

AUTOMATED
DOCUMENT PROCESSING SYSTEM

A D O P S

BY

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Good morning, ladies and gentlemen.

Today's electrical supply utilities and their vendors are faced with many challenges to the building of new power plants, both nuclear and fossil.

Some of these challenges include:

- Conforming to government regulations
- Limiting the rising cost of plant construction
- Generating power reliably and efficiently
- Addressing environmental concerns

These challenges have greatly affected the industry, particularly the nuclear industry, in many areas to the point that we must find short-term solutions to meet the problems being generated.

It is no mystery that power plant costs are on the upswing. Some very knowledgeable persons in the power field have claimed that standardization will counter this trend in new power plants.

The nuclear power field, of course, has not been devoid in the area of standards. In 1979 at year's end, there was a total of 706 nuclear standards, 335 approved and 371 in preparation. The total number of nuclear standards in 1970 was 13. As you can see, implementation of these standards is a challenge, and assuring conformance is even more of a challenge.

We at Exxon Nuclear have found it to be of great value to use a mini-computer-based text management system as one of the ways to assist in assuring conformance to standards.

The increasing complexity of nuclear power plant startup, combined with the requirements under which the startup is performed, has made the use of automated systems a necessity. Today's typical nuclear power plants have associated with them approximately four million documents ranging from individual pieces of paper such as correspondence, to multi-sized drawings, to large manuals such as equipment technical manuals. The "how" to effectively and economically control and utilize an ever expanding information base is a real challenge that is with us today.

It is essential that most of this documentation be rapidly retrievable in accordance with ANSI N45.2.9-1974, which is applicable to the licensing, startup, and subsequent operation of the nuclear plant.

Three major tasks during startup which we have elected to manage by new techniques are as follows.

1. The development and revision of a large number of controlled documents in the form of procedures.
2. The ability to show compliance with the ever increasing and changing regulations.
3. The safety and reporting requirements which are involved in the operation of plant system.

Exxon Nuclear Company, under contract with Louisiana Power and Light Company, is providing certain startup administration services. One particular area of this service involves the use of a computer-based system to accomplish text management.

At the Waterford Nuclear Plant, we have implemented a computer based system which we call AUTOMATED DOCUMENT PROCESSING SYSTEM (ADOPS). This system provides for the collection of input, output, storage, and logic used to handle and manage procedure production. In addition, elements of the system are interfaced to provide an integrated network of management and operational tools at the site level.

For the startup work at the Waterford nuclear site, a Hewlett Packard mini-computer is used which allows for the support of word processing, text management, document production tracking, library index, and remote job entry to other computers. The computer is a Hewlett Packard 3000 Series III mini-computer.

It performs the following functions:

.0 Word Processing

The system provides a powerful, but simple-to-use, word processing system for input and edit of procedure text and/or letters. All of the Louisiana Power and Light Waterford Unit #3 procedures are typed on display stations. The line printer "draft" output and the letter quality printer output are available to print the procedural text for use.

.0 Text Management

The computer system supports a text management capability which maintains catalogs of both the references and the many commitments which have been made to various

regulatory bodies, and cross-references these elements to specific paragraphs of text in the Waterford procedures.

During generation of a given document, most paragraphs of text are followed by a reference(s) and/or commitment(s). These references (R) and commitments (C) are recorded in a format similar to the following:

C - LPL/FSAR14*002.002.2.9.F
*0101/10/79

R - LPL/SAP22*NONE*0000/00/00

The references and commitments are automatically "stripped" from each procedure and stored in the data base along with related paragraph numbers and the unique number of the procedure. The reference and commitment catalogs function as sortable indexes, capable of being displayed or printed out at operator request. They relate each commitment and each reference to a specific paragraph of a specific procedure and can be produced on demand, at the CRT display stations or in hard copy.

3.0 Document Production Tracking

The Document Production Tracking Program places in the data base all in-process documents and their estimated schedules and requirements data.

The tracking program maintains the in-process status of all documents in production. The program provides, in addition, reports of expended effort, modeled predictions of effort remaining, and modeled predictions of elapsed time remaining.

One of the most important benefits of the Document Production Tracking Program is the capability of responding quickly to information requests. The user can instantly gather information on the status of an individual document or a selected set of documents. The variety of available information is limited only by the data residing in the data base.

4.0 Remote Job Entry

At the Waterford nuclear site, EBASCO Services, under contract to LP&L, is providing computerized startup planning and scheduling services. The system as configured accepts EBASCO's card input for batch transmission to either the Mid-South IBM 370/158 or the Burrough's 7700 at EBASCO's offices in New York City. EBASCO's planning and scheduling input is read through a 600 card per minute reader connected to the control console of the central processing unit. Schedule output is accepted on a high speed printer or can be stored on 9-track tape for later use.

5.0 Reference Library

The Waterford Startup Group maintains a controlled library which contains about 30,000 documents, manuals, guides, etc. A data base resides on the computer which contains the titles, the revision and date, the storage file drawer and certain cross-indexing key data.

The system permits the library personnel to store in the data base the name of personnel who check out reference material and the date. A printout of these individuals and the removed material is available on request.

6.0 Interfaces

At the Waterford Nuclear Plant, we initially started typing procedures on a Lanier Word Processor. Attached to this Lanier unit is an Optical Character Reader which accepts procedural text from IBM typewriters. This setup limited our ability to meet certain goals of output we had previously set. Our next step was to add three additional 3M stand-alone word processors in the interim period while engineering the ADOPS System. One of the specifications for ADOPS required tying these different word processors together to eliminate diskette storage.

The present system as configured accepts information from other existing word processors. The information is stored on the HP central processor's disc for recall and editing. The need to index and store word processor diskettes was eliminated. The master procedure index resides on the CPU's disc for recall at any time.

ADOPS has been designed as a modular system to serve the needs of the electric utility industry. ADOPS can be used as a single unit as in the case of the word processing environment for production of procedures or as a multiple unit. ADOPS is capable of expanding to meet the needs of the individual users.

FUTURE PROGRAMS

The presently installed hardware/software combination at the Waterford site offers capabilities for expansion to assist the user in several other areas. At the present time, these programs are not installed but are under consideration. They may be utilized in the future if the need is determined by LP&L.

- Tracking of deficiencies
- Tracking of field design changes
- Tracking of personnel radiation dosages
- Tracking of maintenance requests
- Storage and retrieval of documentation per ANSI N45.2.9-1974
- Nuclear Plant Reliability Data
- IEEE 323 Qualifications

Some of the features of ADOPS which make the system an effective tool are:

ADOPS can be easily interfaced into other systems at the utility or used as a stand-alone system.

ADOPS provides information needed for license reporting and other regulation reporting where required.

ADOPS can furnish information needs at all levels. Data can be summarized for use as a management report or left at full detail for providing information to the users.

All procedures are controlled under ADOPS so that only the latest revisions are issued upon request for use by site personnel.

All aspects of ADOPS are under the direct control of the user. Through the use of the terminals located at the plant site, reports can be generated immediately upon data entry.