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# SANDIA REPORT

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## Smart Document System (SDS) Used in Managing DOE Order's with Electronic Engineering Procedures

Richard Graham, Donald Robbins

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# SMART DOCUMENT SYSTEM (SDS) used in Managing DOE Order's with Electronic Engineering Procedures

by

Richard Graham & Donald Robbins

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## Abstract

The Microsoft (MS) Windows product is widely available for PC's. There exists many thousands of them at Sandia. All of the MS applications in Windows have a **Help** file. This help file informs the user "how to" use and run that application. It is an "on-line" manual. The "**Help Compiler**" was obtained from Microsoft. Use of this compiler enables one to insert text in a form the MS "**Help Engine**" recognizes. This means all of the features of the **Help** file: Hypertext (hot links), browsing, searching, indexing, bookmarks, annotation, are available for your text. This turns a document into a "Smart Document". The use of this Smart Document System (SDS) for Engineering Procedures (EPs) is described.

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**Appendix**

**Distribution**

## **Preface**

The following document represents what the authors said, in part, at the Conduct of Operation Workshop held in Tampa, Fla. on May 5, 1993. The presentation which emphasized Electronic Engineering Procedures using the technique, Smart Document System, has application to any publication.

## **Introduction**

Paper has been part of the scene for about seven millennia. Printing, with movable type has been on the scene since Gutenberg, for over 500 years. Computers have been on the scene for about 50 years. The PC has been on the scene for about 10 years. In those ten years the capability of the PC computer has increased many-fold. The storage capacity has increased, the price has been on a steady decline.

Concurrent with the advances in computer hardware, there has been a like advance in computer software. Faster machines have made possible the concept of Windows, where the user's view of the world, is multi-faceted, much as the top of one's desk. It is easy to jump from one activity to another. The user can transition from word processing, to spread sheets, to fact retrieval from a database, to on-line mail, to the rolodex file, to reading a document. The user can have all of these programs running in different Windows, if that is the user's pleasure. One can also copy from one program to another, using the "clip-board". Text is selected, copied to the clip-board, and then pasted to another application.

## **Microsoft Help**

Windows comes with Help.

All applications and accessories (except Clock) that are bundled in the Windows System include on-line Help. As stated in the Microsoft Windows Manual, "Windows on-line Help is a convenient, quick way to look up information about a task you are performing, a feature you would like to know more about, or a command you want to use." In the Microsoft Software Developers Kit the following statement occurs: "Windows Help provides a practical way to present information about your application in a format users can access easily." Because Help is actually a Window, it includes Window features like a control-menu, sizing buttons, menu bar, scroll bar, and options buttons.

## **Acknowledgment**

Parts of this document are taken from Microsoft's Help instructions. Microsoft is a registered trademark and Microsoft Excel, Word for Windows, MS Draw, Visual Basic with the professional tool kit, Windows Software Development Kit, Multimedia Development Kit and Windows are trademarks of Microsoft Corporation. Doc-To-Help is a registered trademark of WexTech Systems, Inc.

## **Appendix**

Some of the words in the bit map figures are rather small. In general, it is not important to be able to read the fine print as the overall appearance of the screen is the important point being made. However, the small bit maps are printed full size in the Appendix.

## **Electronic Engineering Procedures**

The two volume set of tree destroying, dust collecting, space consuming, Engineering Procedures has gone totally electronic.

As with most manuals, these two volumes are periodically updated. This update reflects changes to existing procedures or to add a new procedure. In the past, these updates were printed, bundled and sent to manual holders. Manual holders would either insert the update package in the manual or set them aside for inserting them at a later date. Usually this later date never arrived.

Now, the manual holder only needs to copy the required files into their computer system or to a Local Area Network (LAN).

## **Managing DOE Orders**

Sometime around 1945, technical business agreements were established to create processes and procedures for the development and production of nuclear weapons from Department of Energy (DOE) Orders. These technical business agreements serve the Design (DA) and Production Agencies (PA) of the Nuclear Weapons Complex (NWC).

Today the NWC consists of three National Laboratories and seven Production Agencies.

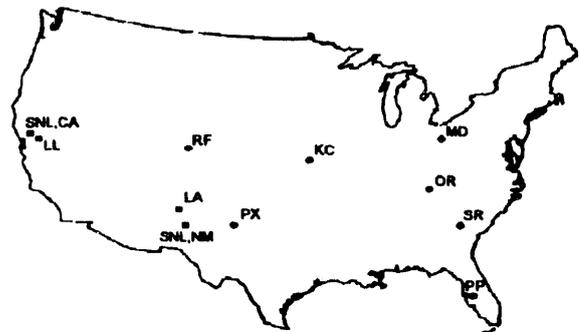
The three National Laboratories are:

- Los Alamos National Laboratory, (LA)
- Lawrence Livermore National Laboratory, (LL)
- Sandia National Laboratories (SNL,NM/CA)

The seven production agencies include:

- Allied-Signal Aerospace Co., Kansas City Division (KC);
- EG&G Mound Applied Technologies (MD);
- Martin Marietta Neutron Devices Div., Pinellas Plant (PP);
- Westinghouse, Savannah River Plant (SR);
- Martin Marietta Energy Systems, Inc., Oak Ridge Y-12 Plant (OR),
- EG&G, Rocky Flats Plant (RF).
- Mason & Hanger-Silas Mason Co., Pantex Plant (PX)

**Today's  
Nuclear Weapon Complex**

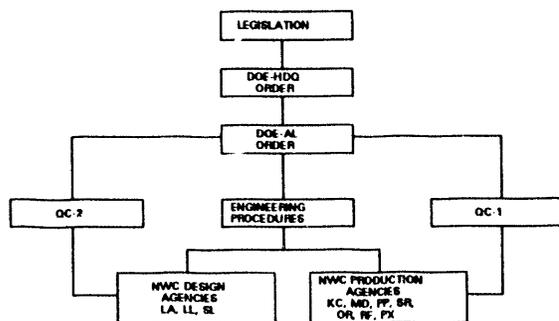


The Engineering Integration Center, organization 2800 and Center for Engineering Services, organization 8200, defines, coordinates, and issues these technical business agreements for the NWC which are known today as **Engineering Procedures (EPs)**. In addition, these EPs provide Sandia interfaces with the private sector. These dynamic EPs add value to the Sandia mission through quality improvement by defining standards for all engineering business practices.

## EP Development and Coordination Process

EP coordination activities include the review of Engineering Procedures and obtaining the concurrence of each participating NWC agency, internal Sandia organization and DOE. All EPs are coordinated by the Sandia engineering procedure organizations (Computer Integration and Manufacturing Department, 2882 and Computer-Aided Engineering Department, 8274).

### Managing DOE Orders



- Sandia coordinates Engineering Procedures within the NWC.
- Participating NWC agencies approve Engineering Procedures

EP coordinators are appointed by each participating DA and PA and are responsible for communicating coordinated responses and requesting EP changes and/ or clarification's.

DOE routinely audits and monitors our compliance with these EPs.

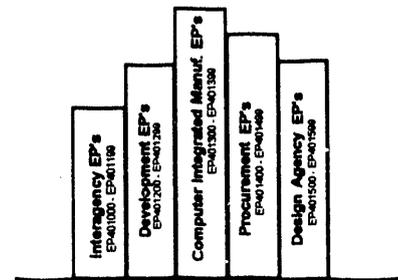
Today, EP's are defined in more than 150 separate documents, grouped in five series and are as follows.

- 1) Interagency, (EP401000-EP401199)
- 2) Development Contractor, (EP401200-EP401299)
- 3) Computer Integrated Manufacturing, (EP401300-EP401399)
- 4) Procurement, (EP401400-EP401499)
- 5) Design Agency, (EP401500-EP401599)

**Interagency EP's** are used to establish procedures between the Design Agencies (DA) and Production Agency (PA). This set ranges from EP401000 to EP401199 and is referred to as the 'Oughts' or 100 series.

**Development Contractor EP's** are issued to inform development contractors (either commercial suppliers or PA's) of the engineering policies and procedures applicable to a Sandia development contract. This set ranges from EP401200-EP401299 and is known as the 200 series.

