Estimating Boiling Water Reactor Decommissioning Costs

A User's Manual for the BWR Cost Estimating
Computer Program (CECP) Software

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ABSTRACT

With the issuance of the Decommissioning Rule (July 27, 1988), nuclear power plant licensees are required to submit to the U.S. Regulatory Commission (NRC) for review, decommissioning plans and cost estimates. This user's manual and the accompanying Cost Estimating Computer Program (CECP) software provide a cost-calculating methodology to the NRC staff that will assist them in assessing the adequacy of the licensee submittals. The CECP, designed to be used on a personal computer, provides estimates for the cost of decommissioning BWR power stations to the point of license termination. Such cost estimates include component, piping, and equipment removal costs; packaging costs; decontamination costs; transportation costs; burial costs; and manpower costs. In addition to costs, the CECP also calculates burial volumes, person-hours, crew-hours, and exposure person-hours associated with decommissioning.

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FOREWORD

This user's manual and computer software has been developed to assist the U.S. Nuclear Regulatory Commission (NRC) in evaluating certain licensee submittals of their estimated cost to decommission a boiling water reactor (BWR) power plant. The report was prepared by Pacific Northwest Laboratory (PNL) for the NRC.

This document supports the effort underway to reanalyze the cost of decommissioning a reference BWR in NUREG/CR-6174, Revised Analyses of Decommissioning for the Reference Boiling Water Reactor Power Station. This user's manual is a companion to the above-referenced document and provides the methodology that was used to prepare the results in NUREG/CR-6174. The NRC staff is considering use of this information to support its evaluation of licensee decommissioning plan submittals and its determination of the acceptability of licensees' decommissioning cost estimates.

Licensees are not required to use this computer program to plan their decommissioning activities and estimate their projected decommissioning costs. However, the program may be useful to licensees to obtain information on NRC's basis for cost estimates; likewise, others may find this software and user's manual useful to validate their independent studies.

Any interested party may submit comments on this report for consideration by the staff. To be certain of consideration, comments on this report must be received by the due date published in the Federal Register Notice. Comments received after the due date will be considered to the extent practical. Comments may be submitted to the Rules Review and Directives Branch, Division of Freedom of Information and Publication Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Further technical information can be obtained from George J. Mencinsky, Division of Regulatory Applications, Office of Nuclear Regulatory Research, Mail Stop T-9 C24, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone (301) 415-6206.

This report is not a substitute for NRC regulations, and compliance is not required. The approaches and/or methods described in this NUREG/CR are provided for information only. Publication of this report does not necessarily constitute NRC approval or agreement with the information contained herein.

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1.0 INTRODUCTION, REQUIREMENTS, AND PROGRAM INSTALLATION

The Cost Estimating Computer Program (CECP), designed for use on an IBM personal computer or equivalent, was developed for estimating the cost of decommissioning light-water reactor power stations to the point of license termination. Such costs estimates include component, piping, and equipment removal costs; packaging costs; decontamination costs; transportation costs; burial volumes and costs; and staffing costs. Using equipment and consumables costs and inventory data supplied by the user, the CECP calculates unit cost factors and then combines these factors with transportation and burial cost algorithms to produce a complete report of decommissioning costs. In addition to costs, the CECP also calculates person-hours, crew-hours, and exposure person-hours associated with decommissioning.

The CECP uses a data base, but it is not a commercial data base product. For this reason, data may be entered and information extracted only through the CECP program itself. The detailed and summary output files (Section 2.2) produced by the CECP are in ASCII format and may be accessed and printed using any IBM PC-compatible word processing program.

This document covers only the boiling water reactor (BWR) version of the CECP software. The pressurized water reactor (PWR) version is covered by a separate document.⁽¹⁾

1.1 REQUIREMENTS

The CECP runs on IBM-compatible computers using a 386SX or higher processor. Basic requirements are

- DOS 5.0 or higher
- A VGA monitor.
- 640K of standard memory. Expanded or extended memory is not required.

- A hard disk.
- HP LaserJet III or IV printer (required only if you want to print files directly from the CECF. See Section 1.2.).

The CECF does not use a mouse or a math co-processor.

1.2 INSTALLATION

The CECF software can be installed onto your hard disk automatically (Section 1.2.1) or manually (Section 1.2.2). Automatic installation is recommended. You should install the software manually only if you encounter problems with the automatic installation. Before proceeding to Section 1.2.1, you need to read the remainder of this section to become familiar with the software and installation process.

The CECF software is distributed on a single 1.44M 3.5-inch diskette. Table 1.1 shows the files contained on the diskette. Before discussing the installation process, a brief discussion of these files is in order.

TABLE 1.1. Contents of the CECF Diskette

INSTALL.EXE	MBE.EXE	HANF.DAT
CECPB.EXE	MBF.EXE	BARN.DAT
MB1.EXE	MBG.EXE	GENERIC.DAT
MB2.EXE	MBH.EXE	SITES.DAT
MB3.EXE	MBI.EXE	DEFAULT.BD
MBA.EXE	HANFBURY.EXE	GOTH.P
MBB.EXE	BARNBURY.EXE	CPORT.P
MBC.EXE	GENBURY.EXE	CLAND.P
MBD.EXE		

The first file, **INSTALL.EXE** (also referred to as **INSTALL**), is the CECF installation program to be discussed shortly. Files **CECPB.EXE**, **MB1.EXE**, **MB2.EXE**, **MB3.EXE**, and **MBA.EXE** through **MBI.EXE** make up the CECF program itself. **DEFAULT.BD**, **SITES.DAT**, **HANF.DAT**, **BARN.DAT**, and **GENERIC.DAT** are default files. Once installed on your hard disk, these five default files must not be deleted; the CECF will not run without them. **GOTH.P**, **CPORT.P**, and **CLAND.P** are printer strings for Hewlett-Packard LaserJet III and IV series printers. The

remaining files (**HANFBURY.EXE**, **BARNBURY.EXE**, and **GENBURY.EXE**) are utility programs for setting up burial cost schedules (Section 5).

To load the CECP software onto your hard disk, you run the **INSTALL** program (Section 1.2.1). In brief, **INSTALL** will do the following: It will put the CECP program files and the utility files into a subdirectory of your hard disk. It will then put the default files into another subdirectory. Next it will ask you to supply the name of the word processing program you want to use as a file editor. Finally, it will create a small file, **BWR.LOC**, in the same subdirectory as your program files. Do not delete this file; it tells the CECP where the default data files reside.

As mentioned above, **INSTALL** will ask you to supply the full path name of the DOS word processing program you want to use as your file editor. The intent of the editor is to allow you to quickly view CECP output files while remaining within the CECP environment. It will not be necessary to perform any actual editing of these files. For this reason, it is recommended that you use the smallest, simplest ASCII editor you can find. **EDIT.COM**, the editor that comes with DOS 5.0, is a good choice; it loads fast and allows easy viewing of large files with no annoying "line wrap." Large, sophisticated word processing programs such as Wordperfect™ are not recommended for two reasons: First, because these programs use their own special internal formatting techniques, it may take an irritatingly long time to load and format a CECP file. Second, the line widths of many CECP files exceed 80 characters and will wrap around on the screen, making the file difficult to read. (You may, of course, set the font style, page size, and margins to correct the problem, but this takes time and defeats the purpose of examining the files quickly.)

INSTALL will also copy the three printer-string files (**GOTH.P**, **CPORT.P**, and **CLAND.P**) to your program subdirectory. This will make it possible to print your output files directly from the CECP, provided a Hewlett-Packard LaserJet III or IV printer is connected to your LPT1 port.

Before installing the CECP software, it is strongly recommended that you make a backup copy of the CECP diskette with the DOS utility, Diskcopy. Once

you have made the backup, you can load the CECF program and default files onto your hard disk by running **INSTALL** as described in Section 1.2.1. **INSTALL**'s operation is self-explanatory; just respond to the questions asked.

1.2.1 Automatic Installation

To install the CECF software automatically, proceed as follows:

1. Make sure you are in DOS, with the command prompt (usually **C:\>** or **D:\>**) visible.
2. Insert the CECF diskette in drive A.^(a)
3. Type **a:** and then press <ENTER>.
4. Type **install** and then press <ENTER>.
5. **INSTALL** is now running. Follow the instructions on the screen.
6. After you exit the installation program, type **cecpb**<ENTER> to run the CECF program.

1.2.2 Manual Installation

If you experience difficulties with **INSTALL**, you can load the CECF onto your hard disk manually. Follow these steps:

1. Create a subdirectory on your hard disk to hold the CECF program files. Assume, for purposes of illustration, that you choose **C:\BWRPROG**.
2. Copy all the program files (these files have an **EXE** extension) from the diskette into **C:\BWRPROG**. Do not copy **INSTALL.EXE**.
3. Create a second subdirectory on your hard disk to hold the CECF default data files. Assume that you choose **C:\BWRDATA**.
4. Copy all remaining files (except **INSTALL.EXE**, of course) into **C:\BWRDATA**.
5. Make sure you are at the **C:\BWRPROG** prompt, and then type the following:

(a) Drive A is used for illustration. You may, of course, use any legitimate 1.44M disk drive.

```
copy con bwr.loc<ENTER>
C:\BWRDATA<ENTER>
C:\DOS\EDIT.COM<Ctrl-Z><ENTER>
```

You have just created a file, **BWR.LOC**, located in **C:\BWRPROG**, which contains the path to the location of the CECP default files. The third line in the example above is the complete name, including path, of the editor or word processor you want to use as a file viewer. If you do not want to use an editor, omit the third line. You would then type this instead:

```
copy con bwr.loc<ENTER>
C:\BWRDATA<Ctrl-Z><ENTER>
```

6. To run the CECP, type **CECPB<ENTER>** at the **C:\BWRPROG** prompt.

1.3 ERROR MESSAGES

If some or all of the default files fail to get transferred to the proper subdirectory during the installation procedure, you will get an error message similar to the one shown in Figure 1.1 when you start the CECP. To correct the problem, copy the missing files into the indicated subdirectory. If all five files are missing, it is probable that your **BWR.LOC** file contains the wrong subdirectory, as discussed in the next paragraph.

```
*** FATAL ERROR ***
2 default files are missing. impossible to proceed
Please load the following into C:\BWRDATA:
    DEFAULT.BD
    SITES.DAT
```

FIGURE 1.1. A Fatal Error Message

A second kind of error occurs if the CECP cannot find your **BWR.LOC** file. This is illustrated in Figure 1.2. To correct this error, type in the subdirectory containing the default files and press <Enter>. For the example shown in Figure 1.2, the subdirectory **c:\bwrdata** has been typed in. Once this is done, the **BWR.LOC** file will be created containing the subdirectory you typed in, and the CECP Main Menu should appear. If **BWR.LOC** contains the wrong subdirectory, you will get the fatal error message of Figure 1.1, with all

five default files listed. If this happens, delete **BWR.LOC** and perform Step 5 of Section 1.2.2.

FIGURE 1.2. An Example of a Missing BWR.LOC File

The last error associated with CECF installation is more subtle. Suppose the Main Menu appears, but nothing happens when you press 2, say, to call up Menu Item 2. This means the program file that runs Menu Item 2, **MB2.EXE**, is missing. To correct this type of error, exit from the CECF by pressing <Alt-X>. Then check to make sure that all the program files on the disks have been loaded into the program subdirectory on your hard disk. The easiest way to ensure that this has been done is to perform Step 2 of Section 1.2.2.

2.0 COST ESTIMATING COMPUTER PROGRAM (CECP) OVERVIEW

The CECP Main Menu is shown in Figure 2.1. Your first task is to enter certain general data that the CECP will need later in calculating site-specific costs. This is done by selecting 1, 2, and 3 from the Main Menu. For example, when you type 1, a file menu appears (Section 2.1), from which you select the data file **DEFAULT.BD**. (File nomenclature will be discussed later.) A data entry screen then appears, permitting you to enter labor costs, burial costs, overhead costs, consumables costs, physical constants (e.g., the density of reinforced concrete), etc. You may then modify whatever values you like and save this new information to a file. In fact, you may save data to several files during the same session. The next time you access Item 1, you will have several files to choose from: the default file, **DEFAULT.BD** (which is always available), and the files you created. Any of these files may be loaded into memory and used as a basis for creating a new file. Data for items 2 and 3 are entered in the same way.

FIGURE 2.1. CECP Main Menu

Having entered general information into the data base, you now enter site-specific data. Data for menu Items A, B and C are entered first, in any order, then data for Items D through H, in any order. For each of the Items D through H, the CECP calculates cost and exposure information in detail and then writes the results to appropriate output files. To get a complete site summary that combines data from Items A through H, select Item I.

The overall method for entering data is outlined in Figure 2.2.

FIGURE 2.2. Flow Diagram for Entering Data into the CECP

2.1 FILE MENUS

When you select a menu item (1-3 or A-H) from the Main Menu, the first thing you will see is the file menu. It is from this menu that you pick the data file you want the CECP to use for storing data pertaining to the Menu Item selected. Figure 2.3 shows the file menu from Menu Item 1. Files are selected by moving the selector bar (shown positioned over **DEFAULT.BD** in Figure 2.3) up and down with the arrow keys (↑ and ↓) and then pressing

FIGURE 2.3. A File Menu

<Enter>. If you change your mind and decide not to proceed, you may return to the Main Menu by pressing <Esc>. Once you have selected the data file, the file menu screen will be replaced by that menu item's data entry screen.

2.2 CECP FILES

The CECP uses data files and produces result files. Data files are specially coded files that cannot be viewed or printed. They are used by the CECP strictly for storing information. Data files use a **BD** extension, such as **DEFAULT.BD** or **REACTOR1.BD**. Result files make up the complete decommissioning cost estimates for a reactor study. Result files use **BRD**, **BRE**, **BRF**, **BRG**, and **BRI** extensions. The final letter in the file extension name refers to the menu item from which it was created. **BRF** files, for example, were created from Menu Item F. The following are a complete set of result files for a hypothetical case study "REACTOR1":

- REACTOR1.BRD**, a detailed description of building decontamination costs
- REACTOR1.BRE**, a detailed compilation of contaminated system costs
- REACTOR1.BRF**, a detailed breakdown of RPV and RPV internals costs

REACTOR1.BRG, a detailed account of staffing costs

REACTOR1.BRI, a general summary of all decommissioning costs.

All result files are in ASCII format and may be examined and printed out using any word processor the user desires. Examples of result files appear in Chapter 7.

Figure 2.4 shows the **REACTOR1.BD** data file and the five result files the CECF creates from it. The data dependencies in the figure show what portions of the data file are used by the CECF to create the output files. For example, when you leave Menu Item D, the CECF creates **REACTOR1.BRD** by combining Menu Item D data with the data you previously entered from Menu Items 1, 2, A, and B.

FIGURE 2.4. CECF File Relationships

2.3 UNIT COST FACTORS, WORK DIFFICULTY FACTORS, AND RADIATION DOSE RATES

The algorithms used by the CECF for calculating unit cost factors and work difficulty factors are not discussed in this manual. Such information can be found in Appendix C of NUREG/CR-6174, Revised Analyses of Decommissioning for the Boiling Water Reactor Power Station.

For simplicity, radiation dose rates are based solely on cobalt-60. It is assumed that this nuclide is by far the most significant source of occupational radiation exposure. When the user enters dose rates for the various decommissioning activities, it will be understood (unless specified otherwise) that these are the dose rates at the time of reactor shutdown. The CECF will use the decommissioning schedules and shutdown dose rates as a baseline for determining the actual dose rates prevailing at the times the activities are performed.

3.0 ENTERING GENERAL COST DATA AND UNIT COST FACTORS

This chapter describes how to use CECP Menu Items 1, 2, and 3 (Figure 2.1). Because of the structural dependencies discussed in Chapter 2, it is important that you enter data from these Menu Items before proceeding to Menu Items D through H.

3.1 MENU ITEM 1: LABOR RATES, BURIAL COSTS, CONSTANTS

As mentioned in Chapter 2, the first screen you see after you choose Menu Item 1 from the Main Menu is the File Menu. From this menu, you pick the data file you want, and the CECP will then load a portion of this file into memory and allow you access to this data through the input screen. Figure 3.1 shows an example input screen for Menu Item 1, with the **DEFAULT.BD** file chosen as the data file source. The selector bar is shown positioned over the first item, "Laborer hourly rate." There are 55 items in all, 21 of which are visible at any one time. Before describing the process of entering and saving data from the input screen, it is necessary to discuss the data itself.

MENU ITEM 1: LABOR RATES, BURIAL COSTS, CONSTANTS	
1 Laborer hourly rate (\$/hr)	26.37
2 Craft hourly rate (\$/hr)	49.70
3 Crew leader hourly rate (\$/hr)	54.84
4 Radiation operator hourly rate (\$/hr)	36.82
5 Engineer hourly rate (\$/hr)	59.09
6 Average shift differential (%)	5.00
7 Profit on equipment and material (%)	15.00
8 Utility overhead (%)	42.00
9 DOC overhead (%)	110.00
10 DOC profit (%)	15.00
11 Density of poured concrete (lb/ft3)	144.00
12 Density of reinforced conc (lb/ft3)	200.00
13 Density of stainless steel (lb/ft3)	500.00
14 DOT 17-H steel drum, 55-gal (\$/ea)	26.95
15 Plastic sheets/bags (\$/ft2)	0.04
16 Blotting paper (\$/ft2)	0.32
17 Gas torch consumables (\$/hr)	6.75
18 Burial costs/ft3 at geologic repos (\$)	6500.00
19 Transportation escalation factor	1.00
20 Waste burial escalation factor	1.00
21 License termination survey cost (\$)	1058344.00
Number of records: 57	
File in use: DEFAULT.BD	
↑ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit	

FIGURE 3.1. Data Entry Screen for Menu Item 1

3.1.1 Menu Item 1 Data Description

The data items you can access from the input screen are listed in Table 3.1. A definition of each of these items follows the table.

TABLE 3.1. Menu Item 1 Data

1	Laborer hourly rate (\$/hr)	26.37
2	Craft hourly rate (\$/hr)	49.70
3	Crew leader hourly rate (\$/hr)	54.84
4	Radiation operator hourly rate (\$/hr)	36.82
5	Engineer hourly rate (\$/hr)	59.09
6	Average shift differential (%)	5.00
7	Profit on equipment and material (%)	15.00
8	Utility overhead (%)	42.00
9	DOC overhead (%)	110.00
10	DOC profit (%)	15.00
11	Density of poured concrete (lb/ft3)	144.00
12	Density of reinforced conc (lb/ft3)	200.00
13	Density of stainless steel (lb/ft3)	500.00
14	DOT 17-H steel drum, 55-gal (\$/ea)	26.95
15	Plastic sheets/bags (\$/ft2)	0.04
16	Blotting paper (\$/ft2)	0.32
17	Gas torch consumables (\$/hr)	6.75
18	Burial costs/ft3 at geologic repos (\$)	6500.00
19	Transportation escalation factor	1.00
20	Waste burial escalation factor	1.00
21	License termination survey cost (\$)	1058344.00
22	Standard box width (ft)	4.00
23	Standard box depth (ft)	4.00
24	Standard box length (ft)	6.00
25	Standard box (\$)	645.00
26	Mod. maritime container 2 x 8 x 20 (\$)	4600.00
27	Mod. maritime container 4 x 8 x 20 (\$)	4965.00
28	Std. maritime cont. 8 x 8.5 x 20 (\$)	3650.00
29	Cask liner for 8-120B cask (\$)	4695.00
30	Small cask liner for 8-120B cask (\$)	3200.00
31	NAC-LWT liner (\$)	1000.00
32	Canister for GTCC material (\$)	520.00
33	Special steel box 4 x 4 x 3 (\$)	430.00
34	Special steel box 4 x 4 x 2.5 (\$)	400.00
35	Special steel box 4 x 4 x 1.5 (\$)	365.00
36	Special steel box 4 x 8 x 1.5 (\$)	730.00
37	Special steel box 6.7 x 8.9 x 14 (\$)	4510.00
38	Special steel box 6.1 x 8.9 x 14 (\$)	4106.00
39	Special steel box 6.7 x 7.3 x 14 (\$)	3700.00
40	Special steel box 4 x 10 x 14 (\$)	3025.00
41	Special steel box 4.5 x 7.3 x 14 (\$)	2485.00
42	Special steel box 94 x 115 x 26 in (\$)	1050.00
43	High integrity container (HIC) (\$)	7825.00
44	NuPac 14/210H cask rental (\$/day)	1250.00
45	CNS 8-120B cask rental (\$/day)	1250.00
46	NAC LWT cask rental (\$/day)	3130.00
47	TN-8 cask rental (\$/day)	3340.00
48	Laundry services (\$/person-shift)	21.00
49	Uncompacted drums of waste (drums/day)	5.00
50	Dry waste compaction ratio	5.00
51	Small tools (% of direct labor costs)	2.00
52	Piping/equip/HXs (curies/ft2)	0.006050

TABLE 3.1. (cont)

53	RCS piping (curies/ft ²)	0.100000
54	Maint. allow. (\$/yr) (SAFSTOR only)	17379.00
55	Length (ft) to which pipes will be cut	15.00

- 1-6: The personnel hourly labor rates (Items 1-5) include overhead costs. Item 6, average shift differential, is based on the assumption that there are two shifts, with rates for the second shift X% higher than the first. Thus, the average shift differential for both shifts is X/2%. For example, if the shift differential for the second shift is 10%, then the average shift differential is (10/2)% = 5%.
- 7-14: Self-explanatory.
- 15-17: These three basic consumables are used by the CECP in many decommissioning tasks.
- 18: Nominal cost for burial of one cubic foot of greater than class C (GTCC) material at a geologic repository. This cost is quite speculative, since a geologic repository (or other such disposal facility as the NRC may approve) does not yet exist.
- 19-20: These factors are unity for 1993 dollars. An escalation factor of 1.05, for example, increases prices by 5%. Item 20 is the low-level waste escalation factor.
- 21: This is the cost of the survey to determine whether the site may be released for unrestricted use. The survey is also known as termination survey, post remedial-action survey or final survey.
- 22-25: These items apply to the metal box used to bury waste at the low-level waste disposal site. The values shown here refer to the standard 4 x 4 x 6-ft B-25 container. If you do not want to use these dimensions, you may supply your own in Items 22 through 24. Permissible values for width and depth are from 2 to 8 feet. Permissible values for the length are from 2 to 20 feet. The CECP will not let you enter values outside these ranges. The CECP calculates the box volume as width x depth x length. The weight of the empty box is calculated as 9.375 x (width x depth + width x length + depth x length). For a 4 x 4 x 6-ft box this works out to 600 lb, the assumed weight of the standard B-25 container.
- 26-27: These items are the costs of the two most commonly used modified maritime containers: 2 x 8 x 20 ft and 4 x 8 x 20 ft.
- 28: The cost of a standard-sized (8 x 8.5 x 20 ft) maritime container.

