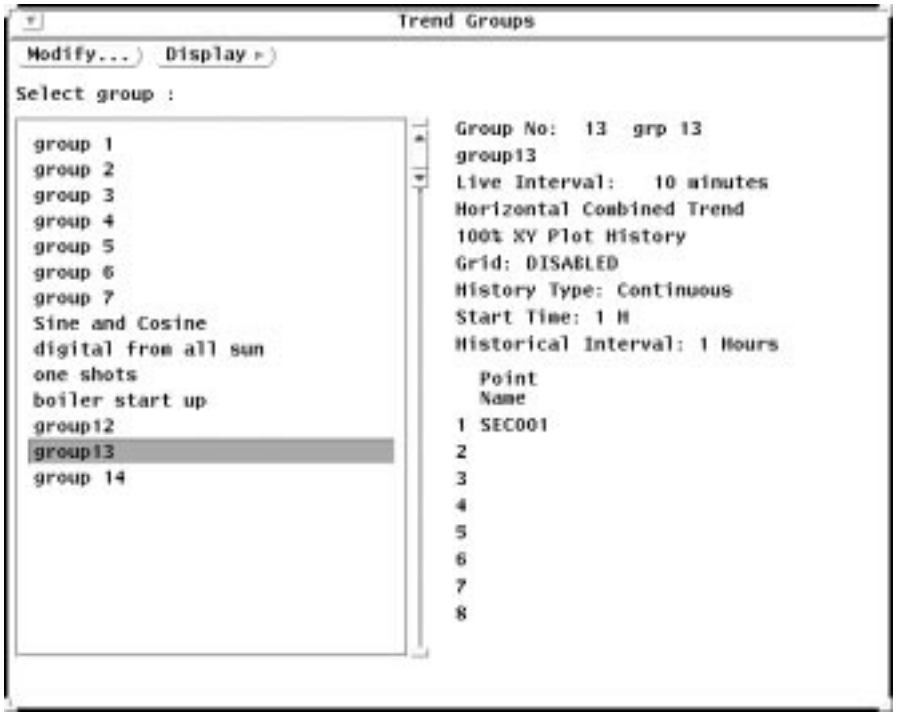

Figure 9-12. Trend Groups Window

- To modify or create trend groups, see Section 9-5.1.
- To display a trend based on a trend group, see Section 9-6

9-5.1. Defining a Trend Group

The **Modify Group** window allows the user to create a new trend group or modify an existing one. The **Modify Group** window is the same for both historical and live trends.

From the **Trend Groups** window (refer to Figure 9-12), select the **Modify** button. The **Modify Group** window appears, as shown below:

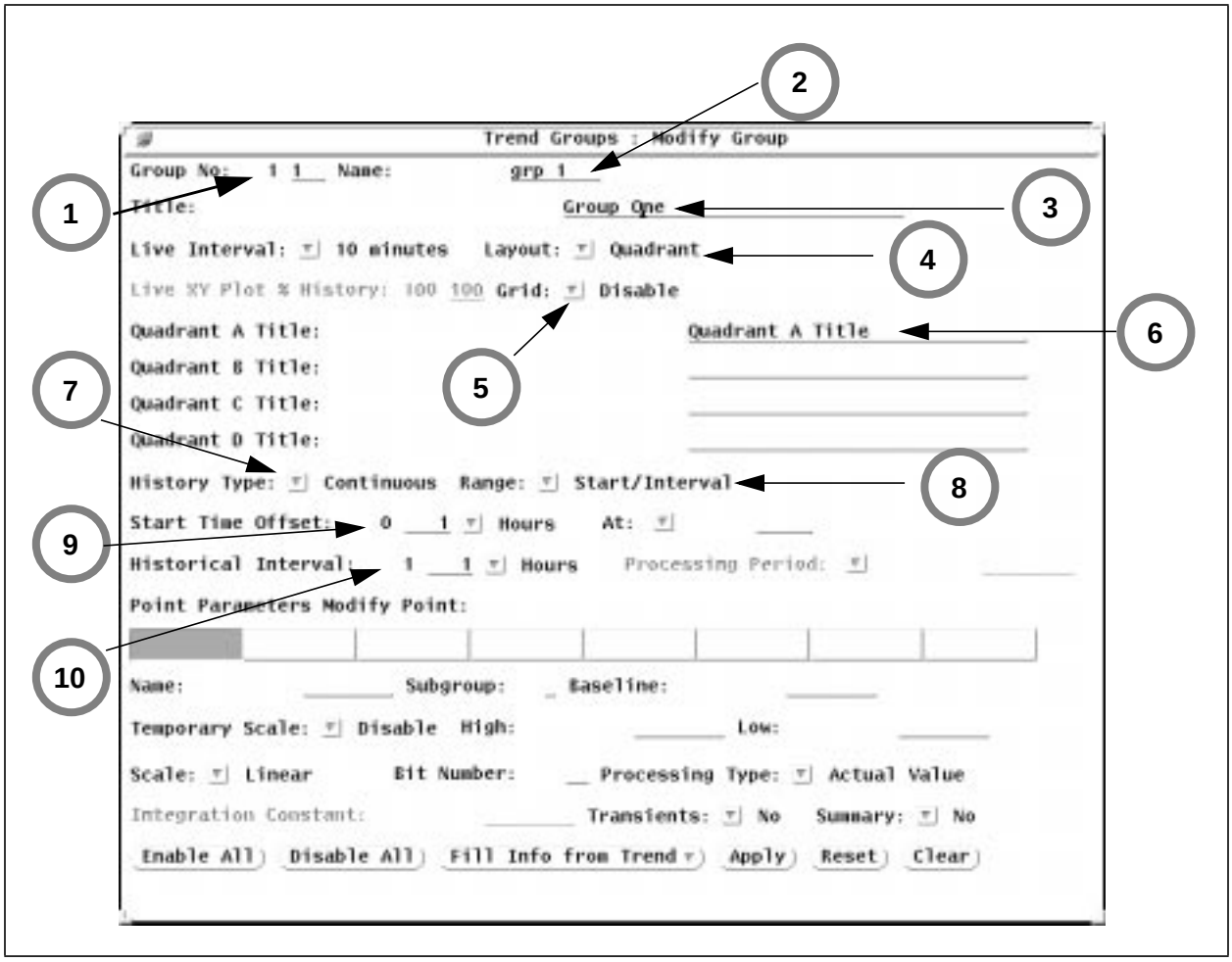

Figure 9-13. Trend Groups Window (Steps 1 - 10)

- The first half of the window contains general fields which apply to the entire trend, such as the collection interval (trend length of time) and trend layout (Steps 1 through 10).
- The second half of the window contains information pertaining to individual point names, such as point subgroup and high and low temporary scales (Steps 11 through 23).

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Note

The number of groups that cannot be modified is set through the WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Operator
Topic: MMI Trend Configuration
Display: Miscellaneous Parameters
Item: Number of Non-modifiable Groups

See "Operator WEStation Configuration Manual" (U0-8110) for more information on this configuration.

- The following fields apply only to live trends: Live Interval and Live XY Plot % History. For information on defining a trend group for a live trend, see "Operator WEStation User's Guide" (U0-8100).
- The following fields apply only to historical trends: History Type, Range, Start Time Offset, At, Historical Interval, Processing Period, Processing Type, Integration Constant, Transients, and Summary.
- To enter historical (or live) information about the trend currently displayed in the window, select the **Fill Info from Trend** button.

Note

Make sure the currently displayed trend is also the selected trend (that is, the trend window has its checkbox selected).

Use the following procedure to create or modify a trend group. (The numbers in the gray circles in Figure 9-13 correspond to the numbered steps.)

1. If defining a new trend group, enter the trend group number (1 to 600) in the **Group No** field. For this example, **1** is entered. (This field is initially displayed with the group number of the group selected from the scrolling list on the **Trend Groups** window.)

Note

The group number is used to identify group information. The **Group No** field should reflect the group number selected in the Group scrolling list.

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2. Enter the trend group name in the **Name** field, using up to 8 characters. (For this example, **`grp 1`** is entered.) The trend group name appears on the **Historical Trend Display** icon.

3. Enter the title of the trend group in the **Title** field, using up to 30 characters. (For this example, **`Group One`** is used.) The trend group title appears in the Group scrolling list on the **Historical Trend Groups** window and on the **Trend Display** window.

4. Pull down the **Layout** menu. Select a trend layout type. For examples of the various trend layouts, see Section 9-2.

   - **Horizontal Combined** displays selected points in one graph, with time located on the horizontal axis. The most recent values are displayed on the right side of the trend as shown in Figure 9-1.

   - **Vertical Combined** displays selected points in one graph, with time located on the vertical axis. The most recent values are displayed at the top of the trend as shown in Figure 9-2.

   - **Vertical Side-By-Side** displays selected points in individual graphs with time located on the vertical axis. The most recent values are displayed at the top of the trend as shown in Figure 9-3.

   - **Quadrant** displays selected points (up to 8) in four different graphs as shown in Figure 9-4.

   - **XY Plot** displays the values of one point verses the values of another point in a line graph as shown in Figure 9-5.

5. Pull down the **Grid** menu. This option displays or removes grid lines on the trend graph.

6. If the trend layout is Quadrant, enter a title for each quadrant trend in the **Quadrant A** through **Quadrant D Title** fields. Up to 30 characters may be entered for each title. The titles will appear above each quadrant trend. Note that these fields are only applicable to the Quadrant trend layout.

7. Pull down the **History Type** menu. Select the applicable history type. This selection determines the type of historical subsystems to which the trend data requests will be sent. The history types are as follows:

   - Continuous

   - Event

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8. Pull down the **Range** menu. Select a time range. This selection determines whether the historical interval entry field or the processing period entry field is operational. The menu choices determine whether a start time and historical interval are to be entered or a start time and a processing period are to be entered. The ranges are as follows:

   - Start/Interval
   - Start/Period

9. Enter the start time offset in the **Start Time Offset** entry field. Pull down the **Start Time Offset** menu. Select the start time units of hours, days, or minutes. The start time offset value is a positive integer.

   Enter the start time for the historical trend in the **At** entry field using the following format: **HH:MM**. The menu choices contain up to ten unique start times which are entered as a menu item when the **Return** key is pressed and a valid time is entered in the entry field. When a time is selected from the menu, the selected time is displayed in the entry field.

   The historical trend start time is computed using the start time and the **Start Time Offset**.

   Example: A **Start Time Offset** of nine hours means that the trend starts nine hours before the time specified in the **At** entry field. (If no time was specified in the **At** entry field, the trend starts nine hours before the current time when the group is displayed in the trend window.)

10. If the **Historical Interval** entry field is operational, enter the historical trend interval in the **Historical Interval** entry field. The interval is the time span of samples displayed on the historical trend. The interval entry field is operational when the Start/Interval Range is selected. Select the interval time units from the menu choices. The default menu selection is minutes. Valid interval values are positive integers. The interval must be greater than or equal to 10 minutes when the History Type in Continuous. When the History Type is Event, the interval must be 0.1 - 6.0 seconds.

    If the processing period entry field is operational, enter the processing period for a historical trend in the **Processing Period** entry field. If the historical data type is EVENT, then the processing period is a floating point of which the valid range is from 0.1 to 6.0. If the historical data type is CONTINUOUS, then the processing period is a time string **HH:MM:SS**. The processing period is the time between samples on the historical trend. The menu choices contain up to ten unique processing periods which are entered as a menu item when the **Return** key is pressed and a valid time is entered in the entry field. When a time is selected from the menu, the selected time is displayed in the entry field.

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For Steps 11 through 16, refer to Figure 9-14.

From a **Point Parameters Modify Point** choice box, select a box to determine the point position on the trend graph.

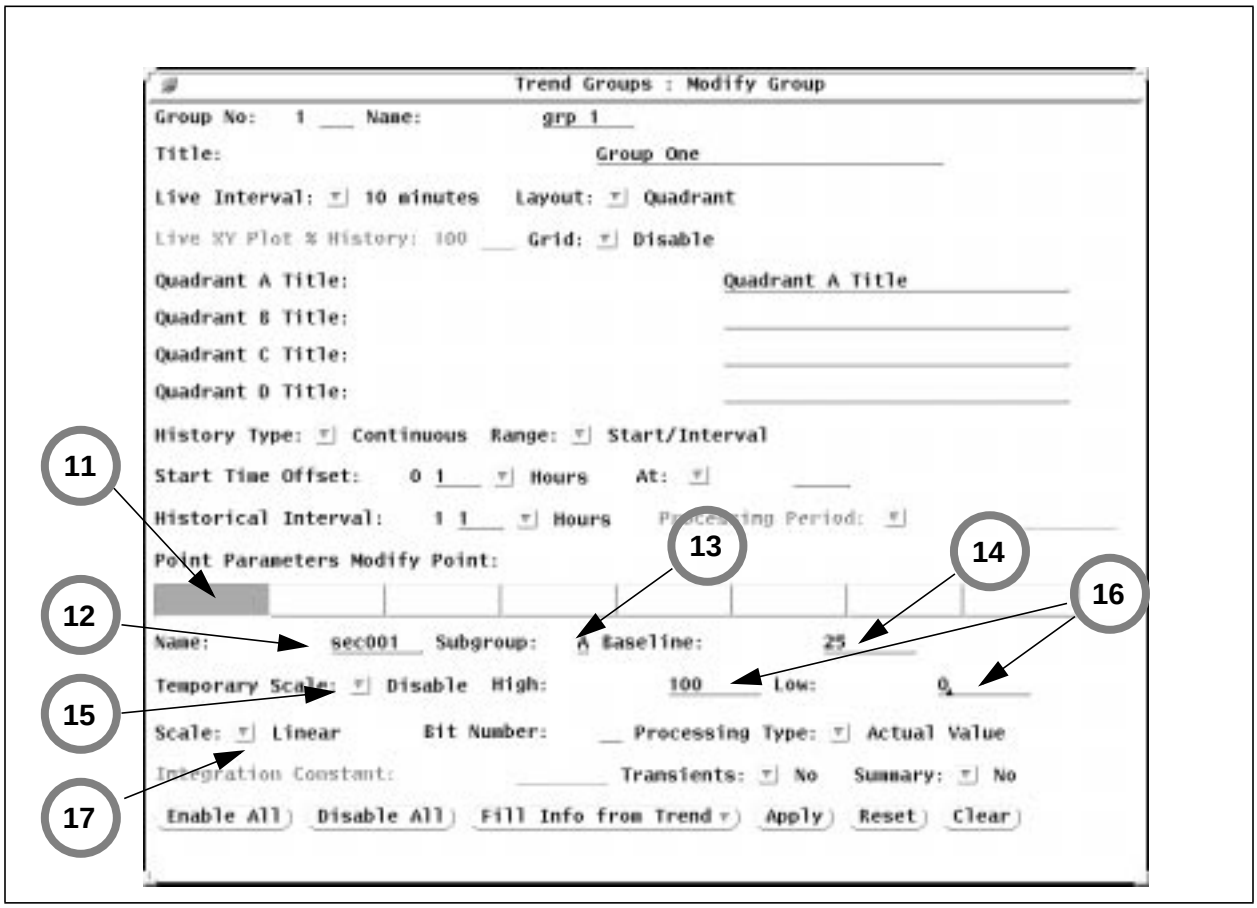

Figure 9-14. Trend Groups Window (Steps 11 - 16)

11. Up to eight points can be displayed on a trend. Names of currently entered points appear in the choice box corresponding to the points' position on a trend.

    When a new point position is selected, the information for the point in the previous choice box is read and verified. If syntax errors are found (invalid scales were entered for a logarithmic point) the previous choice box is selected again to allow the user to correct the errors. A new position cannot be selected until the current position is found to be error free.

    The first point position in the trend has top priority when shading is present. The last point position has the lowest priority. Shading indicates that the area between the baseline and the trend line is shaded.

12. Enter the desired point name in the **Name** entry field. (For this example, **`sec001`** is used.)

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13. Enter a subgroup (A-H) in the **Subgroup** field. The Subgroup field is used to show various trend groupings on Vertical Side-by-Side and Quadrant trends.

    - Vertical Side-by-Side (range = A to H). There is one vertical trend displayed for each subgroup that has at least one point assigned to it. Multiple points within the same subgroup are displayed in the same vertical trend.

    - Quadrant (range = A to D). There is one quadrant trend for each subgroup. Four quadrant trends are displayed in a single window. A subgroup outside the range of A to D will give an error, and the point will not be displayed.

14. Enter the baseline value in the **Baseline** field. The Baseline field is applicable to all trend layouts except for XY plots. All points in a trend have an independent baseline. The area between the trend line and the baseline is shaded with the same color as the trend line. To disable baseline shading, leave this field blank.

    - The point high scale value becomes the baseline when the baseline is greater than the point high scale.

    - The point low scale value becomes the baseline when the baseline is less than the point low scale.

    - For logarithmic points, the baseline value must be greater than zero.

15. Pull down the **Temporary Scale** menu. This option enables the user to view a trend line in lesser or greater detail. Each trend point has its own set of temporary high and low scales.

    - To enable the temporary scale for one point, select **Enable**. To enable the temporary scale for all points in the **Point Parameters** choice boxes, select the **Enable All** button. This option allows the user to enter high and low scale values for each point.

    - To disable the temporary scale for one point, select **Disable**. To disable the temporary scale for all points in the **Point Parameters** choice boxes, select the **Disable All** button.

Note

Scales for points with temporary scales are shown in reverse video on the **Historical Trend Display** window.

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16. If desired, enter the temporary scale values in the **High** and **Low** entry fields.

    - **High Scale** represents the top boundary of the trend. The high scale must be represented as a positive or negative integer, floating point, or in scientific or technical notation. (For example, scientific (1.0e2, -1.0E+2, 1.0E-2) technical (100e0, 10e3, 10E6).)

    - **Low Scale** represents the bottom boundary of the trend. The low scale must be represented as a positive or negative integer, floating point, or in scientific or technical notation. (For example, scientific (1.0e2, -1.0E+2, 1.0E-2) technical (100e0, 10e3, 10E6).)

Notes

If temporary scales are **not** used, the trend will use TB (top bar) and BB (bottom bar) for analog points and the values defined in the **Digital Default High Scale** and **Digital Default Low Scale** parameters. These digital parameters are configurable by using the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Trend UI
Display: Miscellaneous Parameters
Items: Digital Default High Scale
Digital Default Low Scale

Digital points differ from analog points in that digital points always have a value of 0 (off) or 1 (on). The high and low scale values specified for digital points indicate the position of the trend line on the window and the height of the trend. For more information, see "Operator WEStation Configuration Manual (U0-8110).

17. Pull down the **Scale** menu. Select a linear or logarithmic scale.

Note

When a Logarithmic scale is selected and Temporary Scales are enabled, the high scale, low scale, and baseline values must be greater than zero.

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For Step 18, refer to Figure 9-15.

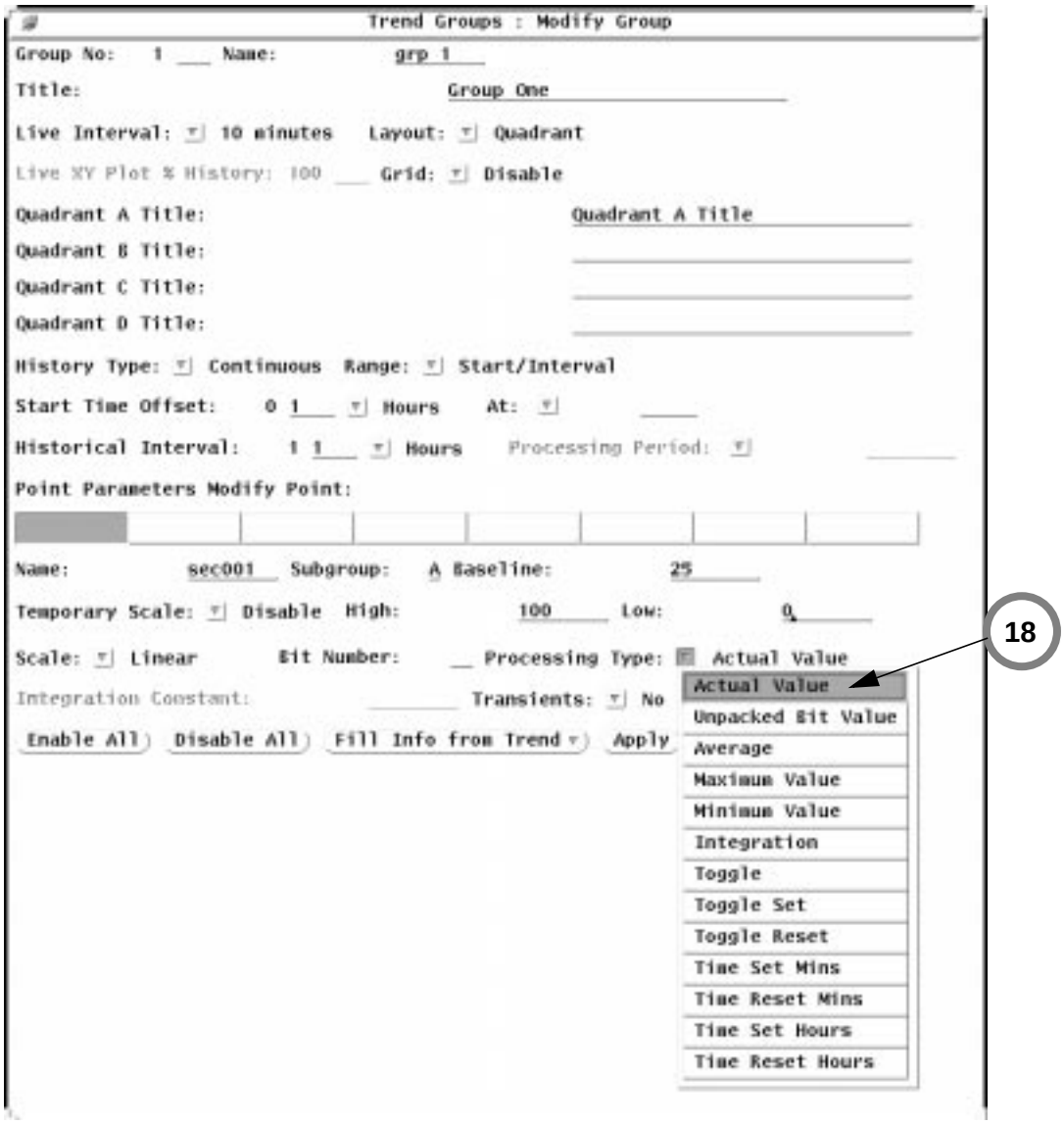

Figure 9-15. Historical Trend Display: Modify Window (Step 18)

18. Pull down the **Processing Type** menu. Select the applicable types. The types are as follows:

    - **Actual Value** displays the actual value of the specified process point at the end of each individual processing period.

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- **Unpacked Bit Value** displays the actual value of a selected bit of the specified process point at the end of each individual processing period. The **Bit Number** entry field is activated when the selected processing type is Unpacked Bit Value.
- **Average** displays the average value of the specified process point over each individual processing period.
- **Maximum Valu**e displays the maximum value of the specified process point over each individual processing period.
- **Minimum Value** displays the minimum value of the specified process point over each individual processing period.
- **Integration** displays the integral of the specified process point with respect to seconds, multiplied by the specified integration constant, over each individual processing period.
- **Toggle** displays the number of state changes for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Toggle Set** displays the number of state changes to the Set state for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Toggle Reset** displays the number of state changes to the Reset state for the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, which occurred over each individual processing period.
- **Time Set Mins** displays the number of minutes which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Set state over each individual processing period.
- **Time Reset Mins** displays the number of minutes which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Reset state over each individual processing period.
- **Time Set Hours** displays the number of hours which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Set state over each individual processing period.
- **Time Reset Hours** displays the number of hours which the specified digital process point, or selected bit of BG, DU, GP, PB, or VC process point, spent in the Reset state over each individual processing period.

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Note

Most processing types return a single precision floating point value. The value is the result of processing the samples for the point.

For Steps 19 through 23, refer to Figure 9-16.

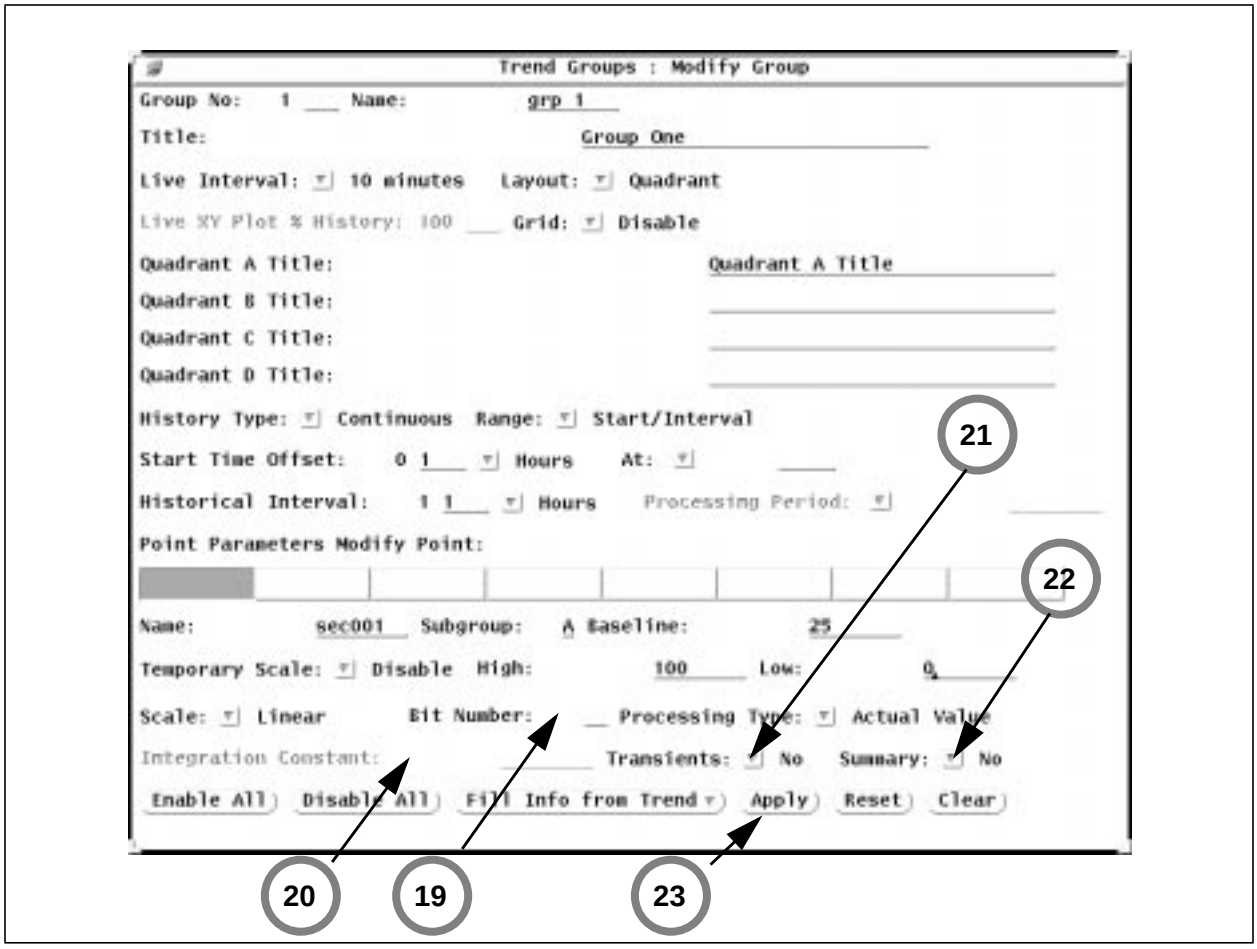

Figure 9-16. Historical Trend Display: Modify Window (Steps 19 - 23)

19. Enter a bit number (0-31) in the **Bit Number** field. This field is only applicable when the processing type is Unpacked Bit Value. (The bit number is retrieved for GP, PB, VC, and DU point record types.)

20. Enter the integration constant in the **Integration Constant** field. This field is only applicable when the processing type is **Integration**.

21. Pull down the **Transients** menu. Selecting **Yes** causes the second digital average value (0 or 1) of any 3 consecutive values in the trend data that are the same to be changed to the opposite state if the second digital average value was not in the same state for its entire processing period

    The transient option does not show true data, and is meant to bring out digital state changes that would otherwise remain hidden on trends of digital points for processing periods greater than 1 second. A trend around the time of the digital activity should be performed, with the processing period decreased and the transient option disabled to show the true digital states. (This option is applicable only when the processing type is **Average Value**.)

22. Pull down the **Summary** menu. Select **Yes** to include a summary section. The summary consists of data for each point, such as averages, maximums, and minimums.

23. When all information for the point has been entered, select the next **Point Parameters** choice box. (Or select the **Apply** button.) The point name now appears in the highlighted box.

Repeat Steps 11-23 until all point information has been entered.

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9-6. Displaying Trend Groups

Use the following procedure to display a trend group in the **Historical Trend Display** window:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

Note

To display **live** trend groups, refer to "Operator WEStation User's Guide" (U0-8100) for instructions.

2. Select the **Groups** button. The **Trend Groups** window appears (as shown in Figure 9-17).

3. Select the desired trend group from the **Group** scrolling list. The group information appears to the right of the **Group** scrolling list.

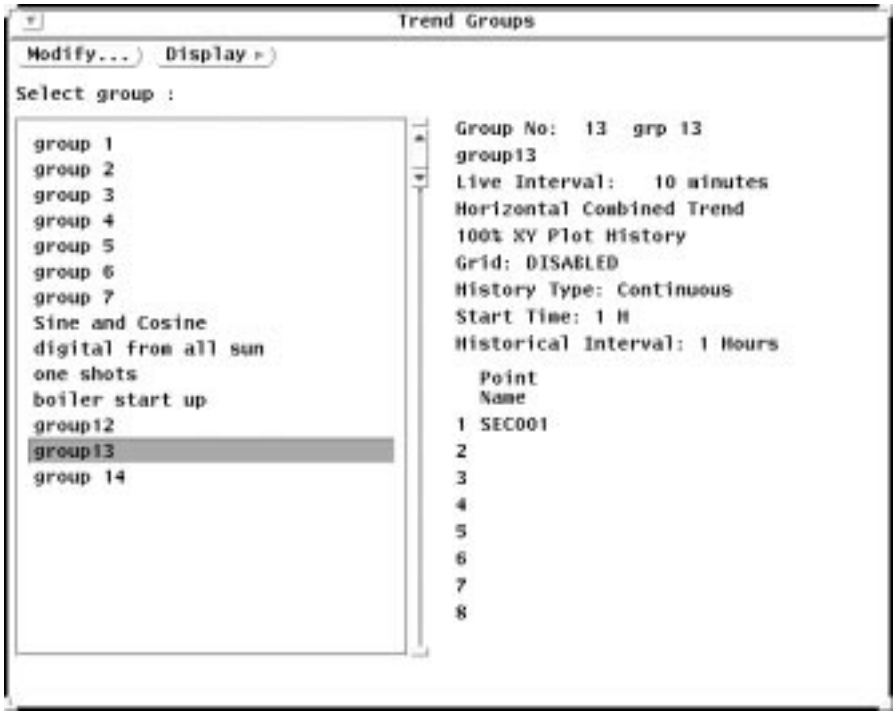

Figure 9-17. Trend Groups

4. Pull down the **Display** menu. Select **Historical Trend**. The trend group now appears in the selected **Historical Trend Display** window. If there is no **Historical Trend Display** window selected, a new **Historical Trend Display** window is created and the group is displayed in the new window.

   This message appears in the bottom of the **Historical Trend** window:

   `Retrieval is in progress.`

   The **Historical Trend Display:Retrieval Status** window is displayed. This window gives the current status of the retrieval in relation to percentage complete. This window also lists the retrieval drops. This window disappears when the retrieval is complete.

   The requested trend appears in the selected **Historical Trend Display** window and the footer message is updated following the message:

   `Retrieval is complete.`

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9-7. Viewing Point Values

The **Time Value Display** window shows point information (such as point name, processing type, and value) at a selected period in time. The position of the cursor indicates the time period. This window is accessed from the view area of **Historical Trend Display** window. Use the following procedure to view the **Time Value Display** window:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

Note

To view a **live Time Value Display** window, refer to "Operator WEStation User's Guide" (U0-8100) for instructions.

2. Left click on any period of time in the view area. A line is drawn on the trend at the selected position, and the **Time Value Display** window appears (see Figure 9-18).

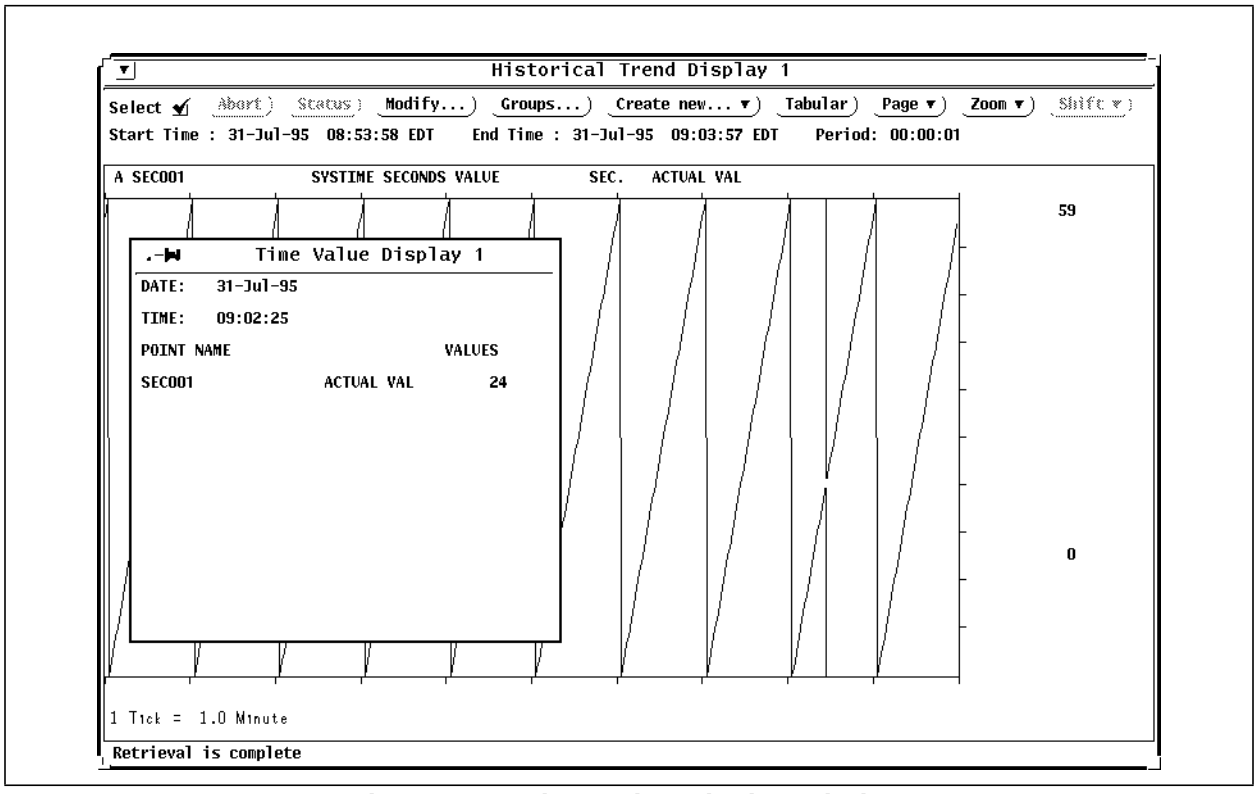

Figure 9-18. Time Value Display Window

3. To view a different time period, left click on a new position in the trend view area or hold down the left mouse button and drag the line throughout the trend view area.

Note

The axis shows tick marks and value limits. The **Time Value Display** may be used to show detailed information about a value on the trend.

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9-8. Zooming a Time Interval

The view area of the trend can be magnified using the Zoom function. The **Zoom** menu can be accessed using the **Zoom** button or the **View Area** pop-up menu. Use the following procedure to Zoom a selected range:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

2. Left click on the start time of the area to be zoomed.

Note

When the start time is selected, the **Time Value Display** window also appears.

3. Middle click on the end time. The range is highlighted and the **Zoom Range Display** window appears. This window displays the start and end periods for the selected range.

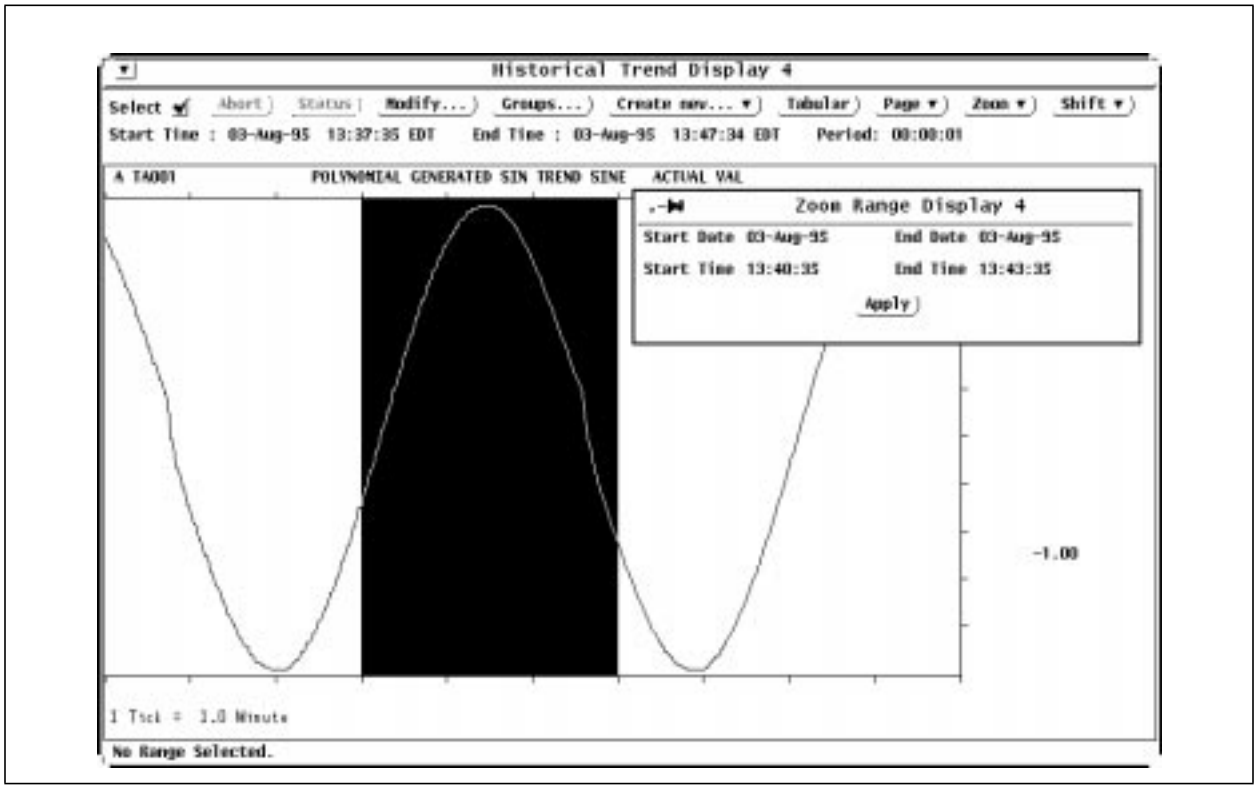

Figure 9-19. Zoom Range Display

4. Select the **Apply** button on the **Zoom Range Display** window or select Zoom Selected Range on the Zoom button menu. The new section of the trend is magnified. The current trend information is cleared and a new trend is displayed.

   This message appears in the bottom of the **Historical Trend** window:

   `Retrieval is in progress.`

   The **Historical Trend Display:Retrieval Status** window is displayed. This window gives the current status of the retrieval as a percentage complete number. This window also lists the retrieval drops. This window disappears when the retrieval is complete.

   The requested trend appears in the **Historical Trend Display** window and the footer message is updated following the message:

   `Retrieval is complete.`

   Note

   If the processing period of the selected zoom range is less than the smallest processing period, the center of the selected region is placed at the center of the new trend and the smallest processing period is used to determine the start time and end time.

5. Use the zoom menu to select other zoom functions:

   - 1/4 x zoom - the new processing period is determined by multiplying the current processing period by 1/4.
   - 1/2 x zoom - the new processing period is determined by multiplying the current processing period by 1/2.
   - 2 x zoom - the new processing period is determined by multiplying the current processing period by 2.
   - 4 x zoom - the new processing period is determined by multiplying the current processing period by 4.

   The new start time is determined such that the value at the time value line will be located at the midpoint of the new trend. If the time value line is not displayed, the midpoint of the current trend will remain the midpoint of the new trend.

9-9. Paging through Trend Displays

Point values collected before or after the time range currently displayed in the trend view area can be viewed using the paging function. The processing period remains the same and a new start time for the trend is determined based on the **Page** menu selection. This window can be accessed using the **Page** button or the **View Area** pop-up menu. Use the following procedure to access the Page menu and select a new view area:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

2. Pull down the **Page** menu.

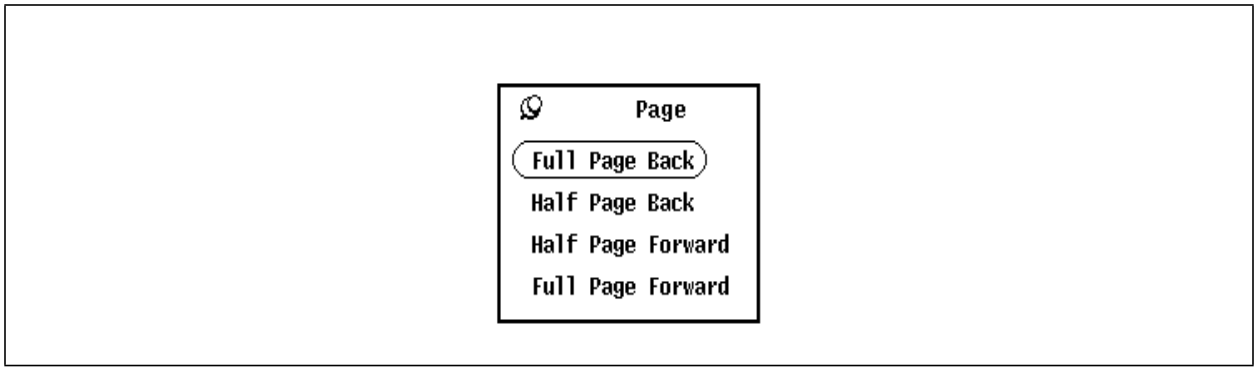

Figure 9-20. Paging Menu

3. Select the direction to move the trend. A trend request is sent to the HSR. When the data returns, the trend is displayed with the new starting time.

   This message appears in the bottom of the **Historical Trend** window:

   `Retrieval is in progress.`

   The **Historical Trend Display:Retrieval Status** window is displayed. This window gives the current status of the retrieval as a percentage complete number. This window also lists the retrieval drops. This window disappears when the retrieval is complete.

   The requested trend appears in the **Historical Trend Display** window and the footer message is updated following the message:

   `Retrieval is complete.`

9-10. Shifting Trends

The Shift function moves the values at the time value line position to start, center or end of the trend. The entire trend is shifted according to the **Shift** menu selection. The **Shift** button is only active while the Time Value line is displayed. The shift function can be accessed using the **Shift** button or the **View Area** pop-up menu.

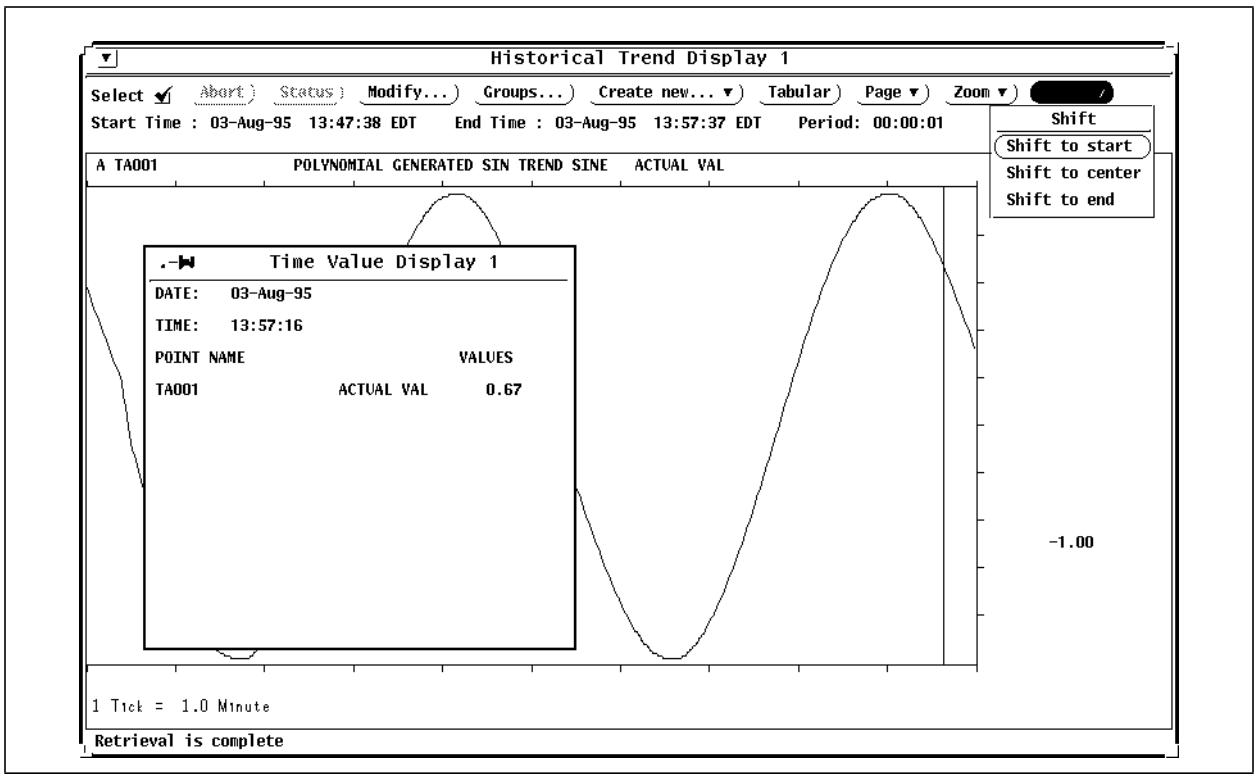

Figure 9-21. Shift Function

Use the following procedure to shift the trend time line values:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

2. Left click on any period of time in the view area. A line is drawn on the trend at the selected position and the **Shift** button is activated.

3. Pull down the **Shift** menu. The start time of the trend is adjusted based on the selection:

   - **Shift to start** adjusts the start time of the trend so the selected time position is at the start of the trend.
   - **Shift to center** adjusts the start time of the trend so the selected time position is at the center of the trend.
   - **Shift to end** adjusts the start time of the trend so the selected time position is at the end of the trend.

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9-11. Displaying Tabular Trends

The **Tabular Trend** window displays the point name, value units, and processing type. The point values and the corresponding time and date the value occurred are listed on the Tabular Trend.

Use the following procedure to display a tabular trend:

1. Access the **Historical Trend Display** window (as described in Section 9-3).

Note

To view a **live** tabular trend, refer to "Operator WEStation User's Guide" (U0-8100) for instructions.

2. Select the **Tabular** button. The **Tabular Trend** window appears (See Figure 9-22).

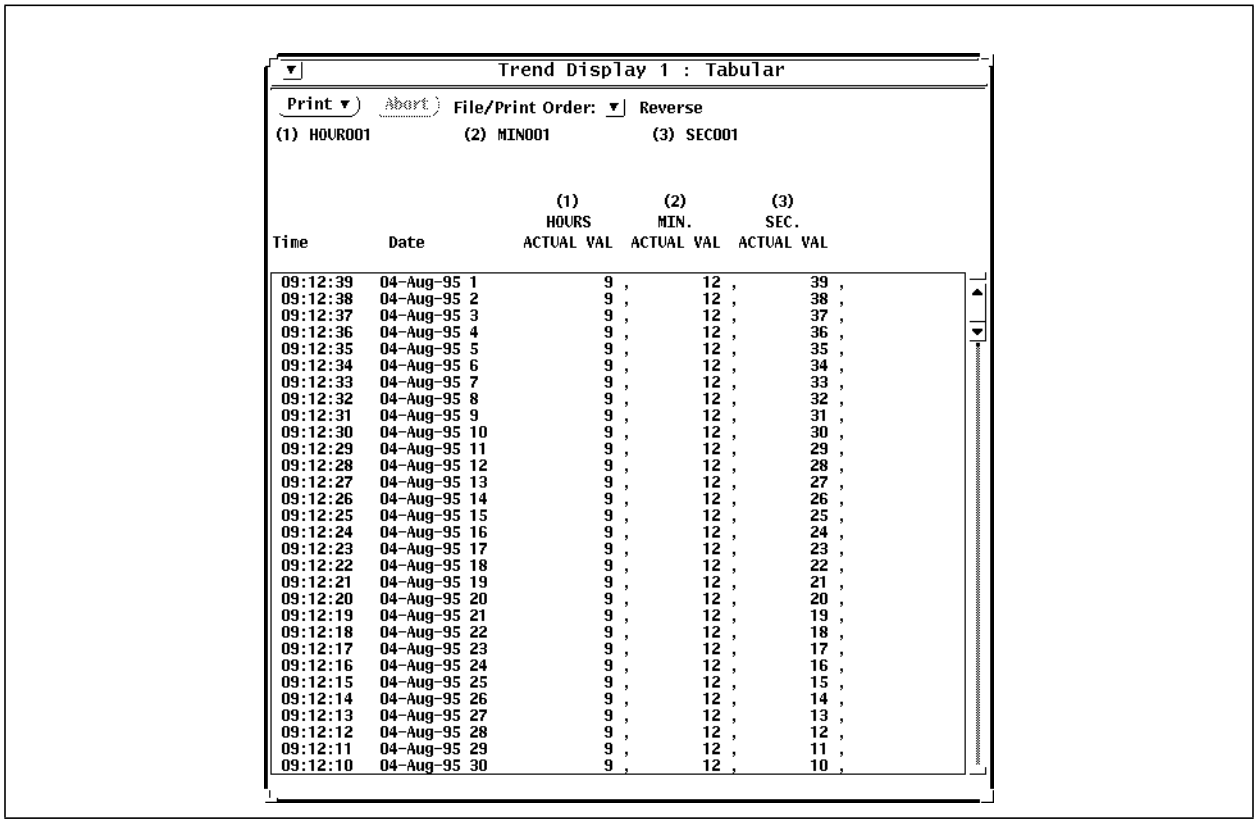

Figure 9-22. Tabular Trend Window

Note

The **Tabular** button is active only when valid data is displayed on the **Historical Trend Display**.

The point information from the current trend is displayed in the window. To view values not currently displayed in the view area, use the scroll bar, or enlarge the window.

3. To change the print order, pull down the **File/Print Order** menu. Select the order in which the point values will be printed or saved to a file. (This step is optional.)

4. To print or save the tabular, data pull down the **Print** menu.

5. Select the desired print option.

   - **to a File** - Saves the tabular trend to the file name **tabular_htrend_file.n** (where n = the trend number) in directory /usr/wdpf/mmi/user/home/data.

   - **to the Log Server** - Sends the tabular trend file to the Log Server defined during configuration.

Note

To cancel a print request, select the **Abort** button.

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9-12. Historical Trend Window Information Messages

Messages that may appear when using the **Historical Trend** window are shown in Table 9-1. (These messages typically appear in the left footer of the **Historical Trend Display** window.)