### The Engineering Procedure Set



**The Computer Integrated Manufacturing Engineering Procedures or (CIM EP's)** document interagency (DA-PA) policies, agreements, and information applicable to NWC CIM projects administered by the DOE-Albuquerque office and relating to the exchange of electronic product definition data and/or programmatic information between NWC agencies. This set ranges from EP401300-EP401399 and is referred to as the 300 series.

**Procurement EP's** are used to inform contractors how interface engineering operations will be conducted with the procuring agency. This set ranges from EP401400-EP401499, and is known as the 400 series.

**Design Agency EP's** are used to document the Design Agencies (DA) engineering policies and procedures related to weapon design and development activities, and to DOE-DoD interfaces. This set contains EP401500 to EP401599 and are referred to as the 500 series.

## From Paper to Digital

In paper form, the five combined sets of Engineering Procedures total approximately 2000 single sided 8.5 x 11 sheets that fill two large three ring binders. Like most paper manuals, updates are expensive and time consuming. When updates were sent out, the user often failed to insert them in the two volumes.

It is the Center's strategic goal to reduce paper consumption and become more focused on digital data within the workplace. In the Spring of 1992, we converted these EP's into Microsoft Word for Windows and discussing how they might be provided to the user in digital form. It was also the intent to provide a system with hypertext capability.

To accomplish the strategic goal a few items needed to be considered.

## Computers & the Workplace

Presently, Sandia has approximately 18000 PC's. Of these, 6000 have Microsoft Windows and 2500 are Macintoshes. We also have workstations with UNIX installed. From these figures it is evident that PC's with Microsoft Windows is the predominant operating system in use.

## Choosing the Right Viewer

In the early nineties products such as Interleaf's "World View" and Frame Technology Corp.'s "FrameViewer" were becoming available. Both products had worthwhile features. These products and others were all proprietary solutions, each requiring the user to purchase their viewing software. With budget reductions, this approach was not very attractive, not to mention the user's reluctance to purchase and learn additional software.

In the summer of 1992 Microsoft Word for Windows was used to write Engineering Procedures. The Help button

### Paper Environment of EP's

- Paper distribution
  - 450 to 800 manual users
  - 2 - large three ring binders
    - » containing approx. 2000 sheet (8.5 x 11)
  - Updates and Revision
    - » Expensive
    - » Time consuming
    - » not every user updates their manual with the provided material.
- Our strategic goal
  - reduce paper distribution
  - eliminate printing cost

### Selecting the right Viewer for us

- Viewers
  - World View by Interleaf
  - FrameViewer by Framemaker
    - » fee required for the viewer
    - » requires distribution
  - Discovery of WinHelp.exe found in Microsoft Windows
    - » eliminates
      - Viewer distribution
      - Viewer costs

found in most Microsoft Window applications, had the features that could be used for the electronic Engineering Procedures. It had Hypertext jumps and provided a real neat way to retrieve information for an electronic manual.

Would it be possible to replace the text of the electronic manual (activated by the HELP button) with the text for the EP's? Inquiries to Microsoft revealed that indeed it would be possible. The product was called the "Help Compiler" and was contained in Microsoft's Visual Basic with the Professional Tool Kit.

The real power of this idea is that in the computing world of the PC, the Microsoft Windows product is literally everywhere. Thus the viewer is already present (bundled as a part of the MS Windows product) and so the additional training to use the Help feature is minimal. The Viewing package is an executable file called WINHELP.EXE and is sometimes referred to as the Help Engine.

It was discovered that other systems were capable of viewing the same electronic files such as: Macintosh and UNIX systems. Microsoft Excel 4.0 is required for the Macintosh users and a product from Bristol Technology Inc., called HyperHelp is available for the UNIX system.

Thus, the viewer was set, the WINHELP.EXE. The majority of the users already had this hidden tool and did not realize it. The remaining step was to create the electronic EP files.

## **Authoring Tools**

Visual Basic with the Professional Tool Kit was purchased to get the HELP compiler and basic Hypertext building instructions.

Next, a few sample EP's were used to demonstrate and sell this capability to upper management. Hytertext jumps, popup windows, browse features, context sensitive text and titles were manually inserted. This process was very time consuming. However, with experience the task became easier. During the process of preparing the demonstration file other software tools that would minimize the build time were discovered.

These tools consisted of a suite of Microsoft products that are: Visual Basic with the Professional Tool Kit, Multi-Media Development Kit, and Windows Software Development Kit. Another software tool was DOC-to-Help, a product by WexTech Systems Inc.

Microsoft's Multi-Media Development Kit contained a BITMAP editor and HOTSPOT editor. The BITMAP editor allows the user to edit scanned bitmaps, It enables one to resize, rotate and transpose bitmap images. The HOTSPOT editor allows the user to add Hypertext jumps, popup windows and execute macros on bitmap images, not to mention other capabilities to produce multimedia files. It also included a full text search capability. A site license is authorized with this product.

### **Authoring Tools**

- **Microsoft Products**
  - Visual Basic with Professional Tool Kit
  - Multi-Media Development Kit
    - » Hot Spot Editor
  - Windows Software Development Kit
- **Doc-to-Help by WexTech Systems, Inc.**
- **Total cost under \$1600**

The best documentation on building a Help file was found in Microsoft's Software Development Kit.

Doc-to-Help is a product that works in conjunction with Microsoft Word for Windows. It contains a group of Macro's and templates with specific styles used to create a Hypertext file. This product eliminated the pain associated with constructing a Hypertext file and minimized the tedious build process. This product offered two output options. The user can produce a paper copy as well as create an electronic Hypertext file. This product has proved to be a very valuable tool.

All products purchased were for less than the sum of \$1600.

### **Building the Electronic EP files.**

The approach to building this electronic manual was to try to maintain the same look and feel as the paper copy. A dramatic change was being made as to how the EP's would be distributed and viewed. Any structural changes could jeopardize the success of the electronic Hypertext file.

On November 1, 1992 the conversion of the 150 documents with templates and styles provided by Doc-to-Help was started. However, some of the styles were modified to resemble our paper manual.

There is a lesson to be learned here. When the conversion is from an existing paper system, to an electronic one, for users the security of having the electronic presentation look like the familiar paper system is necessary for success. It is possible to maintain this bridge in the electronic system. However the basic unit of information manipulated by the electronic Smart Document is a topic. The topic represents an idea or a concept. Maneuvering around a document by Hypertext jumps is from topic to topic. The paper factor of a topic being at a particular place, loses its significance.

Our team consisted of four team members. Two team members had minimal knowledge of Microsoft Word for Windows while another member was an advance user. The fourth team member, a programmer by trade, wrote a few custom macro's and assisted with the graphic images (BITMAPs) found within our EP's.

The five sets of electronic files were converted and compiled by February 1, 1993. Since then two updates have been made to the five sets.

### **Building the Electronic EP sets**

- A team of 4 individuals
- Individual EP's are written in MSWord.
- Converting the old format to new
  - Nov 1, 1992 - Feb. 1, 1993
  - Typists, Software specialist and Project leader
  - Scanned Documents and Images
- Wrote Custom Word Macros
- Obtained tools for Full Text Search

### **Electronic File Structure and Size**

The following are the five sets of electronic Engineering Procedures. Shown is the document range, number of documents and number of Bitmaps contained in each set. The uncompressed file size and compressed file size often represent a 50% reduction. However, the Interagency EP's represent a 350% reduction. The full text search file is usually 50% of the compressed text file.

- Interagency EP401000 - EP401199
  - Approx. 61 Doc's
  - 51 Bitmaps
  - File Size 7.5 Mbytes (uncompressed)
  - Compressed - 2.1 Mbytes
  - Full Text search file - 1 Mbytes
- Development Contractor EP401200 - EP401299
  - Approx. 21 Doc's
  - 6 Bitmaps
  - File Size .7 Mbytes (uncompressed)
  - Compressed - .25 Mbytes
  - Full Text search file - .2 Mbytes
- Computer Integrated Manufacturing EP401300 - EP401399
  - Approx. 8 Doc's
  - 13 Bitmaps
  - File Size .8 Mbytes (uncompressed)
  - Compressed - .3 Mbytes
  - Full Text search file - .3 Mbytes

- Procurement EP401400 - EP401499
  - Approx. 12 Doc's
  - 13 Bitmaps
  - File Size .8 Mbytes (uncompressed)
  - Compressed - .5 Mbytes
  - Full Text search file - .2 Mbytes
- Design EP401500 - EP401599
  - Approx. 54 Doc's
  - 15 Bitmaps
  - File Size 2 Mbytes (uncompressed)
  - Compressed - .9 Mbytes
  - Full Text search file - .8 Mbytes

Totals for the complete EP set is 4 Mbytes compressed with approximately 2.5 Mbytes for the full text search capability.