- 29-30: The costs of the two types of liners used in the 8-120B casks. These casks are used for shipping certain activated reactor pressure vessel (RPV) components to a geologic repository.
- 31: The cost of a NAC legal weight truck (LWT) cask liner.
- 32: The cost of the canister used for packaging greater-than-class-C (GTCC) material.
- 33-36: Cost of the boxes used for shipping certain RPV components and reactor internals to a low-level waste burial site.
- 37-41: Cost of the boxes used to transport the fuel racks to the low-level waste burial site.
- 42: Cost of the special form-fitted container used to transport the sacrificial shield segments to the low-level waste burial site.
- 43: The cost of one polyethylene high-integrity container (HIC).
- 44-47: These are the daily rental charges for the casks used in shipping radioactive waste.
- 48: Protective clothing, laundry, and equipment services are postulated to be provided by an offsite subcontractor. Units are \$/person-shift, where one shift is eight hours.
- 49-50: These two items, taken together, determine the number of 55-gallon drums of compacted dry active waste that accumulate per day in the course of active decommissioning work. For example, if Item 49 is 6 and Item 50 is 3, then two 55-gallon drums of compacted waste are produced daily. Item 50 must be greater than or equal to 1 but not greater than 25.
- 51: This item sets the cost for small tools based on a percentage of direct labor costs.
- 52-53: These items refer to the assumed surface contamination levels (in curies per square foot) for the component types indicated. These levels are at shutdown.
- 54: This item is the annual equipment allowance used toward the repair of buildings during periods of extended safe storage. It applies only to SAFSTOR cases.
- 55: This sets the length, in feet, that system piping will be cut to before being put into the modified maritime container. Permissible values for Item 55 range from 2 to 20 ft.

3.1.2 Entering Data

To enter data, you must first put the selector bar over the desired item. The ↑ and ↓ keys move the selector up and down one line at a time. The <PgUp> and <PgDn> keys move the selector up and down the list a full screen (20 lines) at a time; the <Home> and <End> keys move the selector to the top and bottom of the list.

When the selector bar is positioned where you want it, press <Enter>. The portion of the bar over the data field will change color from white-on-blue to yellow-on-red, and a cursor will appear, indicating that you may begin entering data. When typing in the data, you may use the <BackSpace>, , or the left and right arrow keys (←, →) as needed. The <Ins> key toggles between the insert and typeover mode. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press <Enter>; the data field will revert to its original blue-on-white color, and the cursor will disappear. If you change your mind while entering data, press <Esc> and the previous value of that field will be restored.

From Menu Item 1, you can enter data only for the 55 items listed in Table 3.1. You cannot delete an item or add additional items; you can only change the data values.

3.1.3 Saving Data

You are encouraged to save data as you go along. Pressing <S> will open the Save Data to a File window in the middle of the screen, and you will be invited to name and save your data to a file. Press <Esc> or <Enter> at this point, if you decide not to save your data. Otherwise, type in a file name, up to eight letters long, and press <Enter>. You cannot enter a file extension. The CECP will provide the correct extension (BD) for you. If, for example, you enter reactor1, the CECP will create the file REACTOR1.BD.

It is very important that the default data file supplied with the CECP software not be modified. For this reason, the CECP will not permit you to save a file named DEFAULT. If you try to do so, you will see an error message superimposed over the Save Data to a File window (Figure 3.2). Press any key to clear the error message.

MENU ITEM 1: LABOR RATES, BURIAL COSTS, CONSTANTS	
1 Laborer hourly rate (\$/hr)	26.37
2 Craft hourly rate (\$/hr)	49.70
3 Crew leader hourly rate (\$/hr)	54.84
4 Radiation operator hourly rate (\$/hr)	36.82
5 Engineer hourly rate (\$/hr)	59.09
6 Average shift differential (%)	5.00
7 Profit on equipment and material (%)	15.00
8 Utility overhead (%)	42.00
9 DOC overhead (%)	110.00
10 DOC profit	0
11 Density of	0
12 Density of	0
13 Density of	0
14 DOT 17-H st	5
15 Plastic she	4
16 Blotting pa	2
17 Gas torch c	5
18 Burial costs/ft3 at geologic repos (\$)	6500.00
19 Transportation escalation factor	1.00
20 Waste burial escalation factor	1.00
21 License termination survey cost	1058344.00
Number of records: 48	
File in use: REACTOR1.BD	
<div> <div>Save Data to a File</div> <div>Enter name of new data file: default</div> <div>*** ERROR ***</div> <div>Can't use DEFAULT.BD for a new file name.</div> <div>Press any key to continue.</div> </div>	
↑ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit	

FIGURE 3.2. A File Name Error Message

3.1.4 Exiting

To leave this portion of the CECF, press <Alt-X>. The **Save Data to a File** window will open as described above, and you will be given a final opportunity to save your work, if you have not previously done so. If you elect not to save your work, press <Enter> or <Esc>, and you will be returned to the Main Menu. If you do save your work at this point, you will be returned to the Main Menu as soon as file processing is completed.

You may also exit the data entry screen by using short-cut keys, as explained in Chapter 6.

3.2 MENU ITEM 2: UNIT COST FACTORS FOR DECONTAMINATION

From this menu you modify that portion of the data file that the CECF uses to calculate unit cost factors for building decontamination. The data include crew sizes, work difficulty adjustments, non-productive time adjustments, material costs, and radiation dose rates.

The data entry screen is shown in Figure 3.3. The selector bar is shown positioned over Item 17. There are 126 items in all; 21 are visible at any one time.

MENU ITEM 2: UNIT COST FACTORS FOR DECONTAMINATION		
1 Surf Wash:	Suit-up time (minutes)	120.000
2 Surf Wash:	Breaks (minutes)	30.000
3 Surf Wash:	ALARA (minutes)	25.000
4 Surf Wash:	Warmup (minutes)	15.000
5 Surf Wash:	Cleanup (minutes)	50.000
6 Surf Wash:	Number of laborers	2.000
7 Surf Wash:	Number of crafts	1.000
8 Surf Wash:	Number of crew Leaders	0.500
9 Surf Wash:	Number of rad monitors	0.500
10 Surf Wash:	Crew dose rate (millirem/hr)	3.000
11 Surf Wash:	Cleansing rate (ft2/min)	8.000
12 Surf Wash:	Vacuum hose replacement (\$)	1180.000
13 Surf Wash:	HEPA filter replacement (\$)	300.000
14 Surf Wash:	Misc. parts (\$)	2000.000
15 Surf Wash:	Waste water process. (\$/gal)	10.000
16 Surf Wash:	Mob/demob costs (\$)	20000.000
17 Conc Rmvl:	Suit-up time (minutes)	120.000
18 Conc Rmvl:	Breaks (minutes)	30.000
19 Conc Rmvl:	ALARA (minutes)	10.000
20 Conc Rmvl:	Number of laborers	3.000
21 Conc Rmvl:	Number of crafts	0.000
Number of records: 126		
File in use: REACTOR1.BD		
↑↓ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit		

FIGURE 3.3. Data Entry Screen for Menu Item 2

3.2.1 Menu Item 2 Data Description

The data available from the input screen is shown in Table 3.2. As the table shows, there are 13 different categories of data: surface washing (lines 1-16), concrete removal (17-29), metal removal (30-40), concrete cutting (41-52), handrails (53-65), gratings (66-76), cranes (77-84), spent fuel pool water treatment and disposal (85-88), HVAC ducts and equipment (89-107), and floor drains (108-126). A discussion of these data items, by category, follows Table 3.2.

TABLE 3.2. Menu Item 2 Data

1	Surf Wash:	Suit-up time (minutes)	120.000
2	Surf Wash:	Breaks (minutes)	30.000
3	Surf Wash:	ALARA (minutes)	25.000
4	Surf Wash:	Warmup (minutes)	15.000
5	Surf Wash:	Cleanup (minutes)	50.000
6	Surf Wash:	Number of laborers	2.000
7	Surf Wash:	Number of crafts	1.000
8	Surf Wash:	Number of crew leaders	0.500
9	Surf Wash:	Number of rad monitors	0.500
10	Surf Wash:	Crew dose rate (millirem/hr)	3.000
11	Surf Wash:	Cleansing rate (ft ² /min)	8.000
12	Surf Wash:	Vacuum hose replacement (\$)	1180.000
13	Surf Wash:	HEPA filter replacement (\$)	300.000
14	Surf Wash:	Misc. parts (\$)	2000.000
15	Surf Wash:	Waste water process. (\$/gal)	10.000
16	Surf Wash:	Mob/demob costs (\$)	20000.000
17	Conc Rmvl:	Suit-up time (minutes)	120.000
18	Conc Rmvl:	Breaks (minutes)	30.000
19	Conc Rmvl:	ALARA (minutes)	10.000
20	Conc Rmvl:	Number of laborers	3.000
21	Conc Rmvl:	Number of crafts	0.000
22	Conc Rmvl:	Number of crew leaders	0.250
23	Conc Rmvl:	Number of rad monitors	0.250
24	Conc Rmvl:	Crew dose rate (millirem/hr)	3.000
25	Conc Rmvl:	Cleansing rate (ft ² /hr)	100.000
26	Conc Rmvl:	Cutting bits (\$/hr)	13.000
27	Conc Rmvl:	Filters (\$/hr)	2.500
28	Conc Rmvl:	Cleaning sys. rental (\$/wk)	2300.000
29	Conc Rmvl:	Compressor rental (\$/month)	2025.000
30	Mtl Rmvl:	Staging (in minutes)	60.000
31	Mtl Rmvl:	Height adjustment (%)	10.000
32	Mtl Rmvl:	Respiratory prot. adj. (%)	20.000
33	Mtl Rmvl:	ALARA (minutes)	25.000
34	Mtl Rmvl:	Suit-up time (minutes)	120.000
35	Mtl Rmvl:	Breaks (minutes)	30.000
36	Mtl Rmvl:	Number of laborers	3.000
37	Mtl Rmvl:	Number of crafts	1.500
38	Mtl Rmvl:	Number of crew leaders	0.500
39	Mtl Rmvl:	Number of rad monitors	0.500
40	Mtl Rmvl:	Crew dose rate (millirem/hr)	3.000
41	Conc Cttg:	Staging (in minutes)	60.000
42	Conc Cttg:	Height adjustment (%)	10.000
43	Conc Cttg:	Respiratory prot. adj. (%)	10.000
44	Conc Cttg:	ALARA (minutes)	25.000
45	Conc Cttg:	Suit-up time (minutes)	120.000
46	Conc Cttg:	Breaks (minutes)	30.000
47	Conc Cttg:	Number of laborers	1.000
48	Conc Cttg:	Number of crafts	1.000
49	Conc Cttg:	Number of crew leaders	0.500
50	Conc Cttg:	Dose rate (millirem/hr)	3.000
51	Conc Cttg:	Cutting rate (inch-feet/min)	1.000
52	Conc Cttg:	Blade costs (\$/in-ft of cut)	0.440
53	Handrails:	Cleansing rate (ft/hr)	20.000
54	Handrails:	Suit-up time (minutes)	120.000
55	Handrails:	Breaks (minutes)	30.000
56	Handrails:	ALARA (minutes)	10.000
57	Handrails:	Number of laborers	2.000

TABLE 3.2. (contd)

58	Handrails: Number of crafts	0.000
59	Handrails: Number of crew leaders	0.500
60	Handrails: Number of rad monitors	0.500
61	Handrails: Dose rate (millirem/hr)	3.000
62	Handrails: Industrial wipes (\$/ft2)	0.070
63	Handrails: Wipe usage rate (ft2/ft)	1.350
64	Handrails: Washing fluid (\$/gal)	15.000
65	Handrails: Washing fluid usage (ft/gal)	430.000
66	Gratings: Removal rate (ft2/hr)	68.750
67	Gratings: Suit-up time (minutes)	120.000
68	Gratings: Breaks (minutes)	30.000
69	Gratings: ALARA (minutes)	25.000
70	Gratings: Respiratory prot. adj. (%)	20.000
71	Gratings: Number of laborers	3.000
72	Gratings: Number of crafts	0.000
73	Gratings: Number of crew leaders	0.500
74	Gratings: Number of rad monitors	0.500
75	Gratings: Dose rate (millirem/hr)	3.000
76	Gratings: Grating wgt. (lb/ft2)	10.400
77	Cranes: Number of crafts	2.000
78	Cranes: Number of laborers	2.000
79	Cranes: Number of rad monitors	0.500
80	Cranes: Number of crew leaders	0.500
81	Cranes: Cost of vendor person-hr (\$)	55.000
82	Cranes: Equip costs & mob/demob costs (\$)	22000.000
83	Cranes: Vendor mob/demob costs (\$)	22000.000
84	Cranes: Dose Rate (millirem/hr)	1.000
85	Fuel Pool: Specialty contractor (\$)	750000.000
86	Fuel Pool: Number of HICs	5.000
87	Fuel Pool: Days of cask rental	21.000
88	Fuel Pool: Duration (days)	30.000
89	HVAC Duct: Suit-up time (minutes)	120.000
90	HVAC Duct: Breaks (minutes)	30.000
91	HVAC Duct: ALARA (minutes)	25.000
92	HVAC Duct: Resp. protection (%)	20.000
93	HVAC Duct: Rmvl time (minute/ft)	8.875
94	HVAC Duct: Number of laborers	2.000
95	HVAC Duct: Number of crafts	0.000
96	HVAC Duct: Number of crew leaders	0.500
97	HVAC Duct: Number of rad monitors	0.500
98	HVAC Duct: Crew dose rate (millirem/hr)	1.000
99	HVAC Duct: Linear feet of ductwork	12327.000
100	HVAC Equipment: Suit-up time (minutes)	120.000
101	HVAC Equipment: Breaks (minutes)	30.000
102	HVAC Equipment: ALARA (minutes)	25.000
103	HVAC Equipment: Height adjustment (%)	30.000
104	HVAC Equipment: Number of laborers	2.000
105	HVAC Equipment: Number of crafts	2.000
106	HVAC Equipment: Number of crew leaders	0.500
107	HVAC Equipment: Number of rad monitors	0.500
108	Drains: Number of drains	320.000
109	Drains: Removal time (in minutes)	291.000
110	Drains: Height adjustment (%)	7.000
111	Drains: Respiratory prot. adj. (%)	0.000
112	Drains: ALARA (minutes)	25.000

TABLE 3.2. (contd)

113	Drains: Suit-up time (minutes)	120.000
114	Drains: Breaks (minutes)	30.000
115	Drains: Number of laborers	1.000
116	Drains: Number of crafts	1.000
117	Drains: Number of crew leaders	0.500
118	Drains: Number of rad monitors	0.500
119	Drains: Dose rate (millirem/hr)	0.500
120	Drains: Drilling rate (inches/hr)	7.000
121	Drains: Floor thickness (inches)	24.000
122	Drains: Bit replacement costs (\$/in)	4.600
123	Drains: Power unit rental (\$/week)	1035.000
124	Drains: Drain puller rental (\$/week)	138.000
125	Drains: Absorbent material (ft ²)	11.875
126	Drains: Plastic (ft ²)	50.000

Surface Washing (Items 1-16)

All contaminated surfaces are washed using a manually operated cleaning system, which washes the surface using high-pressure (250 psig) jets and collects the water and removed material simultaneously using a vacuum collection system. The first five items are the lost time adjustments for the surface washing task and are based on the following assumptions:

- The crews work eight-hour shifts.
- Each crew member suits-up or unsuits in anticontamination clothing eight times per shift, taking 15 minutes each time, including travel time to and from the workplace (Item 1).
- The crews take two 15-minute breaks per shift (Item 2).
- The crew members devote 25 minutes per shift to ALARA-related activities, such as reviewing radiation protection guidance (Item 3).
- It takes 15 minutes to warm up and adjust the cleaning system at the beginning of each shift (Item 4).
- Cleanup activities at the end of each shift take 50 minutes (Item 5).

Items 6 through 9 describe the crew composition. Item 10 is the average dose rate in millirem/hr immediately after reactor shutdown. Item 11 is the postulated floor-cleansing rate, in square feet/minute. (The CECP will adjust the cleansing rate for walls and ceilings, as discussed in Section 4.4.1.) Items 12 through 14 are the annual replacement costs for the listed parts.

The surface washing procedure produces waste water that will be processed and disposed of by a specialty contractor. Item 15 is the specialty contractor's processing fee on a per-gallon basis. Item 16 is the cost of mobilizing and demobilizing the specialty contractor's personnel.

Concrete Removal (Items 17-29)

Contaminated concrete surfaces that are not sufficiently decontaminated using the high-pressure washing system are removed with a commercially available pneumatically operated surface removal system. You can adjust the depth of concrete to be removed, as discussed in Section 4.4.1. Items 17 through 24 have the same meanings as the corresponding items discussed above under surface washing and will not be discussed here. Item 25 is similar to Item 11, but note that the rate here is expressed in square feet/hr. Items 26 through 29 are material costs expressed in the units shown.

Metal Removal (Items 30-40)

All contaminated metal surfaces are assumed to be stainless steel and may be any thickness you specify, per Section 4.4.1. The metal is cut using a plasma arc torch mounted on a mechanically driven track system. The cutting rate is 4 ft/min, which includes the torch changeout time of 15 minutes for every 30 minutes of torch operation. The surfaces are cut into nominal 7.5 x 18-ft segments for packaging in modified maritime containers.

Item 30, staging, is the time required to set up for and secure from the metal removal operation at a particular location. It includes installing scaffolding at the surface location and setting up the contamination control system. It also includes the time required to remove the contamination control system, take down the scaffolding and move to the next location. The times required to perform other operations (install the track-mounted torch system, attach lifting devices to surface section, make the cuts, and so on) are accounted for by metal removal algorithms within the CECF.

Items 31 and 32 are work difficulty factors: the height and respiratory protection adjustment factors, in percent. Workers are less efficient while working on scaffolding. The height adjustment factor is used to take this fact into account. The particular factor used here (10%) means that the crews

work at $1/(1.1) = 91\%$ of normal. Worker efficiency while working in respiratory equipment is set by Item 32. The value of 20% used here corresponds to an efficiency of $1/1.2 = 83\%$.

The remaining items in the metal removal category have the same meanings as those discussed in previous categories.

Concrete Cutting (Items 41-52)

All concrete walls and floors are assumed to be uncontaminated or to have been decontaminated before sawing operations begin. Thus, the costs of cutting uncontaminated concrete to provide access to other components are considered to be cascading costs. Although the concrete itself is considered to be uncontaminated, workers will still most likely be working in radiation areas. To allow for this, Item 50 may be used to specify an average area dose rate at reactor shutdown.

Material and labor costs for cutting uncontaminated concrete walls and floors are based on the cut measured in inch-feet (i.e., a cut 1 inch deep and 1 foot long equals 1 inch-foot). Specifying the number of inch-feet per cut is described in Section 4.4.1. The cutting rate is specified by Item 51, and saw blade costs by Item 52.

Item 42, staging, is the time required per location, in minutes, to install and remove scaffolding, to install and remove the track-mounted cutting system, and to install and remove the vacuum/water-spray dust control system. The meanings of the remaining items have been discussed previously.

Handrails (Items 53-65)

All contaminated handrails are assumed to be 2-inch-diameter carbon steel. One linear foot (LF) of handrail equals about $1/2 \text{ ft}^2$ of surface area. The decontamination rate, in LF/hr, is set by Item 53. Decontamination will be done manually using industrial wipes and Radiacwash™ (diluted 5:1). Fluid costs and fluid usage rates are set by Items 64 and 65. Costs and usage rates for the industrial wipes are set by Items 62 and 63. Note that the industrial wipe usage rate is expressed in units of square feet of wipe area per LF of handrail. Meanings for the remaining items have been discussed previously.

Steel Floor Gratings (Items 66-76)

It is assumed that contaminated steel floor grating (on stairs, platforms, and walkways) will be removed during decommissioning in essentially the same manner in which it was installed. Therefore, installation labor factors were used.⁽¹⁾

The grating removal rate is set by Item 66. The weight of the grating, in lb/ft², is set by Item 76. The remaining items have their usual meanings.

Cranes (Items 77-84)

These items provide a means for specifying the removal of building cranes, which are complex, specialized jobs, requiring the assistance of a vendor. For purposes of calculation, the CECF assumes that a typical BWR site has six cranes that will require removal and/or contamination. The vendor will provide a crew to remove the cranes; the decommissioning operations contractor (DOC) will provide a crew to decontaminate them. The DOC decontamination crew composition is specified by Items 77 through 80. Vendor costs are set by Items 81 through 83. Item 81 is the average hourly rate for a member of the vendor's rigging crew. Equipment costs and the costs of mobilizing and demobilizing the equipment are specified by Item 82. Vendor crew mobilization and demobilization costs are specified by Item 83. The dose rate for both the DOC and vendor crews is set by Item 84.

Spent Fuel Pool Water Treatment and Disposal (Items 85-88)

After the spent nuclear fuel inventory has been reduced to zero, the spent fuel pool (SFP) water must be treated before release, because all waste solutions are expected to contain measurable radioactivity. This specialized task is performed by a vendor whose costs may be defined by Item 85. The number of HICs required is specified by Item 86, and the number of days of NuPac14/210H cask rental is specified by Item 87. Total duration in days is set by Item 88.

HVAC Ductwork and HVAC Equipment (Items 89-107)

The HVAC systems are among the last items removed, because the HVAC systems need to be in service until essentially all the contaminated materials have been removed. It is assumed that the ductwork and equipment are only mildly contaminated, with very small dose rates associated with removal activities. This dose rate (which is the assumed dose rate at the time of removal, not adjusted from the reactor shutdown baseline) is set by Item 98 for ductwork.

The linear feet of the ductwork to be removed is specified by Item 99. The time to remove one LF of ductwork is specified by Item 93. The remaining ductwork items and the HVAC equipment items (100-107) have their previously defined meanings.

Removal of Contaminated Floor Drains (Items 108 - 126)

The removal operation for each drain consists of cutting out a concrete plug containing the drain. Each plug weighs about 550 pounds and has a volume of about 2.8 cubic feet, assuming the plug is 16 inches in diameter and the floor is two feet thick. The floor thickness can be set by Item 121. The time required to set up and remove each drain (not including the effects of the work difficulty adjustments and lost time adjustments, Items 111-114) is set by Item 109. The crew composition for this operation is set by Items 115-118. The weekly equipment rental costs for the two major pieces of equipment are set by Items 123 and 124. Bit replacement costs per inch of depth cut are set by Item 122. The remaining items are self-explanatory.

3.2.2 Entering Data, Saving Files, and Exiting

The data entry, file saving, and exiting procedures are precisely the same as for Sections 3.1.2, 3.1.3, and 3.1.4 and will not be repeated here.

