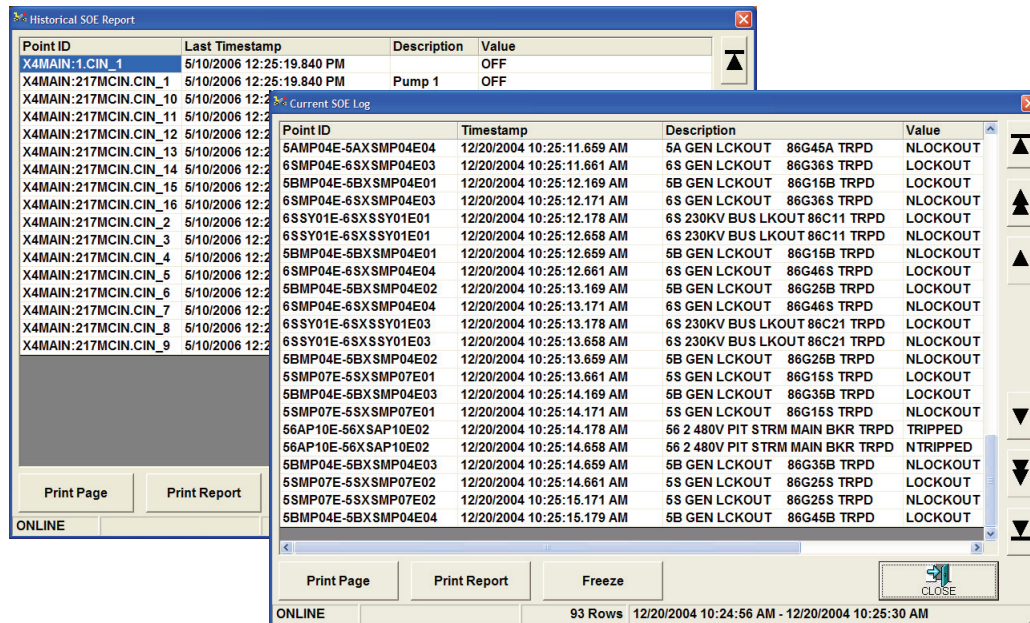


Sequence of Events



Point ID	Last Timestamp	Description	Value
X4MAIN:1.CIN_1	5/10/2006 12:25:19.840 PM		OFF
X4MAIN:217MCIN.CIN_1	5/10/2006 12:25:19.840 PM	Pump 1	OFF
X4MAIN:217MCIN.CIN_10	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_11	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_12	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_13	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_14	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_15	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_16	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_2	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_3	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_4	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_5	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_6	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_7	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_8	5/10/2006 12:25:19.840 PM		
X4MAIN:217MCIN.CIN_9	5/10/2006 12:25:19.840 PM		

Point ID	Timestamp	Description	Value
5AMP04E-5AXSMP04E04	12/20/2004 10:25:11.659 AM	5A GEN LCKOUT 86G45A TRPD	NLOCKOUT
5SMP04E-6SXSMP04E03	12/20/2004 10:25:11.661 AM	6S GEN LCKOUT 86G36S TRPD	LOCKOUT
5BMP04E-5BXSMP04E01	12/20/2004 10:25:12.169 AM	5B GEN LCKOUT 86G15B TRPD	LOCKOUT
6SMP04E-6SXSMP04E03	12/20/2004 10:25:12.171 AM	6S GEN LCKOUT 86G36S TRPD	NLOCKOUT
6SSY01E-6SXSYP01E01	12/20/2004 10:25:12.178 AM	6S 230KV BUS LKOUT 86C11 TRPD	LOCKOUT
6SSY01E-6SXSYP01E01	12/20/2004 10:25:12.658 AM	6S 230KV BUS LKOUT 86C11 TRPD	NLOCKOUT
5BMP04E-5BXSMP04E01	12/20/2004 10:25:12.659 AM	5B GEN LCKOUT 86G15B TRPD	NLOCKOUT
6SMP04E-6SXSMP04E04	12/20/2004 10:25:12.661 AM	6S GEN LCKOUT 86G46S TRPD	LOCKOUT
5BMP04E-5BXSMP04E02	12/20/2004 10:25:13.169 AM	5B GEN LCKOUT 86G25B TRPD	LOCKOUT
6SMP04E-6SXSMP04E04	12/20/2004 10:25:13.171 AM	6S GEN LCKOUT 86G46S TRPD	NLOCKOUT
6SSY01E-6SXSYP01E03	12/20/2004 10:25:13.178 AM	6S 230KV BUS LKOUT 86C21 TRPD	LOCKOUT
6SSY01E-6SXSYP01E03	12/20/2004 10:25:13.658 AM	6S 230KV BUS LKOUT 86C21 TRPD	NLOCKOUT
5BMP04E-5BXSMP04E02	12/20/2004 10:25:13.659 AM	5B GEN LCKOUT 86G25B TRPD	NLOCKOUT
5SMP07E-5SXSMP07E01	12/20/2004 10:25:13.661 AM	5S GEN LCKOUT 86G15S TRPD	LOCKOUT
5BMP04E-5BXSMP04E03	12/20/2004 10:25:14.169 AM	5B GEN LCKOUT 86G35B TRPD	LOCKOUT
5SMP07E-5SXSMP07E01	12/20/2004 10:25:14.171 AM	5S GEN LCKOUT 86G15S TRPD	NLOCKOUT
56AP10E-56XSAP10E02	12/20/2004 10:25:14.178 AM	56 2 480V PIT STRM MAIN BKR TRPD	TRIPPED
56AP10E-56XSAP10E02	12/20/2004 10:25:14.658 AM	56 2 480V PIT STRM MAIN BKR TRPD	NTRIPPED
5BMP04E-5BXSMP04E03	12/20/2004 10:25:14.659 AM	5B GEN LCKOUT 86G35B TRPD	NLOCKOUT
5SMP07E-5SXSMP07E02	12/20/2004 10:25:14.661 AM	5S GEN LCKOUT 86G25S TRPD	LOCKOUT
5SMP07E-5SXSMP07E02	12/20/2004 10:25:15.171 AM	5S GEN LCKOUT 86G25S TRPD	NLOCKOUT
5BMP04E-5BXSMP04E04	12/20/2004 10:25:15.179 AM	5B GEN LCKOUT 86G45B TRPD	LOCKOUT