## Distribution

A reliable distribution system is an essential tool for disseminating digital information. Users are often reluctant to use digital information if the tools require a lot of computer knowledge or a lot of time.

First, the electronic files are revised every quarter.

Second, the files are stored on Sandia's Image Management System. This system is an optical disc storage and retrieval system. It is networked into the Sandia PBX network and is accessible from almost any Sandia installation. For users who have access to IMS all they are required to do is down load the revised electronic EP. This minimizes the distribution process and simplifies the users updating process.

An executable Setup file is provided to assist the inexperienced PC users. When executed this file will create and place the required files in a sub-directory, build a group window and add icons associated to each electronic EP. Upon selecting the icon the EP file will open and display for the user. It also installs the appropriate

Dynamic Link Libraries DLL's required for the full text search and updates MS Windows system files. The executable file used for Setup has been well received.

## Distribution

- **Reliable distribution tools are a must!!!**
  - Image Management System (IMS)
  - Executable Program for easy installation
- **Documents are Issue Controlled**
- **Knowing when a update occurs**
  - Sandia bulletin
  - Engineering Release distribution
- **Networking will minimize individual distribution**

## Viewing Requirements

The electronic EP files can operate on IBM compatibles, Macintosh and UNIX systems. The following are the system requires to access these electronic EP's.

<b>System</b>	<b>Viewing Requirements</b>
IBM compatibles	Microsoft Windows, ver. 3.1
Macintosh	Microsoft Excel 4.0
UNIX	HyperHelp from Bristol Technology, Inc.

These three systems use the same electronic EP file and have the same basic help features.

However, we found that IBM compatible systems with Microsoft Windows has additional capabilities. With this system the user has the ability to: jump between electronic files, perform a full Text search and has the potential for other unexplored probabilities like sound and animation. These added features requires the use of custom DLL's.

## Demonstrating the Electronic Engineering Procedure

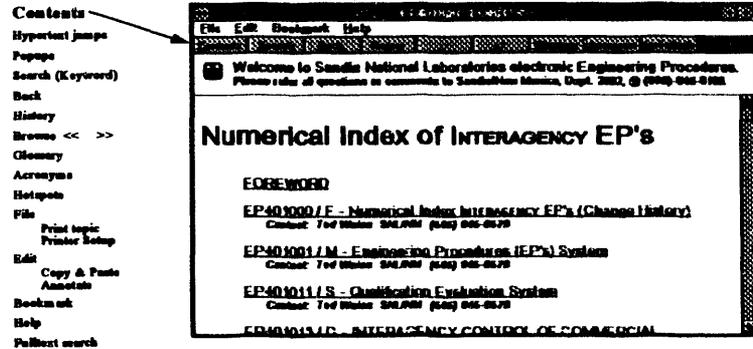
The next several pages of this document will demonstrate the features of a Smart Document, using the EP's. The actual screens will be displayed. It is an attempt to give the look and feel of using the system on paper.

From the Windows "File Manager" the user only needs to double-click on the desired item icon. By doing so, the Microsoft WINHELP.EXE will automatically execute and bring up the appropriate file. Double-clicking on the "the 100 series EP's" icon will display the electronic form of the EP401000 thru EP401199 series.

## **Contents**

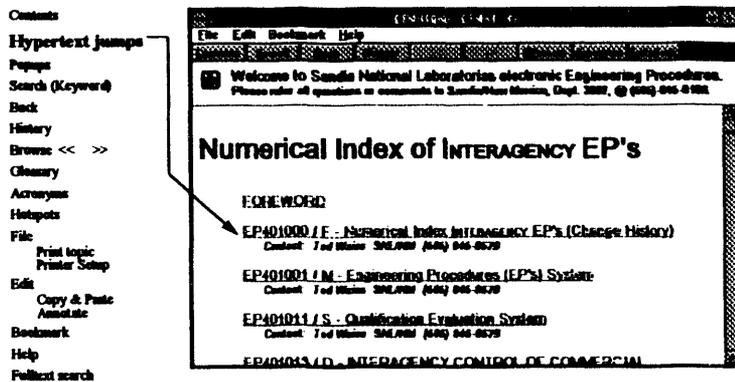
The first button discussed is labeled **"Contents"** This is sort of like home base, or the traditional "Table of Contents" (TOC) at the beginning of a document or a book. Note the jump topics are underlined and highlighted. These are the "hyperjumps" to different topics. Clicking on a topic will immediately jump the user to that topic. There are no pages to leaf through. There is another feature that is indicated by a dotted underline. Clicking on this brings up a so-called popup window. This is the mechanism "Help" uses for definitions and short explanations.

Within a EP topic, there may be one or more jumps, which you can click (or select and press ENTER) to display a new EP topic. You can move, resize, maximize, or minimize the Help window, just like any other window. To return to Contents for How To Use Help, choose the Contents button.



The text shown with a turquoise background color is a non-scroll region. The vertical bar to the right and sometime a horizontal bar at the bottom are scroll bars. When moving the scroll bar button on the right, the text will move under the non-scrolling region or known as subduction.

### Hypertext Jumps



EP topics can include graphics and text that link to other EP topics or to more information about the current topic. These are called jumps. Jumps are usually identified by a color and an underline (unless the jump is a graphic). When you point to a jump, the pointer changes to a hand shape.

#### To choose a jump

Point to the text or graphic, and click with the mouse button.

Or press TAB to select the jump, and then press ENTER.

You can press SHIFT+TAB to move backward and select a jump.

If the jump you choose is linked to another topic, that topic appears in the EP window.

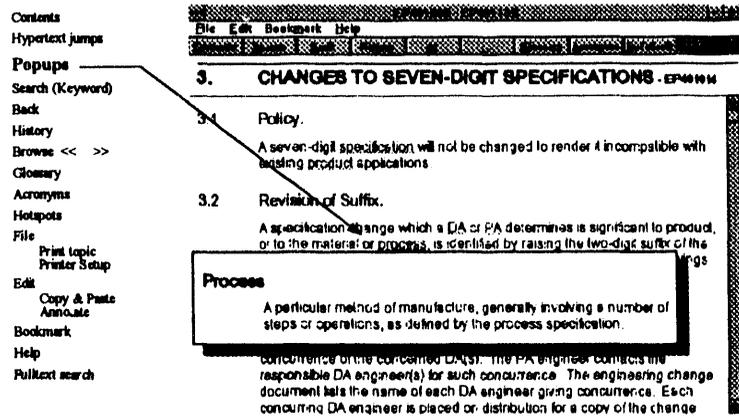
#### To display all jumps in a topic

Press CTRL+TAB.

### Popup Windows

Sometimes a jump is linked to information that appears in a pop-up window or a secondary window. Most popups are identified by a color text that has a dotted underline.

Note: When information is displayed in a pop-up window, the size of the pop-up window is proportional to the size of the main Help window. If you want the pop-up window to be larger, you need to change the size of the main Help window.

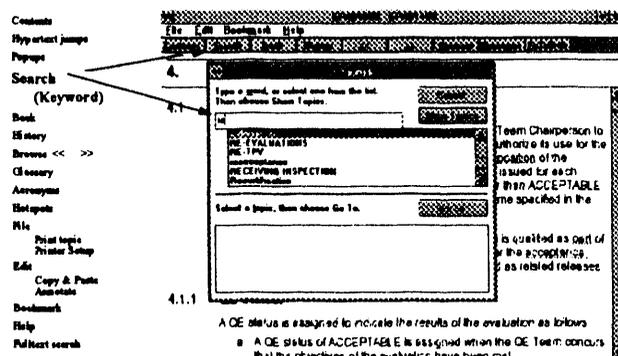


To close a pop-up window  
Click anywhere on the screen, or press any key.

To close a secondary window  
Double-click the Control-menu box.  
Or press ALT, SPACEBAR to open the Control menu, and then choose Close.