3.3 MENU ITEM 3: UNIT COST FACTORS FOR CONTAMINATED SYSTEMS

This portion of the CECF allows you to enter data that the CECF uses to calculate unit cost factors for potentially contaminated plant systems. These data include crew sizes, work difficulty adjustments, non-productive time adjustments, material costs, and radiation dose rates.

The data entry screen is shown in Figure 3.4. The selector bar is shown positioned over Item 74. There are 117 items in all, with 21 visible at any one time.

MENU ITEM 3: UNIT COST FACTORS FOR CONTAMINATED SYSTEMS		
57 Tanks:	Suit-up and unsuit time (min)	120.000
58 Tanks:	Work break time (min)	30.000
59 Tanks:	Number of laborers	3.000
60 Tanks:	Number of crafts	1.500
61 Tanks:	Number of crew leaders	0.500
62 Tanks:	Number of rad monitors	0.500
63 Tanks:	Absorbent material (ft2)	10.000
64 Tanks:	Plastic (ft2)	25.000
65 Tanks:	Gases (hours)	0.017
66 Lg Pump:	Duration (in minutes)	60.000
67 Lg Pump:	Height adjustment (%)	10.000
68 Lg Pump:	Respiratory prot. adjust. (%)	20.000
69 Lg Pump:	Rad/ALARA activities (min)	25.000
70 Lg Pump:	Suit-up and unsuit time (min)	120.000
71 Lg Pump:	Work break time (min)	30.000
72 Lg Pump:	Number of laborers	2.000
73 Lg Pump:	Number of crafts	1.000
74 Lg Pump:	Number of crew leaders	0.500
75 Lg Pump:	Number of rad monitors	0.500
76 Lg Pump:	Absorbent material (ft2)	10.000
77 Lg Pump:	Plastic (ft2)	25.000
Number of records: 117		
File in use: REACTOR1.BD		
↑↓ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit		

FIGURE 3.4. Data Entry Screen for Menu Item 3

3.3.1 Menu Item 3 Data Description

The data accessible from the Menu Item 3 input screen are shown Table 3.3. The data are grouped into nine categories of potentially contaminated system components:

1. Large Piping	6. Large Pumps
2. Small Piping	7. Small Pumps
3. Large Valves	8. Large Miscellaneous
4. Small Valves	9. Small Miscellaneous
5. Tanks	

Within each category there are thirteen data items:

1. Duration (in minutes)	8. Number of Crafts
2. Height Adjustment (%)	9. Number of Crew Leaders
3. Respiratory Prot. Adjust. (%)	10. Number of Rad Monitors
4. Rad/ALARA Activities (min.)	11. Absorbent Material (sq ft)
5. Suit-up and Unsuit Time (min.)	12. Plastic (sq ft)
6. Work Break Time (min.)	13. Gases (hours)
7. Number of Laborers	

Data Items 2 through 10 should be familiar from Section 3.2.1 and will not be discussed in detail again here. Item 1, Duration, is the time, in minutes, required for the crew (Items 7 through 10) to complete the removal operation, with no work difficulty adjustments (2,3) or nonproductive time factors (4,5,6) applied. In the case of tanks, staging includes only the equipment setup and removal times. The cutting times are a function of tank size and shape and are calculated by the CECF.

The quantity of consumable materials consumed during the removal operation is specified by the last three items. Note that the unit costs for these items are maintained in lines 15 through 17.

TABLE 3.3. Menu Item 3 Data

1	Lg Pipe: Duration (in minutes)	87.000
2	Lg Pipe: Height adjustment (%)	10.000
3	Lg Pipe: Respiratory prot. adjust. (%)	20.000
4	Lg Pipe: Rad/ALARA activities (min)	25.000
5	Lg Pipe: Suit-up and unsuit time (min)	120.000
6	Lg Pipe: Work break time (min)	30.000
7	Lg Pipe: Number of laborers	3.000
8	Lg Pipe: Number of crafts	1.500
9	Lg Pipe: Number of crew leaders	0.500
10	Lg Pipe: Number of rad monitors	0.500
11	Lg Pipe: Absorbent material (ft2)	15.000
12	Lg Pipe: Plastic (ft2)	37.500
13	Lg Pipe: Gases (hours)	0.033
14	Sm Pipe: Duration (in minutes)	61.000
15	Sm Pipe: Height adjustment (%)	10.000
16	Sm Pipe: Respiratory prot. adjust. (%)	20.000
17	Sm Pipe: Rad/ALARA activities (min)	25.000
18	Sm Pipe: Suit-up and unsuit time (min)	120.000
19	Sm Pipe: Work break time (min)	30.000
20	Sm Pipe: Number of laborers	3.000
21	Sm Pipe: Number of crafts	1.500
22	Sm Pipe: Number of crew leaders	0.500
23	Sm Pipe: Number of rad monitors	0.500
24	Sm Pipe: Absorbent material (ft2)	10.000
25	Sm Pipe: Plastic (ft2)	25.000
26	Sm Pipe: Gases (hours)	0.017

TABLE 3.3. (contd)

27	Lg Valve: Duration (in minutes)	87.000
28	Lg Valve: Height adjustment (%)	10.000
29	Lg Valve: Respiratory prot. adjust. (%)	20.000
30	Lg Valve: Rad/ALARA activities (min)	25.000
31	Lg Valve: Suit-up and unsuit time (min)	120.000
32	Lg Valve: Work break time (min)	30.000
33	Lg Valve: Number of laborers	3.000
34	Lg Valve: Number of crafts	1.500
35	Lg Valve: Number of crew leaders	0.500
36	Lg Valve: Number of rad monitors	0.500
37	Lg Valve: Absorbent material (ft2)	15.000
38	Lg Valve: Plastic (ft2)	37.500
39	Lg Valve: Gases (hours)	0.033
40	Sm Valve: Duration (in minutes)	61.000
41	Sm Valve: Height adjustment (%)	10.000
42	Sm Valve: Respiratory prot. adjust. (%)	20.000
43	Sm Valve: Rad/ALARA activities (min)	25.000
44	Sm Valve: Suit-up and unsuit time (min)	120.000
45	Sm Valve: Work break time (min)	30.000
46	Sm Valve: Number of laborers	3.000
47	Sm Valve: Number of crafts	1.500
48	Sm Valve: Number of crew leaders	0.500
49	Sm Valve: Number of rad monitors	0.500
50	Sm Valve: Absorbent material (ft2)	10.000
51	Sm Valve: Plastic (ft2)	25.000
52	Sm Valve: Gases (hours)	0.017
53	Tanks: Staging (in minutes)	90.000
54	Tanks: Height adjustment (%)	10.000
55	Tanks: Respiratory prot. adjust. (%)	20.000
56	Tanks: Rad/ALARA activities (min)	25.000
57	Tanks: Suit-up and unsuit time (min)	120.000
58	Tanks: Work break time (min)	30.000
59	Tanks: Number of laborers	3.000
60	Tanks: Number of crafts	1.500
61	Tanks: Number of crew leaders	0.500
62	Tanks: Number of rad monitors	0.500
63	Tanks: Absorbent material (ft2)	10.000
64	Tanks: Plastic (ft2)	25.000
65	Tanks: Gases (hours)	0.017
66	Lg Pump: Duration (in minutes)	60.000
67	Lg Pump: Height adjustment (%)	10.000
68	Lg Pump: Respiratory prot. adjust. (%)	20.000
69	Lg Pump: Rad/ALARA activities (min)	25.000
70	Lg Pump: Suit-up and unsuit time (min)	120.000
71	Lg Pump: Work break time (min)	30.000
72	Lg Pump: Number of laborers	2.000
73	Lg Pump: Number of crafts	1.000
74	Lg Pump: Number of crew leaders	0.500
75	Lg Pump: Number of rad monitors	0.500
76	Lg Pump: Absorbent material (ft2)	10.000
77	Lg Pump: Plastic (ft2)	25.000
78	Lg Pump: Gases (hours)	0.017
79	Sm Pump: Duration (in minutes)	60.000
80	Sm Pump: Height adjustment (%)	10.000
81	Sm Pump: Respiratory prot. adjust. (%)	20.000
82	Sm Pump: Rad/ALARA activities (min)	25.000
83	Sm Pump: Suit-up and unsuit time (min)	120.000

TABLE 3.3. (contd)

84	Sm Pump:	Work break time (min)	30.000
85	Sm Pump:	Number of laborers	2.000
86	Sm Pump:	Number of crafts	1.000
87	Sm Pump:	Number of crew leaders	0.500
88	Sm Pump:	Number of rad monitors	0.500
89	Sm Pump:	Absorbent material (ft2)	10.000
90	Sm Pump:	Plastic (ft2)	25.000
91	Sm Pump:	Gases (hours)	0.017
92	Lg Misc:	Duration (in minutes)	60.000
93	Lg Misc:	Height adjustment (%)	10.000
94	Lg Misc:	Respiratory prot. adjust. (%)	20.000
95	Lg Misc:	Rad/ALARA activities (min)	25.000
96	Lg Misc:	Suit-up and unsuit time (min)	120.000
97	Lg Misc:	Work break time (min)	30.000
98	Lg Misc:	Number of laborers	2.000
99	Lg Misc:	Number of crafts	1.000
100	Lg Misc:	Number of crew leaders	0.500
101	Lg Misc:	Number of rad monitors	0.500
102	Lg Misc:	Absorbent material (ft2)	10.000
103	Lg Misc:	Plastic (ft2)	25.000
104	Lg Misc:	Gases (hours)	0.017
105	Sm Misc:	Duration (in minutes)	60.000
106	Sm Misc:	Height adjustment (%)	10.000
107	Sm Misc:	Respiratory prot. adjust. (%)	20.000
108	Sm Misc:	Rad/ALARA activities (min)	25.000
109	Sm Misc:	Suit-up and unsuit time (min)	120.000
110	Sm Misc:	Work break time (min)	30.000
111	Sm Misc:	Number of laborers	2.000
112	Sm Misc:	Number of crafts	1.000
113	Sm Misc:	Number of crew leaders	0.500
114	Sm Misc:	Number of rad monitors	0.500
115	Sm Misc:	Absorbent material (ft2)	10.000
116	Sm Misc:	Plastic (ft2)	25.000
117	Sm Misc:	Gases (hours)	0.017

3.3.2 Entering Data, Saving Files, and Exiting

The data entry, file saving, and exiting procedures are precisely the same as for Sections 3.1.2, 3.1.3, and 3.1.4 and will not be repeated here.

3.4 REFERENCES

1. Building Construction Cost Data. 1991. Robert Snow Means Company, Inc., Kingston, Massachusetts.

4.0 ENTERING SITE-SPECIFIC DATA AND CREATING OUTPUT FILES

Once the data described in Chapter 3 have been entered, you proceed to Menu Items A through I to complete the decommissioning costs for a specific reactor plant. This chapter describes in detail how this is done.

To illustrate the general process, consider this example. Suppose you want to do decommissioning costs for a project called **REACTOR1**. You would proceed as follows:

1. Make sure you have entered the data from Menu Items 1, 2, and 3 into **REACTOR1.BD**, as described in Chapter 3.
2. Enter data from Menu Items A, B, and C (in any order) into the same data file, **REACTOR1.BD**, as described in Sections 4.1, 4.2, and 4.3, below.
3. Enter data from Menu Items D, E, and F (in any order) into **REACTOR1.BD**. Because D, E, and F use the data you entered previously, this step must be performed after steps 1 and 2.
4. Enter the remaining data from Menu Items G and H (in either order) into **REACTOR1.BD** per Sections 4.7 and 4.8. This step is independent of step 3, but you must complete steps 1 and 2 before starting step 4.
5. Create **REACTOR1.BRI** per Section 4.9. This is the decommissioning summary report for the **REACTOR1** case study. An example of this type of file (**TEST.BRI**) is shown in Chapter 7.

The details of the above process are discussed in the following sections.

4.1 MENU ITEM A: SITE INFORMATION

From this portion of the CECF you define site characteristics such as site name, truck distances to the geologic repository (for GTCC waste) and low-level waste sites, and so on. When you select Menu Item A from the Main Menu, the file menu will prompt you for the data file to use. Once you have selected your data file (let's assume you picked **REACTOR1**), you will see a site information data entry screen, similar to the one shown in Figure 4.1.

Most of the terms shown on this screen should be self-explanatory. All distances are in miles. Line 10 allows you to select which low-level burial

site to use. HANFORD and BARNWELL are the names of the low-level waste sites currently in operation. You may also select GENERIC if you want to use a hypothetical site. In Figure 4.1, Hanford has been chosen. This means, for example, that line 5 is the distance from "Reactor1" to Hanford and that line 8 is the distance from Hanford to the supplier. It is assumed there is only one geologic repository, and that it is located at Yucca Mountain, Nevada.

The "Supplier" refers to the supplier of transportation casks and HICs. (For simplicity, it is assumed that all casks and HICs are furnished by a single supplier.) Line 3, "Elect. Cnsmpt. at Shutdown (MW)," is the average electrical energy consumption rate for the site, in megawatts, at shutdown.

MENU ITEM A: SITE INFORMATION	
1 Reactor Site Name	WASH NUCLEAR 2
2 Area of Site (km2)	4.7
3 Electrical Consumption at Shutdown (MW)	4
4 Cost of Electricity (\$/kwh)	0.027
5 Distance from Reactor Site to Low-Level Burial Site (miles)	15
6 Distance from Reactor Site to Geologic Repository (miles)	793
7 Distance from Reactor Site to Supplier (miles)	2659
8 Distance from Low-Level Burial Site to Supplier (miles)	2674
9 Distance from Geologic Repository to Supplier (miles)	2070
10 Low-Level Burial Site Selected	HANFORD
11 Out-of-Compact Burial Fee Applies	NO

Using file REACTOR1.BD
↑↓ Position Bar ← Enter Data Save Alt-X Quit

FIGURE 4.1. Data Entry Screen for Menu Item A

Line 4, "Cost of Electricity (\$/kWh)," is the cost, in dollars per kilowatt-hour, of the electrical energy consumed in Line 3.

4.1.1 Entering Data

To enter data, put the selector bar on the desired line with the ↑ or ↓ key, then press <Enter>. The portion of the bar over the data field will change color from white-on-blue to yellow-on-red and a cursor will appear, indicating that you may begin entering data. When typing in the data, you may use the <BackSpace>, , or the left and right arrow keys (←, →) as needed. The <Ins> key toggles between the insert and typeover modes. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press <Enter>; the data field will revert to its original blue-on-white color and the cursor will disappear. If you change your mind while entering data, press <Esc> and the previous value of that field will be restored.

As implied earlier, line 10 is a toggle. To enter data for this line, put the selector bar on the line and press <Enter> until the desired name (HANFORD, BARNWELL, or GENERIC) appears.

Entering data for line 1, Site Name, is a bit unusual. Put the selector bar on Item 1, and press <Enter>. The screen will change to the Site Selection Screen shown in Figure 4.2. Now use ↑, ↓, <PgUp>, <PgDn>, <Home>, and <End> to position the bar over the reactor name of your choice and press <Enter>. The screen will revert back to Figure 4.1, except that the site name and the truck distances from the reactor site to the repository and low-level waste site will have been changed to reflect the new site you have chosen. You must still enter your own values for lines 7, 8, and 9.

When in the Site Selection Screen, you may choose your own site name. To do this, press the space bar, enter the name when prompted, and press <Enter>. The screen will revert back to Figure 4.1, with your site name displayed. The other fields will show default values you can change as required.

4.1.2 Saving Data and Exiting

To save your site data, press <S>; the Save Data to a File window will open in the middle of the screen, and you will be prompted for a file

```

Select a Site (Press space bar to enter your own site name)
1 ARKANSAS NUCLEAR 1
2 ARKANSAS NUCLEAR 2
3 BEAVER VALLEY 1
4 BEAVER VALLEY 2
5 BELLEFONTE 1
6 BELLEFONTE 2
7 BIG ROCK 1
8 BRAIDWOOD 1
9 BRAIDWOOD 2
10 BROWNS FERRY 1
11 BROWNS FERRY 2
12 BROWNS FERRY 3
13 BRUNSWICK 1
14 BRUNSWICK 2
15 BYRON 1
16 BYRON 2
17 CALLAWAY 1
18 CALVERT CLIFFS 1
19 CALVERT CLIFFS 2
20 CATAWBA 1
21 CATAWBA 2

124 Reactor Sites
↑↓ PgUp PgDn Home End Position Bar ← Select Site Name

```

FIGURE 4.2. Site Selection Screen

name. Press <Esc> or <Enter> at this point, if you decide not to save your data. Otherwise, type in a file name up to eight letters long and press <Enter>. If, for example, you enter reactor1, the CECF will update the data file REACTOR1.BD.

To exit this portion of the CECF, press <Alt-X>. The Save Data to a File window will open as described above, and you will be given a final opportunity to save your work, if you have not previously done so. If you elect not to save your work, press <Enter> or <Esc>, and you will be returned to the Main Menu. If you do save your work at this point, you will be returned to the Main Menu as soon as file processing is completed.

4.2 MENU ITEM B: DECOMMISSIONING SCHEDULES

From Menu Item B, you organize site decommissioning activities into schedules composed of up to five time periods. The data entry screen is shown in Figure 4.3. Two activities shown in this figure require an explanation. "Remove MSRs" means "Remove moisture separator reheaters" and "Other Large Equipment" refers to the feedwater heaters and the turbine feed pumps.

4.2.1 Entering Data

When the data entry screen appears, you will be in the top part of the screen, and the selector bar will be positioned as shown in Figure 4.3. Each of the 5 lines in this part of the screen is composed of three fields: **Name of Period**, **Start Year**, and **Stop Year**. To enter data, use the arrow keys (↑,↓,←,→) to move the selector bar over the desired field and press <Enter>. The bar will change color from white-on-blue to yellow-on-red and a cursor will appear, indicating that you may begin entering data. As you enter data, you may use the <Backspace>, , or the left and right arrow keys (←,→) as needed. The <Ins> key toggles between the insert and typeover modes. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press <Enter>. The data field will revert to its original

MENU ITEM B: DECOMMISSIONING SCHEDULES		
Name of Period	Start Year	Stop Year
1 Planning and Preparation	-2.5	0
2 Defuel and Layup	0	1.2
3 Spent Fuel Pool Operations	1.2	4.6
4 Deferred Dismantlement	4.6	6.3
5 UNDEFINED	0	0

Select a Period for Each Activity	
Name of Activity	Scheduled Period for this Activity
Remove RPV Internals	Defuel and Layup
Perform Chemical Decon	Defuel and Layup
Remove Reactor Vessel	Deferred Dismantlement
Remove Recirc Pumps	Deferred Dismantlement
Remove RCS Piping	Deferred Dismantlement
Remove Turbine/Condenser	Deferred Dismantlement
Remove MSRs	Deferred Dismantlement
Remove Other Large Equip	Deferred Dismantlement
Remove Spent Fuel Racks	Deferred Dismantlement
Remove Plant Systems	Deferred Dismantlement
Decontaminate Buildings	Deferred Dismantlement
Layup Spent Fuel Pool	*** Not Scheduled ***

Using file REACTOR1.BD

Press N to change number of decommissioning periods

↑↓← Select item ← Enter Data Tab Change Window Save Alt-X Quit

FIGURE 4.3. Data Entry Screen for Menu Item B

blue-on-white color and the cursor will disappear. If you change your mind while entering data, press <Esc> and the previous value of that field will be restored.

Period descriptions may be up to 30 characters long. The time fields are in years and decimal fractions of years and are defined in relation to reactor shutdown, which occurs at year zero. Times before shutdown are negative. The first period in this example, "Planning and Preparation," starts 2.5 years before reactor shutdown and ends at shutdown.

To specify the number of periods to be scheduled, press <N>. A window will open, requesting the number of periods. Enter a number from 1 to 5 and press <Enter>. If you specified, say, four periods, you will notice that period 5 on the top half of the screen is now labeled UNDEFINED, and you will be unable to access it. If you specified only two periods, then periods 3, 4, and 5 will be undefined and inaccessible.

Make certain you define periods chronologically. That is, period 2 must follow period 1, period 3 must follow period 2, and so on. Also make sure that the starting and stopping times between periods do not overlap. If these precautions are not adhered to, the CECF may produce unreliable results.

Having defined the periods, you press <Tab> to enter the bottom half of the screen, **Select a Period for Each Activity**. While you are in this portion of the screen, the only editing keys you can use are ↑, ↓, and <Enter>. The arrow keys move you up and down the activity list and <Enter> cycles through the period descriptions you defined above. Thus, to assign turbine and turbine condenser removal to period 4, you would use ↑ or ↓ to put the bar opposite **Remove Turbine/Condenser** and then press <Enter> until "Deferred Dismantlement" (the name you gave to period 4) appears. If you do not want to assign an activity to any period, just press <Enter> until ***** Not Scheduled ***** appears. This ensures that this activity will not appear in the summary tables (Section 4.9). You will also notice that it will not be possible to assign activities to undefined periods.

Notice that four periods are defined in Figure 4.3, but activities are scheduled only for periods 2 and 4. This is normal. Periods 1 and 3 still

exist and there will be costs associated with them (e.g., Menu Item G), but no active decommissioning is taking place during these periods.

The last activity, **Layup Spent Fuel Pool**, applies only to decommissioning studies that use an extended safe storage period. If you schedule this activity, make sure it is scheduled to occur during the safe storage period. Scheduling this activity also causes the CECP to calculate an equipment repair allowance (Section 3.1.1, Item 46) for the safe storage period. Figure 4.4 shows the proper way to use a safe storage scenario.

4.2.2 Saving Data and Exiting

You may save data as you go along. Pressing <S> will open the **Save Data** to a File window in the middle of the screen, and you will be invited to save your data to a file. Press <Esc> or <Enter> at this point, if you decide not to save your data. Otherwise, type in a file name up to eight letters long and press <Enter>. If, for example, you enter reactor1, the CECP will update the file **REACTOR1.BD**.

MENU ITEM B: DECOMMISSIONING SCHEDULES		
Name of Period	Start Year	Stop Year
1 Planning and Preparation	-2.5	0
2 Defuel and Layup	0	1.2
3 Spent Fuel Pool Operations	1.2	4.6
4 Extended Safe Storage	4.6	58.3
5 Deferred Dismantlement	58.3	60
Select a Period for Each Activity		
Name of Activity	Scheduled Period for this Activity	
Remove RPV Internals	Defuel and Layup	
Perform Chemical Decon	Defuel and Layup	
Remove Reactor Vessel	Deferred Dismantlement	
Remove Recirc Pumps	Deferred Dismantlement	
Remove RCS Piping	Deferred Dismantlement	
Remove Turbine/Condenser	Deferred Dismantlement	
Remove MSRs	Deferred Dismantlement	
Remove Other Large Equip	Deferred Dismantlement	
Remove Spent Fuel Racks	Deferred Dismantlement	
Remove Plant Systems	Deferred Dismantlement	
Decontaminate Buildings	Deferred Dismantlement	
Layup Spent Fuel Pool	Extended Safe Storage	
Using file SAFSTOR2.DB		
Press N to change number of decommissioning periods		
↑↓← Select item	← Enter Data	Tab Change Window Save Alt-X Quit

FIGURE 4.4. A Schedule Incorporating an Extended Safe Storage Period

To leave this portion of the CECF, press <Alt-X>. The Save Data to a File window will open as described above, and you will be given a final opportunity to save your work, if you have not previously done so. If you elect not to save your work, press <Enter> or <Esc> and you will be returned to the Main Menu. If you do save your work at this point, you will be returned to the Main Menu as soon as file processing is completed.