The Sequence of Events (SOE) software package acquires, stores, displays, and reports state changes (events) from specific digital input points in a control system.

FEATURES

SOE provides the following features:

- ▶ Highly accurate collection of digital signals at a resolution of up to 1 ms
- ▶ High-resolution data acquisition across multiple control processors with the optional GPS time synchronization feature
- ▶ Prevention of data loss during high frequency occurrences of events with the use of an intermediate, configurable buffer
- ▶ Seamless integration with AIM*Historian software to provide long-term storage of SOE data
- ▶ Generation of reports and logs containing current or historical digital information
- ▶ Configurable report and log templates
- ▶ Dynamically updated on-screen displays with controls that allow you to easily navigate to and view or print specific data
- ▶ Access to reports and logs from any SOE operator client workstation
- ▶ Easy-to-use GUI for quickly identifying and importing SOE points for which you want to record SOE data and events
- ▶ Capability of configuring meaningful and identifiable entries to be used in reports and logs.

OVERVIEW

The Sequence of Events (SOE) software package provides the ability to accurately collect, display and report both current and historical events, defined as discrete state changes. The SOE software package is designed to assist in the analysis of plant behavior after a fault.

The SOE software package uses server/client architecture for acquisition, storage, and display of data from digital points in your control system with a resolution of one millisecond (ms). SOE software, taking advantage of the optional GPS based time synchronization capability, supports data acquisition at intervals of up to one ms across the entire system.

Data that SOE software collects is sent to an AIM*Historian database for long-term storage to permanent media.

SOE data is based on events, defined as the change in state of a digital input signal. When a digital input goes from false to true, an “event” occurs and the SOE software displays a message showing the date and time of the event. Similarly, when a digital input goes from true to false, an event occurs and is reported. A “sequence of events” is a complete time-sorted set of data that documents the occurrences and sequence of events or disturbances in a plant.

Data from the I/O channels of the following FBMs can be collected and analyzed with SOE software:

- ▶ FBM207, Channel Isolated Voltage Monitor/Contact Sense Input Interface Module
- ▶ FBM217, Group Isolated Discrete Input Interface Module.

SOE CONFIGURATION AND OPERATOR CLIENTS

SOE software uses server/client architecture, and provides two different types of interaction: operation or configuration.

Before collecting data, the process engineer uses the configuration client to define the behavior of the SOE software by setting general operating parameters and selecting the real-time data points that will be monitored by SOE software. Each selected point is identified by a unique tag, the FBM name, and the FBM channel number associated with the point. Data from these real-time points (RTPs) will be collected from your running process and stored in an AIM*Historian database.

In addition, the configuration client allows you to customize each RTP's description, and ON and OFF state text. This facilitates identification and analysis of events and disturbances in the plant by making reports and logs more meaningful and understandable.

A process operator monitoring the plant uses the operator client to display and print the configured SOE reports and logs. The operator client can be used with a mouse or a touchscreen.

SOFTWARE OPERATION

The SOE server acquires data from FBM channels via an FCP270 or FCM100Et on the control domain using a high speed data acquisition interface. The data is stored in a memory-resident circular buffer and sent to an AIM*Historian database for long-term storage. SOE sends current data (from the buffer) or historical data to SOE clients, and the clients show reports and logs with configurable and understandable messages.

Data Collection

Data collection is performed by the same high speed data acquisition interface to the control domain used by Transient Data Recorder and Analyzer (TDR/TDA) software (PSS 21S-2B10 B4). The TDR/TDA product is licensed separately from the SOE product; but for digital points designated for both transient data and sequence of events reporting, the two packages may run in the same workstation and share the same high speed data acquisition interface.

Data Storage and Retrieval

The SOE package sends data to the AIM*Historian product for permanent storage. Between the time that events are collected by SOE and archived by AIM*Historian, they are temporarily stored in an intermediate buffer. SOE relies upon this buffering mechanism to process an extensive amount of data in a short time period without losing information. The circular buffer is configurable from 1,000 to 1,000,000 events.