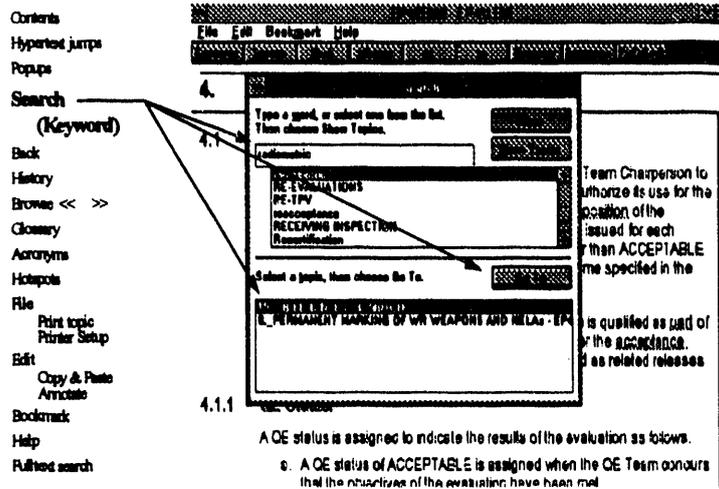
### Keyword Search

You can find information quickly by using the Search button in the Help window. The Search button opens the Search dialog box, where you select a word that you want to search for. All EP topics associated with that word are listed, and you can select one to view. For example, to find out what EP refers to radiometric, you could select "radiometric" from the list. Topics that have the word "radiometric" associated with them would then be listed in the Search dialog box.



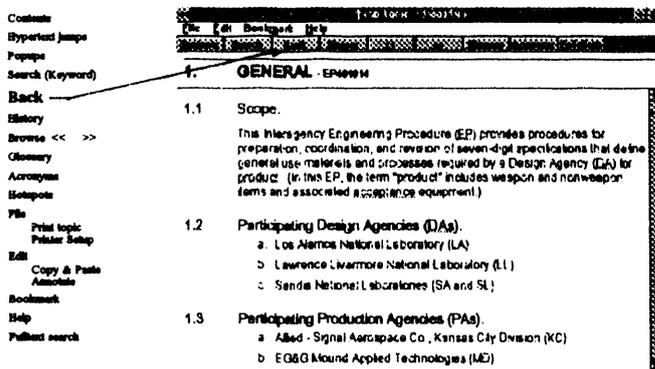
To search for Help information

- 1 In the Help button bar, choose the Search button.  
Or type s.
- 2 Select the word or phrase you want to search for (ra). When you start typing, the words that most closely match the text you type are displayed.
- 3 Choose the Show Topics button.
- 4 Select the topic you want to view. If necessary, use the scroll bar to see more topics.
- 5 Choose the Go To button.



Back

Use the **Back** button to go back through the Help topics you have viewed, in the order in which you viewed them. If there is no previous topic to view, the **Back** button is dimmed. The record of topics you have viewed is removed each time you quit Help.



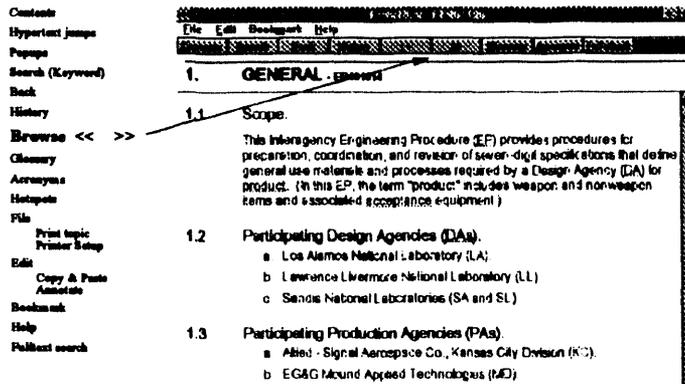
To backtrack through EP topics  
Choose the **Back** button on the Help button bar.  
Or type b.

You return to the previously viewed topic. The topic appears as you left it, unless you resized the window before backtracking.



## Browse buttons

If the browse buttons (<< and >>) appear in the Help window, it means certain Help topics have been grouped together in a sequence.



To view the next topic in the browse sequence

Choose the >> button on the Help button bar.  
Or press the period (.) key.

When you reach the last topic in the sequence, or if there is no browse sequence, the >> button is dimmed.

To view the previous topic in the browse sequence

Choose the << button on the Help button bar.

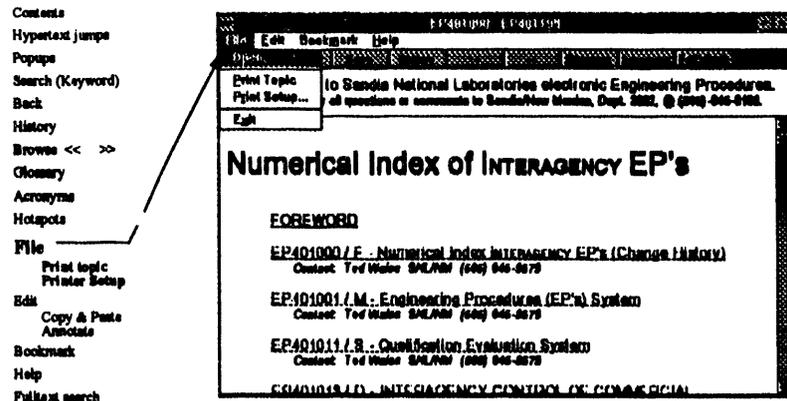
Or press the comma (,) key. When you reach the first topic in the sequence, or if there is no browse sequence, the << button is dimmed.



## File

### "Print topic" and "Print Setup"

You can print any Help topic. A topic prints on the default printer. If you have installed more than one printer, you can make any of them the default printer. You can also change the options for the default printer.



### To print the current Help topic

From the File menu in Help, choose Print Topic.

### To change printers and printer options

- 1 From the File menu in Help, choose Print Setup.
- 2 Select the printer you want to use.
- 3 To change the default printer options, choose the Setup button.

The options vary, depending on the printer you select.

- 4 Select the options you want.
- 5 Choose the OK button to close the printer's Setup dialog box.
- 6 Choose the OK button.

For help with the Setup dialog box, choose the Help button or press F1 while using the dialog box.

Note: You cannot print information that is in a pop-up window.

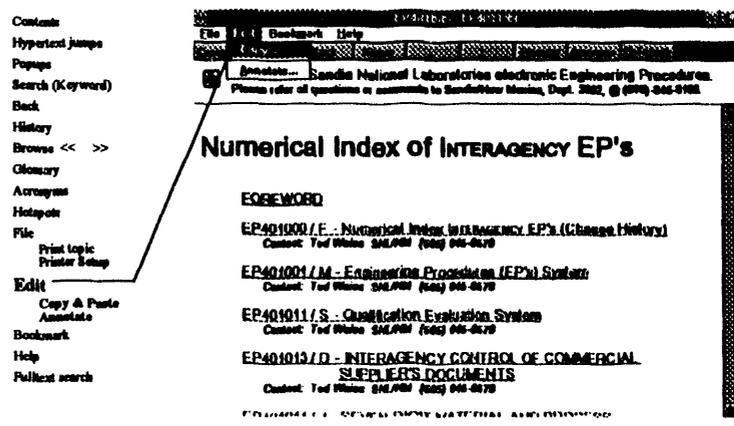
# Edit

## Copying and Pasting

### Copying a Help Topic onto the Clipboard

You can copy some or all of the text in a Help topic onto the Clipboard. From the Clipboard, you can paste the text into another document.

Note: You cannot copy the graphics in a Help topic onto the Clipboard.



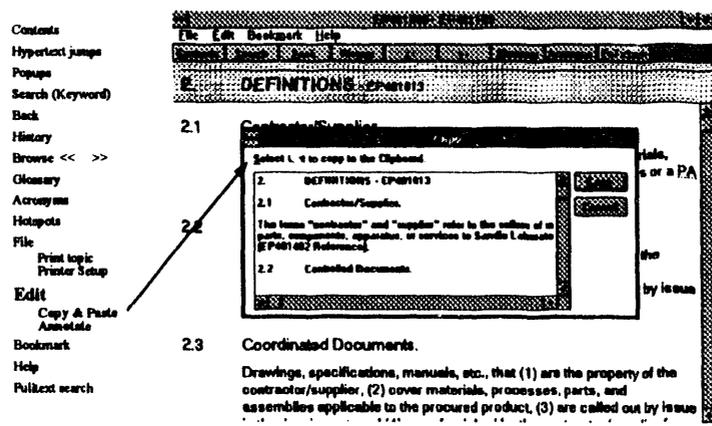
### To copy text in the current Help topic onto the Clipboard

- 1 From the Edit menu in Help, choose Copy.
- 2 To copy all the text onto the Clipboard, choose the Copy button. Or select the text you want to copy onto the Clipboard, and then choose the Copy button.