4.3 MENU ITEM C: SPECIAL EQUIPMENT COSTS

This portion of the CECF allows you to enter data about the specialized major equipment that must be available for decommissioning. Vendor and contract costs are not to be entered here. Menu Item C data are independent of all other data. Thus, the only requirement is that these data be entered sometime before running the Final Summary Report in Menu Item I.

When you select Menu Item C from the Main Menu, the file menu will prompt you for the data file to use. Once you have selected your file, the data entry screen, an example of which is shown in Figure 4.5, will appear.

MENU ITEM C: SPECIAL EQUIPMENT COSTS	
----- Description of Item -----	Tot. Cost(\$)
1 Remote manipulator for under-water in-vesse} cutting	1102500
2 Underwater plasma-arc cutting system (2 each)	154400
3 Cutting table plus jigs	33000
4 Oxyacetylene cutting system	3300
5 Plasma-arc cutting system (2 each)	66000
6 Track-mounted drive unit (4 each)	17600
7 Drum Compactor	94800
8 Closed circuit, high-resolution television	55100
9 High-pressure water jet	176400
10 Kelly Decontamination System (3 each)	558000
11 Underwater lights, viewing windows/periscope	11000
12 Submersible pumps with disposable filter (3 each)	19800
13 Mobile scissors-type manlift (Sky Climber Series 47) (4 ea.)	154400
14 Genie Zoom-Boom manlift, 45 ft.	52900
15 Bobcat front-end loader (light-duty) (2 each)	39600
16 6818 kg forklift (3 each)	297600
17 9100 kg mobile hydraulic crane (2 each)	81600
18 Safety nets (as required)	50700
19 Polyurethane foam generator (2 each)	19800
Number of records: 31 File in use: DEFAULT.BD	
↑↔ Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item	
Ctrl End Insert Item at Bottom of List Save Data to a File Alt-X Quit	

FIGURE 4.5. Data Entry Screen for Menu Item C

Figure 4.5 shows the first 19 of the 31 sample records that make up the **DEFAULT.BD** file. Each record consists of two fields: 1) a description of the piece of equipment and 2) its cost in dollars. You may enter up to 200 records to meet your specific needs.

4.3.1 Entering Data

To enter data, use the positioning keys (**↑**, **↓**, **→**, **←**, **<PgUp>**, **<PgDn>**, **<Home>**, and **<End>**) to put the blue selector bar over the item desired, and then type in the data. The **↑** and **↓** keys move the selector up and down one line at a time. The **<PgUp>** and **<PgDn>** keys move the selector up and down the list a screenful (18 lines) at a time; the **<Home>** and **<End>** keys move the selector to the top and bottom of the list. To move from one field to another on the same line, use the **→** and the **←** keys.

With the selector bar positioned as desired, press **<Enter>**. The bar will change color from white-on-blue to yellow-on-red and a cursor will appear, indicating that you may begin entering data. As you enter data, you may use the **<Backspace>**, ****, or the left and right arrow keys (**←**, **→**) as needed. The **<Ins>** key toggles between the insert and typeover modes. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press **<Enter>**; the data field will revert to its original blue-on-white color, and the cursor will disappear. If you change your mind while entering data, press **<Esc>** and the previous value of that field will be restored.

Adding and deleting records is straightforward. To add a record, place the selector bar anywhere on the line where you want the new record to go, then press **<Ins>**. As an example, suppose you want to add a new record at line 10. Placing the selector bar anywhere on line 10 and pressing **<Ins>** produces the result shown in Figure 4.6. Line 10 has been replaced by a new default data component, and the number of records has been updated to 32. At this point you replace the **No Name** equipment description with your own description, and then enter the cost information.

Adding a record to the end of the list is slightly different. Place the selector bar on the last item in the list. (Pressing **<End>** will get you to

MENU ITEM C: SPECIAL EQUIPMENT COSTS		
-----	Description of Item -----	Tot. Cost(\$)
1	Remote manipulator for under-water in-vessel cutting	1102500
2	Underwater plasma-arc cutting system (2 each)	154400
3	Cutting table plus jigs	33000
4	Oxyacetylene cutting system	3300
5	Plasma-arc cutting system (2 each)	66000
6	Track-mounted drive unit (4 each)	17600
7	Drum Compactor	94800
8	Closed circuit, high-resolution television	55100
9	High-pressure water jet	176400
10	No Name	0
11	Kelly Decontamination System (3 each)	558000
12	Underwater lights, viewing windows/periscope	11000
13	Submersible pumps with disposable filter (3 each)	19800
14	Mobile scissors-type manlift (Sky Climber Series 47) (4 ea.)	154400
15	Genie Zoom-Boom manlift, 45 ft.	52900
16	Bobcat front-end loader (light-duty) (2 each)	39600
17	6818 kg forklift (3 each)	297600
18	9100 kg mobile hydraulic crane (2 each)	81600
19	Safety nets (as required)	50700
Number of records: 32 File in use: DEFAULT.BD		
↑← Home End PgUp PgDn Move Bar Enter Data Insert Item Delete Item Ctrl End Insert Item at Bottom of List Save Data to a File Alt-X Quit		

FIGURE 4.6. Data Entry Screen for Menu Item C: Adding a Record

the end of the list immediately.) Then press <Ctrl-End>. The new default item will appear at the end of the list. Update the record as described earlier.

To delete a record, put the selector bar on the desired line, and then press . A warning will appear, asking you to confirm the deletion. To proceed with the deletion, press <Y>. To cancel, press any other key.

4.3.2 Saving Data and Exiting

You may save data as you go along. Pressing <S> will open the **Save Data to a File** window in the middle of the screen, and you will be invited to save your data to a file. Press <Esc> or <Enter> at this point, if you decide not to save your data. Otherwise, type in a file name, up to 8 letters long, and press <Enter>. If, for example, you enter **reactor1**, the CECF will create the file **REACTOR1.BD**.

To leave this portion of the CECF, press <Alt-X>. The **Save Data to a File** window will open as described above, and you will be given a final opportunity to save your work, if you have not previously done so. If you elect

not to save your work, press <Enter> or <Esc>, and you will be returned to the Main Menu. If you do save your work at this point, you will be returned to the Main Menu as soon as file processing is completed.

4.4 MENU ITEM D: BUILDING DECON COSTS

This part of the CECF allows you to specify, on a building-by-building basis, the concrete and metal surfaces that are to be washed (decontaminated) and the volumes of concrete and metal that are to be removed and subsequently buried. Handrails to be decontaminated and floor gratings to be removed may also be specified. Sometimes portions of walls, ceilings, or floors must be cut out to gain access to the regions beyond. These so-called cascading costs may also be specified in this section of the CECF.

The data entry screen for Menu Item D is shown in Figure 4.7. The first line of the screen shows the building to be decontaminated. The second line consists of the field names for the components to be decontaminated or removed. The next 17 lines list the components themselves. (The selector bar is shown over the name of the first component.)

MENU ITEM D: BUILDING DECON COSTS						
Building Name: Reactor Bldg						
Component	Description	Activity	L (ft)	W (ft)	Depth (in)	Orient
1	Drywell Head Laydown	Conc Wash	44.96	44.96	N/A	Floor
2	Drywell Head Laydown	Conc Rmvl	31.8	31.8	1	Floor
3	RPV Head Laydown	Conc Wash	26.98	26.98	N/A	Floor
4	RPV Head Laydown	Conc Rmvl	26.98	26.98	1	Floor
5	Space Frame	Conc Wash	17.32	17.32	N/A	Floor
6	Refueling Floor Cavities	Mtl Rmvl	134.24	134.24	0.25	Floor
7	Refuel Floor Alcove Pit	Conc Wash	23.66	23.66	N/A	Floor
8	RHR "A" Heat Exchanger Rm	Conc Wash	23.45	23.45	N/A	Floor
9	RHR "A" Heat Exchanger Rm	Conc Rmvl	16.58	16.58	1	Floor
10	RHR "B" Heat Exchanger Rm	Conc Wash	23.45	23.45	N/A	Floor
11	RHR "B" Heat Exchanger Rm	Conc Rmvl	16.58	16.58	1	Floor
12	Fuel Pool Cooling HX/Pump	Conc Wash	27.13	27.13	N/A	Floor
13	Fuel Pool Cooling HX/Pump	Conc Rmvl	24.25	24.25	1	Floor
14	RWCU Heat Exchanger Rm	Conc Wash	39.69	39.69	N/A	Floor
15	RWCU Heat Exchanger Rm	Conc Rmvl	21.75	21.75	1	Floor
16	Standby Liquid Control	Conc Wash	25.08	25.08	N/A	Floor
17	Instrument Rack Trough (9)	Conc Wash	11.75	11.75	N/A	Floor

Number of components: 57 || File in use: REACTOR1.BD

F1 F2 Select Building Change Building Name Ctrl F10 Delete Building
 ↑ Home End PgUp PgDn Select Item ← Enter Data Insert Item
 Ctrl End Insert Item at End Delete Item Save Data to a File Alt-X Quit

FIGURE 4.7. Data Entry Screen for Menu Item D

The last line, just above the help menu, indicates the total number of building components and the file in use.

4.4.1 Component Definitions

Building decontamination data consist of components, and each component consists of six fields: Component Description, Activity, Length, Width, Depth, and Orientation. (See the line just above the first component in Figure 4.7). A data component is properly defined only when all six of these fields are provided with meaningful values. Each line of data on the screen represents one component. For example, the third line in Figure 4.7 describes a component having the following field values:

<u>Field Name</u>	<u>Field Value</u>
Component Description	RPV Head Laydown
Activity	Conc Wash (i.e., concrete wash)
Length	26.98 (26.98 feet long)
Width	26.98 (26.98 feet wide)
Depth (in)	N/A (depth field not applicable)
Orientation	Floor

Each of these fields is discussed below. The actual process of entering the data is discussed later.

Component Description

This is the name of the component or region to be decontaminated or removed. You may enter any description you like, up to a maximum of 30 characters. While the description is completely arbitrary, you should try to make it be consistent with the activity name and orientation, as in the example above.

Activity

You may select from among the following activities: Conc Wash (concrete wash), Conc Rmvl (concrete removal), Mtl Wash (metal wash), Mtl Rmvl (metal removal), Conc Cttg (concrete cutting), Handrails, and Gratings. Note that handrails are decontaminated and not removed, and gratings are removed, not decontaminated.

Length, Width and Depth

In the case of concrete and metal removal, these three parameters define the area and depth of the material to be removed. For example, to specify the removal of a volume of concrete 4 feet long by 3 feet wide by 0.125 inch deep, you would enter 4 into the length field, 3 into the width field, and 0.125 into the depth field. Notice that the length and width fields are in feet and the depth field is in inches. If you know the surface area but not the individual length and width values, you can use the square root of the area for the length and width fields. The example shows an example of this: the known surface area of 728 square feet is represented by length and width values of 26.98 feet.

In the cases of concrete and metal washing and gratings, only the length and width fields are defined. The depth field will be automatically marked N/A, and it will not be possible to enter a value in this field.

For concrete cutting, only the length and depth fields are defined (the width field is automatically marked N/A). Here, length refers to perimeter of the cut (in feet), and depth refers to the depth of the cut (in inches). For example, to specify the removal of a rectangular block 4 feet long by 3 feet wide from a concrete wall 12 inches thick, you would enter 14 in the Length field and 12 in the Depth field.

For handrails, only the Length of the rail is defined.

Orientation

Because decontaminating walls and ceilings is more time-consuming and costly than decontaminating floors, it is important that the orientation be specified for certain operations. The Orient field is used for this purpose. You may select Floor, Wall, Ceiling, or Stairs. Note that for gratings and handrails, the Orient field is not defined.

4.4.2 Entering Data

To enter data, use the positioning keys (↑, ↓, →, ←, <PgUp>, <PgDn>, <Home>, <End>) to put the blue selector bar over the item desired and then enter the data. The ↑ and ↓ keys move the selector up and down one line at a

time. The <PgUp> and <PgDn> keys move the selector up and down the list a screenful (16 lines) at a time; the <Home> and <End> keys move the selector to the top and bottom of the list. To move from one field to another on the same line, use the → and the ← keys.

With the selector bar positioned as desired, press <Enter>. For all fields but the Activity and Orientation fields, the bar will change color from white-on-blue to yellow-on-red and a cursor will appear, indicating that you may begin entering data. As you enter data, you may use the <Backspace>, , or the left and right arrow keys (←, →) as needed. The <Ins> key toggles between the insert and typeover modes. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press <Enter>; the data field will revert to its original blue-on-white color, and the cursor will disappear. If you change your mind while entering data, press <Esc>, and the previous value of that field will be restored.

For the case of the Activity and Orientation fields, you do not actually type in the data. Instead, you put the selector bar over the field and press <Enter> until the desired field name appears.

Adding and deleting components is straightforward. To add a component, place the selector bar anywhere on the line where you want the new component to go, then press <Ins>. As an example, suppose you want to add a new component at line 12. Placing the selector bar anywhere on line 12 and pressing <Ins> produce the result shown in Figure 4.8. Line 12 is now replaced by a new default data component. At this point, replace the **No Name Component** Description with your own description, and then enter your remaining data into the other fields.

Adding a component to the end of the list is slightly different. Place the selector bar on the last item in the list. (Pressing <End> will get you to the end of the list immediately.) Then press <Ctrl-End>. The new default item will appear at the end of the list. Update the fields as described earlier; a total of 100 components may be entered.

An item is deleted by putting the selector bar on the desired line and then pressing . A warning will appear, asking you to confirm the dele-

tion. To proceed with the deletion, press <Y>. To cancel, press any other key.

MENU ITEM D: BUILDING DECON COSTS						
Building Name: Reactor Bldg						
Component Description	Activity	L (ft)	W (ft)	Depth (in)	Orient	
1 Drywell Head Laydown	Conc Wash	44.96	44.96	N/A	Floor	
2 Drywell Head Laydown	Conc Rmvl	31.8	31.8	1	Floor	
3 RPV Head Laydown	Conc Wash	26.98	26.98	N/A	Floor	
4 RPV Head Laydown	Conc Rmvl	26.98	26.98	1	Floor	
5 Space Frame	Conc Wash	17.32	17.32	N/A	Floor	
6 Refueling Floor Cavities	Mtl Rmvl	134.24	134.24	0.25	Floor	
7 Refuel Floor Alcove Pit	Conc Wash	23.66	23.66	N/A	Floor	
8 RHR "A" Heat Exchanger Rm	Conc Wash	23.45	23.45	N/A	Floor	
9 RHR "A" Heat Exchanger Rm	Conc Rmvl	16.58	16.58	1	Floor	
10 RHR "B" Heat Exchanger Rm	Conc Wash	23.45	23.45	N/A	Floor	
11 RHR "B" Heat Exchanger Rm	Conc Rmvl	16.58	16.58	1	Floor	
12 No Name	Conc Wash	0	0	N/A	Wall	
13 Fuel Pool Cooling HX/Pump	Conc Wash	27.13	27.13	N/A	Floor	
14 Fuel Pool Cooling HX/Pump	Conc Rmvl	24.25	24.25	1	Floor	
15 RWCU Heat Exchanger Rm	Conc Wash	39.69	39.69	N/A	Floor	
16 RWCU Heat Exchanger Rm	Conc Rmvl	21.75	21.75	1	Floor	
17 Standby Liquid Control	Conc Wash	25.08	25.08	N/A	Floor	

Number of components: 58 || File in use: REACTOR1.BD

F1 F2 Select Building Change Building Name Ctrl F10 Delete Building
 ↑ Home End PgUp PgDn Select Item ← Enter Data Insert Item
 Ctrl End Insert Item at End Delete Item Save Data to a File Alt-X Quit

FIGURE 4.8. Data Entry Screen for Menu Item D: Adding a Component

So far, the discussion has been confined to a single building. To access other buildings, use <F1> and <F2>. Pressing <F1> moves you down the list of buildings; pressing <F2> moves you up. The CECP can accommodate up to 10 buildings. If data for a building is yet to be entered, the data screen will be essentially blank, as shown in Figure 4.9. For this discussion, assume that data have been entered for only three buildings. This means that Buildings 4 through 10 are undefined, and the names for these buildings are set to their default values: Bldg 4, Bldg 5, and so on.

To enter data for Bldg 4 (Figure 4.9), press <N>. The building name field will change from blue-on-gray to yellow-on-red, and a cursor will appear. Type in the building name (up to 30 characters), using the edit keys as desired. Press <Enter> when done. You may now enter data for this building in the manner previously described.

To delete a building from the data base, press <Ctrl> <F10>. The CECF will then ask you to confirm the deletion by pressing the <Y> key. Pressing any other key will cancel the deletion. When a building is deleted, all data for that building will be deleted, the building name will be converted back to

```

MENU ITEM D:  BUILDING DECON COSTS
Building Name: BLDG 4
Component Description      Activity L (ft) W (ft) Depth (in) Orient
1 No Name                 Conc Wash      0      0      N/A    Wall

Number of Components: 1 || File in use: REACTOR1.PDD
F1 F2 Select Building Change Building Name Ctrl F10 Delete Building
↑↓←→ Home End PgUp PgDn Select Item ← Enter Data Insert Item
Ctrl End Insert Item at End Delete Item Save Data to a File Alt-X Quit

```

FIGURE 4.9. Data Entry Screen for Menu Item D: A Blank Screen

its original default value (Bldg N, where N is a number from 1 to 10), and the screen will once again resemble Figure 4.9.

4.4.3 Data Files

To save your building decon data, press <S> to open the **Save Data to a File** window in the middle of the screen. You will be prompted for a file name. Press <Esc> or <Enter> if you decide not to save your data. Otherwise, type in a file name up to eight letters long and press <Enter>. If, for example, you enter reactor1, the CECF will update the **REACTOR1.BD** data file and create **REACTOR1.BRD**, a detailed report file in ASCII format which you can print out later at your convenience or examine with your editor or word processor.

4.4.4 Exiting

To leave the building decontamination portion of the CECF, press <Alt-X>. The Save Data to a File window will open as described above, and you will be given a final opportunity to save your work if you have not previously done so. If you elect not to save your work, or have previously done so, press <Enter> or <Esc>, and you will be returned to the Main Menu. If you do save your work at this point, you will be returned to the Main Menu as soon as file processing is completed.

4.5 MENU ITEM E: CONTAMINATED SYSTEMS COSTS

This menu item lets you enter data pertaining to contaminated or potentially contaminated process system components and piping components that must be removed for decommissioning work. This portion of the CECF is similar to Menu Item D except that data entry is performed on two screens. File creation is also similar to Menu Item D: the user creates or updates the data (BD) file, and the CECF creates the result file (BRE).

The double-wide data-entry screen is shown in Figure 4.10. The top part of Figure 4.10 shows the left side of the data screen; the bottom part shows the right half. (Accessing the left and right sides of the screen is explained in section 4.5.2.) The first line on both halves of this screen shows the contaminated system. The second line consists of the field names for the system components. The next seventeen lines list the components themselves. (The selector bar is shown over the name of the first system component.) The last line, just above the help menu, indicates the total number of components in the system and the file in use.

MENU ITEM E: CONTAMINATED SYSTEMS COSTS			
System Name: Control Rod Drive System			
Component Description	Category	Disposal	Quantity*
1 CRD Blade	Lg Misc.	Sea-Van	460
2 CRD Mechanism	Lg Misc.	Sea-Van	225
3 Direction Control Set	Sm Misc.	Sea-Van	185
4 Scram Valve	Sm Valve	Sea-Van	370
5 Scram Accumulator	Lg Misc.	Sea-Van	210
6 CRD Pump	Lg Pump	Sea-Van	2
7 Scram Discharge Volume	Lg Misc.	Sea-Van	2
8 Pump Suction Filter	Lg Misc.	Sea-Van	2
9 CRD Drive Water Filter	Sm Misc.	Sea-Van	2
10 3/4 Inch Valve	Sm Valve	Sea-Van	2042
11 1 Inch Valve	Sm Valve	Sea-Van	185
12 2 Inch Valve	Sm Valve	Sea-Van	379
13 4 Inch Valve	Lg Valve	Sea-Van	7
14 2 Inch Restricting Orifice	Sm Misc.	Sea-Van	1
15 2 Inch Flow Control Valve	Lg Misc.	Sea-Van	2
*NOTE: For piping, Quantity refers to feet of piping. For other categories, Quantity refers to the number of items of equipment.			
Number of records: 20 File in use: REACTOR1.BD			
F1 F2 Select System Change System Name Ctrl F10 Delete System			
↑← Home End PgUp PgDn Select Item ← Enter Data Insert Item			
Ctrl End Insert Item at End Delete Item Save Data to a File Alt-X Quit			

MENU ITEM E: CONTAMINATED SYSTEMS COSTS					
System Name: Control Rod Drive System					
	Volume (ft3)	Weight (lb)	Diameter*	Length*	Millirem/Hr
1	9	400	N/A	N/A	25
2	6.3	480	N/A	N/A	25
3	0.32	80	N/A	N/A	25
4	1.6	70	1	24	3
5	1.05	140	N/A	N/A	3
6	9	4000	2	6	2
7	7.85	2000	N/A	N/A	2
8	4.7	400	N/A	N/A	80
9	1.6	100	N/A	N/A	80
10	0.2	30	0.75	5	3
11	0.3	50	1	7	3
12	1	90	2	11.5	3
13	3.1	268	4	17	3
14	0.31	60	N/A	N/A	3
15	1	160	N/A	N/A	3
*NOTE: Diameters and lengths of valves and diameters of piping are in inches. Diameters and lengths of other equipment (if applicable) are in feet.					
Number of records: 20 File in use: DEFAULT.BD					
F1 F2 Select System Change System Name Ctrl F10 Delete System					
↑← Home End PgUp PgDn Select Item ← Enter Data Insert Item					
Ctrl End Insert Item at End Delete Item Save Data to a File Alt-X Quit					

FIGURE 4.10. Left and Right Halves of the Data Entry Screen for Menu Item E

4.5.1 Component Definitions

Contaminated system data consist of components. Each component has nine fields, the first four appearing on the left screen, the remainder on the right. The nine fields are Component Description, Category, Disposal, Quantity, Volume, Weight, Diameter, Height, and Dose Rate. A data component is properly defined only when all nine of these fields are provided with meaningful values. Each line of data on these screens represents one component. For example, line 6 of Figure 4.10 describes a component having the following field values:

<u>Field Name</u>	<u>Field Value</u>
Component Description	CRD Pump
Category	Lg Pump (A large pump)
Disposal	Sea-Van (A modified maritime container)
Quantity	2 (2 CRD pump)
Volume	9 (9 cubic feet)
Weight	4000 (4000 pounds)
Diameter	2 (2 feet in diameter)
Height	6 (6 feet long)
Dose Rate	2 (2 millirem/hr at shutdown)

Each of these fields is described below. Procedures for entering data are discussed later.

