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Automated Estimating System (AES)

Version 6.0

User's Manual

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Engineering and Production Management Systems

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Abstract

This document describes Version 6.0 of the Automated Estimating System (AES), a personal computer-based software package. The AES is designed to aid in the creation, updating, and reporting of project cost estimates for the Estimating and Scheduling Engineering Department of Central Engineering Services of Martin Marietta Energy Systems, Inc. AES provides formatted input screens to guide the user through the estimate creation/update process and provides several standardized reports that allow cost to be sorted and summarized in many different formats and at several levels of aggregation.

ABS

2

1.0 Introduction

1.1 System Overview

The Automated Estimating System (AES) is a personal computer software package developed for the Estimating and Scheduling Engineering Department of Central Engineering Services of Martin Marietta Energy Systems, Inc., to aid in the preparation and reporting of project cost estimates. It is maintained by the Engineering Design Information Systems (EDIS) Section of Computing and Telecommunications Services (C&TS) and the Central Engineering Services of Martin Marietta Energy Systems, Inc. The system provides an easy method for entering and updating the detailed cost, schedule, and escalation information contained in a typical cost estimate. AES combines this information to calculate both unescalated and escalated values for the estimate. These costs can be reported at varying levels of detail.

The system offers several advantages over other manual and computerized estimating methods in the following areas:

- Ease of Use AES uses menus and formatted input screens to guide the user through the estimate creation/update process. Pricing databases are available for cost retrieval and lookup. Context-sensitive messages explaining each input field are available with the touch of a single key.
- Consistency Two system features help ensure that estimates created with the system contain consistent information. Standard craft rates, percentage mark-up factors, and escalation rates are entered and updated using a separate program called the Standard Value program. These "standard values" are retrieved by AES when an estimate is being created. This feature can be used to ensure that all estimates use the proper craft rates, mark-up factors, and escalation rates by restricting the use of the Standard Value program to a single person responsible for creating and distributing to all AES users an "official" standard value file. AES also requires that certain identification information be entered for each estimate created using the system. Examples of required information include Project Number, Work Breakdown Structure (WBS), and Cost Code of Accounts. The entry of information into required fields is enforced during the data entry process. The cursor will not move past a required field until an entry is made.
- Accuracy The system requires that the detailed estimate information be entered once. These data may then be sorted and reported at varying levels of detail. This eliminates the possibility of errors being introduced when the estimate is summarized manually in many different formats and at several levels of aggregation.

Analysis

The ease and speed with which the estimate information can be sorted and summarized provides a powerful analytical tool. In addition, the system can output the detailed estimate information to an ASCII file in a format that can be imported into a spreadsheet or database for further manipulation or analysis. AES also allows "what if" questions concerning the effect of possible schedule, labor rate, or escalation rate changes to be answered quickly.

1.2 System Description

AES consists of two major programs: the Standard Value program and the Estimate Creation/Update/Scheduling/Contingency/Reporting program (Estimating program).

The Standard Value program is used to input and update the craft rates, percentage mark-up factors, and the escalation rates that are stored in a standard value file. A standard value file is required for each estimate created using the AES. This program is operated and controlled by a single authorized individual. Documentation for the Standard Value program is provided in the Automated Estimating System (AES) Standard Value Program User's Manual, Rev. 1 (K/CSD/TM-102).

The Estimating program is used to enter and/or update the detailed cost estimates, combine several estimates to form a project cost estimate, create and/or update a project schedule file, produce reports, and perform various analysis functions. The operation of the AES Estimating program is described in this manual.

1.3 Organization of This Manual

This manual is divided into 13 major sections and 5 appendixes, as described below:

<u>Section</u>	<u>Description</u>
1.0	Contains a general overview of AES and a description of the organization of the manual.
2.0	Includes information you need to know before installing the system on your personal computer. The first part of Sect. 2.0 describes the hardware and software required by AES. The second part describes the files used by the system. The third and last part tells you how to install the program on a personal computer.
3.0	Contains general information about the operation of AES. The use of the menu and input/update screens is described. Explanations of how to enter and update data within each screen field, how to move from field to field within a screen, and how to move from screen to screen are found here.
4.0	Explains set-up options of selecting or changing a standard value file and a default drive/directory.
5.0	Explains how to use the Estimating program to create and update estimates. Included here is detailed information about the order in which screens will appear and the information that must be entered within each screen and for each estimate. Subsections include creating and updating Discipline, Bill of Material, Bill of Material Costs, and Bill of Material Additive records.
6.0	Explains how to modify and create a Basis of Estimate.
7.0	Explains how to create and update a contingency analysis file.
8.0	Describes how to create and update a project schedule file.
9.0	Describes how to list, create, and update WBS title records.
10.0	Describes how to use the Estimating program to generate reports.
11.0	Explains the various utility functions that accompany the Estimating program. These include subsections on recalculating estimates, compressing (packing) a file, and extracting records from and combining records into an estimate file.
12.0	Describes how to retrieve line items from the CACES and Assembly databases.

<u>Section</u>	<u>Description</u>
13.0	Describes the Cost Estimating Guidance Report.
Appendix A	Describes the use of schedule by curve in the allocation of cost to the time periods.
Appendix B	Describes how escalated costs are calculated.
Appendix C	Contains the screen layouts and field definitions for each input screen in AES.
Appendix D	Contains an example of each type of report produced by AES.
Appendix E	Contains some of the more common error messages and a list of possible actions that may be taken to correct the error.

2.0 Getting Started

2.1 Required Hardware/Software

The Automated Estimating System (AES) is designed for use with the IBM PC, PC-XT, PC-AT, PS/2, or any true IBM PC-compatible microcomputer with the following minimum hardware configuration:

- 385KB of free Random Access Memory (RAM)
- Color Graphics Monitor and Adapter
- One 720KB Diskette Drive
- One Hard Disk Drive (either fixed or removable) with at least 3M of free disk space
(an additional 5M is required for the pricing databases)
- Printer

The only software required in addition to AES is the IBM PC Disk Operating System (DOS) version 3.1 or higher. Please note that the use of memory-resident software such as Sidekick, screen blanking programs, etc., while not specifically precluded, could possibly produce unpredictable results when used with this system.

It should be noted that at the time the computer is "booted," a file named CONFIG.SYS must be in the root directory of the drive from which the system is loaded. This file must contain at least the following two lines:

```
FILES      = ff
BUFFERS    = bb
```

where ff must be at least 20 and bb must be at least 10. The CONFIG.SYS file determines the maximum number of files that may be open at one time and the number of buffers to be allocated by DOS. For more information on the use of CONFIG.SYS files, please refer to your DOS manual.

2.2 Required Files

The AES Estimating program uses the following disk files (Figure 1 depicts the relationships among these files):

<u>Name</u>	<u>Description</u>
AES.exe	AES Program
AES.ovr	AES Overlay
AESHELP.HLP	AES Help File
COSTGUID.HLP	Cost Estimating Guidance Report
vvvvvvv.VAL	Standard Value File

Fig. 1. AES File Relationships

<u>Name</u>	<u>Description</u>
eeeeeeee.EST	Estimate Record File
eeeeeeee.BMR	Bill of Material Record File
eeeeeeee.CST	Bill of Material Cost Record File
eeeeeeee.EBS	Basis of Estimate File
ssssssss.SCH	Project Schedule File
ssssssss.NDX	Project Schedule Index File
cccccccc.CNT	Contingency File
cccccccc.CDX	Contingency Index File
wwwwwwww.WBS	WBS Title File
wwwwwwww.IDX	WBS Index File
TASK.DAT	CACES Pricing Database
TASK.NDX	CACES Pricing Database Index
CSI.DAT	CSI Codes File
CSI.NDX	CSI index File
FACFILE.DAT	CACES Crew Makeup File
FACFILE.NDX	CACES Crew Makeup Index
EQUIPMEN.DAT	CACES Equipment File
EQUIPMEN.NDX	CACES Equipment Index
LABOR.DAT	CACES Labor File
LABOR.NDX	CACES Labor Index
ASSEM.DAT	Assembly Database
ASSEM.NDX	Assembly Index
ASM.DAT	Assembly Codes File
ASM.NDX	Assembly Codes Index
A_CSI.DAT	Assembly CSI Reference
A_CSI.NDX	Assembly CSI Reference Index

(The file names are chosen by the user where designated by vvvvvvvv, ssssssss, eeeeeeee, wwwwwwww, and cccccccc. The file extensions are assigned by the system. Note that the four files with extensions .EST, .BMR, .CST, and .EBS must share the same name, denoted eeeeeeee here.)

AES.exe and AES.ovr are the system executable files. AESHELP.HLP contains the AES on-line help, and the COSTGUID.HLP contains the on-line Cost Estimating Guidance Report.

The Standard Value file (vvvvvvv.VAL) is created and updated using a separate program. In applications where multiple users are working on the same project, this allows the file to be centrally maintained and distributed to ensure that those in use contain consistent information. The Standard Value file also contains an expiration date. The AES Estimating program uses this date to verify that the rates are still current (see Sect. 1.2). The Standard Value file is required by the Estimating program and must reside on the same disk/directory as the system files. It contains the sets of participant codes and titles; craft codes, titles, and rates; percentage mark-up values; discipline codes and titles; cost codes and titles; and escalation rates that may be used for estimates created using the system. The participant code is four characters in length and indicates the organization responsible for completing a portion of work (Cost Plus Award Fee Contractor, Fixed Price Contractor, etc.). The craft code is two characters in length and represents a craft, such as

pipe fitter, carpenter, or engineer. Each craft may have a different hourly rate for each participant. This enables the system to reflect differences in labor costs among the various participants. The percentage mark-up values are factors applied to the base costs in each estimate. These mark-up values are used to calculate costs, such as indirects, sales tax, and other costs that can be expressed as a function of direct costs. The escalation rates are used in calculating escalation factors that are used to determine the escalated value of an estimate.

Each project estimate consists of four files with the common name eeeeeeee and with extensions .EST, .BMR, .CST, and .EBS. The first three files are used to store the detailed discipline cost estimate(s) and are referred to collectively as the Estimate database. The .EBS file is an optional file that contains information concerning any assumptions made that may affect the current estimate. The Estimate database may contain one or more discipline estimates. In this context, a discipline estimate refers to the estimated cost of a discrete portion of work associated with a single engineering discipline. Within each discipline estimate, the costs are grouped into Bills of Material. The Estimate Record file contains a record for each discipline estimate in the database. The record contains information (such as Base Fiscal Year) that applies to all Bills of Material in the discipline estimate. The Bill of Material file contains a record for each Bill of Material in the database. The record contains information (Work Breakdown Structure, Participant Code, etc.) that applies to the costs within the Bill of Material. The Bill of Material Cost file contains a record for each detailed estimate item in the database.

The existence of four separate files for the Estimate database is transparent to you when executing the AES Estimating program. The program prompts for a file name, to which the system appends the appropriate extension (.EST, .BMR, .CST, or .EBS) prior to creating or opening each of these four files. You do, however, need to remember that four separate files are present when using DOS commands to copy or rename the Estimate database.

The Project Schedule files (sssssss.SCH and .NDX) are required only if the estimated costs are to be reported in escalated terms. The .SCH file contains the scheduled start date and the scheduled end date for each activity within each WBS-Participant element of a specific project. This file is used to calculate the escalated value of the estimated costs.

The Project Contingency files (ccccccc.CNT and .CDX) are required only if the contingency analysis work sheet has been used to determine contingency percentages for a project. The contingency analysis is based on cost categories at the WBS-Participant level with regard to the completeness of design and degree of difficulty. The Contingency file is used to determine a contingency percentage for each Bill of Material entered into the Estimate database.

The WBS Title files (wwwwwww.WBS and .IDX) are required only if the WBS Title File program has been used to build a title file. The WBS Title file provides consistency of WBS titles in reports.

The CACES and Assembly pricing database files are used for retrieval and lookup of cost information. If disk space is not available to store these files, AES will execute without them, but the ability to retrieve information from the pricing databases is lost.

2.3 Installation Procedure

Three diskettes are used to install AES 6.0: Program Diskette No. 1 and Database Diskettes No. 1 and No. 2. It is necessary to use Program Diskette No. 1 to install AES, which requires at least 3.0Mb of free disk space. Installation of the two Database diskettes that contain the CACES and Assembly databases is optional. The databases require an additional 5.0Mb of free disk space.

To install AES 6.0 Program Diskette No. 1 on a hard disk, perform the following steps:

1. First, create a subdirectory for the AES program files. Assuming that the hard drive is designated as drive C, type the following commands, pressing `←` after each:

```
c:
```

```
cd c:\
```

```
mkdir AES60
```

2. Place AES 6.0 Program Diskette 1 into drive A, type the following command, and press `←`.

```
copy a:program.exe c:\AES60
```

This command copies the "PROGRAM.EXE" file from the diskette in drive a: to your AES60 directory. This file is a self extracting compressed file that contains all of the programs necessary to execute AES 6.0.

3. You must run the PROGRAM.EXE file to extract the AES files and install the program in the directory. Make the AES60 directory current by typing the following command and pressing `←`.

```
cd AES60
```

4. Run the PROGRAM.EXE file by typing the following command and pressing `←`.

```
program
```

You must have at least 3.0Mb of free disk space to contain the extracted files.

5. When complete, you may delete PROGRAM.EXE from your hard drive. Do not delete it from the diskette.

To install AES 6.0 Database Diskettes No. 1 and No. 2, perform the following steps.

1. Place AES 6.0 Database Diskette 1 into drive A, type the following command, and press **←**.

```
copy a:databas1.exe c:\AES60
```

2. Place AES 6.0 Database Diskette 2 into drive A, type the following command, and press **←**.

```
copy a:databas2.exe c:\AES60
```

The above files are self extracting compressed files that contain all of the programs necessary to execute the AES 6.0 Database Module.

3. You must run the two above programs to extract the database files. Make sure that the AES60 directory is your current directory. If not, change to this directory as described in step 3 on the previous page.
4. Run the DATABAS1.EXE file by typing the following command and pressing **←**.

```
database1
```

5. Run the DATABAS2.EXE file by typing the following command and pressing **←**.

```
database2
```

You must have at least 5.0Mb of free disk space to contain the extracted files.

5. When complete, you may delete DATABAS1.EXE and DATABAS2.EXE from your hard drive. Do not delete them from the diskette.

Before using the programs, verify that the current version of the standard value file has been copied to the same disk as the AES programs. If it has not or if an updated standard value file is distributed after the AES programs have been installed, the file may be transferred to the system disk with the DOS COPY command. Please refer to the DOS manual for details on the use of this command.

If you intend to use the report printing utility and mouse capabilities, the DOS PRINT facility must be enabled, and the mouse software must be loaded. This can be done manually at the beginning of each session; however, it is recommended that you modify your CONFIG.SYS or AUTOEXEC.BAT files to include the commands to execute PRINT.COM and MOUSE.COM.

3.0 System Operation Overview

3.1 System Operating Environment

You communicate with AES through three basic formats: selection formats (making menu or button selections), data entry formats (typing data into input fields or forms), and list formats (viewing lists of data displayed by the system).

Version 6.0 of AES displays these formats to you in a mouse-driven windowed environment. If you do not have a mouse, you can use standard keyboard arrow ($\rightarrow$, $\leftarrow$, $\uparrow$, $\downarrow$) and command ($\leftarrow$, **Tab**) keys. Standard keyboard letter and number keys are also used for data entry.

Both mouse and keyboard operation methods are explained in the following text. Standard terms used for objects in the AES environment and for AES operations are also defined below. The operating terms described below are used generically to refer to either mouse or keyboard operation. For the mouse to work, MOUSE.COM must be installed prior to starting AES.

3.1.1 Objects in the AES Environment

Action Buttons

Commands and actions are performed in AES by selecting an action button displayed on the screen. A button is a small raised box that encloses an action name. Examples of action buttons used throughout AES are [EXIT], [OK], and [CANCEL]. Buttons not valid for the current screen operation are dimmed and cannot be accessed. Some screens have a default action button that is automatically triggered when a record is selected from the screen list. Refer to the **Select** operation below for directions in how to activate these buttons.

Field

This term refers to an area on a displayed data entry form in which you are allowed to type information. Each field has a name to identify the type of data it contains and a highlighted space of a defined number of characters to contain the data. Data entry is allowed only in defined fields on a data entry form.

Menu

A menu presents a list of option names for your selection. Only one option may be selected from a menu. Menus come in the shape of a menu bar (which is a horizontal list of option names) or a pull-down menu box (which encloses a vertical list of option names). A pull-down menu is displayed when an option is selected from the AES Main Menu Bar. After a selection is made from a pull-down menu, the menu will disappear. Refer to the **Select** operation in Sect. 3.1.2 for directions on how to select a menu option.

Mouse Cursor and Mouse Buttons

The hand-held mouse is used to move the mouse cursor around the terminal screen in a manner corresponding to the direction the mouse is moved on the desk top. The mouse has one to three buttons on top. The left-most mouse button is pressed (clicked once or double-clicked) to select the object on which the mouse cursor is placed. Double clicking on an item in some lists can be used to select the item instead of using the [OK] button (the two clicks must be made in rapid succession). Single clicking the right-most mouse button invokes the AES help utility (see Sect. 3.4).

Text Cursor

This is a highlighted box or underscore character that marks the place (field) in an entry form where text may be typed. The text cursor is automatically placed on the first data entry field of a form and may be moved to the next field by pressing the $\leftarrow$ (Enter), Tab, or $\uparrow$ and $\downarrow$ arrow keys.

Windows

Some menus and data display lists are presented to you inside windows. The borders of some windows are equipped with scroll bars and a close button control symbol that are used with a mouse to manipulate the window and its contents. These operations are described in the "Operations in AES" section that follows.

3.1.2 Operations in AES

Close Window

To make a selection or data list window disappear without making a selection, select the small square close window button [■] on the top left of the window. This dismisses the latest window and returns to the previous display. The Esc key also performs this function from the keyboard.

Block Copy/Move/Delete

A defined block of Discipline, Bill of Material, or Line Item records can be copied or moved using the Blk_Copy or Blk_Move function. This is done by selecting action buttons displayed on the screen or using keyboard keys in the following ways: (1) place the text cursor on the first line of the block

and select **[Mark_Block]** (or press the **Alt+B** keys); (2) place the cursor on the ending block line and select **[Mark_Block]** (or press the **Alt+B** keys) (the block is marked with a vertical bar in the left margin); (3) move the cursor to the line following the line where the block is to be moved/copied and select **[Blk_Copy]** or **[Blk_Move]** (or press the **Alt+C** or **Alt+M** keys). A defined block can be deleted by selecting **[Blk_Delete]**. **[Blk_Delete]** is also available in the Schedule Modify, WBS Modify, and the Contingency Modify functions. The last two marks you set define the current block until another mark is selected. Selecting **[Mark_Block]** a third time cancels the first mark and begins a new block definition pair of marks.

Enter

This term refers to typing data or text into an entry field and pressing the **↵** (Enter), **Tab**, or **↑** and **↓** arrow keys to move to the next field. AES permits only numeric characters to be entered in a numeric field. You may wish to use the numeric key pad to speed the entry of numeric data. To do this, the **NumLock** key must be pressed. However, the cursor control keys will not function while in this mode unless you are using an enhanced keyboard. To change from numeric mode back to cursor control mode, press the **NumLock** key once again.

Edit

This term refers to changing the current values in the fields of a record. Edit keys are used as follows:

→ or ←	Moves the text cursor right or left within a field.
Backspace	Deletes the character behind the current cursor position.
Ctrl + →	Moves text cursor to the next word.
Ctrl + ←	Moves text cursor to the previous word.
Ctrl + Del	Deletes all characters from the cursor position to end of field.
Delete	Deletes the character under the current cursor position.
End	Moves text cursor to the end of the field.
Home	Moves text cursor to the beginning of the field.
Insert	Toggles between insert and typeover modes.
Shift + → or ←	Highlights text over which cursor is moved while Shift is held down. (The mouse can also be used to highlight text by holding down the left mouse button while dragging the mouse cursor over the text and then releasing the button.)

```

*****
*                                     *
*                               CAUTION                               *
*                               *                                     *
*   The current contents of a highlighted field are erased          *
*   when you modify the field information.                          *
*   *                                                                *
*   If you do not want to clear the current contents,             *
*   press the Home key to remove the highlight                    *
*   before modifying the field information.                         *
*   *                                                                *
*****

```

Scroll

Some data list formats contain more entries than can be shown within one window. This is usually indicated by the presence of a scroll bar on the right or bottom of the window (see window diagram in Sect. 3.1.1). The small box inside the scroll bar indicates the position of the displayed text in the list. More lines or columns of data are displayed by clicking the mouse on the vertical or horizontal arrows in the direction you wish to move the display. The box inside the scroll bar can be dragged along the bar by placing the mouse cursor on the box and pressing and holding down the mouse button while sliding the mouse along the bar. Release the mouse button when the box is positioned where you want it in the list. The record indicator on the bottom-left corner of the window displays the record number of the currently highlighted record.

If you do not have a mouse, use the **↓** or **Page-Down** key to move the highlight bar past the last entry to display more lines; use the **Tab** or **→** key to move past the right margin to display the rest of the line. The **↑** and **Page-Up** keys as well as the **Shift+Tab** or **←** keys scroll in the opposite directions, respectively.

Select

This term refers to choosing an action button, choosing an option from a menu, and checking an option box. If you are using a mouse, position the mouse cursor on an action button or menu item and click the left mouse button to select the button or item. Clicking the mouse once on a record item in a list highlights the record line; then, clicking on the **[OK]** button or another action button selects the currently highlighted item. Double-clicking on some item lists can be used to select an item instead of using an **[OK]** button (the two clicks must be made in rapid succession). Clicking the mouse on a selection box "checks" the box (clicking again "unchecks" the box).

Using the keyboard method, the **Tab** key or keyboard arrow keys are used to move the highlight bar to an action button or menu item, and **←** is pressed to select the highlighted button or item. Once a record item on a list is highlighted, **Tab** to the **[OK]** button or another action button and press **←** to activate the button using the highlighted item. The **Spacebar** is used to "check" or "uncheck" selection boxes.

Some screens have a "default" action button that is automatically activated when a record is selected from the screen list. You can select the record by double-clicking with a mouse or by highlighting the record and pressing the **Spacebar**. Screens in which a default action is available are identified in later manual sections where the individual screens are discussed.

3.1.3 Standard Command and Cursor Keyboard Keys

When operating AES without a mouse, accessing selections and action buttons is done with keyboard keys as described below. Note that the **Menu**, **F1**, **F2**, and **Alt+X** keys are displayed on all system screens to provide you with constant access to these functions, although the display of an option is dimmed if the option is not active for the current screen. To choose one of the four above options, type in the command or click on the option with the mouse.

→, ←, ↑, ↓

Within a selection menu bar or box, arrow keys move the highlight selection bar up/down or right/left to highlight the desired option. Press ←| to select the highlighted option. These keys also move the cursor within a data entry field.

Alt+E

These keys, pressed together, mark the beginning and end of a block of text.

Alt+C

These keys, pressed together, copy a marked block to the current position of the text cursor.

Alt+M

These keys, pressed together, move a marked block to the current position of the text cursor.

Alt+X

These keys, pressed together, exit AES and return to the DOS prompt.

←|

This key is also called **Return** or **Enter**. Press this to select an option that is highlighted on the screen.

Esc

This key closes pop-up windows that display a close [■] button.

F1

This key is used to display a help message about the current position of the cursor.

F2

This key is used to display the Cost Estimating Guidance report (see Sect. 13.0).

F10

This key is used to place the highlight selection bar on the AES Main Menu Bar at the top of the screen. This allows you to make a selection from the main menu options.

Hot keys

A hot key is the highlighted letter that is displayed within some option names on menu bars, pull-down menus, or buttons. When this letter is pressed in combination with the **Alt** key (press and hold **Alt**, then press the letter key), the corresponding option is selected from the current screen. Using hot keys is the fastest method of selecting a menu option or command. Hot keys also help you move your text cursor to a specific field (if its name contains a hot key). Some hot keys on options inside the active window do not need to be preceded by the **Alt** key--pressing just the letter key will work.

Spacebar

The **Spacebar** can be used on a selection or listing screen to select an item in a manner similar to double-clicking with a mouse. First, move the highlight selection bar to the item, line, or box using the **→**, **←**, **↑**, or **↓** keys. Next, press the **Spacebar** to check (or uncheck) the box or select the highlighted record from the list. Some screens provide default action buttons (such as [Update] or [List B/M]) that are activated by selecting a record using the highlight and **Spacebar** method (the equivalent of double-clicking on the record).

Tab

This key moves the highlight bar to the next sequential object (field, action button, selection window) on the current screen. When the last object on the bottom of the screen has been accessed, the highlight bar is returned to the first object on the top of the screen (except on the Line Item data window).

Shift+Tab

Pressing and holding down the **Shift** key while pressing the **Tab** key moves the highlight bar to the previous sequential object on the current screen. If the bar is on the top of the screen, it will be moved to the previous object on the bottom of the screen.

3.2 Accessing AES

To access the AES Estimating program, change to the AES60 subdirectory, and at the C:\AES60> prompt, type the following command (and press **↵**):

AES

The first screen displayed is the following:

Press any key or click the mouse to continue to the first system screen:

This screen prompts you for the name of a standard value file and displays the .VAL files currently residing in your AES60 directory. The standard value file you last selected is displayed as a default in the "Standard Value FileName" field. The "Files" window displays all the *.VAL files in your default directory. You may replace the default file name by selecting one of the other .VAL files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears). The bottom of the screen displays the file size and date of the currently highlighted file name.

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by highlighting the file name and pressing ← or by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [■] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to use this file for the current estimate. The system will check for the expiration date of the file. If the standard value file has expired, a warning message is displayed, and a prompt asks you if you wish to continue with the selected standard value file:

Select **[Yes]** or **[No]** as appropriate. Selecting **[No]** (or pressing **[Esc]** or the **Esc** key) returns to the Standard Value FileName prompt to allow you to select a different standard value file.

The **[Cancel]** button on the base screen is provided to allow you to exit out of AES and back to the DOS prompt--you may not enter AES without selecting a standard value file.