Table 9-1. Historical Trend Messages

Message	Description
ATTRIBUTE: Point not configured at HSR	The specified point was not defined during HSR configuration. (This message appears at the top of the trend window)
Incomplete retrieval:Subsystem(s) shutdown	The requested retrieval could not be completed due to a subsystem shutdown. Use the HSR Station Status/Control window to view the subsystem status.
invalid processing period	The Processing Period field contains an invalid time string or floating point.
invalid end time	The specified end time is invalid. The valid format for the end time is **DD-MMM-YY**.
invalid start time	The specified start time is invalid. The valid format for the start time is **DD-MMM-YY**.
Interval too small to zoom	The selected time interval to zoom is less than 10 minutes.
No points selected	Less than two points were entered on the Trend Modify or Modify Group windows.
Plot must have two points entered	No points were defined for an XY Plot trend.
POINT: no retrieval data	No data was available for the specified point. (This message appears at the top of the trend window.)
Partial data in specified time range	Point data is not complete.
Retrieval is complete	Point data has been extracted from the Main History, Long Term History, and Laboratory History functions.
Retrieval is in progress...	Point data is currently being extracted from the Main History and Long Term History functions.
start time must be earlier than end time	The specified start time must occur in time before the specified end time.
Unable to create tabular trend file for print	The tabular trend file could not be created due to invalid permissions or invalid directory.
Unable to open, create, or write to the tabular trend log file	The tabular trend log file is invalid or has invalid permissions.
* baseline for point contains invalid characters	The baseline value for the specified (*) point must be a positive or negative integer, floating point, or in scientific or technical notation.

Table 9-1. Historical Trend Messages

Message	Description
* baseline for point contains spaces	The baseline values for the specified (*) point contains embedded spaces.
* high temp scale for point contains invalid characters	The high temporary scale for the specified (*) point must be a positive or negative integer, floating point, or in scientific or technical notation.
* high temp scale for point contains spaces	The high temporary scale value for the specified (*) point contains embedded spaces.
* integration constant for point contains invalid characters	The integration constant for the specified (*) point must be a positive or negative integer, floating point, or in scientific or technical notation.
* integration constant for point contains spaces	The integration constant for the specified (*) point contains embedded spaces.
* invalid baseline for logarithmic point	The baseline value for the specified (*) point name is invalid for a logarithmic scale. The value must be greater than zero.
* invalid high temp scale for logarithmic point	The high temporary scale value for the specified (*) point name is invalid for a logarithmic scale. The value must be greater than zero.
* invalid low temp scale for logarithmic point	The low temporary scale value for the specified (*) point name is invalid for a logarithmic scale. The value must be greater than zero.
* low temp scale for point contains invalid characters	The low temporary scale value for the specified (*) point must be a positive or negative integer, floating point, or in scientific or technical notation.
* low temp scale for point contains spaces	The low temporary scale value for the specified (*) point contains embedded spaces.
* point name contains spaces	The specified (*) point name contains embedded spaces.
* point name contains invalid characters	The specified (*) point name contains one or more of the following characters: **~ @ $ % & * \ ,**
* subgroup for point is out of range	The subgroup for the specified (*) point is not within a valid range. The valid range for vertical side-by-side trend subgroups is A-H. The valid range for quadrant trend subgroups is A - D.
* subgroup for point contains invalid characters	The subgroup for the specified (*) point is not a valid subgroup. Valid subgroups for vertical side-by-side trends is A-H. The valid subgroup for quadrant trends is A - D.

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Section 10. Point Data Reviews

10-1. Section Overview

This section describes the user interface windows which may be used to retrieve point data in review form.

The following topics are included in this section:

- Overview of point data review functions (Section 10-2).
- Point Review window (Section 10-3).
- Event Review window (Section 10-4).
- Point review Properties window (Section 10-5).
- Event Trigger List window (Section 10-6).

10-2. Overview of Point Data Review Functions

Two user interface windows - **Historical Point Review** and **Historical Event Review** - are provided for reviews of historical point data. The **Historical Point Review** window accesses all continuous history data (collected by the Main History, Long Term History, and Laboratory Data History subsystems). The **Historical Event Review** window accesses only event-triggered data (collected by the Event History subsystem). A third window, the **Event Trigger List**, can be used to view a list of triggering events and determine the time ranges for which Event data has been saved.

The data retrieved by these windows may be displayed, printed, or saved to a file (depending on system configuration).

When specifying a Point Review or Event Review, the operator enters a time range, selects the points to be included in the review (filtering by point name or characteristics), and selects specific review types. These review types define the type of collected point data which is to be retrieved. For example, all changes in value may be of interest, or only changes when the point(s) entered a particular status (such as points going into alarm). All of these parameters are entered using the **Properties** window (see Section 10-5).

The review provides a listing which includes the following:

- Date and time of each entry.
- Name and English description of each listed point.
- The point’s alarm condition, value, and quality at that time.
- Point attribute record fields such as alarm limits and units (depending on point record type).
- Review type(s) which the entry matched.

Entries are listed in reverse chronological order (latest entry first).

An example Point Review display is shown in Figure 10-1

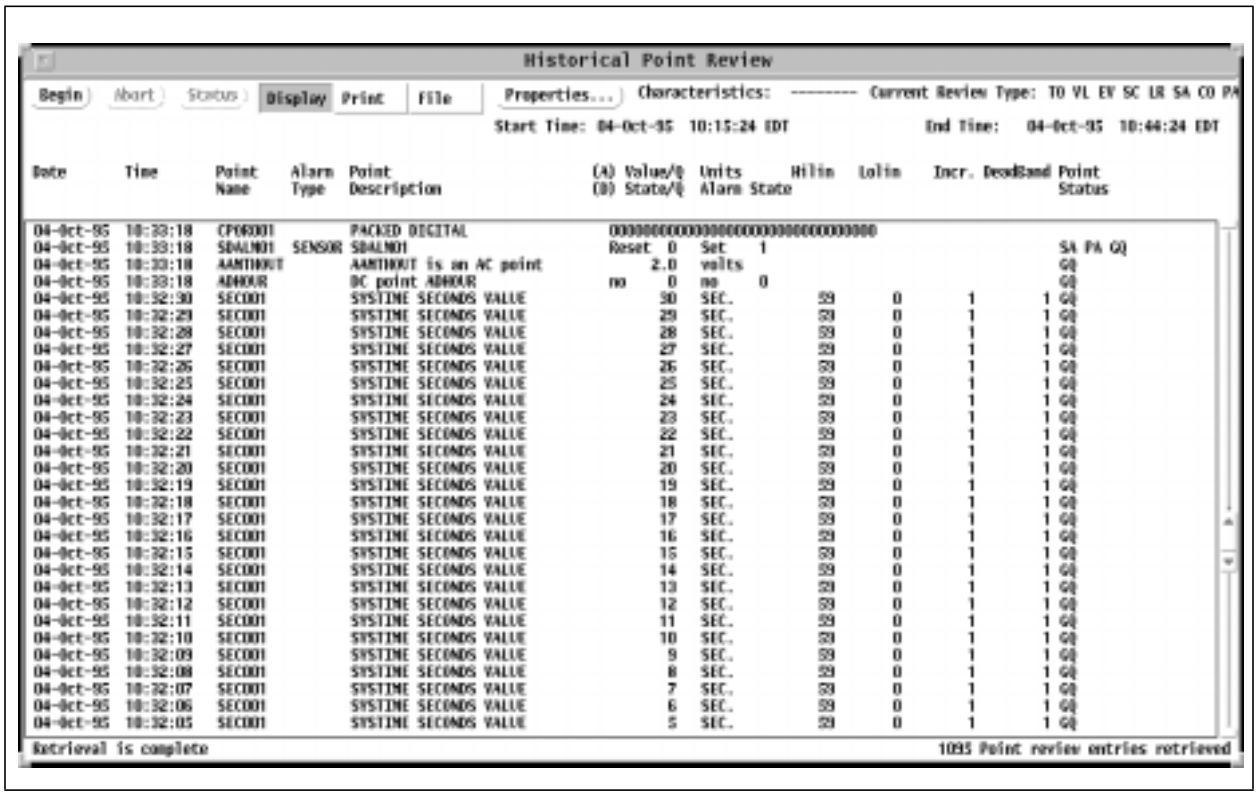

Figure 10-1. Example Historical Point Review Window

The top of this window shows information about the properties selected for this review:

- **Characteristics** displays the characteristics selected for review on the **HSR Review: Properties** window.
- **Current Review Type** displays the review type(s) selected on the **HSR Review Properties** window.
- **Start Time** and **End Time** display the time range of the review request.
- **Date** displays the date stamp of the entry.
- **Time** displays the time stamp of the entry.
- **Point Name** displays the name assigned to the process point.
- **Alarm Type** displays a brief text description of the alarm condition for the point. (See "Record Types User's Guide" (U0-0131) for more information on alarm condition information).
- **Point Description** displays the English description field of the point.

- For analog points **(A)**, the following headings apply:
  - **Value/Q** displays the value and quality of the analog point.
  - **Units** displays the Engineering units description.
  - **Hilim** displays the high alarm limit.
  - **Lolim** displays the low alarm limit.
  - **Incr** displays the incremental alarm limit.
  - **Deadband** displays the alarm deadband value for an analog point.
- For digital points **(D)**, the following headings apply:
  - **State/Q** displays the Set or Reset description, value and quality for a digital point.
  - **Alarm State** displays the specified alarm state.
- **Point Status** displays all status information relevant to this entry.

10-3. Point Review Window

The Historical Point Review user interface (**Historical Point Review** window) accesses Main History, Long Term History, and Laboratory Data History files and retrieves continuous point data to be displayed, printed, or saved to a file. For background information on the Main History, Long Term History and Laboratory Data History subsystems, see Section 3. For information on configuration, see Section 5.

This document assumes the **Historical Point Review** window is accessed at the Operator WEStation. Depending on the Operator WEStation configuration, the Historical Point Review may be accessed from an icon or menu.

The following steps are typical:

1. Open the **Data Analysis and Maintenance** menu.
2. Select the **Historical Reviews** button.
3. Select the **Point Review** button.

   The **Historical Point Review** window appears. (See Figure 10-2)

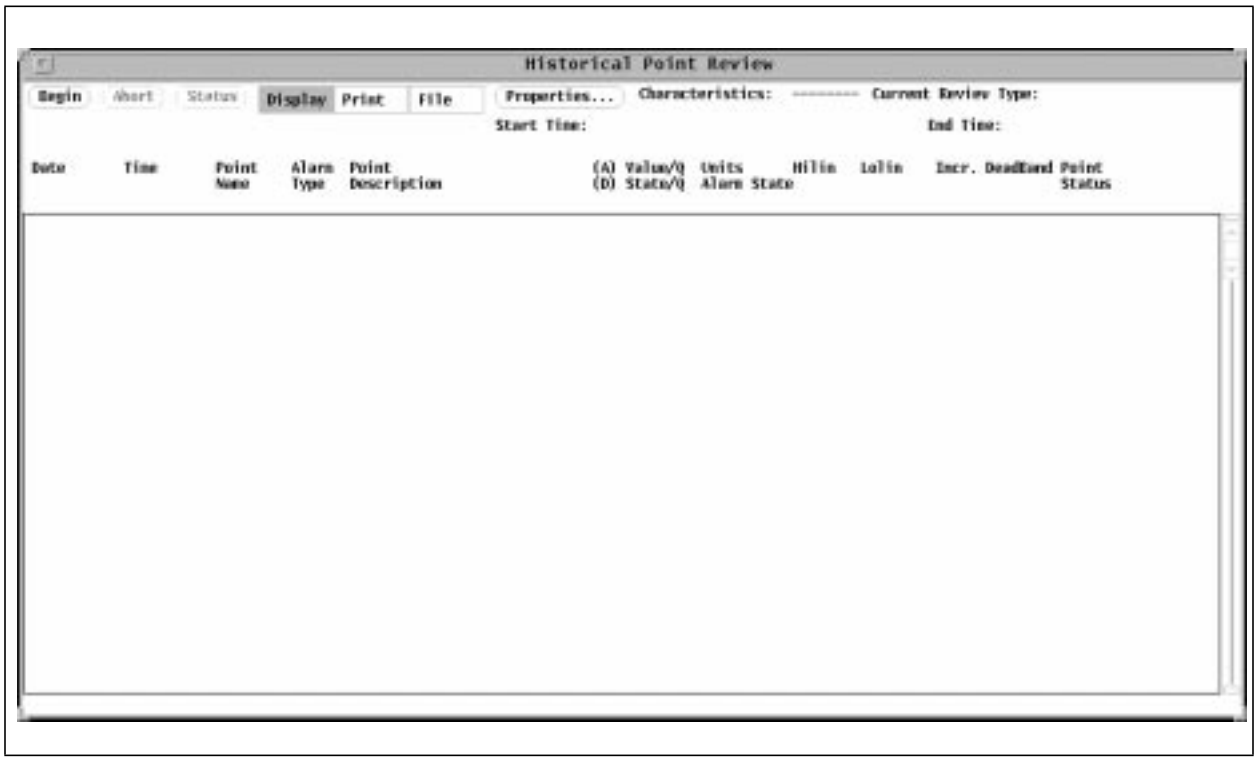

Figure 10-2. Historical Point Review Window

4. Select the **Properties** button (at the top center of the window).

The **HSR Review: Properties** window appears.

5. Enter the parameters for the review, as described in Section 10-5.

6. After entering the review properties, the review may be requested for display, printing, or saving to a file.

   Display - Data returned from the requested review is displayed in the window only

   Print - Data returned from the requested review is displayed in the window and sent to the WEStation Log Server for printing

   File - Data returned from the requested review is displayed in the window and stored in the file specified on the properties window

Note

If the station is not configured to allow saving retrieved data to a file, the **File** option box will not appear. This option is enabled through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Point Review
Item: Save File Locally

Refer to Section 5 for addition configuration information.

7. Select the **Begin** button to start the review process. The following message will appear in the window footer:

   `Retrieval is in progress` …

Notes

The **Retrieval Status** window will appear and display dynamic retrieval information.

To cancel a review in progress, select the **Abort** button. The message, “Retrieval request was aborted” will appear in the window footer.

When the review process is completed, the following message appears in the window footer:

```
Retrieval is complete.
```

The applicable review data appears in the window, as shown in Figure 10-3. Note that for review displays, the number of entries is shown in the right side of the footer.

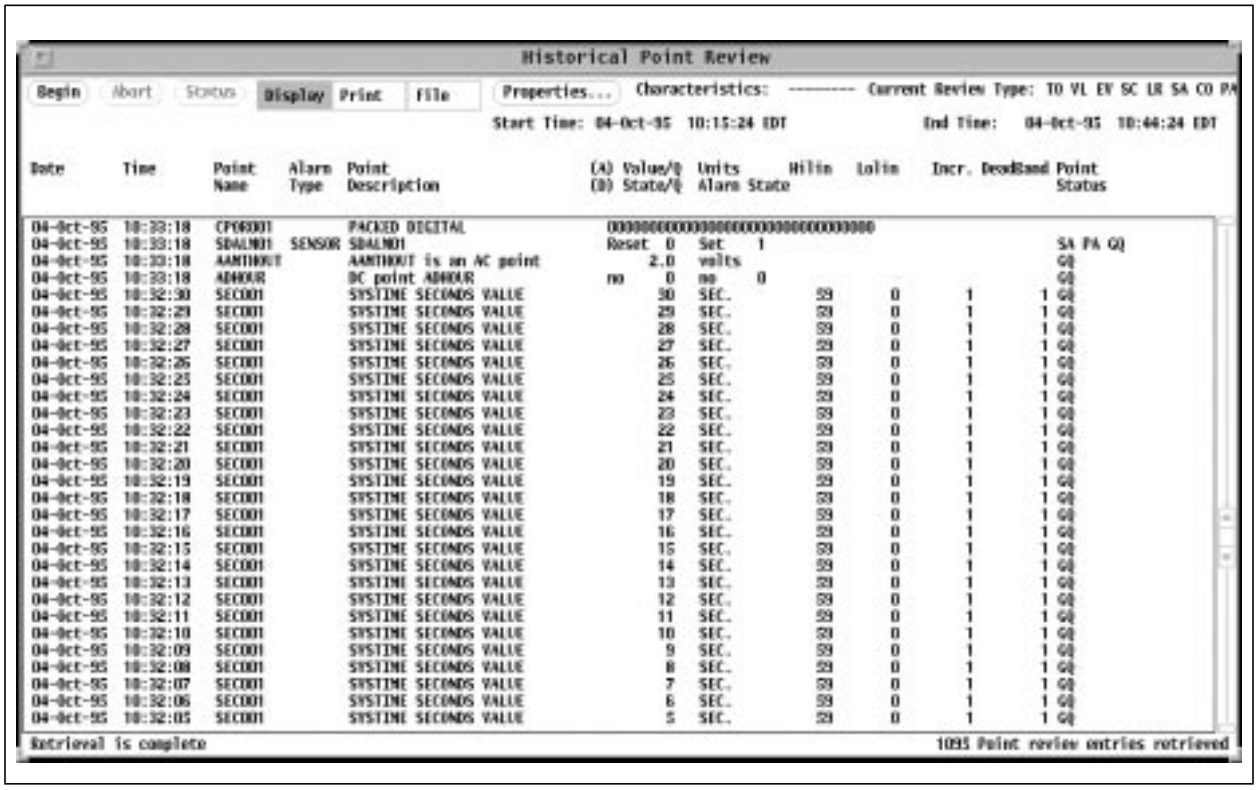

Figure 10-3. Example Historical Point Review Display

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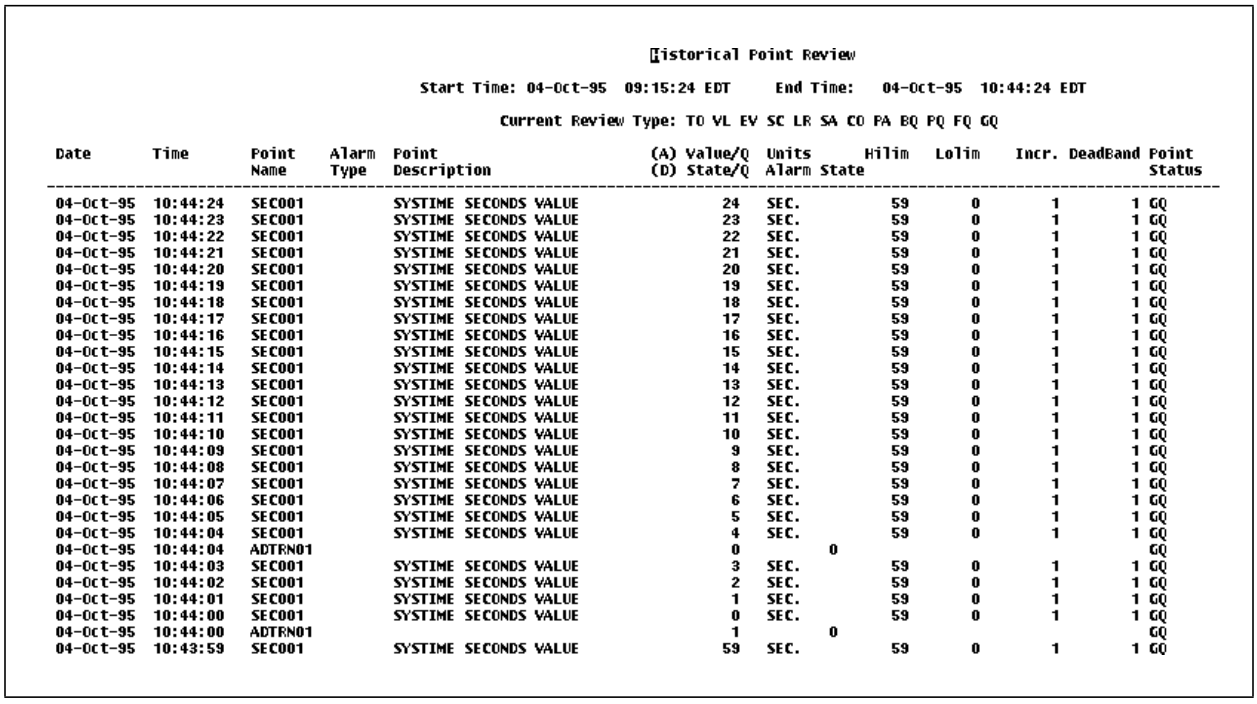
8.A. If **Print** was selected, the review data is sent to the Log Server to be printed. The format of the printed Point Review is shown in Figure 10-4.



Historical Point Review

Start Time: 04-Oct-95 09:15:24 EDT End Time: 04-Oct-95 10:44:24 EDT

Current Review Type: TO VL EV SC LR SA CO PA BQ PQ FQ GQ

Date	Time	Point Name	Alarm Type	Point Description	(A) Value/Q (D) State/Q	Units Alarm State	Hilim	Lolim	Incr.	DeadBand	Point Status
04-Oct-95	10:44:24	SEC001		SYSTIME SECONDS VALUE	24	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:23	SEC001		SYSTIME SECONDS VALUE	23	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:22	SEC001		SYSTIME SECONDS VALUE	22	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:21	SEC001		SYSTIME SECONDS VALUE	21	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:20	SEC001		SYSTIME SECONDS VALUE	20	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:19	SEC001		SYSTIME SECONDS VALUE	19	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:18	SEC001		SYSTIME SECONDS VALUE	18	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:17	SEC001		SYSTIME SECONDS VALUE	17	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:16	SEC001		SYSTIME SECONDS VALUE	16	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:15	SEC001		SYSTIME SECONDS VALUE	15	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:14	SEC001		SYSTIME SECONDS VALUE	14	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:13	SEC001		SYSTIME SECONDS VALUE	13	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:12	SEC001		SYSTIME SECONDS VALUE	12	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:11	SEC001		SYSTIME SECONDS VALUE	11	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:10	SEC001		SYSTIME SECONDS VALUE	10	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:09	SEC001		SYSTIME SECONDS VALUE	9	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:08	SEC001		SYSTIME SECONDS VALUE	8	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:07	SEC001		SYSTIME SECONDS VALUE	7	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:06	SEC001		SYSTIME SECONDS VALUE	6	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:05	SEC001		SYSTIME SECONDS VALUE	5	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:04	SEC001		SYSTIME SECONDS VALUE	4	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:04	ADTRN01			0	0					GQ
04-Oct-95	10:44:03	SEC001		SYSTIME SECONDS VALUE	3	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:02	SEC001		SYSTIME SECONDS VALUE	2	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:01	SEC001		SYSTIME SECONDS VALUE	1	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:00	SEC001		SYSTIME SECONDS VALUE	0	SEC.	59	0	1	1	GQ
04-Oct-95	10:44:00	ADTRN01			1	0					GQ
04-Oct-95	10:43:59	SEC001		SYSTIME SECONDS VALUE	59	SEC.	59	0	1	1	GQ

Figure 10-4. Example Printed Point Review

8.B. If **File** was selected, the review data is saved to the specified file name and can be viewed with any text editor. The format of the saved Point Review is the same as the printed Point Review, as shown in Figure 10-4.

The following messages appear in the window footer throughout a successful save to file request:

`File save is in progress.`

`File save is complete` - <filename specified on the properties window>

9. Select the **Status** button to display the **Retrieval Status** window as shown in Figure 10-5.

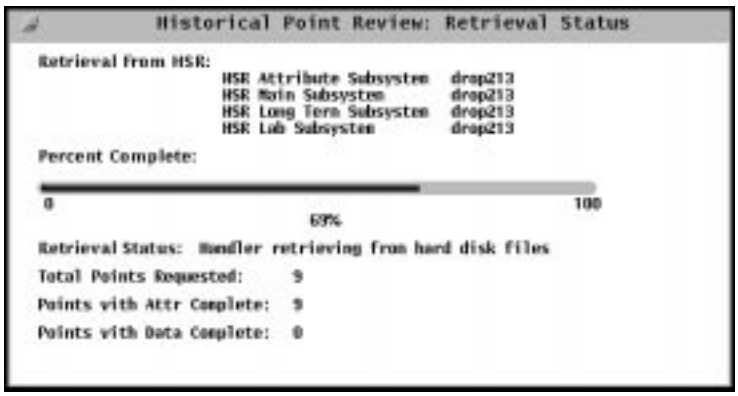


Figure 10-5. Retrieval Status Window

The **Retrieval Status** window displays information about the request currently in progress, such as the percentage of the retrieval that is complete, the number of points requested, the number of points with point attribute information retrieval completed, the number of points with data retrieval completed, and the HSR(s) from which the retrieval is being requested.

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10-4. Event Review Window

The Historical Event Review user interface (**Historical Event Review** window) accesses Event History files and retrieves event-triggered point data to be displayed, printed, or saved to a file. For background information on the Event History subsystem, see Section 3. For information on configuration, see Section 5

This document assumes the **Event Review** window is accessed at the Operator WEStation. Depending on the Operator WEStation configuration, the Historical Event Review may be accessed from an icon or menu.

The following steps are typical:

1. Open the **Data Analysis and Maintenance** menu.
2. Select the **Historical Reviews** button.
3. Select the **Event Review** button.

   The **Historical Event Review** window appears, as shown in Figure 10-6.

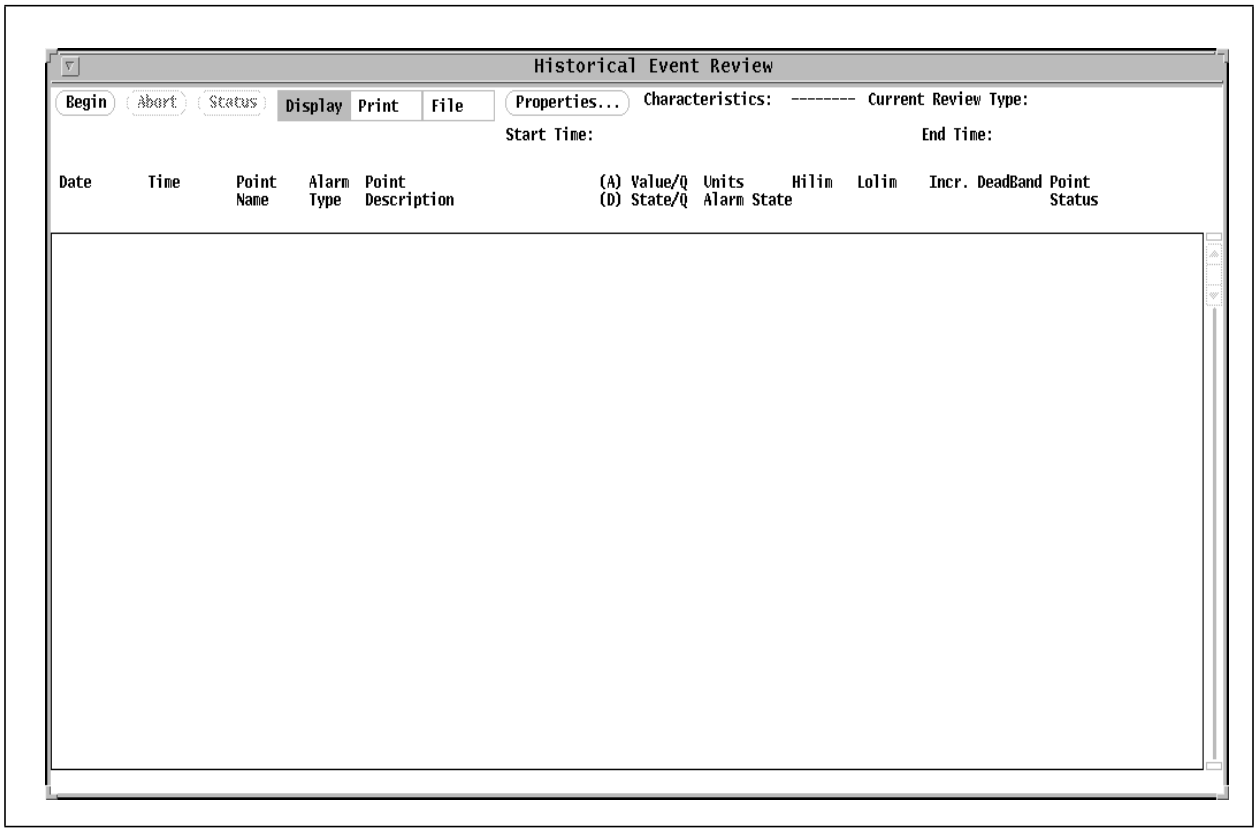

Figure 10-6. Historical Event Review Window

4. Select the **Properties** button (at the top center of the window).

The **HSR Review: Properties** window appears.

5. Enter the parameters for the review, as described in Section 10-5.

6. After entering the review properties, the review may be requested for display, printing, or saving to a file.

   Display - Data returned from the requested review is displayed in the window only

   Print - Data returned from the requested review is displayed in the window and sent to the WEStation Log Server for printing

   File - Data returned from the requested review is displayed in the window and stored in the file specified on the properties window

Note

If the station is not configured to allow saving retrieved data to a file, the **File** option box will not appear. This option is enabled through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Alarm Message Review
Item: Save File Locally

Refer to Section 5 for addition configuration information.

7. Select the **Begin** button to start the review process. The following message will appear in the window footer:

   `Retrieval is in progress` …

Notes

The **Retrieval Status** window will appear and display dynamic retrieval information.

To cancel a review in progress, select the **Abort** button. The message, “Retrieval request was aborted” will appear in the window footer.

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When the review process is completed, the following message appears in the window footer:

`Retrieval is complete.`

The applicable review data appears in the window, as shown in Figure 10-7. Note that for review displays, the number of entries is shown in the right side of the footer.

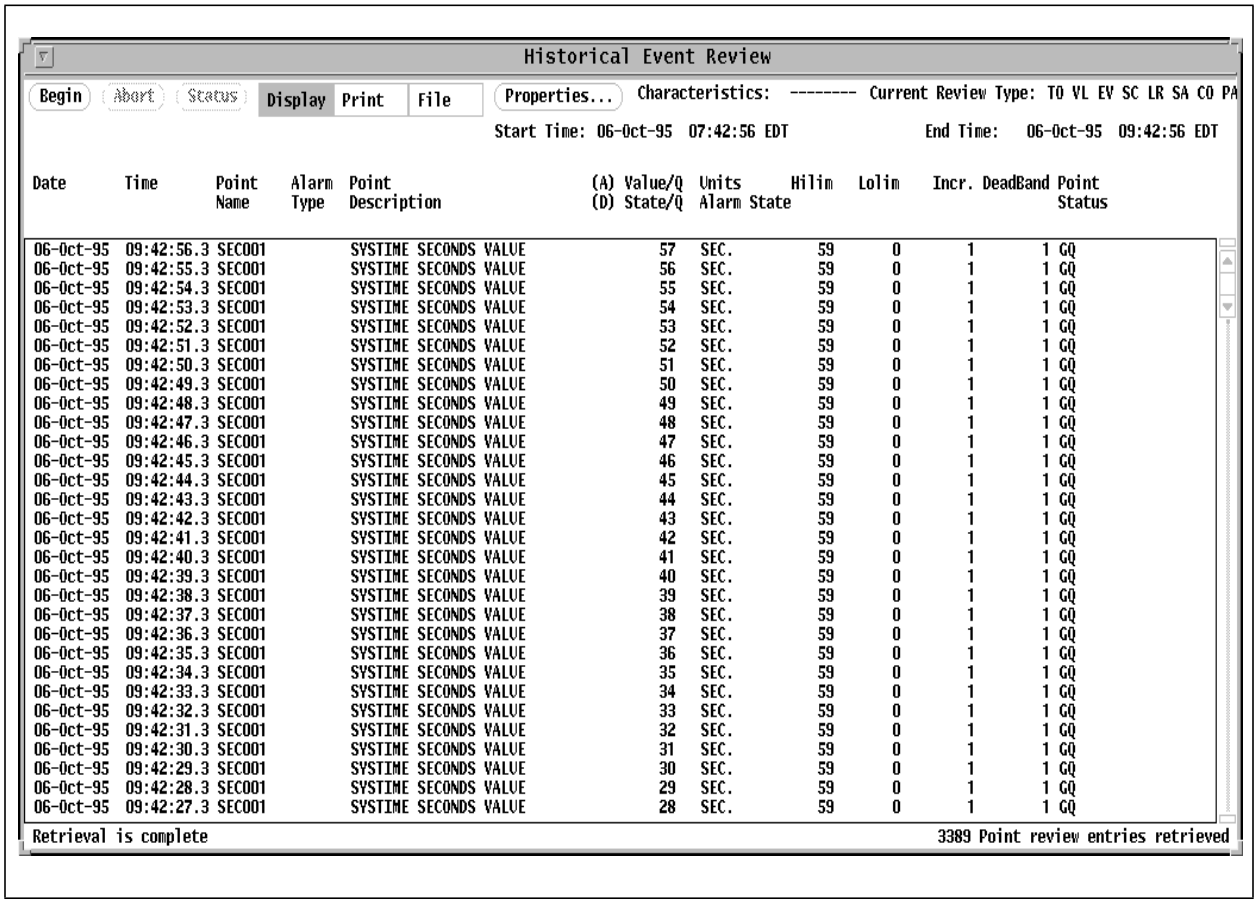
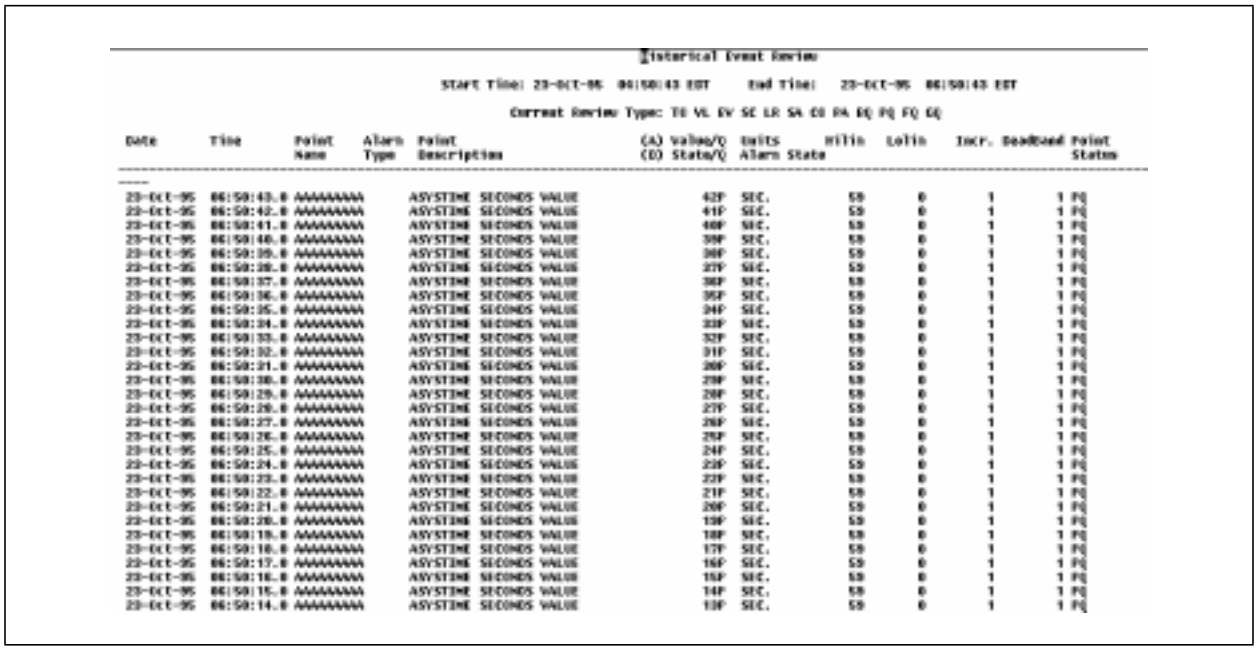


Figure 10-7. Example Historical Event Review Display

8.A. If **Print** was selected, the review data is sent to the Log Server to be printed. The format of the printed Event Review is shown in Figure 10-8.



Historical Event Review

Start Time: 23-Oct-95 06:50:43 EDT End Time: 23-Oct-95 06:50:43 EDT

Current Review Type: TE VL EV SE LR SA CO PA EQ PQ FQ GQ

Date	Time	Point Name	Alarm Type	Point Description	(A) value/Q (D) State/Q	Units Alarm State	Hilim	Lolim	Incr.	Deadband	Point Status
23-Oct-95	06:50:43.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	42F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:42.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	41F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:41.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	40F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:40.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	39F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:39.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	38F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:38.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	37F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:37.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	36F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:36.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	35F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:35.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	34F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:34.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	33F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:33.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	32F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:32.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	31F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:31.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	30F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:30.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2FF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:29.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2EF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:28.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2DF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:27.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2CF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:26.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2BF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:25.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	2AF	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:24.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	29F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:23.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	28F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:22.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	27F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:21.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	26F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:20.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	25F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:19.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	24F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:18.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	23F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:17.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	22F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:16.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	21F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:15.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	20F	SEC.	59	0	1	1	PQ
23-Oct-95	06:50:14.0	AAAAAAAAA		ASYSTIME SECONDS VALUE	13F	SEC.	59	0	1	1	PQ

Figure 10-8. Example Printed Event Review

8.B. If **File** was selected, the review data is saved to the specified file name and can be viewed with any text editor. The format of the saved Event Review is the same as the printed Point Review, as shown in Figure 10-8.

The following messages appear in the window footer throughout a successful save to file request:

`File save is in progress.`

`File save is complete` - <filename specified on the properties window>

9. Select the **Status** button on the **Historical Event Review** window to display the **Retrieval Status** window as shown in Figure 10-9.

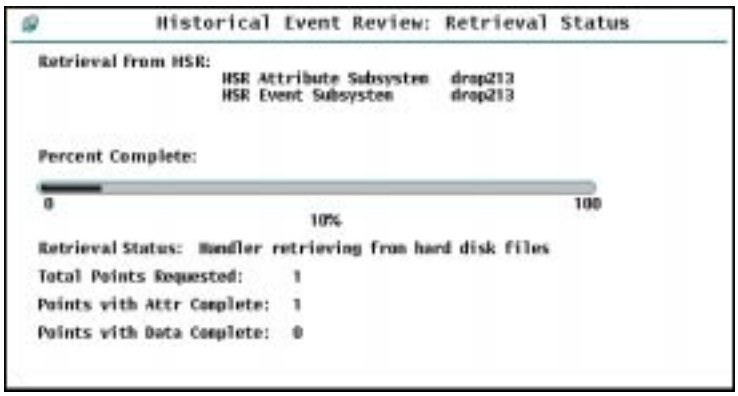


Figure 10-9. Retrieval Status Window

The **Retrieval Status** window displays information about the request currently in progress, such as the percentage of the retrieval that is complete, the number of points requested, the number of points with point attribute information retrieval completed, the number of points with data retrieval completed, and the HSR(s) from which the retrieval is being requested.

10-5. Point Review Properties Window

For both the **Historical Point Review** and **Historical Event Review** windows, a **Properties** window is used to set the parameters for data retrieval. These parameters include filtering by point names or characteristics, review type, and the time range to be searched.

The **Properties** windows for Point Review and Event Review are identical. The **Historical Point Review: Properties** window is shown in Figure 10-10. Information on invoking the **Historical Point Review: Properties** window can be found in Section 10-3 (Point Review Window) or Section 10-4 (Event Review Window).

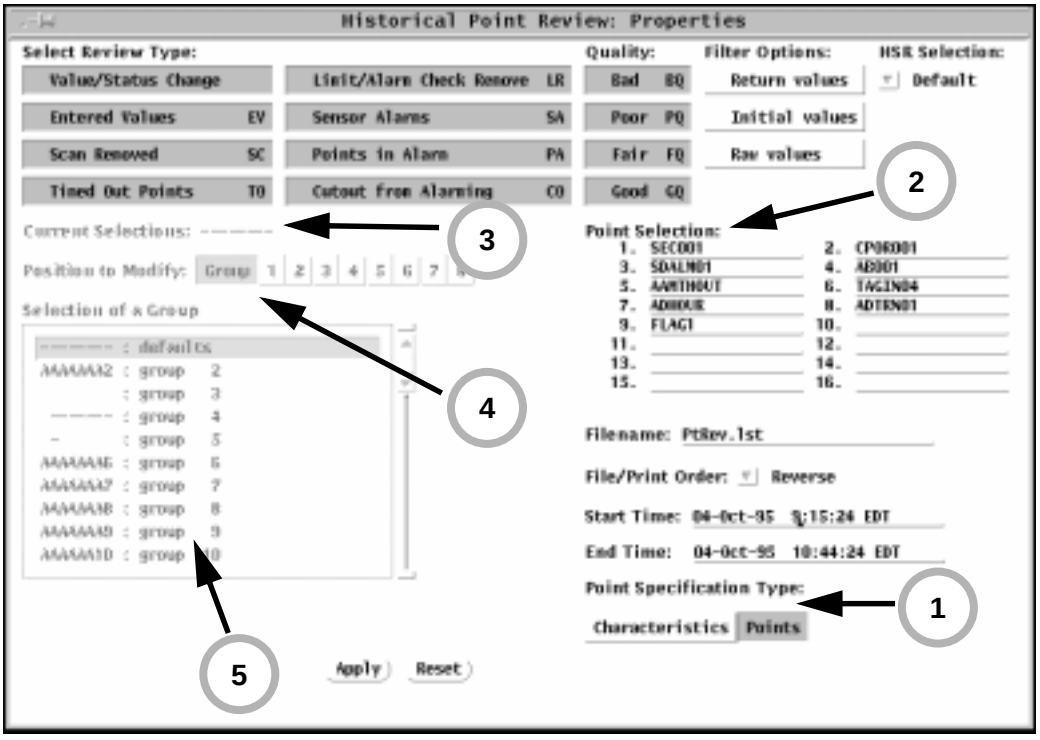


Figure 10-10. HSR Review: Properties Window (Steps 1-5)

The numbers in the gray circles in Figure 10-10 correspond to the numbered steps in Section 10-5.1.

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10-5.1. Filtering by Point Names or Characteristics

The set of points to be included in the review may be selected in one of two ways:

- By point name(s).
- By point characteristics.

1. The **Point Specification Type** option boxes, at the bottom right of the **Properties** window, are used to select one of these two methods.

   If the **Points** box is selected, the **Point Selection** entry fields (on the right side of the window) will be available.

   Note

   Window items related to selection of characteristics are grayed out.

   If the **Characteristics** box is selected, several window items related to characteristics (on the left side of the window) will be available.

   Note

   Window items related to selection of point names are grayed out.

2. To review data for selected points, select the appropriate **Point Specification Type** choice box and enter up to 16 point names in the **Point Selection** entry fields. For a Point review, enter points collected by the Main History, Long Term History, and Laboratory History subsystems. For an Event review, enter points collected by the Event History subsystem.

   Notes

   1. For historical data to be available, the points must have been configured in the Point Information Compiler (.pic) file for the applicable history subsystem(s). See Section 6 for additional information.
   2. Fields that require an alphanumeric entry (such as point names) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

3. If the **Characteristics** box is selected from the **Point Specification Type** choice boxes, the selected characteristics are displayed in the **Current Selections** field.

4. The set of characteristics to be used may be entered individually (for each characteristics position). Alternatively, a pre-defined characteristics group may be selected. (For background information on point characteristics and how they may be defined for a specific system, see "System Point Directory User's Guide" (U0-8205) or "MAC Application Utilities User's Guide" (U0-0136) for information on specifying the characteristics for a point.)

   To select a pre-defined characteristics group, select **Group** from the **Position to Modify** option boxes.

   To select characteristics individually, by position, select a position number from the **Position to Modify** choice boxes.

5. When **Group** is selected from the **Position to Modify** choice boxes, the groups are displayed in the scrolling list. Use the scrolling list to select the predefined group with the desired set of characteristics.

   When a position number is selected from the **Position to Modify** choice boxes, the available characteristics for the position are displayed in the scrolling list. Use the scrolling list to select the desired character for the selected position.

Notes

1. The Operator Station configuration file review.chr is used to define characters for each characteristics position, as well as the characteristics groups. The character and group definitions displayed on the **HSR Review: Properties** window are obtained from this file. For additional information on review.chr, see "Operator WEStation Configuration Manual" (U0-8110).
2. As each characteristic or group is selected, the characters shown in the position(s) of the **Current Selections** field is updated.
3. In any characteristics set, the minus sign indicates that all characters in that position are a match and a blank space indicates that no characteristic is defined for that position.

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10-5.2. Review Type Definitions

Point data is collected by the HSR based on various types of status changes, such as a change in the point's value or alarm status. When specifying a review of point data, the operator may select specific types of status changes which are of interest.

The **Select Review Type** and **Quality** option boxes, located on the upper half of the **HSR Review: Properties** window, are used to select one or more of these options. Selecting one of the Filter Options choice boxes further limits the data displayed.

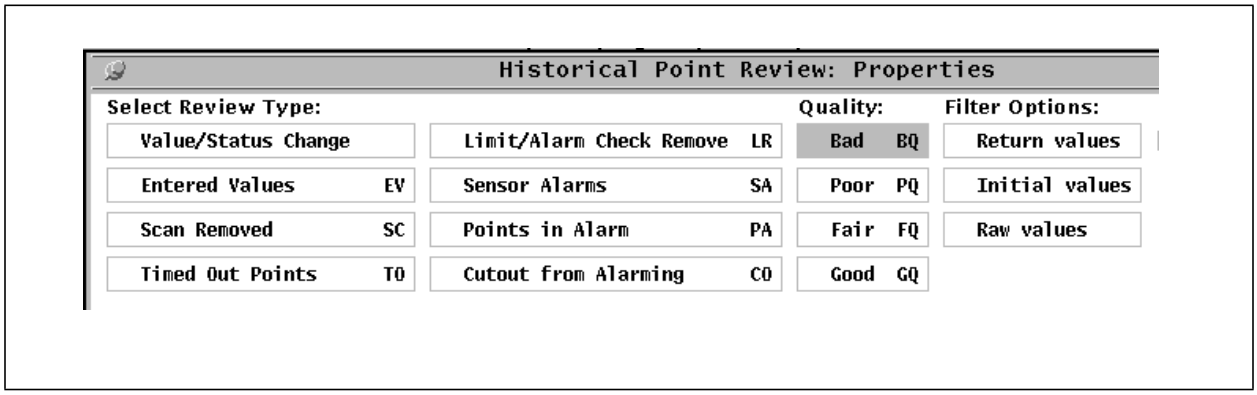

Figure 10-11. Review Type and Quality Options

Table 10-1 provides a brief description of each review type option, quality, and filter option. Note that certain review types are only applicable to specific point record types.

To select review type(s), click on one or more of the option boxes. Keep the following guidelines in mind:

- At least one **Review Type** or **Quality** option box must be selected.
- Each entry returned in the review will be annotated with all applicable status information. Note that a single item may match more than one review type. For example, a point may have gone into alarm and had bad quality. If review types PA (Points in Alarm) and BQ (Bad Quality) were selected, a sample for this point would be flagged as both PA and BQ.
- Depending on the combination of review types selected, the review may show all collected values which match a review type, or may show only entries for changes to a specified status.

For example, if **Value/Status Change** and TO (Timed Out Points) are selected, all changes in point value or status will be retrieved. In the column which shows the applicable review types, each entry will show VL along with any other status information. For example, for those entries which represent a point status changing to timed-out, the **Point Status** column will also show TO. Similarly, when a quality review type (BQ, PQ, FQ, or GQ) is selected, all changes in point value and status which occurred while the point had the selected quality will be retrieved.

The remaining review types will retrieve only occurrences of a point changing to the specified state. However, if selected along with VL or a quality review type, each entry which matches the selected review type will be identified as such in the **Point Status** column. For example, if only PA (Points in Alarm) is selected, all entries will represent points entering alarm status. If both VL and PA are selected, the **Point Status** column will show PA next to each entry while the point was in alarm.

Table 10-1. Review Type Options on HSR Review: Properties Window

Review Type, Quality, or Filter Option	Description	Record Types
Value/Status Change	Retrieves all collected changes in value or status. (wildcard)	All Types
Entered Values EV	Retrieves occurrences of operator-entered values.	AB, AI, AL, DI, DL
Scan Removed SC	Retrieves occurrences when point was removed from scan.	AB, AC, AI, AL, AM, AX, BG, BN, BX, DC, DI, DL, DM, DX, VC, VX
Timed Out Points TO	Retrieves occurrences when point timed-out.	All Types
Limit/Alarm Check Remove LR	Retrieves occurrences when point was removed from limit or alarm checking.	LIMIT: AB, AI, AL ALARM: All analog, device, and digital points
Sensor Alarms SA	Retrieves occurrences when point went into sensor alarm.	AB, AC, AI, AL, AM, AX
Points in Alarm PA	Retrieves occurrences when point went into alarm (any type of alarm condition).	All analog, device and digital points

Table 10-1. Review Type Options on HSR Review: Properties Window

Review Type, Quality, or Filter Option	Description	Record Types
Cutout from Alarming CO	Retrieves occurrences when point was cut-out from alarm checking.	AB, AI, AL
Bad BQ	Retrieves all collected changes when point had bad quality.	AB, AC, AI, AL, AM AX, DI, DL, VC, VX
Poor PQ	Retrieves all collected changes when point had poor quality.	AB, AC, AI, AL, AM AX, DI, DL, VC, VX
Fair FQ	Retrieves all collected changes when point had fair quality.	AB, AC, AI, AL, AM AX, DI, DL, VC, VX
Good GQ	Retrieves all collected changes when point had good quality.	AB, AC, AI, AL, AM AX, DI, DL, VC, VX
Return values	Retrieves values showing return-from the selected conditions, in addition to the samples which satisfy the other conditions.	All Types
Initial values	Retrieves the initial value from the start of the chosen time range, in addition to the samples which satisfy the other chosen conditions.	All Types
Raw values	Retrieves the actual data as it was collected, including duplicate data where the value/status hasn't changed.	All Types

10-5.3. Other Point Data Review Parameters

In addition to specifying the points (filtering by point name or characteristics) and review type(s), the **Historical Point Review: Properties** window is also used to specify the following:

- Time range (Start Time and End Time).
- HSR selection.
- Filename (for retrieval to file only).
- File/Print Order.

Each of these is briefly described below. Additional information on these entries can be found in Section 7.

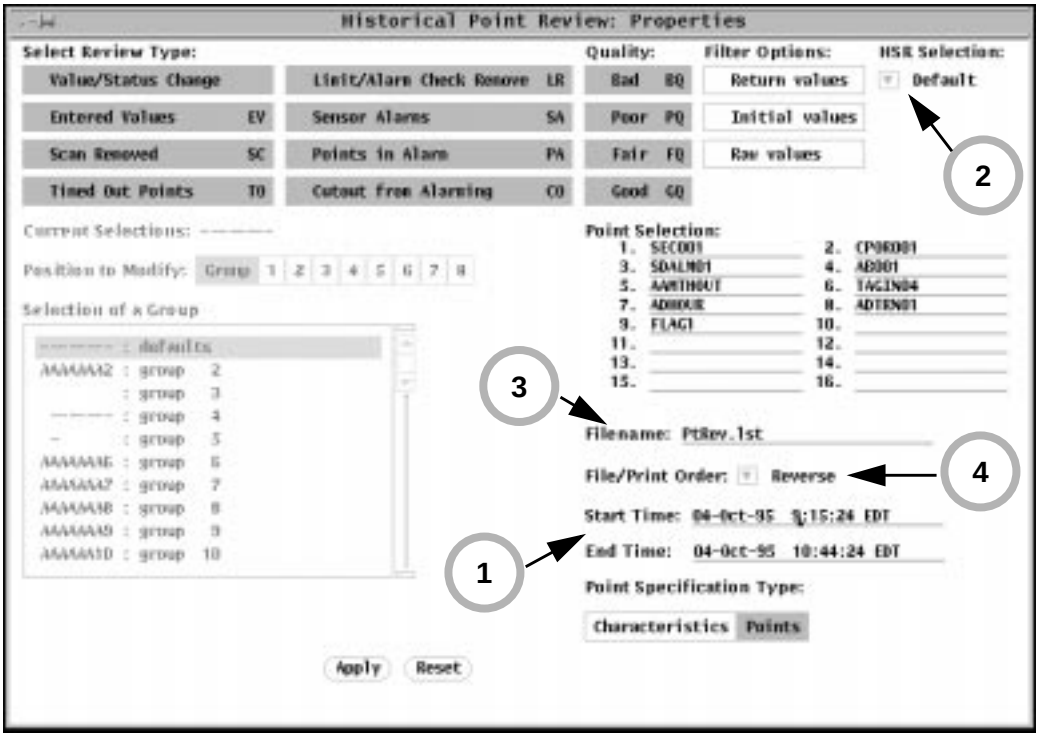

Figure 10-12. HSR Review: Properties Window (Entries 1-4)

The numbers in Figure 10-12 correspond to the entries described on the following page.