Component Description

This is the name of the contaminated system component that is to be removed. You may enter any description you like, up to a maximum of 42 characters. The description is arbitrary, but you should try to make it consistent with the category name, as in the example above.

Category

You may select from among the following categories:

1. Lg Pipe (piping diameter greater than 3 inches)
2. Sm Pipe (piping diameter 3 inches or less)
3. Lg Valve (valves greater than 3 inches)
4. Sm Valve (valves 3 inches or smaller)

5. Tank
6. Lg Pump (pumps greater than 100 pounds)
7. Sm Pump (pumps 100 pounds or less)
8. Lg HX (Heat exchangers greater than 100 pounds)
9. Sm HX (Heat exchangers 100 pounds or less)
10. Lg Misc. (miscellaneous equipment greater than 100 pounds)
11. Sm Misc. (miscellaneous equipment less than 100 pounds)

Disposal

Disposal refers to the disposal container to be used and whether the shipment is contaminated. If you want the components to be shipped by B-25 metal container, use **Mtl Box** for contaminated shipments or **Mtl Box 0** for uncontaminated shipments. The B-25 container is 4 feet wide, 4 feet high, and 6 feet long, but you can specify different dimensions, as discussed in Section 3.1.1. To ship components by modified maritime container, use **Sea-Van** for contaminated shipments or **Sea-Van 0** for uncontaminated shipments. The maritime container is 8 feet wide, 4 feet high, and 20 feet long.

Quantity

Quantity is simply the number of items to be disposed of. But in the case of piping, quantity is the number of feet.

Volume

This is the volume, in cubic feet, of each item listed under quantity. That is, (quantity x volume) is the total volume of the components. In the case of piping, volume is the volume (in cubic feet) of one linear foot of piping. This field is marked **N/A** for tanks, because most tanks will be cut up for disposal, and the CECF will calculate effective tank volumes for you.

Weight

This is the weight, in pounds, of each item listed under quantity. Thus (quantity x weight) is the total weight of the components. For piping, weight is the weight (in pounds) of one linear foot of piping.

Diameter and Length

For valves and piping, units are in inches. But note that piping length is specified under Quantity, above. For other equipment, units are in feet.

Millirem/Hr

This is the average dose rate, in millirem/hour, that the removal crew will be subjected to while removing that component, assuming work is done immediately after shutdown.

4.5.2 Entering Data

To enter data, use the positioning keys ($\uparrow$, $\downarrow$, $\rightarrow$, $\leftarrow$, $\langle$ PgUp $\rangle$, $\langle$ PgDn $\rangle$, $\langle$ Home $\rangle$, and $\langle$ End $\rangle$) to put the blue selector bar over the item desired and then type in the data. The $\uparrow$ and $\downarrow$ keys move the selector up and down one line at a time. The $\langle$ PgUp $\rangle$ and $\langle$ PgDn $\rangle$ keys move the selector up and down the list a screenful (14 lines) at a time; the $\langle$ Home $\rangle$ and $\langle$ End $\rangle$ keys move the selector to the top and bottom of the list. To move from one field to another on the same line, use the $\rightarrow$ and the $\leftarrow$ keys. Pressing $\rightarrow$ when the selector is over the Quantity field will cause the display to shift to the right half of the screen, allowing access to the Volume, Weight, Diameter, Height, and Dose Rate fields. Similarly, pressing $\leftarrow$ when the selector is over the Volume field will shift the display back to the left half of the screen.

When the selector bar is positioned as desired, press $\langle$ Enter $\rangle$. For all fields but Category and Disposal, the bar will change color from white-on-blue to yellow-on-red, and a cursor will appear. This indicates that you may begin entering data. When typing in the data, you may use the $\langle$ BackSpace $\rangle$, $\langle$ Del $\rangle$, or left and right arrow keys ($\leftarrow$, $\rightarrow$) as needed. The $\langle$ Ins $\rangle$ key toggles between the insert and typeover modes. A beep indicates that you tried to enter an illegal character. When satisfied with your entry, press $\langle$ Enter $\rangle$; the data field will revert to its original blue-on-white color, and the cursor will disappear. If you change your mind while entering data, press $\langle$ Esc $\rangle$; the previous value of that field will be restored.

For the case of the Category and Disposal fields, you do not actually type in the data. Instead, put the selector bar over the field and press $\langle$ Enter $\rangle$ until the desired field name appears.

Adding and deleting system components are done in the same manner as described in Section 4.4.2 and will not be repeated here.

4.5.3 Saving Files and Exiting

Files are saved as described in Section 4.4.3, except that the result file is given a BRE extension. Thus, if you save the file with the name REACTOR1, a REACTOR1.BRE file is created. This file is a detailed report file listing the contaminated system items removed and their associated transportation and burial costs. Occupational radiation doses are also given. This file is discussed in greater detail in Chapter 7. In addition to this file, the CECP will update the REACTOR1.BD data file. You exit this portion of the CECP and return to the Main Menu as described in Section 3.1.4.

4.6 MENU ITEM F: NUCLEAR STEAM SUPPLY SYSTEM (NSSS) COSTS

Menu Item F is used for entering data pertaining to large NSSS components that must be decontaminated or removed as part of the decommissioning process. Figure 4.11 shows the input screen for Menu Item F. The general screen layout should be familiar from previous discussions and will not be discussed further.

MENU ITEM F: NSSS COSTS		
1 RPV: Height (inches)		515
2 RPV: Diameter (inches)		190
3 RPV: Height adjustment (%)		0
4 RPV: Respiratory prot. adjust. (%)		20
5 RPV: Rad/ALARA activities (min)		25
6 RPV: Plasma-arc torch change-out factor (%)		46
7 RPV: Suit-up and unsuit time (min)		120
8 RPV: Work break time (min)		30
9 RPV: Number of laborers		4
10 RPV: Number of crafts		3
11 RPV: Number of crew leaders		1
12 RPV: Number of rad monitors		1
13 RPV: Dose rate, for removing int. (millirem/hr)		10
14 RPV: Dose rate, for cutting vessel (millirem/hr)		23.5
15 RCS Pipe (18"-24"): Total Length of piping (ft)		13419
16 RCS Pipe (18"-24"): Total Weight of piping (lb)		2412700
17 RCS Pipe (18"-24"): Total Volume of piping (ft3)		1758
18 RCS Pipe (18"-24"): Removal time (min)		100
19 RCS Pipe (18"-24"): Height adjustment (%)		10
20 RCS Pipe (18"-24"): Resp. prot. adjust. (%)		20
21 RCS Pipe (18"-24"): Rad/ALARA activities (min)		25
Number of records: 159		
File in use: REACTOR1.BD		
↑↓ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit		

FIGURE 4.11. Data Entry Screen for Menu Item F

4.6.1 Menu Item F Data Description

The data available from the input screen are shown in Table 4.1. There are 19 categories of NSSS system components:

Reactor Pressure Vessel (RPV) Data (Items 1-14)
Reactor Coolant System (RCS) Piping, 18-24" (15-31)
RCS Piping, 26-30" (32-48)
RCS Piping, 36-72" (49-65)
RCS Insulation (66-67)
Beams, Plates, Gratings, Cable Trays from Containment Drywell (68-77)
Equipment Removal Crew Data (78-86)
Surface Washing Crew Data (87-101)
Recirculation (Reactor Coolant) Pumps (102-116)
Main Turbine (117-119)
Main Turbine Condenser (120-127)
Moisture Separator Reheaters (128-133)
Turbine Feed Pumps (134-136)
Feed Water Heaters (137-139)
Fuel Racks (140-143)
Sacrificial Shield (144-146)
Chemical Decontamination of RCS (147-152)
Dryer Separator Pool and Refueling Cavity Data (DS & RFC) (153-154)
Spent Fuel Pool (155-157)

An explanation of each item in the file follows Table 4.1.

TABLE 4.1. Menu Item F Data

1	RPV: Height (inches)	515
2	RPV: Diameter (inches)	190
3	RPV: Height adjustment (%)	0
4	RPV: Respiratory prot. adjust. (%)	20
5	RPV: Rad/ALARA activities (min)	25
6	RPV: Plasma-arc torch change-out factor (%)	46
7	RPV: Suit-up and unsuit time (min)	120
8	RPV: Work break time (min)	30
9	RPV: Number of laborers	4
10	RPV: Number of crafts	3
11	RPV: Number of crew leaders	1
12	RPV: Number of rad monitors	1
13	RPV: Dose rate, for removing int. (millirem/hr)	10
14	RPV: Dose rate, for cutting vessel (millirem/hr)	23.5
15	RCS Pipe (18"-24"): Total Length of piping (ft)	13419
16	RCS Pipe (18"-24"): Total Weight of piping (lb)	2412700
17	RCS Pipe (18"-24"): Total Volume of piping (ft ³)	1758
18	RCS Pipe (18"-24"): Removal time (min)	100
19	RCS Pipe (18"-24"): Height adjustment (%)	10
20	RCS Pipe (18"-24"): Resp. prot. adjust. (%)	20
21	RCS Pipe (18"-24"): Rad/ALARA activities (min)	25
22	RCS Pipe (18"-24"): Suit-up and unsuit time (min)	120
23	RCS Pipe (18"-24"): Work break time (min)	30
24	RCS Pipe (18"-24"): Number of laborers	3

TABLE 4.1. (contd)

25	RCS Pipe (18"-24"):	Number of crafts	1.5
26	RCS Pipe (18"-24"):	Number of crew leaders	0.5
27	RCS Pipe (18"-24"):	Number of rad monitors	0.5
28	RCS Pipe (18"-24"):	Absorbent material (ft2)	20
29	RCS Pipe (18"-24"):	Plastic (ft2)	50
30	RCS Pipe (18"-24"):	Gases (hours)	0.33
31	RCS Pipe (18"-24"):	Dose rate (millirem/hr)	300
32	RCS Pipe (26"-30"):	Total Length of piping (ft)	2933
33	RCS Pipe (26"-30"):	Total Weight of piping (lb)	883745
34	RCS Pipe (26"-30"):	Total Volume of piping (ft3)	1758
35	RCS Pipe (26"-30"):	Removal time (min)	190
36	RCS Pipe (26"-30"):	Height adjustment (%)	10
37	RCS Pipe (26"-30"):	Resp. prot. adjust. (%)	20
38	RCS Pipe (26"-30"):	Rad/ALARA activities (min)	25
39	RCS Pipe (26"-30"):	Suit-up and unsuit time (min)	120
40	RCS Pipe (26"-30"):	Work break time (min)	30
41	RCS Pipe (26"-30"):	Number of laborers	3
42	RCS Pipe (26"-30"):	Number of crafts	1.5
43	RCS Pipe (26"-30"):	Number of crew leaders	0.5
44	RCS Pipe (26"-30"):	Number of rad monitors	0.5
45	RCS Pipe (26"-30"):	Absorbent material (ft2)	20
46	RCS Pipe (26"-30"):	Plastic (ft2)	50
47	RCS Pipe (26"-30"):	Gases (hours)	0.33
48	RCS Pipe (26"-30"):	Dose rate (millirem/hr)	300
49	RCS Pipe (36"-72"):	Total Length of piping (ft)	2159
50	RCS Pipe (36"-72"):	Total Weight of piping (lb)	582664
51	RCS Pipe (36"-72"):	Total Volume of piping (ft3)	1758
52	RCS Pipe (36"-72"):	Removal time (min)	220
53	RCS Pipe (36"-72"):	Height adjustment (%)	10
54	RCS Pipe (36"-72"):	Resp. prot. adjust. (%)	20
55	RCS Pipe (36"-72"):	Rad/ALARA activities (min)	25
56	RCS Pipe (36"-72"):	Suit-up and unsuit time (min)	120
57	RCS Pipe (36"-72"):	Work break time (min)	30
58	RCS Pipe (36"-72"):	Number of laborers	3
59	RCS Pipe (36"-72"):	Number of crafts	1.5
60	RCS Pipe (36"-72"):	Number of crew leaders	0.5
61	RCS Pipe (36"-72"):	Number of rad monitors	0.5
62	RCS Pipe (36"-72"):	Absorbent material (ft2)	20
63	RCS Pipe (36"-72"):	Plastic (ft2)	50
64	RCS Pipe (36"-72"):	Gases (hours)	0.33
65	RCS Pipe (36"-72"):	Dose rate (millirem/hr)	70
66	RCS Insulation Volume (ft3)		8635
67	RCS Insulation Weight (lb)		3200
68	Structural: Weight (lb)		1189312
69	Structural: Weight of cable & cable trays (lb)		51885
70	Structural: Number of cuts required		772
71	Structural: Linear feet of cuts		2420
72	Structural: Height adjustment (%)		0
73	Structural: Respiratory prot. adj. (%)		0
74	Structural: Rad/ALARA activities (min)		25
75	Structural: Suit-up and unsuit time (min)		120
76	Structural: Work break time (min)		30
77	Structural: Dose rate (millirem/hr)		1

TABLE 4.1. (contd)

78	Eq Rmvl Crew: Height adjustment (%)	10
79	Eq Rmvl Crew: Resp. prot. adjust. (%)	20
80	Eq Rmvl Crew: Rad/ALARA activities (min)	25
81	Eq Rmvl Crew: Suit-up and unsuit time (min)	120
82	Eq Rmvl Crew: Work break time (min)	30
83	Eq Rmvl Crew: Number of laborers	3
84	Eq Rmvl Crew: Number of crafts	1.5
85	Eq Rmvl Crew: Number of crew leaders	0.5
86	Eq Rmvl Crew: Number of rad monitors	0.5
87	Surf Wash Crew: Suit-up time (minutes)	120
88	Surf Wash Crew: Breaks (minutes)	30
89	Surf Wash Crew: ALARA (minutes)	25
90	Surf Wash Crew: Warmup (minutes)	15
91	Surf Wash Crew: Cleanup (minutes)	50
92	Surf Wash Crew: Number of laborers	2
93	Surf Wash Crew: Number of crafts	1
94	Surf Wash Crew: Number of crew leaders	0.5
95	Surf Wash Crew: Number of rad monitors	0.5
96	Surf Wash Crew: Crew dose rate (millirem/hr)	3
97	Surf Wash Crew: Cleansing rate (ft2/min)	8
98	Surf Wash Crew: Vacuum hose replacement (\$)	1180
99	Surf Wash Crew: HEPA filter replacement (\$)	300
100	Surf Wash Crew: Misc. parts (\$)	2000
101	Surf Wash Crew: Waste water process. (\$/gal)	10
102	Recirc Pumps: Number of pumps	2
103	Recirc Pumps: Weight of one pump (lb)	96072
104	Recirc Pumps: Volume of one pump (ft3)	2607
105	Recirc Pumps: Rmvl. time (1 pump, minutes)	480
106	Recirc Pumps: Height adjustment (%)	10
107	Recirc Pumps: Respiratory prot. adj. (%)	20
108	Recirc Pumps: Rad/ALARA activities (min)	25
109	Recirc Pumps: Suit-up and unsuit time (min)	120
110	Recirc Pumps: Work break time (min)	30
111	Recirc Pumps: Absorbent material (ft2)	200
112	Recirc Pumps: Plastic (ft2)	500
113	Recirc Pumps: Gases (hours)	0.33
114	Recirc Pumps: Dose rate (millirem/hr)	300
115	Recirc Pumps: Shipping cradle cost (\$)	5000
116	Recirc Pumps: Shipping cradle weight (lb)	2000
117	Turbine: Weight (lb)	4300000
118	Turbine: Cutting Time (hours/cut)	6.5
119	Turbine: Dose rate (millirem/hr)	1
120	Condenser: Weight (lb)	3000000
121	Condenser: Cutting Time (hours/cut)	6.5
122	Condenser: Shell & tube bundle area (ft2)	42000
123	Condenser: Tube bundle cross section (ft2)	375
124	Condenser: Cost of material sawed (\$/ft2)	325
125	Condenser: 10 X 10 X 25 container cost (\$)	5500
126	Condenser: 10 X 10 X 25 container weight (ft3)	5000
127	Condenser: Dose rate (millirem/hr)	1
128	MSR: Weight (lb)	460000
129	MSR: Cutting Time (hours/cut)	6.5
130	MSR: Area to be washed (ft2)	4500
131	MSR: 5 X 5 X 38 container cost (\$)	4500
132	MSR: 5 X 5 X 38 container weight (ft3)	4300
133	MSR: Dose rate (millirem/hr)	1

TABLE 4.1. (contd)

134	Turb Pump:	Number of pumps	2
135	Turb Pump:	Weight of each pump (lb)	132700
136	Turb Pump:	Dose rate (millirem/hr)	1
137	FW Heaters:	Number of heaters	16
138	FW Heaters:	Weight of each heater (lb)	121680
139	FW Heaters:	Dose rate (millirem/hr)	1
140	Fuel Racks:	Weight of all fuel racks (lb)	608752
141	Fuel Racks:	Large plastic bags, ea (\$)	1103
142	Fuel Racks:	Removal contract (\$)	826875
143	Fuel Racks:	Dose rate (millirem/hr)	1
144	Sac Shield:	Subcontractor costs (\$)	750000
145	Sac Shield:	Person-hours	3600
146	Sac Shield:	Estimated dose (person-rem)	45.7
147	Chem Decon:	Subcontractor costs (\$)	13250000
148	Chem Decon:	Energy costs (\$)	238000
149	Chem Decon:	Person-hours	8448
150	Chem Decon:	Estimated dose (person-rem)	45.7
151	Chem Decon:	Num of HICs req'd for chem decon	18
152	Chem Decon:	Num of HICs req'd for spent IX resin	5
153	DS & RFC:	Total wall area (ft2)	7774
154	DS & RFC:	Total floor area (ft2)	2215
155	SF Pool:	Total wall area (ft2)	6900
156	SF Pool:	Total floor area (ft2)	1368
157	SF Pool:	Volume (ft3)	54400

1-2: Self-explanatory.

3-4: Defined in Section 3.2.1, Items 31 and 32.

5: Defined in Section 3.2.1, Item 3.

6: This is a work difficulty factor based on the failure rate and changeout time for a plasma-arc cutting torch. This factor lengthens the time required to cut up the RPV internals. A factor of 46%, for example, means that, due to torch failures, the cutting time is increased by 46%. This work difficulty factor is applied only to cutting up the reactor internals.

7-8: Defined in Section 3.2.1, Items 1 and 2.

9-12: Self-explanatory.

13-14: Cutting the RPV internals will be done underwater by manipulators. Cutting the RPV vessel will be done at a later time, in air. Items 13 and 14 allow you to specify the dose rates, at reactor shutdown, for these two operations. (Recall that decay adjustment is discussed in Section 2.3.)

- 15-17: Self-explanatory.
- 18: The time in minutes associated with setting up all equipment and decontamination controls, making one circumferential cut, and then removing all equipment and moving on to the next cut location. This does not take into account any work difficulty factors or nonproductive time adjustments (Items 19-23).
- 19-31: Defined in Section 3.2.1.
- 32-65: These items have the same meanings as the corresponding ones in the RCS category (15-31).
- 66-67: This is the insulation removed from the various RCS components.
- 68-77: The reactor containment vessel (the drywell) contains a large assortment of steel beams, plates, and gratings that are assumed to be surface contaminated. These items are to be removed and shipped as low-level waste (LLW). The drywell also contains a large number of cable trays that will need to be removed. Item 68 is the total weight of the beams, plates and gratings; Item 69 is the total weight of the cable trays. Item 70 is the total number of cuts required to remove the beams, gratings and plates; Item 71 is the total length, in feet, of these cuts. Items 72-77 have their usual meanings.
- 78-86: These items define the parameters for the equipment removal crew. This is the crew used by the CECF to remove the equipment listed in Items 102-147 and the structural drywell Items 68-77. Items 78-86 have their usual meanings.
- 87-101: These items define the parameters for the crew that will perform surface decontamination using very high pressure water jets. Surface decontamination of this type is used for portions of the equipment pertaining to Items 120-139 and for the surfaces listed in Items 155-159. Items 87-101 have the same meanings as Items 1-15 discussed in Section 3.2.1.
- 102-116: Items 102-110 are either self-explanatory or have been defined previously. Items 111-112 are the number of square feet of blotting paper and plastic sheeting required to contain surface contamination that results while dismantling and positioning the pumps for packaging. Item 113 specifies the number hours the plasma arc torch is using its gas supply. Unit costs of Items 111-113 may be set by Items 15-17 of Table 3.1. Item 114 is the average crew dose rate in millirems/hr. Item 115 is the cost of a shipping cradle for one recirculation pump; Item 116 is the weight of this cradle in pounds.
- 117-119: These items pertain to the BWR main turbine. Items 117 and 119 are self-explanatory. Item 118 is the time required, in hours, to perform a typical cut with a plasma arc torch. It is assumed that it

will require about 170 cuts to adequately segment a turbine weighing 4,336,074 pounds into parts small enough to transport by truck. The CECF forms the ratio (Item 117)/(4,336,074) and multiplies it by 170 to get the number of cuts required to segment a turbine weighing the value specified by Item 117. Multiplying the number of cuts required by Item 118 then gives the number of crew hours required to cut up the turbine.

- 120-127: These terms refer to the main turbine condenser. Items 120 and 121 have the same meaning as Items 117 and 118. Item 122 is the area, in square feet, of the interior of the shell and the exterior of the tube bundles. These areas will be decontaminated by the washing crew (Items 87-99). Item 124 is the cost per square foot for a specialty contractor crew to cut up the tube bundles using a diamond saw. Items 125 and 126 are the cost and weight of the special containers used in packaging the condenser segments for shipment. Item 127 has the usual meaning.
- 128-133: These items, which pertain to the moisture separator reheaters, have meanings identical to the corresponding ones listed for the turbine and turbine condenser.
- 134-136: These self-explanatory items refer to the turbine-driven feed pumps.
- 137-139: These items refer to the feed water heaters. Item 138 is the average weight of each heater. The other two items are self-explanatory.
- 140-143: Item 140 is self-explanatory. The large plastic bags referred to by Item 141 are used to wrap the fuel racks in before placing them into their shipping containers. The decontamination and removal of the fuel racks will be handled by a specialty contractor. The cost of these operations is specified by Item 142. Item 143 has the usual meaning.
- 144-146: The sacrificial shield will be removed and packaged by a specialty contractor at a cost specified by Item 144. Item 145 is the total person-hrs required to complete the removal of the shield. Item 146 is self-explanatory.
- 147-152: The chemical decontamination of the reactor coolant system is performed by a subcontractor at a cost specified by Item 147. This item includes the decontamination cost itself and the subsequent water treatment and release costs.