The next screen is displayed to allow you to choose a default drive and directory for the files that will be used during this work session:

Your current default drive/directory is displayed in the "Directory name" field at the top left-hand side of the screen, and all subdirectories under the default directory are displayed in the "Directory tree" window. You can select a subdirectory from the window list, and it will replace the default in the "Directory name" field. You may also click on or Tab to the "Directory name" field and type in a different drive and directory. To list other drives, select the "Drives" option from the listing--all existing drives, including local area network (LAN) drives are displayed. Highlight the desired drive and select the **[Chdir]** button to display the directory tree for the new directory.

The estimate files found in the currently selected drive/directory are displayed in the "Estimate file(s)" window on the right-hand side of the screen. An initial estimate file name may be selected from this list either by clicking on the desired file name or by **Tabbing** to the window list, highlighting the desired file name, and pressing the **Spacebar**.

After the correct drive/directory is displayed in the "Directory name" field, select the **[OK]** button to continue. The **[Revert]** button cancels this function without making a change.

By selecting the small **[↓]** button next to the Directory name field (or pressing **↓** while in the field), you can view a pop-up window of other directories that you have selected during this session:

You can make one of these previously selected directories current by highlighting the directory and pressing **←** or by double-clicking on the directory name--the pop-up window is closed, and your selection is displayed in the field. You may also use the **[■]** (close) button at the top of this window to dismiss the window without making a selection.

After your standard value file name and default directory are chosen, the AES Main Menu Bar is displayed. The next section of this manual explains how to access the Main Menu Bar and gives you an introduction to the bar options' pull-down menus.

3.3 AES Main Menu Bar

To activate the AES Main Menu Bar, click your mouse on one of the menu options or press the F10 key to highlight the first option of the Menu Bar.

The pull-down menus for each of the Main Menu Bar options are displayed below. The options on these menus are discussed in detail in the referenced manual sections.

The Set Up menu options give you information on the current AES version and allow you to select or change your current standard value file and default drive/directory. The Exit option exits the AES program. For more information, see Sect. 4.0.

The Create menu allows you to select the type of file you wish to create. For more information see Sects. 5.0 through 9.0 that discuss creating and modifying each file type.

The Modify menu allows you to select the type of file you wish to modify. For more information see Sects. 5.0 through 9.0 that discuss creating and modifying each file type.

The Reports menu has options to select a report to generate, to browse on-screen reports you have created, to print hard copies of reports, and to perform other report functions. For more information see Sect. 10.0.

The Utilities menu options provide you with maintenance functions for existing estimate files. For more information see Sect. 11.0.

3.4 Help Facility

On-line help is provided throughout AES to explain screens, menu options, and data entry. The help facility is accessed either by pressing F1 or by single-clicking the right mouse button when the topic in question is selected or highlighted on the screen.

Help is displayed within a window that may be zoomed to full size to facilitate easy reading. To enlarge the window or return it to original size, an [↑] button is provided on the top-right of the window--the Alt+Z keys may also be used. The help text can be scrolled up/down and right/left by scroll bars located on the right and bottom of the window.

Additional help is available for some words if the words are displayed in bold type. To display this help, either double-click on the word or Tab to the bolded word and press ←.

To exit a help window, a close button [■] is provided on the top-left corner of the window--the Esc key may also be used.

3.5 Exiting AES

Before exiting AES, the current function must be exited, and the AES Main Menu Bar should be displayed. To exit AES at this point, either press the Alt and X keys or select the Exit option from the Set Up menu as follows:

1. Access the AES Main Menu Bar either using the F10 key or clicking on the bar with your mouse.
2. Select the Set Up option from the menu bar.
3. Select the Exit option from the Set Up menu.

The DOS prompt is displayed upon termination of the system.

4.0 Set Up

Set Up Create Modify Reports Utilities Automated Estimating System

AES Version...
Standard Value
Drive/Directory

Exit Alt+X

The Set Up menu options give you information on the current AES version and allow you to select or change your current standard value file and default drive/directory. The Exit option exits the AES program. These options are discussed in detail below.

4.1 AES Version

The following screen is displayed to inform you of the version of AES being run:

The displayed version number will appear on all report outputs. When you have read the information, select the [OK] button to return to the Set Up menu.

4.2 Standard Value

This option allows you to select or change the standard value file to be used for the current estimate. The file name is selected from the same screen that is displayed to you upon entering AES:

This screen prompts you for the name of a standard value file and displays the .VAL files currently residing in your AES60 directory. The standard value file you last selected is displayed as a default in the "Standard Value FileName" field. The "Files" window displays all the *.VAL files in your AES60 directory. You may replace the default file name by selecting one of the other .VAL files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears). The bottom of the screen displays the file size and date of the currently highlighted file name.

By selecting the small [v] button next to the file name field (by either clicking on it or pressing the keyboard v key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [X] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select **[Open]** to use this file for the current estimate. The system will check for the expiration date of the file. If the standard value file has expired, a warning message is displayed, and a prompt asks you if you wish to continue with the selected standard value file:

Select **[Yes]** or **[No]** as appropriate. Selecting **[No]** (or pressing **[■]** or the **Esc** key) returns to the Standard Value FileName prompt to allow you to select a different standard value file.

The **[Cancel]** button is provided to allow you to exit back to the Set Up menu if you do not wish to change the standard value file at this time.

4.3 Drive/Directory

If a file you want to use is on a different disk drive or in a different directory than the default, you may change your default using this option.

Set Up Create Modify Reports Utilities Automated Estimating System

[*] Set AES Data Directory

Directory name	Estimate name
C:\AES60	↓ ORNLOSHA

Directory tree	Estimate file(s)
Drives	AD64303 02/14/94 2016 ▲
└ C:\	ORNLOSHA 02/14/94 504 •
└ AES60	TEST1 03/01/94 3864
└ TEST	

OK Chdir Revert

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Your current default drive/directory is displayed in the "Directory name" field at the top of the screen, and all subdirectories under the default directory are displayed in the "Directory tree" window. You can select a subdirectory from the "Directory tree," and it will replace the default in the "Directory name" field. You may also click on or **Tab** to the "Directory name" field and type in a different drive and directory. To list other drives, select the "**Drives**" option from the listing--all existing drives, including local area network (LAN) drives are displayed. Highlight the desired drive and select the **[Chdir]** button to display the directory tree for the new directory.

The estimate files found in the currently selected drive/directory are displayed in the "Estimate file(s)" window on the right-hand side of the screen. An initial estimate file name may be selected as the default for updating from this list either by clicking on the desired file name or by **Tabbing** to the window list, highlighting the desired file name, and pressing the **Spacebar**.

After the correct drive/directory is displayed in the "Directory name" field, select the **[OK]** button to continue. The **[Revert]** button restores Directory name back to the original selection when Drive/Directory screen was initialized.

By selecting the small **[↓]** button next to the Directory Name field (or pressing **↓** while in the field), you can view a pop-up window of other directories that you have selected during this session:

You can make one of these previously selected directories current by highlighting the directory and pressing **←** or by double-clicking on the directory name--the pop-up window is closed, and your selection is displayed in the field. You may also use the **[X]** (close) button of this window to dismiss the window without making a selection.

4.4 Exit Alt+X

Select this option to exit AES. You may also press the **Alt** and **X** keys to perform this function. The DOS prompt is displayed upon termination of the system.

5.0 Creating and Modifying an Estimate

The Create and Modify menus allow you to select the type of file you wish to create or modify. The main difference between these options is in either identifying a new file or selecting from existing files to modify. The screens and prompts used for these functions are introduced in Sect. 5.1.

Creating and modifying an estimate file includes working with other related records, which are described in detail in subsequent sections: Bill of Material (B/M) records (see Sect. 5.2), Additive records (see Sect. 5.4), and B/M Line Items (see Sect. 5.3).

5.1 Creating/Modifying the Estimate File

5.1.1 Select the Estimate File

Select **Estimate** from the pull-down **Create** or **Modify** menu options on the Main Menu Bar. The following window is displayed to identify the estimate file name:

If you are creating a new estimate file, this screen prompts you for an estimate file name by displaying "*.est" in the "Estimate FileName" field. You must type in a new file name (do not enter the .EST extension) to create a file--the system will not allow you to overwrite an existing file.

If you are in modify mode, the "Estimate FileName" field defaults to the name of the last estimate file you selected. Use this default or replace it with the existing .EST file that you wish to modify from the "Files" window (if you double-click on a listed file name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [X] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Create or Modify function and return to the AES Main Menu Bar.

NOTE: If the estimate file you are opening is from AES Version 5.2 and needs to be converted to AES 6.0, you will be informed by the prompt on the right. Indicate whether to convert or not to convert the file.

In AES Version 6.0, the estimate file no longer contains the curve type--this is included in the schedule file. Therefore, you may need to retain the curve type information from the estimate file you are about to convert in order to transfer this information to the schedule file when it is next accessed (see Sect. 8.0).

The window on the right allows you to get a list of the curve types in this estimate file before it is converted. If you reply [Yes] to this prompt, a list of curve types will be generated and saved in a file for future reference.

The following window displays the file name of the listing. This is a text file that can be printed as described in Sect. 10.3.

The next window allows you to specify whether or not schedule, WBS title, or contingency files are to be used in creating or updating the estimate file you have just opened:

To mark a selection box, either click on the option box or highlight the option line and press the **Spacebar**. A "√" is placed in the selected box. The √ can be removed by selecting the box a second time (using either method). Select **[OK]** when selections are complete. Selecting **[Abort]** will cancel the Create or Modify function and return to the Main Menu Bar.

If you selected to use any of the above three files, you are next prompted for their file names. This is done with a separate file listing window for .SCH, .WBS, and .CNT files, similar to the listing used to identify the estimate file name. Select and **[Open]** the correct file names from these listings using the same methods as before.

After all file names are selected, the Discipline Directory is displayed as described in the next section.

5.1.2 The Discipline Directory

The following directory listing screen is used to display project header information and a directory of discipline estimates for the estimate file you have identified:

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.EST

Project Number: 1 Description: THIS IS A SAMPLE ESTIMATE

Project Estimator: DE ZIMMERMAN Base Fiscal Yr/Qtr: 93/2

Project Engineer: DJ WEBSTER Date of Approval:

Estimating Job No: Revision No: 0 OK

Project ESO No: A-XXXX-99 Level of Est: P

Overhead Applied? [Y/N]: Y Receiving Site: Y Abort

Discipline.....			Creation			Discipline.....			Creation		
Code	Estimator	Date				Code	Estimator	Date			
X	RED'S	07/13/1993				P	JPk/DEZ	01/21/1993			
O	DEZ	07/13/1993									
E	DLH/DEZ	07/13/1993									
H	JPk/DEZ	07/13/1993									

1:5

Mark_Blk Blk_Copy Blk_Move Blk_Delete

Update Add Delete List B/M Print Exit

F10 Menu Exit <Alt+x> F1 Help F2 Cost Estimating Guidance Report

Create a New Record

If you are creating a new estimate, the screen fields (shown containing data above) are blank to receive new data. You can enter project header information on the top of the screen, and only the [OK] and [Abort] buttons are active. Once the project header information is added by selecting [OK], these buttons are no longer active. However, you may later return the text cursor to the header information to correct information you have entered by clicking on one of the header fields or pressing the Alt and J "Project Number" field "hot key." Once header information is entered, select [OK]--the following screen is automatically displayed to allow you to enter information for the first discipline record:

[*] Update

Discipline Code: Creation Date: / /

Discipline Estimator: Last Update: / /

Market Adjustment:

OK Abort

Complete this information and select [OK] to add this discipline record. The new record will be displayed on the bottom scrolling window of the Discipline Directory screen. You may then access

the action buttons on the bottom of the screen to perform add or modify actions as described under the "Modify An Existing Record" section on the following pages.

When the new discipline record is added, the B/M, Line Items, and Additive screens should be accessed sequentially to complete the new estimate record (see Sects. 5.2, 5.3, and 5.4).

Entry or changes to some of the project header and discipline entry fields for the above screens are required and validated. Help screens are displayed for the following fields if an entry is not made:

Project Number:

[F1] — <Esc> to Close - <Alt+Z> to Zoom — [1]

Project Number - REQUIRED FIELD

Project Number is a unique number assigned to each project.

Base Fiscal Year/Quarter:

[F1] — <Esc> to Close - <Alt+Z> to Zoom — [1]

Base Fiscal Year/Quarter - REQUIRED FIELD

Fiscal Year/Quarter for which dollars are entered - Enter in form of YY/Q.

Revision Number:

[F1] — <Esc> to Close - <Alt+Z> to Zoom — [1]

Revision Number - REQUIRED FIELD

Enter Number of Letter indicating the version of the Project Estimate.

Level of Estimate:

Pressing F1 on this window displays more help.

[F1] — Level of Estimate — [1]

Select Level of Estimate:

1 - Title I Estimate

2 - Title II Estimate

C - CDR Estimate 20%

E - Engineer Estimate

P - Planning/Feasibility Estimate ... 25%

OK

Overhead Applied?:

[F1] — <Esc> to Close - <Alt+Z> to Zoom — [F1]

Overhead Flag - REQUIRED FIELD

Indicate whether Overhead Rates are to be applied.

Valid responses are Y or N.

Receiving Site:

Pressing F1 on this window displays more help.

[F1] — Site Codes — [F1]

Select Site: _____

K - K-25 ▲

M - Portsmouth ■

O - Other ▒

P - Paducah ▒

Y - Y-12 ▼

OK

Discipline Code:

Pressing F1 on this window displays more help.

[F1] — Discipline — [F1]

Select Discipline: _____

A - ARCHITECTURAL ▲

B - CHEMICAL PROCESS ■

C - CIVIL AND SITE ▒

D - MACHINE DESIGN ▒

E - ELECTRICAL ▒

G - PROCESS DESIGN ▒

H - ENVIRONMENTAL CONTROL ▒

I - INSTRUMENTATION ▒

K - RESOURCE PLANNING & CONTROL ▒

L - COMPUTER APPLICATIONS ▼

OK

If any validated field is found to be incorrect, the system responds with a help message and will not proceed until the error has been corrected. If the help message displays a list of valid entries, such as the Discipline list above, an entry may be selected in several ways: by typing the code in the "Select..." field and selecting [OK], by positioning the highlight bar on the correct response and pressing the **Spacebar**, or by using the mouse to double-click on the correct response.

Modify An Existing Record

If you are modifying a record, the [OK] and [Abort] buttons are not displayed for the project header information, but this information may be modified by accessing the fields as described above.

```
*****
*                                     *
*                               CAUTION                               *
*                               *                                     *
*   The current contents of a highlighted field are erased          *
*   when you modify the field information.                          *
*   *                                                                *
*   If you do not want to clear the current contents,              *
*   press the Home key to remove the highlight before              *
*   modifying the field information.                                *
*   *                                                                *
*                               *                                     *
*****
```

Upon entering the Discipline Directory screen in modify mode, you are placed in the bottom window of the screen, and the action buttons are active. The existing discipline estimates are listed on this directory window. Additional records can be viewed using the scroll bar or ↓ key. A discipline estimate can be selected by highlighting the discipline line. One of the action buttons on the bottom of the screen can then be selected for the highlighted estimate. Double-clicking on a discipline line (or highlighting it and pressing the **Spacebar**) automatically selects the [List B/M] button. The operation of each of the action buttons is described below.

[List B/M]

This is the default action button for this screen. If you are creating a new estimate record, this button displays a blank Bill of Material (B/M) record screen for entry of the first B/M for the new estimate. This process is described in detail in Sect. 5.2. If you are modifying a record, this button displays the B/M Directory Screen:

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.EST

Discipline Record Number: 1 Discipline Code: X

.....WBS Code	B/M Title	CC	Part
1.0	MMES TITLE III ENGINEERING	9999	13
1.0	A/E TITLES I & II ENGINEERING	9999	18
1.0	MMES CONSTRUCTION SUPPORT	9000	47
1.0	MMES A/E SUPPORT	9000	48
1.0	MMES CONSTRUCTION SUPPORT	9000	49

1:5

Mark_Blk	Blk_Copy	Blk_Move	Blk_Delete
Update	Add	Delete	Additives
Disciplines	Line Items	Print	Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The WBS code, B/M title, cost code (CC), and participant (Part) code for all B/M records that have been entered for this estimate are listed in the scrolling window. The number of records is displayed in the lower left corner of the scrolling window, and the scrolling bar or ↓ key can be used to display more records. Highlight the desired record and select one of the action buttons on the bottom of the screen to perform a particular action with the currently highlighted record. These action options are defined further in Sect. 5.2.2.

[Update]

If an discipline record is to be updated, highlight that record on the Discipline Directory listing and press [Update]. The Discipline Record screen for that estimate record is displayed over the directory listing in the following format:

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.EST

Project Number: 1 Description: THIS IS A SAMPLE ESTIMATE

Project Estimator: DE ZIMMERMAN Base Fiscal Yr/Qtr: 93/2

Project Engineer: DJ WEBSTER Date of Approval: / /

Estimating Job No: Revision No: 0

Project ESO No: A-XXXX-99 Level of Est: P

Overhead Applied? [Y/N]: Y Receiving Site: Y

[M] Update

Di

Discipline Code: X Creation Date: 07/13/1993

Discipline Estimator: RED'S Last Update: 11/05/1993

Market Adjustment: 0

Mark OK Abort

Update Add Delete List_B/M Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Data can be edited (overtyped, added, or deleted) as necessary. When the update is complete, select [OK] to return to the Discipline Directory listing. If you do not wish to save or make changes, select [Abort].

[Add]

If an discipline record is to be added, place the cursor on the directory line that should precede the new discipline record and press [Add]. A discipline record screen is displayed over the discipline listing in the following format:

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.EST

Project Number: 1 Description: THIS IS A SAMPLE ESTIMATE

Project Estimator: DE ZIMMERMAN Base Fiscal Yr/Qtr: 93/2
Project Engineer: DJ WEBSTER Date of Approval: / /

Estimating Job No: Revision No: D
Project ESO No: A-XXXX-99 Level of Est: P
Overhead Applied? [Y/N]: Y Receiving Site: Y

[=] Update

Di
Discipline Code: X Creation Date: 07/13/1993
Discipline Estimator: RED'S Last Update: 11/05/1993
Market Adjustment: 0

Mark OK Abort

Update Add Delete List B/M Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The screen displays the data for the directory line currently accessed. These data can be left as displayed or overtyped with new data as appropriate for the new record. When the information is complete, select [OK]. If you do not wish to save or make changes, select [Abort].

After adding the new discipline record, the B/M, Line Items, and Additive screens should be accessed sequentially to complete the new estimate record (see Sects. 5.2, 5.3, and 5.4). When the Discipline Directory is again accessed, the new discipline record is displayed on the line directly below the line indicated when the [Add] option was chosen.

[Delete]

This option prompts you to confirm that you wish to delete the currently highlighted record:

[=] Information

Delete Estimate Record for
Discipline - E Record# - 3

Yes No

If you select [Yes], the entire record, including all related B/M records and their associated cost, is deleted. You will be returned to the Discipline Directory screen.

[Print]

This option prints all the B/M work sheets for the highlighted discipline record (see Sect. 5.2.2 for an example of the printout). Answer the following prompt to confirm your desire to print the work sheets for the displayed record:

```

[.]----- Information -----
Print B/Ms for Estimate Record -
Discipline - E   Record# - 3
Yes             No

```

```

*****
*                                     *
*                               CAUTION *
*                                     *
*   The B/M Work Sheets are sent directly to the printer. *
*   Printing will continue until all Work Sheets are printed. *
*                                     *
*   Depending on the number and size of the B/Ms, this could *
*   tie up the system for a period of time. *
*                                     *
*****

```

[Exit]

The **[Exit]** button exits the estimate Create or Modify function and returns to the AES Main Menu Bar.

**[Mark_Bl], [Blk_Copy],
[Blk_Move], [Blk_Delete]**

The four block action buttons across the bottom of the screen allow you to move, copy, or delete a block of discipline records. Blocking is performed using the block action buttons and/or keyboard keys in the following way:

1. Place the highlight cursor on the first line of the block and select **[Mark_Block]** (or press the Alt and B keys).
2. Place the cursor below the ending block line and select **[Mark_Block]** (or press Alt+B). The block is marked with a vertical bar in the left margin.
3. Move the cursor to the line following the line where the block is to be moved/copied and select **[Blk_Copy]** or **[Blk_Move]** (or press the Alt+C or Alt+M keys).

The last two marks that you set define the current block until another mark is selected or until a Move or Delete is performed. Selecting **[Mark_Block]** three times in a row cancels the first mark and begins a new set of block definition marks. A marked block can be Copied several times, but is unmarked when it is Moved.

5.2 Creating/Modifying Bill of Material Records

5.2.1 Creating a New Bill of Material

When creating a new estimate record, B/M records for that record are entered by selecting the [List B/M] button from the Discipline Directory screen. A blank B/M Record screen is displayed in the following format:

Set Up Create Modify Reports Utilities		Automated Estimating System	
D:\AES\SAMPLE.EST			
Discipline Record Number: 1		Discipline Code: X	
[=]		B/M RECORD	
Trace Number: X.1.1		Last Update: 05/28/1992	
WBS Code: []		Funding Type: []	
Title: []		Source Site: []	
Participant Code: []		Cost Code: []	
B/M Title: []		Contracting Type.: []	
B/M Attribute: []		Building/Area....: []	
Title: []		Plant Site.....: []	
		Quantity Take-Off: []	
Cross-Cut Codes			
Program Type: []		Project Type: []	
		Phase of Work: []	
[OK]		[Abort]	

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

If you are adding a new estimate record, selecting [Abort] will abort this screen and return to the previous screen.

Enter information for the new record in the screen fields, and select [OK] to save the record. The system will continue to the B/M Line Items screen (see Sect. 5.3) where you can enter detail cost information. After entering the cost information, you must continue to the additive screen (Sect. 5.4). After entering this information, the system will return you to the B/M Directory screen.

When adding or modifying a B/M record, entry or changes to some fields are required and validated. Help screens are displayed for the following fields if an entry is invalid or required:

WBS Code:

[*] ————— <Esc> to Close — <Alt+Z> to Zoom ————— [1]

WBS Code

Work Breakdown Structure
Enter WBS code. Correct format is ##.##.## where # is a numeric character.

Funding Type:

Pressing F1 on this window displays more help.

[*] ————— Funding Types —————

Funding Type:

C - CAPITAL EQUIP ▲
E - EXPENSE ·
G - GPP ▢
L - LINE ITEM ▢
W - WORK FOR OTHERS ▼

OK

Participant Code:

Pressing F1 on this window displays more help.

[*] ————— Participant —————

Select Participant:

11 - MMES TITLE I & II ENGR. ▲
13 - MMES TITLE III ENGR. ·
18 - A-E TITLE I & II ENGR. ▢
19 - A-E TITLE III ENGR. ▢
21 - MMES PROCUREMENT ▢
22 - MMES SOFTWARE ▢
31 - MMES FABRICATION SHOP ▢
41 - MMES FIELD MAINTENANCE ▢
42 - MMES MACHINE MAINTENANCE ▢
48 - MMES A-E SUPPORT ▼

OK

Cost Code:

Pressing F1 on this window displays more help.

[*] Cost Codes

Select Cost Code:

- 1000 - LAND AND LAND RIGHTS ▲
- 2000 - IMPROVEMENT TO LAND. •
- 3000 - NEW BUILDINGS AND ADDITI
- 4000 - BUILDING MODIFICATIONS
- 5000 - OTHER STRUCTURE
- 6000 - SPECIAL FACILITIES
- 7000 - UTILITIES
- 8000 - STANDARD EQUIPMENT
- 9000 - CONST MGMT/SUPPORT SERVI
- 9999 - ENGINEERING ▼

OK

Source Site:

Pressing F1 on this window displays more help.

[*] Site Codes

Select Site:

- K - K-25 ▲
- M - Portsmouth •
- O - Other
- P - Paducah
- Y - Y-12 ▼

OK

Contracting Type:

Pressing F1 on this window displays more help.

[*] Contracting Type

Select Contracting Type: G ▲

- G - General Contractor •
- S - Subcontractor ▼

OK

Pressing the F1 (Help) key displays the above allowable codes in each case--in some cases additional help is available. From the above selection lists, enter your selection in the "Select..." field and select [OK] to return to the screen field with the highlighted item. (Double-clicking on the item or pressing the keyboard **Spacebar** for a highlighted item is a quick select method.)

From a help message (i.e., WBS code), after reading and determining the correct response, press [■] (or **Esc**), and the cursor will return to the field to allow you to enter the correct value.

5.2.2 Operating the Bill of Material Directory Screen

If you have just created a new B/M record, it is added to the B/M Directory screen below, and you can continue to add line item and additive records, using the action buttons on this screen.

If B/M records exist for the current estimate record, this screen is displayed when you select the **[List B/M]** button from the Discipline Directory screen. You can locate the B/M record you wish to modify from this screen.

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.EST

Discipline Record Number: 1 Discipline Code: K

.....WBS Code	 B/M Title	CC	Part
1.0	MMES TITLE III ENGINEERING	9999	13
1.0	A/E TITLES I & II ENGINEERING	9999	18
1.0	MMES CONSTRUCTION SUPPORT	9000	47
1.0	MMES A/E SUPPORT	9000	48
1.0	MMES CONSTRUCTION SUPPORT	9000	49

1:5

Mark_Blk Blk_Copy Blk_Move Blk_Delete
Update Add Delete Additives
Disciplines Line Items Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

This B/M Directory screen displays the WBS code, B/M title, cost code (CC), and participant (Part) code for all B/M records that have been entered for this discipline. The number of records is displayed in the lower left corner of the scrolling window, and the scrolling bar or ↓ key can be used to display more records.

Highlight the desired record and select one of the action buttons on the bottom of the screen to perform a particular action with the currently highlighted record. Double-clicking on a B/M record (or highlighting it and pressing the **Spacebar**) automatically selects the **[Line Items]** button. These action buttons are defined below.