You can paste the text that is on the Clipboard into a Help annotation or into a document from another application.

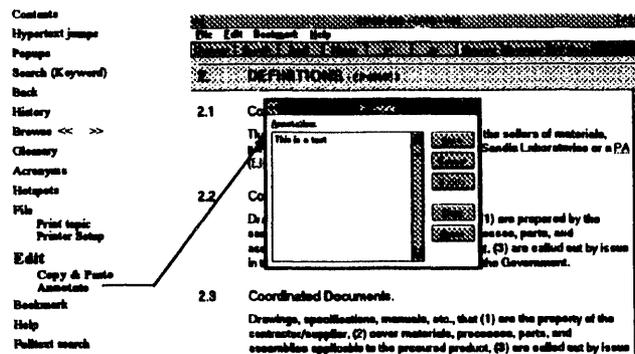
### To copy the entire topic directly onto the Clipboard

Press CTRL+INS.



## Annotate

You can add your own comments to a Help topic. When you annotate a Help topic, Help places a paper-clip icon to the left of the topic title to remind you that you have added text to this topic. For help on annotating Help topics, choose one of the following tasks:



You can add your own comments and notes to a Help topic and view this information later.

### To add text to the current Help topic

- 1 From the Edit menu in Help, choose Annotate.
- 2 In the Annotate dialog box, type the text you want to add.  
If you make a mistake, press BACKSPACE to remove any unwanted characters, and continue typing.  
Text wraps automatically, but you can end a line before it wraps by pressing ENTER.
- 3 Choose the Save button.

### Removing an Annotation

If you no longer need your comments about a Help topic, you can remove the annotation.

#### To remove an annotation

- 1 Click the paper-clip icon to the left of the topic title.  
Or press TAB to select the paper-clip icon, and then press ENTER.
- 2 Choose the Delete button.

### Viewing an Annotation

If you have added comments to a Help topic, you can view them at any time.

#### To view an annotation

- 1 Click the paper-clip icon to the left of the topic title.  
Or press TAB to select the paper-clip icon, and then press ENTER.
- 2 When you finish viewing the annotation, choose the Cancel button.

You can copy text from an annotation and paste it into another annotation in Help or into a document. You can also paste text from documents into annotations.

### To copy an annotation

- 1 Click the paper-clip icon to the left of the topic title.  
Or press TAB to select the paper-clip icon, and then press ENTER.
- 2 To copy the annotation to the Clipboard, choose the Copy button.  
If you want to copy only a portion of the annotation, select the text that you want to copy onto the Clipboard, and then choose the Copy button. You can drag the mouse pointer over text to select it. Or press and hold down SHIFT while you use the arrow keys to select text.
- 3 Choose the Save button.

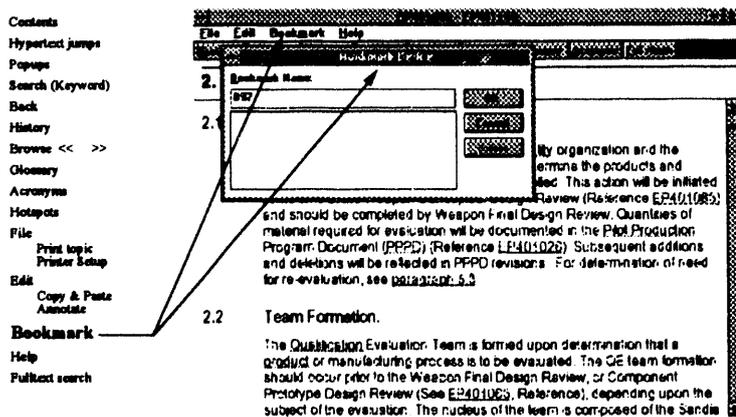
### To paste an annotation

- 1 Copy onto the Clipboard the text you want to paste into the annotation.
- 2 In the Help topic where you want to paste the annotation, click the paper-clip icon to the left of the title.  
Or press TAB to select the paper-clip icon, and then press ENTER.
- 3 To paste the contents of the Clipboard at the beginning of the topic, choose the Paste button.  
Or press SHIFT+INS.  
Or place the insertion point at the location you want to insert the new text, and then choose the Paste button.
- 4 Choose the Save button.

Note: When using the annotation feature it is recommended to use the bookmark feature as well.

## Bookmark

Just as you can place bookmarks in a book to mark specific references, you can place bookmarks in Help topics you use frequently. After you have placed a bookmark in a topic, you can access that topic quickly from the Bookmark menu.



**To place a bookmark in the current topic**

- 1 From the Bookmark menu in Help, choose Define.
- 2 In the Bookmark Name box, the topic title appears. If you want to use a different name to identify the bookmark, type a name in this box.
- 3 Choose the OK button.  
The bookmark name now appears on the Bookmark menu in Help.

**To view a topic that has a bookmark**

From the Bookmark menu in Help, choose the bookmark name for the topic you want to view.

Underlined numbers precede the first nine bookmark titles. You can type the corresponding number to go quickly to a marked topic.

If more than nine bookmarks have been defined, choose More from the Bookmark menu in Help. Select a bookmark in the Go To Bookmark box, and then choose the OK button.

**To remove a bookmark**

- 1 From the Bookmark menu in Help, choose Define.
- 2 Select the bookmark you want to remove.
- 3 Choose the Delete button.

The bookmark name is removed from the Bookmark menu in Help.

**Help****Keeping Help on Top of Other Windows**

When you first open Help, the Help window appears on top of other windows. If you select another window, it might cover up the Help window.

You can choose to keep the Help window on top of other windows even when you switch to other applications. This can be useful if you are using Help to follow a step-by-step procedure in your application.

Note: If you minimize a Help window that is on top, its icon also appears on top of other windows.

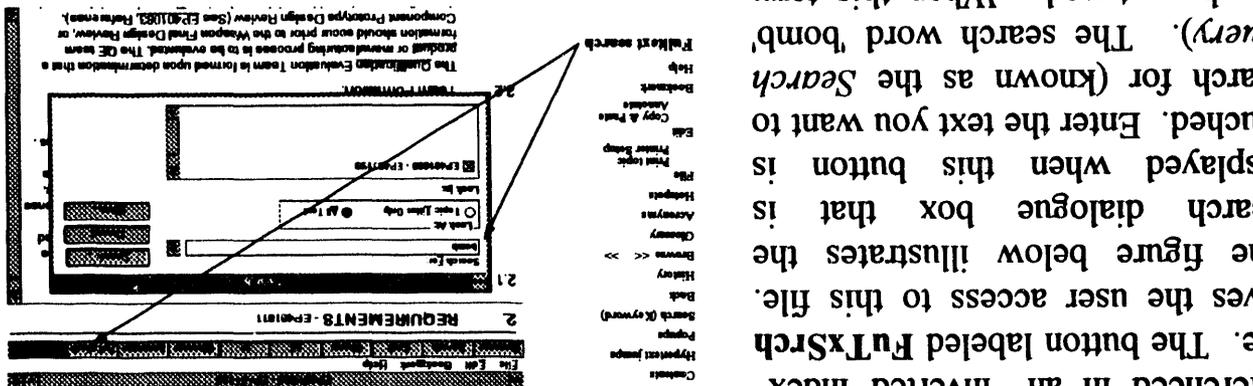
To keep the Help window on top  
 From the Help menu in the Help window, choose Always On Top.  
 A check mark appears next to the command, and a shadow appears around the window border to indicate that the Help window is on top.  
 If you do not want the Help window to be on top, choose Always On Top again.