1. Review Time Range

The time range to be covered by the review is specified using the **Start Time** and **End Time** entry fields (on the right of the window, near the bottom).

A default time range is displayed initially. To select a different time range, enter a new start and/or end time using the standard keyboard or soft keyboard. (See Section 7-4.1 for more detailed information on entering time values in user interface windows.)

2. HSR Selection

A pull-down menu is provided (in the upper right corner of the window) which allows the operator to select a specific HSR Station from which to retrieve the data

In most cases, the HSR Selection may be left as **Default** (the initially displayed option). (See Section 7-4.2 for more detailed information on selecting a specific HSR Station.)

3. Filename

When the retrieved data is to be saved to a file, the filename may be specified on the **Historical Point Review: Properties** window. (See Section 7-4.3 for more detailed information on entering the filename.)

Note

If the station is not configured to allow saving review data to a file, the **Filename** entry field will be grayed-out. This option is enabled through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Point Review
Item: Save File Locally

Refer to Section 5 for addition configuration information.

4. File/Print Order

To change the print order, pull down the **File/Print Order** menu. Select the order in which data will be printed or saved to a file.

- To print a file using a forward chronological order, select **Forward**.
- To print a file using a reverse chronological order, select **Reverse**.

The **Apply** button enters the selected parameters for the review. Any data on the main **Point Review** window is cleared. The selected time range, characteristics, and review types will be displayed at the top of the main **Point Review** window. If any error is made while selecting properties but before pressing **Apply**, the **Reset** button may be used to return to the last applied set of properties.

10-6. Event Trigger List Window

The Historical Event Trigger List user interface (**Historical Event Trigger List** window) provides a list of trigger events, and shows the time range of Event data associated with each trigger event. In addition to providing a concise list of trigger events, this information makes it easier to select a time range to enter into the Event Review window (see Section 10-4). For background information on the Event History subsystem, see Section 3. For information on configuration, see Section 5.

The Trigger List includes the following information:

- **Trigger Time** displays the time the trigger event occurred in history.
- **Point Name** displays the trigger point name.
- **Bit** displays the bit number of the trigger point if applicable.
- **State** displays the value of the trigger point.
- **Start Time** displays beginning time of the file corresponding to the trigger.
- **End Time** displays end time of the file corresponding to the trigger.

Figure 10-14 shows an example trigger list.

The following procedure assumes the **Historical Event Trigger List** window has been accessed on an Operator WEStation. Depending on the Operator WEStation configuration, the Historical Event Review may be accessed from either an icon or menu.

The following steps are typical:

1. Open the **Data Analysis and Maintenance** menu.
2. Select the **Historical Reviews** button.
3. Select the **Event Trigger** button.

The **Historical Event Trigger List** window appears, as shown in Figure 10-13.

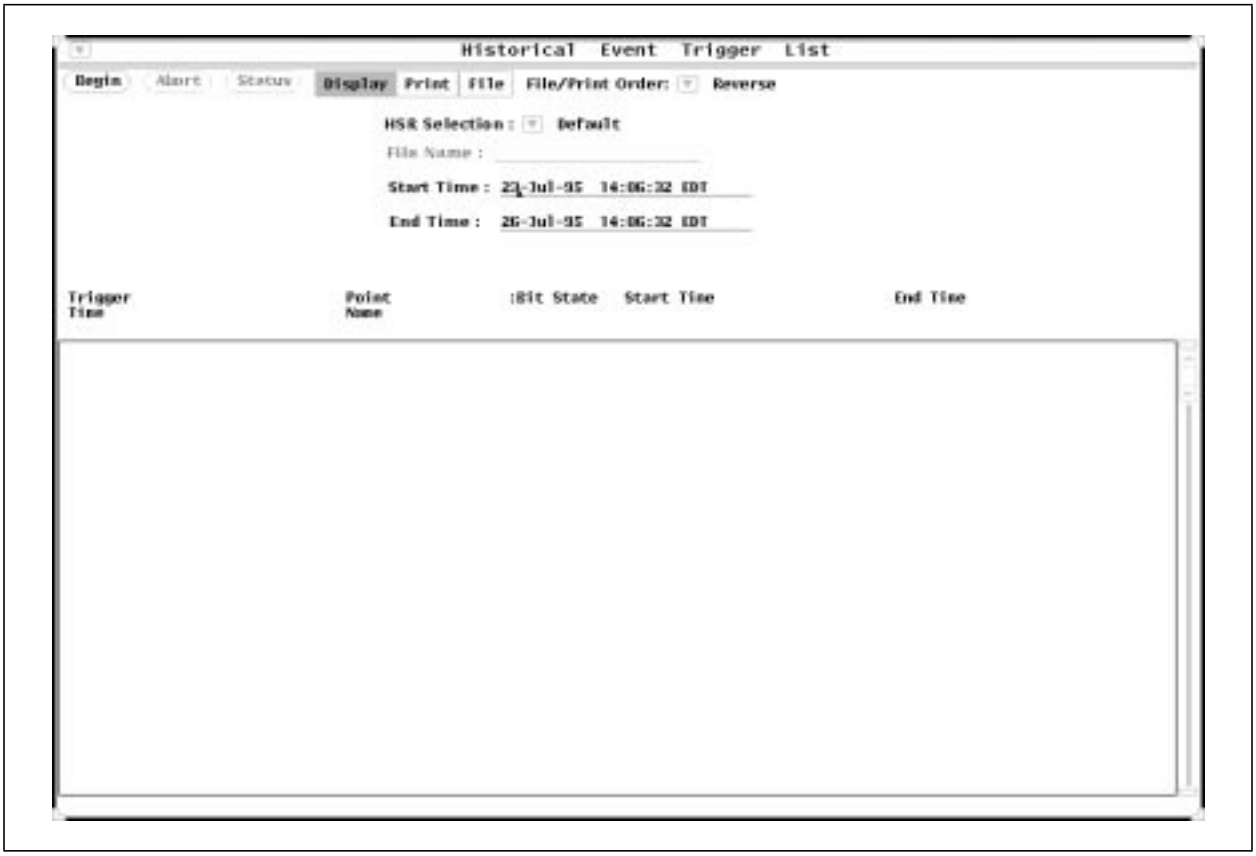

Figure 10-13. Historical Event Trigger List Window

4. Enter the start and end time, HSR selection (if required), and filename (if applicable), as described in Section 7.

Note

Fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

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5. After entering the review properties, the list may be requested for display, printing, or saving to a file.

Display	-	Data is displayed in the window only
Print	-	Data is displayed in the window and sent to the WEStation Log Server for printing
File	-	Data is displayed in the window and stored in the file specified on the properties window

6. Select the **Begin** button to start the review process. The following message will appear in the window footer:

   `Retrieval is in progress` …

   Notes

   The **Retrieval Status** window will appear and display dynamic retrieval information.

   To cancel a listing in progress, select the **Abort** button. The message, “Retrieval request was aborted” will appear in the window footer.

   When the listing process is completed, the following message appears in the window footer:

   `Retrieval is complete.`

7. The applicable review data appears in the window, as shown in Figure 10-14. Note that for listing displays, the number of trigger events that occurred in the specified time period is shown in the right side of the footer.

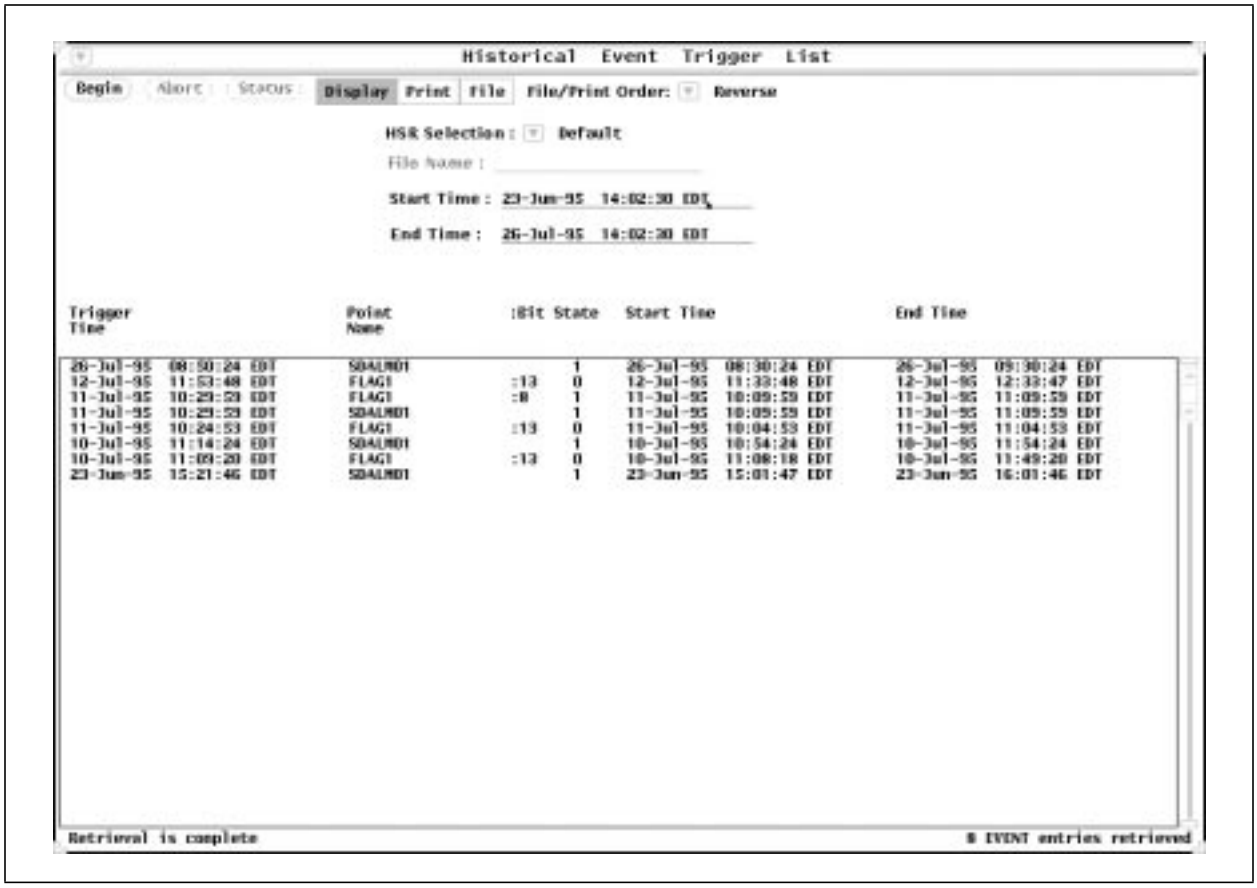

Figure 10-14. Example Historical Event Trigger List Display

8.A. If **Print** was selected, the review data is sent to the Log Server to be printed. The format of the printed Event Trigger List is shown in Figure 10-15.

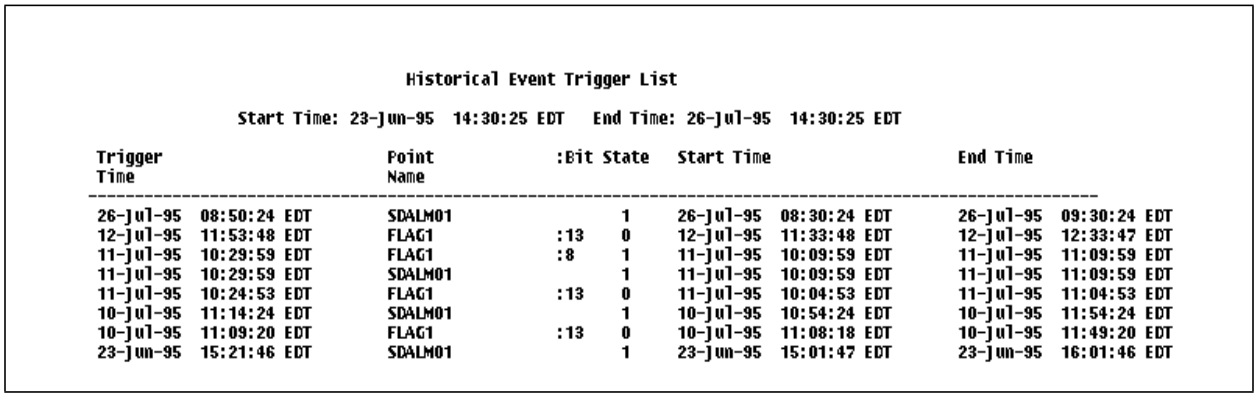

Figure 10-15. Example Printed Event Trigger List

The following messages appear in the window footer throughout a successful print request:

`Sending file to Log Server ...`

`Sending file to Log Server is complete`

8.B. If **File** was selected, the list is saved to the specified file name and can be viewed with any text editor. The format of the saved Event Trigger List is the same as the printed Event Trigger List, as shown in Figure 10-15.

The following messages appear in the window footer throughout a successful save to file request:

`File save is in progress.`

`File save is complete` - <filename specified in the **File Name** entry field>

9. Select the **Status** button to display the **Retrieval Status** window as shown in Figure 10-16.

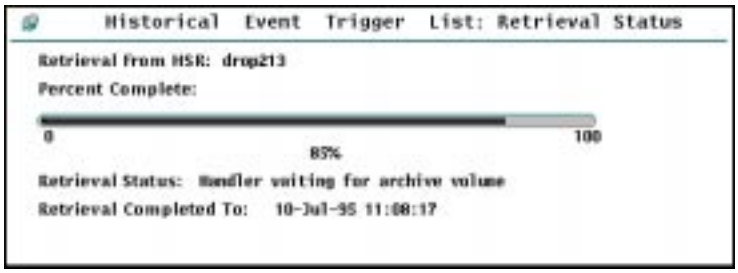

Figure 10-16. Retrieval Status Window

The **Retrieval Status** window displays information about the request currently in progress, such as the percentage of the retrieval that is complete, the HSR(s) from which the retrieval is being requested, and the current Retrieval Status message.

Section 11. Message Data Reviews

11-1. Section Overview

This section describes the user interface windows that can be used to retrieve message data. The following topics are included:

- Historical Alarm Review window (Section 11-2).
- Historical Operator Event Review window (Section 11-3).
- Historical ASCII Review window (Section 11-4).
- Historical SOE Review window (Section 11-5).

11-2. Historical Alarm Review Window

The Alarm Message History user interface (**Historical Alarm Review** window) can display, print, or file alarm messages that were collected from Operator WEStations. From this window, the user can review alarm messages (including specific point record types) that occurred on all drops or a single drop.

This section provides instructions for using the **Historical Alarm Review** window. For background information on the Alarm History function, see Section 3. For information on configuration, see Section 5. The following topics are included:

- Accessing the Historical Alarm Review window (Section 11-2.1).
- Defining Alarm Review properties (Section 11-2.2 through Section 11-2.6).
- Displaying Alarm Reviews (Section 11-2.7).
- Printing Alarm Reviews (Section 11-2.8).
- Saving Alarm Reviews (Section 11-2.9).

11-2.1. Accessing the Historical Alarm Review Window

This document assumes the **Historical Alarm Review** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical Alarm Review** window.

1. Open the **Alarm Review** icon.
2. The **Historical Alarm Review** window appears, as shown in Figure 11-1.

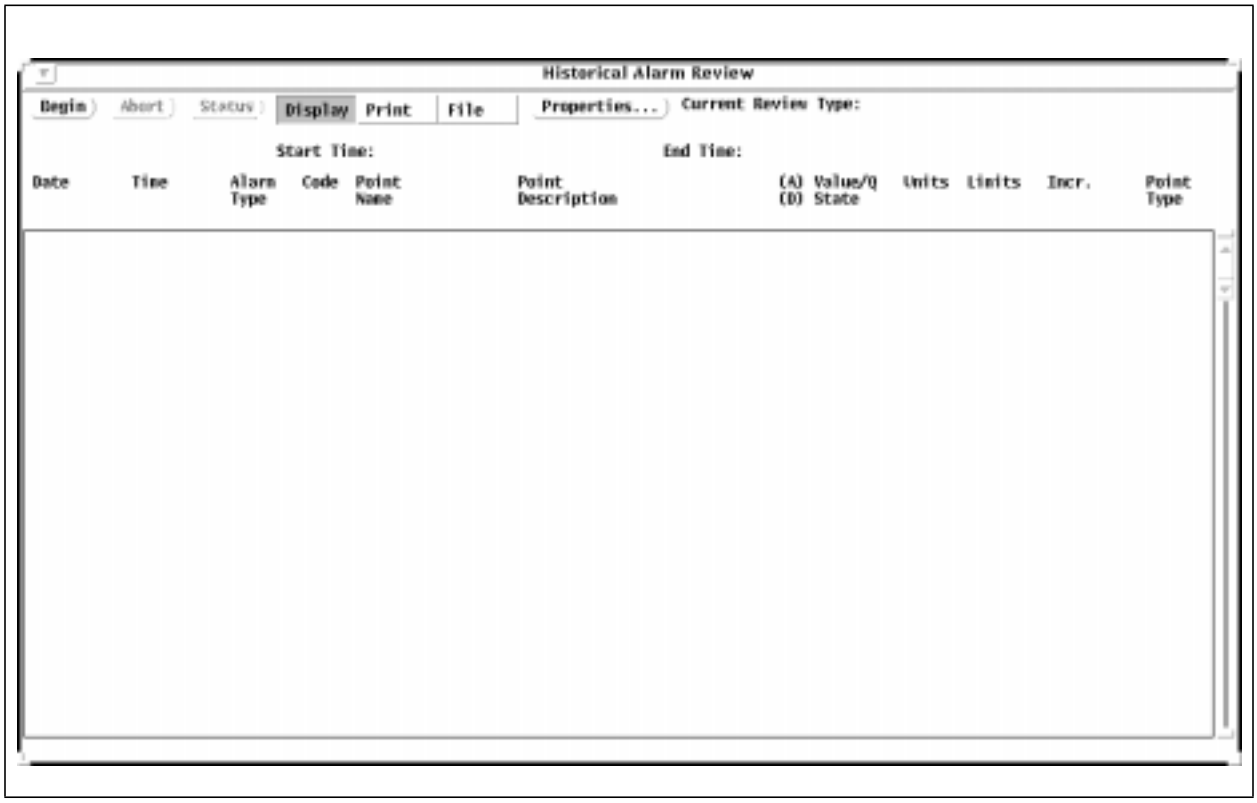

Figure 11-1. Historical Alarm Review Window

11-2.2. Alarm Review Properties

The **Historical Alarm Review: Properties** window allows the user to specify the search time and type of review. Four types of reviews can be specified:

- Review of alarms collected for all points, as described in Section 11-2.3.
- Review of alarms collected for a single point, as described in Section 11-2.4.
- Review of all points with matching alarm types, as described in Section 11-2.5.
- Review of alarms collected for all points with matching point types, as described in Section 11-2.6.

Note

In the **Historical Alarm Review: Properties** window, fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

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Use the following procedure to access the **Alarm Review Properties** window.

1. From the **Historical Alarm Review** window, select the **Properties** button. The **Historical Alarm Review: Properties** window appears, as shown in Figure 11-2.

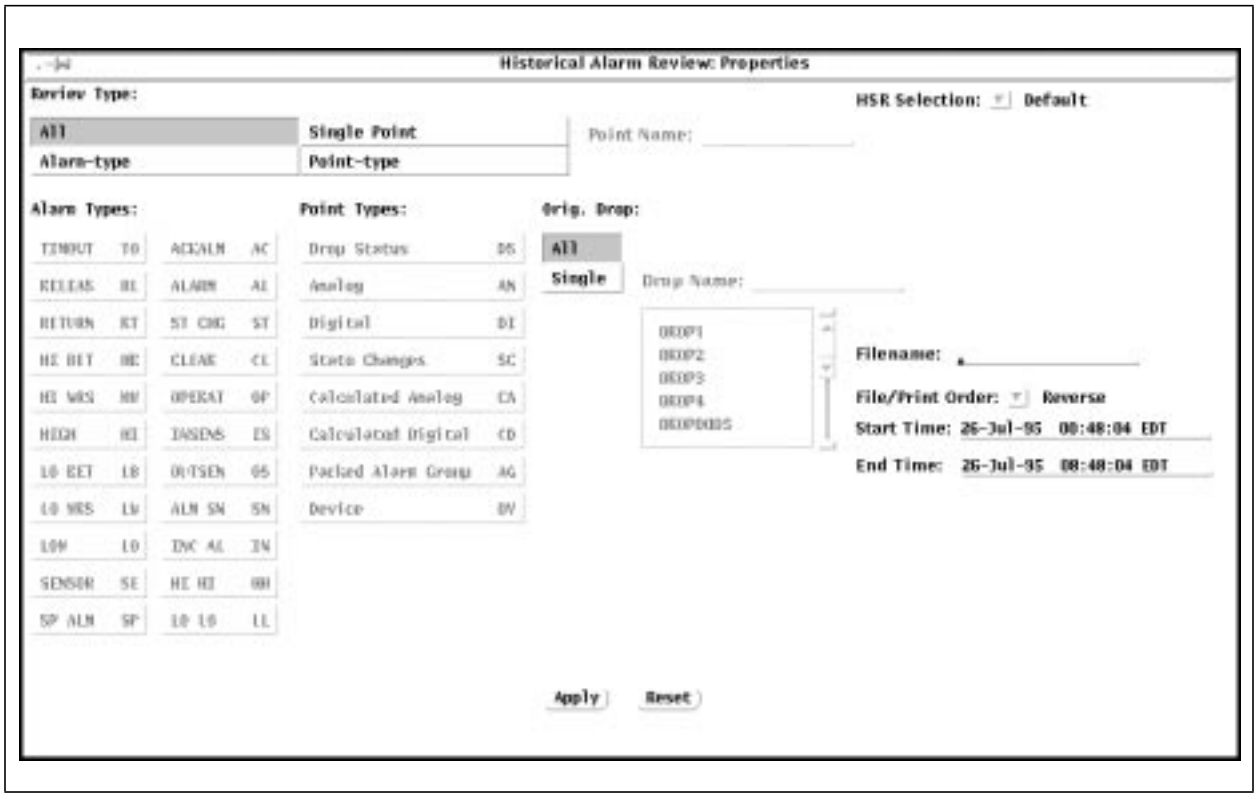

Figure 11-2. Historical Alarm Review: Properties Window

11-2.3. Selecting a Review of All Points

This review can include alarms that were collected on all HSR drops or one drop. Use the following procedure to select a review of alarms for all points. (The numbers in the gray circles correspond to the numbered steps.)

1. Select **All** from the **Review Type** option box. (Note that fields pertaining to point name, point types and alarm types are grayed-out.)

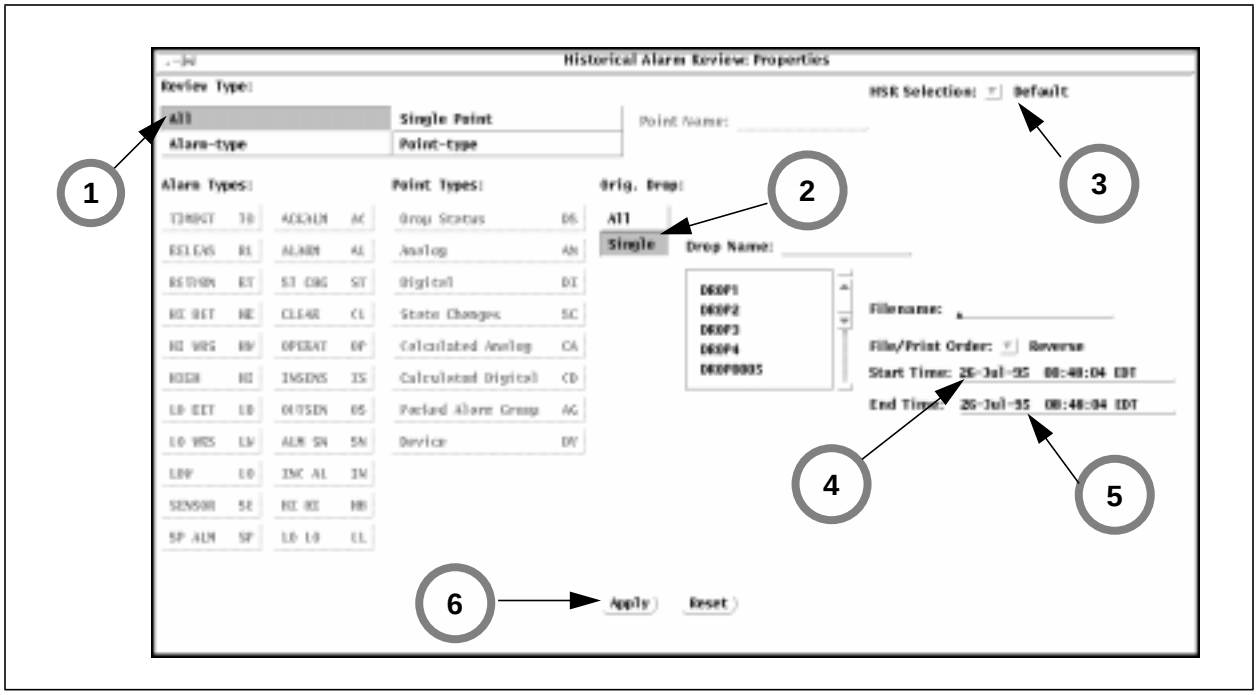

Figure 11-3. Review All Points Option

2. Select the drop(s) originating the alarm from the **Originating Drop** choice box. Select **All** to search all drops for alarms.

   OR

   Select **Single** (as shown in Figure 11-3) to search one drop for alarms. The **Drop Name** scrolling list is highlighted. Select a drop name from this list.

3. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

4. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

5. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

6. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-2.9. The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Items: Default Directory Name
   Default File Name

11-2.4. Selecting a Review of a Single Point

This review searches historical files for all alarms that occurred for a specified point. Use the following procedure to select a review of alarms for a single point. (The numbers in the gray circles correspond to the numbered steps.)

1. Select **Single Point** from the **Review Type** option box. (Note that fields pertaining to point types, alarm types and drop name are grayed-out.)

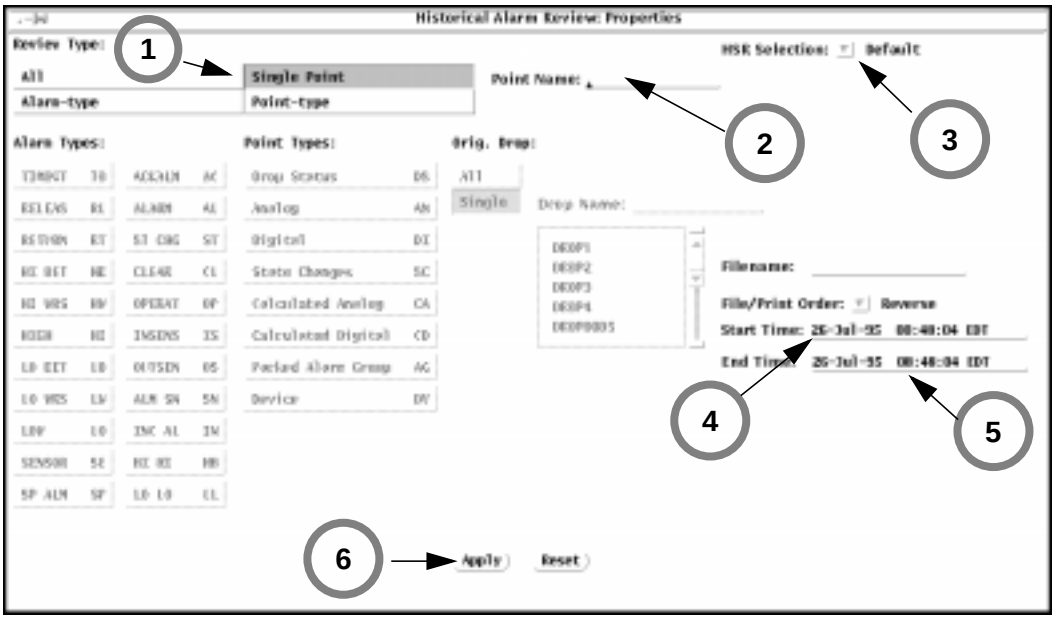

Figure 11-4. Review a Single Point Option

2. Enter a valid point name in the **Point Name** field, as shown in Figure 11-4.

3. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

4. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Alarm Message Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

5. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default end time is the current operating system time.

6. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-2.9. The default filename can be change to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Alarm Message Review
Items: Default Directory Name
Default File Name

11-2.5. Selecting a Review of Specific Alarm Types

Use the following procedure to select a review of specific alarm types. (The numbers in the gray circles correspond to the numbered steps.)

1. Select **AlarmType** from the **Review Type** option box. (Note that fields pertaining to point name and point types are grayed-out.)

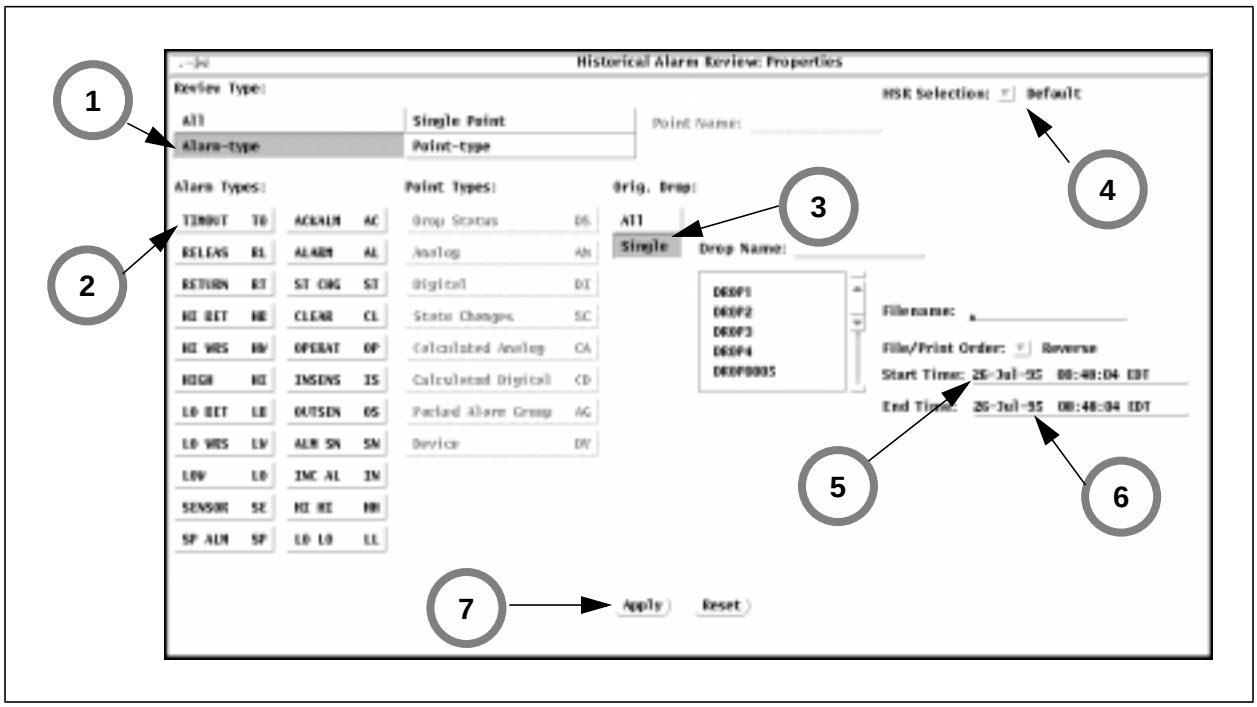

Figure 11-5. Review a Specific Alarm Type Option

2. Select at least one alarm type from the **Alarm Type** option box. For more information on alarm types, see "Operator WEStation User's Guide" (U0-8100).

3. Select the drop(s) originating the alarm from the **Originating Drop** option box. Select **All** to search all drops for alarms.

   OR

   Select **Single** (as shown in Figure 11-5) to search one drop for alarms. The **Drop Name** scrolling list is highlighted. Select a drop name from this list.

4. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

5. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-2.9. The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Items: Default Directory Name
   Default File Name

11-2.6. Selecting a Review of Specific Point Types

Use the following procedure to select a review of specific point types. (The numbers in the gray circles correspond to the numbered steps.)

1. Select **Point Type** from the **Review Type** option box. (Note that fields pertaining to point name and point types are grayed-out.)

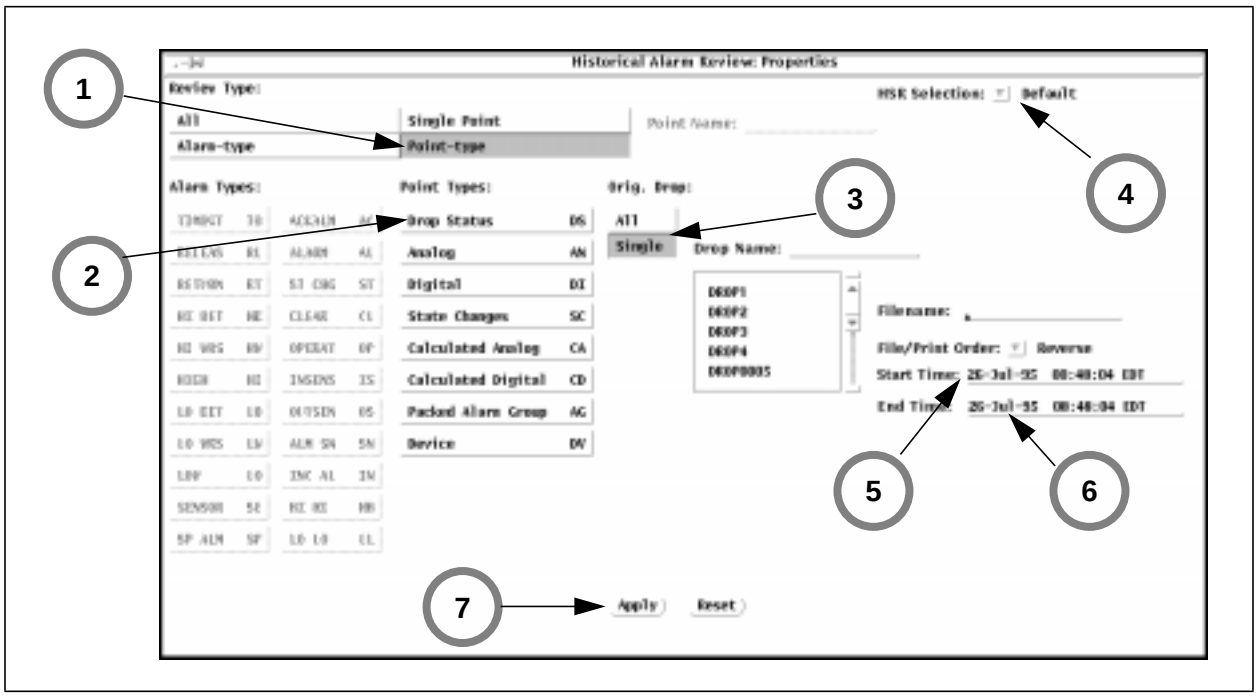

Figure 11-6. Review a Specific Point Type Option

2. Select at least one point type from the **Point Type** option box. For more information on point types, see "Record Types User's Guide" (U0-0131).

3. Select the drop(s) originating the alarm from the **Originating Drop** option box. Select **All** to search all drops for alarms.

   OR

   Select **Single** (as shown in Figure 11-6) to search one drop for alarms. The **Drop Name** scrolling list is highlighted. Select a drop name from this list.

4. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

5. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-2.9. The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Items: Default Directory Name
   Default File Name

11-2.7. Displaying Alarm Reviews

After the Alarm Review properties have been selected, a review request can be displayed on the **Historical Alarm Review** window. Use the following procedure to display alarm reviews:

1. From the **Historical Alarm Review** window, select **Display** from the **Options** option box.

2. Select the **Begin** button to start the review process. The following message appears:

   `Display is in progress`…

   Note

   To cancel a review in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Retrieval is complete`

   The applicable review data appears in the window, as shown in the example in Figure 11-7.

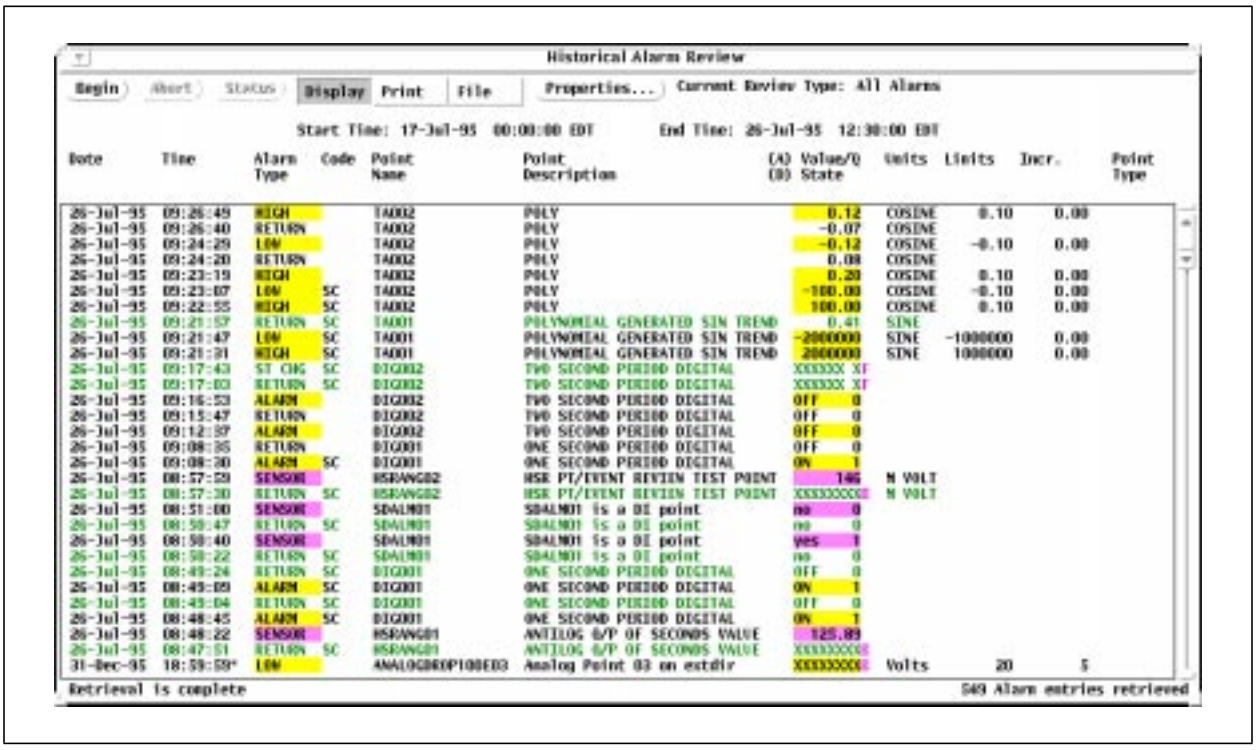

Figure 11-7. Alarm Review by Single Point

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Each field in this window is described below:

- **Current Review Type** displays type of review selected on the **Historical Alarm Review: Properties** window.
- **Start Time** displays beginning time of the review request.
- **End Time** displays end time of the review request.
- **Date** displays date alarm occurred in history.
- **Time** displays time alarm occurred in history.
- **Alarm Type** displays alarm state or drop status.
- **Code** displays alarm code (A=alarm checking, L=limit checking, S=scan removed).
- **Point name** displays the name assigned to process point by Point Group Definition file.
- **Description** displays a text description of the point, point value, limit, and units.
- **Point Type** displays point type selected in the **Historical Alarm Review Properties** window.

The data displayed in the **Historical Alarm Review** window is shown in color. The color coding scheme used is defined through the WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Operator *OR* Alarms
Topic: MMI Alarm Configuration (Colors)
Display: Any appropriate choice

Refer to "Operator WEStation Configuration Manual" (U0-8110) for additional alarm information, including color coding.

11-2.8. Printing Alarm Reviews

After the **Historical Alarm Review: Properties** have been selected, a review request can be sent to the Log Server to be printed. Use the following procedure to print alarm reviews:

1. From the **Historical Alarm Review** window, select **Print** from the **Options** choice box.

2. Select the **Begin** button to start the review process. The following message appears:

   `Sending file to Log Server is in progress`…

   Note

   To cancel a print in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Sending file to Log Server is complete.`

   The review data is then sent to the Log Server to be printed. The format of the printed Alarm Review varies slightly from the format displayed in the **Historical Alarm Review** window, as shown in Figure 11-8.

HSR Alarm Message Review

Start Time: 01-Jul-95 00:00:00 EDT End Time: 26-Jul-95 09:30:00 EDT

Review Type: All Alarms Number of Alarm Messages: 2275

Date	Time	Alarm Type	Code	Point Name	Point Description	(A) Value/(D) State	Units	Limits	Incr.	Point Type
26-Jul-95	09:29:21	LOW		TA002	POLY	-0.12	COSINE	-0.10	0.00	
26-Jul-95	09:29:12	RETURN		TA002	POLY	0.08	COSINE			
26-Jul-95	09:26:49	HIGH		TA002	POLY	0.12	COSINE	0.10	0.00	
26-Jul-95	09:26:40	RETURN		TA002	POLY	-0.07	COSINE			
26-Jul-95	09:24:29	LOW		TA002	POLY	-0.12	COSINE	-0.10	0.00	
26-Jul-95	09:24:20	RETURN		TA002	POLY	0.08	COSINE			
26-Jul-95	09:23:19	HIGH		TA002	POLY	0.20	COSINE	0.10	0.00	
26-Jul-95	09:23:07	LOW	SC	TA002	POLY	-100.00	COSINE	-0.10	0.00	
26-Jul-95	09:22:55	HIGH	SC	TA002	POLY	100.00	COSINE	0.10	0.00	
26-Jul-95	09:21:57	RETURN	SC	TA001	POLYNOMIAL GENERATED SIN TREND	0.41	SINE			
26-Jul-95	09:21:47	LOW	SC	TA001	POLYNOMIAL GENERATED SIN TREND	-2000000	SINE	-1000000	0.00	
26-Jul-95	09:21:31	HIGH	SC	TA001	POLYNOMIAL GENERATED SIN TREND	2000000	SINE	1000000	0.00	
26-Jul-95	09:17:43	ST CHG	SC	DIG002	TWO SECOND PERIOD DIGITAL	XXXXXX X				
26-Jul-95	09:17:03	RETURN	SC	DIG002	TWO SECOND PERIOD DIGITAL	XXXXXX X				
26-Jul-95	09:16:53	ALARM		DIG002	TWO SECOND PERIOD DIGITAL	OFF 0				
26-Jul-95	09:15:47	RETURN		DIG002	TWO SECOND PERIOD DIGITAL	OFF 0				
26-Jul-95	09:12:37	ALARM		DIG002	TWO SECOND PERIOD DIGITAL	OFF 0				
26-Jul-95	09:08:35	RETURN		DIG001	ONE SECOND PERIOD DIGITAL	OFF 0				
26-Jul-95	09:08:30	ALARM	SC	DIG001	ONE SECOND PERIOD DIGITAL	ON 1				
26-Jul-95	08:57:59	SENSOR		HSRANG02	HSR PT/EVENT REVIEW TEST POINT	146	M VOLT			
26-Jul-95	08:57:30	RETURN	SC	HSRANG02	HSR PT/EVENT REVIEW TEST POINT	XXXXXXXX	M VOLT			
26-Jul-95	08:51:00	SENSOR		SDALM01	SDALM01 is a DI point	no 0				

Figure 11-8. Printed Alarm Review

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11-2.9. Saving Alarm Reviews

After the Alarm Review Properties have been selected, a review request can be saved to a file. Use the following procedure to save alarm reviews:

1. From the **Historical Alarm Review** window, select **File** from the **Options** choice.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Alarm Message Review
   Items: Default Directory Name
   Default File Name

   A unique filename must be entered on the **Historical Alarm Review: Properties** window, as described in Section 11-2.2.

2. Select **Begin** to start the file review process. The following message appears:

   `File Save is in progress`…

   Note

   To cancel a file save in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `File save is completed - /tmp/ALMRev.lst`

   The review data is now saved to the specified filename and can be viewed with any text editor. The format of the saved Alarm Review is the same as the printed Alarm Review, as shown in Figure 11-8.

11-3. Historical Operator Event Review Window

The Operator Event Message user interface (**Historical Operator Event Review** window) accesses historical operator event files to display, print, or file four types of operator event reviews:

- Review of **all** operator event messages.
- Review of **specific grouped subtypes** of operator event messages.
- Review of **specific subtypes** of operator event messages.
- Review of operator event messages of a **single point**.

This section provides instructions for using the **Historical Operator Event Review** window. For background information on the Operator Event Message History function, see Section 3. For information on configuration, see Section 5. The following topics are included:

- Accessing the Historical Operator Event Review window (Section 11-3.1).
- Defining Operator Event Review properties (Section 11-3.2 through Section 11-3.6).
- Displaying Operator Event Reviews (Section 11-3.7).
- Printing Operator Event Reviews (Section 11-3.8).
- Saving Operator Event Reviews (Section 11-3.9).

11-3.1. Accessing the Historical Operator Event Review Window

This document assumes the **Historical Operator Event Review** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical Operator Event Review** window:

1. Open the **Operator Event Review** icon.
2. The **Historical Operator Event Review** window appears, as shown in Figure 11-9.

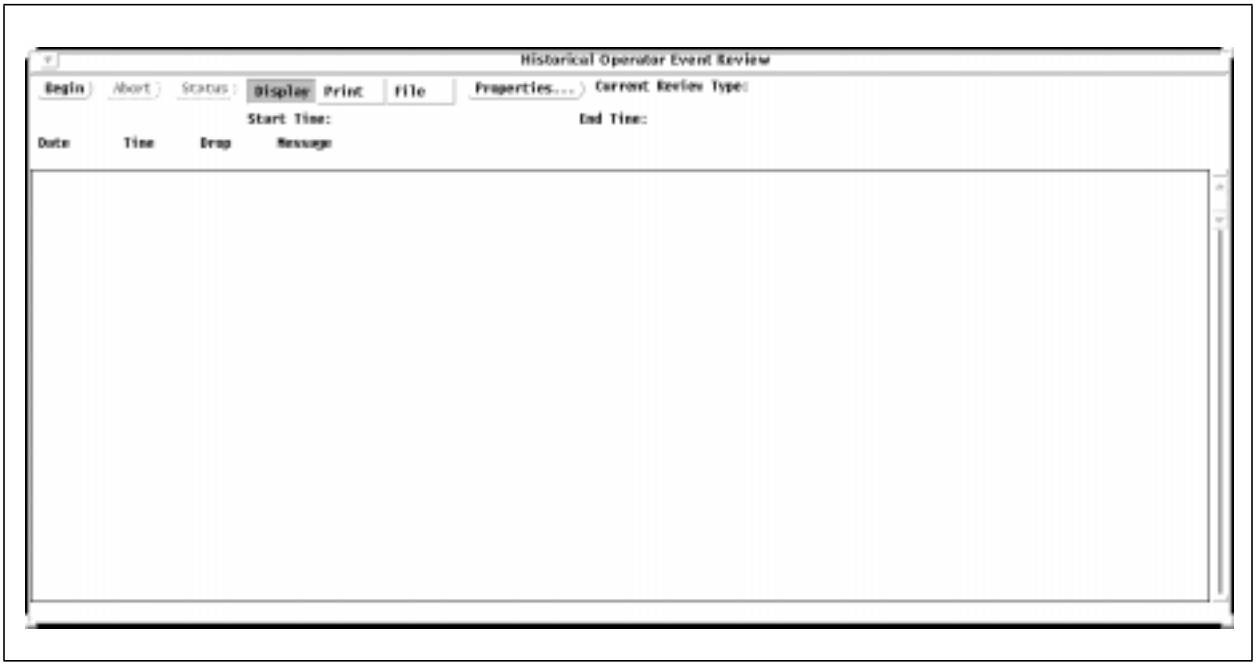

Figure 11-9. Historical Operator Event Review Window

11-3.2. Operator Event Review Properties

The **Historical Operator Event Review: Properties** window allows the user to specify the search time and message subtype. A **subtype** is a pre-defined description of an operator event message that allows the user to search for specific messages that occurred. Four types of reviews can be specified:

- Review of all operator event subtypes on all drops (or a single drop) as described in Section 11-3.3.
- Review of grouped subtypes on all drops (or a single drop) as described in Section 11-3.4.
- Review of selected operator event subtypes on all drops (or a single drop) as described in Section 11-3.5.
- Review of selected points on all drops (or a single drop) as described in Section 11-3.6.

Use the following procedure to access the **Historical Operator Event Review: Properties** window.

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1. From the **Historical Operator Event Review** window, select the **Properties** button. The **Historical Operator Event Review: Properties** window appears, as shown in Figure 11-10.

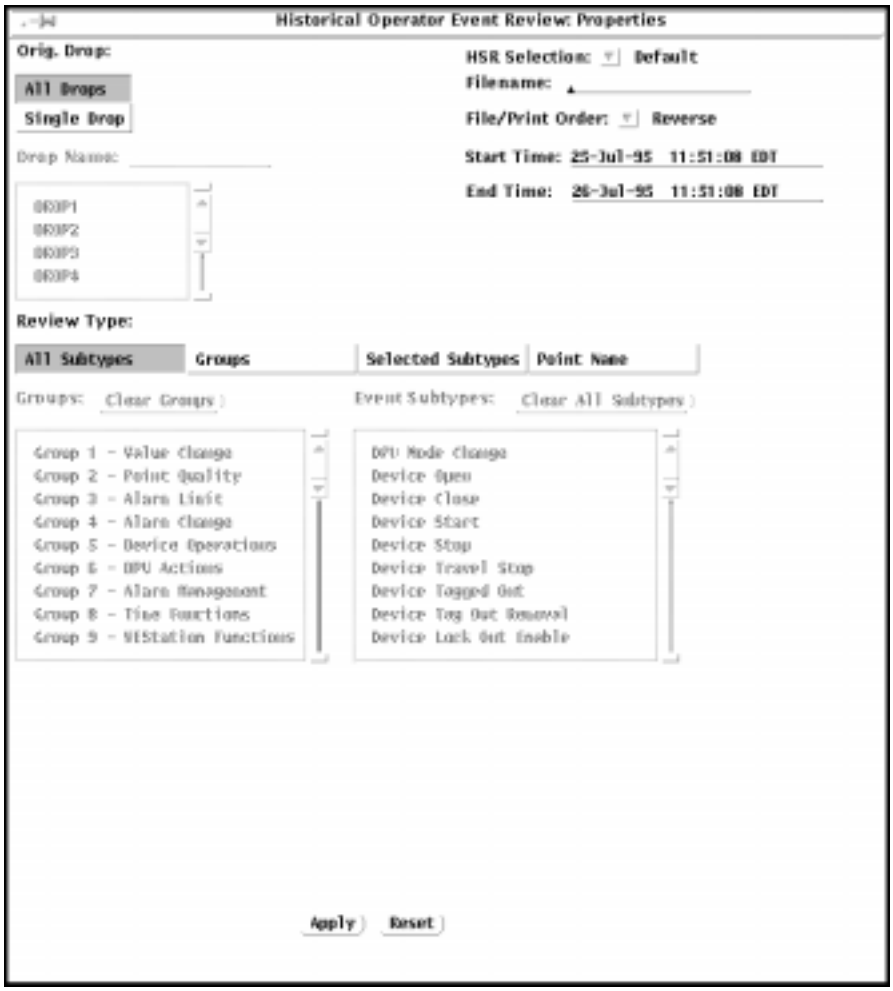

Figure 11-10. Historical Operator Event Review: Properties Window

Note

Fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

11-3.3. Selecting All Event Message Subtypes for Review

Use the following procedure to select a review of all event message subtypes. (The numbers in the gray circles correspond to the numbered steps.)