[Update]

The B/M record selected from the B/M Directory screen is displayed for updates in the following format:

```

Set Up  Create  Modify  Reports  Utilities  Automated Estimating System
D:\AES\SAMPLE.EST
Discipline Record Number: 1 Discipline Code: X
[.] B/M RECORD Last Update: 01/07/1994
Trace Number: X.1.1
WBS Code: 1.0 Funding Type: M
Title: REST. HVAC SYS Source Site: Y
Participant Code: 13 Cost Code: 9999
MMES TITLE III ENGR. ENGINEERING
B/M Title: MMES TITLE III ENGINEERING Contracting Type.: G
B/M Attr.: X-01 Building/Area....: Y-1000
Title: MMES TITLE III ENGINEERING Plant Site.....: Y
Quantity Take-Off: RED'S
Cross-Cut Codes .....
Program Type: Project Type: Phase of Work:
OK Abort
F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report
```

At any time after this screen is displayed, you may press **[Abort]** to abort the current changes and return to the B/M Directory screen.

Enter changes to field data as needed, and select **[OK]** when you are finished. If any changes have been made to the record, the same requirements and validations are enforced as were described previously for creating a record (see Sect. 5.2.1). Pressing the F1 (Help) key displays the allowable codes in each case.

[Add]

If **[Add]** is selected from the B/M Directory screen, the currently highlighted record on the directory screen is displayed on the B/M Record screen shown above. Make the needed changes to the displayed record. The same requirements and validations are enforced as were described previously for creating a record. After all changes have been made to create the new record, press **[OK]**. If any field on the B/M Record screen is found to be incorrect, the system responds with an error message and will not proceed until the error has been corrected. Correct the field, and press **[OK]** again; if no other errors are found, the system adds the B/M record and continues to the B/M Line Items screen to allow you to enter costs for the new record (see Sect. 5.3).

[Delete]

If **[Delete]** is selected, the currently highlighted B/M record will be deleted. The system displays the following prompt to confirm the record to be deleted:

The screenshot shows a rectangular dialog box with a title bar that says "[*] Information". Inside the box, the text "Delete B/M Record" is centered, followed by "Record# - 1" on the next line. At the bottom of the box, there are two buttons: "Yes" on the left and "No" on the right. The dialog box is positioned over a dark background, which appears to be the B/M Directory screen.

Select **[Yes]**, and the system deletes the record, including all related cost and additive data, and displays the B/M Directory screen.

[Additives]

The **[Additives]** button displays the Additives screen to allow you to add or modify additive information for a new or existing record. See Sect. 5.4 for directions in using the Additives screen.

[Disciplines]

Selecting this action button exits this screen and displays the Discipline Directory screen described in Sect. 5.1.2.

[Line Items]

This button is the default action button for this screen. It displays the B/M Line Items screen, which must be accessed to add cost information when creating a new B/M record. Similarly, the **[Additives]** button is required entry on the B/M Line Items screen before that screen may be exited. See Sect. 5.3 for detailed information on adding B/M line items.

[Print]

To produce a B/M Work Sheet, highlight the appropriate B/M record on the B/M Directory screen and select **[Print]**. B/M Work Sheets printed through this function list all cost information for the displayed B/M record. If a cost record contains zero material and/or labor cost, blanks are printed in place of the zero. This allows space for an estimator to mark up the work sheet. An example work sheet is shown on the next page.

[Exit]

The **[Exit]** button on the B/M Directory screen exits the screen and returns to the AES Main Menu Bar.

W O R K S H E E T

Sample Estimate
05/07/92

Page 1

Discipline: P

B/M Title : FIRE PROTECTION

WBS: 1.0 REST. HVAC SYS

CostCode: 4000

Participant: 51

Contracting Type: S

Item Num.	Description	Qty.	Unit	Unit Pr.	Total Mat.	Unit Hr.	Labor Cft.	Labor Total Hours Type Rate	Labor Total	Total Cost M + L

	FIRE PROTECTION PIPING PER CSI SPEC. 15104A									
1-A	INSTALL 4 NEW HDS., INCLUDING PIPE, FITTINGS AND HANGERS.	4.00	EA	1.00	4	1.000	4 SF	26.40	106	110
2-A	REMOVE AND REINSTALL 3 HDS., INCLUDING PIPE, FITTINGS AND HANGERS.	3.00	EA	1.00	3	1.000	3 SF	26.40	79	82
3-A	SPRINKLER CONTRACTOR DESIGN	1.00	LOT			1.000	1 UC	1.00	1	1

TOTAL					7		8		186	193

MARK-UP VALUES

Mobilization & Demobilization	50.00%	40.00%
OSHA/SAFETY	2.00%	2.00%
Indirect Additives	26.00%	26.00%
Contingency	25.00%	25.00%

**[Mark_Bl], [Blk_Copy],
[Blk_Move], [Blk_Delete]**

The four block action buttons across the bottom of the screen allow you to move, copy, or delete a block of B/M records. This can be performed within a discipline or between two discipline records. Blocking is performed using the block action buttons and/or keyboard keys in the following way:

1. Place the highlight cursor on the first line of the block and select **[Mark_Block]** (or press the Alt and B keys).
2. Place the cursor on the ending block line and select **[Mark_Block]** (or press Alt+B). The block is marked with a vertical bar in the left margin.
3. Move the cursor to the line following the line where the block is to be moved/copied and select **[Blk_Copy]** or **[Blk_Move]** (or press the Alt+C or Alt+M keys).

The last two marks that you set define the current block until another mark is selected or until a Move or Delete is performed. Selecting **[Mark_Block]** three times in a row cancels the first mark and begins a new set of block definition marks. A marked block can be copied several times, but is unmarked when it is moved. A block can be deleted by selecting **[Blk_Delete]** only if it is currently displayed on the screen (lines marked on a previous screen cannot be deleted).

[Blk_Copy] or **[Blk_Move]** can be used to copy or move existing B/M records to a newly created discipline record. To do this, mark the block of B/M records on the existing record, add the new discipline record on the Discipline Directory screen, and when on its B/M Update screen, press Alt+C to copy the block or Alt+M to move the block to the new B/M Directory screen.

5.3 Bill of Material Line Items

B/M line items can be entered or modified by selecting [Line Items] from the B/M Directory screen. If you are creating a new estimate, the following screen fields will be blank to allow you to enter new line items.

Set Up Create Modify Reports Utilities Automated Estimating System

SAMPLE.EST - BASE OPTION REPLACE HVAC UNIT

P.5.2 - 1.0 51 FIXED PRICE CONSTRUCTION

	Material \$	Labor \$	Hours	Line Item Total \$
Totals=>	0.00	0.00	0	0.00

THE FOLLOWING ITEMS 1 THRU 24 SHOW PIPE & FITTINGS NEEDED TO INSTALL CHILLED WATER PER SPEC. 15106.

Item	Description	Mat. Qty	Unit	Price	Unit Hrs
THE FOLLOWING ITEMS 1 THRU 24 SHOW PIPE & FITTINGS NEEDED TO INSTALL CHILLED WATER PER SPEC. 15106.					
1	PIPE, 3/4", STEEL WELDE	20.00	LFT	1.00	1.000
2	PIPE, 3", ERW OR SEAMLE	15.00	LFT	1.00	1.000
3	PIPE, 4", ERW OR SEAMLE	15.00	LFT	1.00	1.000
4	PIPE, 6", ERW OR SEAMLE	75.00	LFT	1.00	1.000
5	(ADD PIPE HANGERS)				

1:68

Insert

Mark_Blk Blk_Copy Blk_Move Blk_Delete [X] Craft Repeat

Add Delete Disciplines List B/M Additives

Pricing DB Calculator Part. Cost Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The Trace Number, WBS Number, and Participant Code for the current B/M are displayed on the top of the screen, and the text cursor is placed in the "Item" column for entry or modification of the first line item. Use the **Tab** key, the **Enter** key, or the scroll bar below the item window to scroll to four additional columns of line item information on the right side of the screen--these columns are "Total Hours," "Code," "Rate," and "Tax." Information for the line item that is currently highlighted in the item list is displayed in the "Totals" fields on the top of the screen ("Material \$," "Labor \$," "Hours," and "Line Item Total \$"). Use the right scroll bar or the **↑** and **↓** keys to move the highlight bar between line items.

Update mode is always active, which allows you to modify values on any highlighted line. Once a value is changed on a line, double asterisks (**) appear beside the "Item" column header until you press **↑** or **↓** to exit the line and save the changes (the scroll bars are locked while the line is being edited). To cancel changes to the current line and restore its original values, press **Esc**; the ** will disappear to indicate that the current line is not modified. Changes to any previously modified lines, however, will not be reversed. The "Insert" mode displayed below the lower scroll bar can be toggled to "Overstrike" using the **Insert** key.

The action buttons on the screen are active for the highlighted item and their functions are described at the end of this section. **NOTE:** When creating a new B/M, you must use the [Additives] button to define additives before continuing to other B/M records (see Sect. 5.4).

The "Item" field in the first column holds four characters to identify the item to be entered on the line. The first three characters you enter identify the number of the item (1-999, A01-Z99, etc.). Enter an item number only on the first line of a description. A line with a blank item number indicates a continuation of the description from the previous line. The fourth character identifies lines that are retrieved from the CACES and Assembly databases. "C" is automatically entered when a CACES item is retrieved; retrieval from the Assembly database automatically enters an "A" on the first line retrieved, a "C" on each assembled CACES line, and an "E" on the end line of the assembly, which displays totals for the group. If you enter "ST" (Subtotal) for "Item," totals are automatically displayed in the "Totals" fields at the top of the screen for all previous lines or for lines entered after the last ST, and no other field data may be entered for that line. If the line item has a Construction Specification Institute (CSI) item number from the CACES database, it will be displayed above the complete line item title at the top of the item window. See Sect. 12.0 for more information on the CACES and Assembly databases.

The item "Description" field in the record holds a maximum of 100 characters, but the description field length on the screen holds only 23 characters. As you enter the description, the characters scroll left, allowing up to 100 characters to be entered. Press [Tab] after entering the description, and the full title will be displayed at the top of the item window.

Help for entering data in each field is displayed if you select the F1 (Help) function. The required "Craft" and "Tax Code" fields display the following help screens:

Craft Code:

Pressing F1 on this window displays more help.

[*]
Craft Codes

Item Number Required before entering
Craft Code

Select Craft Code:

AE	ARCHITECT ENGINEER	▲
AW	ASBESTOS WORKER	•
BM	BOILERMAKER	
C	CARPENTER	
DS	DSRD ENGINEER	
E	ELECTRICIAN	
EA	ARCHITECT ENGINEER	
ER	ENG/ENVIRONMENTAL	▼

This window displays only craft codes applicable to the participant for the current B/M. If a labor craft type is entered and is found in the valid craft codes from the standard value file, the system retrieves the appropriate labor rate and displays it on the screen. The system will not allow you to modify this rate. If a labor craft code cannot be found in the standard value file, the system permits you to enter a labor rate for this craft code.

Tax Code:

Pressing F1 on this window displays more help.

[*] Tax Codes

Item Number Required before entering Tax Code

Select Tax Code: **A**

A - Material	8.50% + \$ 0	▲
B - Large Single Item	6.00% + \$ 40	▢
C - Professional Services	0.00% + \$ 0	▼

OK

The default sales tax code of "A" is entered if you do not specify a code for this field.

The functions of the action buttons on the Line Item screen are described below.

[Disciplines]

This button exits this screen and displays the Discipline Directory screen (see Sect. 5.1.2).

[List B/M]

This action button displays the B/M directory screen (see Sect. 5.2.2).

[Additives]

This action button displays the Additives screen. When creating a new B/M, you must use the **[Additives]** button to define additives before leaving this screen or continuing to other B/M records (see Sect. 5.4).

[Pricing DB]

Retrieval and lookup from the CACES pricing database and Assembly database are provided by this button. For a description of the pricing databases information and screens, see Sect. 12.0.

[Exit]

This button exits this screen and returns to the AES Main Menu Bar.

[Add]

If a line item record needs to be inserted between two existing line item records, place the highlight bar on the line item that the inserted record is to precede and select **[Add]**. If the "Craft Repeat" field is checked, the Material Unit and Labor Craft Code for the previous line item is displayed and may be modified to reflect the new line item. If Craft Repeat is not checked, these fields will be blank.

[Delete]

If a line item needs to be deleted, place the cursor on that record and select **[Delete]**. The system removes this record from the screen and from the line item file.

[Part Cost]

This function allows you to view participant costs for a selected WBS. The following screen is displayed when this action button is selected:

[*] AES - Select WBS

Select WBS:

(Press Enter to Select all Bills of Material)

OK Abort

Enter the WBS for which costs are to be included, or leave the field blank to include all bills of material. Select **OK** (or press the **Enter** key) to execute your entry. The following Participant screen is then displayed:

[*] Participant

Select Participant:

11	- MMES TITLE I & II ENGR.	▲
13	- MMES TITLE III ENGR.	■
18	- A-E TITLE I & II ENGR.	▤
19	- A-E TITLE III ENGR.	▥
21	- MMES PROCUREMENT	▦
22	- MMES SOFTWARE	▧
31	- MMES FABRICATION SHOP	▨
41	- MMES FIELD MAINTENANCE	▩
42	- MMES MACHINE MAINTENANCE	▪
48	- MMES A-E SUPPORT	▼

OK

Select a participant from the list, and its number is entered in the "Select Participant" field. Then select **[OK]**--the following message is displayed while the participant cost is calculated:

AES Estimate Update

CALCULATING PARTICIPANT COST

The calculated costs are displayed on the following window:

[.] Participant Cost

WBS	1.0
Participant	91
Material	17,576
Labor	445,971
=====	
Sub-Total	463,547
Overhead	0
Contingency	103,736
=====	
Total	567,273
Exit	

Select **[WBS]** to return to the Select WBS screen to select a different WBS to view.
 Select **[Participant]** to return to the Participant list to select another participant to view.
 When you are done viewing this information, select **[Exit]**.

[Calculator]

An on-screen calculator is displayed when you select the **[Calculator]** button:

[.] Esc to Exit

0			
C	~	%	±
7	8	9	/
4	5	6	*
1	2	3	-
0	.	=	+

Select the calculator's keys with a mouse or by typing the corresponding keys on your keyboard. The total is displayed in the highlighted field on the top of the calculator.
 Select the **[.]** button or press the **Esc** key to dismiss the calculator from the screen.

[Mark_Blk], [Blk_Copy], [Blk_Move], [Blk_Delete]

The four block action buttons across the bottom of the screen allow you to move, copy, or delete a block of line items. This can be performed within a B/M or between two B/M records. Blocking is performed using the block action buttons and/or keyboard keys in the following way:

1. Place the highlight cursor on the first line of the block and select **[Mark_Block]** (or press the **Alt** and **B** keys).
2. Place the cursor below the ending block line and select **[Mark_Block]** (or press **Alt+B**). The block is marked with a vertical bar in the left margin.
3. Move the cursor to the line following the line where the block is to be moved/copied and select **[Blk_Copy]** or **[Blk_Move]** (or press the **Alt+C** or **Alt+M** keys).

The last two marks that you set define the current block until another mark is selected or until a Move or Delete is performed. Selecting **[Mark_Block]** three times in a row cancels the first mark and begins a new set of block definition marks. A marked block can be Copied several times, but is unmarked when it is Moved. A block can be deleted by selecting **[Blk_Delete]** only if it is currently displayed on the screen (lines marked on a previous screen cannot be deleted).

[Blk_Copy] and **[Blk_Move]** can be used to copy line items from an existing B/M line item record to a newly created B/M line item record. To do this, mark the block of lines on the existing record, add a new B/M record from the B/M Directory screen, and from the Line Items screen, select **[Blk_Copy]** **[Blk_Move]** to place the marked block in the new record.

5.4 Bill of Material Additives

The B/M Additive screen allows you to enter direct markups and a contingency markup for a B/M. This screen is accessed by the **[Additive]** action button on the B/M Directory screen or the B/M Line Items screen. The total Material and Labor cost, Labor Hrs, WBS Code, Cost Code, and Participant code for the B/M are displayed on the screen. The current additive values from the B/M record are also displayed on this screen.

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.Est

Discipline Record Number: 1 Discipline Code: K

[+] B/M Additives

Trace Number: 1.1 Participant 13
WBS Code..... 1.0 Cost Code.. 9999

Contingency % 25.0

Material \$ 0
Labor \$ 275
Labor Hrs 5

	Mat.(%)	Lab.(%)		Mat.(%)	Lab.(%)
Test, Tag & Inspect	0.0	0.0	Health Physics...	0.0	0.0
Mobil. & DeMobil.	0.0	0.0	Industrial Hyg.	0.0	0.0
Hangers & Support	0.0	0.0	MAA/Pidas.....	0.0	0.0
Supporting Items	0.0	0.0	Procurement.....	0.0	
Bolts, Fast.&Supply	0.0	0.0	Shop Support.....		0.0
Job Factor.....		0.0			

Special Additives OK Clear Abort

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Any necessary changes to the additive values should be made before selecting **[OK]** to leave the screen. Selecting **[Abort]** exits the screen without saving the displayed data.

All additive values may be set to zero by selecting the **[Clear]** button. The screen then appears with all the fields blank for entry of new data.

To enter a special additive, select the **[Special Additives]** button. The following screen is displayed:

Set Up
Create
Modify
Reports
Utilities
Automated Estimating System

D:\AES\SAMPLE.EST

Discipline Record Number: 1
Discipline Code: X

B/M Additives

Trace Number: 1.1
Participant 13

WBS Code..... 1.0
Cost Code.. 9999

Contingency % 25.0
Material \$ 0

Labor \$ 275

Labor Hrs 5

Special Additives

Test, Tag & In		Mat.(%)	Lab.(%)	 Description
Mobil. & DeMo	Special-1	0.0	0.0	
Hangers & Sup	Special-2	0.0	0.0	
Supporting It	Special-3	0.0	0.0	
Bolts, Fast.&S	Special-4	0.0	0.0	
Job Factor...	Special-5	0.0	0.0	

Special A
OK
Abort

F10 Menu
Exit <Alt+X>
F1 Help
F2 Cost Estimating Guidance Report

If a special additive is entered, a special description must also be entered describing the special additive. Select **[OK]** to save the special additive values and return to the base additives screen. The **[Abort]** button exits the Special Additives window without saving the displayed data.

6.0 Creating and Modifying Basis of Estimate

The Modify menu allows you to select the type of file you wish to modify. Modification or creation of a Basis of Estimate is presented in this section. An estimate file must exist before its basis of estimate can be created.

Basis of Estimate is a utility that allows you to enter up to 200 lines of information concerning any assumptions that were made that may affect the current estimate.

When this option is selected, the system prompts for the estimate file name for which the basis of estimate is to be entered:

This screen prompts you for an estimate file name by displaying "*.est" in the "Estimate FileName" field or displays the name of the last estimate file you selected. The "Files" window displays all the .EST files in your default directory.

You can replace the default file name (or *.est prompt) by selecting one of the existing .EST files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [X] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Basis of Estimate function and return to the AES Main Menu Bar.

After a valid estimate file name has been entered, the following screen appears:

If information concerning the basis of estimate has previously been entered for the estimate, that text appears on this screen.

Text can be entered or modified using the following editing keys:

- Use the →, ←, ↑, and ↓ keys to move the cursor within the screen; the current row and column (1:1) are displayed in the lower left-hand corner of the screen.
- Press **Ctrl** and → to move to the next word or **Ctrl** and ← to move to previous word.
- Press the **HOME** key to position the cursor at the beginning of the current line.
- Press the **END** key to position the cursor at the end of the current line.
- Press the **Ctrl** and **Y** keys to delete the current line.
- Press **Shift** and **Delete** to delete a word.
- Press **Ctrl** and **Delete** to delete from the cursor position to the end of the line.
- Press the **Insert** key to toggle between insert mode and overwrite mode.

(An on-screen help message defining the above keys is available by selecting **F1** from the screen.)

After the basis of estimate has been entered and/or modified, press **Esc** to save the updates and return to the AES Main Menu Bar.

7.0 Creating and Modifying a Contingency

The Create and Modify menus allow you to select a file type. Creation and modification of a contingency record is presented in this section.

When this option is selected, the following screen is displayed, and the system prompts for an existing estimate file name.

This screen displays the name of the last estimate file you selected in the "Estimate FileName" field or, if one does not exist, prompts you for a estimate file name by displaying "*.est". The "Files" window displays all the .EST files in your default directory. You may type in a file name (do not enter the .EST extension) or replace the default file name (or *.est prompt) by selecting one of the other .EST files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [■] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Modify/Create function and return to the AES Main Menu Bar.

Next, the system prompts for a contingency file name.

Select a contingency file in the same manner as described above for the estimate file. If you are creating a new contingency file, the system will not allow you to overwrite an existing contingency file.

After the contingency file name is entered, a listing of contingency records for each WBS-Participant group in the selected contingency file is displayed:

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.CNT

..... WBS	Participant
1	A-E
1.1	FS CONTRCT
1.1.2.3.18.1	FP
1.1.2.3.18.1	MMES

Update Estimate File

Add

Modify

Delete

Print

Exit

Mark_Blk

Blk_Delete

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Scroll to the desired WBS-Participant record to highlight the record. One of the action buttons on the right side of the screen can be selected to be used on the highlighted record. If you double-click on a record (or highlight it and press the **Spacebar**), the default **[Modify]** function is automatically selected. The actions of these buttons are described on the following pages.

[Update Estimate File]

This action button updates the contingency percentages of the selected estimate file based on the information contained in the contingency file. **NOTE:** This same function is performed when you select the contingency file while performing the recalculation utility (see Sect. 11.1). Because this is a time-consuming procedure, you may prefer to run this function in the recalculation utility rather than under this action button.

[Add]

The **[Add]** button on the WBS-Participant listing screen displays the contingency work sheet in the following format.

Set Up Create Modify Reports Utilities Automated Estimating System

[*]
 Project Title: THIS IS A SAMPLE ESTIMATE
 Level of Estimate: Planning/Feasibility
 WBS Code: 1.0
 Midpoint (%): 25
 Participant:

Project Element	Midpoint	Completeness of Design	Degree of Difficulty	Contingency %
LAND AND LAND RIGHTS	25%	X	X	%
IMPROVEMENT TO LAND	25%	X	X	%
NEW BUILDINGS AND ADDITIONS	25%	X	X	%
BUILDING MODIFICATIONS	25%	X	X	%
OTHER STRUCTURE	25%	X	X	%
SPECIAL FACILITIES	25%	X	X	%
UTILITIES	25%	X	X	%
STANDARD EQUIPMENT	25%	X	X	%
CONST MGMT./SUPPORT SERVICES	25%	X	X	%

[Update] [Abort] [Return]

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The "Project Title," "Level of Estimate," and "Midpoint" field values default to those defined for the current project. The "WBS" field defaults to the highlighted WBS-Participant record. Only the Midpoint and WBS defaults can be modified. The other fields are blank to allow you to enter information for a new WBS-Participant record.

The cursor can be placed on the "Midpoint" field of this screen to allow you to change the default percentage. The midpoint for estimates with a Level of Estimate of CDR or Planning/Feasibility defaults to 20% and 25% and cannot be modified.

The "Participant" field is required and validated. A help screen of the valid values is displayed:

[*] Groups

REQUIRED FIELD

WBS
 A-E
 FP
 MK-F
 OTHER

OK

The window in the center of the Contingency Work Sheet screen displays the project elements. Additional project elements can be scrolled onto the screen using the right scroll bar. Position the cursor on the project element line that requires data entry. When the correct line is highlighted, select [Update] to display the following data entry window for that line.

[F1]— Contingency Update
 IMPROVEMENTS TO LAND
 Midpoint of Contingency: 25%

Completeness of Design: 0.00
 Degree of Difficulty: 0.00

Contingency Percentage: 00.0

OK Abort

Enter the values for this element and press **←** or **Tab** to move to the next field. The "Completeness of Design" and "Degree of Difficulty" fields allow you to enter data. The following help screens describe the required format.

[F1]— <Esc> to Close-<Alt+Z> to Zoom-[F1]
 Enter the Completeness of Design
 (The given stage of design for a
 given project element) in form of
 x.xx

[F1]— <Esc> to Close-<Alt+Z> to Zoom-[F1]
 Enter the Degree of Difficulty
 (Refers to those factors that
 greatly increase the cost
 estimating risk for a given
 project element) in form of x.xx

"Contingency Percentage" is calculated automatically by the system. This percentage is numerically equal to the (Midpoint) X (Completeness of Design) X (Degree of Difficulty). Select **[OK]** to return these values to the Work Sheet columns. You may select **[Abort]** to return to the Work Sheet without adding the values.

When all project element values are complete on the Contingency Work Sheet screen, select **[Return]** to return to the previous WBS-Participant listing screen--the new record is added to the list. **[Abort]** will exit the Work Sheet screen without adding the record.

[Modify]

This function is the default button for this screen. It allows you to modify existing information for the currently highlighted WBS line. The same Contingency Work Sheet screen shown above for the **[Add]** function is displayed for the **[Modify]** button. The Project Title, Level of Estimate, Midpoint, WBS, and Participant field values on the top of the screen cannot be modified for the current project.

The center of the screen displays existing values for the project elements. Additional project elements can be scrolled onto the screen. To modify these values, highlight the element line that requires data entry/update and select the **[Update]** button. The same Contingency Update window used for the **[Add]** function is displayed with existing values for the highlighted line. Use this window to modify or add values as described above in the **[Add]** section.

When all modifications are complete, either select **[Return]** to return to the previous WBS-Participant listing screen and save the changes or select **[Abort]** to exit this screen without saving the displayed changes.

[Delete]

When this button is selected from the WBS-Participant listing screen, the following confirmation prompt is displayed for the currently highlighted record line:

A rectangular dialog box with a title bar that reads "[*] Information". The main text inside the box says "Delete Contingency Records for WBS - Participant 1.0 - FP". At the bottom of the box, there are two buttons: "Yes" and "No".

If this record is to be deleted, select **[Yes]**; the record will be deleted from the WBS-Participant list.

[Mark_Blk], [Blk_Delete]

One or more Project Element lines can be deleted using these action buttons or using keyboard keys in the following ways: (1) place the text cursor on the first line of the block and select **[Mark_Blk]** (or press the **Alt+B** keys); (2) place the cursor on the ending block line and select **[Mark_Blk]** (or press the **Alt+B** keys) (the block is marked with a vertical bar in the left margin); and (3) select **[Blk_Delete]**.