### Full-text Search

A very powerful addition to the utility of the electronic manual is the Full-Text Search. At document preparation time, all words in the document are collected and cross

referenced in an "inverted index" file. The button labeled FullTextSearch gives the user access to this file. The figure below illustrates the Search dialogue box that is displayed when this button is touched. Enter the text you want to search for (known as the Search Query). The search word 'bomb' has been typed. When this term

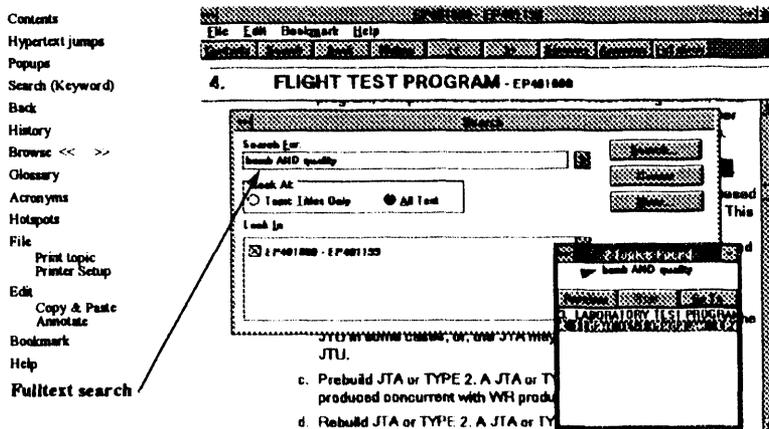
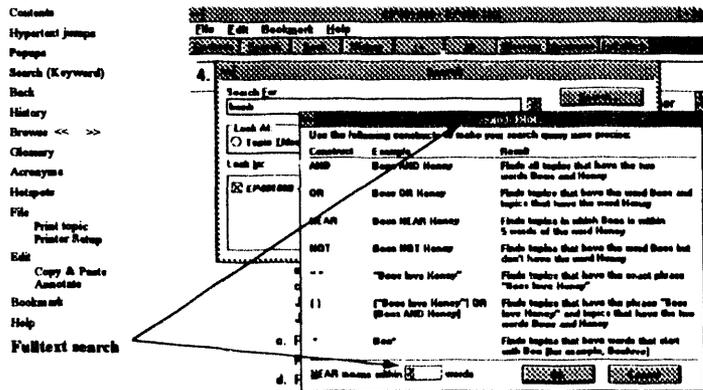
'bomb' is entered, either by hitting return, or by touching the Search button on the menu, then the following Topics Found List appears.



Note that in this particular document, there are seven (7) occurrences of the word 'bomb'. From the Topics Found List, each of the seven (7) occurrences can be selected and displayed. When one is picked, the part of the document containing the word is displayed, and the word 'bomb' is highlighted.

The dialogue box that appears when the button **FuTxSrch** contains a button labeled **Hints**.

When this button is touched, the following dialogue box appears. This is handy for any future reference to the search capabilities. One can use the usual Boolean constructs of AND, OR, NOT to qualify what is desired. To look for a specific phrase, the query is enclosed in quotes (" "). Without the quotes, each word is treated as a part of an AND query. Thus 'Bees love Honey' will find occurrences of a topic that contains the three words Bees, love, Honey. Another feature is the NEAR operator. Any topic in which a phrase appears a certain number of words away from a second phrase is chosen. For example, Bees NEAR Honey will find topics that contain these two words near each other. The span is variable and can be set in the NEAR dialogue box. The default value is "5".



The next screen shows the search refined a bit by the phrase 'bombs AND quality'. Only two (2) topics were found which contained both of these words.

## Button Summary

Listed below are the standard Buttons found in most Microsoft Help files

### To choose a Help button

Click the Help button you want.

Or type the letter that is underlined in the Help button.

### File Menu Commands

Use the scroll bar to see more commands.

### Open

Opens a Help file.

### Print Topic

Prints the topic that is in the Help window. You can print only entire topics.

### Print Setup

Sets printer options before printing a topic. You can select a printer and set or change options for the printer. The options available depend on the type of printer selected.

### Exit

Quits Help and saves any annotations or bookmarks you created.

### Help Buttons

Help buttons are located along the top of the Help window and enable you to move around easily in Help. If a feature is not available, its button name is dimmed.

Note: Some applications may have additional Help buttons not described in the following table.

### Contents

Displays Help Contents for the application you are using.

### Search

Lists all the words you can use to search for topics in the application's Help. By typing or selecting one of these words, you can search for and go to a specific Help topic.

### Back

Displays the last topic you viewed. You move back one topic at a time in the order you viewed the topics.

### History

Displays the last 40 topics you have viewed in the Windows session. The most recent topic viewed is listed first. To revisit a topic, double-click it.

### Browse <<

Displays the previous topic in a series of related topics, until you reach the first topic in the series. The button is then dimmed.

### Browse >>

Displays the next topic in a series of related topics, until you reach the last topic in the series. The button is then dimmed.

## Summary

In our opinion, the "Smart Document" represents a great advance in this information age. It takes a book or a document or a manual and adds significant value. Topics can be easily found, viewed, correlated, printed. Topics can be viewed in linear manner, with the browse buttons, or can be selected with either key words, or full text searches. The user can explore an idea or connected ideas. At all times the user can return to the previous screen by use of the **Back** button, or to the start with the **Contents** button, or follow the search trail via the **History** button. The smart Document System makes a document fun to use.

Popup items make it easy to include definitions. Information can be copied and pasted to other documents. Annotations can be added to capture thoughts or comments about topics.

The electronic EP's have been well received by their user community.

## Conclusion

SDS can provide a way for a document collection to be:

- Paperless,
- Intelligent and thus more useful,
- Usable as a stand alone, or on a network, or by use of IMS\* ,
- A bona fide (with a laptop) replacement for a book.

---

\* IMS is the Image Management System in use at Sandia. It uses an optical storage device for Drawing (scanned) and document storage and retrieval.

This is a new powerful addition to the way information is used. If you have read this far: "Try it, you'll like it."

## Literature References

In recent months there has been several articles on the Microsoft WINHELP engine. We are not alone in recognizing this WINHELP engine, the very tool that we have chosen to publish our EP. We would like to at this time share some of these comments

### Reference #1.

"If I asked you to itemize the technical innovations that distinguish Windows 3.0 and 3.1 from Windows 2.03, you'd probably list such features as protected-mode execution of Windows applications, relief of memory limitations, trapping of bad pointers, and preemptive multitasking of DOS applications. You might also include the widespread use of proportional fonts, color icons, and Version 3.1 enhancements such as common dialogs, TrueType, DDEML, OLE , the StartUp group in the Program Manager, and the install toolkit. But I bet you probably wouldn't mention a feature that in my opinion ranks in importance right behind protected-mode execution; the Windows Help System."

We have added the underline in this quote by Ray Duncan from the April 27th, 1993 issue of PC MAGAZINE in Duncan's column titled "POWER PROGRAMMING". Continuing with the quote from this article:

"Why is the Windows Help System so important? For one thing, it allows developers to present on-line information and context-sensitive assistance to users in a uniform way. For another it supports hyperlinks, keyword searches, browsing and bookmarks that enables users to navigate to the information they need quickly, find related information easily, and return to the same information later. ....In short, the Help System is straightforward to use, conservatively designed, relatively efficient, straightforward to code for, and the help file viewer program is bundled free with every copy of Windows. The Help System and its developers are the unsung heroes of the Windows 3.x juggernaut."

Again the underlines are added by the authors. The viewer program is called WINHELP.EXE. If it is in your path, then you can read any file with the .HLP extension.

## Reference #2

Select the HELP button.

Following this "...simple instruction produces the same result in nearly every Windows application. The Windows Help engine (WINHELP.EXE) opens a Help file specific to that application. Thanks to its universal availability, most Windows users soon become experts at taking advantage of Help's search procedure, pop-up definitions, and features such as bookmarks, annotations, and copy and print facilities."

"...now a growing number of corporate developers are using Windows Help as a delivery mechanism for Hypertext documents. These developers are compiling documents such as employee manuals, regulatory texts and mainframe-access procedures into Help format."

"...the good news is that it isn't necessary to create new source documents from scratch. Files that have been previously used to create printed procedural manuals, catalogues, or other documents can be converted to Help format. The process can be simple...."

"Still , "it's surprising how easy it is to create these custom Help files yet how few people know about it", Moura said. The Help engine "is one of the unknown gems of the Windows environment." (Moura is the assistant city manager for the City of San Carlos, California.) Again, the underline has been added by the authors.

This article by Paul Bonner appeared in a PC WEEK Supplement dated Feb. 15, 1993.

