PROcedure Maintenance System
PROMS

The Nuclear Industry Standard For Procedure Maintenance Systems

PROMS (**PRO**cedure **M**aintenance **S**ystem) is an advanced document management system originally designed for the unique maintenance requirements of nuclear utility plant procedures. It goes far beyond the capabilities provided by conventional word processors, producing high quality and consistent procedures. It is backed by many years of experience in procedure development and software design, and a commitment to cost-effective, no-nonsense software applications.

A significant amount of effort is being expended by the nuclear industry to upgrade and maintain plant procedures. The electric utilities that are responsible for these upgrade efforts are constantly striving to improve both the quality of the procedures, and the efficiency of the procedure maintenance process. The incentive for achieving these objectives is to ensure safe and reliable operation of the plant with attention towards eliminating unnecessary or excessive cost associated with procedure maintenance. Several factors such as increased regulatory attention, more sophisticated procedure formats and structure, and enhanced technical content and basis, contribute to the difficulty of accomplishing this task. Word processing systems are inherently flexible so that strict adherence to a Writer's Guide can be impossible to achieve. With a word processor, many unnecessary and hidden hours are expended manipulating format and fine tuning the printed output.

PROMS includes full-featured word processing, database, and desktop publishing functions. PROMS also has many unique features which substantially increase the efficiency and effectiveness of the procedure maintenance process.

PROMS can help you ensure format consistency, adherence to your writer's guide, setpoint usage consistency, and adherence to other administrative objectives. Every part of your procedure maintenance effort benefits from PROMS.

- **Procedure writing** expertise serves it's intended role: to analyze and verify the technical content of the procedures. The procedure writer can follow up on specific technical issues without concern for adherence to structure and format rules. Automated features also expedite analysis of the procedures from a human factors standpoint. All changes to the document are automatically saved and tracked by the software.

- **Clerical** support becomes more efficient from using the intelligent editing capability provided in PROMS. All editing and printing is controlled by the software, which automatically uses the structure and format rules provided by the writer's guide. No special procedure format knowledge is required because the plant writer's guide is embedded in the software.

- **Administrative tasks** are automatically maintained by the software. PROMS maintains a record of all changes made to a procedure set. Changes are identified on the screen and on the printed procedures via change bars. Reports summarizing all changes are available. These reports are useful to the procedure writer for keeping track of changes and meeting record management requirements.

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THE GLOBAL NUCLEAR INDUSTRY IS IN NEED OF A QUALITY PROCEDURE MAINTENANCE SYSTEM.

Why PROMS?

The inherent features of PROMS that contribute to its overwhelming success in the procedure maintenance software market are summarized as follows:

- **Highly Trained** personnel can focus on procedure content

- **Adaptable** for use in a Windows environment

- **Full-featured** text editing capability

- **Consistent** procedure structure and format

- **Tracking** of procedure modifications

- **Automated** procedure approval system

- **Security** and Multi-User Network functionality

- **Built-in** single and two column procedure step formats

- **Global** search capability

- **Maintenance** of multiple similar procedures using one Parent procedure that automatically generates Child procedures (P/C PC)

- **Multiple formats** within a single document

- **On-line**, context-sensitive help

- **Integrated Graphics**, including scanned images, CAD drawings or sketches

- **Hyperlink capability** for transitions between procedure steps or procedures

- **Referenced Objects**, providing linkage from a database to the procedure text

- **Searchable** pdf file format output

- **Real** Customer Service by people knowledgeable on PROMS and procedure maintenance
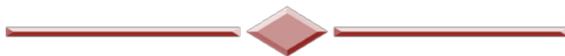
VOLIAN IS ALSO A RECOGNIZED LEADER IN PROVIDING QUALITY ENGINEERING SERVICES TO THE NUCLEAR INDUSTRY.

A State-of-the-Art Procedure Maintenance System

The features that have established PROMS as the nuclear industry standard for procedure maintenance systems reflect the expertise in software development and nuclear engineering that Volian has maintained since its formation in 1984. Volian is a recognized leader in providing the nuclear industry with support for Accident Management Procedures. Volian's Engineering and Software Departments work closely together to enhance the functionality of PROMS, as evidenced by the following features:

Text Format Based on Position in Document

During the edit process, text is not just randomly entered. The creation process is structured to include the ability to generate procedure steps, cautions, notes, equipment lists, explicit AND substeps, etc. PROMS automatically places these text elements in the correct position within the procedure step hierarchy, formats them to the correct width on the screen, and places them into the correct column position.

Sequential Step Element Numbering

Where applicable, step element numbering or lettering in the document is automatically generated as the procedure text is entered. These numbers are also automatically resequenced as procedure steps are created or deleted.

System Logging of Changes

The software automatically tracks changes based on the user name and the date and time of the change. This information is retrievable through the generation of either a chronology or summary of change report.