[Print]

The **[Print]** function allows you to obtain a report of all contingency records or only those for a selected WBS. The report is saved to a file that you may browse using the **Browse** option from the Main Menu Bar **Report** pull-down menu. You may also print the report file using the **Print** option from **Report** pull-down menu. The following prompt is displayed to allow you to select the report to be generated:

A rectangular dialog box with a title bar that reads "Contingency Report". Inside the box, there are three vertically stacked buttons: "All Contingency Records", "Selected WBS Code Only", and "Abort Contingency Report".

If you select **[Selected WBS Code Only]**, make sure you have highlighted the WBS-Participant record on the base screen that you wish to report on. The **[Abort Contingency Report]** option returns you to the base screen without generating a report.

If you select **[All Contingency Records]**, the report will be generated for all contingency records contained in the contingency file. The next display prompts for a file name for the contingency report.

This screen prompts you for an output file name by displaying "*.out". The "Files" window displays all the .OUT files in your default directory. You may type in a file name (do not enter the .OUT extension) to replace the *.out prompt or select one of the existing .OUT files from the "Files" window (if you double-click on a new name, that file is automatically opened, and this screen disappears). [CAUTION: If you select an existing file name, you are prompted to confirm that you wish to overwrite that file.] The **[Cancel]** button is provided to allow you to exit the Print function and return to the WBS-Participant-Activity listing screen.

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. The pop-up window's close button [X] dismisses the window without making a selection.

When the correct file name is displayed in the field, select **[Open]** to create this report file. An example of the report format is displayed below.

Project Title: THIS IS A SAMPLE ESTIMATE							
Level of Estimate: Planning/Feasibility				Midpoint of Contingency: 25%			
WBS: 1.0				Participant: MMES			
Project Element	% Contingency Midpoint		Completeness of Design		Degree of Complexity		Contingency %
LAND AND LAND RIGHTS	25%	X	-.—	X	-.—	=	—.%
IMPROVEMENT TO LAND	25%	X	-.—	X	-.—	=	—.%
NEW BUILDINGS AND ADDITIONS	25%	X	-.—	X	-.—	=	—.%
BUILDING MODIFICATIONS	25%	X	1.00	X	0.50	=	12.5%
OTHER STRUCTURE	25%	X	-.—	X	-.—	=	—.%
SPECIAL FACILITIES	25%	X	0.75	X	0.75	=	14.1%
UTILITIES	25%	X	-.—	X	-.—	=	—.%
STANDARD EQUIPMENT	25%	X	-.—	X	-.—	=	—.%
CONST MGMT/SUPPORT SERVICES	25%	X	-.—	X	-.—	=	—.%
ENGINEERING	25%	X	-.—	X	-.—	=	—.%

[Exit]

This action button exits the Contingency function and returns to the AES Main Menu Bar.

8.0 Creating and Modifying a Schedule File

Selecting to Create or Modify a schedule file allows you to add or change project schedules on the activity level. The schedules are maintained in a project schedule file and are used in calculating escalated costs and reporting costs by fiscal year.

The schedules, which consist of the activity starting date, ending date, and days duration, are entered and retrieved on the basis of WBS and participant code. Multiple activities can be entered for each WBS-Participant combination. The schedules may be entered at any level of the WBS. For example, assume that a particular B/M in an estimate has a WBS code of 1.1.1.2 and a participant code of 51. When a recalculate estimate option or a time-related report is chosen, the system first searches the project schedule file for a schedule record containing WBS 1.1.1.2 and participant code 51. If a schedule record is not found, the system searches the project schedule file for a schedule record containing WBS 1.1.1 and participant code 51. The system continues to search higher WBS levels until either a schedule record is found or the highest WBS level, 1., is reached. This feature provides flexibility in the creation and maintenance of the project schedule. The system generates an error file when matches are not found.

When you select to create or modify a schedule file, the following screen is displayed, and the system prompts for a schedule file name.

If you are creating a new schedule file, this screen prompts you for a schedule file name by displaying "*.sch" in the "Schedule FileName" field. You must type in a new file name (do not enter the .SCH extension) to create the file--the system will not allow you to overwrite an existing file.

If you are in modify mode, this screen displays the name of the last schedule file you selected in the "Schedule FileName" field. The "Files" window displays all the .SCH files in your default directory. Use this default or replace the default file name by selecting one of the other .SCH files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↑] button next to the file name field (by either clicking on it or pressing the keyboard ↑ key while the cursor is in this field), you can view the files you have selected during this work session. You can make one of the previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [■] to dismiss the window without making a selection.

When the correct file name is displayed in the "Schedule FileName" field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Create/Modify function and return to the AES Main Menu Bar.

NOTE: If the schedule file you are opening needs to be converted to the latest version of AES, you will be informed and asked whether or not the file should be converted. You may also be prompted with the following window for the curve type to be used.

In AES Version 6.0, converted 5.2 estimate files no longer contain curve type information--this is kept in the schedule files. Curve Type 5 is automatically added to each converted schedule record. If you wish to have the curve type default to something different than Curve Type 5, type in the default curve type. The curve type you supply at this prompt is automatically added to all converted records. If any records require a different curve type, they must be updated individually. See Sect. 5.1.1 for help in identifying the file containing curve type information saved from the converted estimate file.

After the schedule file name is entered, a listing of Participant records for each WBS in the selected schedule file is displayed:

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.SCH

..... WBS	Part.	Activity #	Start Date	End Date
1	13	A0000000001	04/01/1994	06/30/1996
1	18			
1	19			
1	21			
1	41			
1	47			
1	48			
1	49			
1	51			
1	63			
1	66			
1	67			

Mark_Blk Blk_Delete

Add Modify Delete Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The left window of the screen displays the WBS-Participant record; the right window displays activities that have been defined for the record currently highlighted in the left window (at least one activity exists for each record). Highlight the desired WBS-Participant record and select the appropriate [Add], [Modify], [Delete], or [Print] action that you wish to perform. If you double-click on a WBS-Participant record (or highlight it and press the **Spacebar**), the default **[Modify]** function is automatically selected. These action buttons are described on the following pages.

[Add]

The [Add] action allows you to add a WBS-Participant to the schedule file. The following screen highlights the blank "WBS" and "Participant Code" fields to allow you to enter new information. The "Activity" list on the bottom of the screen is initially blank; you are required to enter one activity for the new WBS-Participant record, which is then placed on the list.

[illegible]

Add the WBS and participant values and complete the following information for the first activity. The "Activity" number defaults to A000000001 but may be changed; enter an activity title beside this number. "Start Date" and either "End Date" or "Duration" must be entered, but not both. If End Date is entered, the system calculates Duration in days. Likewise, if Duration is entered, the system calculates End Date. Duration can span 40 years, and End Date cannot be less than Start Date. System defaults are displayed in the "Curve Type" and "Wgt. Factor" fields, but may be changed. The weight factor may be represented by any preferred number scale--the value designates the numerator of a fraction in which the denominator is the sum of the weight factors for all activities in this record.

Help windows are displayed for any fields that are invalid or required. The required field help is shown below:

WBS Code:

```
[*]= <Esc> to Close - <Alt+Z> to Zoom [?]
```

WBS Code

Work Breakdown Structure

Participant Code:

Pressing F1 on
this window
displays more
help.

[F1] Participant [F1]

Select Participant:

- 11 - MMES TITLE I & II ENGR. ▲
- 13 - MMES TITLE III ENGR. *
- 18 - A-E TITLE I & II ENGR. ▤
- 19 - A-E TITLE III ENGR. ▤
- 21 - MMES PROCUREMENT ▤
- 22 - MMES SOFTWARE ▤
- 31 - MMES FABRICATION SHOP ▤
- 41 - MMES FIELD MAINTENANCE ▤
- 42 - MMES MACHINE MAINTENANCE ▤
- 48 - MMES A-E SUPPORT ▼

OK

Start Date:

[F1] - <Esc> to Close - <Alt+Z> to Zoom [F1]

Start Date

Activity Start Date

Enter the Starting Date for the current
Schedule Activity. Enter in form of mm/dd/yyyy

End Date:

[F1] - <Esc> to Close - <Alt+Z> to Zoom [F1]

End Date

Activity End Date

Enter the Ending Date for the current Schedule
Activity. Enter in form of mm/dd/yyyy

Curve Type:

Pressing F1 on
this window
displays more
help.

[F1] Spending Curve Types [F1]

Select Spending Curve:

- 1 = Curves types 1-4 apply ▲
- 2 = varying degrees of *
- 3 = skewness to Curve 5 ▤
- 4 = ▤
- 5 = -----Bell Like Shape-----
- 6 = Curves types 6-9 apply ▤
- 7 = varying degrees of ▤
- 8 = skewness to Curve 5 ▤
- 9 = ▤
- 10 = -----Linearly descending-----
- 15 = -----Uniform allocation-----
- 20 = -----Linearly ascending----- ▼

OK

Select the **[OK]** button on the top of the Update screen to save the new record--the activity will be displayed in the list on the bottom of the screen. Or, you may cancel this add and return to the previous screen by selecting the **[Abort]** button. After the add is performed, you are given access to the buttons at the bottom of the screen to add more activities to the WBS-Participant, as appropriate.

To add another activity, select the **[Add Activity]** button. The "Activity" field on the top of the screen is highlighted to allow you to add a new activity number and information. The **[OK]** and **[Abort]** buttons are active. The "WBS" and "Participant Code" fields, however, are not highlighted and cannot be changed during the Add function. When information is complete, select the **[Add]** button to add the new activity. If **[Abort]** is selected, the system aborts execution, the activity is not added, and you are returned to the bottom of the screen.

You can change a displayed activity by highlighting the activity and selecting the **[Modify Activity]** button. The information for that particular activity is displayed in the fields at the top of the screen. The buttons **[OK]** and **[Abort]** are displayed on the top of the screen to allow you to save or abort your changes.

Select the **[Delete Activity]** action to delete the currently highlighted activity. The following prompt is displayed to confirm the delete:

[*] Information

Delete Schedule Records for
WBS - 1
Participant - 13
Activity - A000000001

Yes No

The **[Modify WBS-Part]** button gives you access to the "WBS" and "Participant Code" fields on the top of the screen. If you change these values, the WBS and participant of the current activities are replaced with the WBS/Participant entered.

The **[Add New WBS-Part]** button gives you access to the "WBS" and "Participant Code" fields on the top of the screen. If you change these values, a new record is created for the new WBS and participant that is entered, and it will contain all the activities that are listed on the screen. Changing these values does not change the WBS-Participant record that previously existed. This function allows you to quickly copy a WBS-Participant record under a new WBS-Participant combination without affecting the original record. If your intent is to correct or replace an existing record, you should use the **[Modify WBS-Part]** function.

When you are finished with the add WBS-Participant screen, select **[Return]** to return to the initial WBS-Participant-Activity listing screen for this schedule file.

[Modify]

The **[Modify]** button is the default action for the WBS-Participant-Activity listing screen. It displays the same screen as the **[Add]** button discussed above. However, the activities for the WBS-Participant record selected from the previous screen are displayed in the activity list, and the highlight cursor is placed on the bottom of the screen to allow you to identify the activity within the list that you wish to modify:

Set Up Create Modify Reports Utilities Automated Estimating System
Update

WBS: 1 Participant Code: 13

Activity: A000000002 Default Activity Title

Start Date: 06/01/1994 Duration: 420 End Date: 07/25/1995

Curve Type: 5 Wgt. Factor: 1 OK Abort

Activity #	Activity Description	Wgt.
A000000001	Default Activity Title	1
A000000002	Default Activity Title	1

Add Activity Modify Activity Delete Activity

Modify WBS-Part Add New WBS-Part Return

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Highlight the activity you wish to modify or delete, and select the **[Modify Activity]** or **[Delete Activity]** buttons as appropriate. Double-clicking on an activity (or highlighting it and pressing the **Spacebar**) automatically selects the **[Modify Activity]** function. These functions operate the same as described previously in the **[Add]** function. The **[Add Activity]**, **[Modify WBS-Part]**, **[Add New WBS-Part]**, and **[Return]** buttons also perform the same functions as previously described for the **[Add]** function after the first new WBS-Participant record has been initially added.

[Delete]

The **[Delete]** button on the WBS-Participant-Activity listing screen allows you to delete a WBS-Participant record along with all of its activities. Select the WBS-Participant record that you wish to delete from the left list of the screen, and then select **[Delete]**. The following prompt is displayed to allow you to confirm deletion of this record and all of its activities:

[*] Information

Delete Schedule Records for
WBS - Participant
1 - 13

Yes No

[Mark_Bl], [Blk_Delete]

One or more Project Element lines can be deleted using these action buttons or using keyboard keys in the following ways: (1) place the text cursor on the first line of the block and select **[Mark_Bl]** (or press the **Alt+B** keys); (2) place the cursor on the ending block line and select **[Mark_Bl]** (or press the **Alt+B** keys) (the block is marked with a vertical bar in the left margin); and (3) select **[Blk_Delete]**.

[Print]

Selecting the **[Print]** button allows you to send a hard-copy printout of this listing to the printer. An example of this listing is shown below.

Schedule File: D:\AES\SAMPLE.SCH							
Listing Date : 11/21/1993							
	Activity	Start Date	End Date	Curve	Wgt.	Percent	
1 - 13							
	A000000001 Default Activity Title	04/01/1994	06/30/1996	5	1	50.000	
	A000000002 Default Activity Title	06/01/1994	07/25/1995	5	1	50.000	
1 - 18							
	A000000001 Default Activity Title	04/01/1994	12/31/1994	5	1	100.000	
1 - 19							
	A000000001 Default Activity Title	04/01/1994	06/30/1996	5	1	100.000	
1 - 21							
	A000000001 Default Activity Title	04/01/1995	06/30/1996	5	1	100.000	

A graphical plot of the schedule can be generated as described in Sect. 10.1.13.

[Exit]

Selecting this option exits the Create or Update schedule file function and returns to the AES Main Menu Bar.

9.0 Creating and Modifying a WBS Title File

The Create and Modify menus allow you to select a file type. Creation and modification of a WBS title is presented in this section.

The following screen is displayed and prompts for a WBS title file name.

If you are creating a new WBS file, this screen prompts you for a WBS file by displaying "*.wbs" in the "WBS Title FileName" field. You must type in a new file name (do not enter the .WBS extension) to create the file--the system will not allow you to overwrite an existing file.

If you are in modify mode, this screen displays the name of the last WBS file you selected in the "WBS Title FileName" field. The "Files" window displays all the .WBS files in your default directory. Use the default or replace the default file name by selecting one of the other .WBS files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [X] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Modify function and return to the AES Main Menu Bar.

The following screen of WBS numbers and titles is displayed:

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.WBS

WBS	WBS Title
1.0	REST. HVAC SYS
1.1	REST. HVAC SYS OPTION 1
1.2	REST. HVAC SYS OPTION 2
1.3	REST. HVAC SYS OPTION 3

Mark_Blk Blk_Delete

Add Modify Delete Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

This screen lists the WBS codes and titles for each record contained in the WBS title file. The list can be scrolled up and down to locate a specific WBS number. When the WBS line is highlighted, the action buttons on the bottom of the screen can be selected to add, modify, delete, or print the highlighted line. If you double-click on a WBS title line (or highlight it and press the **Spacebar**), the [Modify] function is automatically selected. These actions are described on the following pages.

[Add]

The **[Add]** button displays the following screen in which the currently highlighted WBS title is displayed:

A screenshot of a software dialog box titled "Add WBS Title Record". The dialog box has a title bar with a small icon on the left and a close button on the right. Inside the dialog, there are two text input fields. The first field is labeled "WBS Code :" and contains the text "1.0". The second field is labeled "WBS Title:" and contains the text "REST. HVAC SYS". Below these fields, there are two buttons: "OK" on the left and "Abort" on the right. The dialog box is enclosed in a thick black border.

To add a new WBS code and title, type over the existing information with correct information for the new record. Select **[OK]** to add the new record and return to the base listing screen. If you select **[Abort]**, the entered information will not be saved.

[Modify]

The **[Modify]** button is the default action for this screen. This function displays the following screen in which the currently highlighted WBS title is displayed:

A screenshot of a software dialog box titled "Modify WBS Title Record". The dialog box has a title bar with a small icon on the left and a close button on the right. Inside the dialog, there are two text input fields. The first field is labeled "WBS Code :" and contains the text "1.0". The second field is labeled "WBS Title:" and contains the text "REST. HVAC SYS". Below these fields, there are two buttons: "OK" on the left and "Abort" on the right. The dialog box is enclosed in a thick black border.

Type over the existing information with modified information for the displayed record. Select **[OK]** to save your changes to the record and return to the base listing screen. If you select **[Abort]**, the changes will not be saved.

[Delete]

The **[Delete]** button displays the following confirmation prompt for the currently highlighted WBS record:

A screenshot of a software dialog box titled "Information". The dialog box has a title bar with a small icon on the left and a close button on the right. Inside the dialog, the text reads "Delete WBS Title Record for" followed by "WBS - 1.2" on the next line. Below this text, there are two buttons: "Yes" on the left and "No" on the right. The dialog box is enclosed in a thick black border.

Verify that this is the correct record to delete and select the appropriate action button.

[Mark_Bl], [Blk_Delete]

One or more Project Element lines can be deleted using these action buttons or using keyboard keys in the following ways: (1) place the text cursor on the first line of the block and select **[Mark_Bl]** (or press the **Alt+B** keys); (2) place the cursor on the ending block line and select **[Mark_Bl]** (or press the **Alt+B** keys) (the block is marked with a vertical bar in the left margin); and (3) select **[Blk_Delete]**.

[Print]

This function sends a printout of the information displayed in the listing window to your printer. The WBS title file name and the listing date are displayed on the top of the printout in the following format:

Schedule File: D:\AES\SAMPLE.WBS	
Listing Date : 11/12/1993	
..... WBS Code	 WBS Title
1.0	REST. HVAC SYS
1.1	REST. HVAC SYS OPTION 1
1.2	REST. HVAC SYS OPTION 2
1.3	REST. HVAC SYS OPTION 3

[Exit]

This action button exits the Create or Update WBS Title File function and returns to the AES Main Menu Bar.

10.0 Reports

The Reports menu has options to generate a report, browse on-screen reports you have created, and print hard copies of reports.

You may also perform other report functions such as breaking up a large report into smaller files and exporting data. These functions are described in the following sections.

10.1 Generate

The **Generate** option displays the following list of predefined reports that you may choose to generate. Options on this screen allow the generation of standard and custom reports to a disk file and generation of the schedule plot to a disk file or printer. The disk file can be sent to a printer or viewed on the screen using the **Print** or **Browse** options on the **Reports** pull-down menu (see Sects 10.2 and 10.3).

The system displays a series of screens requesting the estimate file name, output file name, schedule file name, beginning page number, sort arrangement, and specific participant, discipline, or WBS level for which the report will be generated. All report selections from this menu except the Schedule 1-B-7, Cost Schedule Summary, and WBS/Participant Summary allow you to select a sort arrangement for the report.

The order and number of prompts and selection screens used to supply this standard information for each report are identified in the following table.

REPORTS	AES REPORT SELECTION SCREENS									
	Verify Schedule	Selec- tion Criteria	Sort Selec- tion	Select WBS	WBS Level of Report.	Cross-Cut Level of Report.	Report Type	Fiscal Year Range	Dollar Incre- ments	Begin. Page Number
Detail Report Standard Sorted	-	1	-	-	-	-	-	-	-	2
	-	1	2	-	-	-	-	-	-	3
Mark-Up	-	1	2	-	-	-	-	-	-	3
Basis of Estimate	-	-	-	-	-	-	-	-	-	-
Schedule 187	1	-	-	2	3	-	4	-	5	6
Labor Analysis	1	2	3	-	*WW*	*CC*	-	*fy*	4	5
Summary	1	2	3	-	*WW*	*CC*	-	*fy*	4	5
Contingency	1	2	3	-	*WW*	*CC*	-	*fy*	4	5
Cost Schedule	1	-	-	2	3	-	4	5	6	7
WBS/Participant	1	-	-	2	3	-	4	-	5	6
Fiscal Year Summary by FY by Months	1	2	3	-	*WW*	*CC*	-	4	5	6
	1	2	3	-	*WW*	*CC*	-	4	5	6
Monthly Cost Summary	1	2	3	-	*WW*	*CC*	-	4	5	6
Overhead	1	2	3	-	*WW*	*CC*	-	*fy*	4	5

WW This screen only appears if WBS Code is selected as a sort field.

CC This screen only appears if Cross-Cut Code is selected as a sort field.

fy This screen only appears if Fiscal Year is selected as a sort field.

Each report requires you to supply an estimate file name and an output file name. These prompts and the ten report selection screens in the above table are described in the following text. A description of each type of report is given in Sects. 10.1.1 through 10.1.12. The Schedule Plot does not require the use of these general selection screens; selection of this option is described in Sect. 10.1.13.

Estimate File Name Prompt

Each report selection requests the estimate file to be used for the report:

This screen prompts you for an estimate file name by displaying "*.est". The "Files" window displays all the .EST files in your default directory. You may type in a file name (do not enter the .EST extension) to replace the *.est prompt or select one of the existing .EST files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [■] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select **[Open]** to load this file. The **[Cancel]** button is provided to allow you to exit the Report function and return to the AES Main Menu Bar.

Output File Name Prompt

Each report selection requests the output file name for the report:

This screen prompts you for an output file name by displaying "*.out". The "Files" window displays all the .OUT files in your default directory. You may type in a file name (do not enter the .OUT extension) to replace the *.out prompt or select one of the existing .OUT files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears). You can select a previously used file using the pop-up window [↓] button from the "Output FileName" field as described previously.

If you select a file name from the directory listing, the system issues the following warning message:

If you do not wish to overwrite this file, select [No], and the system allows another output file name to be entered. If you select [Yes], the system overwrites the existing file with the requested report.

When the correct file name is displayed in the field, select [Open] to create this file. The [Cancel] button is provided to allow you to exit the Generate Report function and return to the AES Main Menu Bar.

Verify Schedule

For most reports, AES verifies the correct schedule file that was last used in the recalculation of escalation rates.

[-] AES Report

Schedule File last used in recalculation was SAMPLE

...Continue with Report?

If this is the correct schedule file, select **[Yes]**. If this is not the correct schedule file, select **[No]**--the report will terminate and the system will return to the AES Main Menu Bar.

During the report generation, if Bills of Material are found without an escalation percentage or if for Fiscal Year Reports a schedule record could not be found, the following message is displayed:

Information

ERROR..Record(s) Found That Were
Not Scheduled..
or Recalculation Needs to be
Performed.

This indicates that a recalculation needs to be performed or the schedule file needs updating.

A listing of record errors will be generated instead of the report. The output file (the file designated to receive the report) can be viewed using the **Browse** function from the **Reports** pull-down menu to locate the records that are in error. These records are listed by WBS, participant code, and cost code.

Report Selection Criteria

The Report Selection Criteria screen allows specific values for B/M Attribute, WBS, Discipline Code, Cost Code, Participant, Funding Type, and Cross-Cut Code to be defined. The report will be generated for only the Bills of Material that match the criteria entered.

[*]----- AES - Report Selection Criteria -----

[B]/M Attribute: []	[W]BS: []
[D]iscipline:	[C]ost Code:
<div style="border: 1px solid black; padding: 5px;"> A - ARCHITECTURAL B - CHEMICAL PROCESS ✓ C - CIVIL AND SITE ✓ D - MACHINE DESIGN E - ELECTRICAL </div>	<div style="border: 1px solid black; padding: 5px;"> 1000 - LAND AND LAND RIGHTS 2000 - IMPROVEMENT TO LAND 3000 - NEW BUILDINGS AND ADD 4000 - BUILDING MODIFICATION 5000 - OTHER STRUCTURE </div>
[P]articipant:	[F]unding Type:
<div style="border: 1px solid black; padding: 5px;"> 11 - MMES TITLE I & II ENGR 13 - MMES TITLE III ENGR. 18 - A-E TITLE I & II ENGR 19 - A-E TITLE III ENGR. 21 - MMES PROCUREMENT </div>	<div style="border: 1px solid black; padding: 5px;"> E - EXPENSE G - GPP/CE FY95 ON H - GPP/CE TO FY95 L - LINE ITEM 95 ON M - LINE ITEM TO 95 </div>
Program Type Project Type Phase of Work	
Cro[S]s-Cut Codes: [] - [] - []	
[R]eport Desc: []	
<input type="button" value="OK"/> <input type="button" value="Abort"/>	

If the report is to be generated for all Bills of Material contained in the estimate, select [OK] without entering any specific criteria. To generate a report for a specific "B/M Attribute," "WBS," or "Cross-Cut Code" ("Program Type," "Project Type," or "Phase of Work"), enter the appropriate information in these fields. A help list of valid cross-cut codes are displayed if you enter F1 while the cursor is placed in these fields.

To mark one or more specific "Discipline," "Cost Code," "Participant," and/or "Funding Type," either click on the desired code, or **Tab** to the appropriate window list, highlight the desired code, and press the **Spacebar**. This places a ✓ beside the code--The ✓ can be removed by repeating this selection action.

The "Report Desc:" field, located at the bottom of the screen, allows you to enter information concerning the report being generated. This description will be included at the top of all pages of the report.

When all criteria are entered, select [OK] to continue to other selection screens for the current report as appropriate.

Sort Selection Screen

If the report is to be sorted, the system displays a Report Sort Selection screen, which contains only the sort criteria that are used for that particular report. Therefore, sort selection displayed on this screen will vary among reports.

Report Sort Selection

Sort 1:

Sort 2:

Sort 3:

---- Sort Fields ----

- A - S/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- F - Fiscal Year
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

Sort Fields Defined

Abort AES Report

Enter the letter of the primary sort in the "Sort 1" field either by typing the letter defined in the list at the right or by double-clicking on the sort option. Move to the "Sort 2" field, and the system automatically enters the sort description for the selection you just made. Enter any additional sort fields as desired and select **[Sort Fields Defined]** when you are done. You may use the **Shift-Tab** keys or the mouse to return to a prior sort selection and change the entry by either typing over it or reselecting from the list. Selecting **[Abort AES Report]** will terminate the creation of the report and return to the AES Main Menu Bar.

If Fiscal Year is selected as a sort option on this screen, you will have an opportunity to enter the Starting Fiscal Year and/or the Ending Fiscal Year for which the report is to be generated.