Total energy costs incurred during chemical decontamination operations are specified in Item 148. Primary contributors to these costs are the electrical costs associated with running the recirculation and other pumps. The remaining items are self-explanatory.

- 153-154: The dryer separator pool and the refueling cavity will have surface contamination that must be removed by the surface washing crew. Items 153 and 154 specify the surface areas that will need to be washed.
- 155-157: The spent fuel pool must also be washed down. Items 155 and 156 specify the areas involved. In addition, the pool will need to be drained and the water processed. Item 157 specifies the volume of water that must be processed.

4.6.2 Entering Data, Saving Files, and Exiting

Data entry is the same as described in Section 3.1.2. Files are saved as described in Section 4.5.3, except that the result file is given a BRF extension. Thus, if you save a file with the name REACTOR1, the REACTOR1.BD file is updated and a REACTOR1.BRF file is created. The REACTOR1.BRF file is a detailed breakdown of costs associated with removing the reactor pressure vessel and its internals. You exit this portion of the CECF and return to the Main Menu as described in Section 3.1.4.

4.7 MENU ITEM G: STAFFING COSTS

This portion of the CECF allows you to enter utility and DOC staffing costs for each decommissioning period. The labor costs used in DEFAULT.BD are representative of labor costs (1993 dollars) at the WNP-2 Nuclear Plant located in Richland, Washington. The utility overhead positions and overhead rates were supplied by the Washington Public Power Supply System, the operator of the WNP-2 plant.

The data input screen for Menu Item G is shown in Figure 4.12. The first line of this screen lists the staffing fields: Job Description, Annual Salary, Overhead (in percent), Organization, and the person-years per year for periods 1 through 5 (1 2 3 4 5). Because it is not possible to fit all this information onto a single screen line, the person-years per year are designated by asterisks (*) or 0. An asterisk simply means that data is present for this item, but there is no room to show it. A zero means this job position is not staffed for that period. As an example, consider line item 1.

MENU ITEM G: STAFFING COSTS									
Job Description	Salary	Overhead	Org	1	2	3	4	5	
1 Plant Manager	113580	59	U	*	*	*	*	0	
2 Assistant Plant Manager	96497	58	U	*	*	*	0	0	
3 Secretary	25103	100.8	U	*	*	*	*	0	
4 Clerk Typist	21653	85	U	0	*	*	*	0	
5 Accountant	45738	107	U	0	*	*	*	0	
6 Contracts/Procurement Spec.	46307	99.5	U	*	*	*	*	0	
7 Industrial Safety Specialist	52494	109	U	0	*	*	*	0	
8 Planning/Scheduling Engineer	55046	71	U	0	*	0	0	0	
9 Radioactive Ship. Specialist	68019	60	U	0	*	*	*	0	
10 Chemistry Supervisor	62098	53	U	*	*	0	0	0	
11 Chemistry Technician	43950	58	U	0	*	*	*	0	
12 Quality Assurance Manager	74518	83	U	*	*	0	0	0	
13 Quality Assurance Engineer	60085	89.3	U	0	*	0	*	0	
14 Quality Assurance Technician	41992	88.3	U	0	*	*	0	0	
15 Health Physics Supervisor	62098	60	U	*	*	*	0	0	
16 ~Sr. Health Physics Technician	56899	63	U	0	*	*	0	0	
17 Health Physics/ALARA Planner	56899	63	U	0	*	0	*	0	
18 ~Health Physics Technician	43950	61	U	0	*	0	0	0	
19 Nuclear Records Specialist	52490	71	U	*	*	*	*	0	
Number of records: 71 File in use: REACTOR1.BD									
↑← Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item									
Ctrl End Insert Item at Bottom of List Save Data to a File Alt-X Quit									

FIGURE 4.12. Data Entry Screen for Menu Item G

The Job Description is Plant Manager, the salary is \$113,580, the overhead is 59%, and the organization is U (for utility). But person-years per year for Plant Manager are shown on the screen as *, *, *, *, and 0 for periods 1 through 5.

The organization codes are U, D, and N, which stand for "Utility," "DOC," and "Neither." Use N for safety consultants, other specialists, or specialty contractors who are not part of the utility or DOC staffs. The CECF calculates the salary, including overhead as

$$\text{Salary w/overhead} = (1 + \text{overhead}/100) \times (\text{annual salary}).$$

No overhead costs are calculated for the N category, so if you want to allow for overhead costs in this category, include them in the annual salary.

4.7.1 Entering Data, Saving Files, and Exiting

Data entry is very similar to the procedures discussed in Section 4.4 or 4.5. The only significant difference is in the entry of person-years per year for the various periods. By way of example, let's assume you want to examine

the person-hours per year for period 1 for Plant Manager in Figure 4.12. Use the arrow keys to position the blue bar over the asterisk under the "1" column and press <Enter>. A small red window will open (Figure 4.13), showing you the person-years per year for Plant Manager for period 1 (0.05). To close the window without changing the value, just press <Esc> or <Enter>. To change the value, merely type in the number you want and press <Enter>. The small window will close. If you change your mind while entering a number, just press <Esc>, and the window will close, leaving the original value intact. If a period is not used or if a job position does not exist for that period, you should enter a 0.

MENU ITEM G: STAFFING COSTS									
Job Description	Salary	Overhead	Org	1	2	3	4	5	
1 Plant Manager	113580	59	U	*	*	*	*	0	
2 Assistant Plant Manager	96497	58	U	*	*	*	0	0	
3 Secretary	25103	100.8	U	*	*	*	*	0	
4 Clerk Typist	21653	85	U	0	*	*	*	0	
5 Accountant	45738	107	U	0	*	*	*	0	
6 Contracts/Procurement Spec.	46307	99.5	U	*	*	*	*	0	
7 Industrial Safety Specialist	52494	109	U	0	*	*	*	0	
8 Planning/Scheduling Engineer	55046	71	U	0	*	0	0	0	
9 Radioactive Ship. Specialist	68019	60	U	0	*	*	*	0	
10 Chemistry Supervisor	Person-yrs/yr for Phase 1			*	*	0	0	0	
11 Chemistry Technician	0.05			0	*	*	*	0	
12 Quality Assurance M				*	*	0	0	0	
13 Quality Assurance Engineer	60085	89.3	U	0	*	0	*	0	
14 Quality Assurance Technician	41992	88.3	U	0	*	*	0	0	
15 Health Physics Supervisor	62098	60	U	*	*	*	0	0	
16 ~Sr. Health Physics Technician	56899	63	U	0	*	*	0	0	
17 Health Physics/ALARA Planner	56899	63	U	0	*	0	*	0	
18 ~Health Physics Technician	43950	61	U	0	*	0	0	0	
19 Nuclear Records Specialist	52490	71	U	*	*	*	*	0	
Number of records: 71 File in use: REACTOR1.BD									
↑ Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item Ctrl End Insert Item at Bottom of List Save Data to a File Alt-X Quit									

FIGURE 4.13. Entering a Value for Person-Hours per Year

It is important to remember that the values you are entering here are person-years per year, not person-years per period. If it is essential that a particular job be staffed for a certain number of person-years per period, you need to use the following relation:

$$\text{person-years/year} = (\text{desired person-years/period}) / (\text{length of period in years}).$$

As an example, in the Reference BWR study, a value of 1.7 years was used for period 4. But when the staffing requirements were calculated, it was found

that some job positions would not be required for the entire period. The industrial safety specialist, for example, would be needed for only the first 1.5 years of the 1.7-year period. So, to determine the correct value for person-years/year for this job position, the preceding formula would be used:

$$\text{person-years/year} = (1.5 \text{ person-years/period}) / (1.7 \text{ years/period}) = 0.88235294.$$

This is the value used in **DEFAULT.BD**.

The only other field requiring special comment is the organization field. This field is set by pressing <Enter> until the desired value (U, D, or N) appears. To specify that a staff position is also a radiation worker position, precede the description with a tilde (~) as in line 16 or 18 in Figure 4.12. The CECF makes additional calculations for radiation workers to find their occupational radiation exposures and protective clothing costs.

You save files as described in Section 3.1.3. Menu Item G produces result files with **BRG** file extensions. A **BRG** file contains a complete listing of staffing costs by period. Table 7.4 is an example **BRG** file. You exit this portion of the CECF and return to the Main Menu as described in Section 3.1.4.

4.8 MENU ITEM H: UNDISTRIBUTED COSTS

This portion of the CECF allows you to enter property taxes, insurance costs, and other undistributed costs for each decommissioning period. Figure 4.14 shows the input data screen.

For each decommissioning period, you may enter data for the following items:

1. Average annual property taxes
2. Average annual nuclear insurance costs
3. Annual Regulatory costs
4. DOC mobilization and de-mobilization costs
5. Energy consumption fraction
6. Environmental monitoring.

Figure 4.14 shows all six of these items for the first three periods and the first three items for period 4. Notice that property taxes, insurance, and regulatory costs are on an annual basis. Regulatory costs are costs associated with applicable state or NRC safety and security inspections.

MENU ITEM H: UNDISTRIBUTED COSTS		
1	Period 1: Property Taxes (\$/year)	0
2	Insurance (\$/year)	0
3	Regulatory Costs (\$/year)	142932
4	DOC Mobil/Demobil (\$)	0
5	Energy Consumption Fraction	0
6	Environ. Monitoring (\$/year)	0
7	Period 2: Property Taxes (\$/year)	0
8	Insurance (\$/year)	2662600
9	Regulatory Costs (\$/year)	359300
10	DOC Mobil/Demobil (\$)	0
11	Energy Consumption Fraction	1
12	Environ. Monitoring (\$/year)	48603
13	Period 3: Property Taxes (\$/year)	0
14	Insurance (\$/year)	600000
15	Regulatory Costs (\$/year)	25518
16	DOC Mobil/Demobil (\$)	0
17	Energy Consumption Fraction	0.005708
18	Environ. Monitoring (\$/year)	4860
19	Period 4: Property Taxes (\$/year)	0
20	Insurance (\$/year)	1198600
21	Regulatory Costs (\$/year)	359300
Using File REACTOR1.BD		
↑↓ Home End PgUp PgDn Select item ← Enter Data Save Alt-X Quit		

FIGURE 4.14. Data Entry Screen for Menu Item H

There are significant costs associated with a contractor establishing itself at the work site. These costs include obtaining temporary office facilities, obtaining the required special equipment, and assembling the work force. There are similar costs for closing down the work site. All these costs are covered by Item 4.

The energy consumption fraction (Item 5) is the fraction of total site energy costs that is to be allocated to decommissioning activities. Enter a decimal number from 0 to 1. If you enter 1, all site energy costs will be allocated to decommissioning; if you enter 0, the utility will pay all energy costs. Energy costs paid by the utility are not charged to decommissioning.

Environmental monitoring (Item 6) is the annual cost of monitoring the extent and consequences of releases of radioactivity or chemicals from the nuclear power plant. Such monitoring is conducted by a specialty contractor. The percentage of monitoring costs you charge to decommissioning depends on the amount of active decommissioning work done during each period. For the example used in REACTOR1.BD, no monitoring costs were assigned for period 1, 100% (\$48603/year) were assigned in period 2, 10% (\$4860/year) were assigned in period 3, and 100% were assigned in period 4.

4.8.1 Entering Data, Saving Files, and Exiting

Data are entered in precisely the same manner that was described in Section 3.1.2. Exit this portion of the CECF and return to the Main Menu as described in Section 3.1.4.

4.9 MENU ITEM I: FINAL SUMMARY REPORT

This part of the CECF creates a site summary of all decommissioning cost estimates. When you select Item I from the Main Menu, the file menu will appear, and you will be prompted to specify which **BD** file to use. The screen shown in Figure 4.15 will then appear. From this screen, you select the case study for which you want to get a summary report. You may also copy and delete files from this menu.

```

MENU ITEM I:  FINAL SUMMARY REPORT

Select a Case Study Name

Case Studies
REACTOR1
REACTOR2
SAFSTOR1
SAFSTOR2

*** Press C to copy case study files ***
*** Press <Del> to delete a case study ***

```

FIGURE 4.15. Selecting a Case Study

To obtain a summary report for a case study, move the selector bar up or down to pick the study you want. Assume you pick REACTOR2. Then the screen will appear as shown in Figure 4.16. This screen applies **only** to decommissioning studies that are variations of a base case. Suppose, for

Sensitivity Case Option

If REACTOR2 is a variation of a base case study, and you did NOT adjust the decommissioning periods and overhead staffing to reflect changes in person-hours, you may elect to have the CECP make all the necessary adjustments for you. These changes will modify the following files: REACTOR2.BD, REACTOR2.BRG, and REACTOR2.BRI.

Would you like the CECP to make these adjustments <YN>?

FIGURE 4.16. Sensitivity Case Option

example, that Reactor1 is your primary case study for a certain reactor. You decide it would be interesting to see how increasing the work difficulty factors will increase overall decommissioning costs. To do this you run another case, Reactor2, say, which is identical to Reactor1, except that you have increased the work difficulty factors in file REACTOR2.BD. You create all other Reactor2 files in the usual way. They will be identical to the corresponding Reactor1 files except that they will have the REACTOR2 prefix. Now you run Menu Item I to generate a summary for the Reactor2 case. Since Reactor2 is a "sensitivity case" (a variation of a base case study), you may want to answer "yes" to the prompt in Figure 4.16. Doing so will cause the screen to change as shown in Figure 4.17. Since Reactor1 is the base case for Reactor2, you would select REACTOR1 and press <Enter>. The CECP will now automatically create new REACTOR2.BD and REACTOR2.BRG files to reflect the increased person-hours resulting from the increased work difficulty factors.

Sensitivity Case Option

If REACTOR2 is a variation of a base case study, and you did NOT adjust the decommissioning periods and overhead staffing to reflect changes in person-hours, you may elect to have the CECP make all the necessary adjustments for you. These changes will modify the following files: REACTOR2.BD, REACTOR2.BRG, and REACTOR2.BRI.

Would you like the CECP to make these adjustments <YN>? Y

Select the base case file name from the list below.

Select a Case Study

REACTOR1

REACTOR2

SAFSTOR1

SAFSTOR2

FIGURE 4.17. Selecting the Base Case

Whether or not you decide to make use of the sensitivity case option, the CECP will now proceed to create the summary by processing data from various portions of the data file (REACTOR2.BD). The result is REACTOR2.BRI, the summary report for the Reactor2 case. The CECP will report when it has completed building the summary file. You can then press <ESC> to return to the Main Menu.

As mentioned earlier, in addition to creating summary files, you may also copy and delete files from the screen shown in Figure 4.14. To copy files to a diskette or to another drive or subdirectory, move the selector bar up or down to pick the case you want, and then press <C>. A small window will open and you will be asked to specify the destination path name for the case files you selected. Type in the path name and press <Enter>. If the path exists, the files will be copied. If the path cannot be found or if a disk drive door is open, you will hear a beep, indicating an error. Make sure your path name is correct and try again. Should you decide not to copy files, press <ESC>.

To delete all files associated with a case study, move the selector bar up or down to pick the case you want, and then press . A warning window will open, asking you to confirm the deletion of all files. To continue with the deletion, press <Y>, and all files making up that study will be deleted. Pressing any key but <Y> will cancel the file deletion operation.

5.0 BURIAL COST DATA

With the exception of the highly activated reactor components that must to be sent to a GTCC geologic repository, the CECP assumes that all radioactive materials resulting from decommissioning will be sent to a low-level waste site.

Burial costs for the geologic repository are assumed to be based solely on a cost-per-unit-volume basis. This number is entered by the user as Item 18 in Menu Item 1 (Table 3.1).

Burial cost data for the low-level waste sites are more complex than the geologic repository and must be stored in files. Recall that the user tells the CECP which low-level burial site to use (Menu Item A, Figure 4.1, line 10). If the user specifies HANFORD, the CECP reads in a set of values appropriate to the Hanford Site from the **HANF.DAT** file. Similarly, if the user specifies BARNWELL, data from **BARN.DAT** are read. Finally, if the user specifies GENERIC, the CECP will read the **GENERIC.DAT** file.

The Hanford and Barnwell sites change their rate schedules frequently. To keep the data files up to date, three utility programs have been included with the CECP package. The **HANFBURY.EXE** utility updates **HANF.DAT**, **BARNBURY.EXE** updates **BARN.DAT**, and **GENBURY.EXE** updates **GENERIC.DAT**. These utilities are run at the DOS prompt, not from within the CECP itself.

5.1 BURIAL COSTS FOR HANFORD

This section explains how to use the **HANFBURY.EXE** utility to update the **HANF.DAT** file. To run **HANFBURY.EXE**, make sure you are in the CECP program subdirectory and then type **HANFBURY<Enter>** at the DOS prompt. Figure 5.1 shows the first screen that you will see. As the figure shows, Screen 1 is used for creating a lookup table for packages. The ">" symbol means "greater than." So line 5, for example, means that a package whose dose rate is greater than 5 R/hr but less than or equal to 10 R/hr will be charged \$44.50 per cubic foot. The selector bar, shown positioned over the upper bound of

HANFORD: PACKAGES					
	R/HR AT CONTAINER SURFACE				PRICE PER CUBIC FOOT
1		0	to	0.2	35.92
2	>	0.2	to	1	37.70
3	>	1	to	2	39.10
4	>	2	to	5	40.60
5	>	5	to	10	44.50
6	>	10	to	20	53.20
7	>	20	to	40	61.40

Number of Records: 7

↑← Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item
 Ctrl End Insert at End Tab Upper Range F1/F2 Next/Prev Screen Alt-X Quit

FIGURE 5.1. Hanford Buriál Data, Screen 1

the first dose range in line 1, is moved around on the screen in a manner identical to that discussed in previous sections of this document and will not be discussed further here.

To see how to modify the data, suppose that a new Hanford rate schedule comes out that is identical to the previous one, except that line 7 has been modified and a new range (new line 8) has been added. The new rates are

H/HR AT CONTAINER SURFACE	PRICE PER CU. FT
> 20 - 30	61.40
> 30 - 40	72.30

Data from this modified schedule are incorporated as follows: First, move the bar down to line 7 and enter the new upper range, "30." Then, to create a new line of data at the bottom, press <Ctrl-End>. Figure 5.2 shows the situation at this point. Notice that the upper range value in line 7 (30 R/HR) has been automatically copied into the lower range value in line 8. So, the only values left to be entered are "40" and "72.40" in line 8. Entering new values

HANFORD: PACKAGES					
	R/HR AT CONTAINER SURFACE				PRICE PER CUBIC FOOT
1		0	to	0.2	35.92
2	>	0.2	to	1	37.70
3	>	1	to	2	39.10
4	>	2	to	5	40.60
5	>	5	to	10	44.50
6	>	10	to	20	53.20
7	>	20	to	30	61.40
8	>	30	to	0	0.00

Number of Records: 8

↑← Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item
 Ctrl End Insert at End Tab Upper Range F1/F2 Next/Prev Screen Alt-X Quit

FIGURE 5.2. Entering New Data

into the middle of the table is done in a similar manner. Using the <Ins> key as needed, enter the upper range value for each line; the program will automatically adjust the lower range values for the line. Then enter the new values for the PRICE PER CUBIC FOOT column. Lines may be deleted using the key. The program will request confirmation before deleting any line.

To specify dose rates above the last value given in the table, use the <Tab> key to open the UPPER RANGE INFORMATION window. With the data as shown in Figure 5.1, the screen will appear as indicated in Figure 5.3 when the <Tab> key is pressed. To enter data in this window, just move the selector bar up or down, type in the data, and press <Enter>. Close the window by pressing <Esc>.

So far, the discussion has been confined to Screen 1 (HANFORD: PACKAGES). To move to the next screen, press <F1>; to move to the previous one, press <F2>. Data entry for Screens 2, 3, and 4 is the same as for Screen 1 and will not be discussed. Screen 5, HANFORD: SPECIAL CHARGES, TAXES AND FEES, is shown in Figure 5.4.

HANFORD: PACKAGES				
	R/HR AT CONTAINER SURFACE		PRICE PER CUBIC FOOT	
1		0 to 0.2		35.92
2	>	0.2 to 1		37.70
3	>	1 to 2		39.10
4	>	2 to 5		40.60
5	>	5 to 10		44.50
6	>	10 to 20		53.20
7	>	20 to 40		61.40

Enter Upper Range Information

For values greater than 40 R/HR the charge is:
~~\$ 86.90~~ plus
\$ 0.541 times R/HR in excess of 40.

Press <Esc> to close this window.

Number of Records: 7

↑↔ Home End PgUp PgDn Move Bar ← Enter Data Insert Item Delete Item
Ctrl End Insert at End Tab Upper Range F1/F2 Next/Prev Screen Alt-X Quit

FIGURE 5.3. Entering Upper Range Information

HANFORD: SPECIAL CHARGES, TAXES AND FEES	
Truck Cask: Remains on Vehicle During Unloading	1000.00
Truck Cask: Removed from Vehicle During Unloading	25000.00
Rail Cask	50000.00
Poly HIC in Large Engineered Concrete Barrier	9520.00
Poly HIC in Small Engineered Concrete Barrier	8325.00
Special Nuclear Material (\$ per gram per shipment)	10.00
Decontamination Services (\$ per hour)	150.00
Perpetual Care and Maintenance Fee (\$ per cubic foot)	1.75
Business and Occupation Tax (percent)	5.50
Site Surveillance Fee (\$ per cubic foot)	1.99
City Surcharge (\$ per cubic foot)	6.50
Commission Regulatory Fee (percent)	1.00

↑↔ Move Bar ← Enter Data F1/F2 Next/Prev Screen Save Alt-X Quit

FIGURE 5.4. Miscellaneous Burial Data

As can be seen in Figure 5.4, Screen 5 consists of miscellaneous data. The last item, "Commission Regulatory Fee," is in percent; the remaining items are in dollars. Data entry for this screen is very simple: merely put the bar where you want it, press <Enter>, type in your data, and press <Enter> again.

You may save data to the **HANF.DAT** file at any time by pressing the <S> key. Note that this overwrites the previous data in the file. To exit from **HANFBURY.EXE**, press <Alt-X>.

5.2 BURIAL COSTS FOR BARNWELL AND GENERIC SITES

As mentioned previously, the burial cost data for Barnwell are stored in the **BARN.DAT** file. To update data in this file, the user runs the **BARNBURY.EXE** utility. To run the utility, make sure you are in the CECP program subdirectory, and then type **BARNBURY**<Enter> at the DOS prompt.