You can use standard AIM*Historian functions to query its archives for specific data.

Refer to *I/A Series Information Suite AIM*Historian* (PSS 21S-6C1 B3) for additional information on AIM*Historian software.

THE SOE CONFIGURATION CLIENT

The configuration client provides the user interface with which you can configure the real-time points (RTPs) that are to be collected as SOE data from FBM I/O data channels. You can customize the printed reports and logs in which these RTPs appear by editing the supplied templates.

Additionally, the configuration client allows you to edit the following general SOE operating parameters:

- ▶ The time delay between event detection and the time at which the collected data is sorted by time stamp and stored in the circular buffer. This time delay ensures that if there is a time delay between different data sources (FBMs), the data is stored in the correct time sorted order in the circular buffer.
- ▶ The size of the SOE circular buffer.
- ▶ The default debounce period, or the number of milliseconds a signal must be stable before its change in state is processed. The debounce filter eliminates a signal's relay chatter.
- ▶ The name of the AIM*Historian instance used to archive data.
- ▶ The names of the printers used to print SOE reports and logs.
- ▶ The time preference (UTC or local time) in which the timestamps are displayed.
- ▶ The maximum number of rows in SOE data tables that are displayed on the screen for the reports and logs.
- ▶ The location of configurable report, log, and configuration templates.

Also, from the General Parameters window (Figure 1), you can access SOE server statistics (Figure 2), such as buffer use and the number of events processed.

SOE Configuration Client - General Parameters

SOE Server Parameters

SOE Delay Time in Seconds

0

SOE Server Buffer Size

50000

SOE Debounce Milliseconds

0

SOE Station Id

SOECXS

SOE Array Size for Historian

100

Local Parameters

SOE Server Name

X4AW70

SOE Historian Instance Name

soehx6

Printer Name

\\fox-nep15-prtlHawk

Auto-Printer Name

\\fox-nep15-prtlHawk

Use UTC

False

Maximum Number of SOE Rows in Grid

1000

Config Report - Template

D:\opt\fox\tr\soe\templates\Configuration Report.rtf

Current SOE Report - Template

D:\opt\fox\tr\soe\templates\Current SOE Report.rtf

Current SOE Log - Template

D:\opt\fox\tr\soe\templates\Current SOE Log.rtf

Historical SOE Report - Template

D:\opt\fox\tr\soe\templates\Historical SOE Report.rtf

Historical SOE Log - Template

D:\opt\fox\tr\soe\templates\Historical SOE Log.rtf

Show Statistics

SOE RTP Configuration

Save and Exit

Cancel

ONLINE

TIME 5/11/2006 10:54:14 AM

Figure 1. Configuring SOE General Parameters

SOE Server Statistics

Buffer Usage

Size

In Use

Max In Use

HSDAI Buffer

50000

0

17

SOE Server Circular Buffer

50000

0

17

SOE Server Sort Buffer

17

0

Buffer Overrun

HSDAI

0

SOE Server

0

SOE Count

Start Time

5/3/2006 2:19:08 AM

after Debounce

before Debounce

total SOE Count

272

272

SOE Count

0

0

SOEs per Minute

0

0

Max SOEs per Minute

34

34

1

Set Cycle in seconds

Reset Buffer Overrun

Reset SOE Count

OK

Figure 2. SOE Server Statistics

Selecting SOE Real-Time Points

After setting up general SOE parameters, you can quickly and easily select the digital tags in your control system for which you want to record SOE data and events.

SOE software queries the control system for available digital points that can be collected with SOE software, and retrieves only valid SOE RTPs, that is, those points that are supported and enabled for sequence of events collection.

The supported points are then displayed in a tree format so you can select them for inclusion in the set of RTPs for which data will be collected, as shown in Figure 3. To do this, expand the compound in which the points exist, then select the point you wish to include (block.parameter format).