Transitions

A transition is a dynamic reference to another place within a procedure, or to another procedure. For example, the text "go to step 3.1.2," may be replaced by a transition identifier that refers to that step. This managed link is automatically maintained as procedure steps are added or removed.

Annotations for Procedures, Sections and Steps

PROMS provides the capability for the procedure writer to attach editorial comments or reminders to procedure steps. Annotations are only seen when editing the procedure text element to which the comment is linked. Annotations are not included on the document hardcopy. PROMS provides the capability to search for Annotations and print a search summary of Annotations.

Security System

PROMS utilizes Windows Security for access to the application. All changes are automatically tracked by user name. The security system also allows the PROMS Administrator to assign different levels of document access on a user-by-user basis. This feature provides the ability to permit plant personnel, other than the procedure writers, to view, search and print procedures while not having the necessary access to edit them.

Global Search

This function provides the ability to search for common words/phrases, Annotations, and Referenced Objects across entire procedure set(s) with a direct link to the Editing module. The search results can be viewed on the screen or printed.

Archival System

Searching for blank text in a procedure set can provide assistance in maintaining consistency within a procedure set by listing all the steps in a set in alphabetical order identifying and grouping similar steps, cautions, and notes.

Referenced Object Databases

The PROMS Referenced Objects Module enables the procedure writer to create multiple databases containing various plant data (Setpoints, Equipment, Alarm Points, References, etc.) which are linked to the procedure text, with their position automatically tracked by PROMS. Therefore, a single data modification can automatically be reflected throughout the procedure set.

A prime example of the benefit realized through the use of Referenced Objects is the ability for a multiple unit plant to create a database with unit specific information, such as equipment identification nomenclature, etc. This feature enables the plant procedure writers to maintain a Parent procedure set (EOPs, AOPs, etc.) for the entire site, while having the ability to generate unit specific procedures for implementation into the applicable Control Room. This, and the many other applications of Referenced Objects, generates unlimited possibilities for improving the manipulation of pertinent plant data utilized in nuclear plant procedures.
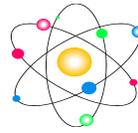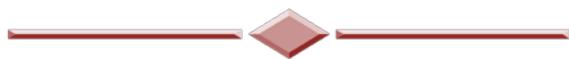
Nuclear Industry Utilization

The first installation of PROMS was at the Indian Point Unit 2 Nuclear Power Plant in 1986. The experience that has been gained since this installation has served to improve the functionality of the system. Nineteen Nuclear plant sites are currently using PROMS to maintain their procedures. Many have reported more than a 50% decrease in their procedure maintenance time while improving the overall quality of the procedures. While the primary use of PROMS has historically been the maintenance of Emergency Operating Procedures, PROMS is now used to maintain a vast variety of additional procedure sets and documents including the following:

- Abnormal Operating Procedures
- Administrative Procedures
- Alarm Response Procedures
- Annunciator Procedures
- Background Documents
- Dedicated Shutdown Procedures
- Deviation Documents
- Emergency Plan Implementation Procedures
- Fire Contingency Procedures
- Instrument Failure Guides
- Maintenance Procedures
- Normal Operating Procedures
- Surveillance Procedures
- Flex Support Guidelines
- Severe Accident Management Guidelines

Customer Service

Volian Enterprises is staffed by highly qualified, highly motivated employees who take a personal interest in the customer's needs. This dedication and pride in their work ensures our customers of high quality engineering and computer services and products. The Volian Enterprises Quality Assurance Program is an integral part of our business, which reflects our commitment to providing quality products and services.

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Editing

The PROMS editor provides all of the standard document editing features of a full-featured word processor. However, unlike conventional word processors, the formats and document structures prescribed by the plant's writer's guide are embedded in the plant-specific PROMS format, and are reflected in both the editing and output generation functions. Therefore, the problems and limitations of attempting to define a standard format in a conventional word processor are eliminated. This is especially beneficial in a multi-writer environment. All document changes automatically conform to the prescribed format; therefore, data entry is faster and easier. Renumbering of procedure steps and references to steps is performed automatically by the PROMS editor.
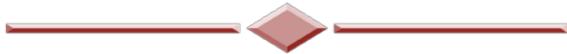
Printing

PROMS generates both Preliminary and final copy procedures. The plant specific writer's guide requirements, especially page layout, are embedded in the PROMS format. The document text print options available in PROMS include the flexibility to a) print an entire procedure; b) print an individual procedure section or page; and c) print preview a procedure. PROMS generates a searchable pdf file:

- Print with/without change bars
- With Watermarks
- Foldouts on back PROMS

In addition to generating procedure hardcopies, PROMS provides the functionality to generate logs which summarize procedure modifications. The ability to summarize the integration of plant data from supporting databases, along with identifying procedural interactions via transition links, is also supported by the PROMS print function.