Select WBS Number

Reports that do not display the Report Selection Criteria screen can be generated for a particular WBS. The WBS is selected using the following prompt:

AES - Select WBS

Select WBS:

(Press Enter to Select all Bills of Material)

OK

Abort

Enter the WBS for which the report is to be generated, or leave the field blank to include all Bills of Materials. Selecting **[Abort]** will terminate the report and return to the AES Main Menu Bar.

WBS Level of Reporting

Certain reports require the WBS level of reporting to be entered. The default WBS level for the current report will be marked on the following screen.

WBS Report Level
Select WBS Level
() 1 () 6
() 2 () 7
(•) 3 () 8
() 4 () 9
() 5

OK

If this is correct, select [OK]. If the default level is not correct, click on the correct level, or use the ↑ and ↓ keys to move the mark to the correct level.

Cross-Cut Level of Reporting

When generating a report sorted by the Cross-Cut field, the cross-cut level of reporting must be indicated. The default cross-cut level will be marked on the following screen.

Reporting Level
Select Cross-Cut Level
() 1
() 2
(•) 3

OK

If this is correct, select [OK]. If the default level is not correct, click on the correct level, or use the ↑ and ↓ keys to move the mark to the correct level.

Report Type

Some reports allow for selection of a standard or custom report type. If custom is selected, engineering cost will not be included as a portion of the report unless engineering cost is found in the estimate.

AES - Report Type
(•) Standard Report - Engineering Always Included in Report
() Engineering Omitted from Report if NOT Found in Estimate

OK

The default report type is Standard. If this is correct, select [OK]. If the default is not correct, click on the second option, or use the ↓ key to move the mark to the second report type.

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

2 of 3

Fiscal Year Range

A fiscal year spread can be defined by entering the fiscal year in which the report is to begin reporting cost and/or entering the fiscal year in which the report is to end reporting cost.

A dialog box titled 'AES - Report' with the subtitle 'Fiscal Year Spread'. It contains two input fields: 'Starting Fiscal Year of Report:' and 'Ending Fiscal Year of Report:'. Both fields are currently empty. At the bottom center is an 'OK' button.

If cost is to be reported for all fiscal years of the estimate, do not enter any values and select the [OK] button to continue.

Dollar Increments Prompt

This prompt allows you to define the increments in which dollars are to be reported:

A dialog box titled 'AES - Report' with the subtitle '\$1 or \$1000'. It contains a prompt 'Dollars reported in Increments of: (*)' followed by a radio button and the value '1000'. Below this is another radio button and the value '1'. At the bottom center is an 'OK' button.

A default of \$1000 is marked. If this is correct, select [OK]. If this is incorrect, select \$1 by clicking on the option or using the ↓ key to move the mark.

Beginning Page Number

Most reports have consecutive page numbering that can begin with whatever page number you specify. This allows you to combine several different reports into one consecutive package. If this option is functional for the selected report, the following prompt is displayed:

A dialog box titled 'AES - Report' with the subtitle 'Enter Beginning Page Number:'. It contains a text input field with the number '1' entered. At the bottom center is an 'OK' button.

Enter the desired page number and select [OK].

10.1.1 Detail Report

The Detail Report option reports at the line item level for the Bill of Material records that match the selection criteria you define.

The Detail Report has a landscape and a portrait format. It can be generated in a standard form that lists the Bills of Material in the order they are found in the estimate or in a sorted detail form that sorts the Bills of Material in the order you define.

The available sort fields for the Detail Report are shown below:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

10.1.2 Mark-Up Summary Report

The Mark-Up Summary Report lists all the mark-up and contingency percentages for the Bills of Material that match your selection criteria.

The following sorts are available for the Mark-Up Summary Report:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

10.1.3 Basis of Estimate Report

The Basis of Estimate Report option produces a report of the information contained in the Basis of Estimate file (see Sect. 6.0).

10.1.4 Schedule 1-B-7

The Schedule 1B7 option reports on escalated cost broken out by participant group and cost code. The report can be generated for a specific WBS and WBS Level that you specify.

10.1.5 Labor Analysis

The Labor Analysis option reports on labor hours and escalated and unescalated labor dollars for the Bills of Material that match your selection criteria. The dollars and hours can be sorted by the following sort fields:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- F - Fiscal Year
- L - Labor Craft Code
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

10.1.6 Summary Report

The Summary Report option reports on escalated and unescalated material and labor dollars for the Bills of Material that match your entered selection criteria. The dollars can be sorted by the following sort fields:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- F - Fiscal Year
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

10.1.7 Contingency Summary

The Contingency report option reports on material and labor dollars and the contingency dollars and contingency percentages for the Bills of Material that match your entered criteria. The dollars and percentages can be sorted by the following sort fields:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- F - Fiscal Year
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

The Contingency report may be generated for either escalated or unescalated cost.

10.1.8 Cost Schedule Report

The Cost Schedule Report option reports on escalated cost broken out by fiscal year and participant group. The report can be generated for a specific WBS and WBS Level. The report can also be generated for a specified fiscal year range.

10.1.9 WBS/Participant Summary

The WBS/Participant Summary option reports on escalated Engineering and Construction cost broken out by participant group and WBS. The report can be generated for a specific WBS and WBS Level.

10.1.10 Fiscal Year Summary

The Fiscal Year Summary option provides the selection of two fiscal year reports. Both reports are generated for escalated cost for the Bills of Material that match your entered selection criteria. The report is broken out by fiscal year and a defined sort arrangement. The available sort fields for this report are the following:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

The Fiscal Year Summary option can report costs broken out by fiscal year only or by months within the fiscal year. The reports can also be generated for a specified fiscal year range.

10.1.11 Monthly Cost Report

The Monthly Cost Report option reports on escalated material, labor, overhead, and contingency cost broken out by months for the Bills of Material that match your entered selection criteria. The available sort fields for the Monthly Cost Summary are the following:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

This report can also be generated for a specified fiscal year range. It is recommended that this report be generated for no more than a 7-year time frame due to the length of time required to generate this level of detail.

10.1.12 Overhead Summary

The Overhead Summary option reports on escalated material and labor dollars with the overhead and contingency dollars broken out by material and labor. The overhead percentage is also shown for material and labor. The report is generated for the Bills of Material that match your entered selection criteria. The dollars can be sorted in order by the following sort order fields:

- A - B/M Attribute
- B - Building
- C - Cost Code
- D - Discipline
- F - Fiscal Year
- P - Participant
- S - Cross-Cut Code
- T - Trace Number
- U - Funding Type
- W - WBS

10.1.13 Schedule Plot

The Schedule Plot option generates a graphical plot of the selected Schedule file. This plot is created using LaserJet printer commands. It can be sent directly to a LaserJet printer or to a disk file, which may be printed as described in Sect. 10.3.

The schedule plot can be generated by entering specific values for WBS, Participant, and a defined Fiscal Year range on the following selection screen:

[*] AES - Schedule Plot Selection

[WBS]:

[Participant:

- 11 - MMES TITLE I & II ENGR. ▲
- 13 - MMES TITLE III ENGR. •
- 18 - A-E TITLE I & II ENGR. ▤
- 19 - A-E TITLE III ENGR. ▤
- 21 - MMES PROCUREMENT ▤
- 22 - MMES SOFTWARE ▼

Starting Fiscal Year:

Ending Fiscal Year:

OK Abort

If the plot is to be generated for all the schedule records contained in the schedule, select **[OK]** without entering any specific criteria. To generate the plot for a specific WBS, enter the appropriate WBS code in the WBS field.

To mark one or more participants, either click on the desired code, or **Tab** to the "Participant" window, highlight the desired code, and press the **Spacebar**. A **√** is placed beside the selected code; the **√** can be removed by repeating the selection action.

A Fiscal Year range can be entered by defining the "Starting Fiscal Year" and/or "Ending Fiscal Year" for which the plot is to be generated.

After the above criteria for generating the Schedule plot is complete, press **[OK]** to proceed to the following prompt to select the output device for the Schedule plot:

Schedule Plot

Select Output Device

(*) Printer (LaserJet)

() File

OK

Selecting **Printer** sends the Schedule plot directly to the printer. If **File** is selected, you will be prompted for the output file name using the selection process described on page 82, with the exception that the file extension .OPL is added by the system for the Schedule plot.

An example schedule plot is shown on the next page.

04/02/1994 - D:\AES\SAMPLE.SCH

Fiscal Year Range: 1994 - 1996

WBS Participant Activity #

1

13 - A000000001

18 - A000000001

19 - A000000001

21 - A000000001

41 - A000000001

47 - A000000001

48 - A000000001

49 - A000000001

51 - A000000001

63 - A000000001

66 - A000000001

67 - A000000001

<--- FISCAL YEAR --->

<--- FISCAL YEAR --->

10.2 Browse

The Report Browse option allows you to view any of the report files that you have generated. The reports are accessed through the following reports directory:

A system prompt (*.o??) requests entry of a report file name. Select the output file that you wish to browse either by double-clicking on a file name from the "Files" listing or by entering a file name in the "Report FileName" field and selecting [Open].

The report page is wider and longer than the window in which it is displayed. Use the scroll bars or keyboard arrow and Page-Up and Page-Down keys to access the full report. When you have viewed the report, select the [Exit AES Report Browse] button to return to the AES Main Menu Bar.

The report is then displayed in the following format:

10.3 Print

The Print option allows AES reports to be submitted to the DOS print queue. Before the AES Print option will work, DOS PRINT must be loaded. If print has not been loaded, the following message is displayed:

Press [OK] to exit to the Main Menu Bar and exit AES to the DOS prompt. Then, type **PRINT** at the DOS prompt (and press **↵**).

You are prompted for the "Name of list device [PRN]: ". If you do not enter the name of a device, your default printer will be used, so press **↵** again at this prompt. You should receive the message:

Resident part of PRINT installed
PRINT queue is empty

This indicates that the DOS PRINT function has been loaded. You may re-enter AES to perform the print option.

When the **Print** option is selected from the **Reports** option of the Main Menu Bar, the following Print screen is displayed:

The report queue is initially empty when you first enter this screen. As you select files to be printed, the file names are added to the scrolling list, and their print status is displayed beside the file names. You may highlight a displayed file name and select the **[Cancel AES Print Job]** to remove the name from the queue.

To add a file name to the queue, select the **[Submit AES Print Job]** button. The following screen is displayed:

Use standard file selection techniques on this screen to **[Open]** the file you wish to print. The selected file name will be added to the bottom of the queue list on the previous screen. If no other files are in the queue, the message "currently printing" is displayed beside the file name.

When all reports that you want to print have been added to the queue, you may select the **[Exit AES Report Printing]** button to exit and perform other tasks while the reports are being printed. You may return to the Print function at any time to check the status of the report queue.

10.4 Other

Two other report options are available under the **Other** option of the **Reports** menu:

The **Break-up Report** option allows you to divide a large generated report into several smaller reports of a specified number of pages.

The **Data Export** option allows you to export AES estimate data to a defined, formatted text file for import into spreadsheets or other databases.

These options are described more fully in the following two sections.

10.4.1 Break-up Report

Report files can be broken up into smaller files to facilitate easier printing or viewing of the information. The following screen allows you to select the report file you wish to split into smaller files:

Replace the prompt "*.out" with the report file to be split up. The "Files" window displays all the .OUT files in your default directory. You may type in an existing file name to replace the *.out prompt or select one of the existing .OUT files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [■] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Break-up Report function and return to the AES Main Menu Bar.

The next prompt allows you to enter the number of pages the new files should contain:

Enter the page size of the files and press [OK] to begin processing. When processing is complete the following message is displayed:

The individual files will be assigned the same file name as the original report file, but the file extensions will be numbered .o01, .o02, etc. The broken up files can be accessed for printing or viewing. The maximum number of individual files that can be created is 25.

10.4.2 Data Export

This option allows you to export selected estimate data into a file. Three options are available under the **Data Export** option of the **Reports** menu:

The **Line Item Export** exports AES data at the line item level into a defined, formatted text file.

The **Fiscal Year Export** option exports AES data at a fiscal year level.

The **Summary Export** option exports AES data at the B/M level.

All three options present the same series of screens for the selection of data to export. They differ only in the format of the data that is saved to the export file. This procedure is described below.

The system first prompts for the estimate that contains the data to be exported. The same directory screen is used to select and [Open] the file as is used in other functions previously described.

After the estimate file name is opened, the following Line Item Export screen is displayed:

Set Up Create Modify Reports Utilities Automated Estimating System

Line Item Export - D:\AES\SAMPLE.EST

----- Discipline -----
Code .. Estimator ..

Select record(s) to be exported by positioning the cursor on the appropriate record and press the <Space Bar> or click on the record using the mouse.
The selected records will be marked and can be unselected in the same manner as they were selected.
After all records to be exported have been marked - Select Export Records <Alt+E>. Select Abort to abort the Export operation.

Export Selected Records

Abort Line Item Export

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Select records as described in the directions on the above screen: either double-clicking on the record or highlighting the line and pressing the **Spacebar** will place a check mark (✓) beside the item. Select **[Export Selected Records]** when all records have been marked.

The following prompt is displayed for the line item export:

[*] Confirm

Apply Job Factor??

Yes No

Select **[Yes]** or **[No]** as appropriate.

You are next asked to supply an output file name by typing in the name on the following directory listing screen and selecting [Open].

The data format of the output file has double quotes around each text field, and all fields are separated by commas. The format of the data for a line item export is shown below, and the lengths of the text fields are indicated.

<u>Variable</u>	<u>Type</u>	<u>Length</u>
Trace Number	Text	7
Line Item Number	Text	4
Item Description	Text	141
Material Quantity	Real	xxxxx.xx
Material Unit	Text	6
Material Price	Real	xxxxxxx.xx
Total Material	Real	xxxxxxxxx
Unit Hours	Real	xxxxx.xxx
Total Hours	Real	xxxxx
Craft Code	Text	2
Total Labor	Real	xxxxxxx
Total Cost	Real	xxxxxxxxx

11.0 Utilities

The Utilities menu options provide you with maintenance functions for existing estimate files.

The functions on this Utilities pull-down menu are discussed in the following sections.

11.1 Re-Calculate Estimate

The first option from the Utility screen, Re-Calculate Estimate, updates the estimate using the indirect and direct additive values, labor rates, overhead rates, and average escalation rates. This utility option should be performed whenever a change has been made to the standard value file or to the schedule file.

You are first prompted for the name of the estimate file you wish to recalculate:

This screen prompts you for an estimate file name by displaying "*.est" in the "Estimate FileName" field or displays the name of the last estimate file you selected. The "Files" window displays all the .EST files in your default directory.

You must type in a new file name (do not enter the .EST extension) to replace the default file name (or *.est prompt) by selecting one of the existing .EST files from the "Files" window (if you double-click on a new name, that file is automatically loaded, and this screen disappears).

By selecting the small [↓] button next to the file name field (by either clicking on it or pressing the keyboard ↓ key while the cursor is in this field), you can view the files you have selected during this work session:

You can make one of these previously used files current by double-clicking on the file name--the pop-up window is closed, and your selection is displayed in the field. You may also use the pop-up window's close button [X] to dismiss the window without making a selection.

When the correct file name is displayed in the field, select [Open] to load this file. The [Cancel] button is provided to allow you to exit the Recalculate function and return to the AES Main Menu Bar.

The next window allows you to specify whether or not Schedule, WBS Title, or Contingency files are to be used in recalculation of the estimate file you have just opened:

To mark a selection box, either click on the option box or highlight the option line and press the **Spacebar**. A check mark (✓) is placed in the selected box. The ✓ can be removed by selecting the box a second time (using either method). Select **[OK]** when selections are complete. Selecting **[Abort]** will cancel the Recalculate function and return to the Main Menu Bar.

If you selected to use any of the above three files, you are next prompted for their file names. This is done with a separate file listing window for .SCH, .WBS, and .CNT files, similar to the listing used to identify the estimate file name. Select and [Open] the correct files from these listings using the same methods as before.

The system next asks if line items are to be renumbered:

[?] Confirm

Re-number Line Items?

Yes No

When responses to the above prompts have been correctly entered, the system performs the Recalculation function and displays the message:

RECALCULATING ESTIMATE

When the system has completed recalculating the estimate, it returns to the AES Main Menu Bar. The time period before returning to the menu will vary depending on the size of the estimate file.

11.2 Compress Estimate File

The Compress Data option compresses the estimate file in order to save disk space (this is not an archive compression). This option should be used if several records have been deleted from an estimate file. The system first prompts for the estimate file name that is to be compressed:

Select the estimate file from this directory screen in the standard manner, and select **[Open]**. After a valid estimate file name has been entered, the system immediately compresses the selected file and displays the message:

The system returns to the AES Main Menu Bar when it has completed compressing the data.

11.3 Extract From Estimate

The Extract Estimates option allows you to copy discipline record(s) from an existing estimate file to a new file. Extracting records will not affect the existing file. The system will first prompt for the estimate file name that contains the discipline records to be extracted.

Select the estimate file from this directory screen in the standard manner, and select **[Open]**.

After a valid estimate file name has been entered, the system displays the following screen to identify the records to be extracted:

Estimate Extract - D:\AES\SAMPLE.EST

Select record(s) to be extracted by positioning the cursor on the appropriate record and press the <Space Bar> or double click on the record using the mouse. The selected records will be marked and can be unselected in the same manner as they were selected. After all records to be extracted have been marked - Select Extract Records <Alt+E>. Select Abort to abort the Extract operation.

Code	Discipline	Estimator
X	RED'S	
D	DEZ	
E	DLH/DEZ	
H	JPK/DEZ	
P	JPK/DEZ	

Extract Selected Records

Abort Estimate Extract

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Select records as described on the above screen: either double-clicking on the record or highlighting the line and pressing the **Spacebar** will place a check mark beside the item. Select **[Extract Selected Records]** when all records have been marked.

You will next be prompted for an output file name for the extracted records:

[*] AES - Save Extracted Estimates as

Output FileName: *.est

Files: SAMPLE.EST, ..\

Open

Cancel

D:\AES*.EST

SAMPLE.EST 2016 Oct 18, 1993 1:52pm

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

If you select an existing file from this directory the following warning message is displayed:

Select **[OK]** to return to the directory screen to enter a new file name. The extraction of any estimate may be aborted by selecting **[Cancel]** from the directory screen.

The system will extract the selected records to the new file and return to the AES Main Menu Bar. The original estimate will still exist in the original file.

11.4 Combine Files...

The Combine Files option combines Estimate, Contingency, Schedule, or WBS Title files of the same project into one file. The combine process does not affect the original files. The file type to be combined is selected from the following menu:

Estimate Files
Contingency Files
WBS Title Files

The procedure is similar for all of the file types. The estimate file type is used as an example in the following procedure description.

When the estimate file option is selected, the system displays the existing estimate files on the following screen:

Select files as described on the above screen: either double-clicking on the record or highlighting the line and pressing the Spacebar will place a check mark beside the item. Select [Combine Selected Files] when all files have been marked. The system combines the selected files into a new file of the same type. The system will not allow you to overwrite an existing file.

The following window will be displayed for selection of the primary file name:

Select the primary file name by highlighting the file name and selecting [OK]. To cancel the combine function at this time, select [Abort]. If estimate files are being combined, the primary file will be the file from which the header information (Project Title, Level of Estimate, Revision, etc.) will be retrieved. If schedule, WBS title, or contingency files are being combined, the primary file will be the first file combined. Information in the remaining files will not be added to the combine file if it is contained in the primary file.

If the system detects a different standard value file in the combined files, the following warning is displayed:

Select [OK] or [Cancel] as appropriate. If other incompatibilities are noticed by the system, other warning message may be displayed, for example:

Select [OK] to continue once you have noted the warning.

The following message is displayed while the files are being combined:

COMBINING ESTIMATE FILES

When the system has completed combining the estimate files, it prompts you for an output filename for the new combined estimate file:

Enter a new filename and select **[Open]**. The system will not allow you to overwrite an existing file. After the file is saved, the system returns to the AES Main Menu Bar. The time period before returning to the menu will vary depending on the size of the estimate file.

12.0 CACES and Assembly Databases

When entering Bill of Material line items, the **[Pricing DB]** action button allows retrieval or lookup of line items from the CACES or Assembly pricing database. Selection of either database is done from the following menu:

The **[CACES Database]** is made up of task records that are composed of crews, individual material cost, and labor unit hours that are applied to the labor rates from the standard value file. The task records are grouped in Construction Specification Institute (CSI) format. For example, 03 is the general category "Concrete."

The **[Assembly Database]** contains assemblies that are made up of task records from the CACES database. The Assembly records are grouped according to Building System Index (BSI) format.

These options are discussed further in the following sections of this chapter. The **[Abort]** option returns to the B/M Line Item screen without displaying the databases.

12.1 CACES Database

Selection of the CACES database displays the following screen:

Select the general CSI category by highlighting the correct line and selecting [OK] or double-clicking with the mouse (the selected line number is displayed in the upper-left corner of the screen). After the general CSI category is entered, the system continues to a new screen containing a further subcategory of the CSI number. For example, if 03000 (Concrete) is selected, the following screen appears:

Select the desired subdivision and select [OK]. If further subcategories exist another screen is displayed. In the current case, the following subcategory exists:

Select the final category from this screen in the same manner as for the previous screens.

The following message is displayed while records for the selected category are loaded:

The system enters the CACES database, displays the task records of the appropriate CSI number, and displays the following screen:

More records can be scrolled on the screen using the scrolling bar or ↑ and ↓ keys. You can highlight the desired topic and select the action buttons on the bottom of the screen to use on the selected topic. These actions are explained below.

[Expand Rec]

Select this button to get an expanded view of the task record that is highlighted. For example, if the cursor is positioned on the task record for CSI number 031101111, the following display appears:

[*] 31101111

Foundations (Plywood Forms), Footing Forms, 1 Use

CREW: ACARJ	Material Unit Cost:	1.3684
UNIT: SF	Labor Unit Hours :	0.0853

OK

Select [OK] to return to the base listing of tasks when you have viewed this display.

[Crew Makeup]

This option displays the crew makeup of the task record. Using the previous task record example, the following window is displayed:

[*]

CREW => ACARJ

Labor	CARPENTER	3.0000	0.0000
Labor	LABORER	1.0000	0.0000
Equip.	Misc. Power Tools	0.2500	5.6800
Equip.	Small Tools	0.6300	1.3500

OK

Select [OK] to return to the base listing of tasks when you have viewed this display.

[Retrieve]

To retrieve a task record, highlight the record to be retrieved and select [Retrieve]. The system displays the following information and prompts for the material quantity:

[*] 31101111

Foundations (Plywood Forms), Footing Forms, 1 Use

MATERIAL		LABOR					
Quantity:		Code	Unit	Hrs	Hrs	Rate	Total
Unit....:	SF	C	3.000	XXXXXX	0.00	XXXXXX.XX	
Cost....:	1.37	L	1.000	XXXXXX	0.00	XXXXXX.XX	
Total....:							

OK Abort

The material quantity must be entered or a prompt is displayed:

A rectangular dialog box with a title bar containing a small icon and the word "Information". The main text inside the box reads "Enter Material Quantity" followed by "in form of xxxxxx.xx" on the next line. At the bottom center of the box is a button labeled "OK".

After the material quantity is entered, the system calculates and displays the total labor hours for each craft. Select **[OK]** to return to the base listing screen.

When a CACES task is retrieved as described above, a B/M Line Item record is entered into the estimate for each craft displayed on the retrieval screen. The first cost record will also contain the material quantity and cost. In this example, two cost records are retrieved.

[Return]

When all records for the current estimate have been retrieved, the **[Return]** button exits this screen and returns to the B/M Line Item screen for the current estimate. The selected line items are loaded while the following message is displayed:

A rectangular message box with a title bar that says "AES Update". The main text inside the box reads "LOADING LINE ITEMS".

When the B/M Line Item screen is displayed, the selected line items will be entered in the line item scrolling window.

12.2 Assembly Database

Selection of the Assembly database displays the following screen:

Set Up Create Modify Reports Utilities Automated Estimating System

[*]

01

01	SUBSTRUCTURE
02	STRUCTURAL FRAME
03	ROOFING
04	EXTERIOR CLOSURE
05	INTERIOR CONSTRUCTION
06	INTERIOR FINISHES
07	SPECIALTIES
08	PLUMBING
09	HEATING, VENTILATION & AIR CONDITIONING
10	SPECIAL MECHANICAL SYSTEMS
11	INTERIOR ELECTRICAL
14	SITE PREPARATION

OK Abort

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

The general BSI categories are listed on this screen for your selection. The currently highlighted line is displayed in the field at the upper-left corner of the screen. Select [OK] when the desired category is highlighted.

The system continues to a new screen containing further subcategories of the BSI number. For example, if 01 (SUBSTRUCTURE) is selected, the following screen appears:

Set Up Create Modify Reports Utilities Automated Estimating System

[*]

011

011	STANDARD FOUNDATIONS
013	SLAB ON GRADE

OK Abort

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Highlight the desired division and select [OK]. If there is a further subcategory, the system displays another screen containing these subcategories:

Set Up Create Modify Reports Utilities Automated Estimating System

[*]

01110

01110	COLUMN FOUNDATIONS
01120	CONTINUOUS FOUNDATIONS
01130	FOUNDATIONS WALLS
01140	COLUMN PIERS

OK Abort

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Again, select the BSI category to complete the BSI number. Once the BSI number is complete, the system enters the database and loads the record of the appropriate BSI number; the following message is displayed:

ASSEM Pricing Data Base

LOADING RECORDS

The following screen appears:

Set Up Create Modify Reports Utilities Automated Estimating System

[*]

0111001a	CY	SPREAD FOOTINGS UNDER COLUMN PIERS - 4000 PSI CONCRETE
0111001b	CY	COLUMN FOOTINGS 12 IN TO 20 IN THICK 3000 PSI CONCRETE
0111001c	CY	COLUMN SUPPORT SPREAD FOOTINGS, 10 INCHES THICK 4000 PSI CON
0111001d	CY	COLUMN SUPPORT SPREAD FOOTINGS, ASTM A-615 REBAR, 3000 PSI C
0111001e	CY	SPREAD FOOTINGS USING 3000 PSI CONCRETE AND REINFORCING BAR
0111001f	CY	COLUMN SUPPORT SPREAD FOOTINGS, 3000 PSI, VARYING DIMENSIONS
0111001g	CY	COLUMN FOOTINGS USING 3000 PSI CONCRETE AND REINFORCING BAR
0111001h	CY	COLUMN SUPPORTS SPREAD FOOTINGS, 3000PSI REINFORCED CONCRETE
0111001i	CY	SPREAD FOOTINGS USING 3000 PSI CONCRETE AND REINFORCING BAR
0111001j	CY	SPREAD FOOTINGS USING 3000 PSI CONCRETE AND REINFORCING BAR
0111081a	CY	VARIOUS SIZE SPREAD FOOTINGS FOR COLUMNS TO REST ON. THE FOO
0112001a	CY	CONTINUOUS FOOTINGS UNDER FOUNDATIONS WALLS-1 FOOT THICK-400
0112001b	CY	CONTINUOUS FOOTING UNDER FOUNDATION 1FT THICK 3000 PSI CONCR
0112001c	CY	CONTINUOUS FOOTINGS CAST IN PLACE 3000 PSI CONCRETE
0112001d	CY	CONTINUOUS FOOTINGS UNDER FOUNDATION WALLS 1FT - 6IN THICK 4

Expand Rec Retrieve Return

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

More records can be scrolled on the screen using the scrolling bar or ↑ and ↓ keys. You can highlight the desired topic and select the action buttons on the bottom of the screen to use on the selected topic. These actions are explained below.