You enter data for the Barnwell Site in virtually the same way as you do for the Hanford Site discussed in Section 5.1. **BARNBURY.EXE** has only three lookup table screens, compared with four for **HANFBURY.EXE**. The fourth screen is a miscellaneous data screen similar to Screen 5 of the Hanford data.

To enter data for a generic site, the user runs the **GENERIC.EXE** utility to update the **GENERIC.DAT** file. Rate schedules for generic sites are modeled on the Hanford rate schedule. Thus, the screens in **GENERIC.EXE** are identical with **HANFBURY.EXE**, except that the word **GENERIC** replaces **HANFORD**.

6.0 A SAMPLE RUN

Now that the details of CECF operation have been presented, it is a good idea to actually create a case study, so that the user can see how all the parts of the CECF work together. Let us make a case study called **TEST**. Once **TEST** is created, you can examine its output files using the file viewer. In the interests of time and simplicity, we will use the default values throughout, so that no actual data entry will be required. This means we can start with Menu Item D. We will be using some short-cut keys that will make our work a little easier. We proceed as follows:

1. At the Main Menu, press <D> to access Menu Item D. Press <Enter> to pick the **DEFAULT.BD** file. Then, because we do not want to change any data, press <S> to save the file. Type in **TEST**<Enter> to create the **TEST.BD** file. This file is an exact copy of **DEFAULT.BD**. Notice that in addition to making **TEST.BD**, the CECF also creates the output file **TEST.BRD**. Now, instead of pressing <Alt-X> to get back to the Main Menu, press <Alt-E> instead. This short-cut key will put you directly into the file menu of Menu Item E.
2. At this point, you should be in the file menu of Menu Item E. Use the down arrow key to position the bar over **TEST** and press <Enter> to load **TEST.BD**. Now, to create the **TEST.BRE** file, just press <S> and type **TEST**<Enter>. Press <Alt-F> to get into the file menu of Menu Item F.
3. By now the process should be clear. Proceed as above until you get to the file menu of Menu Item I. (You may skip Menu Item H since we are not changing any data, and Item H does not produce an output file.) The screen now looks like Figure 4.15, except that the only case study available is the one you are constructing, **TEST**. Press <Enter> to accept **TEST**. The screen changes to Figure 4.16, but the files listed are the **TEST** files. **TEST** is not a variation of a previous study, so press <N> here. If all goes well, you will get a message saying that report file **TEST.BRI** is complete.

To view the output files you created (**TEST.BRD**, **TEST.BRE**, **TEST.BRF**, **TEST.BRG**, and **TEST.BRI**), press <Esc> and then <V> at the Main Menu, or just press <Alt-V> while still in Menu I. You should see the screen shown in Figure 6.1. Then to examine, for example, the **BRI** files available, press <5>. The screen changes to the one shown in Figure 6.2. Because the only case

FIGURE 6.1. The File Viewer Menu

FIGURE 6.2. Selecting Summary Output Files

study available is the one you just created, there is only one **BRI** file: **TEST.BRI**. (There is no **DEFAULT.BRI** file. In fact, the only **DEFAULT** files the CECF permits is the data input file that came on the distribution diskette.) Press <Enter> to select **TEST.BRI**. The CECF will then turn control over to the editor you specified during the installation procedure. Thus, you should see **TEST.BRI** on the screen, running in your editor. You may use your editor in the manner you are accustomed to. When you exit from your editor, the screen will revert to Figure 6.1. Should you decide to change to a different editor, press <W>. A small window will open, allowing you to type in the name of your new editor. The CECF will use this editor until you change it again from this menu. To exit from the File Viewer Menu, press <Esc>.

Printing an output file is accomplished exactly the same way as viewing it, except that you press <P> at the Main Menu, rather than <V>. If any of the printer-string files (**CLAND.P**, **CPORT.P**, and **GOTH.P**) are missing, the CECF will not print your output files. If the printer-string files are present, but a printer other than an HP LaserJet 3 or LaserJet 4 is connected to LPT1, your output files will probably not print out correctly.

7.0 CECP OUTPUT FILES

This chapter contains complete listings of the five output files produced by the CECP. The examples shown here are the **TEST** files you created in Chapter 6.

Table 7.1 is the **TEST.BRE** file created from Menu Item E, which contains a detailed report of the potentially radioactive system components that are to be removed during the decommissioning process. Note that this report is in three parts: 1) "POTENTIALLY RADIOACTIVE SYSTEMS: PHYSICAL CHARACTERISTICS"; 2) "POTENTIALLY RADIOACTIVE SYSTEMS: CREW-HOURS, PERSON-HOURS, ETC."; and 3) "POTENTIALLY RADIOACTIVE SYSTEMS: REMOVAL, TRANSPORTATION, DISPOSAL COSTS." The column headings used in (1) were previously defined in Section 4.5. The headings in (2) are self-explanatory. The headings used in (3) are defined below.

- Removal: The total labor costs (including overhead, shift differential and consumables costs) of removing the listed components.
- Container: The cost of the B-25 containers or modified Sea-Vans needed to accommodate the component.
- Transport: The cost of shipping the component by truck to the burial site.
- Disposal: The cost of burying the component at the burial site, including applicable burial surcharges.

TABLE 7.1. Contents of File TEST.BRE

File: E:\BWR\TEST.BRE
Plant Name: WASH NUCLEAR 2

+++++
+ INVENTORY OF POTENTIALLY RADIOACTIVE SYSTEMS: PHYSICAL CHARACTERISTICS +
+++++

*** Control Rod Drive System

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
CRD Blade	Lg Misc.	Sea-Van	460	400	9		
CRD Mechanism	Lg Misc.	Sea-Van	225	480	6		
Direction Control Set	Sm Misc.	Sea-Van	185	80	0		
Scram Valve	Sm Valve	Sea-Van	370	70	2		
Scram Accumulator	Lg Misc.	Sea-Van	210	140	1		
CRD Pump	Lg Pump	Sea-Van	2	4,000	9		
Scram Discharge Volume	Lg Misc.	Sea-Van	2	2,000	8		
Pump Suction Filter	Lg Misc.	Sea-Van	2	400	5		
CRD Drive Water Filter	Sm Misc.	Sea-Van	2	100	2		
3/4 Inch Valve	Sm Valve	Sea-Van	2,042	30	0		
1 Inch Valve	Sm Valve	Sea-Van	185	50	0		
2 Inch Valve	Sm Valve	Sea-Van	379	90	1		
4 Inch Valve	Lg Valve	Sea-Van	7	268	3		
2 Inch Restricting Orifice	Sm Misc.	Sea-Van	1	60	0		
2 Inch Flow Control Valve	Lg Misc.	Sea-Van	2	160	1		
1 Inch Air-Operated Vent	Sm Misc.	Sea-Van	1	90	1		
2 Inch Air-Operated Drain	Lg Misc.	Sea-Van	1	145	1		
2 Inch Flow Element	Sm Misc.	Sea-Van	2	50	0		
1 Inch Flow Element	Sm Misc.	Sea-Van	1	30	0		
Instrument Root Valve	Sm Valve	Sea-Van	39	8	0		

*** Feed and Condensate

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Condensate Booster Pump	Lg Pump	Sea-Van	3	26,444	642		
Condensate Pump	Lg Pump	Sea-Van	3	48,200	1,128		
Gland Exhaust Condenser	Lg Misc.	Sea-Van	1	8,880	56		
Air Ejector Condenser	Lg Misc.	Sea-Van	2	14,568	945		
Off-Gas Condenser	Lg Misc.	Sea-Van	1	1,975	260		
Condensate Storage Tanks	Lg Misc.	Sea-Van	2	111,179	7,063		
Seal Steam Evaporator	Lg Misc.	Sea-Van	2	29,627	978		
Seal Steam Evaporator Blowdown Cooler	Lg Misc.	Sea-Van	2	470	3		

TABLE 7.1. Contents of File TEST.BRE (contd)

24 Inch MOV	Lg Valve Sea-Van	16	15,750	89
24 Inch Valve	Lg Valve Sea-Van	3	15,750	89
24 Inch Stop-Check Valve	Lg Valve Sea-Van	2	9,450	80
24 Inch Air-Operated Check Valve	Lg Valve Sea-Van	1	10,000	81
24 Inch Flow-Element	Lg Valve Sea-Van	4	9,200	80
20 Inch MOV	Lg Valve Sea-Van	14	9,000	78
20 Inch Valve	Lg Valve Sea-Van	8	9,000	78
20 Inch Check Valve	Lg Valve Sea-Van	6	5,400	72
20 Inch Air-Operated Check	Lg Valve Sea-Van	1	6,000	73
20 Inch Flow Element	Lg Valve Sea-Van	3	5,400	72
18 Inch MOV	Lg Valve Sea-Van	2	10,140	61
18 Inch Valve	Lg Valve Sea-Van	2	10,140	61
16 Inch MOV	Lg Valve Sea-Van	3	6,000	44
16 Inch Air Control Valve	Lg Valve Sea-Van	1	6,000	44
16 Inch Air-Operated Check	Lg Valve Sea-Van	1	3,900	40
16 Inch Flow Element	Lg Valve Sea-Van	2	3,600	40
16 Valve	Lg Valve Sea-Van	3	6,000	44
16 Inch Check	Lg Valve Sea-Van	1	3,600	40
12 Inch Air-Operated Valve	Lg Valve Sea-Van	2	3,200	24
12 Inch Valve	Lg Valve Sea-Van	3	3,000	24
12 Inch Flow Element	Lg Valve Sea-Van	1	1,800	21
10 Inch Air-Operated Valve	Lg Valve Sea-Van	1	1,640	18
10 Inch Valve	Lg Valve Sea-Van	10	1,610	18
10 Inch Flow Element	Lg Valve Sea-Van	3	880	14
8 Inch Air-Operated Valve	Lg Valve Sea-Van	2	1,125	15
8 Inch Valve	Lg Valve Sea-Van	1	1,125	15
6 Inch Air-Operated Valve	Lg Valve Sea-Van	3	640	10
3 Inch Air-Operated Valve	Sm Valve Sea-Van	1	153	1
3 Inch Valve	Sm Valve Sea-Van	4	153	1
3 Inch Flow Element	Sm Valve Sea-Van	1	100	1
2-1/2 MOV	Sm Valve Sea-Van	5	120	1
2-1/2 Inch Valve	Sm Valve Sea-Van	5	120	1
2-1/2 Inch Check Valve	Sm Valve Sea-Van	4	70	1
2 Inch Air-Operated Valve	Sm Valve Sea-Van	5	75	1
2 Inch Valve	Sm Valve Sea-Van	21	75	1
1 1/2 Inch Valve	Sm Valve Sea-Van	16	62	1
1 1/2 Inch Relief Valve	Sm Valve Sea-Van	3	50	1
1 Inch MOV	Sm Valve Sea-Van	2	50	1
1 Inch Air-Operated Valve	Sm Valve Sea-Van	3	50	1
1 Inch Valve	Sm Valve Sea-Van	79	50	1
1 Inch Check Valve	Sm Valve Sea-Van	2	38	1
1 Inch Relief Valve	Sm Valve Sea-Van	20	42	1
1 Inch Restricting Orifice	Sm Valve Sea-Van	2	38	1
3/4 Inch Relief Valve	Sm Valve Sea-Van	7	40	1
1/2 Inch Valve	Sm Valve Sea-Van	3	25	0

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Check Valve	Sm Valve	Sea-Van	3	15	0
1/2 Inch Restricting Orifice	Sm Valve	Sea-Van	3	18	0
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	119	32	0

*** Chemical Waste Processing

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Chemical Waste Tank	Tank	Sea-Van	2	11,066	52	12.20	18.10
Detergent Drain Tank	Tank	Sea-Van	2	4,039	24	6.00	7.90
Detergent Drain Pump	Lg Pump	Sea-Van	2	385	7		
Concentrator Feed Pump	Lg Pump	Sea-Van	2	559	7		
Chemical Waste Pump	Lg Pump	Sea-Van	2	1,054	9		
Detergent Drain Filter	Lg Misc.	Sea-Van	1	2,495	2		
Chemical Addition Tank	Tank	Sea-Van	2	500	4	2.60	4.00
Tank Agitators	Sm Misc.	Sea-Van	2	80	1		
Chemical Addition Pump	Sm Pump	Sea-Van	2	385	--		
Distillate Tank	Tank	Sea-Van	2	11,066	52	12.20	18.10
Distillate Tank Pump	Lg Pump	Sea-Van	2	508	5		
Distillate Polishing Demineralizer	Lg Misc.	Sea-Van	1	999	651		
Decon Solution Concentrator	Lg Misc.	Sea-Van	2	7,500	187		
Decon Solution Concentrator Waste Tank	Tank	Sea-Van	2	1,566	17	5.60	5.60
Decon Concentrator Bottom Recycle Pump	Lg Pump	Sea-Van	2	1,857	40		
Decon Concentrator Condenser	Lg Misc.	Sea-Van	2	5,078	61		
Decon Concentrator Pre Heater	Lg Misc.	Sea-Van	2	6,923	105		
Decon Concentrator Waste Pump	Lg Pump	Sea-Van	1	559	8		
Chemical Waste Stream Mixer	Lg Misc.	Sea-Van	2	245	1		
Condensate Receiver Tank	Tank	Sea-Van	2	2,093	45	3.80	10.20
Condensate Receiver Tank Pump	Sm Pump	Sea-Van	2	225	6		
8 Inch Air-Operated Valve	Lg Valve	Sea-Van	2	340	144		
6 Inch MOV	Lg Valve	Sea-Van	2	180	7		
6 Inch Valve	Lg Valve	Sea-Van	3	180	7		
4 Inch MOV	Lg Valve	Sea-Van	4	100	3		
4 Inch Valve	Lg Valve	Sea-Van	5	100	3		
4 Inch Check Valve	Lg Valve	Sea-Van	2	80	2		
4 Inch Flow Element	Lg Valve	Sea-Van	2	80	2		
3 Inch MOV	Sm Valve	Sea-Van	2	65	1		
3 Inch Air-Operated Valve	Sm Valve	Sea-Van	15	65	1		
3 Inch Valve	Sm Valve	Sea-Van	14	65	1		
3 Inch Check Valve	Sm Valve	Sea-Van	5	60	1		
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	60	1		
3 Inch Flow Element	Sm Valve	Sea-Van	1	60	1		
2 Inch Air-Operated Valve	Sm Valve	Sea-Van	8	40	1		
2 Inch Valve	Sm Valve	Sea-Van	25	40	1		
2 Inch Check Valve	Sm Valve	Sea-Van	7	35	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch Relief Valve	Sm Valve Sea-Van	2	40	1
2 Inch Flow Element	Sm Valve Sea-Van	3	35	1
1 1/2 Inch Air-Operated Valve	Sm Valve Sea-Van	3	35	1
1 1/2 Inch Valve	Sm Valve Sea-Van	31	35	1
1 1/2 Check Valve	Sm Valve Sea-Van	8	30	0
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	4	30	0
1 Inch Air-Operated Valve	Sm Valve Sea-Van	7	30	0
1 Inch Valve	Sm Valve Sea-Van	23	30	0
1 Inch Check Valve	Sm Valve Sea-Van	12	25	0
1 Inch Restricting Orifice	Sm Valve Sea-Van	6	25	0
Instrument Root Valves (Typ. 3/4" Globe)	Sm Valve Sea-Van	96	32	0

*** Containment Instrument Air

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
6 Inch Valve	Lg Valve	Sea-Van	1	180	7		
6 Inch Check Valve	Lg Valve	Sea-Van	1	150	6		
2 Inch Valve	Sm Valve	Sea-Van	100	40	1		
2 Inch Check Valve	Sm Valve	Sea-Van	2	35	1		
2 Inch Relief Valve	Sm Valve	Sea-Van	1	42	1		
1 1/4 Inch 3-Way Valve	Sm Valve	Sea-Van	62	55	1		
1 1/4 Inch 4-Way Valve	Sm Valve	Sea-Van	4	60	1		
3/4 Inch Valve	Sm Valve	Sea-Van	3	32	0		
3/4 Inch Relief Valve	Sm Valve	Sea-Van	2	25	0		
1/2 Inch Valve	Sm Valve	Sea-Van	48	20	0		
Instrument Air Accumulators	Lg Misc.	Sea-Van	22	285	2		

*** Fuel Pool Cooling and Cleanup

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
FPCC Pumps	Lg Pump	Sea-Van	2	1,161	62		
FPCC Demineralizer	Tank	Sea-Van	2	3,450	16	3.00	13.20
Skimmer Surge Tank	Tank	Sea-Van	2	11,793	67	5.90	25.00
Resin Eductor	Tank	Sea-Van	1	80	0	0.60	1.60
FPCC Heat Exchanger	Lg HX	Sea-Van	2	4,490	62		
Supp. Pool Cleanup Pump	Lg Pump	Sea-Van	1	1,161	19		
Resin Tank Agitator	Sm Misc.	Sea-Van	2	80	3		
Fuel Pool Precoat Pump	Lg Pump	Sea-Van	1	625	13		
Dust Evacuator (Precoat)	Lg Misc.	Sea-Van	1	230	3		
FPCC Hold Pump	Lg Pump	Sea-Van	2	429	6		
FPCC Output Diffusers	Lg Pipe	Sea-Van	120	29	0		
FPCC Precoat Tank	Tank	Sea-Van	1	500	4	2.60	4.00
FPCC Resin Tank	Tank	Sea-Van	1	500	4	2.60	4.00

TABLE 7.1. Contents of File TEST.BRE (contd)

10 Inch Valve (No internals)	Lg Valve Sea-Van	2	305	18
10 Inch Valve	Lg Valve Sea-Van	4	500	18
10 Inch Check Valve	Lg Valve Sea-Van	3	370	14
10 Inch Flow Element	Lg Valve Sea-Van	3	370	14
8 Inch MOV	Lg Valve Sea-Van	2	320	14
8 Inch Valve	Lg Valve Sea-Van	5	320	14
8 Inch Check Valve	Lg Valve Sea-Van	1	240	11
6 Inch MOV	Lg Valve Sea-Van	10	180	7
6 Inch Valve	Lg Valve Sea-Van	14	180	7
6 Inch Check Valve	Lg Valve Sea-Van	3	150	6
6 Inch Air Operated Valve	Lg Valve Sea-Van	9	180	6
6 Inch Flow Element	Lg Valve Sea-Van	1	150	6
4 Inch Air Operated Valve	Lg Valve Sea-Van	1	100	3
4 Inch Check Valve	Lg Valve Sea-Van	1	80	2
4 Inch Flow Element	Lg Valve Sea-Van	1	80	2
3 Inch Air Operated Valve	Sm Valve Sea-Van	2	65	1
3 Inch Valve	Sm Valve Sea-Van	1	65	1
3 Inch Check Valve	Sm Valve Sea-Van	2	60	1
2 Inch Air Operated Valve	Sm Valve Sea-Van	3	40	1
2 Inch Valve	Sm Valve Sea-Van	5	40	1
2 Inch Check Valve	Sm Valve Sea-Van	1	35	1
2 Inch Relief Valve	Sm Valve Sea-Van	1	45	1
1 1/2 Inch Valve	Sm Valve Sea-Van	1	35	1
1 Inch Valve	Sm Valve Sea-Van	10	35	0
1 Inch Check Valve	Sm Valve Sea-Van	1	30	0
1 Inch Relief Valve	Sm Valve Sea-Van	2	38	0
1 Inch Flow Element	Sm Valve Sea-Van	1	30	0
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	75	32	0

*** Condensate Demineralizers

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Filter Demineralizers	Tank	Sea-Van	6	11,675	28	7.00	10.60
Resin Trap (with basket)	Lg Misc.	Sea-Van	6	2,100	23		
Demineralizer Hold Pump	Lg Pump	Sea-Van	6	350	8		
Condensate Backwash Receiving Tank	Tank	Sea-Van	1	15,224	59	12.20	21.10
Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	924	16		
Condensate Decant Pump	Lg Pump	Sea-Van	1	924	16		
Condensate Backwash Pump	Lg Pump	Sea-Van	1	924	16		
Condensate Phase Separator Tank	Tank	Sea-Van	2	7,001	60	15.20	17.20
34 Foot Loop Seal	Lg Pipe	Sea-Van	150	19	0		
36 Inch Flow Element	Lg Valve	Sea-Van	1	1,800	200		
20 Inch Butterfly Valve	Lg Valve	Sea-Van	2	3,900	65		
18 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	1	3,100	61		

TABLE 7.1. Contents of File TEST.BRE (contd)

12 Inch Butterfly Valve	Lg Valve Sea-Van	6	1,120	24
12 Inch Air Operated Butterfly Valve	Lg Valve Sea-Van	12	1,120	24
12 Inch Flow Element	Lg Valve Sea-Van	6	1,000	24
8 Inch Air Operated Butterfly Valve	Lg Valve Sea-Van	22	530	14
8 Inch Butterfly Valve	Lg Valve Sea-Van	2	530	15
8 Inch Air Operated Valve	Lg Valve Sea-Van	1	750	15
8 Inch Check Valve	Lg Valve Sea-Van	5	430	11
8 Inch Flow Element	Lg Valve Sea-Van	2	400	11
6 Inch Air Operated Valve	Lg Valve Sea-Van	12	375	7
6 Inch Valve	Lg Valve Sea-Van	2	375	7
6 Inch Air Operated Butterfly Valve	Lg Valve Sea-Van	21	350	7
6 Inch Check Valve	Lg Valve Sea-Van	3	270	6
4 Inch Air Operated Valve	Lg Valve Sea-Van	5	180	3
4 Inch Check Valve	Lg Valve Sea-Van	1	130	3
3 Inch Air Operated Valve	Sm Valve Sea-Van	2	130	1
3 Inch Air Operated Butterfly Valve	Sm Valve Sea-Van	6	120	1
3 Inch Butterfly Valve	Sm Valve Sea-Van	1	120	1
3 Inch Restricting Orifice	Sm Valve Sea-Van	1	80	1
2 Inch Air Operated Butterfly Valve	Sm Valve Sea-Van	6	55	1
2 Inch Butterfly Valve	Sm Valve Sea-Van	2	55	1
2 Inch Valve	Sm Valve Sea-Van	43	75	1
2 Inch Check Valve	Sm Valve Sea-Van	5	50	1
2 Inch Relief Valve	Sm Valve Sea-Van	3	65	1
1 1/2 Inch Valve	Sm Valve Sea-Van	1	58	1
1 Inch Air Operated Valve	Sm Valve Sea-Van	13	45	1
1 Inch Valve	Sm Valve Sea-Van	18	45	1
1 Inch Check Valve	Sm Valve Sea-Van	5	30	1
1 Inch Relief Valve	Sm Valve Sea-Van	6	42	1
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	149	32	0