1. From the **Originating Drop** choice box, select **All Drops** (As shown in Figure 11-11) (for a review of operator event messages on all drops).

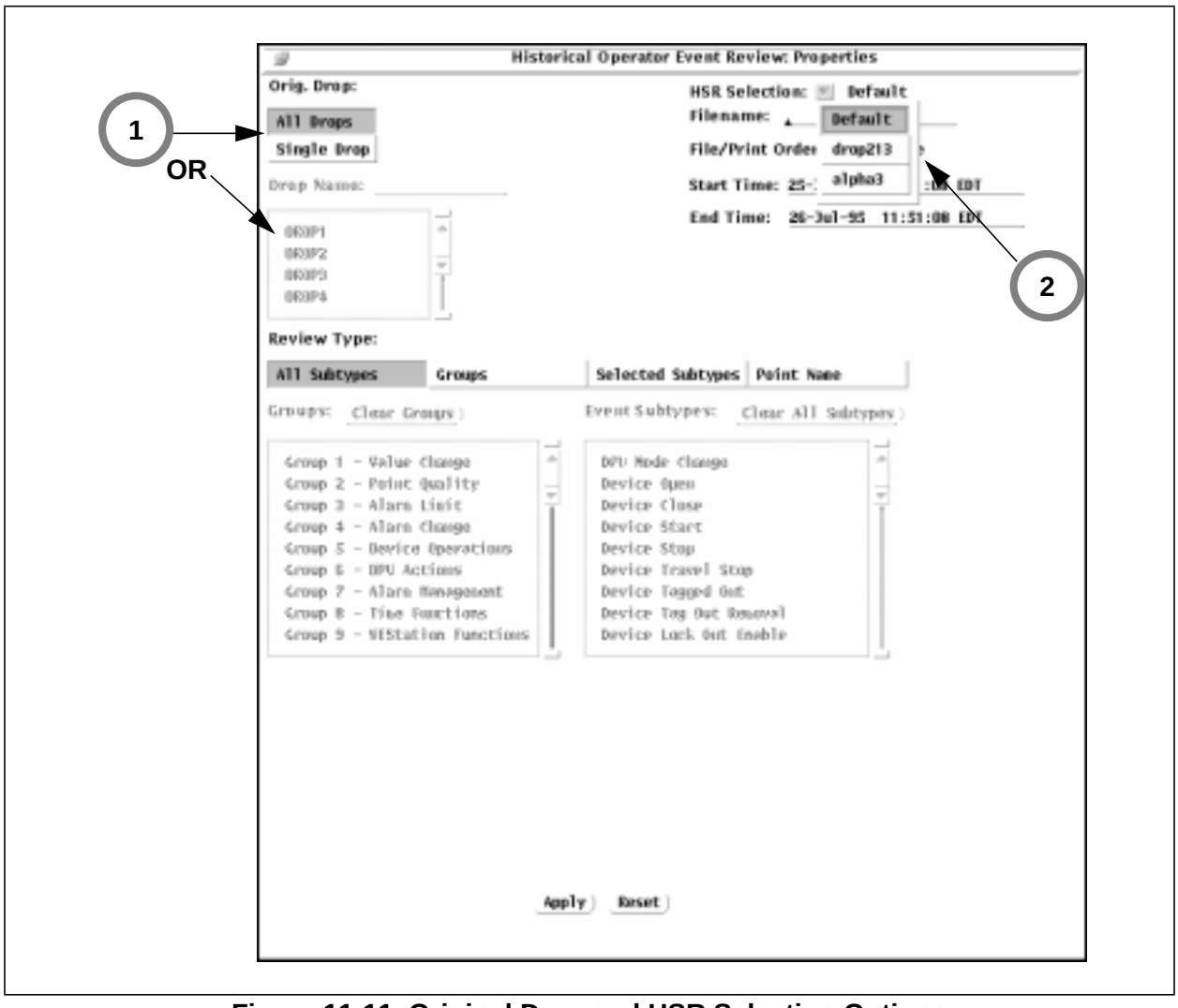

Figure 11-11. Original Drop and HSR Selection Options

OR

Select **Single Drop** (for a review of operator event messages on a specified drop). The **Drop Name** scrolling list is highlighted. Select a drop name from this list, as shown in Figure 11-11.

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

3. Select **All Subtypes** from the **Review Type** choice box.

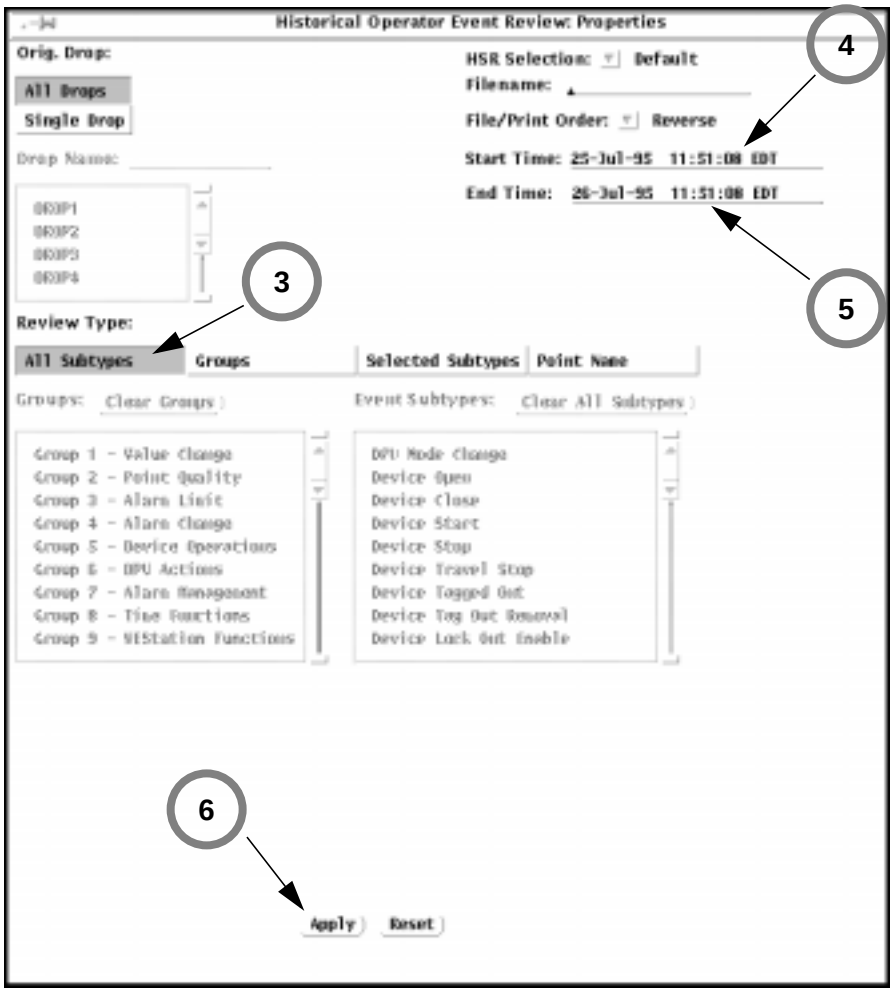

Figure 11-12. Subtype Options

4. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

5. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

6. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-3.9 The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Items: Default Directory Name
   Default File Name

11-3.4. Selecting Specific Groups of Event Messages for Review

Use the following procedure to select a review of all event message subtypes. (The numbers in the gray circles correspond to the numbered steps.)

1. From the **Originating Drop** choice box, select **All Drops** (for a review of operator event messages on all drops).

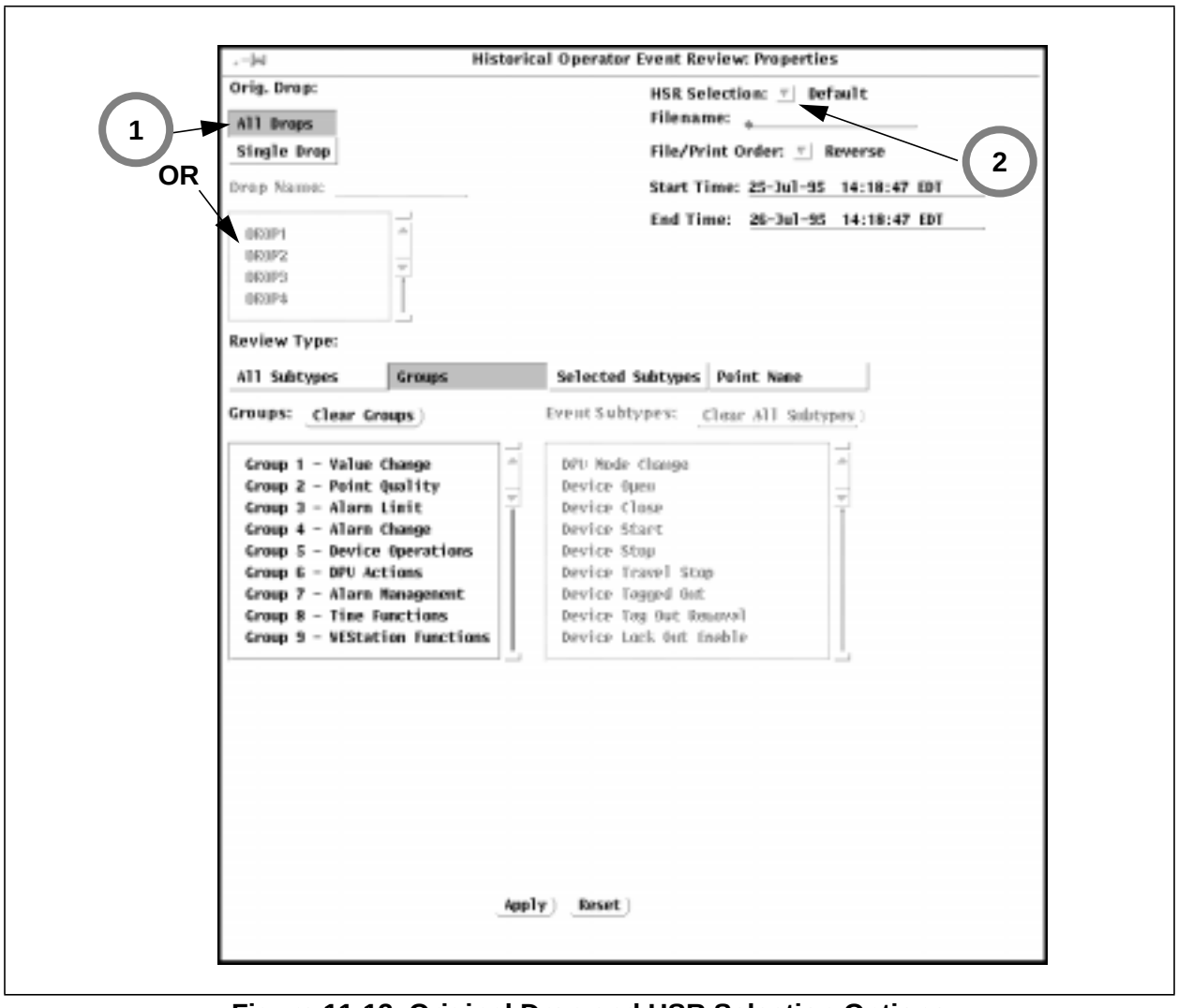

Figure 11-13. Original Drop and HSR Selection Options

OR

Select **Single Drop** (for a review of operator event messages on a specified drop). The **Drop Name** scrolling list is highlighted. Select a drop name from this list, as shown in Figure 11-11.

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

3. Select **Groups** from the **Review Type** choice box.

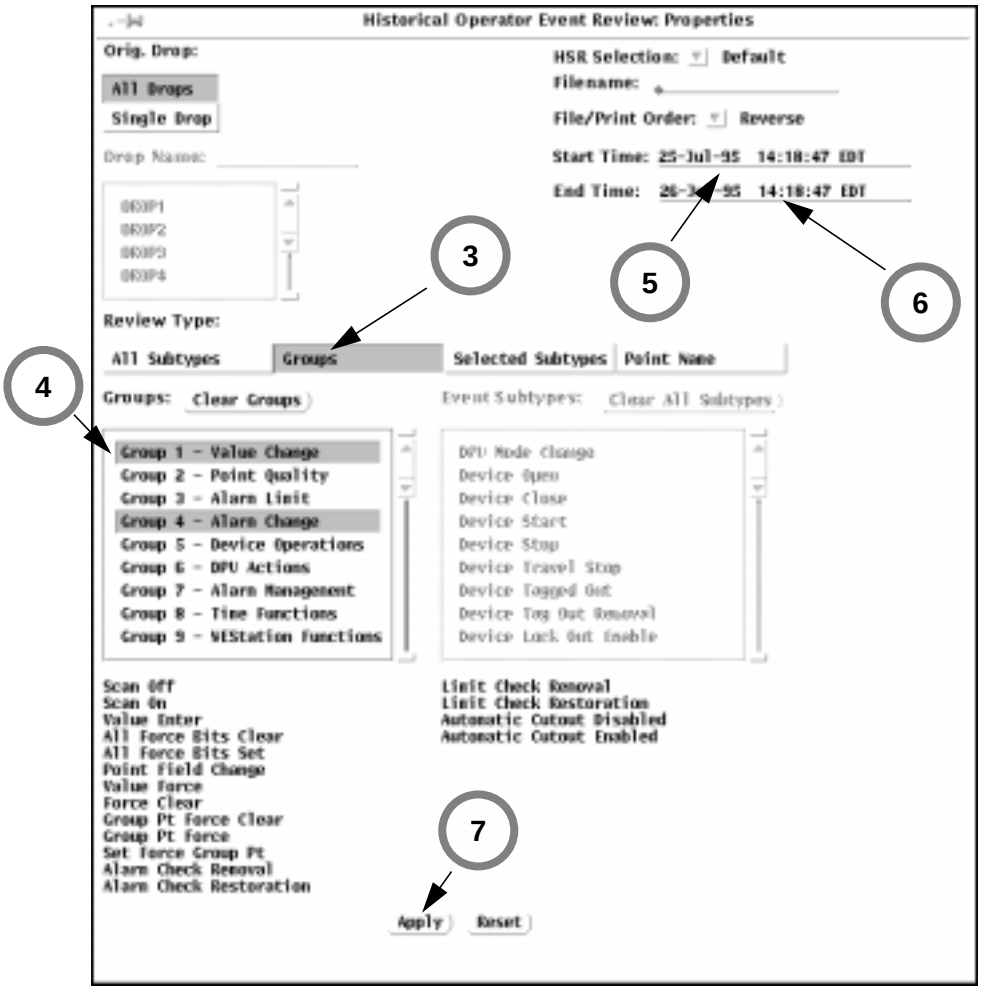

Figure 11-14. Subtype Options

4. The **Groups** scrolling list is highlighted. Select the desired group (or groups) from this list. As groups are selected, they appear in a list, as shown in Figure 11-14.

Notes

1. To clear all selected group subtypes from the window, select the **Clear Groups** button.
2. To unmark a group subtype, de-highlight it.

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5. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **File Name** field. This name is used when the review request will be saved to a file, as described in Section 11-3.9. The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Items: Default Directory Name
   Default File Name)

11-3.5. Selecting Specific Event Message Subtypes for Review

Use the following procedure to select a review of specific event message subtypes. (The numbers in the gray circles correspond to the numbered steps.)

1. From the **Originating Drop** choice box, select **All Drops** (for a review of operator event messages on all drops).

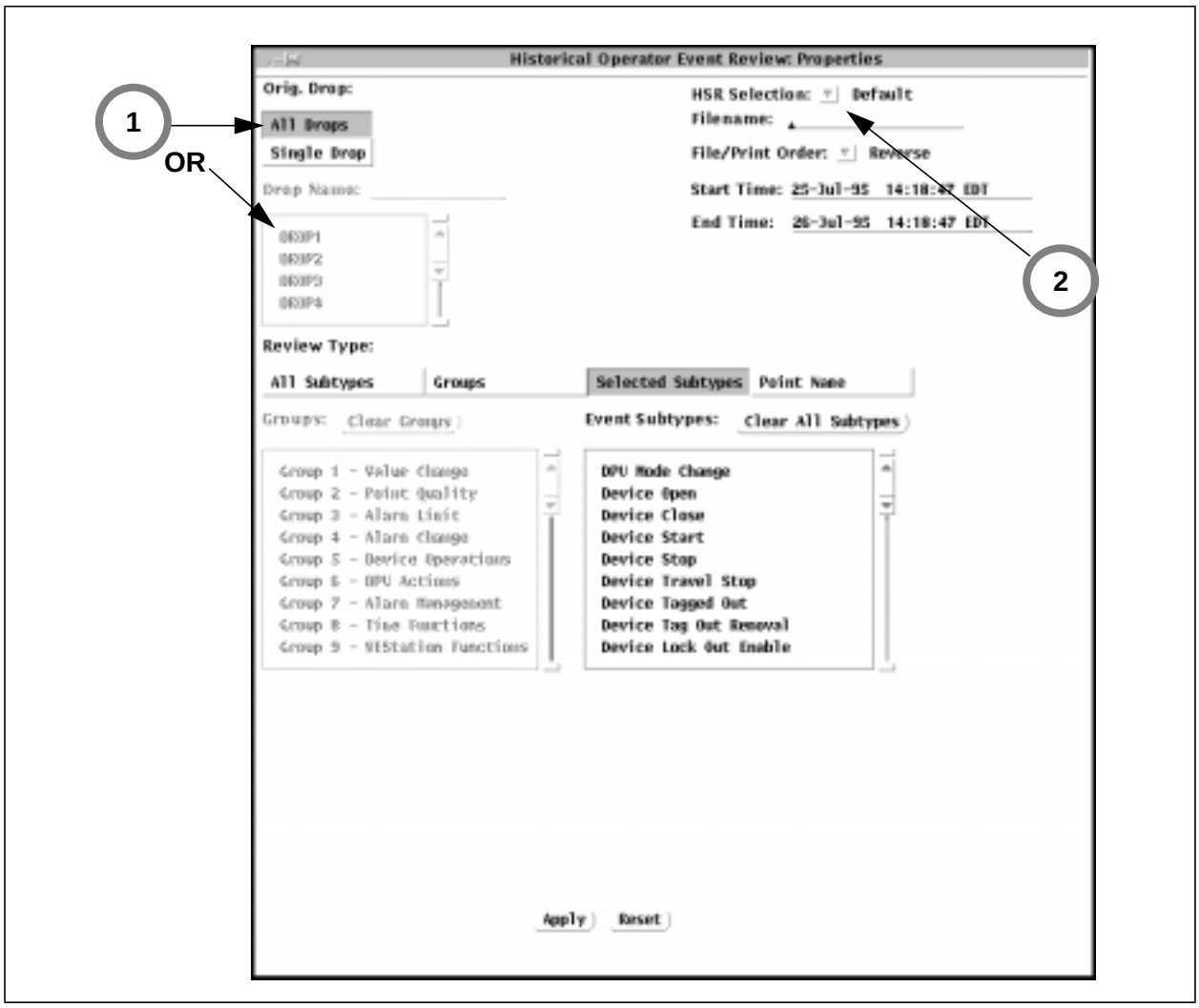

Figure 11-15. Original Drop and HSR Selection Options

OR

Select **Single Drop** (for a review of operator event messages on a specified drop). The **Drop Name** scrolling list is highlighted. Select a drop name from this list, as shown in Figure 11-15.

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

3. Select **Selected Subtypes** from the **Review Type** choice box.

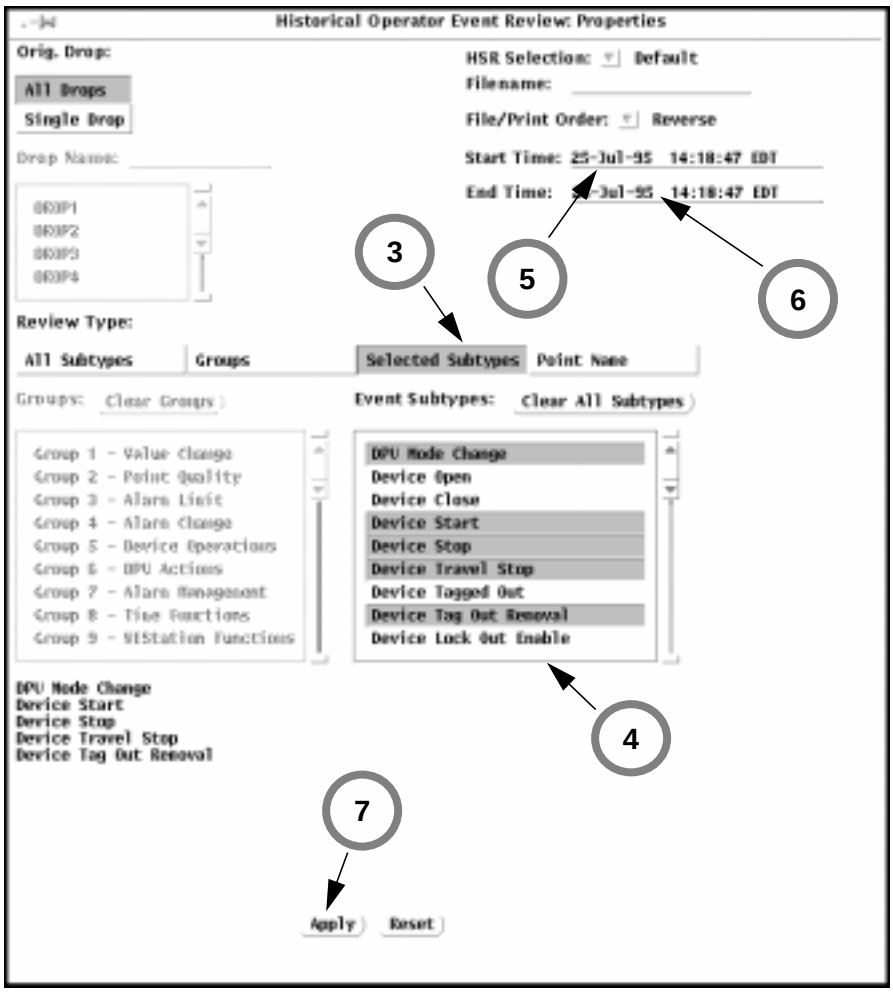

Figure 11-16. Subtype Options

4. The **Event Subtypes** scrolling list is highlighted. Select the desired operator event (or events) from the **Event Subtypes** scrolling list. As events are selected, they appear in a list, as shown in Figure 11-16.

Notes

1. To clear all selected event subtypes from the window, select the **Clear Groups** button.
2. To unmark an event subtype, de-highlight it.

5. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **File name** field. This name is used when the review request will be saved to a file, as described in Section 11-3.9. The default filename can be change to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Items: Default Directory Name
   Default File Name

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11-3.6. Selecting Specific Points for Review

Use the following procedure to select a review of specific event message subtypes. (The numbers in the gray circles correspond to the numbered steps.)

1. From the **Originating Drop** choice box, select **All Drops** (for a review of operator event messages on all drops).

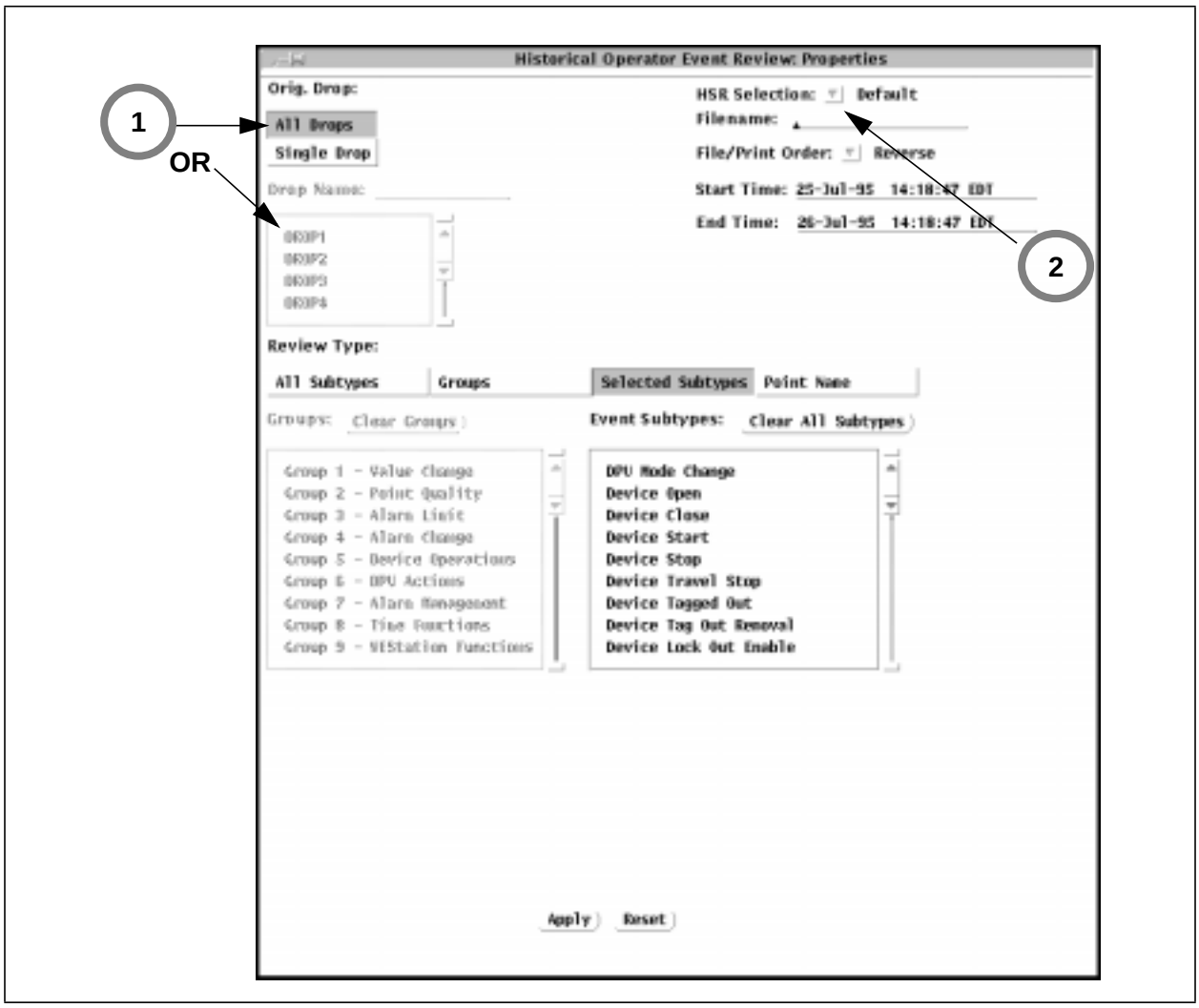

Figure 11-17. Original Drop and HSR Selection Options

OR

Select **Single Drop** (for a review of operator event messages on a specified drop). The **Drop Name** scrolling list is highlighted. Select a drop name from this list, as shown in Figure 11-17.

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

3. Select **Point Name** from the **Review Type** choice box. Type the desired point name into the text field.

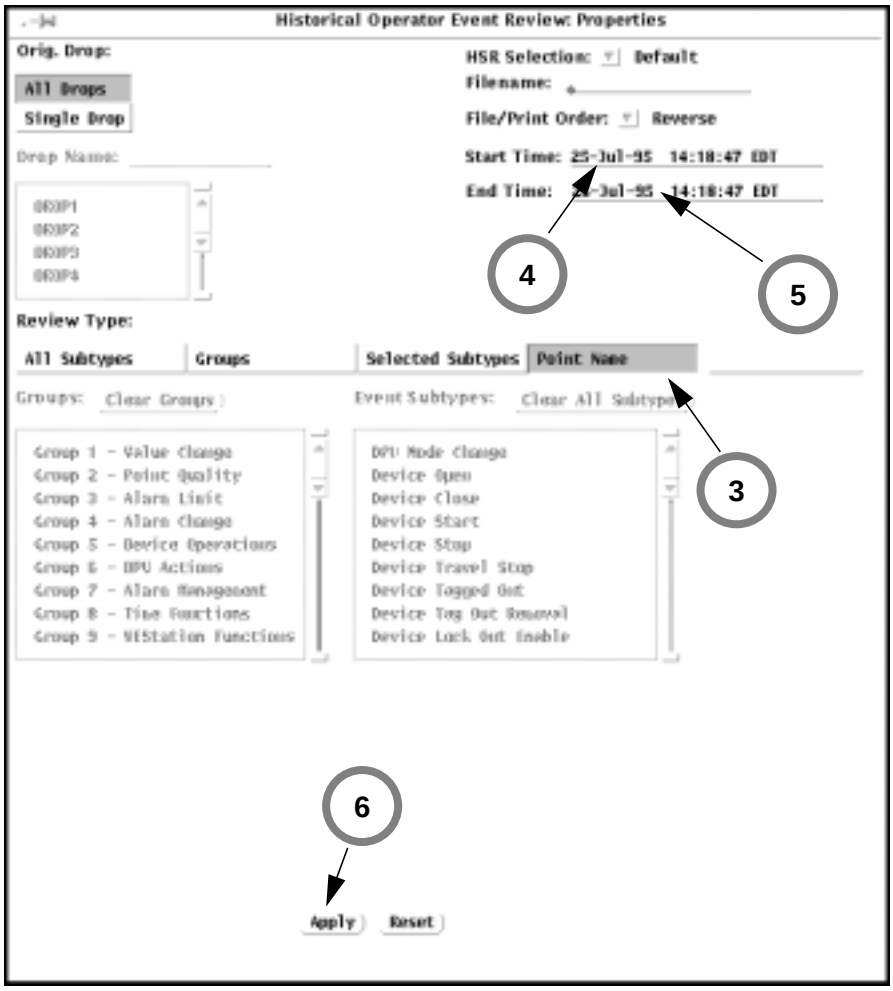

Figure 11-18. Subtype Options

4. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Operator Event Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

5. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default end time is the current operating system time.

6. Select the **Apply** button to save the selected review properties. The default file name appears in the **File name** field. This name is used when the review request will be saved to a file, as described in Section 11-3.9. The default file name can be change to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI Operator Event Review
Items: Default Directory Name
Default File Name

11-3.7. Displaying Operator Event Reviews

After the Operator Event Review properties have been selected, a review request can be displayed on the **Historical Operator Event Review** window. Use the following procedure to display Operator Event reviews:

1. From the **Historical Operator Event Review** window, select **Display** from the Option boxes.

2. Select the **Begin** button to start the review process. The following message appears:

   `Retrieval is in progress ...`

   Note

   To cancel a review in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Retrieval is complete`

   The applicable review data appears in the window, as shown in the example in Figure 11-19.

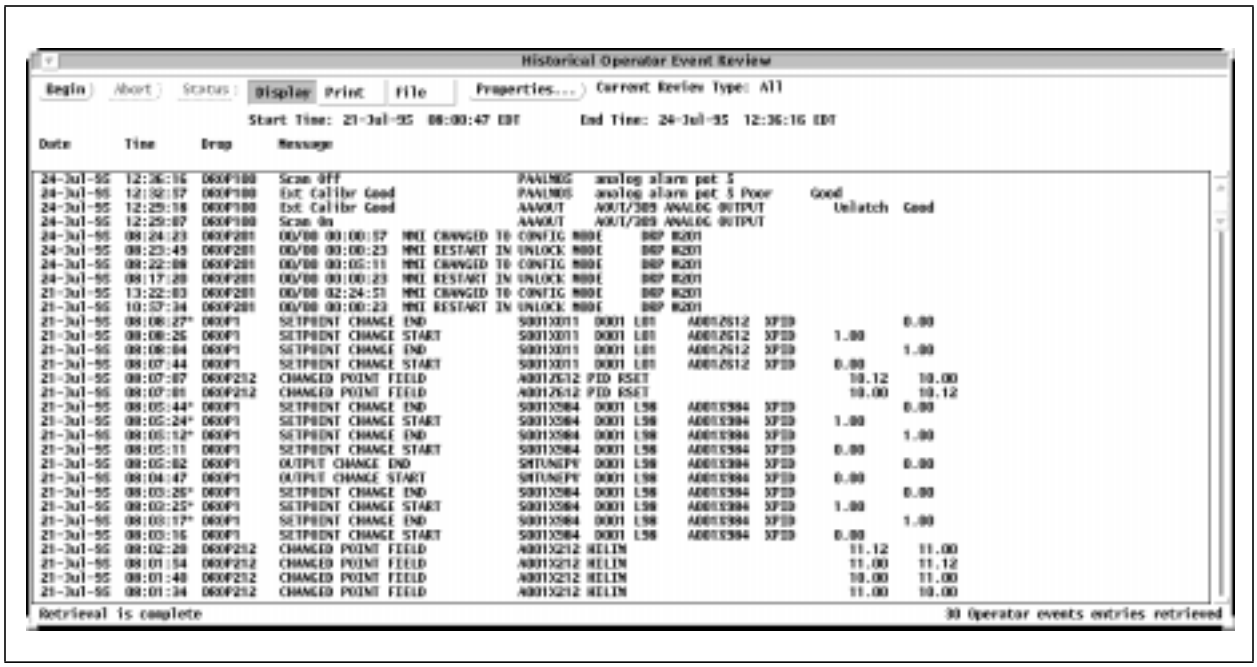

Figure 11-19. Operator Event Reviews

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The fields in this window are as follows:

- **Current Review Type** displays type of review selected on the **Historical Operator Event Review: Properties** window.
- **Start Time** displays beginning time of the review request.
- **End Time** displays end time of the review request.
- **Date** displays date event occurred in history.
- **Time** displays time event occurred in history.
- **Drop** displays the drop where the event message originated.
- **Message** displays the actual operator event message.

11-3.8. Printing Operator Event Reviews

After the Operator Event Review Properties have been selected, a review request can be sent to the Log Server to be printed. Use the following procedure to print Operator Event reviews:

1. From the **Historical Operator Event Review** window, select **Print** from the options box.

2. Select the **Begin** button to start the review process. The following message appears:

   `Sending file to Log Server is in progress ...`

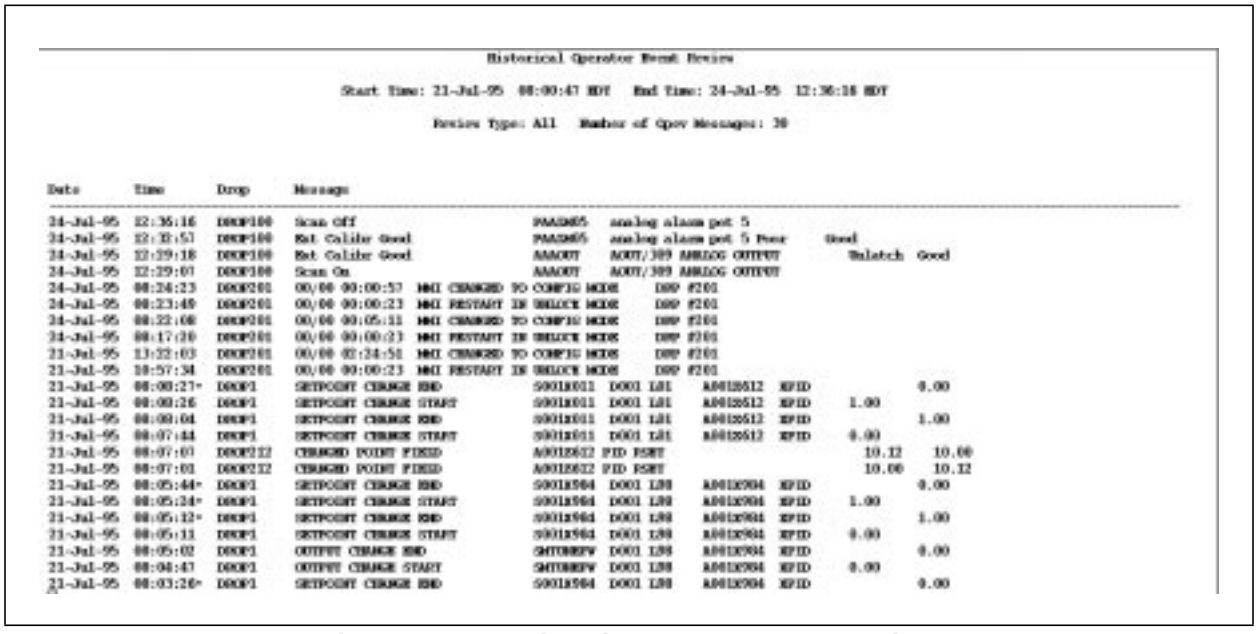
   Note

   To cancel a print in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Sending file to Log Server is complete`

   The review data is then sent to the Log Server to be printed. The format of the printed Operator Event Review varies slightly from the format displayed in the **Historical Operator Event Review** window, as shown in Figure 11-20.



Historical Operator Event Review

Start Time: 21-Jul-95 00:00:47 EDT End Time: 24-Jul-95 12:36:16 EDT

Review Type: All Number of Open Messages: 30

Date	Time	Drop	Message								
24-Jul-95	12:36:16	DROP100	Scan Off		PMAIN05	analog alarm pnt 5					
24-Jul-95	12:12:51	DROP100	Nat Calibr Good		PMAIN05	analog alarm pnt 5 Poor		Good			
24-Jul-95	12:29:18	DROP100	Nat Calibr Good		AAAOUT	AOUT/309 ANALOG OUTPUT		Unlatch	Good		
24-Jul-95	12:29:07	DROP100	Scan On		AAAOUT	AOUT/309 ANALOG OUTPUT					
24-Jul-95	08:24:23	DROP201	00/00 00:00:57	MMI CHANGED TO CONFIG MODE		DRP #201					
24-Jul-95	08:23:49	DROP201	00/00 00:00:23	MMI RESTART IN UNLOCK MODE		DRP #201					
24-Jul-95	08:22:08	DROP201	00/00 00:05:11	MMI CHANGED TO CONFIG MODE		DRP #201					
24-Jul-95	08:17:20	DROP201	00/00 00:00:23	MMI RESTART IN UNLOCK MODE		DRP #201					
21-Jul-95	13:22:03	DROP201	00/00 02:24:51	MMI CHANGED TO CONFIG MODE		DRP #201					
21-Jul-95	10:57:34	DROP201	00/00 00:00:23	MMI RESTART IN UNLOCK MODE		DRP #201					
21-Jul-95	08:08:27*	DROP1	SETPOINT CHANGE END		S0018011	D001 L01	A0012512	RPID			0.00
21-Jul-95	08:08:26	DROP1	SETPOINT CHANGE START		S0018011	D001 L01	A0012512	RPID	1.00		
21-Jul-95	08:08:04	DROP1	SETPOINT CHANGE END		S0018011	D001 L01	A0012512	RPID			1.00
21-Jul-95	08:07:44	DROP1	SETPOINT CHANGE START		S0018011	D001 L01	A0012512	RPID	0.00		
21-Jul-95	08:07:07	DROP212	CHANGED POINT FIXED		A0012612	PID RSET			10.12		10.00
21-Jul-95	08:07:01	DROP212	CHANGED POINT FIXED		A0012612	PID RSET			10.00		10.12
21-Jul-95	08:05:44*	DROP1	SETPOINT CHANGE END		S0018504	D001 L00	A0012904	RPID			0.00
21-Jul-95	08:05:24*	DROP1	SETPOINT CHANGE START		S0018504	D001 L00	A0012904	RPID	1.00		
21-Jul-95	08:05:12*	DROP1	SETPOINT CHANGE END		S0018504	D001 L00	A0012904	RPID			1.00
21-Jul-95	08:05:11	DROP1	SETPOINT CHANGE START		S0018504	D001 L00	A0012904	RPID	0.00		
21-Jul-95	08:05:02	DROP1	OUTPUT CHANGE END		SMTUBEFW	D001 L00	A0012904	RPID			0.00
21-Jul-95	08:04:47	DROP1	OUTPUT CHANGE START		SMTUBEFW	D001 L00	A0012904	RPID	0.00		
21-Jul-95	08:03:26*	DROP1	SETPOINT CHANGE END		S0018504	D001 L00	A0012904	RPID			0.00

Figure 11-20. Printed Operator Event Review

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11-3.9. Saving Operator Event Reviews

After the Operator Event Review Properties have been selected, a review request can be saved to a file. Use the following procedure to save Operator Event reviews:

1. From the **Historical Operator Event Review** window, select **File** from the **Options** choice.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI Operator Event Review
   Items: Default Directory Name
   Default File Name

   A unique filename must be entered on the **Historical Operator Event Review: Properties** window, as described in Section 11-3.2.

2. Select **Begin** to start the file review process. The following message appears:

   `File Save is in progress ...`

   Note

   To cancel a file save in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `File save is complete`

   The review data is now saved to the specified filename and can be viewed with any text editor. The format of the saved Operator Event Review is the same as the printed Operator Event Review, as shown in Figure 11-20.

11-3.10. Operator Event Subtypes

The following table shows all possible event subtypes. They are listed in numerical order. For additional information on the definitions of the subtypes, see "Record Types User's Guide" (U0-0131).

Table 11-1. Operator Event Subtypes

Subtype Number	Operator Event Category Type
100	DPU Mode Change
101	Device Open
102	Device Close
103	Device Start
104	Device Stop
105	Device Travel Stop
106	Device Tagged Out
107	Device Tag Out Removal
108	Device Lock Out Enable
109	Device Lockout Disable
110	Device Capture Release
111	Device Trip Acknowledge
112	Device Response Failure
120	Setpoint Change
121	Output Change
130	MAC Edit Mode Change
160	High High Limit Change
161	High Incremental Limit Change
162	Low Low Limit Change
163	Low Incremental Limit Change
180	LS Print Cancellation
190	Alarm Acknowledge
191	Alarm Release

Table 11-1. Operator Event Subtypes (Cont'd)

Subtype Number	Operator Event Category Type
192	Alarm Unrelease
193	Alarm Shelve
194	Alarm Unshelve
195	Alarm Reset
200	Scan Removal
201	Scan Restoration
202	Alarm Check Removal
203	Alarm Check Restoration
204	Limit Check Removal
205	Limit Check Restoration
206	Value Enter
207	High Limit Change
208	Low Limit Change
209	Incremental Change
210	Alarm Deadband Change
211	All Force Bits Clear
212	All Force Bits Set
213	Quality Unlatch
214	Good Quality Latch
215	Fair Quality Latch
216	Poor Quality Latch
217	Bad Quality Latch
218	Automatic Cutout Disabled / Automatic Cutout Disabled Failed
219	Automatic Cutout Enabled / Automatic Cutout Enabled Failed
220	Time Broadcast by MMI
221	Time Broadcast by CIU

Table 11-1. Operator Event Subtypes (Cont'd)

Subtype Number	Operator Event Category Type
222	DHC Enable Attempt
223	All Drop DHC Enable Attempt
224	Time Broadcast by MMI / CIU
225	Highway Time Transfer
226	Highway Time Change
227	Info Highway Command
230	MMI Mode Change
231	MMI Logon / Logoff
240	Point Field Change
250	Value Force
251	Force Clear
252	Group Pt Force Clear
253	Group Pt Force
254	Set Force Group Pt

11-4. Historical ASCII Review Window

The ASCII Message user interface (**Historical ASCII Review** window) can display, print, or file ASCII messages that occurred on all drops or a single drop. ASCII messages are any text messages generated by the user.

This section provides instructions for using the **Historical ASCII Review** window. For background information on the ASCII Message History function, see Section 3. For information on configuration, see Section 5. The following topics are included:

- Accessing the Historical ASCII Review window (Section 11-4.1).
- Defining ASCII Message Review properties (Section 11-4.2).
- Displaying ASCII Message Reviews (Section 11-4.5).
- Printing ASCII Message Reviews (Section 11-4.6).
- Saving ASCII Message Reviews (Section 11-4.7).

11-4.1. Accessing the Historical ASCII Review Window

This document assumes the **Historical ASCII Review** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical ASCII Review** window:

1. Open the **ASCII Message Review** icon.
2. The **Historical ASCII Review** window appears, as shown in Figure 11-21.

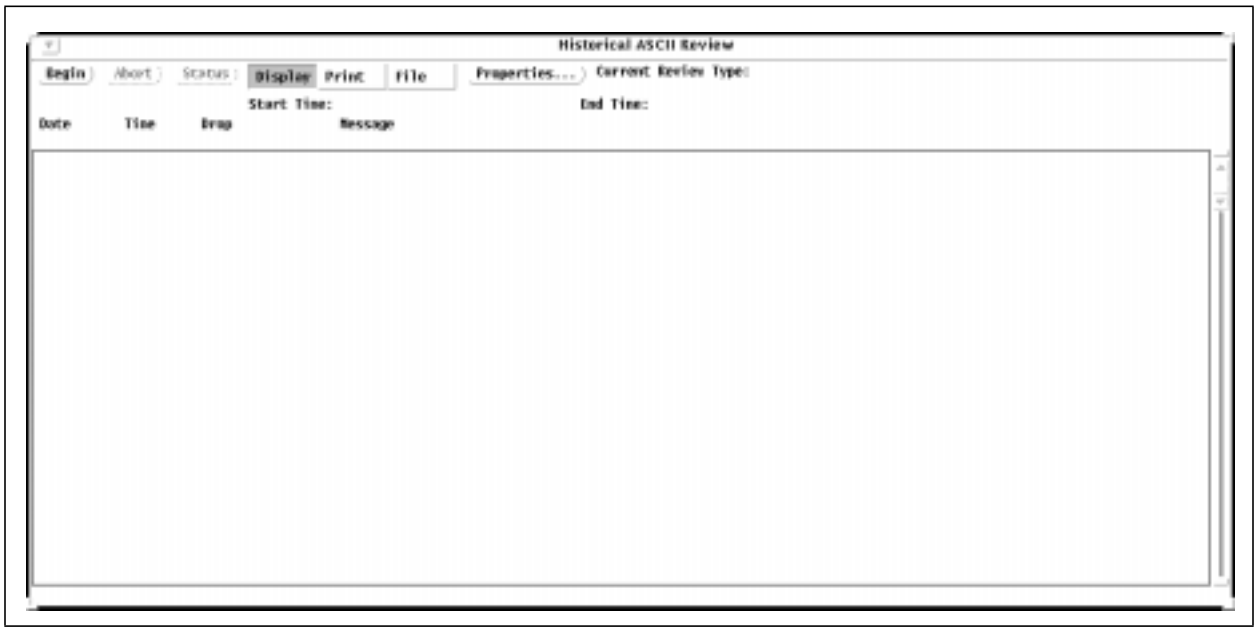

Figure 11-21. Historical ASCII Review Window

11-4.2. ASCII Review Properties

The **Historical ASCII Review: Properties** window allows the user to specify the search time and type of review. Two types of reviews can be specified:

- Review of ASCII messages that occurred on all HSR drops, as described in Section 11-4.3.
- Review of ASCII messages that occurred on a single HSR drop, as described in Section 11-4.4.

Use the following procedure to access the **Historical ASCII Review: Properties** window:

1. From the **Historical ASCII Review** window, select the **Properties** button. The **Historical ASCII Review: Properties** window appears, as shown in Figure 11-22.

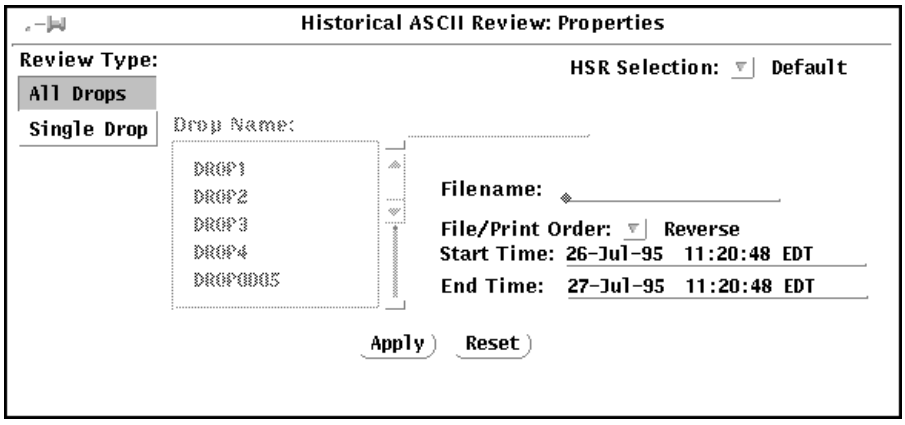

Figure 11-22. Historical ASCII Review: Properties Window

Note

Fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

11-4.3. Selecting a Review of All Drops

Use tne following procedure to select a review of ASCII messages on all drops.

1. Select **All Drops** from the **Review Type** option box. (Note that the fields pertaining to drop name are grayed-out.)

2. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

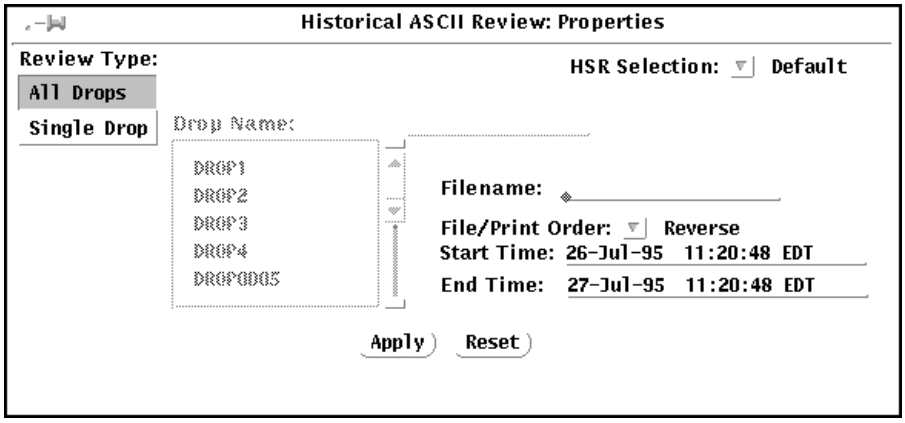

Figure 11-23. HSR Selection Menu

3. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI ASCII Message Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

4. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   The default end time is the current operating system time.

5. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 7-4.3. The default filename can be change to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI ASCII Message Review
Items: Default Directory Name
Default File Name

11-4.4. Selecting a Review of a Single Drop

Use the following procedure to select a review of ASCII messages on a single drop.

1. Select **Single Drop** from the **Review Type** option box.

2. Select a drop name from the scrollable **Drop Name** list. The selected drop name appears in the **Drop Name** field, as shown in Figure 11-24.

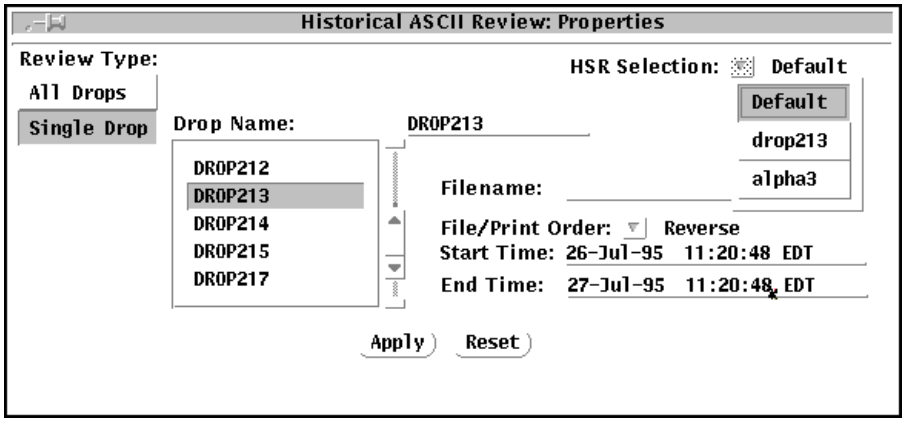

Figure 11-24. Review a Single Drop Option

3. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

4. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI ASCII Message Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

5. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   The default end time is the current operating system time.

6. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 7-4.3. The default filename can be change to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI ASCII Message Review
Items: Default Directory Name
Default File Name

11-4.5. Displaying ASCII Message Reviews

After the ASCII Message Review properties have been selected, a review request can be displayed on the **Historical ASCII Review** window. Use the following procedure to display ASCII message reviews:

1. From the **Historical ASCII Review** window, select **Display** from the option boxes.

2. Select the **Begin** button to start the review process. The following message appears:

   `Retrieval is in progress`…

   Note

   To cancel a review in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Retrieval is complete`

   The applicable review data appears in the window, as shown in the example in Figure 11-25.

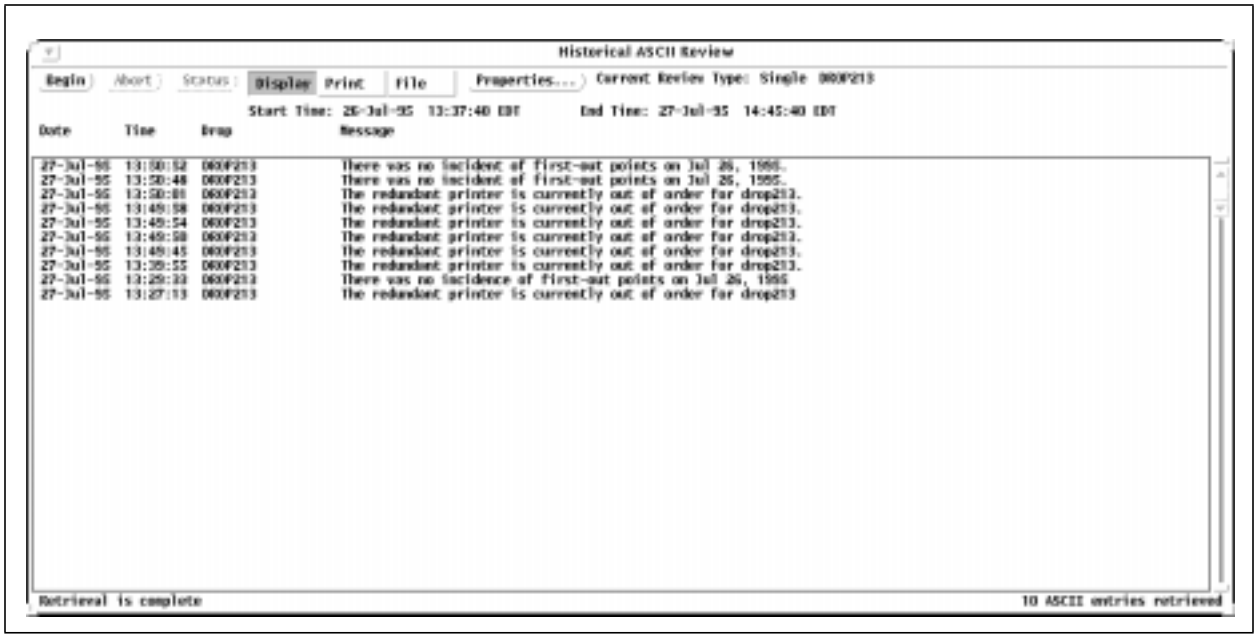

Figure 11-25. ASCII Review Window with Data

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The fields in Figure 11-25 are as follows:

- **Current Review Type** displays type of HSR review selected on the **Historical ASCII Review: Properties** window.
- **Start Time** displays beginning time of the review request.
- **End Time** displays end time of the review request.
- **Date** displays date event occurred in history.
- **Time** displays time event occurred in history.
- **Drop** displays where the ASCII message was originated.
- **Message** displays the actual ASCII message.

11-4.6. Printing ASCII Message Reviews

After the ASCII Message Review Properties have been selected, a review request can be sent to the Log Server to be printed. Use the following procedure to print ASCII message reviews:

1. From the **Historical ASCII Review** window, select **Print** from the option boxes.
2. Select the **Begin** button to start the review process. The following message appears:

   `Sending file to Log Server is in progress`…

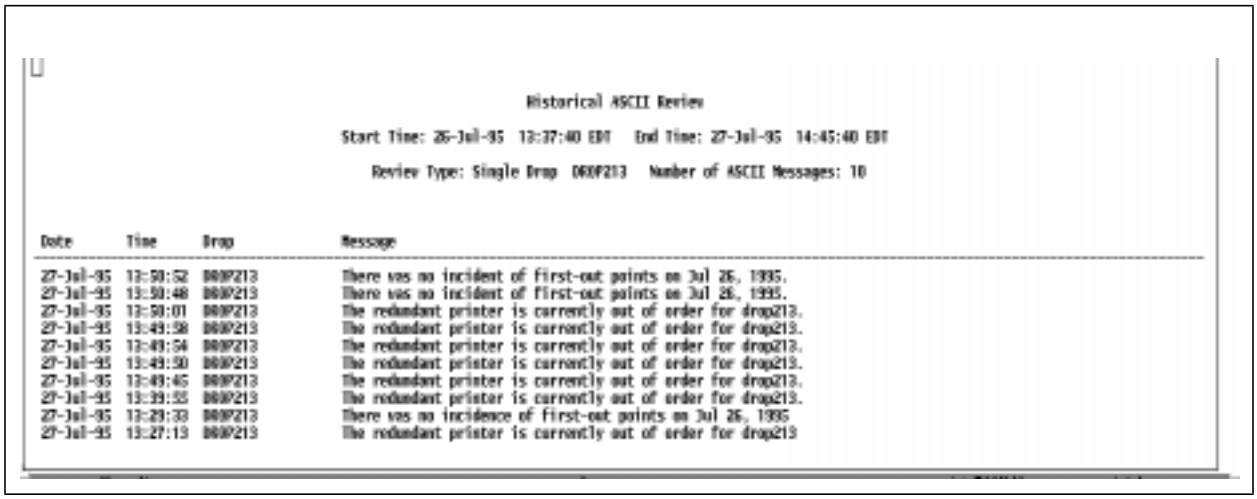
   Note

   To cancel a print in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Sending file to Log Server is complete`

   The review data is then sent to the Log Server to be printed. The format of the printed ASCII Message Review (as shown in Figure 11-26) varies slightly from the format displayed in the **Historical ASCII Review** window.



Historical ASCII Review

Start Time: 26-Jul-95 13:37:40 EDT End Time: 27-Jul-95 14:45:40 EDT

Review Type: Single Drop D80P213 Number of ASCII Messages: 10

Date	Time	Drop	Message
27-Jul-95	13:50:52	D80P213	There was no incident of first-out points on Jul 26, 1995.
27-Jul-95	13:50:48	D80P213	There was no incident of first-out points on Jul 26, 1995.
27-Jul-95	13:50:01	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:49:58	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:49:54	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:49:50	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:49:45	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:39:55	D80P213	The redundant printer is currently out of order for drop213.
27-Jul-95	13:29:33	D80P213	There was no incidence of first-out points on Jul 26, 1995
27-Jul-95	13:27:13	D80P213	The redundant printer is currently out of order for drop213

Figure 11-26. Printed ASCII Message Review

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11-4.7. Saving ASCII Message Reviews

After the ASCII Message Review Properties have been selected, a review request can be saved to a file. Use the following procedure to save ASCII message reviews:

1. From the **Historical ASCII Review** window, select **File** from the option boxes.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI ASCII Message Review
   Items: Default Directory Name
   Default File Name

   A unique filename must be entered on the **Historical ASCII Review: Properties** window, as described in Section 11-4.

2. Select **Begin** to start the file review process. The following message appears:

   `File save is in progress`…

   Note

   To cancel a file save in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `File save is complete`

   The review data is now saved to the specified filename and can be viewed with any text editor. The format of the saved ASCII Message Review is the same as the printed ASCII Message Review, as shown in Figure 11-26.

11-5. SOE Review Window

The Historical SOE Review user interface (**Historical SOE Review** window) access historical Sequence of Events (SOE) files to display, print, or file reviews of SOE messages. Reviews can be based on drop name, point name, or both. First-out event messages can also be included in an SOE review. (A first-out event is a digital point configured as the event that caused the trigger to occur.)

This section provides instructions for using the **Historical SOE Review** window. For background information on the SOE Message History function, see Section 3. For information on configuration, see Section 5. The following topics are included:

- Accessing the Historical SOE Review window (Section 11-5.1).
- Defining SOE Review properties (Section 11-5.2 through Section 11-5.7).
- Displaying SOE reviews (Section 11-5.8).
- Printing SOE reviews (Section 11-5.9).
- Saving SOE reviews (Section 11-5.10).

11-5.1. Accessing the SOE Review Window

This document assumes the **Historical SOE Review** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical SOE Review** window:

1. Open the **SOE Review** icon.

2. The **Historical SOE Review** window appears, as shown in Figure 11-27.

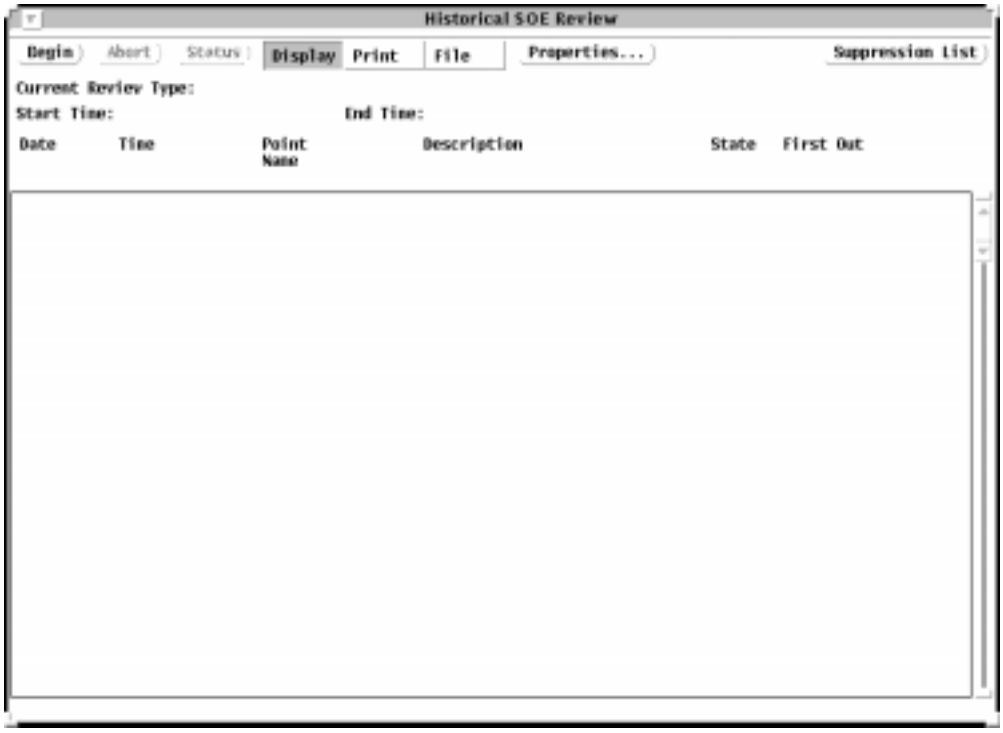

Figure 11-27. Historical SOE Review Window

11-5.2. SOE Review Properties

The **Historical SOE Review: Properties** window allows the user to specify the search time and type of review. Five types of reviews can be specified:

- Review of all SOE messages on all drops, as described in Section 11-5.3.
- Review of SOE messages for a single point on all drops, as described in Section 11-5.4.
- Review of all SOE messages on a particular drop, as described in Section 11-5.5.
- Review of all SOE messages on a particular trigger, as described in Section 11-5.6.
- Review of SOE messages that occurred around a first-out event, as described in Section 11-5.7.

From the **Historical SOE Review** window, select the **Properties** button. The **Historical SOE Review: Properties** window appears, as shown in Figure 11-28.

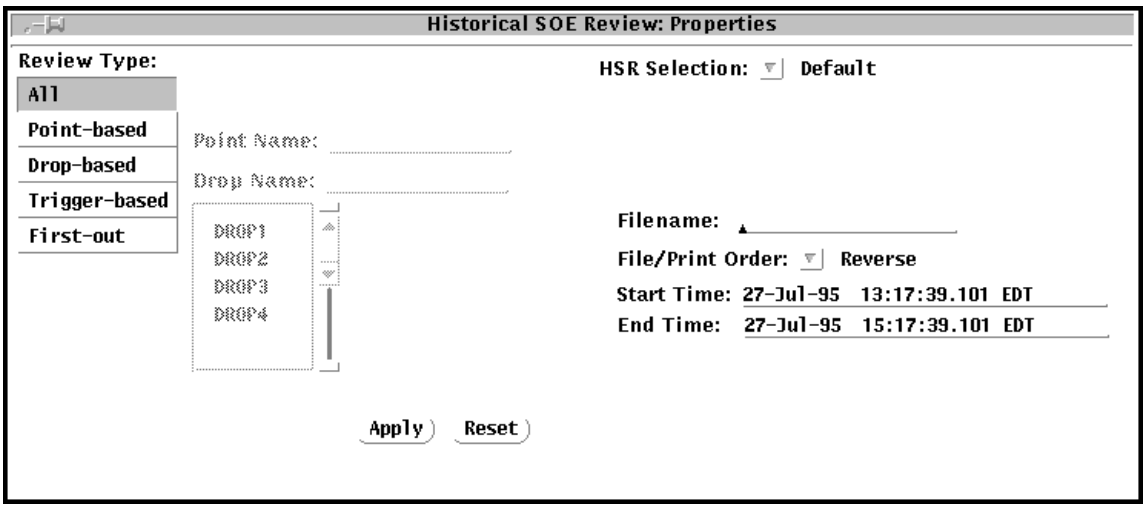

Figure 11-28. Historical SOE Review: Properties Window

Note

Fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

11-5.3. Selecting All SOE Messages for Review

Use the following procedure to review all SOE messages on all drops:

1. Access the **Historical SOE Review** window (as described in Section 11-5.1).
2. Select the **Properties** button. The **Properties** window appears.
3. Select **All** from the **Review Type** option box.

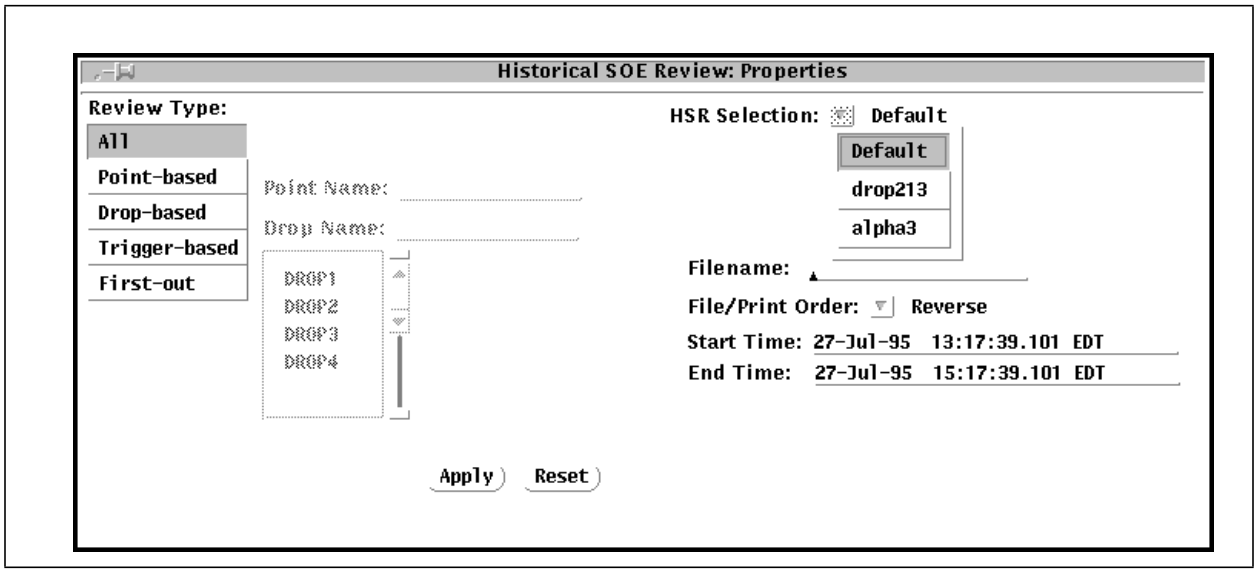

Figure 11-29. Review All SOE Messages Option

4. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.
5. Enter the start time of the review request in the **Start Time** field using the following format:

   `DD-MMM-YY hh:mm:ss`

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI SOE Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-5.10 The default filename can be changed to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI SOE Review
Items: Default Directory Name
Default File Name

11-5.4. Selecting Point-Based SOE Messages for Review

Use the following procedure to review all SOE messages for a specified point on all drops:

1. Access the **Historical SOE Review** window (as described in Section 11-5.1).
2. Select the **Properties** button. The **Properties** window appears.
3. Select **Point-based** from the **Review Type** option box.

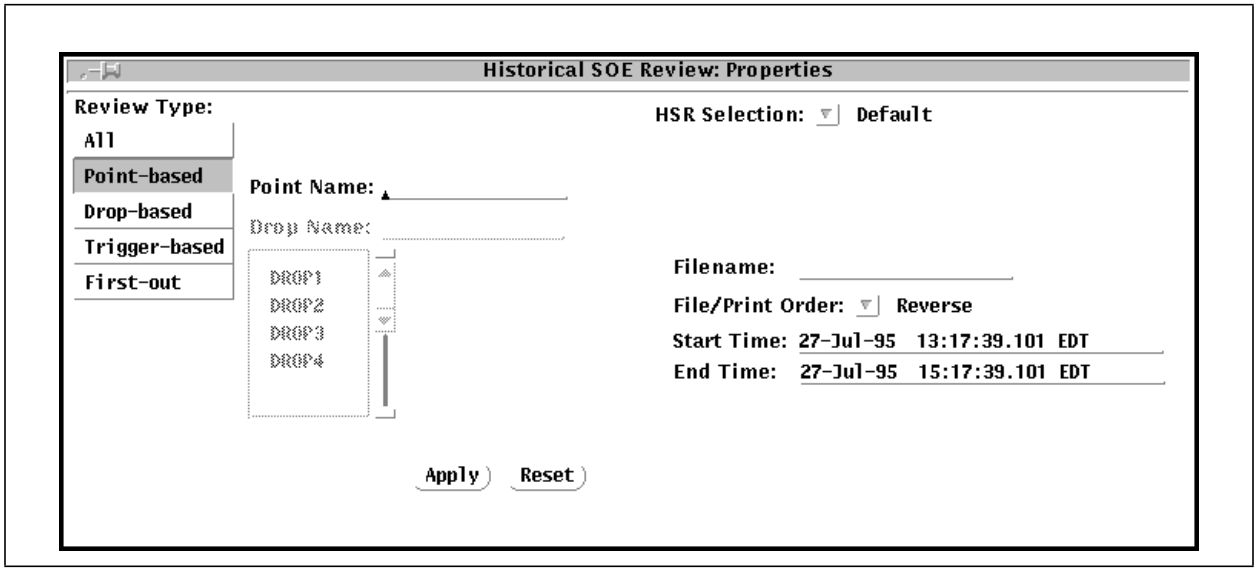

Figure 11-30. Point-Based Review Type

4. Enter a valid SOE point name in the **Point Name** field, as shown in Figure 11-31.

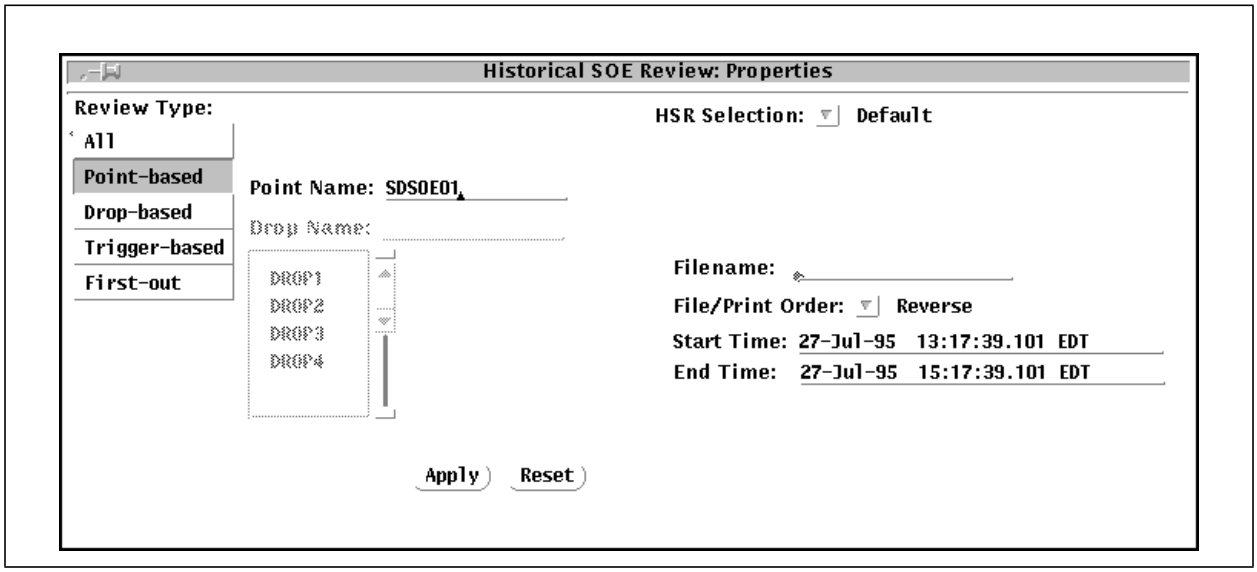

Figure 11-31. Point Name Field

5. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

6. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

7. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

8. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-5.10. The default filename can be changed to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Items: Default Directory Name
   Default File Name

11-5.5. Selecting Drop-Based SOE Messages for Review

Use the following procedure to review all SOE messages that occurred on a specific drop:

1. Access the **Historical SOE Review** window (as described in Section 11-5.1).
2. Select the **Properties** button. The **Properties** window appears.
3. Select **Drop-based** from the **Review Type** option box.

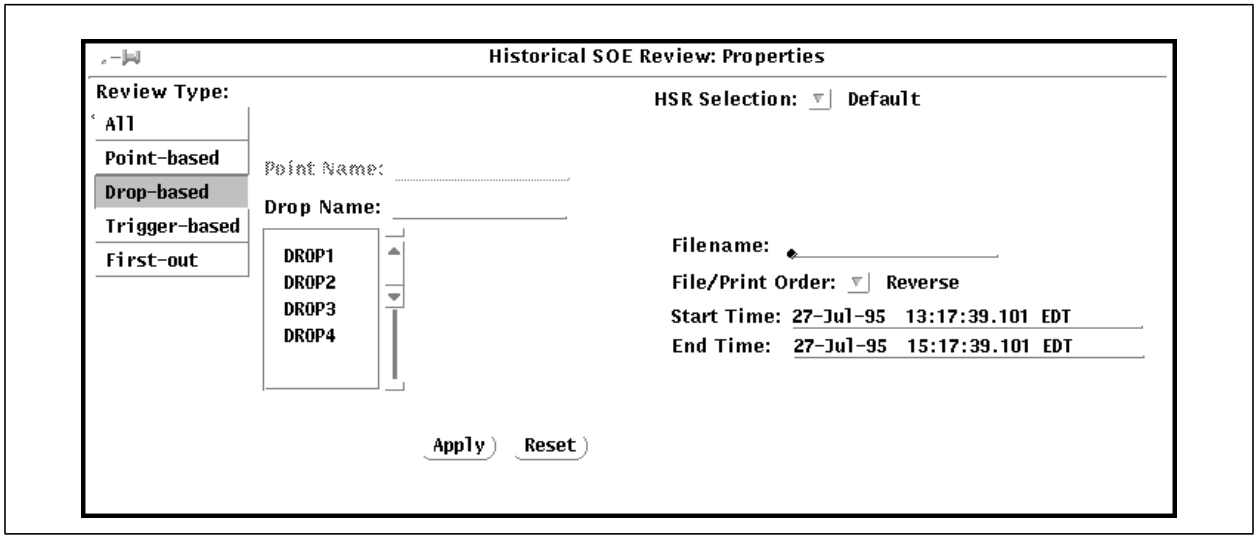

Figure 11-32. Drop-Based Review Type

4. Select a drop name from the **Drop Name** scrolling list. The drop name now appears in the **Drop Name** field.

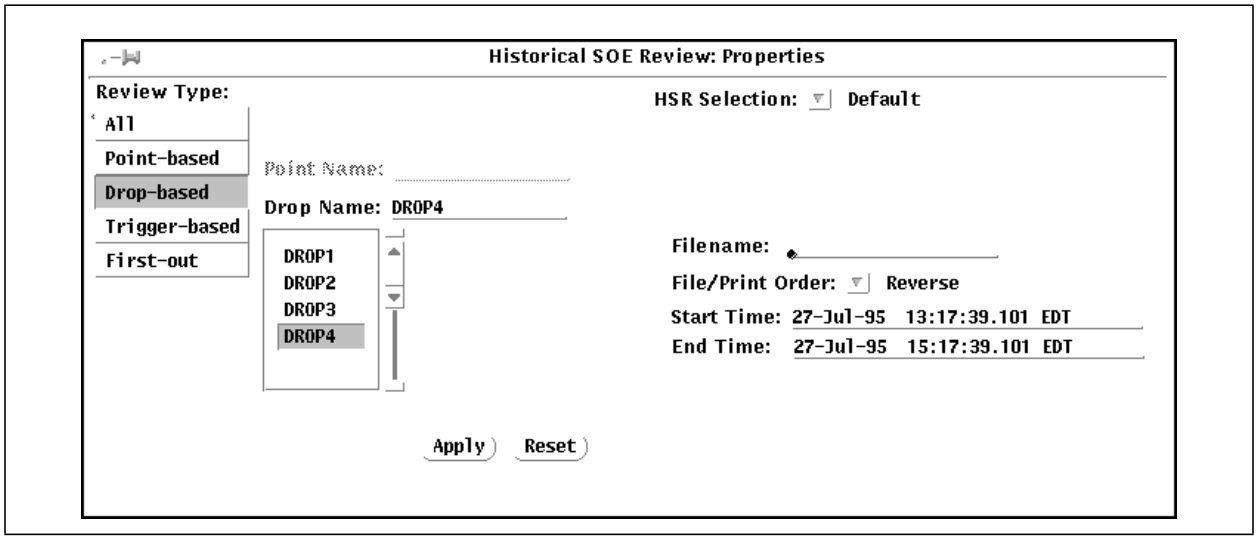

Figure 11-33. Drop Name Field

5. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

6. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

7. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

8. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-5.10. The default filename can be changed to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Items: Default Directory Name
   Default File Name

11-5.6. Selecting Trigger-Based SOE Messages for Review

Use the following procedure to review all SOE messages that occurred because of a specific trigger:

1. Access the **Historical SOE Review** window (as described in Section 11-5.1).
2. Select the **Properties** button. The **Properties** window appears.
3. Select **Trigger-based** from the **Review Type** option box.

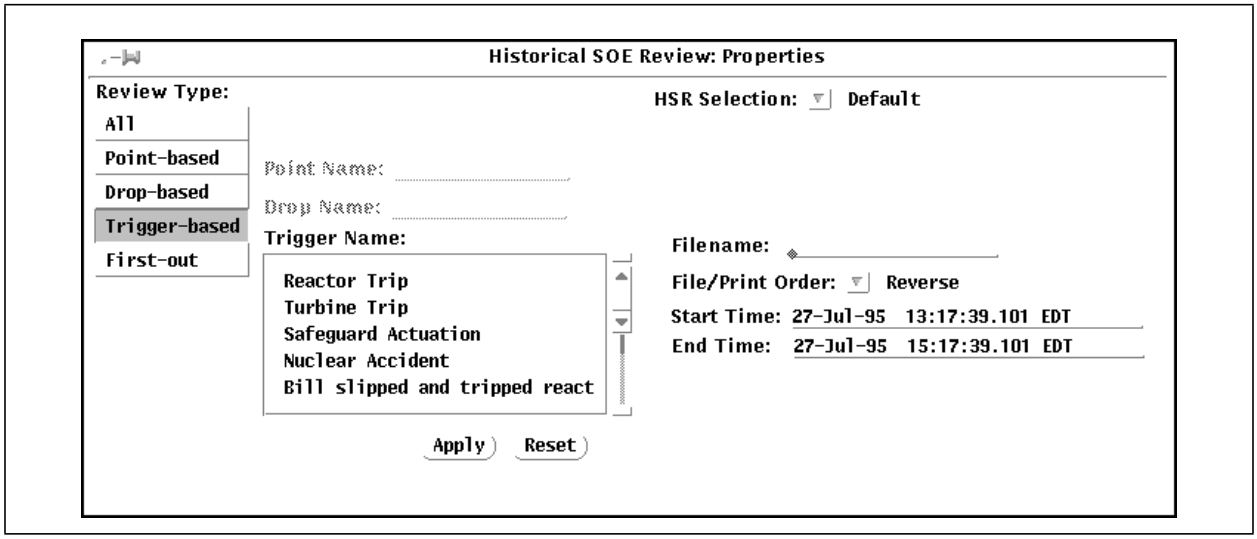

Figure 11-34. Trigger-Based Review Type

4. Select a trigger name from the **Trigger Name** scrolling list. The trigger name now appears in the **Trigger Name** field.

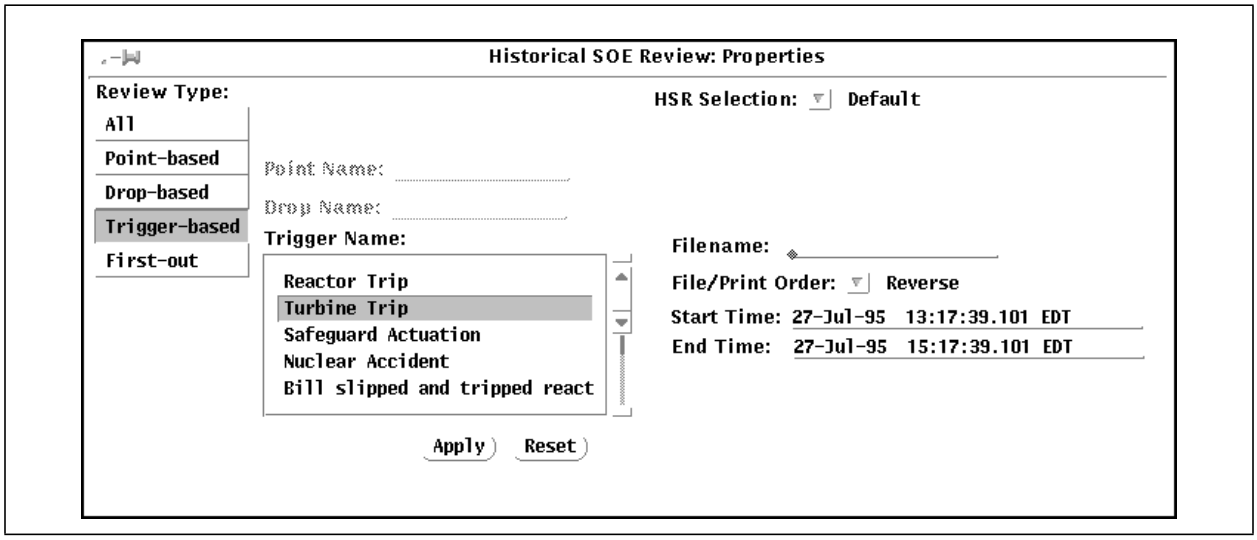

Figure 11-35. Trigger Name Field

5. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

6. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default start time is set through the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Item: Default Review Period

   Refer to Section 5 for addition configuration information.

7. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   Note

   The default end time is the current operating system time.

8. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-5.10. The default filename can be changed to a unique filename.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Items: Default Directory Name
   Default File Name

11-5.7. Selecting First-Out SOE Messages for Review

The first-out review type displays up to 100 SOE messages that occurred one minute before and after a first-out event was detected. Before the first-out event, up to 49 SOE messages can be reviewed. After the first-out event, up to 50 SOE messages can be reviewed. (For more information on first-out events, see Section 3.) Use the following procedure to review all SOE messages that occurred around a first-out event:

1. Access the **Historical SOE Review** window (as described in Section 11-5.1).
2. Select the **Properties** button. The **Properties** window appears.
3. Select **First-out** from the **Review Type** option box.

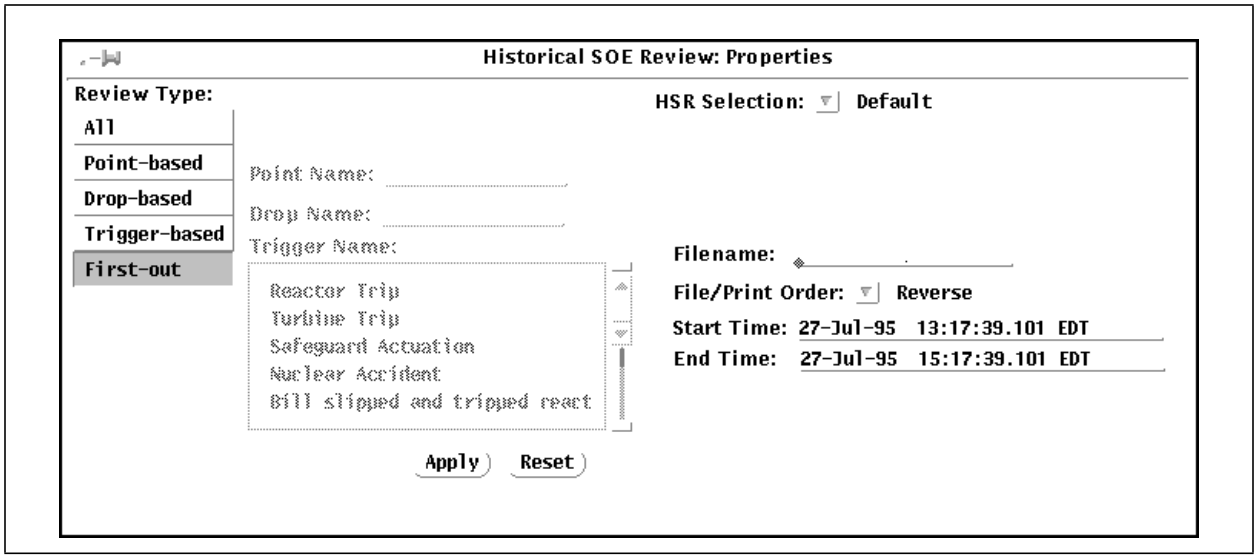

Figure 11-36. First-out Review Type

4. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.
5. Enter the start time of the review request in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default start time is set through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI SOE Review
Item: Default Review Period

Refer to Section 5 for addition configuration information.

6. Enter the end time of the review request in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

Note

The default end time is the current operating system time.

7. Select the **Apply** button to save the selected review properties. The default filename appears in the **Filename** field. This name is used when the review request will be saved to a file, as described in Section 11-5.10 The default filename can be change to a unique filename.

Note

The default filename and directory are configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI SOE Review
Items: Default Directory Name
Default File Name

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11-5.8. Displaying SOE Reviews

After the SOE Review properties have been selected, a review request can be displayed on the **Historical SOE Review** window.

1. From the **Historical SOE Review** window (refer to Figure 11-27), select **Display** from the **Options** choice box.

2. Select the **Begin** button to start the review process. The following message appears:

   `Retrieval is in progress` …

   Note

   To cancel a review in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Retrieval is complete`

   The applicable review data appears in the window, as shown in Figure 11-37 to Figure 11-41.

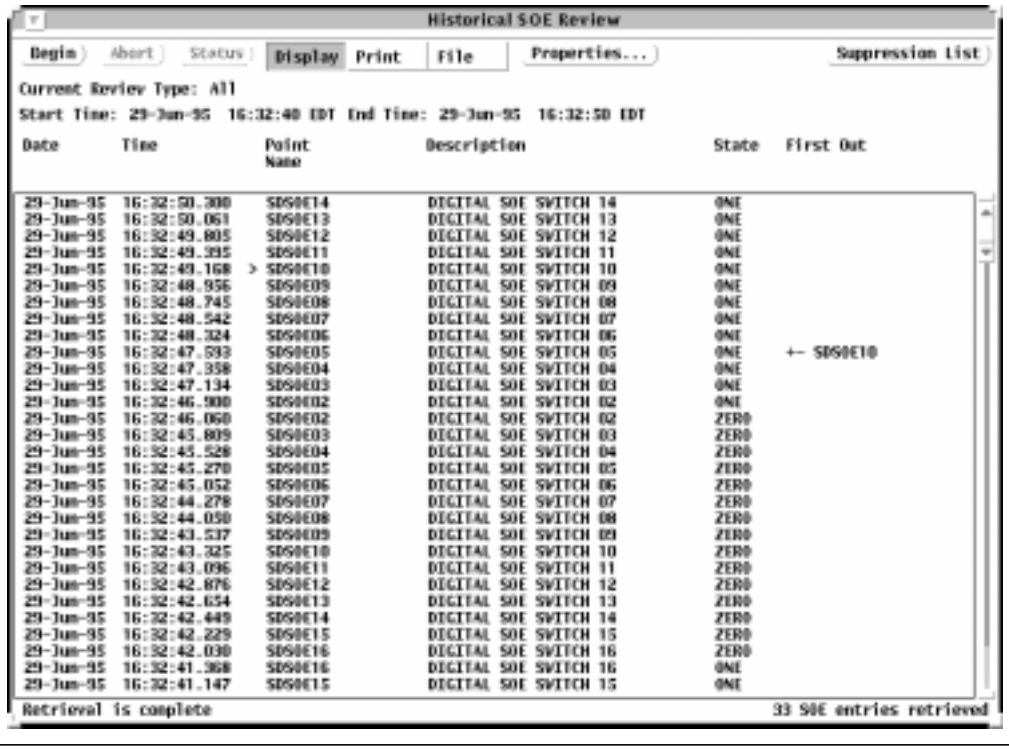

Figure 11-37. SOE Review

The fields in this window are as follows:

- **Current Review Type** displays type of review selected on the SOE Review Properties window.
- **Start Time** displays beginning time of the review request.
- **End Time** displays end time of the review request.
- **Date** displays date event occurred in history.
- **Time** displays time event occurred in history.
- **Point** displays the name assigned to process point by Point Group Definition file.
- **Description** displays a text description of the point.
- **State** displays the state of the digital point (0=off, 1=on). For information on digital points, see "Record Types User's Guide" (U0-0131).
- **First-out** displays the point name and time the first-out event was detected.

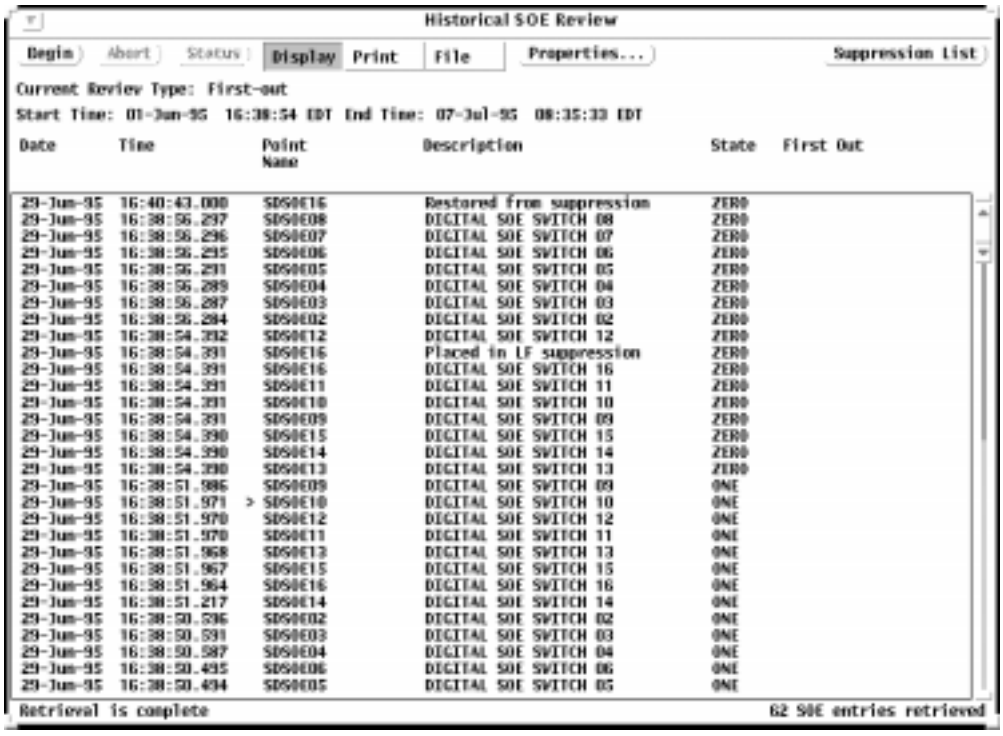

Figure 11-38. First-Out SOE Review

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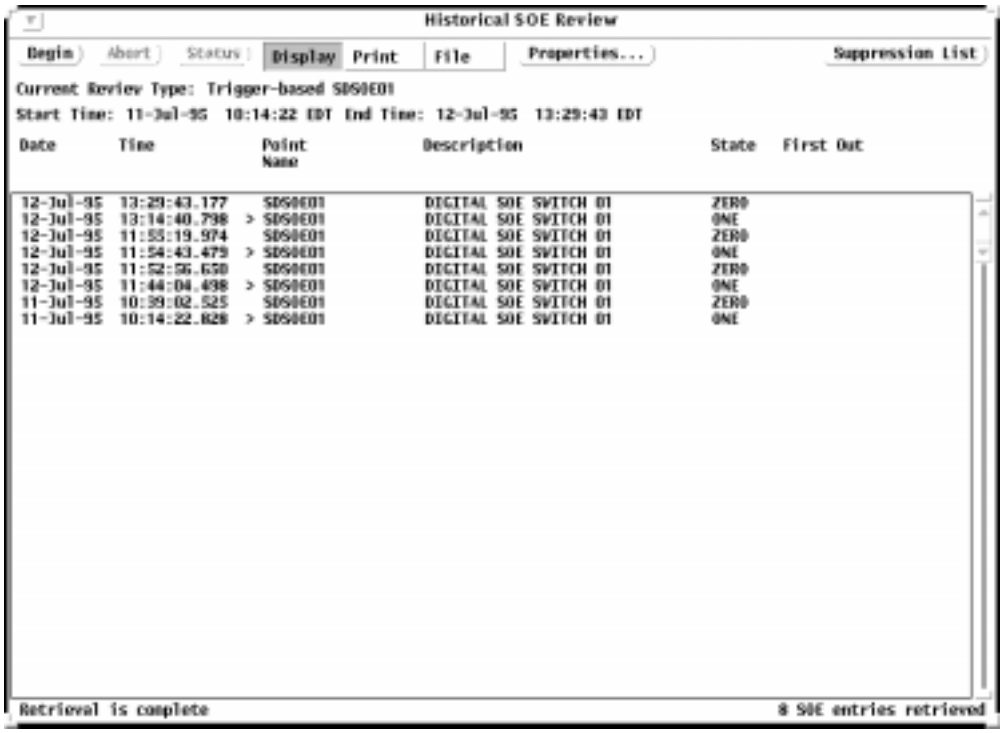


Figure 11-39. Trigger-Based SOE Review

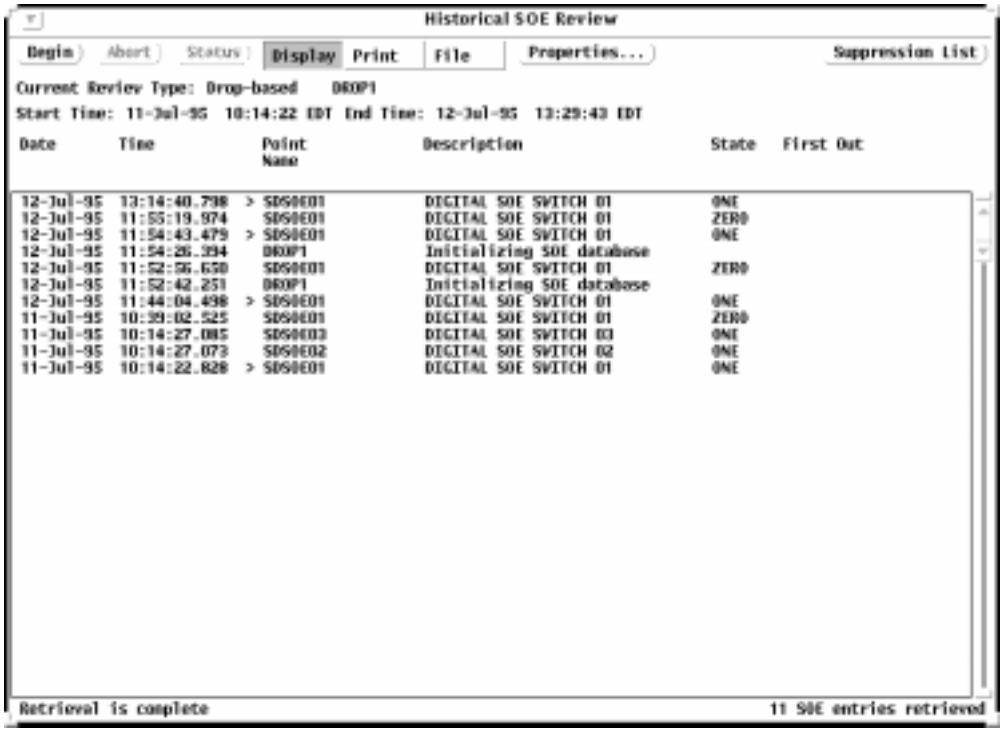


Figure 11-40. Drop-Based SOE Review

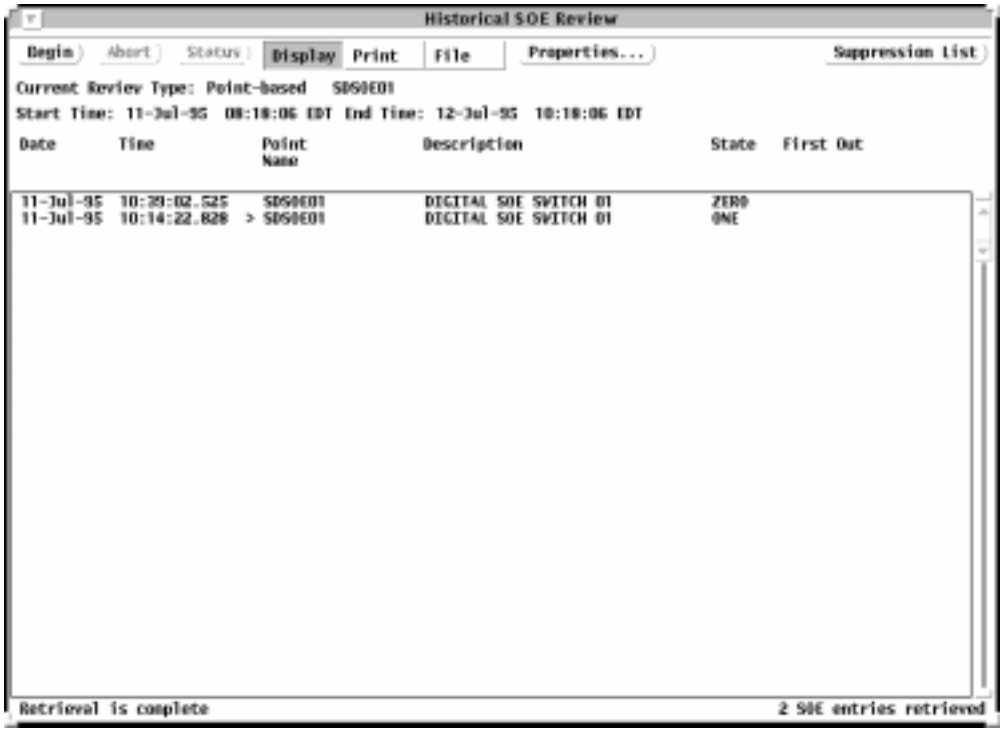


Figure 11-41. Point-Based SOE Review

11-5.9. Printing SOE Reviews

After the SOE Review Properties have been selected, a review request can be sent to the Log Server to be printed.

1. From the **Historical SOE Review** window (refer to Figure 11-27), select **Print** from the option boxes.

2. Select the **Begin** button to start the review process. The following message appears:

   `Sending file to Log Server is in progress`…

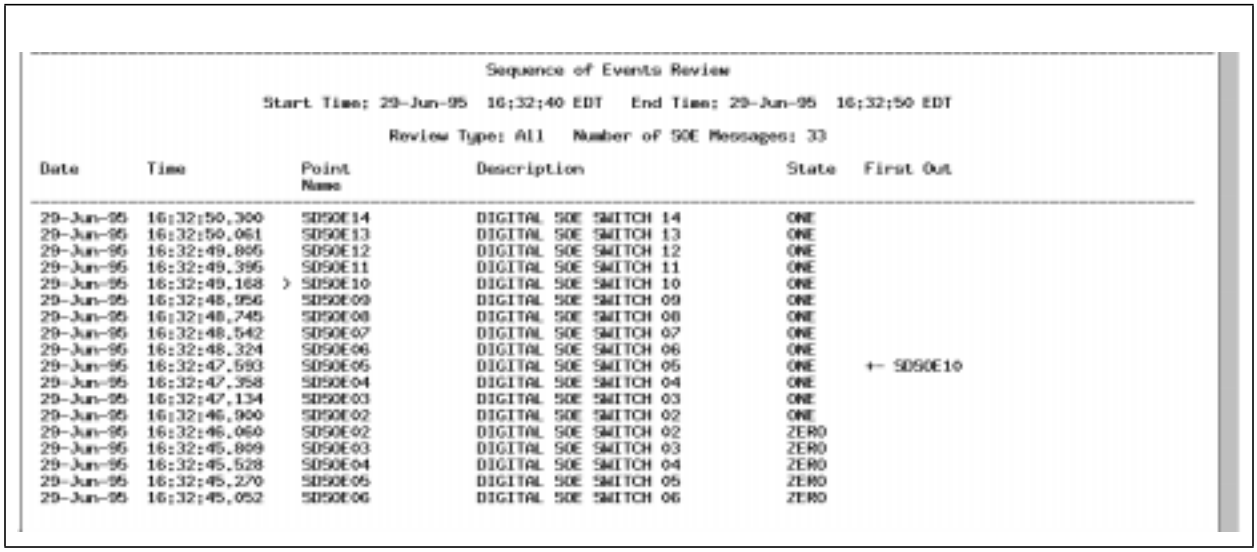
   Note

   To cancel a print in progress, select the **Abort** button.

3. When the review process is completed, this message appears:

   `Sending file to Log Server is complete`

   The review data is then sent to the Log Server to be printed. The format of the printed SOE Review varies slightly from the format displayed in the **Historical SOE Review** window, as shown in Figure 11-42.