[Expand Rec]

Select this button to get an expanded view of the task record that is highlighted. This function displays the CACES records that make up the assembly. For example, if the cursor is positioned on the task record for BSI number 0111001a, the following screen appears:

[*] 0111001a

022223401 Miscellaneous Hard Labor Trim Bottom of Excavation			
Mat. Unit:	SF	Qty. 17.00	Cost 0.02 Unit Hrs. 0.017

022224104 Backfilling Foundation Without Compaction 6 In, Fil			
Mat. Unit:	CY	Qty. 5.65	Cost 0.30 Unit Hrs. 0.021

OK

Select [OK] to return to the base listing of tasks when you have scrolled and viewed the contents of the record.

[Retrieve]

To retrieve an Assembly record, highlight the record to be retrieved and select **[Retrieve]**. The system displays the following prompt for the material quantity:

A screenshot of a terminal window showing a prompt for material quantity. At the top, it displays "[*] 0111001a". Below this, the text "Material Quantity:" is followed by a shaded rectangular input field. At the bottom of the window, there are two buttons: "OK" on the left and "Abort" on the right.

Select **[OK]** to return to the database.

When **[Return]** is selected, the system returns to the B/M Line Item screen and displays the records retrieved. The first record that makes up the retrieved assembly contains an "A" in the fourth position of the item number field. The last record that makes up the assembly contains an "E" in the fourth position of the item number field. Any multiples of selected line items are represented as "***Ditto***" in the listing. Positioning the cursor on this line displays the total material and labor amount for the assembly.

[Return]

When all records for the current estimate have been retrieved, the **[Return]** button exits this screen and returns to the B/M Line Item screen for the current estimate. The selected line items are loaded while the following message is displayed:

A screenshot of a terminal window displaying a loading message. The text "ASSEM Pricing Data Base" is at the top, and "LOADING LINE ITEMS" is centered below it. The entire text is enclosed in a rectangular border.

When the B/M Line Item screen is displayed, the selected line items will be entered in the line item scrolling window.

13.0 Cost Estimating Guidance Report

The Cost Estimating Guidance Report option, F2, is available at the bottom of all system windows. It is used to display a listing of various topics concerning estimating and scheduling. This section describes the procedure for viewing the Cost Estimating Guidance Report.

To activate this option, press function key F2 or click on the Cost Estimating Guidance Report option displayed on the bottom of the current system window. The following screen is displayed to show the current Cost Estimating Guidance Report Index.

[.] <Esc> to Close - <Alt+Z> to Zoom [1]					
INDEX					
Cost Guidance Report					
Issue Date: 03/01/94					
	Cat.	Site	Part.	Issue Date	Sheet

A-E Home Office Support	ENG	ALL	MMES	09/30/93	1.0
Asbestos Removal	CONST	ALL	CM	03/01/94	2.0
				03/01/94	2.1
Carcinogen Control	CONST	ALL	CM & MMES	09/30/93	3.0
Confined Space Entry and Work	CONST	ALL	CM	03/01/94	4.0
				03/01/94	4.1
Drawings, As-Built	ENG	ALL	MMES	10/20/92	5.0

This window can be zoomed to full size to facilitate easy reading by clicking the [↑] button on the top right corner of the window or by pressing the Alt+Z keys. Repeat either operation to return the window to original size. Use the right and bottom scroll bars or the keyboard →, ←, ↑, and ↓ keys to scroll the window text up or down and right or left across the window.

Topics for which there is additional information are shown in bold type. A particular topic may be selected for viewing by tabbing to the topic and pressing ← or by using the mouse to double-click on the topic. Information on the selected topic will be displayed as shown on the following window:

[*] <Esc> to Close - <Alt+Z> to Zoom
[1]

Sheet 2.0

Subject: Asbestos Removal
Issue Date: 03/01/94

REQUIREMENT: For projects involving asbestos, the project documentation must include a complete description of the methods to be employed in the removal, handling and disposal of the material containing asbestos. The specific methods must be approved by the Industrial Health Department representative at the site where the work is to be performed.

Asbestos abatement work by subcontractors will be performed in accordance with Division 1, Section 01130 of the Technical specification.

GUIDANCE:

1. If the above information is not supplied, contact the Project Engineer for the necessary guidance.
2. A typical program will include provisions for some or all of the following:
 - * Work Plan and Asbestos Work Authorization

Additional information may be available for some parts of the text--this is indicated when a word in the text is displayed in bold type. Additional option words are displayed at the very bottom of the text in the form of **Next Page**, **Prev. Page**, **Index**, or **Sheet x.x**. Double-click on any bolded word in the text or option word below the text to branch to more help pages (alternatively, **Tab** to highlight the word and press **←**.) The **Index** option is available at the bottom of all windows to return to the Cost Estimating Guidance Report Index.

Press **Esc** to exit the Cost Estimating Guidance Report and return to the window from which this function was accessed.

Appendix A

Description of Schedule by Curve

The purpose of this appendix is to describe the use of spending curves in the allocation of costs across time in the Automated Estimating System (AES). The allocation of costs to specific time periods is dependent on three inputs: the starting schedule date, the ending schedule date, and the percentage of costs allocated to each quarter. The first two inputs, starting schedule date and ending schedule date, are retrieved by the system from the schedule activity record from the Project Schedule file. The third input, the percentage allocation of costs to each quarter, is calculated based on the spending curve entered for each schedule activity. The available curve types and descriptions are listed below.

Curve Type	Description
5	A curve with a bell-like shape
1-4 6-9	Curves that apply varying degrees of skewness to curve type 5
10	A linearly descending allocation over the time period.
15	A uniform allocation over the time period
20	A linearly ascending allocation over the time period

Figures A-1 and A-2 show the cumulative percentage distributions for the various curve types. The tables on pages A-4 through A-9 show the percentage distributions and cumulative percentage distributions for the various curve types.

For curve types 1 through 9, the base curve from which all other curves are calculated is curve type 5. The base curve consists of 36 datapoints, each representing the cumulative percentage of dollars expended in each time period on a typical construction project. A statistical study of spending patterns used empirical data from many Department of Energy (DOE) and predecessor agency projects to produce a theoretical cumulative distribution of costs across the life of a project. This distribution is in the form of 36 explicit points and does not strictly conform to any of the well-known distributions. It is, however, symmetrical and bell-shaped. The results of this study are documented in a DOE chart entitled "Theoretical Cumulative Progress Table." The AES relies on the manipulation of density functions to adjust these 36 points for different durations and amounts of skewness.

Fig. A-1. Cumulative spending curves (1 through 9).

Fig. A-2. Cumulative spending curves (10, 15, 20).

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 1

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	6.35124	6.35124
10/01/1993 - 12/31/1993	10.01203	16.36327
01/01/1994 - 03/31/1994	11.97666	28.33993
04/01/1994 - 06/30/1994	13.58594	41.92587
07/01/1994 - 09/30/1994	14.08553	56.01140
10/01/1994 - 12/31/1994	12.99754	69.00895
01/01/1995 - 03/31/1995	10.78857	79.79751
04/01/1995 - 06/30/1995	8.55799	88.35550
07/01/1995 - 09/30/1995	6.28206	94.63756
10/01/1995 - 12/31/1995	3.55470	98.19226
01/01/1996 - 03/31/1996	1.39339	99.58565
04/01/1996 - 06/30/1996	0.41435	100.00000

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 2

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	3.72031	3.72031
10/01/1993 - 12/31/1993	7.16114	10.88145
01/01/1994 - 03/31/1994	9.72872	20.61017
04/01/1994 - 06/30/1994	12.05896	32.66913
07/01/1994 - 09/30/1994	13.88071	46.54985
10/01/1994 - 12/31/1994	14.20565	60.75550
01/01/1995 - 03/31/1995	12.70319	73.45868
04/01/1995 - 06/30/1995	10.69371	84.15239
07/01/1995 - 09/30/1995	8.15846	92.31085
10/01/1995 - 12/31/1995	5.09875	97.40960
01/01/1996 - 03/31/1996	2.05758	99.46718
04/01/1996 - 06/30/1996	0.53282	100.00000

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 3

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	2.19762	2.19762
10/01/1993 - 12/31/1993	5.06882	7.26644
01/01/1994 - 03/31/1994	7.69889	14.96533
04/01/1994 - 06/30/1994	10.40102	25.36635
07/01/1994 - 09/30/1994	12.92747	38.29381
10/01/1994 - 12/31/1994	14.55023	52.84404
01/01/1995 - 03/31/1995	14.13438	66.97842
04/01/1995 - 06/30/1995	12.66662	79.64504
07/01/1995 - 09/30/1995	10.03171	89.67675
10/01/1995 - 12/31/1995	6.79152	96.46827
01/01/1996 - 03/31/1996	2.82054	99.28881
04/01/1996 - 06/30/1996	0.71119	100.00000

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 4

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	1.34163	1.34163
10/01/1993 - 12/31/1993	3.54638	4.88801
01/01/1994 - 03/31/1994	6.03079	10.91880
04/01/1994 - 06/30/1994	8.80311	19.72190
07/01/1994 - 09/30/1994	11.66165	31.38355
10/01/1994 - 12/31/1994	14.16918	45.55274
01/01/1995 - 03/31/1995	15.01121	60.56395
04/01/1995 - 06/30/1995	14.34201	74.90596
07/01/1995 - 09/30/1995	11.92428	86.83025
10/01/1995 - 12/31/1995	8.44403	95.27428
01/01/1996 - 03/31/1996	3.83770	99.11198
04/01/1996 - 06/30/1996	0.88802	100.00000

Starting Date = 07/01/1993
Ending Data = 06/30/1996
Curve Type = 5

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.82336	0.82336
10/01/1993 - 12/31/1993	2.50226	3.32562
01/01/1994 - 03/31/1994	4.61438	7.94000
04/01/1994 - 06/30/1994	7.33967	15.27967
07/01/1994 - 09/30/1994	10.36511	25.64478
10/01/1994 - 12/31/1994	13.37978	39.02456
01/01/1995 - 03/31/1995	15.32697	54.35153
04/01/1995 - 06/30/1995	15.68635	70.03788
07/01/1995 - 09/30/1995	13.78212	83.82000
10/01/1995 - 12/31/1995	10.19993	94.01993
01/01/1996 - 03/31/1996	4.91675	98.93668
04/01/1996 - 06/30/1996	1.06332	100.00000

Starting Date = 07/01/1993
Ending Data = 06/30/1996
Curve Type = 6

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.54066	0.54066
10/01/1993 - 12/31/1993	1.74762	2.28828
01/01/1994 - 03/31/1994	3.54590	5.83418
04/01/1994 - 06/30/1994	6.07056	11.90474
07/01/1994 - 09/30/1994	9.09036	20.99510
10/01/1994 - 12/31/1994	12.35602	33.35112
01/01/1995 - 03/31/1995	15.12950	48.48063
04/01/1995 - 06/30/1995	16.66825	65.14888
07/01/1995 - 09/30/1995	15.44763	80.59651
10/01/1995 - 12/31/1995	11.85471	92.45122
01/01/1996 - 03/31/1996	6.19661	98.64783
04/01/1996 - 06/30/1996	1.35217	100.00000

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 7

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.34868	0.34868
10/01/1993 - 12/31/1993	1.25739	1.60607
01/01/1994 - 03/31/1994	2.70625	4.31232
04/01/1994 - 06/30/1994	4.96574	9.27806
07/01/1994 - 09/30/1994	7.89722	17.17528
10/01/1994 - 12/31/1994	11.30502	28.48030
01/01/1995 - 03/31/1995	14.59896	43.07926
04/01/1995 - 06/30/1995	17.24126	60.32053
07/01/1995 - 09/30/1995	16.96043	77.28096
10/01/1995 - 12/31/1995	13.59283	90.87379
01/01/1996 - 03/31/1996	7.48313	98.35691
04/01/1996 - 06/30/1996	1.64309	100.00000

Starting Date = 07/01/1993
Ending Date = 06/30/1996
Curve Type = 8

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.24363	0.24363
10/01/1993 - 12/31/1993	0.89482	1.13845
01/01/1994 - 03/31/1994	2.06685	3.20530
04/01/1994 - 06/30/1994	4.03252	7.23782
07/01/1994 - 09/30/1994	6.81521	14.05303
10/01/1994 - 12/31/1994	10.25066	24.30369
01/01/1995 - 03/31/1995	13.85585	38.15954
04/01/1995 - 06/30/1995	17.45965	55.61919
07/01/1995 - 09/30/1995	18.28388	73.90307
10/01/1995 - 12/31/1995	15.19937	89.10244
01/01/1996 - 03/31/1996	8.96607	98.06851
04/01/1996 - 06/30/1996	1.93149	100.00000

Starting Date = 07/01/1993
Ending Data = 06/30/1996
Curve Type = 9

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.16164	0.16164
10/01/1993 - 12/31/1993	0.63162	0.79326
01/01/1994 - 03/31/1994	1.61265	2.40591
04/01/1994 - 06/30/1994	3.25451	5.66042
07/01/1994 - 09/30/1994	5.84847	11.50890
10/01/1994 - 12/31/1994	9.22086	20.72975
01/01/1995 - 03/31/1995	13.00402	33.73377
04/01/1995 - 06/30/1995	17.36933	51.10310
07/01/1995 - 09/30/1995	19.36540	70.46850
10/01/1995 - 12/31/1995	16.86025	87.32875
01/01/1996 - 03/31/1996	10.38317	97.71192
04/01/1996 - 06/30/1996	2.28808	100.00000

Starting Date = 07/01/1993
Ending Data = 06/30/1996
Curve Type = 10

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	16.08370	16.08370
10/01/1993 - 12/31/1993	14.67446	30.75817
01/01/1994 - 03/31/1994	12.99183	43.75000
04/01/1994 - 06/30/1994	11.76499	55.51499
07/01/1994 - 09/30/1994	10.49270	66.00770
10/01/1994 - 12/31/1994	9.08346	75.09116
01/01/1995 - 03/31/1995	7.52238	82.61353
04/01/1995 - 06/30/1995	6.23477	88.84830
07/01/1995 - 09/30/1995	4.90170	93.75000
10/01/1995 - 12/31/1995	3.49246	97.24246
01/01/1996 - 03/31/1996	2.06815	99.31062
04/01/1996 - 06/30/1996	0.68938	100.00000

Starting Date = 07/01/1993
 Ending Data = 06/30/1996
 Curve Type = 15

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	8.39416	8.39416
10/01/1993 - 12/31/1993	8.39416	16.78832
01/01/1994 - 03/31/1994	8.21168	25.00000
04/01/1994 - 06/30/1994	8.30292	33.30292
07/01/1994 - 09/30/1994	8.39416	41.69708
10/01/1994 - 12/31/1994	8.39416	50.09124
01/01/1995 - 03/31/1995	8.21168	58.30292
04/01/1995 - 06/30/1995	8.30292	66.60584
07/01/1995 - 09/30/1995	8.39416	75.00000
10/01/1995 - 12/31/1995	8.39416	83.39416
01/01/1996 - 03/31/1996	8.30292	91.69708
04/01/1996 - 06/30/1996	8.30292	100.00000

Starting Date = 07/01/1993
 Ending Data = 06/30/1996
 Curve Type = 20

Time Period	%	Cumulative %
07/01/1993 - 09/30/1993	0.70462	0.70462
10/01/1993 - 12/31/1993	2.11386	2.81848
01/01/1994 - 03/31/1994	3.43152	6.25000
04/01/1994 - 06/30/1994	4.84084	11.09084
07/01/1994 - 09/30/1994	6.29562	17.38647
10/01/1994 - 12/31/1994	7.70486	25.09132
01/01/1995 - 03/31/1995	8.90098	33.99230
04/01/1995 - 06/30/1995	10.37107	44.36338
07/01/1995 - 09/30/1995	11.88662	56.25000
10/01/1995 - 12/31/1995	13.29586	69.54586
01/01/1996 - 03/31/1996	14.53769	84.08355
04/01/1996 - 06/30/1996	15.91645	100.00000

A-10

AFS

Appendix B

Calculation of Escalated Cost

The purpose of this appendix is to describe how the Automated Estimating System (AES) calculates the escalated value of the estimates. The system calculates an average escalation factor for each Bill of Material in the estimate. To calculate the escalated cost of a Bill of Material, the system multiplies the cost for the Bill of Material by the average escalation factor.

The average escalation factor for a Bill of Material is calculated in three steps. First, a table of quarterly escalation factors is calculated based on the base fiscal year and quarter of the project entered in the estimate record and the annual escalation rates entered in the standard value file. The escalation factors are calculated based on the following rules:

1. The base fiscal year and quarter and any preceding quarters have an escalation factor of 1.0.
2. The rates are compounded annually from the fourth quarter of each fiscal year.

The creation of the escalation factor table is best illustrated by example. Assume that the standard value file contains the annual escalation rates listed on page B-2 and that the estimate record contains a base fiscal year and quarter of 1993 quarter 4. The system calculates the escalation factors based on the following formula (* signifies multiplication)

$$\begin{array}{lcl} \text{Current Quarter} & & \\ \text{Factor} & = & (\text{Previous fourth quarter factor}) * (1 + (\text{Sum of first through} \\ & & \text{current quarter quarterly escalation rates})) \end{array}$$

where the quarterly escalation rate is the annual escalation rate (from the standard value file) divided by 4. In this example, the escalation factor for fiscal year 1993 quarter 4 would be 1.0, since this is the base fiscal year and quarter. The remaining quarterly factors are calculated simply by filling in the appropriate values in the above formula. For fiscal year 1994 quarter 1, the previous fourth quarter factor (from fiscal year 1993 quarter 4) is 1.0. The quarterly escalation rate is the annual escalation rate for 1994 (2.5%) divided by 4, which yields 0.00625. Because this is the first quarter of the fiscal year, the sum of the first through the current quarter quarterly escalation rates is 0.00625. Placing these values in the formula results in the following:

$$1.00625 = (1.00000) * (1 + (0.00625))$$

For fiscal year 1994 quarter 2, the only value that changes is the sum of the first through the current quarter quarterly escalation rates. This value, 0.0125, is the quarterly escalation rate for 1994 quarter 1 (0.00625) plus the quarterly escalation rate for 1994 quarter 2 (0.00625). Placing these values in the formula results in the following:

$$1.01250 = (1.00000) * (1 + (0.00625 + 0.00625))$$

Escalation Rates

Fiscal Year	Escalation Rates
1993	1.9 %
1994	2.5 %
1995	3.0 %
1996	3.2 %
1997	3.4 %
1998	3.3%
1999	3.3%
2000	3.3%
2001	3.3%
2002	3.3%

For the remaining two quarters of fiscal year 1994, the only value that changes is the sum of the escalation rates for the first through the current quarter. The result of placing the appropriate values in the formula is illustrated below for each of these quarters.

$$1994 \text{ quarter 3: } 1.01875 = (1.00000) * (1 + (0.00625 + 0.00625 + 0.00625))$$

$$1994 \text{ quarter 4: } 1.02500 = (1.00000) * (1 + (0.00625 + 0.00625 + 0.00625 + 0.00625))$$

The calculation of the escalation factors for fiscal year 1995 involves changing two of the formula values. The previous fourth quarter escalation factor (from 1994 quarter 4) becomes 1.02500. The quarterly escalation rate is the annual escalation rate for 1995 (3.0%) divided by 4, which yields each of the quarters in fiscal year 1995, as illustrated below:

$$1995 \text{ quarter 1: } 1.03268 = (1.02500) * (1 + (0.00750))$$

$$1995 \text{ quarter 2: } 1.04037 = (1.02500) * (1 + (0.00750 + 0.00750))$$

$$1995 \text{ quarter 3: } 1.04806 = (1.02500) * (1 + (0.00750 + 0.00750 + 0.00750))$$

$$1995 \text{ quarter 4: } 1.05575 = (1.02500) * (1 + (0.00750 + 0.00750 + 0.00750 + 0.00750))$$

This formula produces the values depicted in column 4 of the table of escalation factors shown on page B-6.

The second step in the calculation of the average escalation factor is the retrieval of the schedule activities from the project schedule file based on the Work Breakdown Structure (WBS) code and the participant code. Each schedule activity specifies the starting date and ending date of the activity. The percentage distribution over the time period is determined by the curve type entered on each schedule activity. Appendix A contains a description of the available curve types and the methodology used in calculating the distribution. Each schedule activity also designates a weighting factor that determines the percentage of the Bill of Material cost that is allocated to the schedule activity.

The average escalation factor for the Bill of Material is calculated first by calculating the average escalation factor for each schedule activity and then by multiplying this value by the percentage of the Bill of Material cost allocated to this schedule activity. The sum of these values gives the average escalation factor for the Bill of Material. As an example, assume that the Bill of Material has two Schedule Activities associated with it:

Activity	Starting Date	Ending Date	Curve Type	Weighting Factor
1	11/01/93	05/31/94	5	25
2	07/01/94	09/15/95	5	75

The calculation of the average escalation factor for each schedule activity begins by computing the percentage distribution over the time period from the schedule activity curve type, which would result in:

Activity 1

Fiscal Year	Qrt.	Date Range	Percentage
1994	1	(11/01/93 - 12/31/93)	10.9683
1994	2	(01/01/94 - 03/31/94)	67.0034
1994	3	(04/01/94 - 05/31/94)	22.0283

Activity 2

Fiscal Year	Qrt.	Date Range	Percentage
1994	4	(07/01/94 - 09/30/94)	5.3045
1995	1	(10/01/94 - 12/31/94)	20.2445
1995	2	(01/01/95 - 03/31/95)	35.8802
1995	3	(04/01/95 - 06/30/95)	31.7453
1995	4	(07/01/95 - 09/15/95)	6.8255

To complete the calculation of the average escalation factor for each schedule activity, this information is combined with the escalation factors calculated from the previous step. The percentage in each fiscal year and quarter in the distribution is multiplied by the escalation factor for that fiscal year and quarter. The sum of these results is the average escalation factor for the schedule activity.

Activity 1

Fiscal Year	Qrt.	Percentage	Escalation %	Percentage * Escalation %
1994	1	10.9683	1.0063	0.1103
1994	2	67.0034	1.0125	0.6784
1994	3	22.0283	1.0188	0.2244
Avg. Escalation Factor				1.0131

Activity 2

Fiscal Year	Qrt.	Percentage	Escalation %	Percentage * Escalation %
1994	4	5.3045	1.0250	0.0543
1995	1	20.2445	1.0327	0.2091
1995	2	35.8802	1.0404	0.3733
1995	3	31.7453	1.0481	0.3327
1995	4	6.8255	1.0558	0.0706
Avg. Escalation Factor				1.0400

The final step involves applying the percentage of the Bill of Material cost allocated to each schedule activity. The percentage of the Bill of Material cost allocated to each activity is calculated by adding the weighting factors of the schedule activities and then dividing each weighting factor by this total. In this example, the percentage allocated to Activity 1 would be 25% and to Activity 2 would be 75%. The average escalation factor of each activity is multiplied by the percentage of the Bill of Material cost allocated to the activity, as illustrated below:

Activity 1	1.0131	*	0.25	=	0.2533
Activity 2	1.0404	*	0.75	=	0.7800

The sum of these values yields the average escalation rate for the Bill of Material, which is 1.0333.

The average escalation factor is automatically calculated each time the WBS and/or participant code on the Bill of Material is modified when using a schedule file during the update. If the schedule is altered, the user must request that the average escalation factors be recalculated by choosing the Re-calculation option on the Utility Menu.