## Reference #3.

"Help Is on the Way"

"Yes, you can write your own help file for your custom spreadsheet macros or use a help file to convert your company policy manuals to an electronic on-line reference."

"For all but the simplest projects, though building a help file without special tools can be tough. You start with a simple text file, then add special codes as described in the Windows Software Development Kit to define bitmaps, Hypertext links, keyword searches, and a table of contents. The Microsoft Help Compiler takes this file, called an .RTF (rich text format) file and converts it to the .HLP file format that WinHelp, the common Hypertext help engine, uses."

"Because of the intricacies involved in creating a Windows help file, five help authoring tools have arrived during the past year. To varying degrees, these tools try to insulate you from the arcane formatting of Hypertext jumps, index terms and bitmapped graphics in a windows help file. Although some of the tools are easier to use than others, if you can use a word processor you can create a Windows help file."

The Five Products are:

1. Doc-to-Help (this is the one we have used on the EP manuals).
2. Help Magician
3. QDHelp
4. RoboHelp
5. UniversalHelp

The information in this reference was obtained from: Windows Magazine, Feb., 1993 , in an article by David Claiborne.

#### **Reference # 4.**

"Your documentation staff is going to write a user's guide anyway. Why not use that for on-line help? This approach saves the programmers time and helps to test the quality of the user's documentation."

"One short cut is to tap a tool named Doc-to-Help from WexTech Systems of New York. It helps you convert Microsoft Word for Windows files into on-line help. You just edit the .DOC and .RTF files to specify Hypertext jumps, assign indices and related items and provide glossary terms where needed."

"Once you have edited the files, you run the utility, which builds the help file. this file is then attached to your application and run with the Windows help engine. I like Doc-to-Help because it makes creating and maintaining Windows help fairly painless." The above reference is from an article by Christine Comaford in PC Week, Dec. 14, 1992.

# Appendix

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for

# Today's Nuclear Weapon Complex



**The Nuclear Weapons Complex**

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## **Paper Environment of EP's**

- **Paper distribution**
  - 450 to 600 manual users
  - 2 - large three ring binders
    - » containing approx. 2000 sheet (8.5 x 11)
  - Updates and Revision
    - » Expensive
    - » Time consuming
    - » not every user updates their manual with the provided material.
- **Our strategic goal**
  - reduce paper distribution
  - eliminate printing cost

Appendix  
for

## Selecting the right Viewer for us

- **Viewers**
  - **World View by Interleaf**
  - **FrameViewer by Framemaker**
    - » **fee required for the viewer**
    - » **requires distribution**
  - **Discovery of WinHelp.exe found in Microsoft Windows**
    - » **eliminates**
      - **Viewer distribution**
      - **Viewer costs**

Selecting the Viewer

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## Authoring Tools

- **Microsoft Products**
  - Visual Basic with Professional Tool Kit
  - Multi-Media Development Kit
    - » Hot Spot Editor
  - Windows Software Development Kit
- **Doc-to-Help by WexTech Systems, Inc.**
- **Total cost under \$1600**

Authoring Tools  
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## **Building the Electronic EP sets**

- **A team of 4 individuals**
- **Individual EP's are written in MSWord.**
- **Converting the old format to new**
  - **Nov 1, 1992 - Feb. 1, 1993**
  - **Typists, Software specialist and Project leader**
  - **Scanned Documents and Images**
- **Wrote Custom Word Macros**
- **Obtained tools for Full Text Search**

**Building**  
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for

## Distribution

- **Reliable distribution tools are a must!!!**
  - Image Management System (IMS)
  - Executable Program for easy installation
- **Documents are Issue Controlled**
- **Knowing when a update occurs**
  - Sandia bulletin
  - Engineering Release distribution
- **Networking will minimize individual distribution**

Distribution  
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## Viewing Requirements

- **IBM compatibles**
  - System requirements
    - » Windows 3.1
- **Macintosh system**
  - System requirements
    - » MS Excel Software
- **Unix system** (a known product, but not yet purchased)
  - HyperHelp by Bristol Technology Inc.

### Viewing Requirements

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EP401000 - EP401199

File Edit Bookmark Help

Welcome to Sandia National Laboratories electronic Engineering Procedures.  
Please refer all questions or comments to Sandia/New Mexico, Dept. 2002, @ (505) 846-8100.

## Numerical Index of INTERAGENCY EP's

FOREWORD

EP401000 / E - Numerical Index INTERAGENCY EP's (Change History)  
*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401001 / M - Engineering Procedures (EP's) System  
*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401011 / S - Qualification Evaluation System  
*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401013 / D - INTERAGENCY CONTROL OF COMMERCIAL

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EP401000 EP401199

File Edit Bookmark Help

Welcome to Sandia National Laboratories electronic Engineering Procedures.  
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EP401011 / S - Qualification Evaluation System  
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EP401013 / D - INTERAGENCY CONTROL OF COMMERCIAL

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3. **CHANGES TO SEVEN-DIGIT SPECIFICATIONS - EP401014**

3.1 **Policy.**  
A seven-digit specification will not be changed to render it incompatible with existing product applications.

3.2 **Revision of Suffix.**  
A specification change which a DA or PA determines is significant to product, or to the material or process, is identified by raising the two-digit suffix of the change.

**Process**  
A particular method of manufacture, generally involving a number of steps or operations, as defined by the process specification.

concurrency of the concerned DA(s). The PA engineer contacts the responsible DA engineer(s) for such concurrence. The engineering change document lists the name of each DA engineer giving concurrence. Each concurring DA engineer is placed on distribution for a copy of the change

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4.1.1

A QE status is assigned to indicate the results of the evaluation as follows:

- a. A QE status of ACCEPTABLE is assigned when the QE Team concurs that the objectives of the evaluation have been met

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4.

4.1

4.1.1

Team Chairperson to authorize its use for the position of the issued for each than ACCEPTABLE me specified in the

is qualified as part of or the acceptance. d as related releases.

A QE status is assigned to indicate the results of the evaluation as follows:

- a A QE status of ACCEPTABLE is assigned when the QE Team concurs that the objectives of the evaluation have been met

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## 1. GENERAL - EP461614

### 1.1 Scope.

This Interagency Engineering Procedure (EP) provides procedures for preparation, coordination, and revision of seven-digit specifications that define general use materials and processes required by a Design Agency (DA) for product. (In this EP, the term "product" includes weapon and nonweapon items and associated acceptance equipment.)

### 1.2 Participating Design Agencies (DAs).

- a. Los Alamos National Laboratory (LA).
- b. Lawrence Livermore National Laboratory (LL).
- c. Sandia National Laboratories (SA and SL).

### 1.3 Participating Production Agencies (PAs).

- a. Allied - Signal Aerospace Co., Kansas City Division (KC).
- b. EG&G Mound Applied Technologies (MD).

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The screenshot shows a software interface with a table of contents on the left and a 'Windows Help History' window on the right. The table of contents lists sections 2.1 and 2.2. The 'Windows Help History' window displays a list of help topics, including '2. REQUIREMENTS - EP401011' and '3. GUIDELINES FOR CONDUCTING QE ACTIVITIES - EP401011'. Arrows point from the 'History' menu item to the 'History' window and from the '2. REQUIREMENTS' entry in the table of contents to the corresponding entry in the help history window.