Sequence of Events Review

Start Time: 29-Jun-95 16:32:40 EDT End Time: 29-Jun-95 16:32:50 EDT

Review Type: All Number of SOE Messages: 33

Date	Time	Point Name	Description	State	First Out
29-Jun-95	16:32:50.300	SD50E14	DIGITAL SOE SWITCH 14	ONE	
29-Jun-95	16:32:50.061	SD50E13	DIGITAL SOE SWITCH 13	ONE	
29-Jun-95	16:32:49.805	SD50E12	DIGITAL SOE SWITCH 12	ONE	
29-Jun-95	16:32:49.395	SD50E11	DIGITAL SOE SWITCH 11	ONE	
29-Jun-95	16:32:49.168	> SD50E10	DIGITAL SOE SWITCH 10	ONE	
29-Jun-95	16:32:48.956	SD50E09	DIGITAL SOE SWITCH 09	ONE	
29-Jun-95	16:32:48.745	SD50E08	DIGITAL SOE SWITCH 08	ONE	
29-Jun-95	16:32:48.542	SD50E07	DIGITAL SOE SWITCH 07	ONE	
29-Jun-95	16:32:48.324	SD50E06	DIGITAL SOE SWITCH 06	ONE	
29-Jun-95	16:32:47.593	SD50E05	DIGITAL SOE SWITCH 05	ONE	+- SD50E10
29-Jun-95	16:32:47.358	SD50E04	DIGITAL SOE SWITCH 04	ONE	
29-Jun-95	16:32:47.134	SD50E03	DIGITAL SOE SWITCH 03	ONE	
29-Jun-95	16:32:46.900	SD50E02	DIGITAL SOE SWITCH 02	ONE	
29-Jun-95	16:32:46.060	SD50E02	DIGITAL SOE SWITCH 02	ZERO	
29-Jun-95	16:32:45.809	SD50E03	DIGITAL SOE SWITCH 03	ZERO	
29-Jun-95	16:32:45.528	SD50E04	DIGITAL SOE SWITCH 04	ZERO	
29-Jun-95	16:32:45.270	SD50E05	DIGITAL SOE SWITCH 05	ZERO	
29-Jun-95	16:32:45.052	SD50E06	DIGITAL SOE SWITCH 06	ZERO	

Figure 11-42. Printed SOE Review

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11-5.10. Saving SOE Reviews

After the SOE Review Properties have been selected, a review request can be saved to a file.

1. From the **SOE Review** window (refer to Figure 11-27), select **File** from the option boxes.

   Note

   The default filename and directory are configured in the following WDPF Admin Tool settings:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSRUI SOE Review
   Items: Default Directory Name
   Default File Name

   A unique filename must be entered on the **Historical SOE Review: Properties** window, as described in Section 11-5.

2. Select **Begin** to start the file review process. The following message appears:

   `File save is in progress` …

   Note

   To cancel a file save in progress, select the **Abort** button.

3. When the review process is completed, the following message appears:

   `File save is complete`

   The review data is now saved to the specified filename and can be viewed with any text editor. The format of the saved SOE Review is the same as the printed SOE Review, as shown in Figure 11-42.

Section 12. Historical File List User Interface

12-1. Section Overview

The Historical File List user interface (**Historical File List** window) can generate a list of files and subdirectories archived at the HSR. Files within a specific time range are listed. If the HSR that is accessed is in data analysis mode, the latest directory structure is listed, otherwise the current directory structure is listed.

In addition, this window allows the user to view the contents of a file (such as a report generated by the Log Server), copy the file to a local directory, or print the file.

This section provides instructions for using the **Historical File List** window. For background information on the File History function, see Section 3. For information on configuration, see Section 5. The following topics are included:

- Accessing the Historical File List window (Section 12-2).
- Defining File List properties (Section 12-3).
- Performing a Directory/File Search (Section 12-4).
- Displaying historical files (Section 12-5).
- Printing historical files (Section 12-6).
- Copying historical files (Section 12-7).
- Listing of File List messages (Section 12-8).

12-2. Accessing the File List Window

This document assumes the **Historical File List** window is accessed at the Operator WEStation. Use the following procedure to access the **Historical File List** window.

1. Open the **File List** icon.

2. The **Historical File List** window appears, as shown in Figure 12-1. The subdirectories from the current directory structure, and files for the specified time range. Time range has no effect on the subdirectories that are shown, only on files.

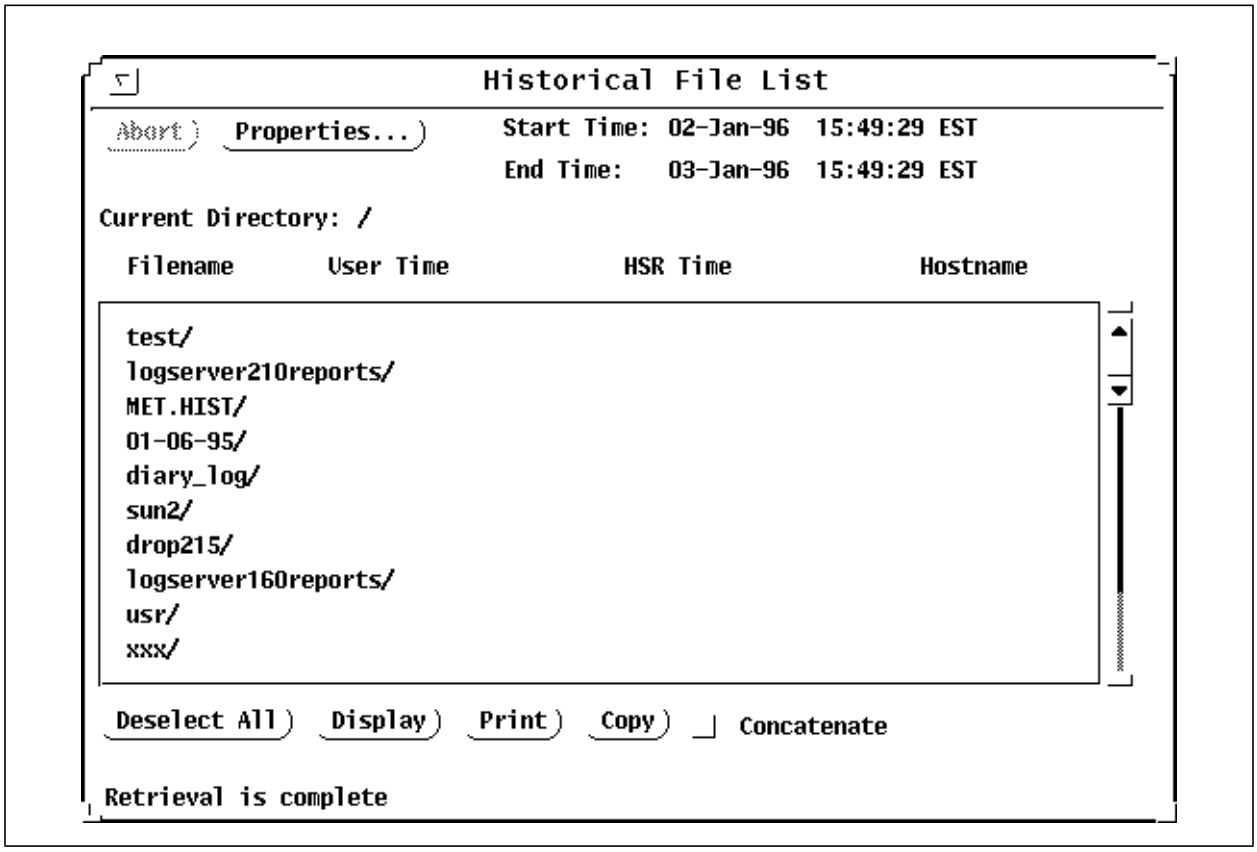

Figure 12-1. Historical File List Window

12-3. File List Properties

The **Historical File List: Properties** window allows the user to specify parameters for the directory/file search.

- File List can display the current directory structure for a collecting HSR, and the latest directory structure for an HSR in data analysis mode. File List can also list all files within a specified time range located in the same directory, as described in Section 12-4.

Use the following procedure to enter file list properties:

1. From the **Historical File List** window, select the **Properties** button. The **Historical File List: Properties** window appears, as shown in Figure 12-2.

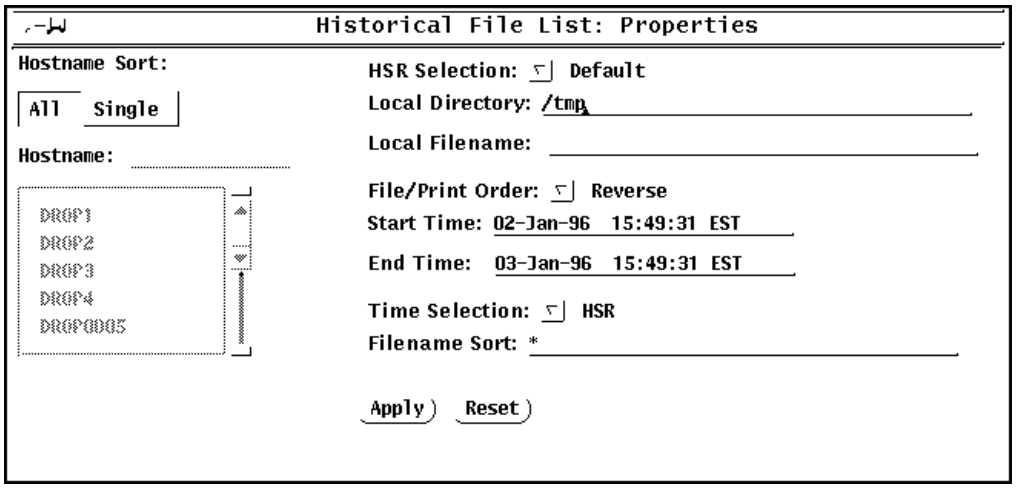

Figure 12-2. Historical File List: Properties Window

Note

Fields that require an alphanumeric entry (such as **Start Time** and **End Time**) can be entered using the drag and drop feature of the keyboard window, or entered with a standard keyboard. For information on using the drag and drop feature, see "Operator WEStation User's Guide" (U0-8100).

The numbers in the gray circles in Figure 12-3 correspond to the numbered Steps (2-11).

2. From the **Hostname Sort** option box, select the host where the files were originated. Select **All** to display files from all hosts.

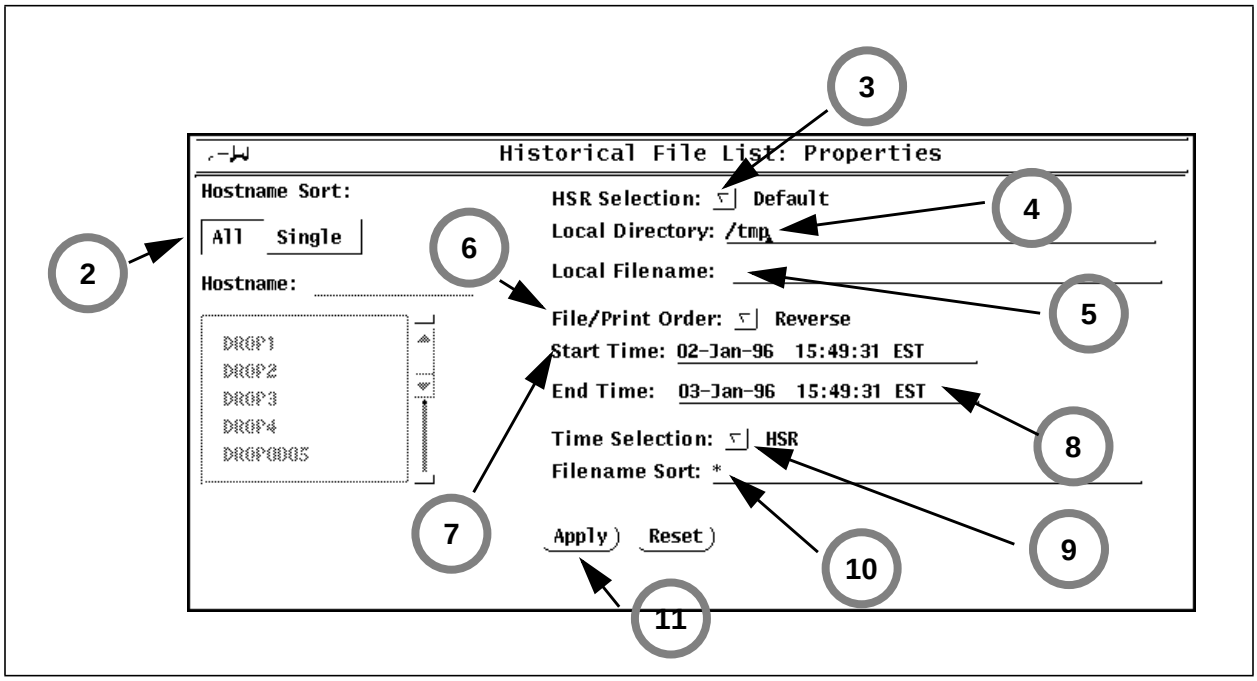

Figure 12-3. Historical File List:Properties Window (Steps 2- 11)

OR

Select **Single** to display files from a specific host. Select a Hostname from the **Hostname** scrolling list. The Hostname now appears in the **Hostname** field.

3. Pull down the **HSR Selection** menu. Select the HSR from which to extract the historical information.

4. Enter the directory name in the **Local Directory** field. This field is used only when copying files from the HSR to the machine running the File List UI.

Note

The default directory is configured in the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSRUI File List Review
Items: Default Directory Name

5. Enter the filename in the **Local Filename** field. This field is used only when copying from the HSR to the machine running the File List UI. If a filename is not entered, the file is copied to the name of the first file selected in the **Historical File List** scrolling list.

Note

For information on copying files, see Section 12-7.

6. Pull down the **File/Print Order** menu and select the desired method.

7. Enter the start time of the file search in the **Start Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   - The **Start Time** field defines the beginning of the time range.

8. Enter the end time of the file search in the **End Time** field using the following format:

   DD-MMM-YY hh:mm:ss

   The end time defines the end of the time range.

Notes

The end time must be later than the start time. The default end time is the current operating system time.

The **Start Time** field, **End Time** field, and **Time Selection** choice are not applicable for directories.

9. Pull down the **Time Selection** menu.

   - **HSR** performs a file search by the HSR system time.
   - **User** performs a file search by user entered time. The user time is the time specified by the user when the file is saved to the HSR.

10. Enter the name of the file for the search. The filename may contain the wildcard character "*****". The default filename is "*****" meaning search for all files.

11. Select the **Apply** button. The list of files and subdirectories is updated on the **Historical File List** window according to the selected parameters.

Note

To clear the current properties, select the **Reset** button.

12-4. Performing a Directory/File Search

The **Historical File List** window allows the user to display a list of HSR subdirectories and files located on the originating host(s).

Use one of the following procedures to display subdirectories and files in the **Historical File List** window:

- Select the **Properties** button on the **Historical File List** window (shown in Figure 12-1) and use the **Historical File List**: **Properties** window.

  OR

- Double clicking the left mouse button on one of the directories already listed in the **Historical File List** window.

12-4.1. Search Using the Properties Window

1. Select the **Properties** button on the **Historical File List** window and the **Properties** window will appear as shown in Figure 12-4.
2. Enter the desired parameters as described in Section 12-3.
3. Select the **Apply** button on the **Properties** window.

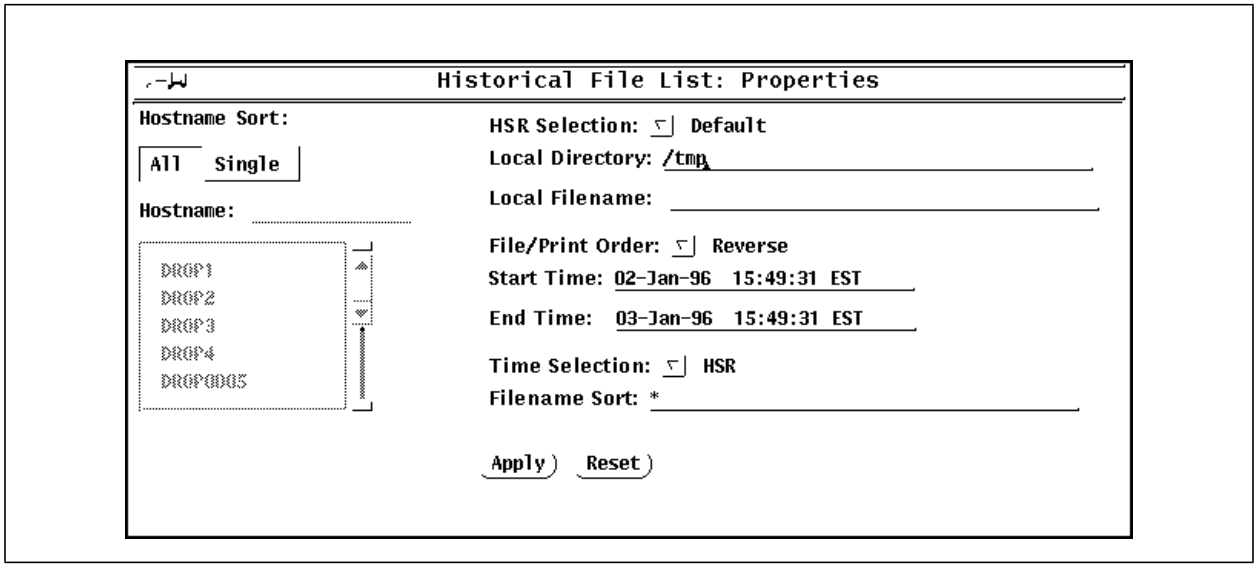

Figure 12-4. Historical File List: Properties Window

12-4.2. Search by Double Clicking a Directory

1. Double click the left mouse button on one of the directories already listed in the **Historical File List** window.

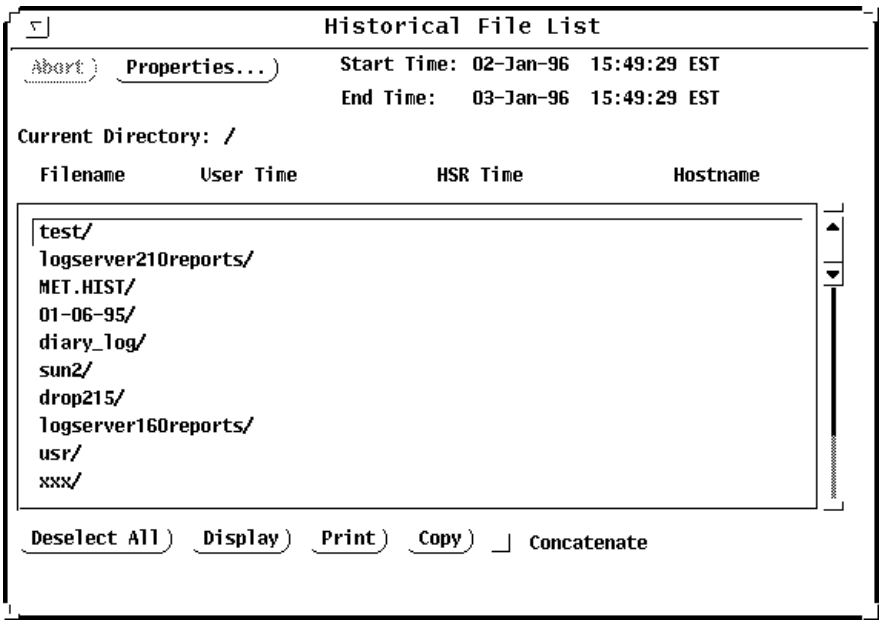

Figure 12-5. Historical File List Window Search

Note

To return to the root directory double click on the first entry ("**.**"). To return to the parent directory double click on the second entry ("**..**"). These entries do not exist when the current directory is the root directory ("/").

The search is performed immediately on the current directory. During the search, the scrolling list is not displayed.

When the search is complete, the **File List** scrolling list will appear. Subdirectories that exist are displayed first in the scrolling list. This is followed by a list of all of the files created within the range specified using the **Start Time** and **End Time** fields in the **Properties** window (see Figure 12-6).

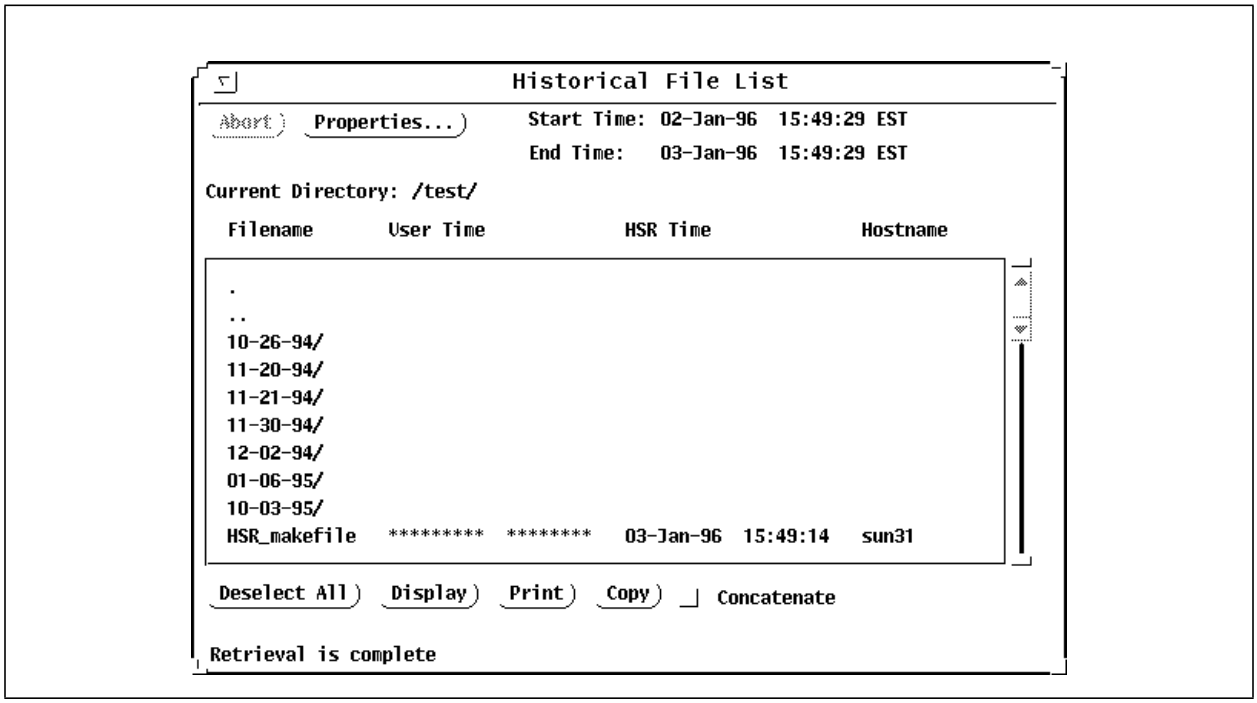

Figure 12-6. Historical File List Window Search (Complete)

Note

The **Historical File List** window displays both the user time and the HSR time of the file. However, if no user time was entered, asterisks appear in the **User Time** field.

2. Use the **Deselect All** button to deselect all files or directories that are currently selected in the scrolling list.

   - To display the contents of a file, see Section 12-5.
   - To print a file, see Section 12-6.
   - To copy a file to the local directory, see Section 12-7.

12-5. Displaying a File

From the **Historical File List: File Display** window, the user can view the contents of a file.

Use the following procedure to access the **Historical File List: File Display** window:

1. From the **Historical File List** window, select the desired file name in the **File Name** scrolling list (shown in Figure 12-7) using the left button on the mouse. Next, select the **Display** button.

   OR

   Using the left mouse button, double click on the file name in the scrolling list (shown in Figure 12-7).

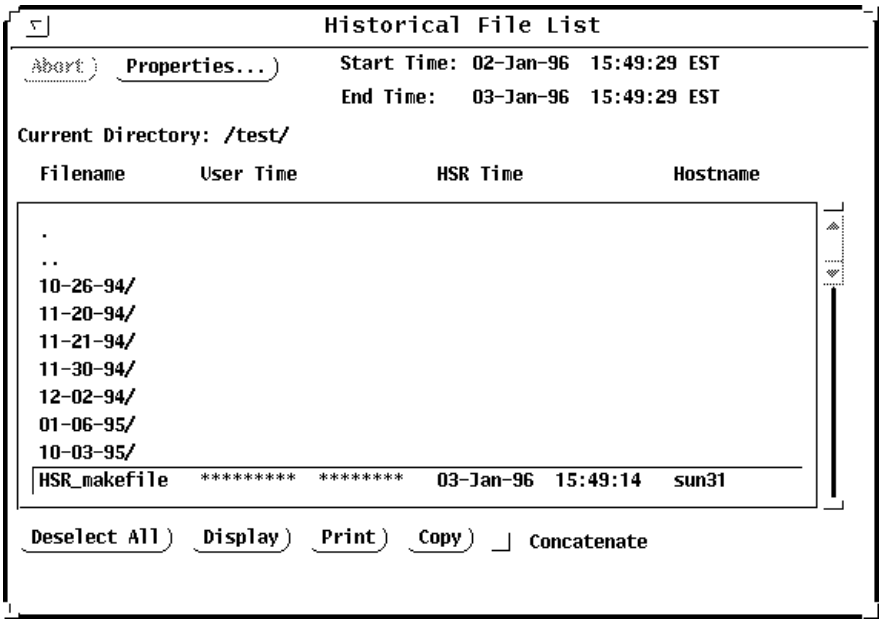

Figure 12-7. Selecting a File for Display

The **Historical File List: File Display** window appears, as shown in Figure 12-8.

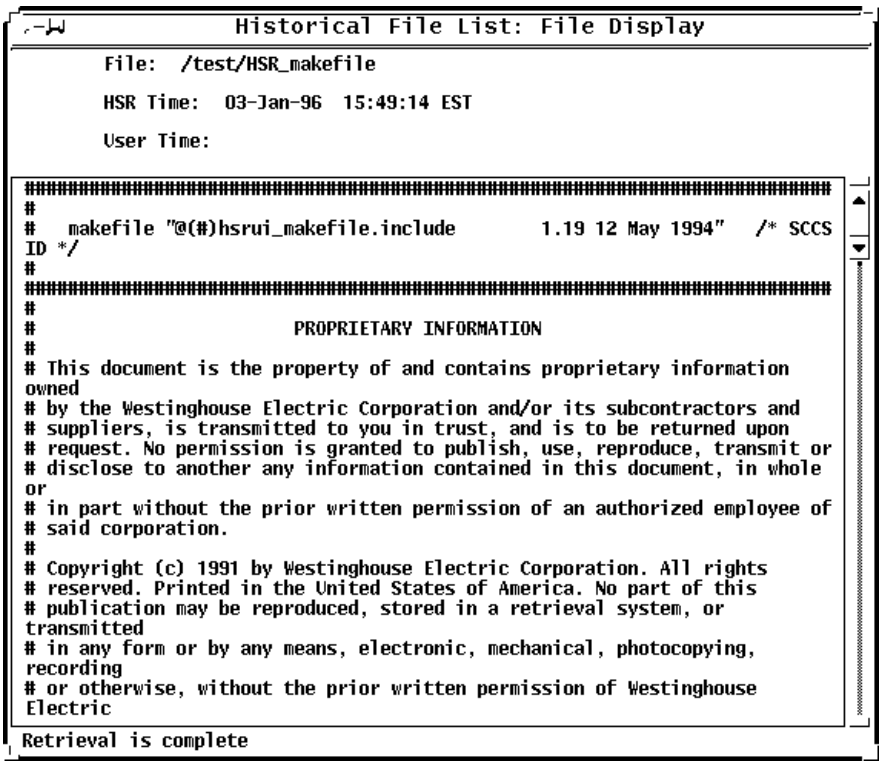

Figure 12-8. Historical File List: File Display Window

2. The **Historical File List: File Display** window is a typical view only window. Use the scroll bars to view the file.

3. Quit the window when finished.

Note

Directories cannot be selected and displayed. Multiple files can be selected and displayed in the same window when the **Concatenate** check box in the **Historical File List** window is also selected.

12-6. Printing a File

From the **Historical File List** window, the user can select one file (or mulitple files) to print. The **Concatenate** check box allows the user to print multiple files at the Log Server. Select this box if multiple files are highlighted. Use the following procedure to send files to the Log Server for printing.

1. From the **Historical File List** window, highlight the desired file name in the **Filename** scrolling list, as shown in Figure 12-9.

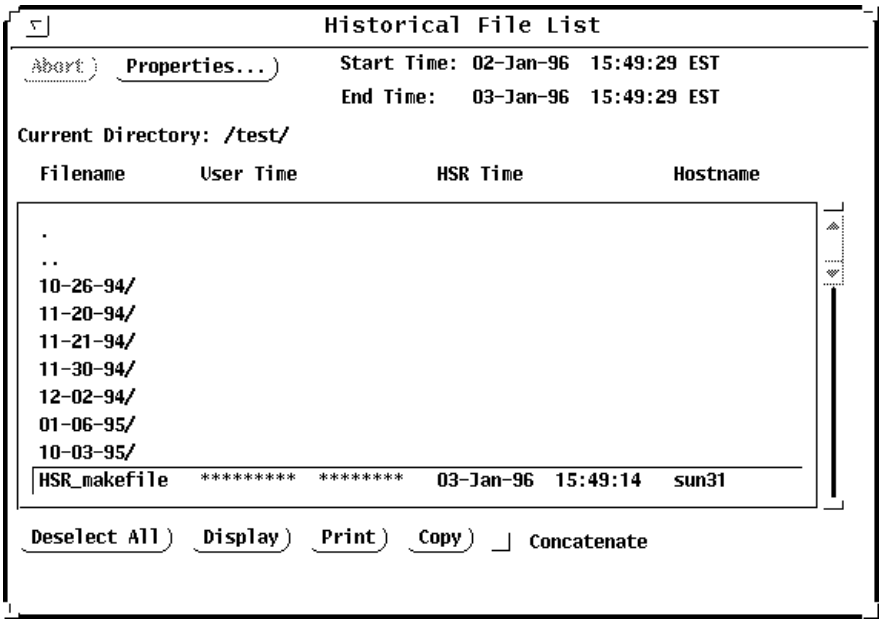

Figure 12-9. Selecting a File for Print

2. Select the **Print** button to send the files to the Log Server. The following message appears:

   `Print is in progress ...`

   followed by:

   `Sending file to log server is in progress ...`

   Note

   To cancel a print in progress, select the **Abort** button.

3. When the print process is completed, note that the following message will appear:

   `Sending file to log server is complete.`

12-7. Copying Files

From the **Historical File List** window, the user can copy one file (or mulitple files) to a local filename and directory. Before copying files, be sure to specify a local directory and local filename on the **Historical File List: Properties** window, as described in Section 12-3.

The **Concatenate** check box allows the user to copy the selected files into the specified file name. Select this box if multiple files are highlighted. If no name is specified in the **Local Filename** field on the **Properties** window, the local filename will be the same as the first highlighted file.

Use the following procedure to copy files:

1. From the **Historical File List** window, highlight the desired filename(s) in the **Filename** scrolling list (as shown in Figure 12-10), using the left mouse button.

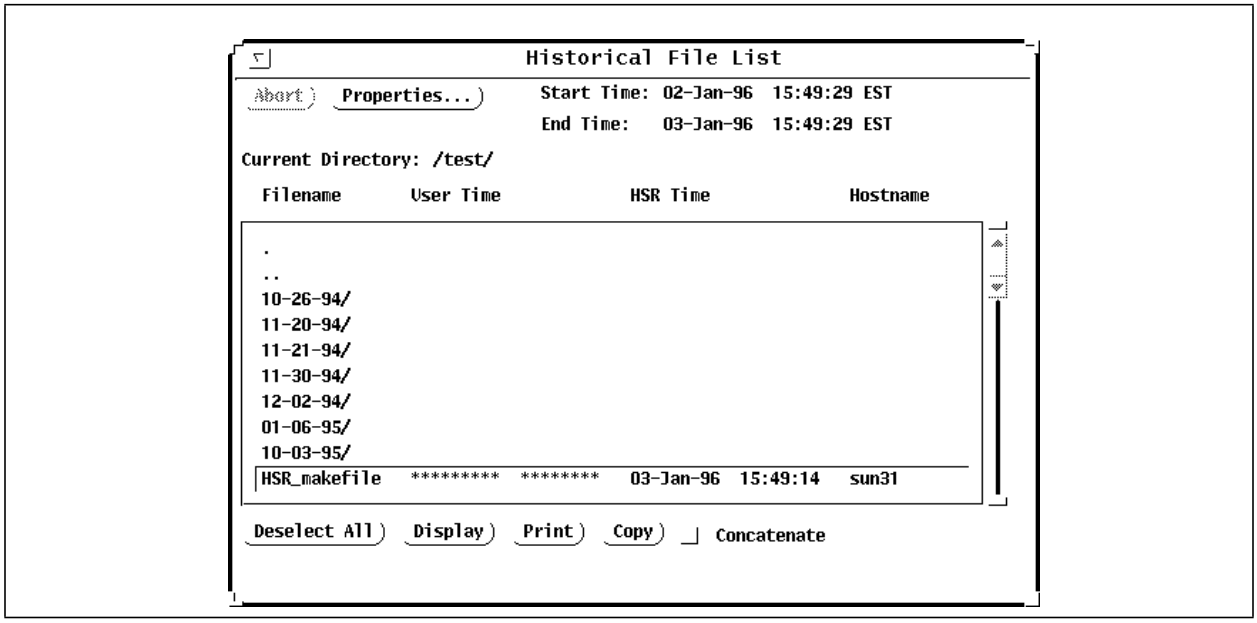

Figure 12-10. Selecting a File for Copy

2. Select the **Copy** button. The following message appears:

   `File copy is in progress ...`

   Note

   To cancel a copy in progress, select the **Abort** button.

3. When the process is completed, note that the following message will appear:

   `File copy is complete.`

   The file is saved to the specified filename and can be viewed with any text editor.

12-8. File List Window Messages

Some messages that may appear when using the **Historical File List** window are shown in Table 12-1. (These messages appear in the bottom left corner of the applicable **Historical File List** window.

Table 12-1. File List Messages

Message	Description
Communication error (socket) with HSR file subsystem.	An invalid path may have been specified. Also, the physical connection (wiring) may have been severed.
Illegal Hostname.	The Hostname entered in the File List Properties window is not applicable to the File History function.
Invalid parameter.	Check the configuration file.
Multiple directories/files selected	Directory is not a valid selection.
No file(s) selected for Display/ Print/Copy.	No files were highlighted in the File List scrolling window.
No subdirectories found.	When performing a directory search, no subdirectories were found under the specified directory.
Unable to connect to the server with HSR file subsystem.	An invalid path may have been specified. Also, the physical connection (wiring) may have been severed.

Section 13. HSR Engineering Tools

13-1. Section Overview

There are three tools that interface to the HSR to support engineering type activities. These tools are listed below:

- The **Point Information Editor User Interface** (see Section 13-2) allows a user to add and delete points on-line, change deadband and trip information, and provide helpful statistical information as to a point's activity level.
- The **Data Analysis Manager** (see Section 13-3) is an interface into periodic retrieval of point data. This package is similar to **Historical Trend** but utilizes a third party package (P-STAT) to give greater retrieval post-processing.
- The **Laboratory Data User Interface** (see Section 13-4) is a gateway to populating the **Laboratory History Subsystem** (see Section 3) with points and their corresponding times, values, and statuses.

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13-2. Point Information Editor User Interface

The Point Information Editor User Interface can add, delete and modify collection information for points contained in Main, Long Term, or Event History Subsystems. This tool will also display useful statistical information for adjusting point collection criteria.

13-2.1. Accessing the Point Information Editor

This document assumes the Point Information Editor is accessed through an SDS menu. Use the following procedure to access the Point Information Editor:

1. Open the SDS Level IV menu (Log on if not already logged-on).
2. From the **Top Level Menu**, select **Drop Functions.**
3. Select **HSR Station**.
4. Select **Point Information Edit**.

The Point Information Editor User Interface appears, as shown in Figure 13-1. At this point, a connection is being established between this User Interface (U I) and the HSR. While the connection is being created, the message in footer of Figure 13-1 will appear.

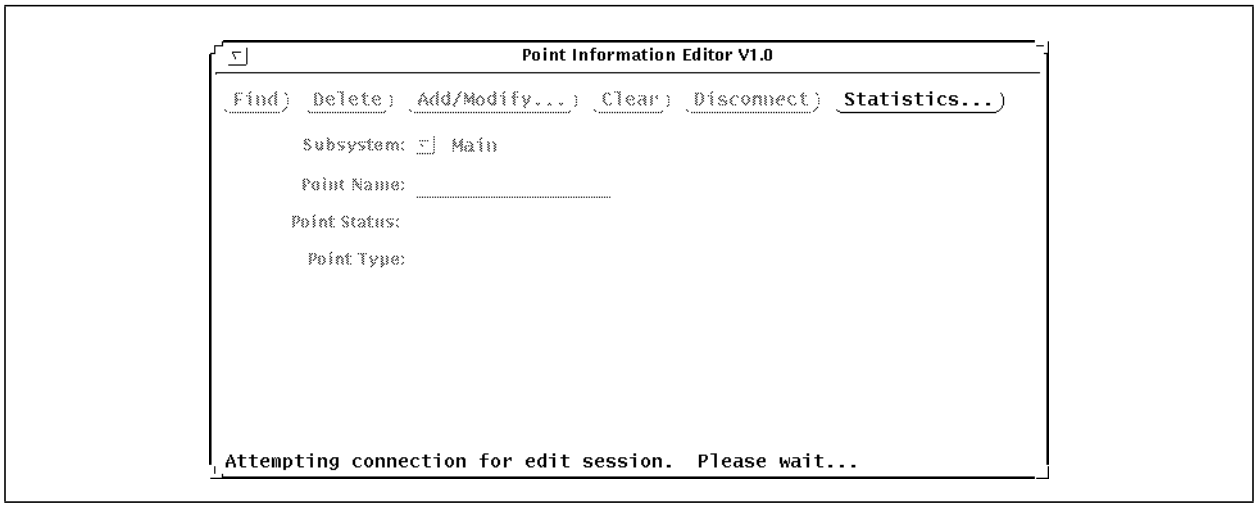

Figure 13-1. Point Information Editor User Interface

Figure 13-2 shows the result when the connection is successful.

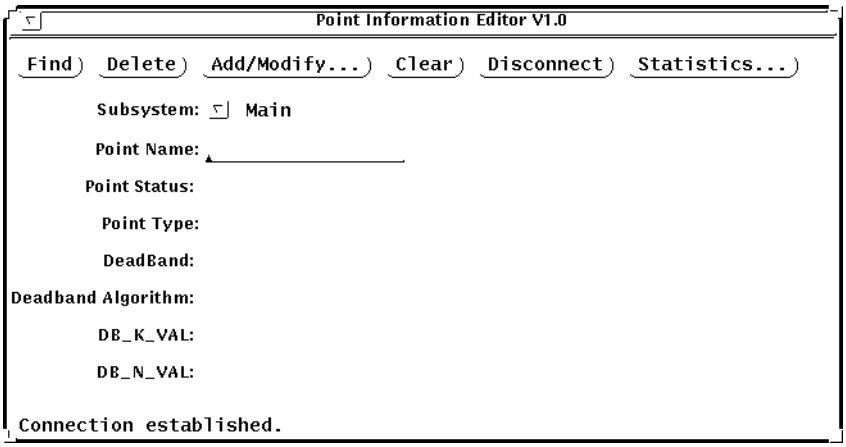

Figure 13-2. Point Information Editor User Interface (Connection Established)

13-2.2. Using the Point Information Editor

Finding a Point

To find a point that is currently being collected:

1. Access the **Point Information Editor** window.
2. Pull down the **Subsystem** menu (as shown in Figure 13-3) and choose the subsystem where the point is to be found.

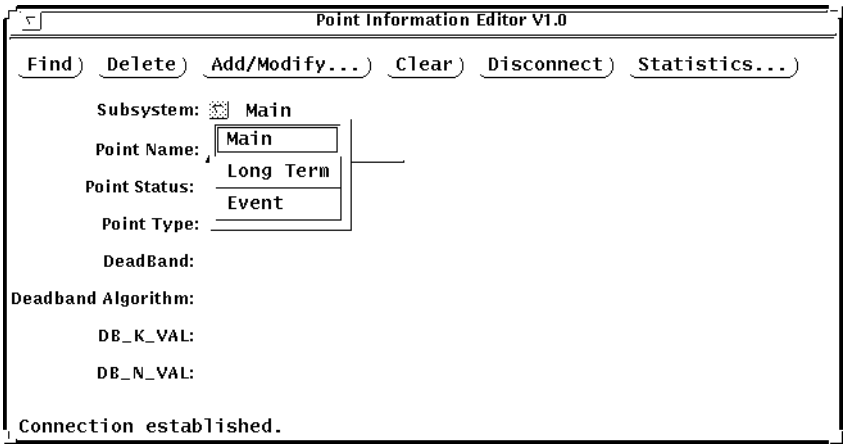

Figure 13-3. Point Information Editor User Interface (Subsystem Menu)

3. Enter the point name in the **Point Name** entry field**.**

4. Select the **Find** button.

   If the point is collected by the subsystem specified, the necessary information will be retrieved and displayed, as shown in Figure 13-4.

   If the point is not found in the specified subsystem, then select one of the other subsystems and try the request again.

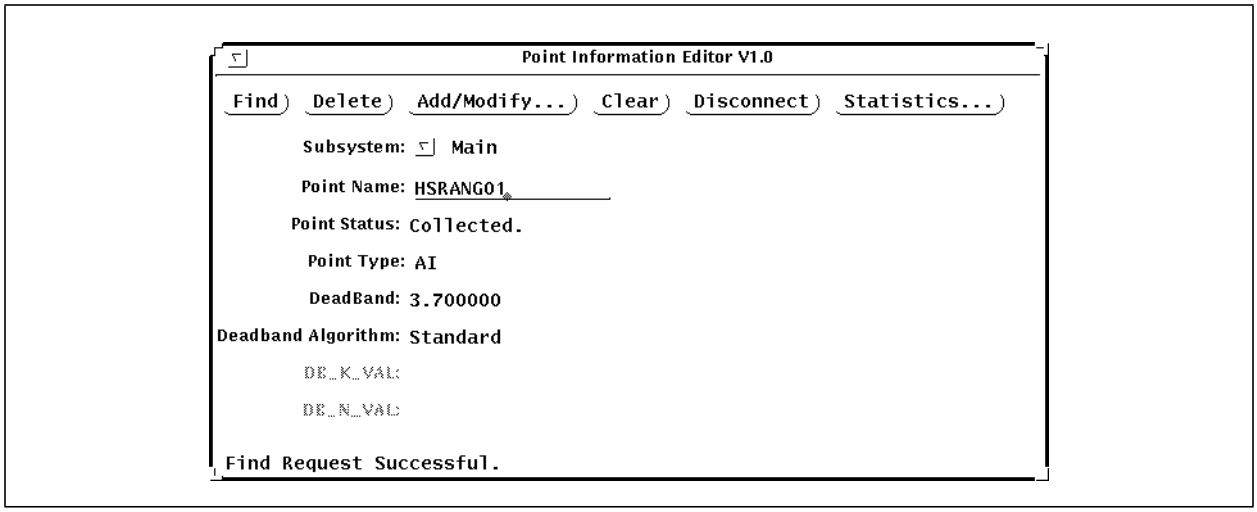

Figure 13-4. Point Information Editor User Interface (Find Request)

Deleting a Point

To delete a point:

1. Follow the **Finding a Point** procedure to locate the point that is to be deleted.

2. Select the **Delete** button. There will be a confirmation on the deletion of the point**.**

Modifying a Point

To modify a points collection criteria:

1. Follow the **Finding a Point** procedure to locate the point that is to be modified.
2. Select the **Add/Modify** button. A pop-up window appears as shown in Figure 13-5**.**

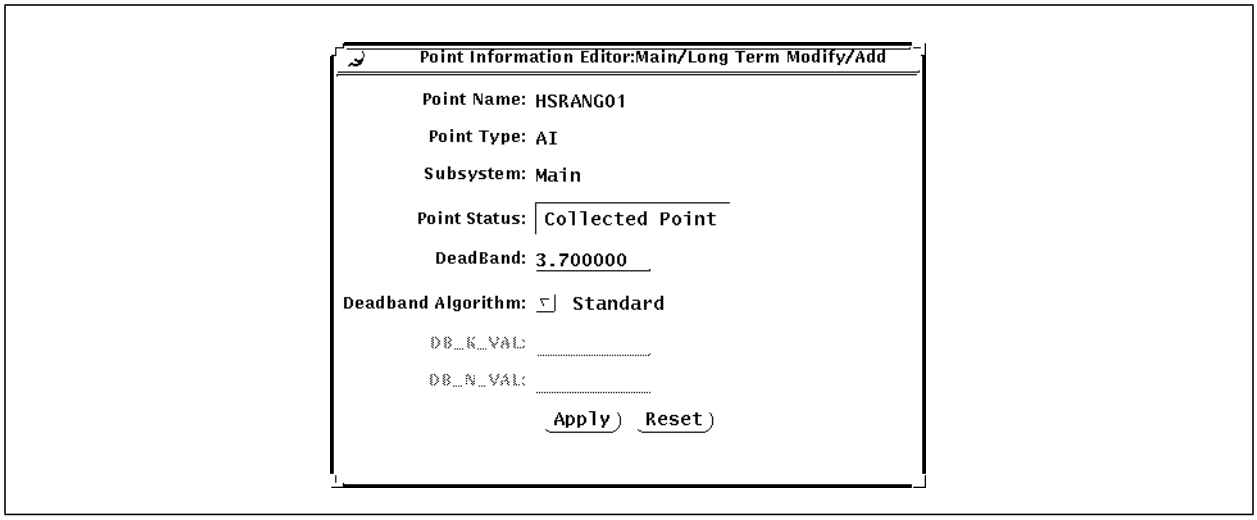

Figure 13-5. Point Information Editor User Interface (Add/Modify)

3. Pull down the **Deadband Algorithm** menu. Choose the desired algorithm from the list of supported deadband processing algorithms that are displayed (as shown in Figure 13-6.)

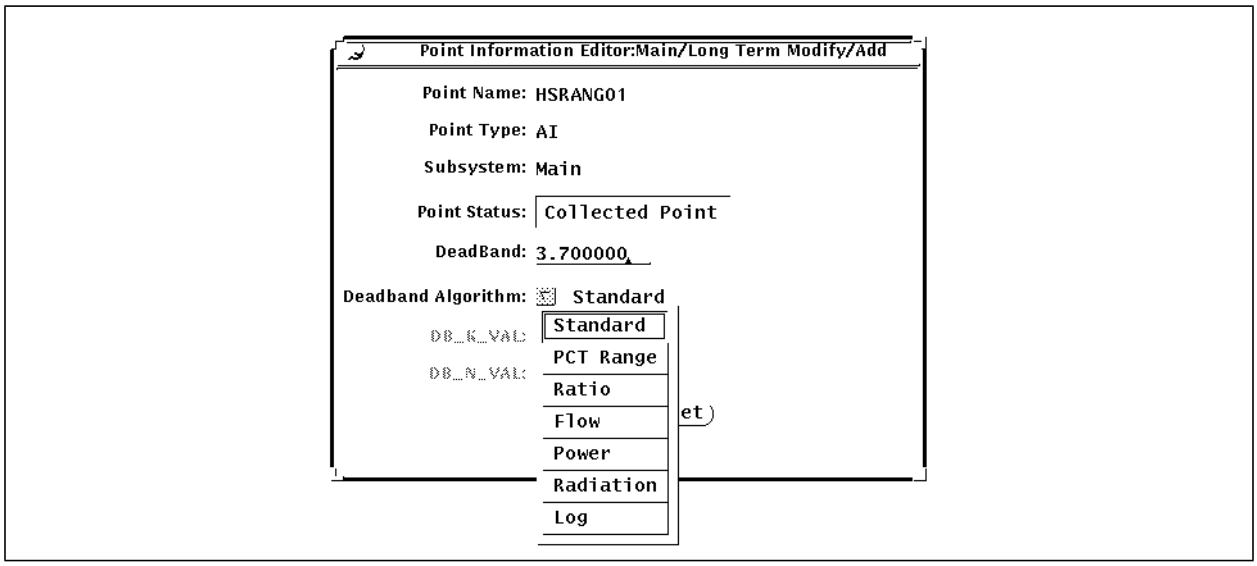

Figure 13-6. Point Information Editor User Interface (Deadband Algorithm)

4. Based on the deadband algorithm chosen, the DB_N_VAL and DB_K_VAL entries may become active and require information to be placed in them. For more information pertaining to deadband functionality, refer to Section 6.

Clearing a Point

To clear the information of a point currently being displayed, select the **Clear** button.

Disconnecting a Session

To disconnect an active session, press the **Disconnect** button. Remember that only one session can be active or connected at any one time. This prevents two or more users from changing collection criteria at the same time.

When a session has been disconnected, the user interface will appear as shown in Figure 13-7.

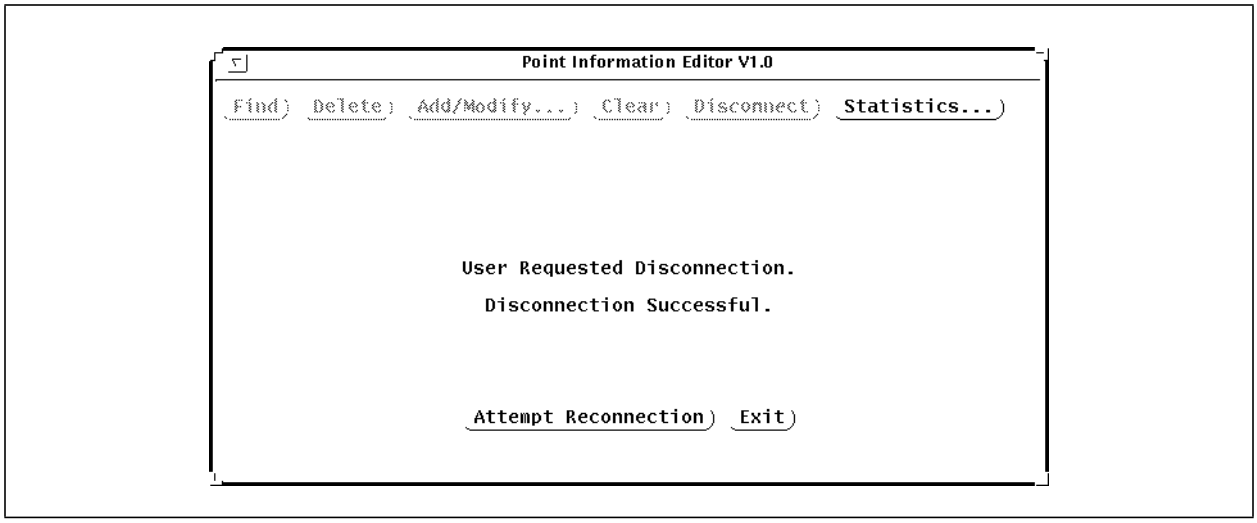

Figure 13-7. Point Information Editor User Interface (Disconnect)

Note

A disconnection will occur after a timeout has expired. The user interface will detect inactivity after five minutes and disconnect the session.

If a session has been disconnected, it can be re-established by pressing the **Attempt Reconnection** button shown in Figure 13-7.

13-2.3. Using Point Information Editor Statistics

The Statistics User Interface is invoked through the **Statistics** button on the Point Information Editor User Interface (as shown in Figure 13-7). It can provide statistical information on point collection frequency. This information, used in conjunction with the Add/Modify feature of the Point Information Editor, can be an extremely valuable tool in fine tuning the deadband criteria of currently collected points and adding new necessary points.

When the **Statistics** button is pressed on the Point Information Editor, the **Main/Long Term Statistics** screen is displayed (as shown in Figure 13-8).

Note

Statistics cannot be obtained for Event History because Event History collects EVERY 0.1 (one-tenth) second and does **NOT** collect by exception (deadband).