FY Escalated To		ESCALATION MULTIPLIERS ----- Fiscal Year Estimate Made -----												Escalation (%)
		93-1	93-2	93-3	93-4	94-1	94-2	94-3	94-4	95-1	95-2	95-3	95-4	
1993	- 1	1.0000												1.9%
1993	- 2	1.0048	1.0000											1.9%
1993	- 3	1.0095	1.0048	1.0000										1.9%
1993	- 4	1.0143	1.0095	1.0048	1.0000									1.9%
1994	- 1	1.0206	1.0158	1.0110	1.0063	1.0000								2.5%
1994	- 2	1.0269	1.0221	1.0173	1.0125	1.0063	1.0000							2.5%
1994	- 3	1.0333	1.0284	1.0236	1.0188	1.0125	1.0063	1.0000						2.5%
1994	- 4	1.0396	1.0347	1.0299	1.0250	1.0188	1.0125	1.0063	1.0000					2.5%
1995	- 1	1.0474	1.0425	1.0376	1.0327	1.0264	1.0201	1.0138	1.0075	1.0000				3.0%
1995	- 2	1.0552	1.0503	1.0453	1.0404	1.0340	1.0277	1.0213	1.0150	1.0075	1.0000			3.0%
1995	- 3	1.0630	1.0580	1.0530	1.0481	1.0417	1.0353	1.0289	1.0225	1.0150	1.0075	1.0000		3.0%
1995	- 4	1.0708	1.0658	1.0608	1.0558	1.0493	1.0429	1.0364	1.0300	1.0225	1.0150	1.0075	1.0000	3.0%
1996	- 1	1.0794	1.0743	1.0693	1.0642	1.0577	1.0512	1.0447	1.0382	1.0307	1.0231	1.0156	1.0080	3.2%
1996	- 2	1.0879	1.0828	1.0777	1.0726	1.0661	1.0596	1.0530	1.0465	1.0389	1.0312	1.0236	1.0160	3.2%
1996	- 3	1.0965	1.0914	1.0862	1.0811	1.0745	1.0679	1.0613	1.0547	1.0470	1.0394	1.0317	1.0240	3.2%
1996	- 4	1.1051	1.0999	1.0947	1.0895	1.0829	1.0762	1.0696	1.0630	1.0552	1.0475	1.0397	1.0320	3.2%
1997	- 1	1.1145	1.1092	1.1040	1.0988	1.0921	1.0854	1.0787	1.0720	1.0642	1.0564	1.0486	1.0408	3.4%
1997	- 2	1.1238	1.1186	1.1133	1.1081	1.1013	1.0945	1.0878	1.0810	1.0732	1.0653	1.0574	1.0495	3.4%
1997	- 3	1.1332	1.1279	1.1226	1.1173	1.1105	1.1037	1.0969	1.0901	1.0821	1.0742	1.0663	1.0583	3.4%
1997	- 4	1.1426	1.1373	1.1319	1.1266	1.1197	1.1128	1.1060	1.0991	1.0911	1.0831	1.0751	1.0671	3.4%
1998	- 1	1.1521	1.1467	1.1413	1.1359	1.1289	1.1220	1.1151	1.1082	1.1001	1.0920	1.0840	1.0759	3.3%
1998	- 2	1.1615	1.1560	1.1506	1.1452	1.1382	1.1312	1.1242	1.1172	1.1091	1.1010	1.0928	1.0847	3.3%
1998	- 3	1.1709	1.1654	1.1599	1.1545	1.1474	1.1404	1.1333	1.1263	1.1181	1.1099	1.1017	1.0935	3.3%
1998	- 4	1.1803	1.1748	1.1693	1.1638	1.1567	1.1496	1.1425	1.1354	1.1271	1.1188	1.1106	1.1023	3.3%
1999	- 1	1.1901	1.1845	1.1789	1.1734	1.1662	1.1590	1.1519	1.1447	1.1364	1.1281	1.1197	1.1114	3.3%
1999	- 2	1.1998	1.1942	1.1886	1.1830	1.1757	1.1685	1.1613	1.1541	1.1457	1.1373	1.1289	1.1205	3.3%
1999	- 3	1.2096	1.2039	1.1982	1.1926	1.1853	1.1780	1.1707	1.1635	1.1550	1.1465	1.1381	1.1296	3.3%
1999	- 4	1.2193	1.2136	1.2079	1.2022	1.1948	1.1875	1.1802	1.1728	1.1643	1.1558	1.1472	1.1387	3.3%
2000	- 1	1.2293	1.2236	1.2178	1.2121	1.2047	1.1973	1.1899	1.1825	1.1739	1.1653	1.1567	1.1481	3.3%
2000	- 2	1.2394	1.2336	1.2278	1.2220	1.2145	1.2071	1.1996	1.1922	1.1835	1.1748	1.1661	1.1575	3.3%
2000	- 3	1.2495	1.2436	1.2378	1.2319	1.2244	1.2169	1.2094	1.2019	1.1931	1.1844	1.1756	1.1669	3.3%
2000	- 4	1.2595	1.2536	1.2477	1.2418	1.2343	1.2267	1.2191	1.2115	1.2027	1.1939	1.1851	1.1763	3.3%
2001	- 1	1.2699	1.2640	1.2580	1.2521	1.2444	1.2368	1.2292	1.2215	1.2126	1.2037	1.1949	1.1860	3.3%
2001	- 2	1.2803	1.2743	1.2683	1.2623	1.2546	1.2469	1.2392	1.2315	1.2226	1.2136	1.2046	1.1957	3.3%
2001	- 3	1.2907	1.2847	1.2786	1.2726	1.2648	1.2570	1.2493	1.2415	1.2325	1.2234	1.2144	1.2054	3.3%
2001	- 4	1.3011	1.2950	1.2889	1.2828	1.2750	1.2672	1.2593	1.2515	1.2424	1.2333	1.2242	1.2151	3.3%
2002	- 1	1.3118	1.3057	1.2995	1.2934	1.2855	1.2776	1.2697	1.2618	1.2527	1.2435	1.2343	1.2251	3.3%
2002	- 2	1.3226	1.3164	1.3102	1.3040	1.2960	1.2881	1.2801	1.2722	1.2629	1.2536	1.2444	1.2351	3.3%
2002	- 3	1.3333	1.3270	1.3208	1.3146	1.3065	1.2985	1.2905	1.2825	1.2732	1.2638	1.2545	1.2451	3.3%
2002	- 4	1.3440	1.3377	1.3314	1.3251	1.3171	1.3090	1.3009	1.2928	1.2834	1.2740	1.2646	1.2552	3.3%

Appendix C

Screen Layouts and Field Definitions

This appendix contains the screen layout and field definitions for each data input screen in the Automated Estimating System. The layout and field definitions for particular screens appear on the following pages:

Discipline Update Screen	C-2
Bill of Material Update Screen	C-6
B/M Additives Update Screen	C-10
Line Item Update Screen	C-12
Contingency Update Screen	C-14
Schedule Update Screen	C-16
WBS Title Update Screen	C-18

Discipline Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.Est

Project Number: A Description: B

Project Estimator: C Base Fiscal Yr/Qtr: D/
Project Engineer: E Date of Approval: F/ /

Estimating Job No: G Revision No: H
Project ESO No: I Level of Est: J
Overhead Applied? (Y/N): K Receiving Site: L

[M] Update

DI
Co Discipline Code: M Creation Date: N/ /
Discipline Estimator: O Last Update: P/ /
Market Adjustment: Q

1

Mark OK Abort

Update Add Delete List B/M Print Exit

F10 Menu Exit <Alt+x> F1 Help F2 Cost Estimating Guidance Report

**Automated Estimating System
Discipline Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
<i>Project Header Information</i>							
A	Project Number	A unique number assigned to each project. REQUIRED FIELD	Disc. Estimator		Char	8	
B	Description	Describes the project being performed.	Disc. Estimator		Char	30	
C	Project Estimator	Name of the Project Estimator	Disc. Estimator		Char	15	
D	Base Fiscal Year/Quarter	Fiscal Year/Quarter for which dollars are entered. REQUIRED FIELD	Disc. Estimator	YY/Q	Int.	4	
E	Project Engineer	Name of Project Engineer	Disc. Estimator		Char	15	
F	Date of Approval	Date of Approval by Estimating. Enter in the form of (mm/dd/yyyy)	Disc. Estimator		Date	10	
G	Estimating Job Number	Work Order Number	Disc. Estimator		Char	10	
H	Revision Number	Number or letter indicating the version of the project estimate. REQUIRED FIELD	Disc. Estimator		Char	2	
I	Project ESC Number	The Engineering Service Order Number	Disc. Estimator		Char	17	
J	Level of Estimate	Code representing the level of design on which the estimate is based. The Level of Estimate is used in the Contingency Analysis in determining the Midpoint of Contingency. REQUIRED FIELD Valid Codes are: P - Planning Feasibility C - CDR 1 - Title I 2 - Title II E - Engineers	Disc. Estimator	P,C,1,2, E	Char	1	

**Automated Estimating System
Discipline Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
K	Overhead Applied	Flag indicating whether Overhead is applied in the Estimate. REQUIRED FIELD.	Disc. Estimator	Y,N	Char	1	
L	Receiving Site	The site paying for work, or so called Final Cost Objective. REQUIRED IF OVERHEAD IS APPLIED. Validated from the site codes in the Standard Value File. <i>The Project Header Information (fields A-L) defines the project being performed. Any modifications made to this data is updated for all the discipline records contained in the file. The Discipline Information defined on the following page (fields M-Q) describes the Engineering Discipline for which the estimate is being entered.</i>	Disc. Estimator	S.V. File	Char	1	Y

**Automated Estimating System
Discipline Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
<i>Discipline Information</i>							
M	Discipline Code	Code representing the Engineering Discipline. REQUIRED FIELD. Validated from Disciplines codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	1	Y
N	Creation Date	Date when estimate was created. System generated - but can be overwritten. (mm/dd/yyyy)	Disc. Estimator		Date	10	
O	Discipline Estimator	Name of the Discipline Estimator	Disc. Estimator		Char	15	
P	Last Update	Date of last update to Estimate. System generated	System		Date	10	
Q	Market Adjustment	Dollar amount representing a "below the line" adjustment to the total cost.	Disc. Estimator	> = 0	Real	8	

Bill of Material Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.EST

Discipline Record Number: 2 Discipline Code: 0

[=] B/M RECORD Last Update: 11/05/1993

Trace Number: 2.2

WBS Code: A Funding Type: C
Title: B Source Site: D

Participant: E Cost Code: G
F H

B/M Title: I Contracting Type: J
Bldg./Area: K

B/M Attr.: L Plant Site: N
Title: M Qty. Take-off: O

Cross-Cut Codes

Program Type: P Project Type: R Phase of Work: T
Q S U

OK Abort

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

**Automated Estimating System
Bill of Material Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	WBS Code	Work Breakdown Structure. REQUIRED FIELD	Disc. Estimator		Char	32	Y
B	WBS Title	The title describing the work associated with the WBS Code.	Disc. Estimator or WBS Title File		Char	60	
C	Funding Type	Code representing the type of funding. REQUIRED FIELD. Validated from Funding Type codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	1	Y
D	Source Site	The site where work originated, without respect to where the work is being done. REQUIRED FIELD IF OVERHEAD APPLIED. Validated from Site codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	1	Y
E	Participant Code	Code representing the participant doing the work. REQUIRED FIELD. Validated from Participant codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	4	Y
F	Participant Title	Participant Title which the participant code identifies.	System		Char	25	
G	Cost Code	Valid cost code from Cost Codes of Accounts. REQUIRED FIELD. Validated from Cost Codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	4	Y
H	Cost Code Title	Cost Code Title which the cost code identifies.	System		Char	30	
I	B/M Title	Describes the Bill of Material.	Disc. Estimator		Char	30	
J	Contracting Type	Defines the contracting type. REQUIRED FIELD. Valid codes are: (G) General Contractor (S) Subcontractor	Disc. Estimator	G,S	Char	1	

**Automated Estimating System
Bill of Material Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
K	Building/Area	From EMIS building codes.	Disc. Estimator		Char	10	
L	B/M Attribute	User defined field. The B/M Attribute further defines the Bill of Material. The B/M Attribute is available as a selection criteria for most AES reports and is available as a sort option in the AES reports.	Disc. Estimator		Char	15	
M	B/M Attribute Title	Title describing the B/M Attribute.	Disc. Estimator		Char	30	
N	Plant Site	Code to indicate plant site. Plant code is NOT required but will be validated if entered: Valid Plant Site codes are: (K) K-25 (M) Portsmouth (Y) Y-12 (P) Paducah (X) X-10 (O) Other	Disc. Estimator	K,X,Y,O M, P	Char	1	
O	Quantity Take-Off By	Name of person who created the material take-off	Disc. Estimator		Char	15	
	... Cross-Cut Code ...	The Cross-Cut code allows for further definition of the Bill of Material. The Cross-Cut code is broken out into the Program Type, Project Type, and Phase of Work. Cross-Cut is not required, but if entered the Program Type, Project Type, and Phase of Work codes must all be entered and will be validated from the appropriate codes from the Standard Value File. The Cross-Cut code is available as a selection criteria at the Program Type, Project Type, and Phase of Work level for most AES reports and is available as a sort option in the AES reports.					
P	Program Type Code	Code defining the Program Type which the Bill of Material represents. Not Required, but if entered will be validated from the Program Type codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	2	Y
Q	Program Type Description	Description of the Program Type which the Program Type code represents.	System		Char	20	

**Automated Estimating System
Bill of Material Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
R	Project Type Code	Code defining the Project Type which the Bill of Material represents. Not Required, but if entered will be validated from the Project Type codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	2	Y
S	Project Type Description	Description of the Project Type which the Project Type code represents.	System		Char	20	
T	Phase of Work Code	Code defining the Phase of Work which the Bill of Material represents. Not Required, but if entered will be validated from the Phase of Work codes in the Standard Value File.	Disc. Estimator	S.V. File	Char	2	Y
U	Phase of Work Description	Description of the Phase of Work which the Phase of Work code represents.	System		Char	20	

B/M Additives Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.Est

Discipline Record Number: 4 Discipline Code: H

[*] B/M Additives

Trace Number: 4.4 Participant 51
WBS Code..... 1.0 Cost Code.. 4000

Contingency % **A**

Material \$ 215
Labor \$ 5126
Labor Hrs 214

	Mat.(%)	Lab.(%)		Mat.(%)	Lab.(%)
Test, Tag & Inspect	B	C	Health Physics...	H	H
Mobil. & DeMobil.	D	E	Industrial Hyg.	O	P
Hangers & Support	F	G	MAA/Pidas.....	Q	R
Supporting Items	H	I	Procurement.....	S	
Bolts, Fast.&Supply	J	K	Shop Support.....		T
Job Factor.....		L			

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Set Up Create Modify Reports Utilities Automated Estimating System

D:\AES\SAMPLE.EST

Discipline Record Number: 4 Discipline Code: H

[*] B/M Additives

Trace Number: 4.4 Participant 51
WBS Code..... 1.0 Cost Code.. 4000

Contingency % **16.0**

Material \$ 215
Labor \$ 5126
Labor Hrs 214

[*] Special Additives

	Mat.(%)	Lab.(%)	 Description
Test, Tag & In	Special-1	U V	W
Mobil. & DeMo	Special-2	U V	W
Hangers & Sup	Special-3	U V	W
Supporting It	Special-4	U V	W
Bolts, Fast.&S	Special-5	U V	W
Job Factor...			

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

**Automated Estimating System
B/M Additives Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	Contingency %	Percentage mark-up value applied to material and labor for contingency.	Disc. Estimator or Contingency File	xxx.x%	Real	5	
B,C	Test, Tag & Inspect	Percentage mark-up value applied to material(B) and/or labor (C) for Testing, Tagging, and Inspection.	Disc. Estimator	xxx.x%	Real	5	
D,E	Mobil. & Demobil.	Percentage mark-up value applied to material (D) and/or labor (C) for Mobilization and demobilization.	Disc. Estimator	xxx.x%	Real	5	
F,G	Hangers & Support	Percentage mark-up value applied to material (F) and/or labor (G) for Hangers & Supports.	Disc. Estimator	xxx.x%	Real	5	
H,I	Supporting Items	Percentage mark-up value applied to material (H) and/or labor (I) for Supporting Items.	Disc. Estimator	xxx.x%	Real	5	
J,K	Bolts, Fast. & Supply	Percentage mark-up value applied to material (J) and/or labor(K) for Bolts, Fasteners, and Supplies.	Disc. Estimator	xxx.x%	Real	5	
L	Job Factor	Percentage mark-up value applied to labor as job factor.	Disc. Estimator	xxx.x%	Real	5	
M,N	Health Physics	Percentage mark-up value applied to material (M) and/or labor (N) for Health Physics.	Disc. Estimator	xxx.x%	Real	5	
O,P	Industrial Hygiene	Percentage mark-up value applied to material (O) and/or labor (P) for Industrial Hygiene.	Disc. Estimator	xxx.x%	Real	5	
Q,R	MAA/Pidas	Percentage mark-up value applied to material (Q) and/or labor (R) for MAA/Pidas.	Disc. Estimator	xxx.x%	Real	5	
S	Procurement	Percentage mark-up value applied to material for procurement.	Disc. Estimator	xxx.x%	Real	5	
T	Shop Support	Percentage mark-up value applied to labor for shop support.	Disc. Estimator	xxx.x%	Real	5	
U,V	Special Additive	Percentage mark-up value applied to material (U) and/or labor (V) for user defined additive. ** 5 Special Additives can be defined **	Disc. Estimator	xxx.x%	Real	5	
W	Special Desc.	Description of user defined additives.	Disc. Estimator		Char	25	

Line Item Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System

SAMPLE.EST - BASE OPTION REPLACE HVAC UNIT

P.5.2 - 1.0 51 FIXED PRICE CONSTRUCTION

Material \$	Labor \$	Hours	Line Item Total \$
Totals=> K 1.00	L 0.00	M 1	N 24.85

0 ITEMS 1 THRU 24 SHOW PIPE & FITTINGS NEEDED TO INSTALL CHILLED WATER PER SPEC. 15106.

Item	Description	Mat.Qty	Unit	Price	Unit Hrs
A	B	C	D	E	F
1	PIPE, 3/4", STEEL WELDE>	20.00	LFT	1.00	1.000
2	PIPE, 3:, ERW OR SEAMLE>	15.00	LFT	1.00	1.000
3	PIPE, 4:, ERW OR SEAMLE>	15.00	LFT	1.00	1.000
4	PIPE, 6:, ERW OR SEAMLE>	75.00	LFT	1.00	1.000
5	(ADD PIPE HANGERS)				

1:68

Mark_Blk

Blk_Copy

Blk_Move

Blk_Delete

Add

Delete

Pricing DB

[X] Craft Repeat

Disciplines

List B/M

Calculator

Part. Cost

Additives

Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

Set Up Create Modify Reports Utilities Automated Estimating System

SAMPLE.EST - BASE OPTION REPLACE HVAC UNIT

P.5.2 - 1.0 51 FIXED PRICE CONSTRUCTION

Material \$	Labor \$	Hours	Line Item Total \$
Totals=> K 1.00	L 0.00	M 1	N 24.85

0 ITEMS 1 THRU 24 SHOW PIPE & FITTINGS NEEDED TO INSTALL CHILLED WATER PER SPEC. 15106.

Item	Mat.Qty	Unit	Price	Unit Hrs	Tot.Hrs	Code	Rate	Tax
A	C	D	E	F	G	H	I	J
1	20.00	LFT	1.00	1.000	1	E	23.85	A
2	15.00	LFT	1.00	1.000	1	E	23.85	A
3	15.00	LFT	1.00	1.000	200	PF	23.85	A
4	75.00	LFT	1.00	1.000	0		0.00	A
5								

1:68

Mark_Blk

Blk_Copy

Blk_Move

Blk_Delete

Add

Delete

Pricing DB

[X] Craft Repeat

Disciplines

List B/M

Calculator

Part. Cost

Additives

Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

**Automated Estimating System
Line Item Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	Item Number	Alphanumeric field which identifies each line item.	Disc. Estimator		Char	4	
B	Item Description	Used to describe the activity being performed, material being procured, equipment being installed, or other activity.	Disc. Estimator		Char	100	
C	Material Quantity	Quantity of material. (xxxxxx.xx)	Disc. Estimator		Real	9	
D	Material Unit	Indicates the units of material such as square yards, cubic yards, etc.	Disc. Estimator		Real	6	
E	Material Price	Cost per one unit of material. (xxxxxxxx.xx)	Disc. Estimator		Real	11	
F	Unit Hours	Man-hours necessary to perform one unit of described task. (xxxxx.xxx)	Disc. Estimator or Calculated		Real	9	
G	Total Labor Hours	Man-hours necessary to perform the described task. (xxxxxx)	Disc. Estimator or Calculated		Real	6	
H	Labor Craft Code	Code indicating the labor type necessary to perform the indicated task.	Disc. Estimator		Char	2	Y
I	Labor Rate	The hourly labor rate retrieved from the Standard Value File based on Labor Craft Code and Participant Code. If Labor Craft Code is user defined - user must enter labor rate.	Disc. Estimator or S.V. File		Real	6	
J	Tax Code	Code indicating tax rate to be applied to line item. A - Material C- Professional Services B - Large Single Item	Disc. Estimator	A,B,C	Char	1	Y
K	Total Material	Total Material Cost of Line Item.	System				
L	Total Labor	Total Labor Cost of Line Item.	System				
M	Total Labor Hrs.	Total Labor Hours of Line Item	System				
N	Total Cost	Total Cost (material + labor) of Line Item	System				
O	Description	Line Item Description (100 character description is displayed.)	System				

Contingency Update Screen

Set Up Create Modify Reports Utilities
Automated Estimating System

[*]
 Project Title: THIS IS A SAMPLE ESTIMATE
 Level of Estimate: Planning/Feasibility
 WBS Code: \$

Midpoint (%): A
 Participant: C

Project Element	Completeness	Degree of Difficulty	Contingency %
LAND AND LAND RIG			
IMPROVEMENT TO LA			
NEW BUILDINGS AND			
BUILDING MODIFICA			
OTHER STRUCTURE			
SPECIAL FACILITIE			
UTILITIES			
STANDARD EQUIPMEN			
CONST MGMT./SUPPO			

Upda
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F10 Menu
Exit <Alt+X>
F1 Help
F2 Cost Estimating Guidance Report

**Automated Estimating System
Contingency Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	Midpoint of Contingency	Midpoint of contingency range based on the level of estimate.	Disc. Estimator or System		Real	2	
B	WBS Code	The WBS code for which contingency is being calculated.	Disc. Estimator		Char	32	Y
C	Participant Group	The Participant Group for which contingency is being calculated.	Disc. Estimator		Char	10	Y
D	Cost Code Title	Title of Cost Code for which contingency is being calculated.	System		Char	30	
E	Completeness of Design	The given stage of design for a given project element.	Disc. Estimator		Real	3	
F	Degree of Difficulty	Refers to those factors that greatly increase the cost estimating risk for a given project element.	Disc Estimator		Real	3	
G	Contingency Percentage	Contingency percentage calculated based on Midpoint, Completeness of Design, and Degree of Difficulty for the current WBS code, Participant Group, and Cost Code.	System		Real	4	

Schedule Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System

Update

WBS: A Participant Code: B

Activity: C D

Start Date: E/ / Duration: F End Date: G/ /

Curve Type: H Wgt. Factor: I

Activity #	Activity Description	Wgt.
A000000001	Default Activity Title	1

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**Automated Estimating System
Schedule Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	WBS Code	WBS code for which schedule is being entered.	Scheduler		Char	32	Y
B	Participant Code	Participant for which schedule is being entered. The combination of WBS code and Participant defines the work being scheduled.	Scheduler		Char	4	Y
C	Activity Number	Activity number identifies the schedule activity being entered or updated.	Scheduler		Char	10	Y
D	Activity Description	Description of the Activity being scheduled.	Scheduler		Char	30	
E	Starting Date	Starting Date of schedule activity (mm/dd/yyyy).	Scheduler		Date	10	
F	Duration	Duration in days of the schedule activity.	Scheduler		Int.	5	
G	Ending Date	Ending Date of schedule activity (mm/dd/yyyy).	Scheduler		Date	10	
H	Curve Type	Code indicating the type of spending curve to be used in allocation of cost for the schedule activity. 5: Curve with a bell-like shape. 1-4, 6-9: Curve that applies varying degrees of skewness to curve type 5. 10: A linearly descending allocation over the time period. 15: A uniform allocation over the time period. 20: A linearly ascending allocation over the time period.	Scheduler		Int.	2	
I	Wgt. Factor	Defines the percentage of Cost that is to be allocated to the schedule activity. The percentage is calculated by dividing the Wgt. Factor by the sum of all the Wgt. Factors for the given WBS - Participant.	Scheduler		Int.	5	

WBS Title Update Screen

Set Up Create Modify Reports Utilities Automated Estimating System
D:\AES\SAMPLE.WBS

..... WBS	 WBS Title
1.1	WBS Title for 1.1
1.2	WBS Title for 1.2

[=] Add WBS Title Record

WBS Code : A

WBS Title: B

OK Abort

Add Modify Delete Print Exit

F10 Menu Exit <Alt+X> F1 Help F2 Cost Estimating Guidance Report

**Automated Estimating System
WBS Title Update Screen**

Item No	Data Item Nomenclature	Data Requirement Description	Source of Data	Value or Range	Type	Field Size	Key
A	WBS Code	The WBS Code for which the WBS record is being entered or updated.	Disc. Estimator		Char	32	Y
B	WBS Title	The WBS Title defining the WBS code entered.	Disc. Estimator		Char	60	

Appendix D

Examples of Reports Produced by AES

This appendix displays an example of the reports produced by the Automated Estimating System. The examples appear on the following pages:

Detail Report/Portrait	D-3
Detail Report/Landscape	D-5
Mark-Up Summary	D-7
Schedule 1-B-7	D-9
Labor Analysis	D-11
Summary Report	D-13
Contingency Summary	D-15
Cost Schedule Summary	D-17
WBS/Participant Summary	D-19
Fiscal Year Summary	D-21
Monthly Summary	D-23
Monthly Cost Report	D-27
Overhead Report	D-30

D-2

ABS

DETAIL REPORT
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

Project Estimator	Date
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:25:42

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

Creation Date 07/13/1993
Revision Number ... 0

Estimating Job Number ..