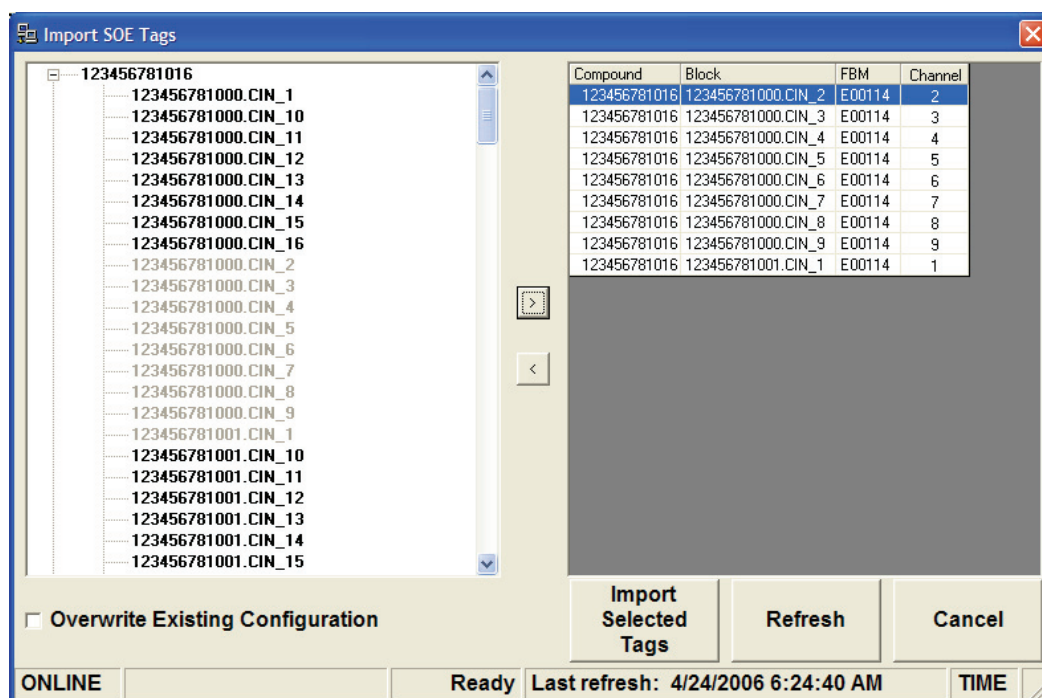


Figure 3. Importing SOE Tags

Configuring Real-Time Points

After selecting a data point for which you want to collect data, the RTP name is set to a tag name (C:B.P) assigned by SOE, no description of the point is provided, and the state text of the point defaults to ON and OFF. You can customize this generic text and insert an RTP description so that specific, meaningful messages pertaining to the RTPs and their state values are displayed in SOE reports and logs.

Using the SOE RTP Configuration window, shown in Figure 4, you can:

- ▶ Modify the “Description” field to contain a meaningful text string representing the RTP in reports and logs.
- ▶ Customize the “VALUE ON” and “VALUE OFF” fields to contain the text that appears in the “Value” column in SOE reports and logs when the state of the associated RTP is On (True) or Off (False) respectively. For example, if the SOE tag represents a valve’s position, you can set the value “ON” to “Open” and the value “OFF” to “Closed”.
- ▶ Adjust the debounce value to the time required for a signal to be stable before its state change is processed.
- ▶ Enable or disable the collection of data for an individual configured RTP.
- ▶ Import from the set of SOE RTPs.
- ▶ Run the configuration report, which prints the settings you establish in the SOE configuration client on the printer specified in the General Parameters window.
- ▶ Save or cancel configuration changes.
- ▶ Exit the SOE configuration client.

INDEX	RTP NAME	DESCRIPTION	VALUE ON	VALUE OFF	DEBOUNCE	FBM NAME	FBM-CH	ACTIVATED
2	X4MAIN:217MCIN.CIN_1		ON	OFF	0	E00114	1	☒
3	X4MAIN:217MCIN.CIN_1	Pump 1	ON	OFF	0	E00114	1	☒
4	X4MAIN:217MCIN.CIN_2	Pump 2	ON	OFF	0	E00114	2	☒
5	X4MAIN:217MCIN.CIN_3	Pump 3	ON	OFF	0	E00114	3	☒
6	X4MAIN:217MCIN.CIN_4	Pump 4	ON	OFF	0	E00114	4	☒
7	X4MAIN:217MCIN.CIN_5	Pump 5	ON	OFF	0	E00114	5	☒
8	X4MAIN:217MCIN.CIN_6	Pump 6	ON	OFF	0	E00114	6	☒
9	X4MAIN:217MCIN.CIN_7	Pump 7	ON	OFF	0	E00114	7	☒
10	X4MAIN:217MCIN.CIN_8	Pump 8	ON	OFF	0	E00114	8	☒
11	X4MAIN:217MCIN.CIN_9	Valve 1	OPEN	CLOSED	0	E00114	9	☒
12	X4MAIN:217MCIN.CIN_10	Valve 2	OPEN	CLOSED	0	E00114	10	☒
13	X4MAIN:217MCIN.CIN_11	Valve 3	OPEN	CLOSED	0	E00114	11	☒
14	X4MAIN:217MCIN.CIN_12	Valve 4	OPEN	CLOSED	0	E00114	12	☒
15	X4MAIN:217MCIN.CIN_13	Valve 5	OPEN	CLOSED	0	E00114	13	☒
16	X4MAIN:217MCIN.CIN_14	Valve 6	OPEN	CLOSED	0	E00114	14	☒
17	X4MAIN:217MCIN.CIN_15	Valve 7	OPEN	CLOSED	0	E00114	15	☒
18	X4MAIN:217MCIN.CIN_16	Valve 8	OPEN	CLOSED	0	E00114	16	☒

General Parameters Import SOE Tags Delete Selected Tags Config Report Save CLOSE

ONLINE 1 Tag(s) selected, 17 changed TIME 5/11/2006 11:01:15 AM

Figure 4. Configuring SOE Real-Time Points

THE SOE OPERATOR CLIENT

The operator client is used to display and print SOE reports and logs. Two different modes are supported: the first mode displays current events with automatic updates (current SOE log) on the screen. The second mode displays historical data.

SOE Operator Client Main Window

The operator client main window (Figure 5) is used to perform all operator functions in the SOE software. From the operator client main window, you can:

- ▶ Display any of the available SOE reports or logs described in the following sections
- ▶ Activate or deactivate automatic printing of the current SOE log
- ▶ Exit the SOE operator client.