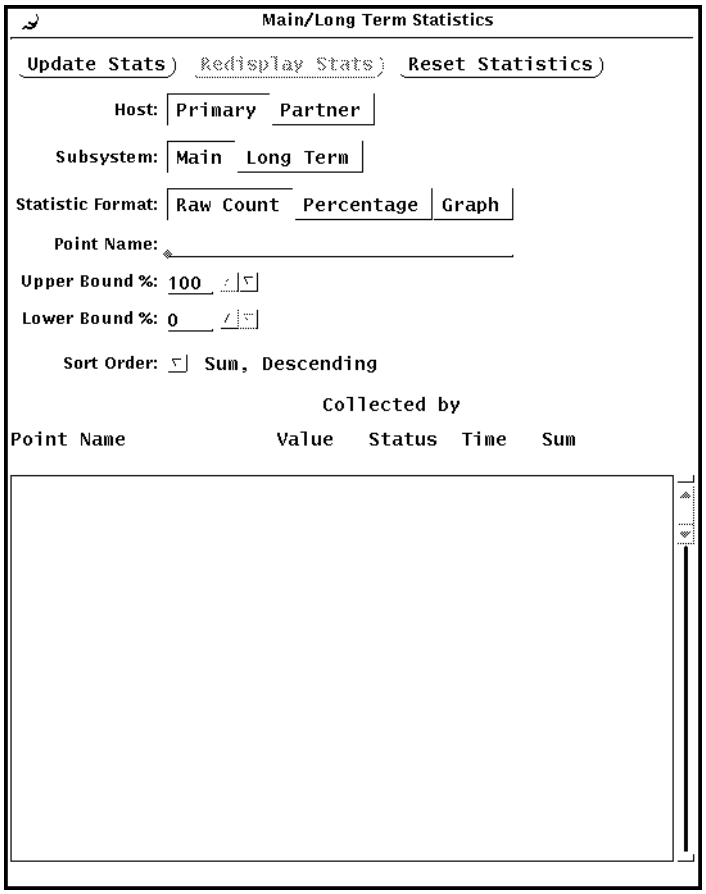

Figure 13-8. Main/Long Term Statistics

A description of the buttons and entry fields are shown in Table 13-1.

Examples of different statistic formats are shown in Figure 13-9 through Figure 13-12

Table 13-1. Main/Long Term Statistics description

Item	Description
Update Stats	This takes the current filtering criteria, issues a request to the HSR, and displays the results.
Redisplay Stats	This takes new filtering options and re-displays the current request. The pressing of this button DOES NOT re-issue a request for statistics to the HSR; it simply re-displays the last query results in a different manner. As an example, this button would be used if the Sort Order was changed.
Reset Statistics	This button resets the counters used to display collection frequencies. When the Main or Long Term History subsystems are restarted, the collection counters for all points collected by these subsystems are reset to 0. This button accomplishes the same thing. A good use of this button would be to reset the counters for some known time (for example, midnight). Then it is easier for the user to determine how many samples have been stored since that time.
Host	In a redundant configuration, this button allows the user to talk to either HSR.
Subsystem	This lets the user choose the subsystem for statistics. The UI **cannot** show points from both Main and Long Term History subsystems at the same time.
Statistic Format	• **Raw Count** displays raw numbers in canvas (see Figure 13-9). • **Percentage** displays the collection percentage (see Figure 13-10). • **Graph** displays a color graph of the collection rate (see Figure 13-11).
Point Name	This can be used as a filter for point names. This entry field recognizes regular expressions (such as D*). Figure 13-12 shows this field used with "**DRO***"; this shows all points collected by Main that begin with "DRO".
Upper Bound	This filters out all points whose collection rate is above this percentage.
Lower Bound	This filters out all points whose collection rate is below this percentage.
Sort Order	This displays data sorted either by point name or by collection rate.

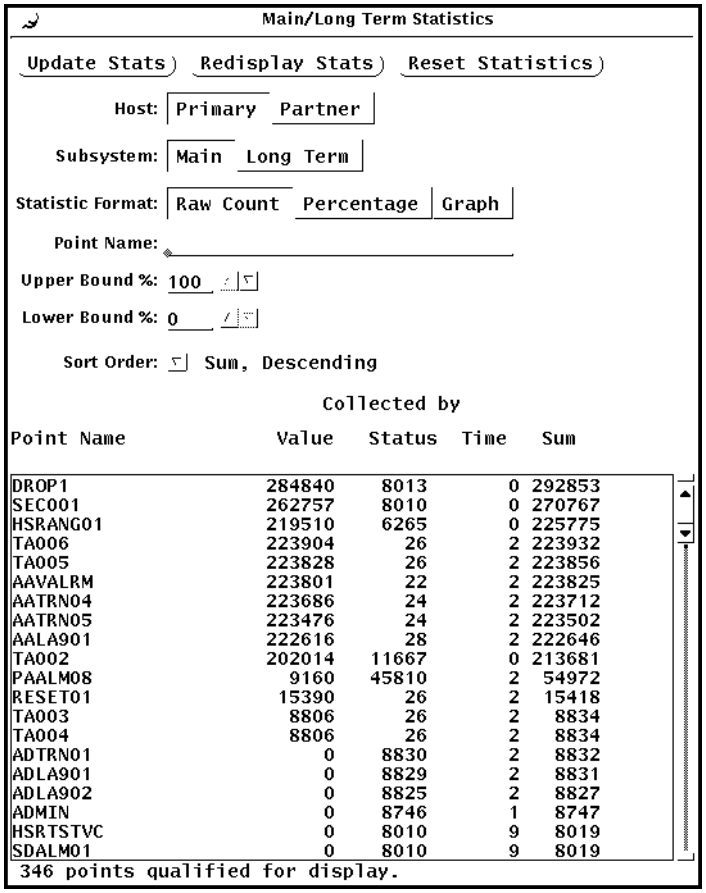

Figure 13-9. Main/Long Term Statistics (Raw Count Example)

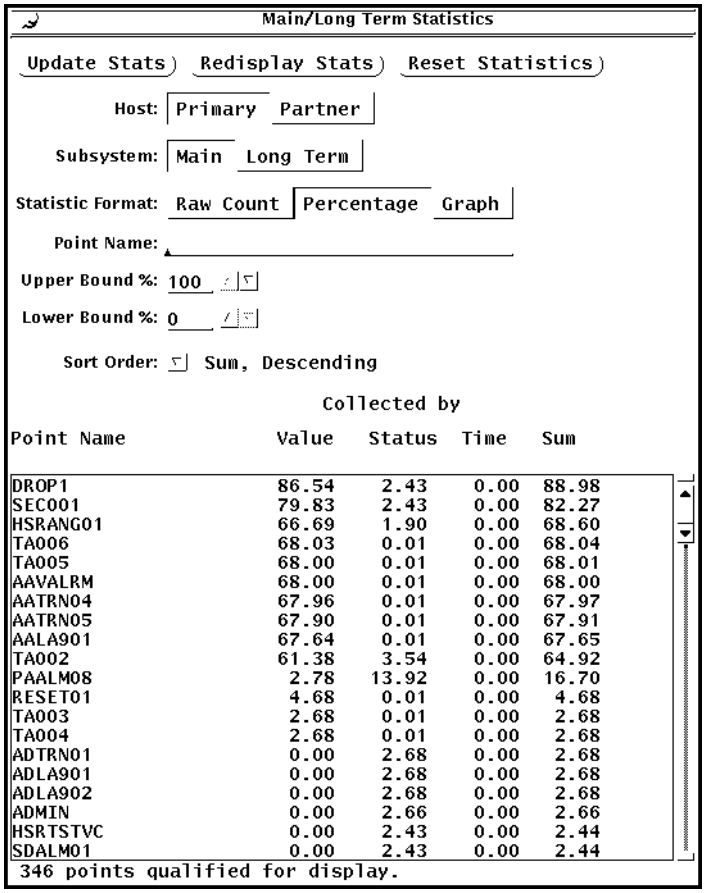

Figure 13-10. Main/Long Term Statistics (Percentage Example)

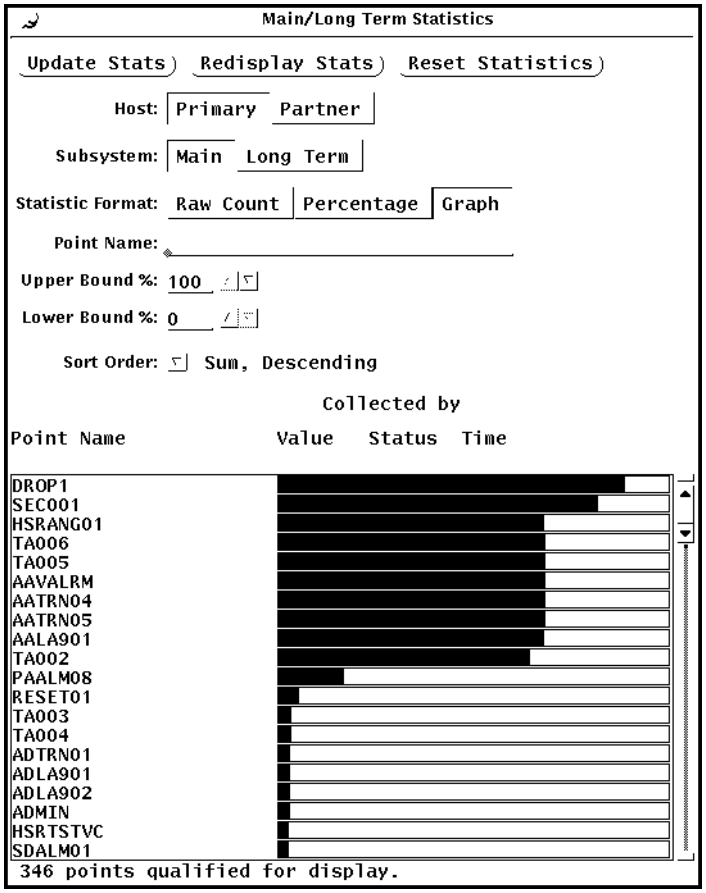

Figure 13-11. Main/Long Term Statistics (Graph Example)

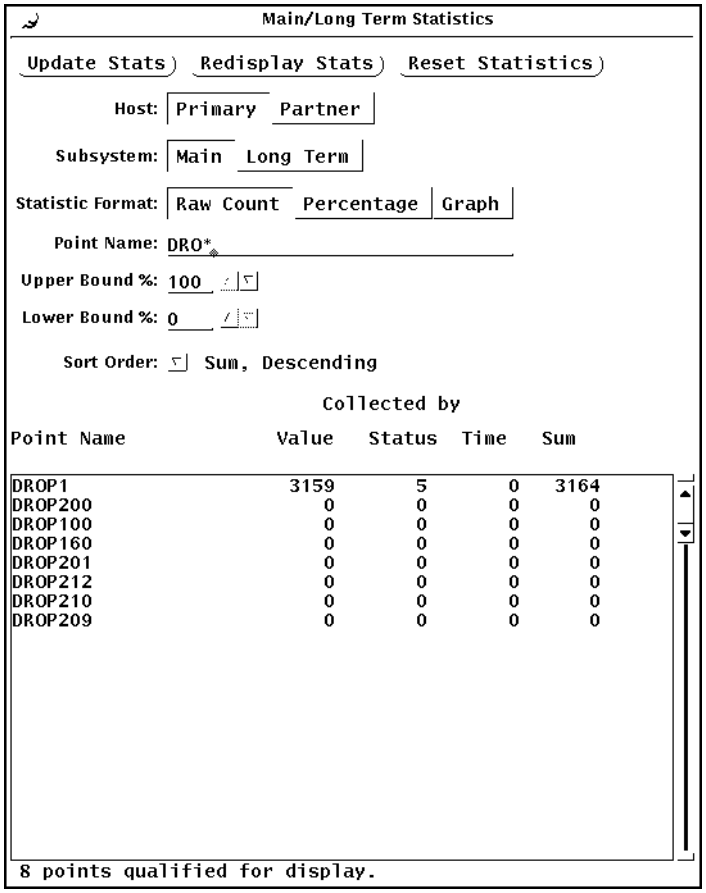

Figure 13-12. Main/Long Term Statistics (Point Name Example)

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13-3. Data Analysis Manager

The Data Analysis Manager is used to retrieve periodic point data from the HSR. It then utilizes the third party P-STAT™ software package to do post processing on the retrieved data to allow for more sophisticated statistical analysis. The Data Analysis Manager uses the same retrieval call to the HSR as Historical Trend (refer to Section 9-4); this is also the HSR retrieval library call **HSR_get_periodic_data**,(described in Section 14).

Note

The use of the Data Analysis Manager **REQUIRES** the purchasing and installation of a software license from P-STAT.

13-3.1. Data Analysis Initialization

Use the following procedure to initialize the Data Analysis Manager:

1. Access the Data Analysis Manager from the SDS Level IV menu. The user interface will appear similar to Figure 13-13. This user interface is driven by using groups to retrieve data.

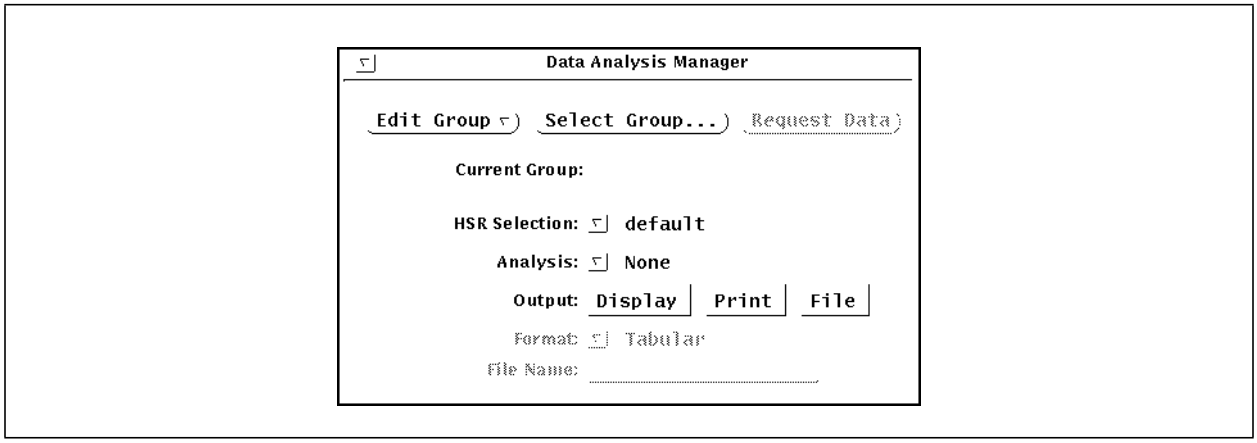

Figure 13-13. Data Analysis Manager

2. Pull down the **Edit Group** menu to display group manipulation functions as shown in Figure 13-14.

3. Perform one of the following functions:

   - Generate a new group of point names (with or without a template) by selecting **build new** from the **Edit Group** menu.
   - Modify existing groups by selecting **modify existing** from the **Edit Group** menu.
   - Delete groups by selecting **delete** from the **Edit Group** menu.

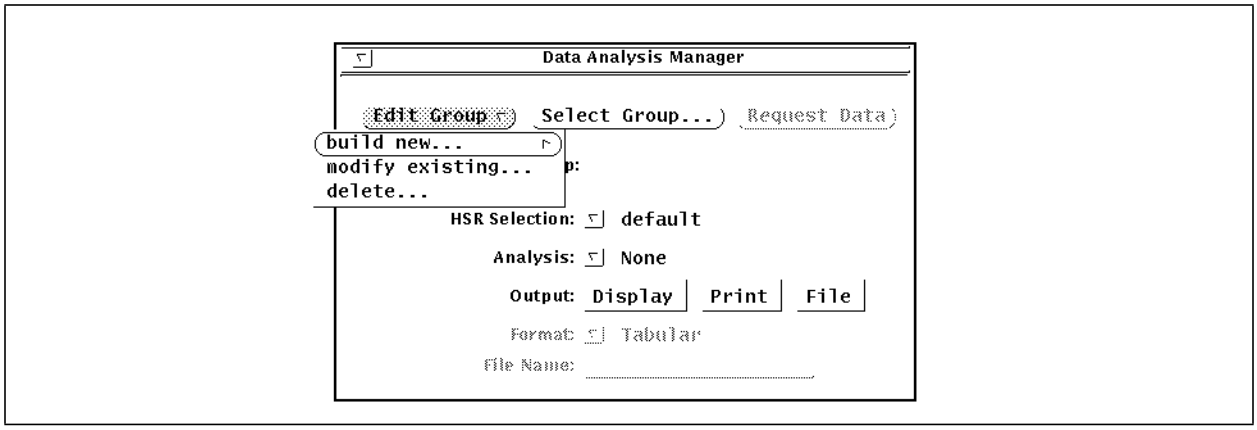

Figure 13-14. Data Analysis Manager: Edit Menu

4. After a group or groups have been created or modified to the user's satisfaction, retrieve the data (described in Section 13-3.2).

13-3.2. Retrieving Data

Use the following procedure to retrieve data:

1. Access the **Data Analysis Manager** window (described in Section 13-3.1).
2. Press the **Select Group** button to create a pop-up window as shown in the example in Figure 13-15.

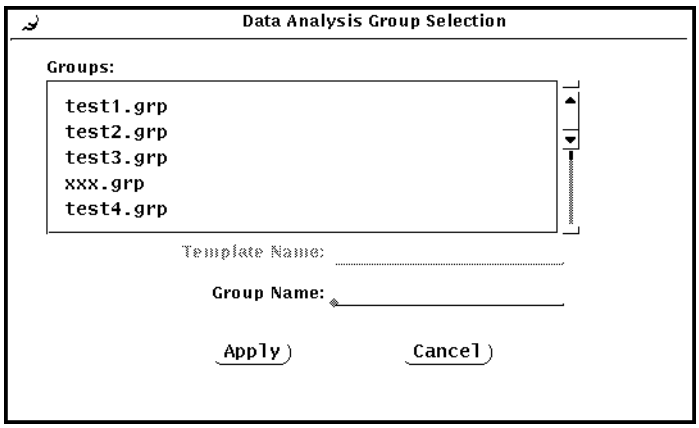

Figure 13-15. Data Analysis Manager: Select Group

3. Select a group to be used to issue the retrieval request.
4. After the group is selected, the Data Analysis Manager UI will appear as shown in Figure 13-16. Notice that the **Current Group** under the buttons has been selected as **`test1.grp`**, and the **Edit Group** and **Select Group** buttons are now inactive. The **Request Data** button is active and ready to issue the request.

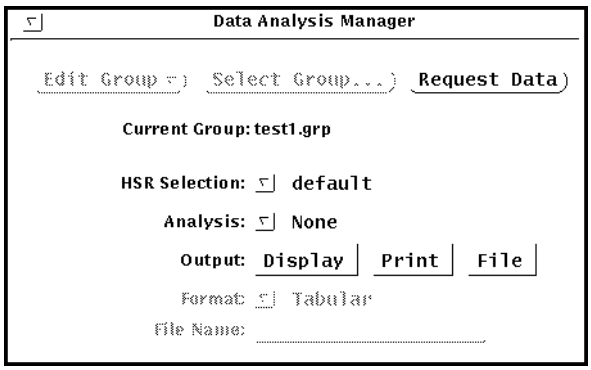

Figure 13-16. Data Analysis Manager: Group Selected

5. Figure 13-17 shows the **Analysis** pull down menu has **None** and **P-STAT** as its choices. Choose **None** to perform **no** post processing through P-STAT (see Figure 13-19). Choosing this option is very similar to a Historical Tabular Trend (refer to Section 9-11).

   OR

   Choose P-STAT to perform statistical analysis (see Figure 13-20).

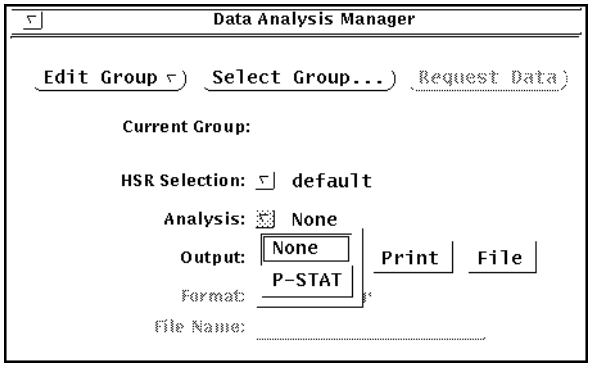

Figure 13-17. Data Analysis Manager: Analysis Menu

6. Ensure that the HSR selection, Analysis, and Output parameters are set correctly.

7. Press the **Request Data** button. While the data is being retrieved, a window similar to Figure 13-18 will appear.

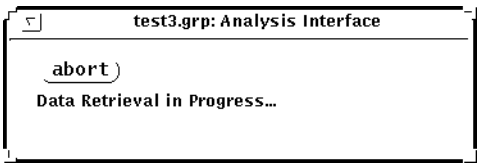

Figure 13-18. Data Analysis Manager: Request Data

8. Following the successful retrieval of the data, another screen will be generated with the results. Refer to Figure 13-19 for an example of retrieval results when the **Analysis** parameter is set to **None.**

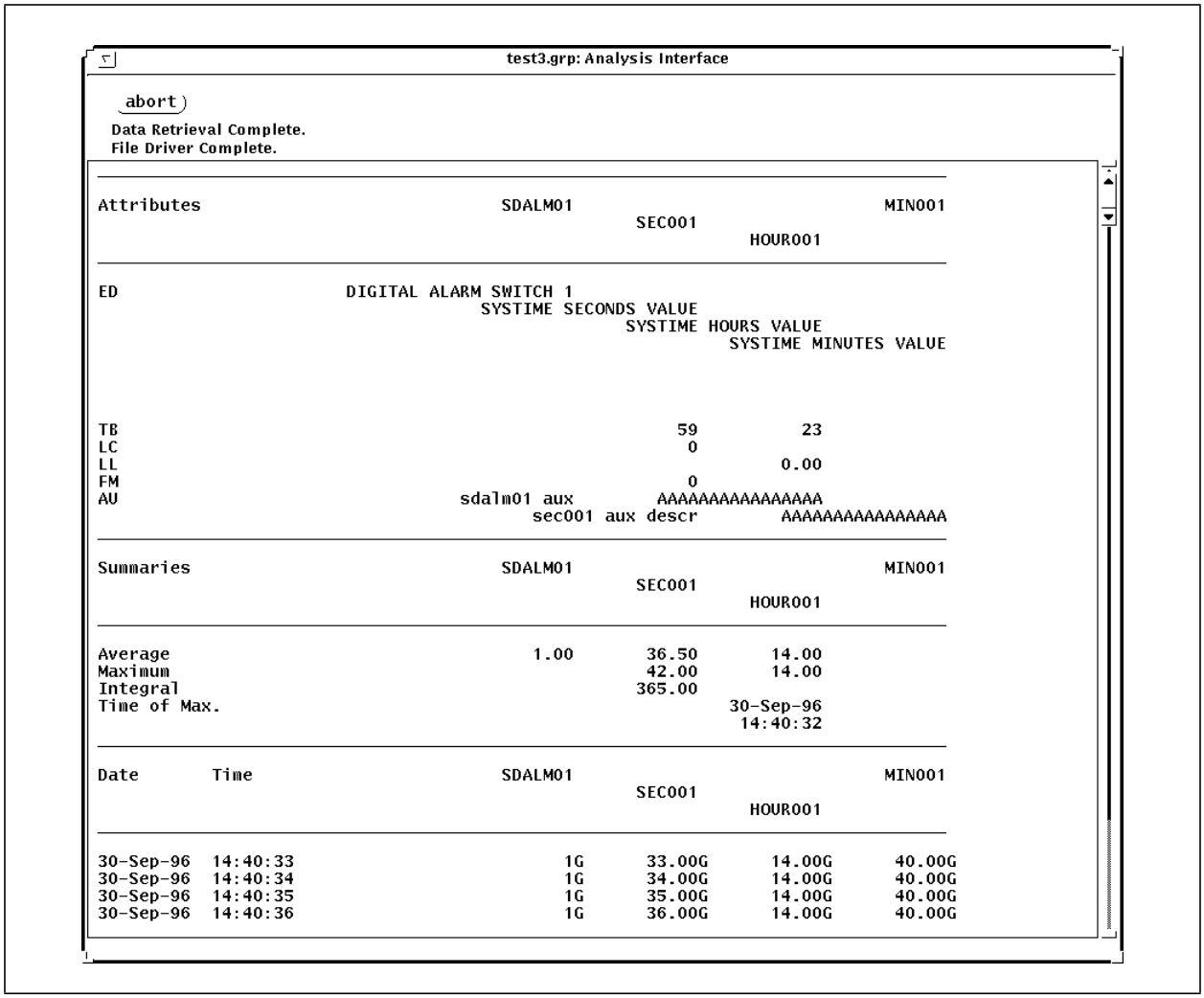

Figure 13-19. Analysis Interface: None

9. Refer to Figure 13-20 for an example of retrieval results when the **Analysis** parameter is set to **P-STAT**. The information shown in Figure 13-20 is a direct interface into the P-STAT software product. Refer to the P-STAT manuals to understand and utilize the functions shown in Figure 13-20.

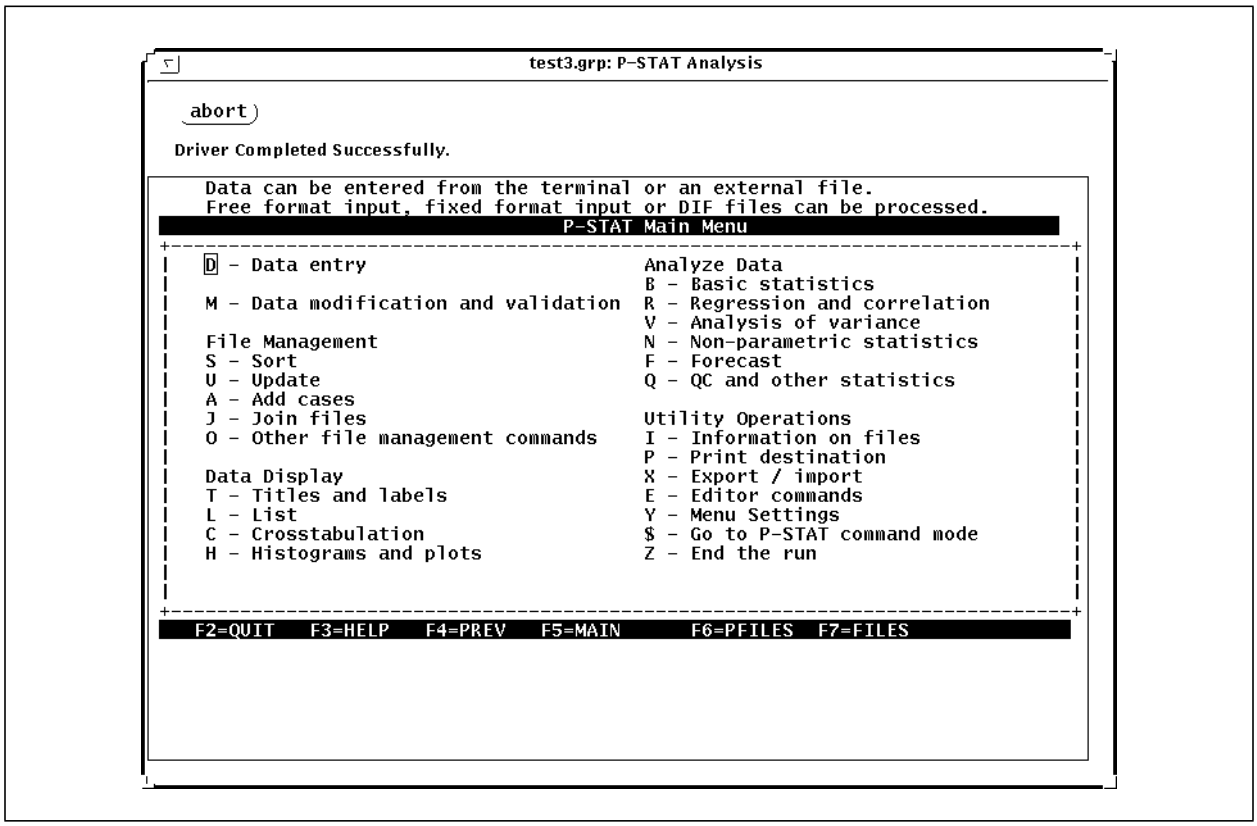

Figure 13-20. Analysis Interface: P-STAT

13-4. Laboratory Data User Interface

The Laboratory Data History UI is used for both the storing and retrieving of point value data to the Laboratory Data History subsystem.

13-4.1. Accessing the Laboratory Data History UI

This document assumes the Laboratory Data History subsystem is accessed through an SDS menu. Use the following procedure to access the Laboratory Data History:

1. Open the SDS Level IV menu (Log on if not already logged-on).
2. From the **Top Level Menu**, select **Drop Functions.**
3. Select **HSR Station**.
4. Select **Laboratory Data History**.

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When the Laboratory Data History UI is brought up for the first time, it will look similar to Figure 13-21. At this point, the user interface is awaiting the entry of data for either collection or retrieval purposes.

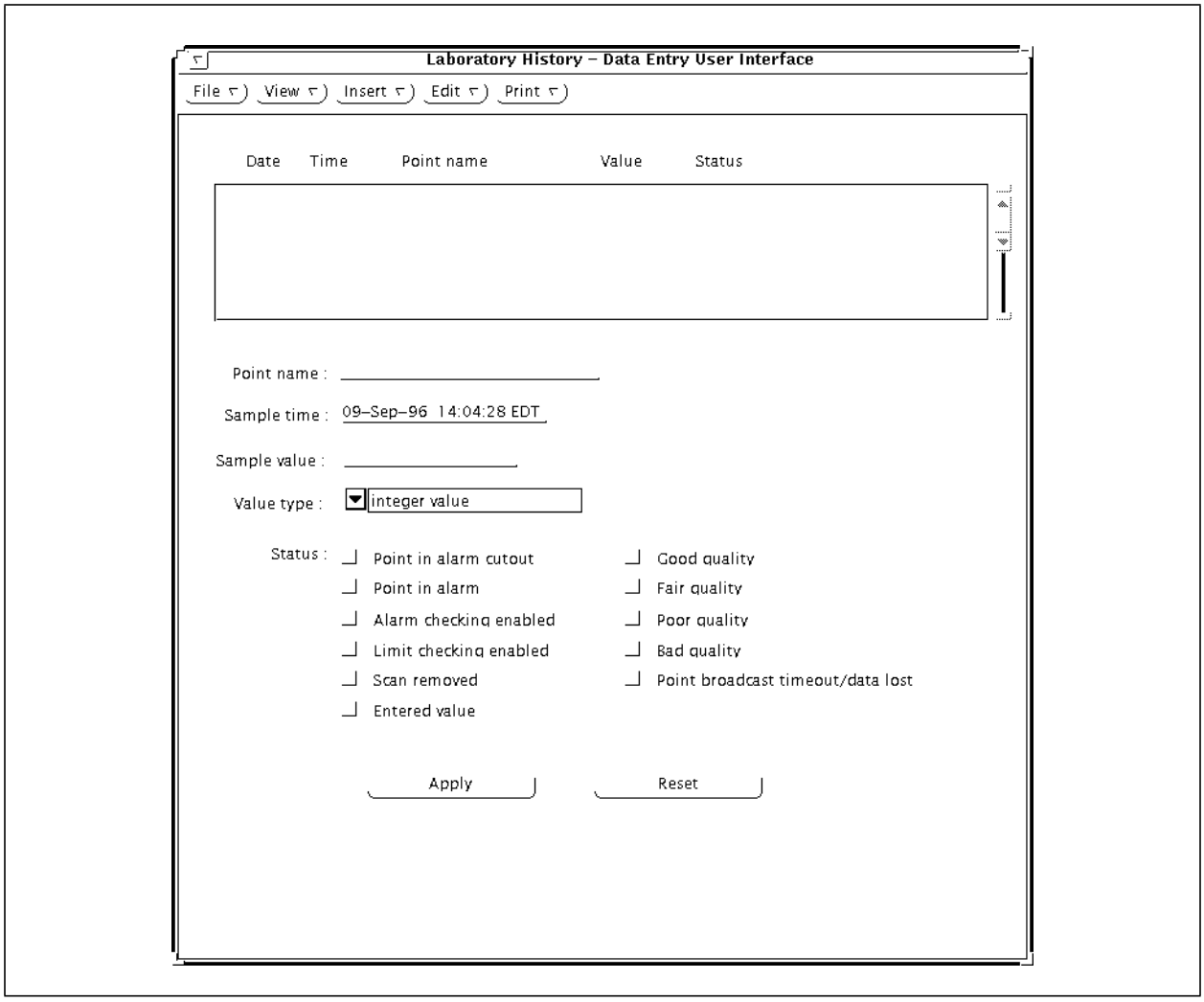

Figure 13-21. Laboratory Data History

13-4.2. Using the Laboratory Data History UI

Use the following procedure to populate the Lab History subsystem with point value data one sample at a time:

1. To define time(s), value(s), and status(es) for points, access the Laboratory Data History UI (as described in Section 13-4.1).

2. Use the **Insert** pull-down menu and select **Single** or **Multiple** (refer to Figure 13-22). **Single** is used to define a single point and its corresponding time, value, and status. **Multiple** is used to define a range of points and their attributes (time, value, and status).

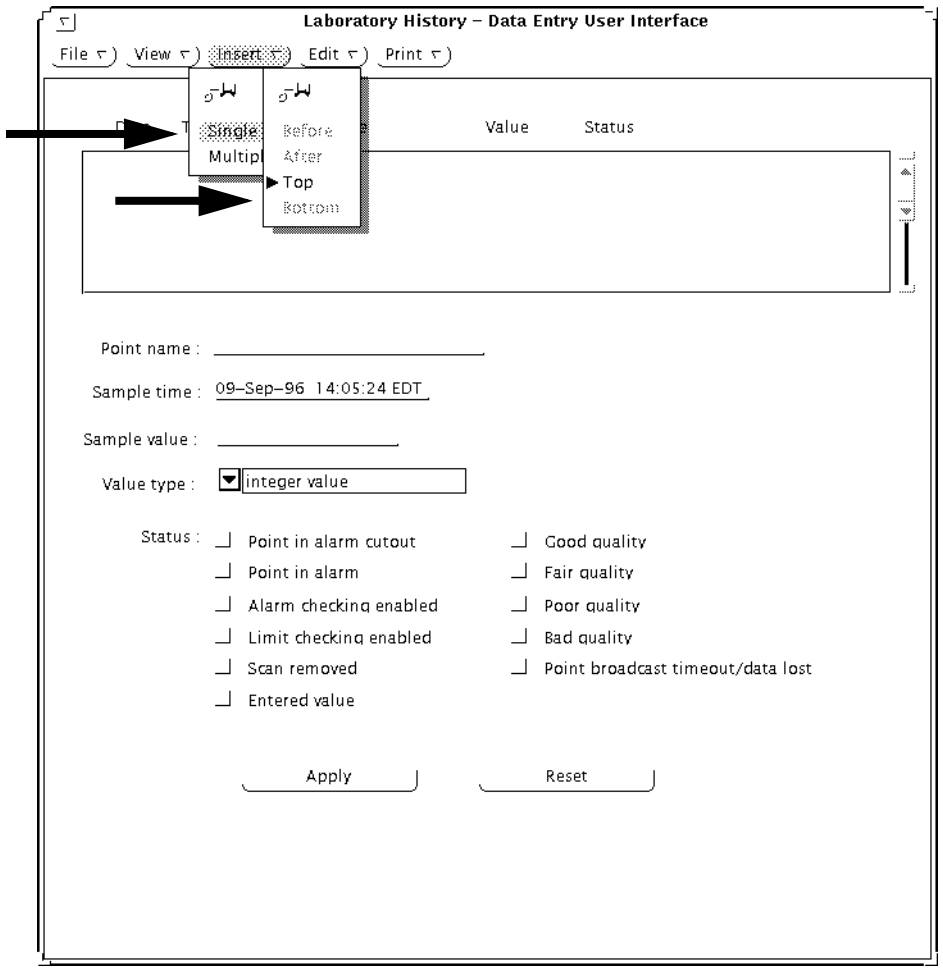

Figure 13-22. Laboratory Data History: Insert Menu

3. For this example, (see Figure 13-22), **Single** is selected, which yields a submenu of **Before**, **After**, **Top**, and **Bottom**.

4. Since this is the first sample defined, only the **Top** menu item is applicable. Select **Top** and the canvas area will produce a shaded bar where the point entry to be defined will be placed as shown in Figure 13-23.

5. Enter the point name (which must have been defined in the PIC file as described in Section 6-5). The sample time will default to the current time.

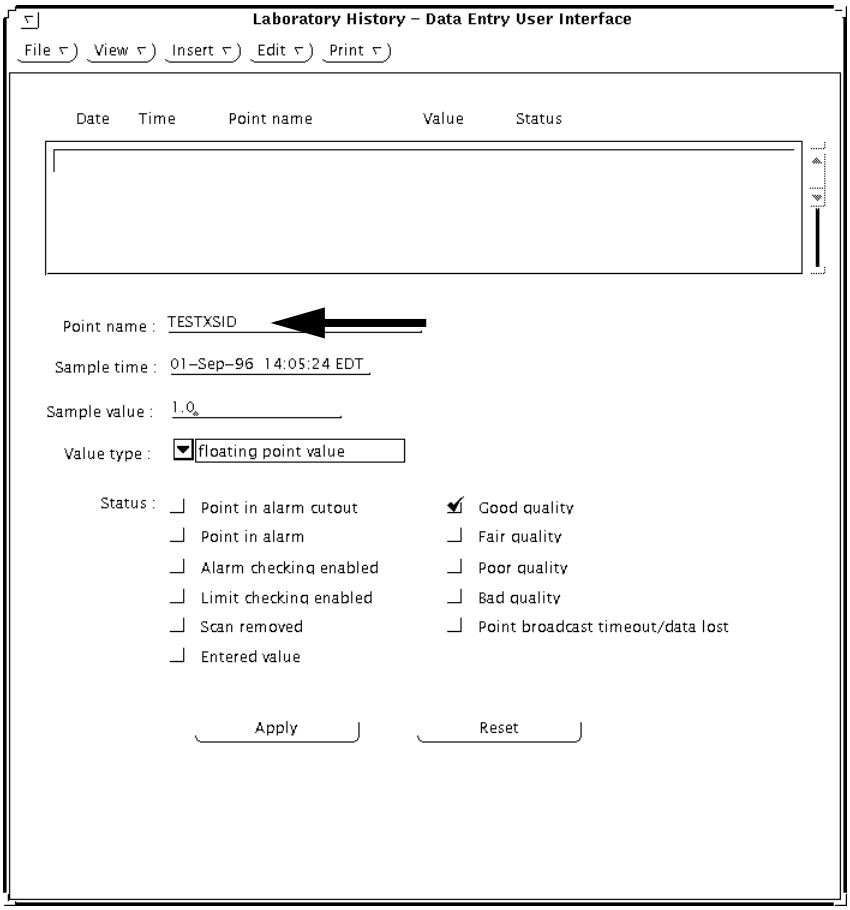

Figure 13-23. Laboratory Data History: Top

6. Adjust the time to the time desired for the point sample being defined.

Note

Any time specified must be in the past. The Lab History subsystem will **not** accept times in the future.

7. Specify the value and its corresponding value type in the appropriate fields.

8. Select a status. An example of how the UI will look when all the fields are defined (and prior to pressing **Apply**) is shown in Figure 13-23.

9. When all applicable information is entered, press the **Apply** button.

   When the **Apply** button is pressed, all information is checked for validity. If all fields are valid, the entry is packaged together and placed in the canvas area as shown in Figure 13-24.

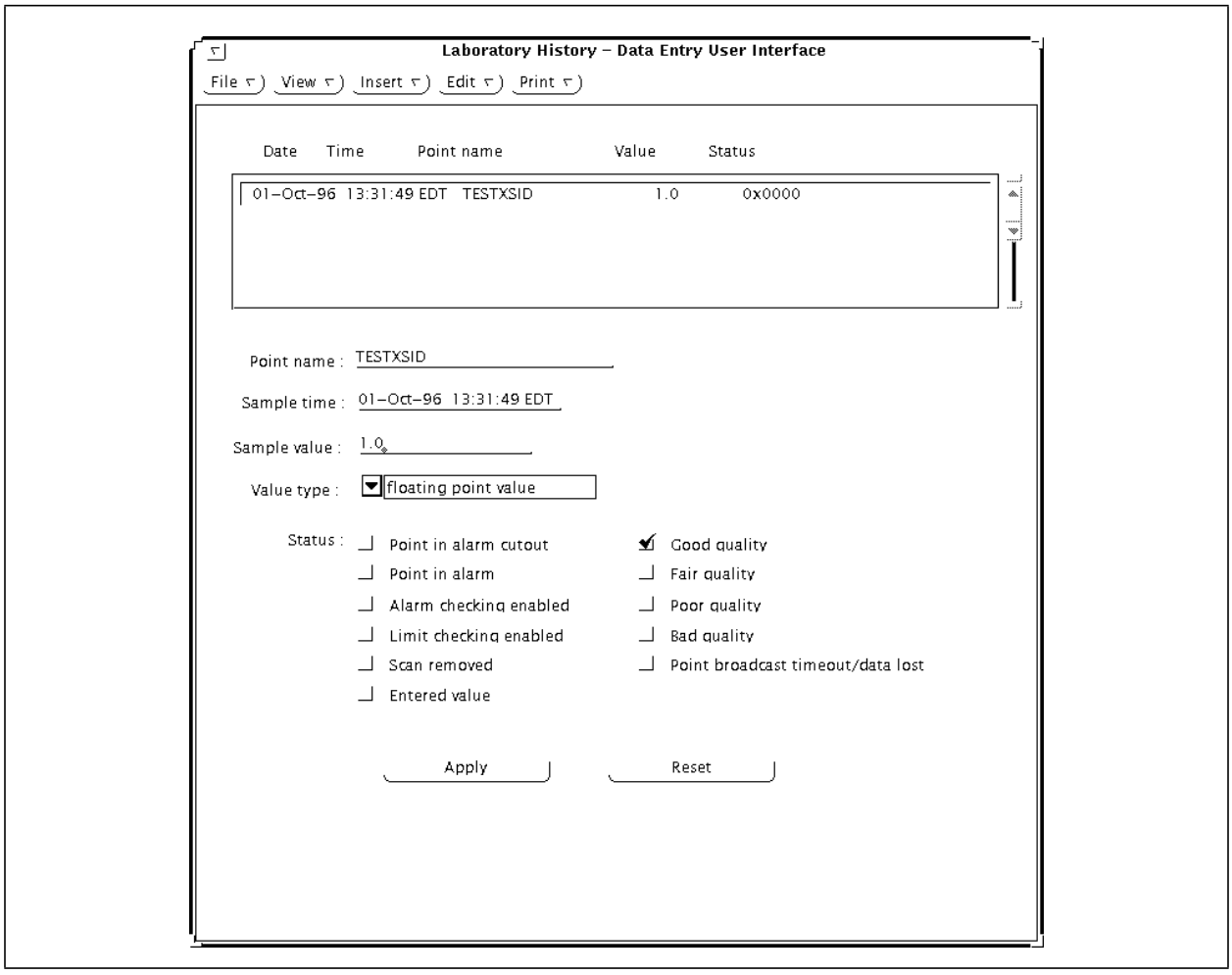

Figure 13-24. Laboratory Data History: Applying Info

10. Use the same steps to generate additional point samples that are needed.

11. After the canvas area is filled with all the desired point value definitions, select the **Save** option under the **File** pull-down menu. When **Save** is invoked, all point data information is sent to the HSR Laboratory Data History subsystem, and a message will appear at the footer of the UI indicating that **`File Saved OK`**.

12. If more samples need to be defined, then select **New** under the **File** pull down menu. This will clear all previously defined point data samples.

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13-4.3. Editing Multiple Samples

The example in Section 13-4.2 details defining one sample at a time. In order to enter a range of samples, select **Multiple** from the **Insert** menu. A **Multiple Point Sample Editor** screen is displayed as shown in Figure 13-25.

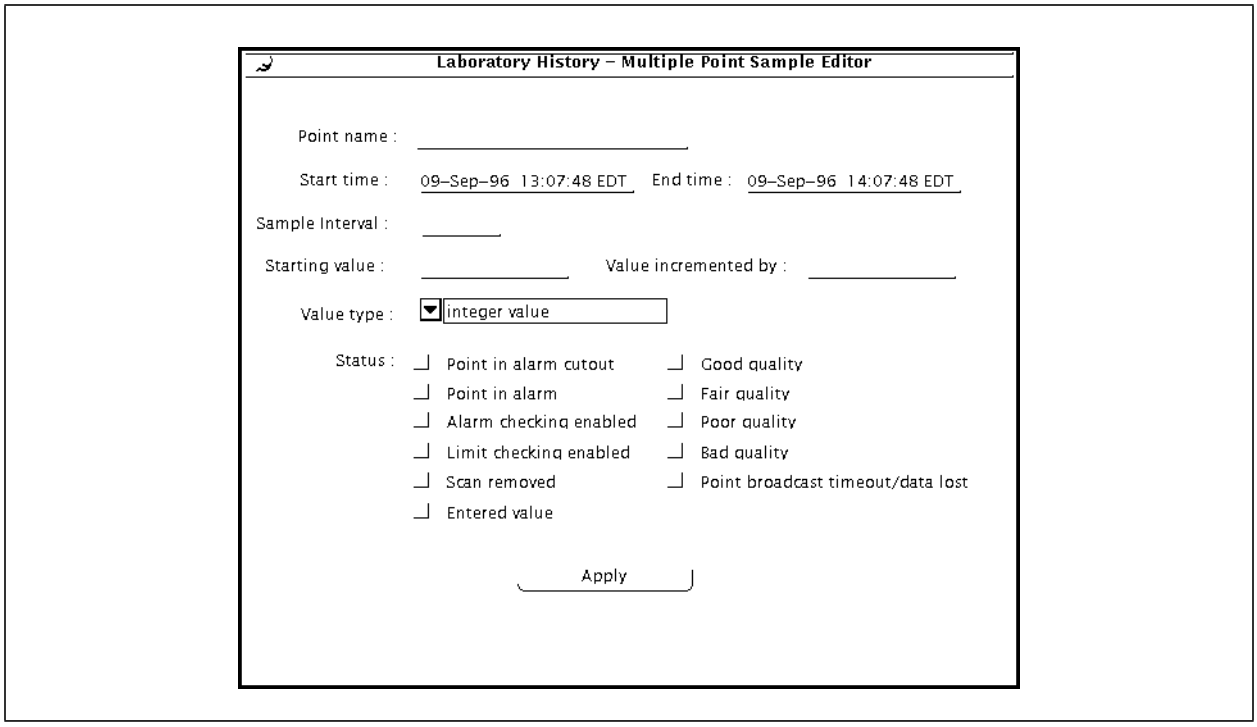

Figure 13-25. Laboratory Data History: Multiple Point Sample Editor

This screen will enable the user to enter a range of samples for a particular point. For example, if the user knows that a point starts at time x and for the next hour increment by 1 every 5 minutes, this user interface should be used. Instead of editing 12 single points, this UI can generate 12 samples automatically given the criteria mentioned above.

13-4.4. Retrieval through the Laboratory Data History UI

To retrieve data from Lab History:

- Utilize Historical Trend (refer to Section 9-4)

  OR

- Utilize Historical Point Review (refer to Section 10-3).

  OR

- There is an interface in the **Laboratory Data History UI** that will display Lab point data exclusively.

Use the following procedure to retrieve data through this interface:

1. Access the Laboratory Data History UI (as described in Section 13-4.1).
2. Choose **Open** under the **File** menu. The **Lab History Retrieval Properties** window will appear similar to Figure 13-26.

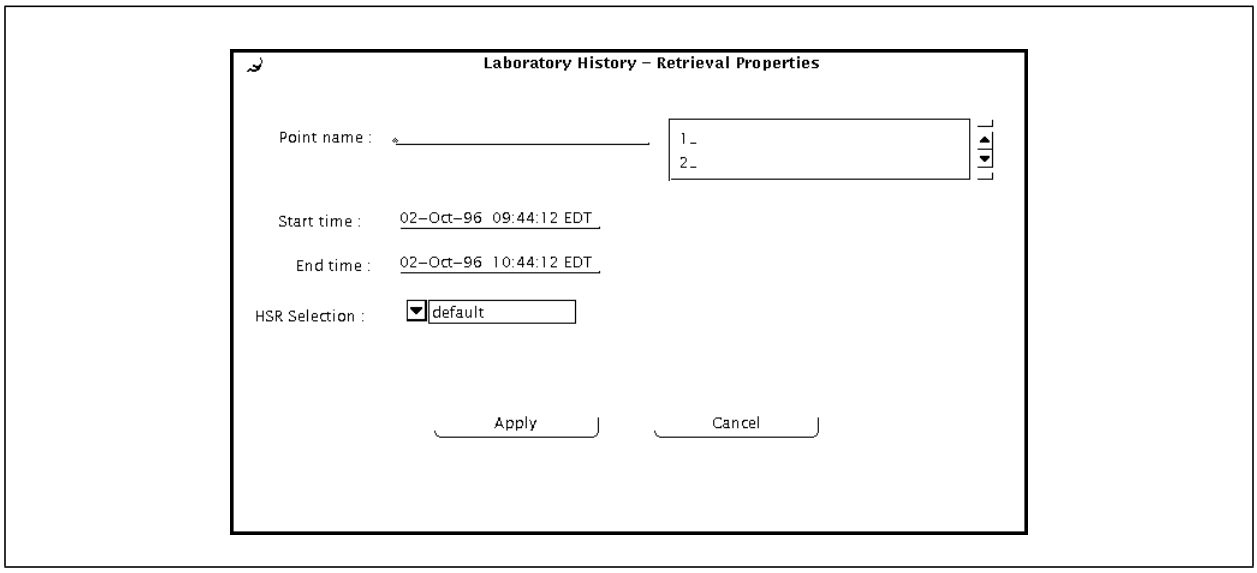

Figure 13-26. Lab History: Retrieval Properties

3. On the right side is a menu bar used to select a pointname. Click on the number point to be defined.
4. Type the point name to be retrieved in the **Point name** entry field.
5. Repeat this process until all point names to be retrieved are defined.
6. Adjust the **Start time** and **End Time** to the desired range.

7. Press **Apply** when complete. Figure 13-27 shows an example of what this window will look like after **Apply** is pressed. If all of the retrieval parameters are valid, then the request is issued. Results from the retrieval are displayed in the canvas area of the main Data Entry User Interface for Laboratory History (see Figure 13-21).

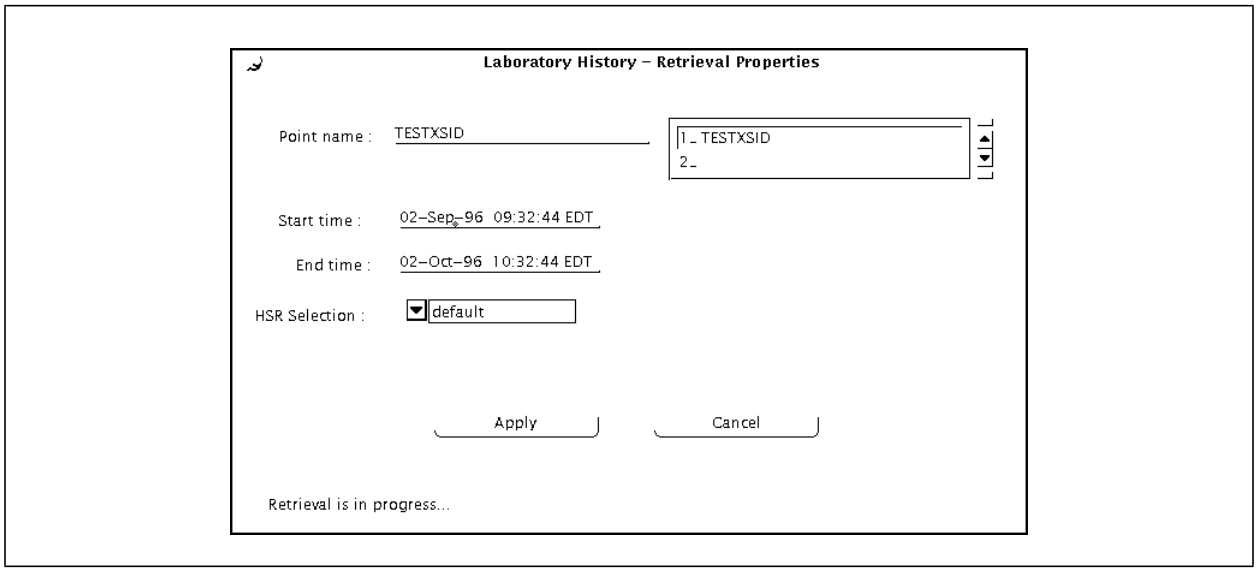

Figure 13-27. Lab History: Retrieval Properties

Section 14. HSR Library Routines

14-1. Section Overview

This section covers the C library routines that provide various storage and retrieval functions of HSR data. Topics covered are:

- Background (Section 14-2).
- Using an include file (Section 14-3).
- Reading man pages (Section 14-4).