Pagination of a procedure is an ongoing and serious problem for the procedure writer using traditional word processing systems. As procedure steps are added, deleted, or modified, the pagination of a document may change. Most plant Writer's Guides dictate that cautions and notes associated with a step must immediately precede a step and be located on the same page. Often this leads to a manual proofreading exercise where invariably some of the cautions and notes would be located on the bottom of the preceding page and, therefore, be misplaced. PROMS automatically repaginates a procedure and always locates the cautions and notes on the same page as the step.

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In those situations where a step is only a few lines too long for a page, it is normal practice to adjust the line spacing commands to fit the entire step wording on the page. PROMS automatically performs this task.

If a step must be printed on multiple pages, many writer's guides require a message such as "THIS STEP CONTINUED ON NEXT PAGE" to be placed on the bottom of the page. On the next page a message would notify the procedure user that the step was continued from the previous page. PROMS automatically determines the proper locations for the page break and prints the appropriate message. These pagination functions are all accomplished without embedding text or printer commands in the procedure document data.
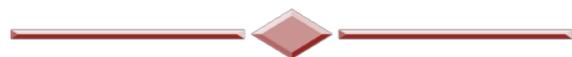
Procedure Change Control

The process of procedure maintenance dictates that changes are made continuously. The identification and traceability of changes to the procedure are a necessary function for the procedure writer to perform. This task is often so difficult and time consuming to accomplish manually, that it is sometimes completely neglected or only partially implemented.

At the procedure writer's option, change bars will be placed adjacent to changes on the printed procedure. The change bar function is useful in reducing review time during the procedure verification and approval processes. In addition, PROMS can print complete reports of all changes made to a procedure with the date of the change, who made the change, the "old" text before the change, and the "new" text after the change. These reports also note changes to Referenced Objects links and transitions. Therefore, PROMS automatically performs the change control function, which removes the burden of this task from the procedure writer.

Procedure Implementation

The procedure group must maintain at least two copies of each procedure set. One set is the "approved" version, which is the currently used version (i.e. the set of procedures in the control room). The second set, referred to as the "working draft", is the set of procedures currently under modification. This set replaces the approved set once review and signoff are completed. An APPROVAL feature is provided to process procedure changes into a new revision of a single procedure or the entire procedure set.

Another useful feature within PROMS permits the procedure writer to perform an approval on a single procedure basis. This feature allows the user to check for interdependencies or transitions between the procedure to be approved and other procedures within the set. For example, modification to a procedure setpoint value may be altered by the addition of a procedure step. It is often difficult for the procedure writer to verify if the procedure setpoint is in other procedures, or if an addition of a step has changed a transition reference from another procedure. Unless this verification is accurately performed, these changes may introduce the potential for the propagation of error throughout the procedure set. PROMS performs this optional check which eliminates the potential for technical inconsistencies between procedure entries.

PROMS determines if the chosen procedure affects other procedures within the set in terms of containing modifications to Referenced Objects, transitions, and/or library documents. Any affected procedures will be identified, and the reason (modified Referenced Object return value, etc.) will be indicated. The user will then be able to approve either a single procedure or all of the procedures. If no other procedures are found to be affected, the user is assured that the chosen procedure can be approved without impact on other procedures.
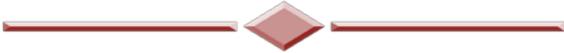
Parent/Child Publishing Capability (P/CPC)

PROMS permits the user to maintain similar procedures using a single Parent procedure. Only the "Parent" procedure is edited, and the changes get filtered down to the "child" procedures, which can be printed and approved for use at the plant. Maintenance and test procedures often are very similar for similar pieces of equipment. For example, a single "Parent" procedure can be written to address the calibration test procedures for an SG level channel. "Child" procedures for each SG channel can be generated from this one "Parent" procedure. This helps ensure consistency between procedures while minimizing the maintenance effort.
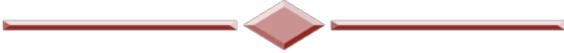
Software Installation & Customer Support

A plant specific PROMS installation may include the loading of the customer's procedures and setpoint data into the PROMS system by Volian. The customer's Writer's Guide is used to create a PROMS document format. A Referenced Objects database would be created to house the setpoint data. As the procedures are installed, they are reviewed against the other procedures in terms of format and structure. Inconsistencies are identified to the customer so that they can decide on an appropriate action. After the procedures are bulk-loaded, verification of the procedure text can be optionally performed. Based on the verification results, differences are identified and reviewed with the customer. Many times these differences involve inconsistencies between the original procedures and the writer's guide. This requires changes to either the writer's guide, the procedures, or both. The customer determines the most appropriate actions to resolve these differences.

Volian is committed to providing quality products and customer support as evidenced by the following:

- Volian provides a variety of training services on the effective use of PROMS at various levels including:

  - Basic Usage
  - Advanced Usage
  - Administrator

- Under the Volian Enterprises Maintenance and Upgrade Program, enhancements to the product and personalized customer support are continually provided. Assistance is only a phone call away.

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