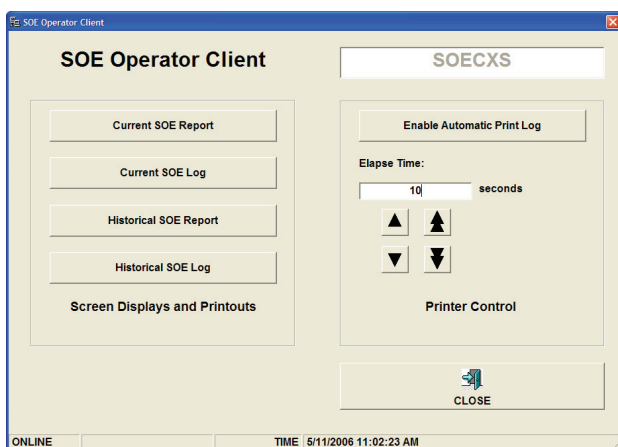


Figure 5. SOE Operator Client

REPORTS AND LOGS

An important feature of SOE software is the creation of reports and logs, which organize and present information about SOE points and events so that you can easily analyze digital data. In addition, reports and logs can be generated on demand using archived data to allow plant personnel to analyze data when needed.

After a plant upset, for example, you can examine a generated report or log to determine what caused the disturbance and how plant management can be improved in response to the disturbance.

You can access current SOE events and have them displayed and updated automatically on your monitor. You can access historical SOE data stored in the AIM*Historian instance, which can also be viewed on a monitor or printed from any SOE client workstation.

SOE software allows you to customize reports using the provided report templates. The template files are in rich text format, so you can use a word processor such as Microsoft® Word to tailor the reports according to your preferences and to the specifications of your plant.

SOE provides you with the capability to demand a report or log at any time, or to configure the SOE current log to display or print automatically to the output device of your choice.

An **SOE report** documents the states of designated digital points sorted by point ID at a specific point in time (current or historical). An **SOE log** documents a complete set of events sorted by time stamp over a specified time span (current or historical). The following reports can be displayed and printed in landscape format:

- ▶ SOE report using the current time
- ▶ SOE report using a historical time
- ▶ SOE log using the current time
- ▶ SOE log using a historical time.

Screen Displays of SOE Reports and Logs

Identical data is reported in printed output and on screen displays of SOE reports and logs. However, the screen displays contain controls that make it easy to navigate to and view or print specific data.

Using the Update and Freeze buttons on the current SOE log, you can enable or disable automatic on-screen updates to current RTP values. These buttons are only available when displaying an SOE log using the current time; historical data cannot be dynamically updated.

Navigation buttons that appear on the right-hand side of screen displays allow you to:

- ▶ Navigate to the top or bottom of the report/log
- ▶ Go up or down one page
- ▶ Go up or down one item.

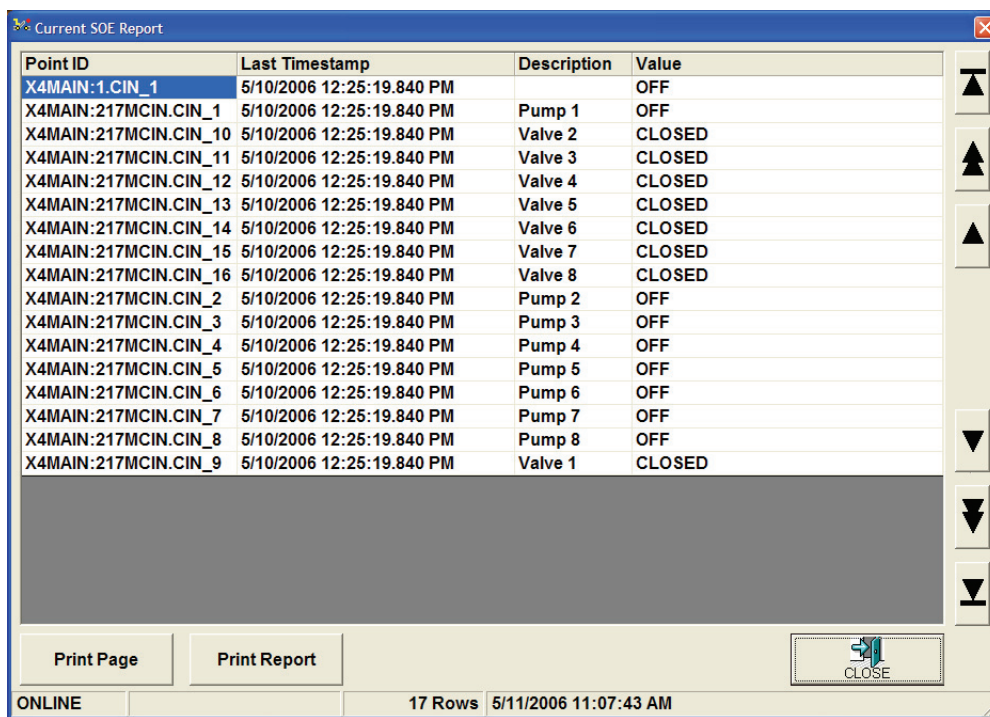
From a screen display, you can opt to print the currently displayed page or the entire SOE report or log to the configured printer.