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14-2. Background

The following routines provide the required access to HSR data with user-created and/or third party software. Links external to the HSR can be obtained by including the desired functionality. Since each of the routines is fully detailed in the supplied man pages, the descriptions in this section will be brief.

Each function in the library has a corresponding include file to be used in an application that calls the function. Details on the structure of the data files are part of the **.h** file of that particular function. A list of the **.h** files follows.

At runtime, the application program calls and links **libhsr.a/libhsr.so** (which contains all the functionality described in this section). To ensure that **libhsr.a/libhsr.so** can perform the appropriate calls, users must have read/write/execute access to the **$WDPF_HOME/hsrui/lib** directory.

Table 14-1 contains a description of the functionality of the following routines:

- Retrieve/stop retrieval of data from Main, Long Term and Lab subsystem:
  - HSR_get_periodic_data
  - HSR_get_periodic_data_file
  - HSR_get_review_data_file
  - HSR_abort_periodic_data
- Retrieve/stop retrieval of data from the Event subsystem:
  - HSR_get_evlist
  - HSR_get_periodic_event
  - HSR_get_periodic_event_file
  - HSR_get_review_event_file
  - HSR_abort_periodic_event
- Retrieve/stop retrieval of Sequence of Events messages:
  - HSR_get_soe_data_file
  - HSR_abort_soe_data
- Retrieve/stop retrieval of Alarm messages:
  - HSR_get_alarm_data_file
  - HSR_abort_alarm_data

- Retrieve/stop retrieval of Operator Event messages:
  - HSR_get_opev_data_file
  - HSR_abort_opev_data
- Retrieve/stop retrieval of ASCII messages:
  - HSR_get_ascii_data_file
  - HSR_abort_ascii_data
- Store and retrieve any files to/from the file subsystems:
  - HSR_store_hist_file
  - HSR_dir_list
  - HSR_hist_file_list
  - HSR_get_hist_file
  - HSR_abort_dir_list
  - HSR_abort_file_list
  - HSR_abort_get_file

.h include files

- HSR_alarm_data.h
- HSR_ascii_data.h
- HSR_evlist_data.h
- HSR_file_data.h
- HSR_opev_data.h
- HSR_periodic_data.h
- HSR_review_data.h
- HSR_send_alarms_data.h
- HSR_soe_data.h
- HSR_lib_error.h
- HSR_periodic_data.h
- HSR_review_data.h

Table 14-1. Library Routines (Listed Alphabetically)

Routine Name	Description
HSR_dir_list	Retrieves a list of the directories available in the file subsystem of the HSR.
HSR_get_alarm_data_file	Retrieves alarm messages collected by the HSR during a specified time interval.
HSR_get_ascii_data_file	Retrieves ASCII messages from the ASCII History subsystem of an HSR Station, which have time tags that fall into a specified time interval.
HSR_get_evlist	Retrieves a list of event trips in a specified time interval.
HSR_get_hist_file	Retrieves a file stored in the file subsystem of the HSR with a specified time tag.
HSR_get_opev_data_file	Retrieves operator event messages collected by the HSR Operator Event subsystem which have time tags that fall in a specified time interval.
HSR_get_periodic_data	Retrieves a specified number of data samples, each separated by a specified time interval, from each of the following subsystems of the HSR: Main, Long Term, and Lab. Data retrieved with this library routine is returned to *shared memory* (as opposed to a file).
HSR_get_periodic_data_file	Retrieves a specified number of data samples, each separated by a specified time interval, from each of the following subsystems of the HSR: Main, Long Term, and Lab. Data retrieved with this library routine is returned to a *file*).
HSR_get_periodic_event	Retrieves a specified number of data samples, each separated by a specified time interval, from either the Main, Long Term, and Lab subsystems of the HSR. Data retrieved with this library routine is returned to *shared memory* (as opposed to a file).
HSR_get_periodic_event_file	Retrieves a specified number of data samples, each separated by a specified time interval, from either the Main, Long Term, and Lab subsystems of the HSR. Data retrieved with this library routine is returned to a *file*).
HSR_get_review_data_file	Retrieves data files collected from a triggered event (change in status or value) during a specified time interval from each of the following subsystems of the HSR: Main, Long Term, and Lab.
HSR_get_review_event_file	Retrieves data collected by the event subsystem during a specified time interval.

Table 14-1. Library Routines (Cont'd) (Listed Alphabetically)

Routine Name	Description
HSR_get_soe_data_file	Retrieves Sequence of Events messages collected by the HSR SOE subsystem which have time tags in a specified time interval.
HSR_hist_file_list	Retrieves a list of files stored in the File Subsystem of the HSR during a specified time interval.
HSR_store_hist_file	Sends a request to store a file to the File Subsystem.
Note: Each retrieve or get routine has a corresponding cancellation routine. These are listed below.	
HSR_abort_alarm_data	Cancels the outstanding alarm data retrieval requests made to the HSR Station.
HSR_abort_ascii_data	Cancels the outstanding ASCII data retrieval requests made to the HSR Station.
HSR_abort_dir_list	Cancels the outstanding directory list retrieval requests made to the HSR Station.
HSR_abort_file_list	Cancels the outstanding file list retrieval requests made to the HSR Station.
HSR_abort_get_file	Cancels the outstanding file retrieval requests made to the HSR Station.
HSR_abort_opev_data	Cancels the outstanding operator event file retrieval requests made to the HSR Station.
HSR_abort_periodic_data	Cancels the outstanding periodic data retrieval requests made to the HSR Station.
HSR_abort_periodic_event	Cancels the outstanding periodic event data retrieval requests made to the HSR Station.
HSR_abort_soe_data	Cancels the outstanding SOE (Sequence of Events) data retrieval requests made to the HSR Station.
Note: The specified data, such as time intervals and number of samples, are set during the calling sequence of the various library routines. Usage of the routines is detailed in the appropriate man pages. See Section 14-4 for instructions on accessing man pages.	

14-3. Using an Include File

To compile a **.c** program which calls an HSR library function, the .c program should include the relevant **.h** files for the function. These, and the calling interface, are described in the man page (see Section 14-4) for that particular function.

In the following examples, it is assumed that the libraries and **.h** files are under **/usr/wdpf**.

Note

The flag *-I/usr/wdpf/hsrui/inc* should be used on the cc line to indicate where the .h files will be found.

When linking, the following libraries need to be used in the order shown in Figure 14-1.

```
/usr/wdpf/hsrui/lib/libhsr.a
/usr/wdpf/hsr/common/src/libhsrcomm.a
/usr/wdpf/shc/lib/libspd.a
/usr/wdpf/common/lib/libcommon.a
-lX11
-lm
```

Figure 14-1. Link Library Sequence

14-3.1. Makefile Example

The following makefile example shows how to incorporate a program called customcode.c.

```
CFLAGS=-I/usr/wdpf/hsrui/inc -I/usr/wdpf/common/inc
XLIBS = -lX11
SSW_ROOT=/usr/wdpf
WDPF_LIBS = \
     $(SSW_ROOT)/hsrui/lib/libhsr.a \
     $(SSW_ROOT)/hsr/common/src/libhsrcomm.a \
     $(SSW_ROOT)/shc/lib/libspd.a \ " "/libshc.a
     $(SSW_ROOT)/common/lib/libcommon.a
customcode : customcode.o
     cc -o customcode customcode.o $(WDPF_LIBS) $(XLIBS) -lm
     -lnsl -lsocket
```

Figure 14-2. Makefile Example

14-4. Reading man pages

To read a man page, type in the following command line at either a UNIX command tool or c shell window:

```
man 3H HSR_get_evlist
```

Information as shown in Figure 14-3 will then appear.

```
HSR_get_evlist(3H)        HSR Library        HSR_get_evlist(3H)
NAME
     HSR_get_evlist obtain event trip information from the HSR
Station
SYNOPSIS
     #include "evlist_retr_data.h"
     #include "HSR_lib_error.h"
     #include "HSR_evlist_data.h"

     int
     HSR_get_evlist(file_name,start_time,end_time,hsr_host);

     char *file_name;
     struct timeval start_time;
     struct timeval end_time;
     char *hsr_host;

DESCRIPTION
This library function is used to gather event trip information
from the Event subsystem of an HSR Station. Event trip information
is gathered from the on-line and archive directories.

This function forks off a child process to handle the request.
The PID of the child process is returned back from this library
call. An abort of the child process can be implemented by doing
a kill SIGTERM of the child process PID.

Once the retrieval request has completed, the data is written to
the output file specified and the library call exists with the
appropriate status.

The file_name argument is the name of the file that will contain
the final data.   The layout of this file can be found in the
HSR_evlist_data.h include file. This file needs the Display_Info
structure to extract the data from the file.

The start_time and end_time arguments define the time range of
the request.   The end_time specifies the latest (most recent)
time. Each time is represented as a timeval structure.
.....
```


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```
     The hsr_host argument allows the user to override the station
     configuration and specify the hostname of the HSR Station from
     which to retrieve the event list data.   If the hostname is NULL,
     then the proper hostname from which to retrieve data is determined
     from configuration parameters (see CONFIG.HSRLIB) and HSR Station
     activity counters.


     RETURN VALUE
     The PID of the child process is returned from this process, but
     the exit status of the child process can be obtained. The exit
     status can be retrieved by continually check the child process
     with a wait3(). The call will exit with a 0 (HSR_LIB_OK) if
     successful or the appropriate exit status if there is an error.
     The return status codes of the library function (defined in
     HSR_lib_error.h)

     There are 2 error codes defined in HSR_lib_error.h that are
     specific to the HSR_get_evlist library call. They are:

     HSR_LIB_E_PARTIAL_DATA
     which indicates that during a retrieval request a particular file
     or directory could not be read. In this case, data is returned
     from the other files but the data is incomplete.   Examine the
     hsr_msg_log file to find out what file or directory caused the
     problem.

     HSR_LIB_E_BUFF_OVERFLOW
     which indicates that during a retrieval request the internal
     buffer was not of sufficient size to hold all the data. In this
     case data will be returned up to the point where there was no more
     room in the internal buffer. To compensate for this problem the
     user should make an additional request covering the period of time
     for which no data has been returned.

     SEE ALSO
     libhsr(3H), CONFIG.HSRLIB(5H)

     Sun Release 4.1     Last change: 24 June 1992                  2
```

Figure 14-3. Sample man page for HSR (Cont'd)

Section 15. Start-up Operation

15-1. Section Overview

This section covers the start-up function of HSR software. Topics covered are:

- HSR Station Manager (Section 15-2).

15-2. HSR Station Manager

The HSR Station Manager provides the following functions at start-up for the WEStation HSR:

- Starts the HSR WEStation software on reboot of the station by starting the configured HSR subsystems.
- Monitors the status of all SHCs in the HSR Station.
- Monitors for modified PIC files.
- Monitor for modified configuration.

15-2.1. Initialization Functions

When the WEStation HSR is rebooted, the HSR Station Manager software is automatically started. When the Station Manager is started, it performs the following initialization functions:

1. Transfers an HSR configuration file (if it exists) from the **$(WDPF_HOME)/hsr/config/new** directory to the **$(WDPF_HOME)/hsr/config** directory. This would happen if a recently modified configuration was downloaded to the drop.
2. Reads the configuration file found in **$(WDPF_HOME)/hsr/config** to obtain the settings for all Station parameters.
3. Sets the appropriate bit in the F9 field in the Drop Status record for all SHCs to indicate that the drop is a WEStation HSR. Refer to "Record Types User's Guide" (U0-0131) for additional information.
4. Waits until all SHCs are on-line and have received a time update.

5. While waiting, processes requests from the HSR Status/Control user interface and checks the **$(WDPF_HOME)/hsr/config/new** directory for the presence of either of the following:

   — A modified HSR configuration file.

   — Modified PIC files.

Note

The HSR Status/Control user interface will indicate if the HSR is waiting for an SHC to come on-line or is waiting to receive a time update (refer to Section 8-2).

6. After all SHCs are on-line and have received a time update, the Station Manager subsystem does the following:

   — Transfers all PIC files (main.pic, long_t.pic, lab.pic, event.pic, and soe.pic) from the **$(WDPF_HOME)/hsr/config/new** directory to the **$(WDPF_HOME)/hsr/config** directory

   — Starts all subsystems enabled by the Station parameters in the HSR configuration file.

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Appendix A. HSR Disk Space Management

A-1. Section Overview

The HSR uses a set of four directories to manage historical files for each HSR function:

- **Active** directory contains the current historical file.
- **Complete** directory contains the current files that have been closed.
- **Staging** directory contains the archived historical files.
- **Tertiary** directory contains optical only files (when the optical drive is mounted).

The amount of disk space used in the active and complete directories is controlled by the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Local Hard Disk Parameters
Displays: Hard Disk Space Targets
Hard Disk Space Limits

Normally, the amount of space consumed in the active and complete directories is minimal, because the Archive Manager moves files from these directories to the staging directory. However, when the Archive Manager is not running for a significant period of time (greater than or equal to one day), historical files will begin to be backed up in the active and complete directories. This will potentially consume all available disk space. The amount of disk space is regulated by limiting the absolute number of megabytes that each HSR function can consume.

A-1.1. File Deletion Precedence

The overall disk space allocation strategy keeps the most current files on the hard drive. To keep the most current files on the hard drive, older files are deleted.

Notes

There is no relative deletion priority assigned to the various subsystem files. For example, a Main History file will not be kept before an SOE report. A strict time sequence algorithm is used, based on the time the file was written.

The deletion strategy is independent of file size. Larger files will not be deleted first.

If there is insufficient disk space to write a new file, the older files are deleted in the following order:

1. Oldest archived file.
2. Oldest unarchived file (if the **Delete Unarchived Files** parameter is active).
3. If no files could be deleted, an error message is issued to inform the user that no space is available and new archive data has not been written.

A-2. Secondary Disk Space Management

There are four possible disk management strategies available in the **Storage Management** setting. This setting is configurable through the following WDPF Admin Tool settings:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Secondary Hard Disk Parameters
Item: Storage Management

This appendix will cover each of the strategies and the available parameters that are set to implement each strategy. These strategies are specific to the managing of historical data in the secondary (staging) storage disk(s). (Refer to Section 5 for addition configuration information.)

Selection of a strategy affects what checks (if any) are made before a file is stored and the file deletion process if space is not currently available. The file deletion precedence process (to clear space to store a new file) is detailed in Section A-1.1.

For example, the Period Limit strategy may be chosen if data were to be collected for a three month period (on a quarterly basis). In this case, the drive would be checked to see if there was sufficient space to store the file when it closed.

The following sections describes the parameters that must be set through the WDPF Admin Tool, and the impact of the various strategies on disk space management process for the Archive Manager Subsystem.

The four **Storage Management** options (located on the **HSR Secondary Hard Disk Parameters** GUI) are:

- **Option 1: No disk space or period limits** (Default).
  - Uses all available space in partition(s). Always deletes the oldest overall file in order to store the new file.
  - No attempt is made to give one subsystem a longer history period than another (no subsystem specific restrictions).
- **Option 2: Disk space limits only**.
  - Before a file is stored, the data is checked to be sure that it conforms to the established limits in the **Hard Disk Space Limits** parameter (located on the **Hard Disk Space Limits** display of the **HSR Local Hard Disk Parameters** GUI) for each subsystem.
  - Consumes up to the amount set in the **Hard Disk Space Limits** parameter per subsystem.
- **Option 3: Period limits only**.
  - Before a file is stored, the data is checked to be sure that it conforms to the established limits in the **Hard Disk Period Limits** parameter (located on the **Hard Disk Period Limits** display of the **HSR Secondary Hard Disk Parameters** GUI) for each subsystem.
  - Uses the minimum space to ensure that the history time periods are maintained per subsystem.
  - The **Exceed Period Limits** parameter (located on the **Exceed Period Limits** display of the **HSR Secondary Hard Disk Parameters** GUI) allows subsystems to extend the history period if disk space is available in the partition(s). Will delete oldest file from subsystem history period limit when disk space is needed.

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- **Option 4: Disk space and period limits**.
  - This is the most restrictive strategy. Before a file is stored, it is checked for conformance to the **Hard Disk Space Limits** parameter (located on the **Hard Disk Space Limits** display of the **HSR Local Hard Disk Parameters** GUI), then it tries to satisfy **Hard Disk Period Limits** parameter (located on the **Hard Disk Period Limits** display of the **HSR Secondary Hard Disk Parameters** GUI).
  - The **Exceed Period Limits** parameter (located on the **Exceed Period Limits** display of the **HSR Secondary Hard Disk Parameters** GUI) allows subsystems to extend the history period if disk space is available in the partition(s). Will delete oldest file over subsystem history period limit when disk space is needed.

Using the following WDPF Admin Tool settings, each subsystem may set the configuration parameters (if applicable) in the proper display of the **HSR Secondary Hard Disk Parameters** GUI:

Function: Define Software Configuration
Filter: Historical Storage/Retrieval
Topic: HSR Secondary Hard Disk Parameters
Displays: Archive Enable
Delete Unarchived Files
Hard Disk Space Limits (Mbytes)
Hard Disk Period Limits (Days)
Exceed Period Limits
Items: Main History
Long Term History
Lab History
Event History
SOE History
Point Attribute History
Alarm History
ASCII Message History
Operator Event History
File History

Table A-1 describes each of these further. For more information about each setting, refer to Section 5.

Table A-1. Disk Space Allocation Parameters

Parameter	Effect of Parameter
Archive Enable	Allows the Archive Manager to migrate subsystem data to the secondary disk(s) and optical disks.
Delete Unarchived Files	**CAUTION:** **This parameter should be used with extreme care. The parameter should only be used on systems without removable media or if the removable media will be disabled for a considerable length of time.** Allows a subsystem to remove unarchived files. These files may be deleted to meet the **Hard Disk Space Limits** parameter or **Hard Disk Period Limits** parameter. The unarchived subsystem files may also be deleted when all other available disk space had been utilized. (May be set for any **Storage Management** option)
Hard Disk Space Limits (Mbytes)	Defines the maximum disk space utilized by all files of the specified subsystems. This feature is only used when the **Hard Disk Space Limits** are enabled. This parameter is specified in bytes, but must not exceed the maximum disk partition size. (**Must** be defined for the **Storage Management** options **Disk space and period limits** and **Disk space limits only** options).
Hard Disk Period Limits (Days)	Specifies the time period for storage of archived/unarchived files. This feature is dependent on whether the **Hard Disk Period Limits** parameter is enabled. This time period is specified in days from the current day back to the time for which data is available in secondary storage. (**Must** be defined for the **Storage Management** options **Disk space and period limits** and **Period limits only**).

Table A-1. Disk Space Allocation Parameters

Parameter	Effect of Parameter
Exceed Period Limits	Allows a subsystem to exceed the specified storage time period. This feature is only used if the **Hard Disk Period Limits** parameter is enabled. If both **Hard Disk Space Limits** parameter and **Exceed Period Limits** parameter are enabled, the subsystem may store files beyond the **Hard Disk Period Limits** parameter time limit. The file sizes must still conform to the limits established by the **Hard Disk Space Limits** parameter when the **Exceed Period Limits** parameter is enabled. If the **Disk space and period limits** parameters are enabled, the subsystem will first conform to the **Hard Disk Space Limits** parameter and then, space permitting, conform to **Hard Disk Period Limits** parameter. (May **only** be set for the **Storage Management** options **Disk space and period limits** and **Period limits only** options).

A-3. Disk Storage Strategies

The Storage Management options are described in Section A-2. If there is space available on the local hard disk drive, files are written in the following manner:

Table A-3. Normal Write Procedures

Option	Result
Option 1: **No disk space or period limits** (Default)	If the file is larger than the available disk space, file deletion precedence is followed and the requested file is written to the free disk space.
Option 2: **Disk space limits only**	The total byte size of all files for the specific subsystem is compared to the **Hard Disk Space Limits** parameter. • If the file is smaller than the available disk space, it is written to the free disk space. • If the file is larger than the available disk space, file deletion precedence is followed and the requested file is written to the free disk space.
Option 3: **Period limits only**	The existing archived/unarchived files are checked against the **Hard Disk Period Limits** parameter subsystem time limit. • If the subsystem History Period does not exceed the overall HSR **Hard Disk Period Limits** parameter, the requested file is written to the free disk space. • If the total of the subsystem consumed time plus the requested file exceeds the subsystem **Hard Disk Period Limits** parameter, see deletion precedence (Section A-1.1.). • If free space is available, the file is written.
Option 4: **Disk space and period limits**	The total byte size for all files for the specific subsystem plus the requested file size is compared to the **Hard Disk Space Limits** parameter. • If both the **Hard Disk Space Limits** parameter and the **Hard Disk Period Limits** parameter criteria are met, then the file is written to the hard drive. • If the subsystem file size to be archived is within the setting of the **Hard Disk SpaceLimits** parameter, then the existing archived/unarchived files are also checked against the **Hard Disk Period Limits** parameter subsystem time limit. • If total subsystem consumed time plus the completed file exceeds the subsystem **Hard Disk Period Limits** parameter, then file deletion precedence is followed. (See Section A-1.1.) • If the total byte size is greater than the subsystem **Hard Disk Space Limits** parameter, then file deletion precedence is followed. • If the subsystem **Hard Disk Period Limits** parameter could be maintained, the completed file is written to the free disk space.

If there is not currently any free space available on the hard drive, files are deleted to clear the disk for additional storage according to the following procedures

Table A-4. File Write with Deletion

Option	Result
Option 1: No disk space or period limits (Default)	Space is cleared according to deletion precedence. Then the new archive file is written to the free partition.
Option 2: Disk space limits only	The total byte size of all files for the specific subsystem is compared to the **Hard Disk Space Limits** parameter. • If the file is smaller, it is written to the free disk space. • If the file is larger, space is cleared according to deletion precedence. The newest file uses the newly cleared space.
Option 3: Period limits only	The existing archived/unarchived files are checked against the **Hard Disk Period Limits** subsystem time limit. • If the subsystem the **Hard Disk Period Limits** could be maintained, the File Deletion Precedence procedure is followed and the requested file is written to the free disk space. • If the total of the subsystem consumed time plus the requested file exceeds the subsystem the **Hard Disk Period Limits** parameter, space is cleared according to deletion precedence. • Write file in the newly cleared space.
Option 4: Disk space and period limits	Clear disk space according to file deletion precedence. Write file in the newly cleared space if space is available within the constraints of the **Hard Disk Space Limits** parameter and the **Hard Disk Period Limits** parameter.

Appendix B. Optical Jukebox Management

B-1. Section Overview

The following topics are discussed in this section:

- Optical Jukebox Overview (Section B-2).
- Loading an Optical Jukebox (Section B-3).
- Loading the Maximum Number of Disks (Section B-4).
- Ejecting Disks in the Optical Jukebox (Section B-5).
- Labeling of Optical Disks (Section B-6).
- Locking and Unlocking Optical Disks (Section B-7).
- Attentions (Section B-8).
- Volume Library Management (Section B-9).

B-2. Optical Jukebox Overview

The HSR has the ability to utilize an optical jukebox. The necessary components to make an optical jukebox work are as follows:

1. Hewlett-Packard Optical Jukebox in one of the following varieties: 20xt, 40st, 100st, 40fx, 80fx, or 200fx.
2. Necessary cabling and termination to the jukebox.
3. Optical Driver Software for the drive. This would be one of the following:
   - SQ/EMASS driver (re-writable, Solaris 2.3)
   - Perceptics driver (WORM Solaris 2.3 or better)
   - Standard Sun Driver (re-writable, Solaris 2.5 or better)

   The SQ/EMASS and Perceptics drivers require a license fee.
4. Autochanger/Jukebox Management Driver written by Westinghouse.

Note

This document does **NOT** detail the installation of the Jukebox or any subsequent drivers.

B-3. Loading an Optical Jukebox

B-3.1. Accessing the Jukebox Status UI

The main interface into controlling the Jukebox is the **Jukebox Status** User Interface which can be brought up through the **Drives** pull down menu in the **Archive: General Status** window shown in Figure B-1

Use the following typical procedure to access the **Jukebox Status** window:

1. Access the **Data Analysis and Maintenance** menu.
2. Select **Device Maintenance**.
3. Select **Archive Status**.
4. Select **General Status**. The **General Status** window appears.
5. Select **Archive:Drive Status** item from the **Drives** menu.

.

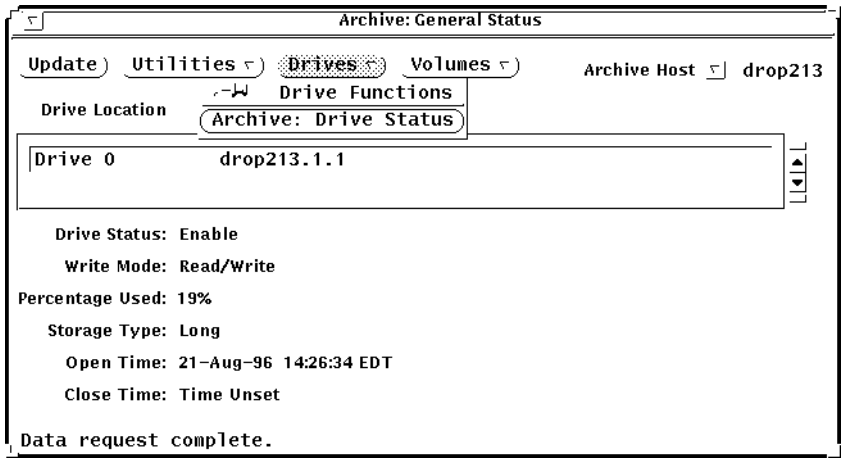

Figure B-1. Archive: General Status

Note

Under the **Drives** pull down menu, the menu item reads **Archive: Drive Status** even if the jukebox is configured. This is because the **Drives** UI is dynamic and will change based on whether a jukebox or a stand-alone optical driver is found.

6. When the **Jukebox Status** UI is brought up, it will initially appear similar to the example shown in Figure B-2.

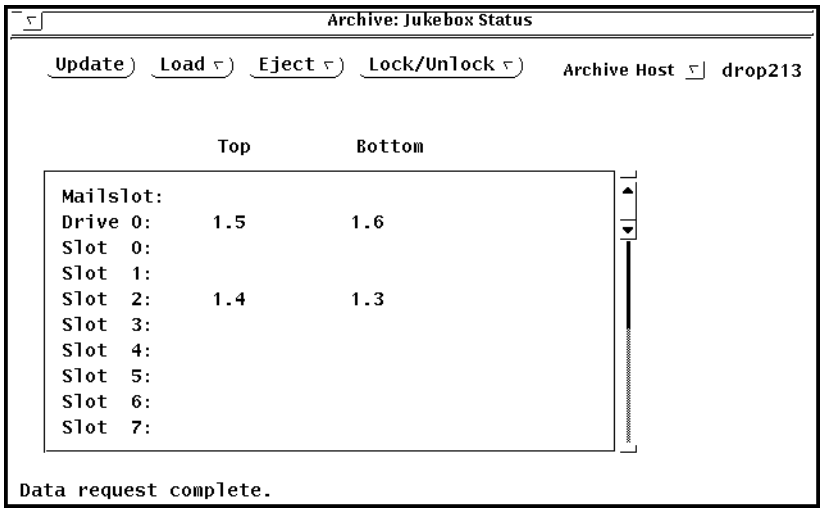

Figure B-2. Archive: Jukebox Status

In this example, the **Jukebox Status** UI is displaying all pertinent information concerning the jukebox:

- Drive 0 has volume 1.5 mounted and loaded.
- Volume 1.6 is on the flip-side of 1.5.
- Slot 2 has an optical disk in it containing volumes 1.4 and 1.3.

However, this is an example of a system with a jukebox that has been running and archiving for some period of time. When using the jukebox for the first time, the **Jukebox Status** UI will still look similar to Figure B-2, except that there will be **no** optical volumes listed.

B-3.2. Loading Blank Disks

If the **Jukebox Status** UI is showing nothing in any of the slots or the drive(s), then the jukebox is empty and needs to have blank disks placed inside. To accomplish the loading of *blank* disks, the jukebox must be put into a “Load State”.

Use the following procedure to load blank disks:

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1. Select the **Load** button. A submenu will appear as shown in Figure B-3.

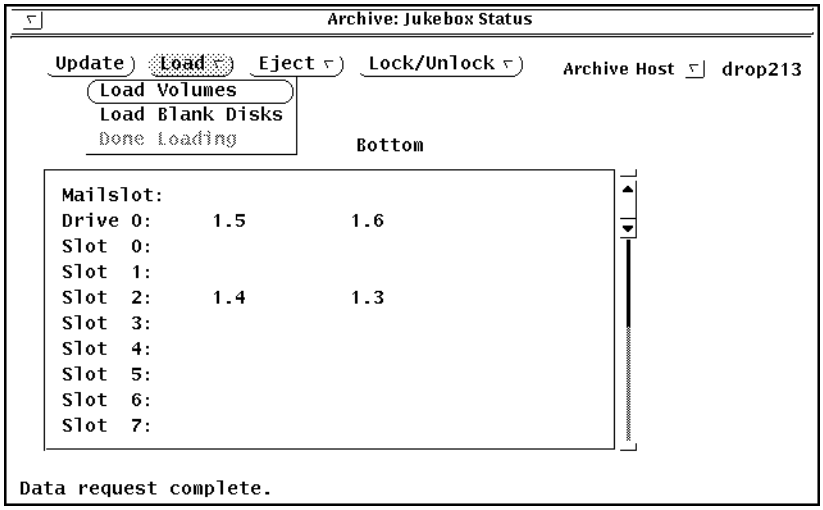

Figure B-3. Jukebox Status: Load submenu

As is displayed in the submenu, the jukebox can be loaded with blank opticals (**Load Blank Disks**), or with opticals that already have data written to them (**Load Volumes**).

2. Select **Load Blank Disks** and the jukebox is put into a “Load State”. The mailslot (plastic piece that enables disks to be loaded into an open slot) on the jukebox will rotate and allow the user to place a disk into it.

3. Insert a disk into the mailslot (ensure disk is pushed in as far as it will go).The jukebox will automatically put the disk into an empty slot and return the mailslot so that another disk can be loaded.

4. Insert the desired number of blank disks.

5. Select **Done Loading** from the **Load** menu.

CAUTION

The jukebox will assume blanks are being loaded if **Load Blank Disks** is chosen. If an existing optical disk with data on it is loaded into the jukebox, using this option the data **could be lost**. If loading optical disks with data **already** written to them, use the **Load Volumes** option which is described in Section B-3.3.

B-3.3. Loading Volumes

Use the following procedure to load volumes:

1. Select the **Load** button.
2. Select **Load Volumes**.
3. When the **Load Volumes** option is selected, the jukebox will perform the same type of operations as when **Load Blank Disks** is selected, except that each side of each optical disk loaded will be placed into the drive and mounted. This is done to determine what volume (if any) is contained on each side of each optical. If no volume is detected on the optical disk, the **Jukebox Status** UI will show **Unknown** for the volume, next to the slot or drive number as shown in Figure B-4.

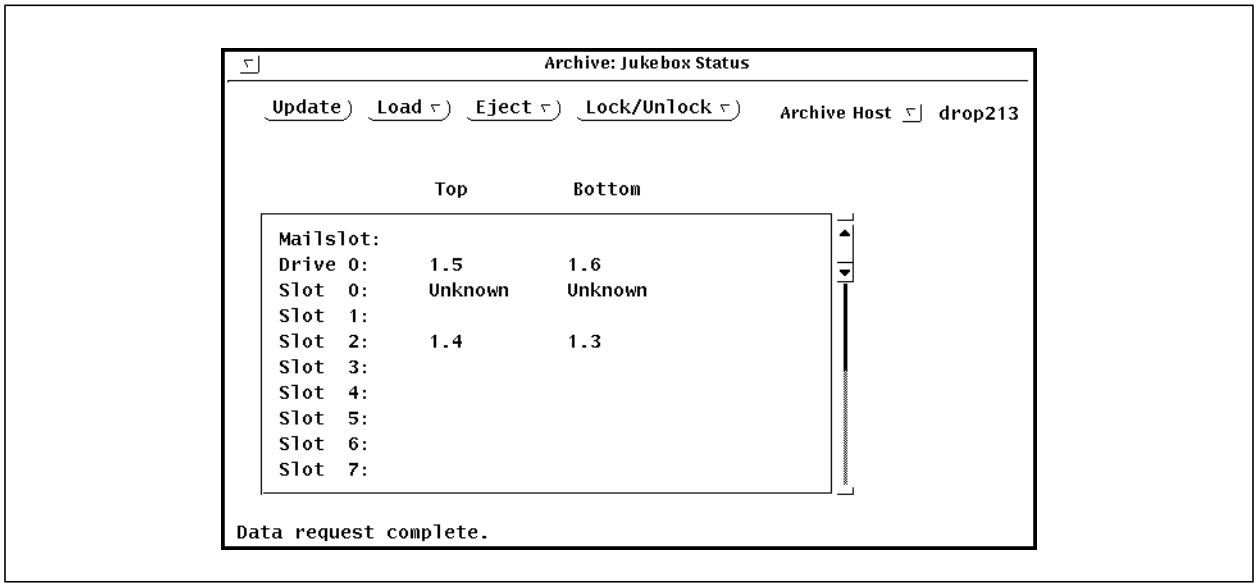

Figure B-4. Jukebox Status: Unknown Volume

When loading (either blanks or volumes), the **Jukebox Status** UI will put itself into a “Load State” as shown in Figure B-5.

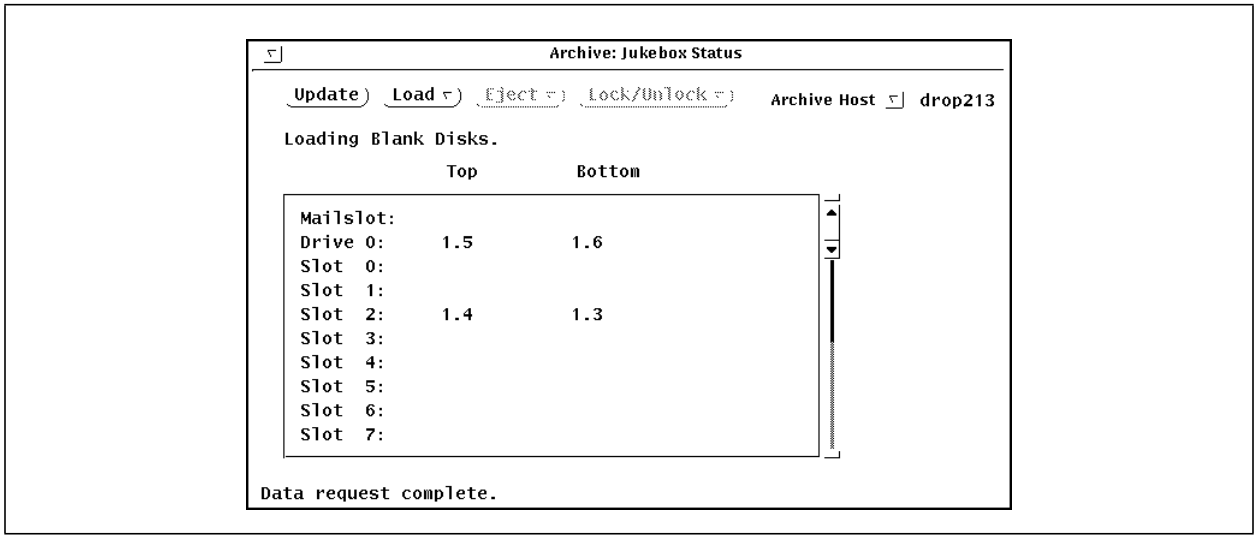

Figure B-5. Jukebox Status: Loading State

The example in Figure B-5 is shown as if **Load Blank Disks** were chosen. Notice also the text under the buttons that reads “**`Loading Blank Disks`**.” This is one indication that the **Jukebox Status** UI has put the jukebox into a “Load State.” Also notice that the pull down menus for **Eject** and **Lock/Unlock Disk** are inaccessible. This is because these operations are not valid for a “Load State.” **Done Loading** must be chosen from the **Load** menu to toggle the **Jukebox Status** UI out of the “Load State”.

When in a **Load Blank Disks** state, the only applicable operations are:

- **Update** the UI (the UI will **NOT** automatically update).
- Place the **Jukebox Status** UI into a **Load Volumes** state (mount all opticals inserted).
- **Done Loading** option (to complete loading).

Figure B-6 shows these applicable operations.

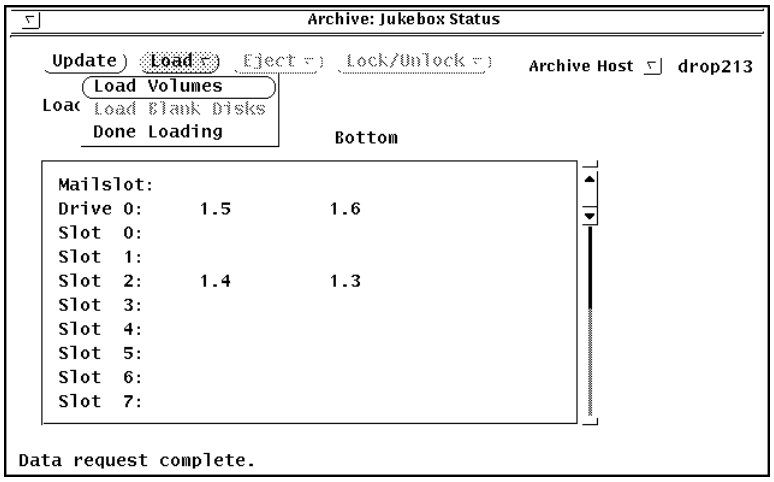

Figure B-6. Jukebox Status: Load State Menu

Note

The **Jukebox Status** UI is designed so that it incorporates a safety locking mechanism. If any **Jukebox Status** UI puts the jukebox into a “Load State”, then any other **Jukebox Status** UI’s that might exist on any other drop will not be able to put the jukebox into any (“Load”, “Eject”, or “Lock/Unlock”) state until the original UI exits the “Load State” (**Done Loading**).

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B-4. Loading the Maximum Number of Disks

All of the slots in the jukebox can be utilized. When a **Load** request is issued with all but one of the slots in the jukebox already filled, a disk is ejected because the jukebox does not know how many disks will be loaded. It will continue to eject one disk for every one expected to load when all but one of the slots are full.

Use the following procedure to load all the slots in the jukebox:

1. Hold the last disk to be inserted.
2. Put the jukebox into a “Load State”. This will bring a disk to the mailslot.
3. Remove that disk and place the desired disk into the mailslot. The jukebox will then eject another disk into the mailslot, anticipating another load.
4. With the disk **still in the mailslot**, tell the jukebox that loading is complete by selecting the **Done Loading** option. The disk in the mail slot will be taken in, and the jukebox will now be secure with all slots filled.

B-5. Ejecting Disks in the Optical Jukebox

Disks can only be ejected from the jukebox by using the **Eject** pull-down menu. When this menu is accessed (without the jukebox being in a “Load State” or “Lock/Unlock State”), it will appear similar to Figure B-7.

Use the following procedure to eject disks:

1. Select the **Eject** button.
2. Select the **Select Disks to Eject** button and the jukebox will be put into an “Eject State.” Then the canvas area that is displaying the slot/drive and volume information is now selectable. Select one or several drives/slots by clicking on the applicable slot or drive number.
3. If **Eject Disks** is selected, all the selected disks from the jukebox will be ejected one at a time.

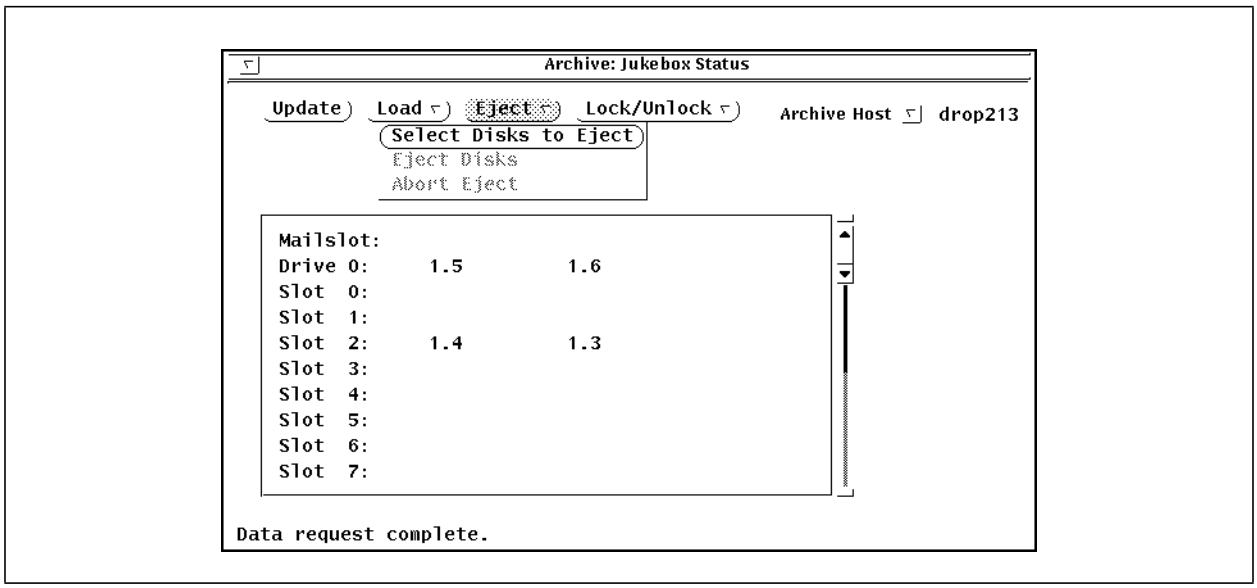

Figure B-7. Jukebox Status: Eject Menu

4. When the jukebox ejects disks, they will appear at the mailslot. Remove the disk. The jukebox can not eject any other disks until the disk protruding from the mailslot is removed.
5. After the desired disks are ejected, select **Abort Eject** from the menu.

   The jukebox will remain in an “Eject State” until the **Abort Eject** button is pressed. This is true even if all the disks selected have already been ejected.

Note

The **Jukebox Status** UI is designed so that it incorporates a safety locking mechanism. If any **Jukebox Status** UI puts the jukebox into a “Eject State”, then any other **Jukebox Status** UI’s that might exist on any other drop will not be able to put the jukebox into any state (“Load”, “Eject”, or “Lock/ Unlock”) until the original UI exits the “Eject State” (**Abort Eject**).

B-6. Labeling of Optical Disks

When using a stand-alone optical drive, it is easy to label the disks. Every time a particular disk is asked for (via Attention Response), the user already knows what volume the optical side will be. Therefore, labeling disks was pro-active and easy.

This is not the case when dealing with a jukebox. Blanks are loaded into the jukebox and then the Archive Manager will decide in what order to use the blanks. The **Jukebox Status** can show the user which disks are labeled as volumes, and which are blank, but the disks lack a physical label which would be needed by the user to identify any disk that may be ejected and used at a later time.

It is therefore recommended that at periodic intervals, the user eject opticals that have volumes already written to them and place labels on these disks to identify them. After placing written labels on the disks, they can be reloaded back into the jukebox using the **Load Volumes** button. If periodic labeling of the disks is done, the disks will be easily identifiable if they are automatically ejected from the jukebox and placed into storage (on a shelf for example).

Always place a written label on any disk (that is, a volume that has data on it) that is ejected from the jukebox for any reason. If the user sees a disk protruding from the mailslot, but does not know what volume it is, press the **Update** button, without removing the disk from the mailslot. The mailslot entry will show the volume number for both sides of the disk.

B-7. Locking and Unlocking Optical Disks

Locking and unlocking of optical disks inside the jukebox pertains to what criteria is used if a disk needs to be ejected. A disk will only *need* to be ejected if the jukebox is full (all slots filled) and another disk needs to be placed into the jukebox either to be written to or retrieved from. Therefore, the **Lock/Unlock** button functionally will only make sense if the jukebox is full or very close to full.

The HSR Archive Manager uses certain algorithms to determine what disk(s) to eject when an ejection operation is necessary. This algorithm is defined as the least used optical volume being the highest candidate to be ejected. The Lock/ Unlock functionality overrides this algorithm by choosing a disk or disks to keep locked in the jukebox. If a disk is locked, then the ejection algorithm will ignore the entire disk as a candidate to be ejected.

Use the following procedure to lock and unlock disks:

1. Select the **Lock/Unlock** pull down menu (shown in Figure B-8).
2. Select **Select Disks to Lock/Unlock**. If this option is selected, the jukebox will enter a “Lock/Unlock State” similar to a “Load State” or “Eject State.” The canvas area will now behave similar to **Select Disks to Eject** (refer to Section B-5).
3. Select one or more disks (by clicking on applicable slot or drive number) to be locked.
4. Select the **Lock/Unlock Disks** button to lock the selected disk(s) if previously unlocked, or unlock the selected disk(s) if previously locked.

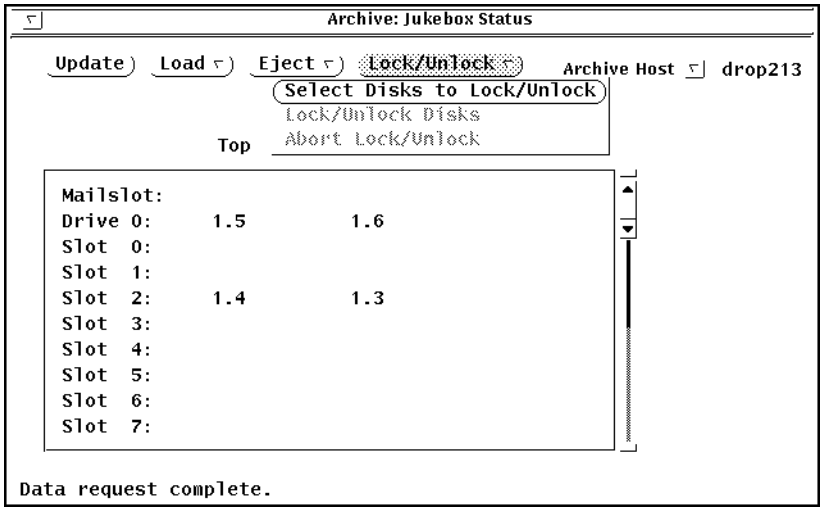

Figure B-8. Jukebox Status: Lock/Unlock Menu

5. Select the **Abort Lock/Unlock** menu item.The jukebox will remain in a “Lock/Unlock State” until the button **Abort Lock/Unlock** item is pressed.

Note

The **Jukebox Status** UI is designed so that it incorporates a safety locking mechanism. If any **Jukebox Status** UI puts the jukebox into a “Lock/Unlock State”, then any other **Jukebox Status** UI’s that might exist on any other drop will not be able to put the jukebox into any state (“Load”, “Eject”, or “Lock/Unlock”) until the original UI exits the “Lock/Unlock State” (**Abort Lock/Unlock**).

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B-8. Attentions

The **Archive:Attention Response** window is used to notify the user that a specific optical disk is needed. The Attention Response plays a very prominent role on an HSR with a stand alone optical device (refer to Section 8). This Attention Response plays a lesser role on an HSR with a jukebox.

There are two conditions which will cause the **Attention Response** window to automatically open on an HSR with a jukebox.

1. **`Specific disk needed`**

   If the Archive Manager needs a disk that is not currently located inside the jukebox, then the mailslot on the jukebox will be opened and an **Attention** will be posted to insert a specific volume into the mailslot. Figure B-9 shows an example of this message. The Archive Manager needs the volume specified for either a write operation (current volume, should be very, very rare) or a retrieval operation.

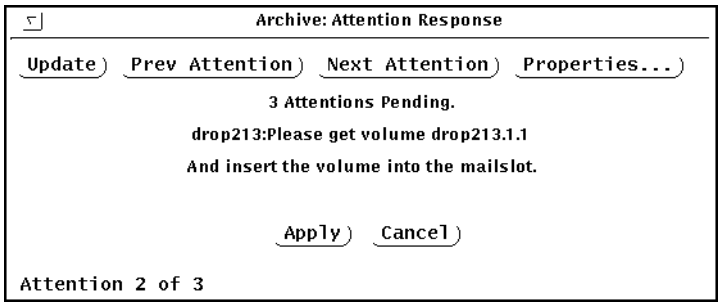

Figure B-9. Archive:Attention Response

2. **`Minimum number of blanks not present`**

   The following WDPF Admin Tool settings determine how many blank disk sides must be present in the jukebox at all times:

   Function: Define Software Configuration
   Filter: Historical Storage/Retrieval
   Topic: HSR Optical Disk Parameters
   Item: Jukebox Minimum Blank Volumes

   If, at any time, there are less blank disk sides in the jukebox than this parameter specifies, than an **Attention** is posted similar to Figure B-10. Note that this attention is read-only. There is no user input needed (**Apply/Cancel**). In order to clear this attention, the user must load more blank disks using the **Load Blanks** option (described in Section B-3.2)**.**

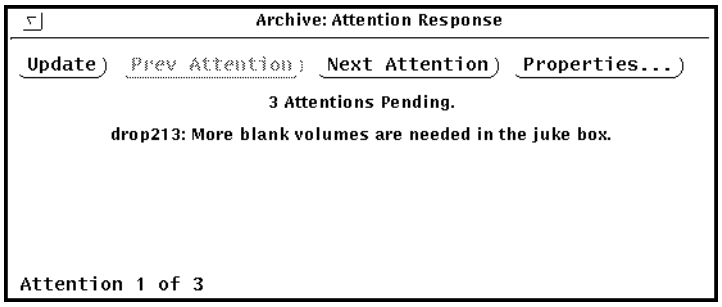

Figure B-10. Archive:Attention Response

B-9. Volume Library Management

After the jukebox is initially setup and configured, it should be loaded with blank disks up to (or close to) the capacity. Following the initial loading of blanks, the jukebox will run for a significant period of time without intervention. This is because as the Archive Manager has files to write to the optical disk, it will fill disks and use blanks to write more. The only intervention that is recommended is to periodically write labels on unlabeled disks by ejecting them (refer to Section B-6).

When more disks have been written to than can fit in the jukebox, then it is time to make decisions on what to disks to store in the jukebox. The Archive Manager can handle all scenarios that can occur inside the jukebox. If a disk is needed that is not in the jukebox, an Attention will appear (Refer to Section B-8).

If a retrieval is issued that spans five optical volumes, and all the volumes needed are in the jukebox, then the Archive Manager will mount each of the disks needed and retrieve the information from each of the optical disks without any intervention from the user.

Therefore, if thirty disks have been written to, and there are only sixteen slots to fill, there are many different combinations of disks of sixteen that could be loaded. Whether the jukebox is loaded with contiguous volumes or not, is a decision of the user. The Archive Manager will handle contiguous and non-contiguous volumes in the jukebox as stated above. It is recommended, however, that the best method to manage the jukebox is to keep a rolling contiguous window; more disks are written to, older disks are ejected.

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