Section	Section Title	Description
2.	<b>REQUIREMENTS</b>	
2.1	Determination	Shortly after production of appropriate design processes to which at the time of the and should be of material required Program Document and deletions will for re-evaluation
2.2	Team Formation	The Qualification product or man should occur prior to the Weapon Final Design Review, or Component Prototype Design Review (See EP401063, Reference), depending upon the subject of the evaluation. The nucleus of the team is composed of the Sandia

**Windows Help History**

- 2. REQUIREMENTS - EP401011
- 3. GUIDELINES FOR CONDUCTING QE ACTIVITIES - EP401011
- 4. DETERMINING OF SUBJECTS - EP401011
- 3. GUIDELINES FOR CONDUCTING QE ACTIVITIES - EP401011
- 2. REQUIREMENTS - EP401011
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- Help Contents
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EP401000 - EP401199	
File Edit Bookmark Help	
<b>1. GENERAL - EP401074</b>	
1.1 Scope.	This Interagency Engineering Procedure (EP) provides procedures for preparation, coordination, and revision of seven-digit specifications that define general use materials and processes required by a Design Agency (DA) for product. (In this EP, the term "product" includes weapon and nonweapon items and associated acceptance equipment.)
1.2 Participating Design Agencies (DAs).	<ul style="list-style-type: none"><li>a. Los Alamos National Laboratory (LA).</li><li>b. Lawrence Livermore National Laboratory (LL).</li><li>c. Sandia National Laboratories (SA and SL).</li></ul>
1.3 Participating Production Agencies (PAs).	<ul style="list-style-type: none"><li>a. Allied - Signal Aerospace Co., Kansas City Division (KC).</li><li>b. EG&amp;G Mound Applied Technologies (MD).</li></ul>

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FP201000 - FP201199

File Edit Bookmark Help

Glossary of Terms

**A**

- Abnormal Environment
- Acceptance
- Acceptance Equipment
- Accident Response Group
- Accuracy
- Active Drawing
- Advance Change Order
- Ancillary Equipment
- Approved Calibration Station
- Approximate Dimension
- Archive Drawing
- Assembly Listing
- Authentication

**B**

- Base Issue
- Base Spares
- Basic Dimension
- Rins

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112401000 112401199

File Edit Bookmark Help

## Glossary of Terms

**A**

- Abnormal Environment
- Acceptance
- Acceptance Equipment
- Accident Response Group
- Accuracy
- Active Drawing
- Advance Change Order
- Auxiliary Equipment
- Approved Calibration Station
- Approximate Dimension
- Archive Drawing
- Assembly Listing
- Authentication

**B**

- Base Issue
- Base Spares
- Basic Dimension
- Bin

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EP401000 - EP401192

File Edit Bookmark Help

Open...

Print Topic  
Print Setup...  
Exit

to Sandia National Laboratories electronic Engineering Procedures.  
For all questions or comments to Sandia/New Mexico, Dept. 2882, @ (505) 846-8188.

## Numerical Index of INTERAGENCY EP's

FOREWORD

EP401000 / F - Numerical Index INTERAGENCY EP's (Change History)  
*Contact: Ted Weiss SNL/NM (505) 846-9579*

EP401001 / M - Engineering Procedures (EP's) System  
*Contact: Ted Weiss SNL/NM (505) 846-9579*

EP401011 / S - Qualification Evaluation System  
*Contact: Ted Weiss SNL/NM (505) 846-9579*

EP401013 / D - INTERAGENCY CONTROL OF COMMERCIAL

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EP401000 - EP401199

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Copy... Annotate... Print...

Sandia National Laboratories electronic Engineering Procedures.  
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## Numerical Index of INTERAGENCY EP's

FOREWORD

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*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401011 / S - Qualification Evaluation System  
*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401013 / D - INTERAGENCY CONTROL OF COMMERCIAL  
SUPPLIER'S DOCUMENTS  
*Contact: Ted Weiss SNL/NM (505) 846-9679*

EP401014 / L - SEVEN DIGIT MATERIAL AND PROCESS

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The screenshot shows a web browser window with a menu bar (File, Edit, Bookmark, Help) and a toolbar. The main content area displays a document titled "2. DEFINITIONS - EP401013". A "Copy" dialog box is open, showing the following text:

Select text to copy to the Clipboard.

2. DEFINITIONS - EP401013

2.1 Contractor/Supplier.

The terms "contractor" and "supplier" refer to the sellers of materials, processes, parts, and assemblies applicable to the procured product, (3) are called out by issue.

2.2 Controlled Documents.

2.3 Coordinated Documents.

Drawings, specifications, manuals, etc., that (1) are the property of the contractor/supplier, (2) cover materials, processes, parts, and assemblies applicable to the procured product, (3) are called out by issue

An arrow points from the "Copy & Paste" menu item in the left sidebar to the "Copy" button in the dialog box.

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The screenshot shows a web browser window with a menu bar (File, Edit, Bookmark, Help) and a toolbar. The page title is "DEFINITIONS - EP4818T3". The main content area displays sections 2.1, 2.2, and 2.3. An "Annotate" popup window is open over section 2.1, containing the text "This is a test" and several buttons. The background text includes sections 2.1, 2.2, and 2.3.

2.1 Co...  
The...  
par...  
EX...

2.2 Co...  
Dra...  
cor...  
ass...  
in t...

2.3 Coordinated Documents.  
Drawings, specifications, manuals, etc., that (1) are the property of the contractor/supplier, (2) cover materials, processes, parts, and assemblies applicable to the procured product, (3) are called out by issue

the sellers of materials, Sandia Laboratories or a P.A.

(1) are prepared by the...  
esses, parts, and...  
t, (3) are called out by issue...  
the Government.

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2. **Bookmark Name:**

B57

OK

Cancel

Apply

2.1

2.2

Team Formation.

The Qualification Evaluation Team is formed upon determination that a product or manufacturing process is to be evaluated. The QE team formation should occur prior to the Weapon Final Design Review, or Component Prototype Design Review (See EP4Q1063, Reference), depending upon the subject of the evaluation. The nucleus of the team is composed of the Sandia

ility organization and the  
etermine the products and  
ied. This action will be initiated  
Review (Reference EP4Q1063)  
and should be completed by Weapon Final Design Review. Quantities of  
material required for evaluation will be documented in the Pilot Production  
Program Document (PPPD) (Reference EP4Q1026). Subsequent additions  
and deletions will be reflected in PPPD revisions. For determination of need  
for re-evaluation, see paragraph 5.3.

## Bookmark

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EP401000 - EP401199

File Edit Bookmark Help

http://www.epa.gov/epaosopr/...

2. REQUIREMENTS - EP401011

2.1 Search

Search For:  
bomb

Look At:  
 Topic Titles Only  All Text

Look In:  
 EP401000 - EP401199

Search Cancel Help...

2.2 Team Formation.

The Qualification Evaluation Team is formed upon determination that a product or manufacturing process is to be evaluated. The QE team formation should occur prior to the Weapon Final Design Review, or Component Prototype Design Review (See EP401063, Reference),

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The screenshot shows a web browser window with the following elements:

- Address Bar:** EP401080 - EP401199
- Menu Bar:** File Edit Bookmark Help
- Navigation Bar:** Back Forward Stop Home X Home Stop Search
- Section Header:** 4. FLIGHT TEST PROGRAM - EP401080
- Search Interface:**
  - Search For:** bomb AND quality
  - Look At:**  Topic Titles Only  All Text
  - Look In:**  EP401000 - EP401199
- Search Results:**
  - 2 Topics Found
  - bomb AND quality
  - Table with columns: Rank, Title, To: To: To: To:
  - 3. LABORATORY TEST PROGRAM
  - 4. FLIGHT TEST PROGRAM
- Text Below Search:**

JTU in some cases, or, the JTA may JTU.

c. Prebuild JTA or TYPE 2. A JTA or TY produced concurrent with WR produ

d. Rebuild JTA or TYPE 2. A JTA or TY

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4.

The screenshot shows a search interface with a search box containing the word "bomb". A "Search Hints" dialog box is open, providing a table of search constructs to refine the query. The table lists various operators like AND, OR, NEAR, NOT, and their effects on search results. A "NEAR" construct is highlighted with a mouse cursor, and a tooltip explains that "NEAR" means within a certain number of words.

Construct	Example	Result
AND	Bees AND Honey	Finds all topics that have the two words Bees and Honey
OR	Bees OR Honey	Finds topics that have the word Bees and topics that have the word Honey
NEAR	Bees NEAR Honey	Finds topics in which Bees is within 5 words of the word Honey
NOT	Bees NOT Honey	Finds topics that have the word Bees but don't have the word Honey
" "	"Bees love Honey"	Finds topics that have the exact phrase "Bees love Honey"
( )	("Bees love Honey") OR (Bees AND Honey)	Finds topics that have the phrase "Bees love Honey" and topics that have the two words Bees and Honey
c. F	Bees	Finds topics that have words that start with Bees (for example, Beehive)
d. F	NEAR means within 5 words	

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The screenshot shows a search interface with the following elements:

- Search For: bomb AND quality
- Look At:  Topic Titles Only  All Text
- Look In:  EP401000 - EP401199
- Search Results Popup: 2 Topics Found
  - LABORATORY TEST PROGRAM
  - FLIGHT TEST PROGRAM

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# Distribution

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