Sequence of Events Reports

An SOE report retrieves all RTPs configured as SOE points and sorts them by Point ID (RTP name). For each RTP, the report lists the Point ID, the time at which the digital RTP last changed its state (to the millisecond), a description of the RTP, and the state to which the RTP changed at the listed time. An SOE report is generated on demand.

Current SOE Report

Figure 6 shows an example of an SOE report displayed on a screen using the current time.



Point ID	Last Timestamp	Description	Value
X4MAIN:1.CIN_1	5/10/2006 12:25:19.840 PM		OFF
X4MAIN:217MCIN.CIN_1	5/10/2006 12:25:19.840 PM	Pump 1	OFF
X4MAIN:217MCIN.CIN_10	5/10/2006 12:25:19.840 PM	Valve 2	CLOSED
X4MAIN:217MCIN.CIN_11	5/10/2006 12:25:19.840 PM	Valve 3	CLOSED
X4MAIN:217MCIN.CIN_12	5/10/2006 12:25:19.840 PM	Valve 4	CLOSED
X4MAIN:217MCIN.CIN_13	5/10/2006 12:25:19.840 PM	Valve 5	CLOSED
X4MAIN:217MCIN.CIN_14	5/10/2006 12:25:19.840 PM	Valve 6	CLOSED
X4MAIN:217MCIN.CIN_15	5/10/2006 12:25:19.840 PM	Valve 7	CLOSED
X4MAIN:217MCIN.CIN_16	5/10/2006 12:25:19.840 PM	Valve 8	CLOSED
X4MAIN:217MCIN.CIN_2	5/10/2006 12:25:19.840 PM	Pump 2	OFF
X4MAIN:217MCIN.CIN_3	5/10/2006 12:25:19.840 PM	Pump 3	OFF
X4MAIN:217MCIN.CIN_4	5/10/2006 12:25:19.840 PM	Pump 4	OFF
X4MAIN:217MCIN.CIN_5	5/10/2006 12:25:19.840 PM	Pump 5	OFF
X4MAIN:217MCIN.CIN_6	5/10/2006 12:25:19.840 PM	Pump 6	OFF
X4MAIN:217MCIN.CIN_7	5/10/2006 12:25:19.840 PM	Pump 7	OFF
X4MAIN:217MCIN.CIN_8	5/10/2006 12:25:19.840 PM	Pump 8	OFF
X4MAIN:217MCIN.CIN_9	5/10/2006 12:25:19.840 PM	Valve 1	CLOSED

Print Page Print Report CLOSE

ONLINE 17 Rows 5/11/2006 11:07:43 AM

Figure 6. Current SOE Report

Historical SOE Report

For a historical SOE report, a dialog box (Figure 7) allows you to select the point in time at which you want to display the states of the configured SOE RTPs.

Figure 8 shows an example of an SOE report displayed on a screen using a specified historical time.

Figure 7. Select Report Start Time

Point ID	Last Timestamp	Description	Value
X4MAIN:1.CIN_1	5/10/2006 12:25:19.840 PM		OFF
X4MAIN:217MCIN.CIN_1	5/10/2006 12:25:19.840 PM	Pump 1	OFF
X4MAIN:217MCIN.CIN_10	5/10/2006 12:25:19.840 PM	Valve 2	CLOSED
X4MAIN:217MCIN.CIN_11	5/10/2006 12:25:19.840 PM	Valve 3	CLOSED
X4MAIN:217MCIN.CIN_12	5/10/2006 12:25:19.840 PM	Valve 4	CLOSED
X4MAIN:217MCIN.CIN_13	5/10/2006 12:25:19.840 PM	Valve 5	CLOSED
X4MAIN:217MCIN.CIN_14	5/10/2006 12:25:19.840 PM	Valve 6	CLOSED
X4MAIN:217MCIN.CIN_15	5/10/2006 12:25:19.840 PM	Valve 7	CLOSED
X4MAIN:217MCIN.CIN_16	5/10/2006 12:25:19.840 PM	Valve 8	CLOSED
X4MAIN:217MCIN.CIN_2	5/10/2006 12:25:19.840 PM	Pump 2	OFF
X4MAIN:217MCIN.CIN_3	5/10/2006 12:25:19.840 PM	Pump 3	OFF
X4MAIN:217MCIN.CIN_4	5/10/2006 12:25:19.840 PM	Pump 4	OFF
X4MAIN:217MCIN.CIN_5	5/10/2006 12:25:19.840 PM	Pump 5	OFF
X4MAIN:217MCIN.CIN_6	5/10/2006 12:25:19.840 PM	Pump 6	OFF
X4MAIN:217MCIN.CIN_7	5/10/2006 12:25:19.840 PM	Pump 7	OFF
X4MAIN:217MCIN.CIN_8	5/10/2006 12:25:19.840 PM	Pump 8	OFF
X4MAIN:217MCIN.CIN_9	5/10/2006 12:25:19.840 PM	Valve 1	CLOSED

Figure 8. Historical SOE Report

Sequence of Events Logs

The SOE log contains an entry line for every event that occurs, that is, one entry for every time an RTP changes state. The events listed in the SOE log are sorted by time. For each event entry, the SOE log records the Point ID (RTP name), the time at which the digital RTP changed its state, the RTP's description, and the state to which it changed.