Project Estimator.. DE ZIMMERMAN
WBS 1.0 REST. HVAC SYS
Cost Code 9999 ENGINEERING
Participant 13 MMES TITLE III ENGR.
Level of Estimate . P Planning/Feasibility Estimate
B/M Attribute X-01 MMES TITLE III ENGINEERING
Discipline X ENGINEERING
B/M Title MMES TITLE III ENGINEERING
Receiving Site ... Y-12
Cross-Cut Code
Standard Value File C:\AES\AES_DEV\TEST\SAMPLE.VAL
Estimate File C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 4-13-94 12:23a

Project Engineer DJ WEBSTER
Building/Area Y-1000
Plant Site Y
Contracting Type G General
Funding Type GPP/CE TO FY95
Source Site Y-12
Discipline Estimator ... RED'S
Quantity Take-Off By ... RED'S
Trace Number X.1.1 0

Expiration Date: 08/20/1994

Item	Description	MATL. /	Quantity /	Unit /	Unit Price /	Total Material /	Total Cost M + L
		LABOR	Hours	Craft	Rate	Total Labor	
MMES TITLE III ENGINEERING:							
1	-A ELECTRICAL	Matl.	1.00	LOT	0.00	0	
		Labor	1	XC	55.05	55	55
2	-A ENVIRONMENTAL CONTROL	Matl.	1.00	LOT	0.00	0	
		Labor	1	XC	55.05	55	55
3	-A FIRE PROTECTION	Matl.	1.00	LOT	0.00	0	
		Labor	1	XC	55.05	55	55
4	-A PIPING	Matl.	1.00	LOT	0.00	0	
		Labor	1	XC	55.05	55	55
5	-A STRUCTURAL	Matl.	1.00	LOT	0.00	0	
		Labor	1	XC	55.05	55	55

BILL OF MATERIAL SUMMARY	Material	Labor	Total Cost M + L
TOTAL DIRECT	0	275	275
MMES OVERHEAD		10.00%	28
TOTAL	0 (hrs.	5)	303

DETAIL REPORT
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

Project Estimator

Date

Estimating Manager

Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:27:32

AES Version 6.0

Creation Date 07/13/1993
 Project Estimator .. DE ZIMMERMAN
 WBS 1.0 REST. HVAC SYS
 Participant ... 13 MMES TITLE III ENGR.
 Cost Code 9999 ENGINEERING
 B/M Attribute . X-01 MMES TITLE III ENGINEERING
 Discipline X ENGINEERING
 B/M Title MMES TITLE III ENGINEERING
 Trace Number .. X.1.1 0
 Estimate File . C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 4-13-94 12:23a

THIS IS A SAMPLE ESTIMATE

Revision Number ... 0

Contracting Type G General Contractor
 Funding Type H-GPP/CE TO FY95
 Level of Estimate P Planning/Feasibility Estimate
 Discipline Estimator . RED'S
 Cross Cut
 Standard Value File .. SAMPLE.Val

Estimating Job Number ..
 Project Engineer DJ WEBSTER
 Building/Area Y-1000
 Plant Site Y
 Source Site Y-12
 Receiving Site Y-12
 Quantity Take-Off By ... RED'S
 Expiration Date 08/20/1994

Estimate File . C:\AES\AES_DEV\SAMPLE\SAMPLE.BST C 4-15-94 11:15A										
ITEM	DESCRIPTION	MATERIAL				LABOR				TOTAL COST M + L
		Qty.	Unit	Unit Pr.	Total	Hours	Cft.	Rate	Total	
MMES TITLE III ENGINEERING:										
1	-A ELECTRICAL	1.00	LOT	0.00	0	1	XC	55.05	55	55
2	-A ENVIRONMENTAL CONTROL	1.00	LOT	0.00	0	1	XC	55.05	55	55
3	-A FIRE PROTECTION	1.00	LOT	0.00	0	1	XC	55.05	55	55
4	-A PIPING	1.00	LOT	0.00	0	1	XC	55.05	55	55
5	-A STRUCTURAL	1.00	LOT	0.00	0	1	XC	55.05	55	55
TOTAL DIRECT					0				275	275
MMES OVERHEAD						10.00%			28	28
TOTAL					0	5			303	303

MARK-UP SUMMARY
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

Project Estimator	_____	Date	_____
Estimating Manager	_____	Date	_____

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:32:49

AES Version 6.0

THIS IS A SAMPLE ESTIMATE
MARK-UP SUMMARY

Discipline: ENGINEERING
Participant: 13 MMES TITLE III ENGR.
B/M Title: MMES TITLE III ENGINEERING
Building: Y-1000
Contingency: 25.0 %

WBS: 1.0
Cost Code: 9999 ENGINEERING
B/M Attribute: X-01 MMES TITLE III ENGINEERING
Funding Type: H GPP/CE TO FY95 EEXPENSE
Cross-Cut: - - Trace Number: X.1.1

	Total Miscellaneous	Job Factor	Shop Support	Health Physics	Industrial Hygiene	MAA/PIDAS	Procurement Services	Total Special
Labor(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Material(%)	0.0			0.0	0.0	0.0	0.0	0.0

Discipline: ENGINEERING
Participant: 18 A-E TITLE I & II ENGR.
B/M Title: A/E TITLES I & II ENGINEERING
Building: Y-1000
Contingency: 25.0 %

WBS: 1.0
Cost Code: 9999 ENGINEERING
B/M Attribute: X-02 A/E TITLES I & II ENGINEERING
Funding Type: H GPP/CE TO FY95 EEXPENSE
Cross-Cut: - - Trace Number: X.1.2

	Total Miscellaneous	Job Factor	Shop Support	Health Physics	Industrial Hygiene	MAA/PIDAS	Procurement Services	Total Special
Labor(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Material(%)	0.0			0.0	0.0	0.0	0.0	0.0

Discipline: ENVIRONMENTAL CONTROL
Participant: 21 MMES PROCUREMENT
B/M Title: BASE OPTION REPLACE HVAC UNIT
Building: Y-1000
Contingency: 25.0 %

WBS: 1.0
Cost Code: 4000 BUILDING MODIFICATIONS
B/M Attribute: H-01 FILTERS
Funding Type: H GPP/CE TO FY95 EEXPENSE
Cross-Cut: - - Trace Number: H.4.1

	Total Miscellaneous	Job Factor	Shop Support	Health Physics	Industrial Hygiene	MAA/PIDAS	Procurement Services	Total Special
Labor(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Material(%)	0.0			0.0	0.0	0.0	0.0	0.0

Discipline: OTHER
Participant: 41 MMES FIELD MAINTENANCE
B/M Title: MAINTENANCE TIE INS
Building: Y-1000
Contingency: 25.0 %

WBS: 1.0
Cost Code: 3000 NEW BUILDINGS AND ADDITIONS
B/M Attribute: O-01 MAINTENANCE TIE INS
Funding Type: H GPP/CE TO FY95 EEXPENSE
Cross-Cut: - - Trace Number: O.2.1

	Total Miscellaneous	Job Factor	Shop Support	Health Physics	Industrial Hygiene	MAA/PIDAS	Procurement Services	Total Special
Labor(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Material(%)	0.0			0.0	0.0	0.0	0.0	2.0

SCHEDULE 1-B-7
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Approved by:

_____ Project Estimator	_____ Date
_____ Estimating Manager	_____ Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:33:53

AES Version 6.0

THIS IS A SAMPLE ESTIMATE
WBS: 1

SCHEDULE 1-B-7
ESCALATED DOLLARS

	Participants					TOTAL
	MMES	A-E	FP	MK-F	OTHER	
I. ENGINEERING						
TITLE I&II (Sect. A)	.	401	.	.	.	401
TITLE III (Sect. B)	322	.	.	.	.	322
TOTAL ENGINEERING	322	401	.	.	.	723
II. PROJECT MANAGEMENT	969	.	.	.	.	969
III. DESIGN & PROJECT LAISION	.	.	.	.	.	0
IV. CONSTRUCTION						
LAND AND LAND RIGHTS	.	.	.	.	.	0
IMPROVEMENT TO LAND	.	.	.	.	.	0
NEW BUILDINGS AND ADDITIONS	123	.	227	.	.	350
BUILDING MODIFICATIONS	24	.	147799	.	.	147823
OTHER STRUCTURE	.	.	.	.	.	0
SPECIAL FACILITIES	.	.	.	.	.	0
UTILITIES	.	.	366955	.	.	366955
CONST MGMT/SUPPORT SERVICES	.	.	.	569	.	569
TOTAL CONSTRUCTION	147	.	514981	569	.	515697
V. STANDARD EQUIPMENT	.	.	.	.	.	0
VI. CONSTRUCTION MANAGEMENT	.	.	.	129	.	129
SUBTOTAL	1438	401	514981	698	.	517518
VII. CONTINGENCY	356	100	128745	175	.	129376
GRAND TOTAL	1794	501	643726	873	.	646894

Title I&II (Sect. A) as a percent of Construction : 0.08%

Project Mgmt. as a percent of Construction is : 0.19%

Construction Mgmt. as a percent of Construction is: 0.03%

The overall distributed Contingency is : 25.00%

Ratio of escalated to unescalated total cost : 1.08

LABOR ANALYSIS
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:34:31 AES Version 6.0

THIS IS A SAMPLE ESTIMATE

LABOR ANALYSIS

\$1 = \$1

04/13/1994

Arranged By: Participant Code

	Labor Hours	Unescalated Labor \$	Escalated Labor \$
13 MMES TITLE III ENGR.	5	303	321
18 A-E TITLE I & II ENGR.	7	385	399
21 MMES PROCUREMENT	0	0	0
41 MMES FIELD MAINTENANCE	2	112	121
47 MMES CONSTRUCTION SUPPORT	8	484	521
48 MMES DESGN & PROJ LIAISON	5	303	313
49 MMES PROJECT MANAGEMENT	2	121	128
51 FIXED PRICE CONSTRUCTION	14900	460882	496064
66 MK-F INDIRECTS ON FP	0	0	0
67 MK-F DIRECTS ON FP	1	58	62
<hr/>			
SUB - TOTAL	14930	462648	497929
CONTINGENCY		115662	124482
<hr/>			
GRAND TOTAL	14930	578310	622411

SUMMARY REPORT
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:35:11

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

SUMMARY REPORT

\$1 = \$1

04/13/1994

Arranged By: Participant Code

	----- Unescalated -----			----- Escalated -----		
	Material	Labor	Total	Material	Labor	Total
	\$	\$	\$	\$	\$	\$
13 MMES TITLE III ENGR.	0	303	303	0	322	322
18 A-E TITLE I & II ENGR.	2	385	387	2	399	401
21 MMES PROCUREMENT	23	0	23	24	0	24
41 MMES FIELD MAINTENANCE	2	112	114	2	121	123
47 MMES CONSTRUCTION SUPPORT	1	484	485	1	521	522
48 MMES DESGN & PROJ LIAISON	2	303	305	2	314	316
49 MMES PROJECT MANAGEMENT	2	121	123	2	128	130
51 FIXED PRICE CONSTRUCTION	17576	460882	478458	18918	496064	514982
66 MK-F INDIRECTS ON FP	120	0	120	129	0	129
67 MK-F DIRECTS ON FP	478	58	536	507	62	569
<hr/>						
SUB - TOTAL	18206	462648	480854	19587	497931	517518
CONTINGENCY	4551	115662	120213	4897	124482	129379
<hr/>						
GRAND TOTAL	22757	578310	601067	24484	622413	646897

Project Number: 1
THIS IS A SAMPLE ESTIMATE

Sort Order
1. Participant

Project Estimator	Date
Estimating Manager	Date

STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:35:53

AES

THIS IS A SAMPLE ESTIMATE

CONTINGENCY REPORT

\$1 = \$1

04/13/1994

Arranged By: Participant Code

			Escalated			
	Material	Labor	Sub-Total	-- Contingency --		Total
	\$	\$	\$	\$	%	\$
13	MMES TITLE III ENGR.	0	322	80	25.00	402
18	A-E TITLE I & II ENGR.	2	399	100	25.00	501
21	MMES PROCUREMENT	24	0	6	25.00	30
41	MMES FIELD MAINTENANCE	2	121	31	25.00	154
47	MMES CONSTRUCTION SUPPORT	1	521	131	25.00	653
48	MMES DESGN & PROJ LIAISON	2	314	79	25.00	395
49	MMES PROJECT MANAGEMENT	2	128	33	25.00	163
51	FIXED PRICE CONSTRUCTION	18918	496064	128745	25.00	643727
66	MK-F INDIRECTS ON FP	129	0	32	25.00	161
67	MK-F DIRECTS ON FP	507	62	142	25.00	711
<hr/>						
GRAND TOTAL	19587	497931	517518	129379	25.00	646897

COST SCHEDULE SUMMARY
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXXX-99
Revision Number.....0
Last Update.....04/13/1994

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:36:32

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

COST/SCHEDULE REPORT

\$1 = \$1

04/13/1994

Fiscal Year Range 1994 - 1996

WBS 1

	1994	1995	1996	Total
ENGINEERING				

TITLE I & II (SECT. A)				
A-E TITLE I & II ENGR.	280	121	.	401
TITLE III (SECT. B)				
MMES TITLE III ENGR.	19	205	98	322
-----	-----	-----	-----	-----
TOTAL ENGINEERING	299	326	98	723
CONSTRUCTION				

MMES				
MMES PROCUREMENT	.	6	19	25
MMES FIELD MAINTENANCE	.	28	94	122
MMES CONSTRUCTION SUPPORT	.	121	401	522
MMES DESGN & PROJ LIAISON	220	96	.	316
MMES PROJECT MANAGEMENT	8	83	40	131
FP				
FIXED PRICE CONSTRUCTION	.	119162	395819	514981
MK-F				
MK-F INDIRECTS ON FP	.	30	99	129
MK-F DIRECTS ON FP	34	363	173	570
-----	-----	-----	-----	-----
TOTAL CONSTRUCTION	262	119889	396645	516796
TOTAL	561	120215	396743	517519
CONTINGENCY	140	30054	99186	129380
-----	-----	-----	-----	-----
GRAND TOTAL	701	150269	495929	646899

WBS/PARTICIPANT SUMMARY
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXXX-99
Revision Number.....0
Last Update.....04/13/1994

Approved by:

Project Estimator

Date

Estimating Manager

Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:37:12

AES Version 6.0

AIIM

Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301-587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

3 of 3

THIS IS A SAMPLE ESTIMATE

WBS/PARTICIPANT REPORT

\$1 = \$1

04/13/1994

	----- Participants -----					
	MMES	A-E	FP	MK-F	OTHER	TOTAL
ENGINEERING						
TITLE I & II (SECT. A)	.	401	.	.	.	401
TITLE III (SECT. B)	322	.	.	.	.	322
TOTAL ENGINEERING	322	401	.	.	.	723
CONSTRUCTION						
WBS 1	1116	.	514981	698	.	516795
TOTAL CONSTRUCTION	1116	.	514981	698	.	516795
TOTAL	1438	401	514981	698	.	517518
CONTINGENCY	359	100	128745	175	.	129379
GRAND TOTAL	1797	501	643726	873	.	646897

FISCAL YEAR SUMMARY
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:37:58

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

FISCAL YEAR REPORT

\$1 = \$1

04/13/1994

Arranged By: Participant Code
Fiscal Year Range 1994 - 1996

	1994	1995	1996	Total
13 MMES TITLE III ENGR.	19	205	98	322
18 A-E TITLE I & II ENGR.	280	121	.	401
21 MMES PROCUREMENT	.	6	19	25
41 MMES FIELD MAINTENANCE	.	28	94	122
47 MMES CONSTRUCTION SUPPORT	.	121	401	522
48 MMES DESGN & PROJ LIAISON	220	96	.	316
49 MMES PROJECT MANAGEMENT	8	83	40	131
51 FIXED PRICE CONSTRUCTION	.	119162	395819	514981
66 MK-F INDIRECTS ON FP	.	30	99	129
67 MK-F DIRECTS ON FP	34	363	173	570
Sub-Total	561	120215	396743	517519
Contingency	140	30054	99186	129380
Grand Total	701	150269	495929	646899

```

.....
*
*                               P A R T I A L   E S T I M A T E
*
* REPORT GENERATED FOR:
*   FISCAL YEARS -- 1995 - 1995
*
.....

```

MONTHLY SUMMARY
 Project Number: 1
 THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
 Revision Number.....0
 Last Update.....04/13/1994

Sort Order
 1. Participant

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
 STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
 ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
 SCHEDULE FILE: SAMPLE
 REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/14/1994 09:18:04

AES Version 6.0

THIS IS A SAMPLE ESTIMATE
Fiscal Year 1995

MONTHLY SUMMARY
\$1 = \$1

04/14/1994

Arranged By: Participant Code
Fiscal Year Range 1995 - 1995

	Oct-1994	Nov-1994	Dec-1994	Jan-1995
13 MMES TITLE III ENGR.	8	10	12	14
18 A-E TITLE I & II ENGR.	72	41	9	.
21 MMES PROCUREMENT	.	.	.	.
41 MMES FIELD MAINTENANCE	.	.	.	.
47 MMES CONSTRUCTION SUPPORT	.	.	.	.
48 MMES DESGN & PROJ LIAISON	56	32	7	.
49 MMES PROJECT MANAGEMENT	3	4	5	6
51 FIXED PRICE CONSTRUCTION	.	.	.	.
66 MK-F INDIRECTS ON FP	.	.	.	.
67 MK-F DIRECTS ON FP	15	17	21	24
Sub-Total	154	104	54	44
Contingency	39	26	13	11
Grand Total	193	130	67	55

Partial Estimate

1

THIS IS A SAMPLE ESTIMATE
Fiscal Year 1995

MONTHLY SUMMARY
\$1 = \$1

04/14/1994

Arranged By: Participant Code
Fiscal Year Range 1995 - 1995

	Feb-1995	Mar-1995	Apr-1995	May-1995
13 MMES TITLE III ENGR.	14	17	19	21
18 A-E TITLE I & II ENGR.	.	.	.	.
21 MMES PROCUREMENT	.	.	.	.
41 MMES FIELD MAINTENANCE	.	.	1	2
47 MMES CONSTRUCTION SUPPORT	.	.	3	8
48 MMES DESGN & PROJ LIAISON	.	.	.	.
49 MMES PROJECT MANAGEMENT	6	7	8	9
51 FIXED PRICE CONSTRUCTION	.	.	2747	7744
66 MK-F INDIRECTS ON FP	.	.	1	2
67 MK-F DIRECTS ON FP	25	31	33	38
Sub-Total	45	55	2812	7824
Contingency	11	14	703	1956
Grand Total	56	69	3515	9780

Partial Estimate

2

THIS IS A SAMPLE ESTIMATE
Fiscal Year 1995

MONTHLY SUMMARY
\$1 = \$1

04/14/1994

Arranged By: Participant Code
Fiscal Year Range 1995 - 1995

	Jun-1995	Jul-1995	Aug-1995	Sep-1995	FY-1995 Total	Grand Total
13 MMES TITLE III ENGR.	22	23	23	22	205	205
18 A-E TITLE I & II ENGR.	.	.	.	.	122	122
21 MMES PROCUREMENT	1	1	2	2	6	6
41 MMES FIELD MAINTENANCE	3	5	8	10	29	29
47 MMES CONSTRUCTION SUPPORT	14	23	32	41	121	121
48 MMES DESGN & PROJ LIAISON	.	.	.	.	95	95
49 MMES PROJECT MANAGEMENT	9	10	9	9	85	85
51 FIXED PRICE CONSTRUCTION	13814	22699	31719	40440	119163	119163
66 MK-F INDIRECTS ON FP	3	6	8	10	30	30
67 MK-F DIRECTS ON FP	38	41	41	39	363	363
Sub-Total	13904	22808	31842	40573	120219	120219
Contingency	3476	5702	7960	10143	30054	30054
Grand Total	17380	28510	39802	50716	150273	150273

Partial Estimate

3

```

.....
*
*                               P A R T I A L   E S T I M A T E
*
* REPORT GENERATED FOR:
* PARTICIPANTS -- 51
* FISCAL YEARS -- 1995 - 1995
*
.....

```

MONTHLY COST REPORT
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Cost Code

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/14/1994 09:38:49

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

MONTHLY COST REPORT

\$1 = \$1

04/14/1994

Arranged By: Cost Code
Fiscal Year Range 1995 - 1995

	Escalated					
	Material	Labor	Overhead	Subtotal	Contingency	Total
	\$	\$	\$	\$	\$	\$
Apr-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	1	0	1	0	1
4000 BUILDING MODIFICATIONS	32	756	0	788	197	985
7000 UTILITIES	69	1888	0	1957	489	2446
TOTAL Apr-1995	101	2645	0	2746	686	3432
May-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	3	0	3	1	4
4000 BUILDING MODIFICATIONS	90	2132	0	2222	556	2778
7000 UTILITIES	195	5323	0	5518	1379	6897
TOTAL May-1995	285	7458	0	7743	1936	9679
Jun-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	6	0	6	2	8
4000 BUILDING MODIFICATIONS	160	3804	0	3964	991	4955
7000 UTILITIES	347	9496	0	9843	2461	12304
TOTAL Jun-1995	507	13306	0	13813	3454	17267
Jul-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	10	0	10	3	13
4000 BUILDING MODIFICATIONS	264	6251	0	6515	1629	8144
7000 UTILITIES	570	15604	0	16174	4044	20218
TOTAL Jul-1995	834	21865	0	22699	5676	28375
Aug-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	14	0	14	3	17
4000 BUILDING MODIFICATIONS	368	8735	0	9103	2276	11379
7000 UTILITIES	797	21805	0	22602	5650	28252
TOTAL Aug-1995	1165	30554	0	31719	7929	39648

Partial Estimate

1

THIS IS A SAMPLE ESTIMATE

MONTHLY COST REPORT

\$1 = \$1

04/14/1994

Arranged By: Cost Code

Fiscal Year Range 1995 - 1995

	Material	Labor	Overhead	Subtotal	Contingency	Total
	\$	\$	\$	\$	\$	\$
Sep-1995						
3000 NEW BUILDINGS AND ADDITIONS	0	18	0	18	4	22
4000 BUILDING MODIFICATIONS	470	11136	0	11606	2902	14508
7000 UTILITIES	1016	27800	0	28816	7204	36020
TOTAL Sep-1995	1486	38954	0	40440	10110	50550
TOTAL FOR FISCAL YEAR 1995	4378	114782	0	119160	29791	148951
GRAND TOTAL	4378	114782	0	119160	29791	148951

Partial Estimate

2

OVERHEAD REPORT
Project Number: 1
THIS IS A SAMPLE ESTIMATE

Project ESO Number.....A-XXXX-99
Revision Number.....0
Last Update.....04/13/1994

Sort Order
1. Participant

Approved by:

_____	_____
Project Estimator	Date
_____	_____
Estimating Manager	Date

Base Fiscal Year/Quarter: 93/2
STANDARD VALUE: C:\AES\AES_DEV\TEST\SAMPLE.VAL EXPIRES: 08/20/1994
ESTIMATE FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Est 04/13/1994
SCHEDULE FILE: SAMPLE
REPORT FILE: C:\AES\AES_DEV\SAMPLE\SAMPLE.Out 04/13/1994 12:39:26

AES Version 6.0

THIS IS A SAMPLE ESTIMATE

OVERHEAD REPORT

\$1 = \$1

04/13/1994

Arranged By: Participant Code

		Cost	Overhead	Escalated	Subtotal	Contingency	Total
		\$	%	\$	\$	\$	\$
13	MMES TITLE III ENGR.	Material	0	0.00	0	0	0
		Labor	292	10.00	29	80	401
		Total	292	10.00	29	80	401
8	A-E TITLE I & II ENGR.	Material	2	0.00	0	1	3
		Labor	399	0.00	0	100	499
		Total	401	0.00	0	101	502
21	MMES PROCUREMENT	Material	24	0.00	0	6	30
		Labor	0	0.00	0	0	0
		Total	24	0.00	0	6	30
41	MMES FIELD MAINTENANCE	Material	2	0.00	0	1	3
		Labor	103	17.00	18	30	151
		Total	105	16.63	18	31	154
47	MMES CONSTRUCTION SUPPORT	Material	1	0.00	0	0	1
		Labor	474	10.00	47	130	651
		Total	475	9.98	47	130	652
48	MMES DESGN & PROJ LIAISON	Material	2	0.00	0	1	3
		Labor	285	10.00	28	78	391
		Total	287	9.93	28	79	394
49	MMES PROJECT MANAGEMENT	Material	2	0.00	0	1	3
		Labor	117	10.00	12	32	161
		Total	119	9.82	12	33	164
51	FIXED PRICE CONSTRUCTION	Material	18918	0.00	0	4729	23647
		Labor	496064	0.00	0	124016	620080
		Total	514982	0.00	0	128745	643727
66	MK-F INDIRECTS ON FP	Material	129	0.00	0	32	161
		Labor	0	0.00	0	0	0
		Total	129	0.00	0	32	161
67	MK-F DIRECTS ON FP	Material	507	0.00	0	127	634
		Labor	62	0.00	0	15	77
		Total	569	0.00	0	142	711

THIS IS A SAMPLE ESTIMATE

OVERHEAD REPORT

\$1 = \$1

04/13/1994

Arranged By: Participant Code

	Cost	Overhead	Escalated	Subtotal	Contingency	Total
	\$	%	\$	\$	\$	\$
GRAND TOTAL						
Material	19587	0.00	0	19587	4898	24485
Labor	497796	0.03	134	497930	124481	622411
Total	517383	0.03	134	517517	129379	646896

Appendix E

Error Messages and Codes

This appendix describes certain error conditions that may occur during execution of the Automated Estimating System (AES). When an error occurs during the execution of the program, an error message will appear on the screen, and the program will return to the AES Main Menu Bar. The message is displayed in the format:

ERROR....nnn
Error Message.....
at XXXX:YYYY

where nnn is the error number and XXXX:YYYY is the run-time error address (segment and offset) where the error occurred.

The following lists the more common error messages reported from AES.

DOS ERRORS

4 Too many open files.

Reported if the program has too many open files. DOS never allows more than 15 files open per process. If this error occurs, check the CONFIG.SYS file. It should include a FILES=xx entry, where xx should be set to at least 20.

5 File access denied.

Reported when a file has been selected for update and the file or directory is a read-only file.

I/O ERRORS

100 Disk read error.

Reported when an attempt is made to read past the end of the file. Usually occurs when reading a corrupted file due to damaged media or an improperly closed file.

101 Disk write error.

Reported when writing to a file and the disk becomes full.

CRITICAL ERRORS

150 Disk is write-protected.

Reported when an attempt is made to write to a disk that is write protected.

153 Drive not ready.

Reported when an attempt is made to read or write to the indicated drive. Possible causes for this error are that the drive door is not closed, the diskette is not properly formatted, or the drive is located on a network server that has been turned off or re-booted.

Distribution

1-5.	J. C. Asbell
6-10.	C. A. Boyd
11.	M. D. Brandon
12-26.	M. M. Brown
27-41.	W. W. Byers, Jr.
42.	N. W. Day
43.	L. F. Denton
44.	F. D. Hammerling
45-59.	D. A. Holder
60-74.	J. M. Lassiter
75.	R. P. Leinius
76-90.	M. R. Love, Jr.
91.	S. B. Matthews
92.	G. D. Walker
93.	R. H. Wantland
94-138.	D. E. Zimmerman
139.	Applied Technology Library
140.	K-25 Site Records Department - RC
141-152.	Department of Energy Office of Scientific and Technical Information

DATE

FILMED

7 / 14 / 94

END