You can choose to view a current SOE log, or you can specify a start point and an end point for the historical SOE log.

Current SOE Log

A current SOE log displayed on a screen shows data that is automatically updated: a new line is added to the bottom of the displayed list every time an RTP changes state. The automatic updates to the log can be disabled or enabled by clicking the Freeze or Update button.

Figure 9 shows an example of a current SOE log displayed on a screen.

Point ID	Timestamp	Description	Value
5AMP04E-5AXSMP04E04	12/20/2004 10:25:11.659 AM	5A GEN LCKOUT 86G45A TRPD	NLOCKOUT
6SMP04E-6SX SMP04E03	12/20/2004 10:25:11.661 AM	6S GEN LCKOUT 86G36S TRPD	LOCKOUT
5BMP04E-5BX SMP04E01	12/20/2004 10:25:12.169 AM	5B GEN LCKOUT 86G15B TRPD	LOCKOUT
6SMP04E-6SX SMP04E03	12/20/2004 10:25:12.171 AM	6S GEN LCKOUT 86G36S TRPD	NLOCKOUT
6SSY01E-6SXSSY01E01	12/20/2004 10:25:12.178 AM	6S 230KV BUS LKOUT 86C11 TRPD	LOCKOUT
6SSY01E-6SXSSY01E01	12/20/2004 10:25:12.658 AM	6S 230KV BUS LKOUT 86C11 TRPD	NLOCKOUT
5BMP04E-5BX SMP04E01	12/20/2004 10:25:12.659 AM	5B GEN LCKOUT 86G15B TRPD	NLOCKOUT
6SMP04E-6SX SMP04E04	12/20/2004 10:25:12.661 AM	6S GEN LCKOUT 86G46S TRPD	LOCKOUT
5BMP04E-5BX SMP04E02	12/20/2004 10:25:13.169 AM	5B GEN LCKOUT 86G25B TRPD	LOCKOUT
6SMP04E-6SX SMP04E04	12/20/2004 10:25:13.171 AM	6S GEN LCKOUT 86G46S TRPD	NLOCKOUT
6SSY01E-6SXSSY01E03	12/20/2004 10:25:13.178 AM	6S 230KV BUS LKOUT 86C21 TRPD	LOCKOUT
6SSY01E-6SXSSY01E03	12/20/2004 10:25:13.658 AM	6S 230KV BUS LKOUT 86C21 TRPD	NLOCKOUT
5BMP04E-5BX SMP04E02	12/20/2004 10:25:13.659 AM	5B GEN LCKOUT 86G25B TRPD	NLOCKOUT
5SMP07E-5SX SMP07E01	12/20/2004 10:25:13.661 AM	5S GEN LCKOUT 86G15S TRPD	LOCKOUT
5BMP04E-5BX SMP04E03	12/20/2004 10:25:14.169 AM	5B GEN LCKOUT 86G35B TRPD	LOCKOUT
5SMP07E-5SX SMP07E01	12/20/2004 10:25:14.171 AM	5S GEN LCKOUT 86G15S TRPD	NLOCKOUT
56AP10E-56X SAP10E02	12/20/2004 10:25:14.178 AM	56 2 480V PIT STRM MAIN BKR TRPD	TRIPPED
56AP10E-56X SAP10E02	12/20/2004 10:25:14.658 AM	56 2 480V PIT STRM MAIN BKR TRPD	NTRIPPED
5BMP04E-5BX SMP04E03	12/20/2004 10:25:14.659 AM	5B GEN LCKOUT 86G35B TRPD	NLOCKOUT
5SMP07E-5SX SMP07E02	12/20/2004 10:25:14.661 AM	5S GEN LCKOUT 86G25S TRPD	LOCKOUT
5SMP07E-5SX SMP07E02	12/20/2004 10:25:15.171 AM	5S GEN LCKOUT 86G25S TRPD	NLOCKOUT
5BMP04E-5BX SMP04E04	12/20/2004 10:25:15.179 AM	5B GEN LCKOUT 86G45B TRPD	LOCKOUT

Print Page

Print Report

Freeze

CLOSE

ONLINE93 Rows12/20/2004 10:24:56 AM - 12/20/2004 10:25:30 AM

Figure 9. Current SOE Log

Historical SOE Log

For a historical SOE log, a dialog box (see Figure 10) allows you to select the start time and end time for which you want to create a log of events. The

historical log displays the SOE RTPs that changed state during the specified time period.

Figure 11 shows an example of an SOE log displayed on a screen using a specified historical time span.

Select time

Start Time

Year	Month	Day	Hour	Minute	Second
2006	May	10	11	11	56

End Time

Year	Month	Day	Hour	Minute	Second
2006	May	10	11	12	56

Screen Printer Cancel

Figure 10. Select Log Start and End Time

Historical SOE Log

Point ID	Timestamp	Description	Value
X4MAIN:217MCIN.CIN_11	5/10/2006 12:24:33.875 PM	Valve 3	*BAD*
X4MAIN:217MCIN.CIN_12	5/10/2006 12:24:33.875 PM	Valve 4	*BAD*
X4MAIN:217MCIN.CIN_13	5/10/2006 12:24:33.875 PM	Valve 5	*BAD*
X4MAIN:217MCIN.CIN_14	5/10/2006 12:24:33.875 PM	Valve 6	*BAD*
X4MAIN:217MCIN.CIN_15	5/10/2006 12:24:33.875 PM	Valve 7	*BAD*
X4MAIN:217MCIN.CIN_16	5/10/2006 12:24:33.875 PM	Valve 8	*BAD*
X4MAIN:217MCIN.CIN_1	5/10/2006 12:25:19.840 PM	Pump 1	OFF
X4MAIN:217MCIN.CIN_7	5/10/2006 12:25:19.840 PM	Pump 7	OFF
X4MAIN:217MCIN.CIN_6	5/10/2006 12:25:19.840 PM	Pump 6	OFF
X4MAIN:217MCIN.CIN_5	5/10/2006 12:25:19.840 PM	Pump 5	OFF
X4MAIN:217MCIN.CIN_4	5/10/2006 12:25:19.840 PM	Pump 4	OFF
X4MAIN:217MCIN.CIN_3	5/10/2006 12:25:19.840 PM	Pump 3	OFF
X4MAIN:217MCIN.CIN_2	5/10/2006 12:25:19.840 PM	Pump 2	OFF
X4MAIN:1.CIN_1	5/10/2006 12:25:19.840 PM		OFF
X4MAIN:217MCIN.CIN_8	5/10/2006 12:25:19.840 PM	Pump 8	OFF
X4MAIN:217MCIN.CIN_16	5/10/2006 12:25:19.840 PM	Valve 8	CLOSED
X4MAIN:217MCIN.CIN_15	5/10/2006 12:25:19.840 PM	Valve 7	CLOSED
X4MAIN:217MCIN.CIN_14	5/10/2006 12:25:19.840 PM	Valve 6	CLOSED
X4MAIN:217MCIN.CIN_13	5/10/2006 12:25:19.840 PM	Valve 5	CLOSED
X4MAIN:217MCIN.CIN_12	5/10/2006 12:25:19.840 PM	Valve 4	CLOSED
X4MAIN:217MCIN.CIN_11	5/10/2006 12:25:19.840 PM	Valve 3	CLOSED
X4MAIN:217MCIN.CIN_10	5/10/2006 12:25:19.840 PM	Valve 2	CLOSED
X4MAIN:217MCIN.CIN_9	5/10/2006 12:25:19.840 PM	Valve 1	CLOSED

Print Page Print Report CLOSE

ONLINE 34 Rows 5/10/2006 11:11:56 AM - 5/11/2006 11:11:56 AM

Figure 11. Historical SOE Log

Printing Reports and Logs

Current reports and logs as well as historical reports and logs work with page-oriented printers only.

You can also print the most recent page of the current SOE log, even if the page is not completely full. Figure 12 shows an example of a printed SOE log using the current time.

Auto Log Printing

The auto log printing function runs in the background and is enabled and disabled from the SOE Operator Client.

Depending on the printer, the log will print as follows:

- ▶ With a line printer configured, a line is printed immediately every time a point value change occurs.
- ▶ With a page-oriented printer configured, every time a page of data is collected or the elapsed time has expired, the page automatically prints in landscape format. This page-oriented print mechanism is controlled by a configurable elapse timer.

A detailed log file is also created regarding the printing task: start and exit of the auto print log, use of a line printer, errors, lines not printed due to errors.

SEQUENCE OF EVENTS				
Current SOE Log				
REPORT TIME: 12/20/2004 12:55:13		STATION ID:H91AW7-SOE		
DATE	TIME	RTPNAME	DESCRIPTION	VALUE
12/20/2004	12:54:59.392 PM	6AP07E-06XSAP07E02	06-1 480V ST MCC TRIPPED	TRIPPED
12/20/2004	12:54:59.392 PM	06AP08E-06XSAP08E04	06-2 480V ST MCC TRIPPED	NTRIPPED
12/20/2004	12:54:59.892 PM	5AMP04E-5AXSMP04E02	5A GEN LCKOUT 86G25A TRPD	LOCKOUT
12/20/2004	12:54:59.892 PM	5AMP04E-5AXSMP04E03	5A GEN LCKOUT 86G35A TRPD	NLOCKOUT
12/20/2004	12:55:00.392 PM	6AMP04E-6AXSMP04E01	6A GEN LCKOUT 86G15B TRPD	LOCKOUT
12/20/2004	12:55:00.392 PM	6AMP04E-6AXSMP04E02	6A GEN LCKOUT 86G25B TRPD	NLOCKOUT
12/20/2004	12:55:00.892 PM	6SMP04E-6XSMP04E02	6S GEN LCKOUT 86G26S TRPD	NLOCKOUT
12/20/2004	12:55:00.892 PM	6SSY01E-6SXSSY01E03	6S 230KV BUS LKOUT 86C21 TRPD	NLOCKOUT

Figure 12. Printed SOE Log Using the Current Time

SYSTEM REQUIREMENTS

An I/A Series Windows based workstation or Windows Server 2003 with V8.x software installed and AIM*Historian software (V3.2.4 or later) installed on the SOE server.



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