*** Equipment Drain Processing

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Waste Demineralizer	Tank	Sea-Van	1	1,998	33	5.00	10.20
Waste Collector Filter	Lg Misc.	Sea-Van	1	3,991	138		
Waste Filter Hold Pump	Lg Pump	Sea-Van	1	700	9		
Waste Collector Tank and Eductor	Tank	Sea-Van	1	22,530	66	16.20	18.10
Waste Collector Pump	Lg Pump	Sea-Van	1	625	20		
Spent Resin Tank	Tank	Sea-Van	1	1,448	18	5.90	5.90
Spent Resin Pump	Lg Pump	Sea-Van	1	224	8		
Waste Surge Tank and Eductor	Tank	Sea-Van	1	40,269	114	25.00	20.10
Waste Surge Pump	Lg Pump	Sea-Van	1	625	20		
Waste Sample Tank and Eductor	Tank	Sea-Van	2	15,330	53	15.00	14.50
Waste Sample Pump	Lg Pump	Sea-Van	2	508	16		

Instrument Root Valve (typ. 3/4" globe)					Qty	Wgt(1b)	Vol(ft3)	Dia(ft)	Hgt(ft)
Component Description	Category	Disposal	Qty	Wgt(1b)	Vol(ft3)	Dia(ft)	Hgt(ft)	Tanks	
8 Inch Air Operated Valve	Lg Valve Sea-Van		1	320	14				
6 Inch Air Operated Valve	Lg Valve Sea-Van		1	180	7				
6 Inch Check Valve	Lg Valve Sea-Van		2	150	6				
6 Inch Flow Element	Lg Valve Sea-Van		1	150	6				
6 Inch Flow Sight Glass	Lg Misc. Sea-Van		1	120	5				
4 Inch Air Operated Valve	Lg Valve Sea-Van		27	100	3				
4 Inch Valve	Lg Valve Sea-Van		14	100	3				
4 Inch Check Valve	Lg Valve Sea-Van		13	80	2				
4 Inch Resin Strainer	Sm Misc. Sea-Van		1	80	3				
4 Inch Restricting Orifice	Sm Valve Sea-Van		7	80	2				
4 Inch Flow Element	Lg Valve Sea-Van		1	80	2				
4 Inch Resin Screen	Sm Misc. Sea-Van		5	70	1				
3 Inch Air Operated Valve	Sm Valve Sea-Van		4	65	1				
3 Inch Valve	Sm Valve Sea-Van		7	65	1				
3 Inch Check Valve	Sm Valve Sea-Van		2	60	1				
3 Inch Restricting Orifice	Sm Valve Sea-Van		1	60	1				
3 Inch Flow Element	Sm Valve Sea-Van		1	60	1				
2 Inch Air Operated Valve	Sm Valve Sea-Van		4	40	1				
2 Inch Valve	Sm Valve Sea-Van		14	40	1				
2 Inch Check Valve	Sm Valve Sea-Van		2	35	1				
2 Inch Relief Valve	Sm Valve Sea-Van		1	40	1				
2 Inch Flow Element	Sm Valve Sea-Van		3	35	1				
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van		2	35	1				
1 1/2 Inch Valve	Sm Valve Sea-Van		5	35	1				
1 1/2 Check Valve	Sm Valve Sea-Van		3	30	0				
1 Inch Air Operated Valve	Sm Valve Sea-Van		4	30	0				
1 Inch Valve	Sm Valve Sea-Van		6	30	0				
1 Inch Check Valve	Sm Valve Sea-Van		10	25	0				
1 Inch Flow Element	Sm Valve Sea-Van		1	25	0				
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van		55	32	0				
*** Extraction Steam									
24 Inch MOV	Lg Valve Sea-Van		6	7,100	--				
24 Inch Stop Check Valve	Lg Valve Sea-Van		6	5,690	--				
20 Inch MOV	Lg Valve Sea-Van		10	5,800	--				
20 Inch Stop Check Valve	Lg Valve Sea-Van		10	4,640	--				
18 Inch MOV	Lg Valve Sea-Van		5	4,900	--				
18 Inch Stop Check Valve	Lg Valve Sea-Van		5	3,920	--				
16 Inch MOV	Lg Valve Sea-Van		2	4,230	--				
16 Inch Stop Check Valve	Lg Valve Sea-Van		2	3,384	--				
8 Inch Air Operated Valve	Lg Valve Sea-Van		6	1,125	--				
6 Inch MOV	Lg Valve Sea-Van		4	588	--				

TABLE 7.1. Contents of File TEST.BRE (contd)

4 Inch Air Operated Valve	Lg Valve Sea-Van	4	268	--
2 Inch Air Operated Valve	Sm Valve Sea-Van	10	75	--
2 Inch Restricting Orifice	Sm Valve Sea-Van	12	55	--
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	85	32	--

*** High/Low Pressure Core Spray

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
24" Suction Strainer	Lg Misc.	Sea-Van	2	378	13		
18 Inch MOV	Lg Valve	Sea-Van	1	4,900	61		
24 Inch Check Valve	Lg Valve	Sea-Van	1	7,100	89		
3 Inch Valve	Sm Valve	Sea-Van	1	153	1		
3 Inch Check Valve	Sm Valve	Sea-Van	1	100	1		
14 Inch MOV	Lg Valve	Sea-Van	1	2,760	31		
20 Inch Check Valve	Lg Valve	Sea-Van	1	6,000	70		
12 X 24 Inch Pump	Lg Pump	Sea-Van	1	60,374	1,071		
16 Inch Check Valve	Lg Valve	Sea-Van	1	1,600	31		
2 Inch Valve	Sm Valve	Sea-Van	1	90	1		
1 X 2 Inch Pump	Lg Pump	Sea-Van	1	181	19		
1 Inch Check Valve	Sm Valve	Sea-Van	1	50	0		
1 Inch Valve	Sm Valve	Sea-Van	1	50	0		
1 1/2 X 2 Inch Valve	Sm Valve	Sea-Van	1	90	2		
6 Inch Valve	Lg Valve	Sea-Van	2	588	7		
12 Inch Valve	Lg Valve	Sea-Van	3	2,240	21		
10 Inch MOV	Lg Valve	Sea-Van	1	1,610	16		
12 Inch MOV	Lg Valve	Sea-Van	2	2,240	21		
3/4 Inch Valve	Sm Valve	Sea-Van	42	90	0		
24 Inch Suction Strainer	Lg Misc.	Sea-Van	2	378	13		
Vent Strainer	Sm Misc.	Sea-Van	1	95	3		
3/4 Inch Valve	Sm Valve	Sea-Van	28	30	0		
24 Inch MOV	Lg Valve	Sea-Van	1	7,100	89		
3/4 Inch Check Valve	Sm Valve	Sea-Van	1	30	0		
1 1/2 Inch Valve	Sm Valve	Sea-Van	4	62	1		
14 X 24 Pump	Lg Pump	Sea-Van	1	21,200	134		
Pump Pit	Lg Misc.	Sea-Van	1	400	4		
16 Inch Valve	Lg Valve	Sea-Van	1	1,600	31		
12 Inch MOV	Lg Valve	Sea-Van	1	2,240	21		
12 Inch Valve	Lg Valve	Sea-Van	2	2,240	21		
16 Inch Flow Control Valve	Lg Valve	Sea-Van	1	4,030	45		
6 Inch Flow Control Valve	Lg Valve	Sea-Van	1	588	7		
6 Inch Valve	Lg Valve	Sea-Van	1	588	7		
1 X 2 Inch Pump	Lg Pump	Sea-Van	1	181	19		
1 1/2 Check Valve	Sm Valve	Sea-Van	1	50	0		
3 Inch Valve	Sm Valve	Sea-Van	1	153	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

12 Inch Check Valve	Lg Valve Sea-Van	1	1,200	15		
3/4 Inch Air Operated Valve	Sm Valve Sea-Van	1	30	0		
*** Miscellaneous Drains						
Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	Tanks Dia(ft) Hgt(ft)
Misc. Drain Tank #1	Tank	Sea-Van	1	1,073	36	4.00 8.90
Misc. Drain Tank #2 (includes pumps)	Tank	Sea-Van	1	1,441	43	5.60 15.10
6 Inch Valve	Lg Valve Sea-Van		2	588	7	
4 Inch Valve	Lg Valve Sea-Van		5	268	3	
3 Inch MOV	Sm Valve Sea-Van		8	153	1	
3 Inch Air Operated Valve	Sm Valve Sea-Van		3	153	1	
3 Inch Valve	Sm Valve Sea-Van		3	100	1	
3 Inch Check Valve	Sm Valve Sea-Van		2	130	1	
3 Inch Strainer	Sm Valve Sea-Van		8	100	1	
3 Inch Restricting Orifice	Sm Valve Sea-Van		4	100	1	
3 Inch Flow Element	Sm Valve Sea-Van		2	100	1	
2 Inch MOV	Sm Valve Sea-Van		1	75	1	
2 Inch Air Operated Valve	Sm Valve Sea-Van		11	75	1	
2 Inch Valve	Sm Valve Sea-Van		11	75	1	
2 Inch Restricting Orifice	Sm Valve Sea-Van		26	55	1	
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van		3	62	1	
1 1/2 Inch Valve	Sm Valve Sea-Van		2	62	1	
1 Inch Air Operated Valve	Sm Valve Sea-Van		8	50	1	
1 Inch Valve	Sm Valve Sea-Van		7	50	1	
1 Inch Steam Trap	Sm Valve Sea-Van		2	90	1	
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van		47	32	0	
1/2 Inch Valve	Sm Valve Sea-Van		14	90	1	
2 1/2 Inch Air operated Valve	Sm Valve Sea-Van		2	131	1	
2 1/2 Inch Valve	Sm Valve Sea-Van		3	131	1	
*** Main Steam and MS Leakage Control						
Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	Tanks Dia(ft) Hgt(ft)
72 Inch MOV (Butterfly)	Lg Valve Sea-Van		1	21,300	2,300	
Stop Valve	Lg Valve Sea-Van		6	7,100	89	
Interceptor Valve	Lg Valve Sea-Van		6	7,100	89	
30 Inch MSIV	Lg Valve Sea-Van		8	1,400	170	
24 Inch MOV	Lg Valve Sea-Van		1	7,100	89	
24 Inch Relief Valve	Lg Valve Sea-Van		4	9,230	90	
20 Inch Relief Valve	Lg Valve Sea-Van		2	7,700	86	
16 Inch MOV	Lg Valve Sea-Van		1	4,230	50	
16 Inch Check Valve	Lg Valve Sea-Van		2	3,380	40	

TABLE 7.1. Contents of file TEST.PRE (contd)

Item	QTY	UNIT	DESCRIPTION	PRICE	TOTAL
14	1	INCH	14 INCH CHECK VALVE	2,220	2,220
14	2	INCH	14 INCH MOV	2	2
12	2	INCH	12 INCH MOV	2,500	2,500
12	2	INCH	12 INCH STOP CHECK VALVE	1,970	1,970
30	2	INCH	30 INCH FLOW RESTRICTOR	3,000	3,000
8	4	INCH	8 INCH AO SRV	2,030	2,030
10	36	INCH	10 INCH VACUUM BREAKER	900	900
24	18	X 12	24 X 12 INCH QUENCHER	1,650	1,650
10	8	INCH	10 INCH MOV	1,610	1,610
8	2	INCH	8 INCH VALVE	1,125	1,125
8	5	INCH	8 INCH CHECK VALVE	1	1
6	8	INCH	6 INCH MOV	11	11
6	3	INCH	6 INCH CHECK VALVE	268	268
6	3	INCH	6 INCH VALVE	2	2
6	3	INCH	6 INCH MOV	153	153
3	3	INCH	3 INCH MOV	153	153
3	3	INCH	3 INCH AIR OPERATED VALVE	153	153
3	3	INCH	3 INCH FLOW ELEMENT	100	100
2	2	INCH	2 INCH MOV	75	75
2	2	INCH	2 INCH AIR OPERATED VALVE	75	75
2	5	INCH	2 INCH VALVE	393	393
2	7	INCH	2 INCH VALVE SEA-VAN	7	7
1	7	INCH	1 INCH VALVE SEA-VAN	62	62
1	4	INCH	1 INCH VALVE SEA-VAN	50	50
1	75	INCH	1 INCH VALVE SEA-VAN	50	50
1	195	INCH	1 INCH VALVE SEA-VAN	32	32
0	163	INCH	0 INCH VALVE SEA-VAN	25	25
0	35	INCH	0 INCH MOV SEA-VAN	90	90
1	4	INCH	1 INCH MI SC SEA-VAN	95	95
1	2	INCH	1 INCH MI SC SEA-VAN	220	220
4	2	INCH	4 INCH VALVE SEA-VAN	1,029	1,029
15	4	INCH	15 INCH MI SC SEA-VAN	520	520
5	4	INCH	5 INCH MI SC SEA-VAN	8,900	8,900
55	1	INCH	55 INCH MI SC SEA-VAN	14,600	14,600
922	2	INCH	922 INCH MI SC SEA-VAN	11,600	11,600
571	1	INCH	571 INCH MI SC SEA-VAN	29,674	29,674
3,809	2	INCH	3,809 INCH LG VALVE SEA-VAN	8,000	8,000
100	8	INCH	100 INCH LG VALVE SEA-VAN	25	25
0	0	INCH	0 INCH VALVE SEA-VAN	38	38
1	2	INCH	1 INCH VALVE SEA-VAN	14	14
50	14	INCH	50 INCH SM VALVE SEA-VAN	50	50

TABLE 7.1. Contents of File TEST.BRE (contd)

1 Inch Check Valve (MSLC)	Sm Valve Sea-Van	4	38	1
1 1/2 Inch Flow Element (MSLC)	Sm Valve Sea-Van	4	46	1
1 1/2 Inch MOV (MSLC)	Sm Valve Sea-Van	20	50	1
1 1/2 Check Valve (MSLC)	Sm Valve Sea-Van	2	46	1
MSLC Fan (3 Inch)	Lg Misc. Sea-Van	2	450	8
MSLC Heater	Lg Misc. Sea-Van	4	125	2

*** Radioactive Floor Drain Processing

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Floor Drain Demineralizer	Tank	Sea-Van	1	1,997	33	5.00	10.20
Floor Drain Sample Tank	Tank	Sea-Van	1	15,330	53	14.90	14.50
Floor Drain Sample Pump	Lg Pump	Sea-Van	1	508	17		
Floor Drain Filter Aid Pump	Lg Pump	Sea-Van	1	260	4		
Floor Drain Filter Hold Pump	Lg Pump	Sea-Van	1	699	8		
Floor Drain Filter	Lg Misc. Sea-Van	1	3,991	14			
Floor Drain Collector Pump	Lg Pump	Sea-Van	1	625	21		
Floor Drain Collector Tank	Tank	Sea-Van	1	22,530	66	16.20	18.10
Waste Decant Pump	Lg Pump	Sea-Van	1	224	8		
Waste Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	634	13		
Waste Sludge Phase Sep. Tank w/ 2 Eductors	Tank	Sea-Van	1	12,093	41	14.20	11.20
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	320	10		
6 Inch Air Operated Valve	Lg Valve	Sea-Van	3	180	5		
6 Inch Check Valve	Lg Valve	Sea-Van	2	150	5		
6 Inch Flow Site Glass	Lg Misc. Sea-Van	1	100	1			
4 Inch MOV	Lg Valve	Sea-Van	1	100	3		
4 Inch Air Operated Valve	Lg Valve	Sea-Van	21	100	3		
4 Inch Valve	Lg Valve	Sea-Van	18	100	3		
4 Inch Check Valve	Lg Valve	Sea-Van	11	80	2		
4 Inch Restricting Orifice	Lg Valve	Sea-Van	4	80	2		
4 Inch Resin Strainer	Lg Misc. Sea-Van	1	250	2			
3 Inch Air Operated Valve	Sm Valve	Sea-Van	5	65	1		
3 Inch Valve	Sm Valve	Sea-Van	3	65	1		
3 Inch Check Valve	Sm Valve	Sea-Van	3	60	1		
3 Inch Flow Element	Sm Valve	Sea-Van	1	55	1		
3 Inch Flow Site Glass	Sm Misc. Sea-Van	2	40	1			
2 Inch Air Operated Valve	Sm Valve	Sea-Van	4	40	1		
2 Inch Valve	Sm Valve	Sea-Van	9	40	1		
2 Inch Check Valve	Sm Valve	Sea-Van	3	35	1		
2 Inch Relief Valve	Sm Valve	Sea-Van	1	40	1		
2 Inch Stop Check Valve	Sm Valve	Sea-Van	1	40	1		
2 Inch Flow Site Glass	Sm Misc. Sea-Van	2	30	0			
2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	35	1		
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	2	35	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

1 1/2 Inch Valve	Sm Valve Sea-Van	1	35	1
1 Inch Relief Valve	Sm Valve Sea-Van	1	30	1
1 1/2 Inch Flow Element	Sm Valve Sea-Van	1	30	0
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	30	0
1 Inch Check Valve	Sm Valve Sea-Van	3	25	0
1 Inch Solenoid Valve	Sm Valve Sea-Van	1	30	0
1 Inch Ball Valve	Sm Valve Sea-Van	1	30	0
1 Inch Flow Site Glass	Sm Misc. Sea-Van	1	20	0
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	50	15	0
1/2 Inch Solenoid Valve	Sm Valve Sea-Van	2	15	0
1/2 Inch Check Valve	Sm Valve Sea-Van	5	15	0

*** Turbine & Rad Waste Bldg. Drains

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
EDR Sump Pump	Lg Pump	Sea-Van	6	1,289	17		
FDR Sump Pump	Lg Pump	Sea-Van	7	1,065	17		
Chemical Drain Sump Pump	Lg Pump	Sea-Van	1	1,467	17		
6 Inch Restricting Orifice	Lg Valve	Sea-Van	19	150	6		
3 Inch Valve	Sm Valve	Sea-Van	6	65	1		
3 Inch Check Valve	Sm Valve	Sea-Van	6	60	1		
2 Inch MOV	Sm Valve	Sea-Van	3	40	1		
2 Inch Valve	Sm Valve	Sea-Van	8	40	1		
2 Inch Check Valve	Sm Valve	Sea-Van	8	35	1		
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	22	32	0		

*** Offgas

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Catalytic Recombiner Vessel	Tank	Sea-Van	2	999	24	4.60	6.90
Preheater Heat Exchanger	Lg HX	Sea-Van	2	1,185	150		
Offgas Condenser	Lg Misc.	Sea-Van	1	1,976	260		
Water Separator	Lg Misc.	Sea-Van	1	598	4		
Lab Vacuum Pump	Sm Pump	Sea-Van	4	90	1		
Water Separator	Lg Misc.	Sea-Van	2	2,994	5		
Charcoal Ads. Vessel	Tank	Sea-Van	8	8,980	90	4.00	22.80
Cooler Condenser	Lg Misc.	Sea-Van	2	1,995	24		
Seal Water Trap	Lg Pipe	Sea-Van	20	19	0		
Pre-Filter Vessel	Tank	Sea-Van	2	2,495	13	3.00	10.60
After-Filter Vessel	Tank	Sea-Van	2	2,495	13	3.00	10.60
Dessicant Dryers	Lg Misc.	Sea-Van	4	1,371	28		
Dryer Heater	Lg Misc.	Sea-Van	2	7,384	54		
Dryer Chiller	Lg Misc.	Sea-Van	2	4,990	366		

TABLE 7.1. Contents of File TEST.BRE (contd)

Regen Blower	Lg Misc. Sea-Van	2	1,400	21
6 Inch Air Operated Valve	Lg Valve Sea-Van	9	180	7
6 Inch Valve	Lg Valve Sea-Van	18	180	7
4 Inch MOV	Lg Valve Sea-Van	2	100	3
4 Inch Air Operated Valve	Lg Valve Sea-Van	4	100	3
3 Inch Air Operated Valve	Sm Valve Sea-Van	2	65	1
3 Inch Valve	Sm Valve Sea-Van	6	65	1
2 Inch Air Operated Valve	Sm Valve Sea-Van	4	40	1
2 Inch Valve	Sm Valve Sea-Van	10	40	1
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	3	35	1
1 1/2 Inch Valve	Sm Valve Sea-Van	4	35	1
1 1/2 Relief Valve	Sm Valve Sea-Van	1	37	1
1 1/2 Flow Element	Sm Valve Sea-Van	2	30	0
1 Inch Air Operated Valve	Sm Valve Sea-Van	16	30	0
1 Inch Valve	Sm Valve Sea-Van	30	30	0
1 Inch Relief Valve	Sm Valve Sea-Van	2	32	0
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	89	32	0

*** Reactor Building Closed Cooling Water

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
RBCCW Heat Exchanger	Lg HX	Sea-Van	3	16,432	245	4.00	6.00
RBCCW Pump	Lg Pump	Sea-Van	2	3,518	28		
RBCCW Surge Tank	Tank	Sea-Van	1	1,170	24		
Drywell Cooler (w/ two axial fans)	Lg Misc.	Sea-Van	5	1,640	29		
14 Inch MOV	Lg Valve	Sea-Van	1	990	26		
12 Inch Valve	Lg Valve	Sea-Van	3	730	23		
10 Inch MOV	Lg Valve	Sea-Van	7	550	18		
10 Inch Valve	Lg Valve	Sea-Van	6	550	18		
10 Inch Check Valve	Lg Valve	Sea-Van	4	370	14		
10 Inch Flow Element	Lg Valve	Sea-Van	1	370	14		
8 Inch MOV	Lg Valve	Sea-Van	5	340	14		
8 Inch Valve	Lg Valve	Sea-Van	2	340	14		
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	340	10		
8 Inch Flow Element	Lg Valve	Sea-Van	4	240	10		
6 Inch Valve	Lg Valve	Sea-Van	6	210	7		
6 Inch Check Valve	Lg Valve	Sea-Van	4	150	6		
6 Inch Air Operated Valve	Lg Valve	Sea-Van	1	210	7		
6 Inch Flow Element	Lg Valve	Sea-Van	1	150	6		
4 Inch MOV	Lg Valve	Sea-Van	7	120	3		
4 Inch Air Operated Valve	Lg Valve	Sea-Van	1	120	3		
4 Inch Valve	Lg Valve	Sea-Van	3	120	3		
3 Inch Valve	Sm Valve	Sea-Van	9	80	1		
3 Inch Electro-Hydraulic Valve	Sm Valve	Sea-Van	3	80	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	Tanks	
						Dia(ft)	Hgt(ft)
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	45	1		
2 Inch Valve	Sm Valve	Sea-Van	10	45	1		
2 Inch Relief Valve	Sm Valve	Sea-Van	1	48	1		
1 Inch Valve	Sm Valve	Sea-Van	6	30	0		
1 Inch Relief Valve	Sm Valve	Sea-Van	7	32	0		
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	149	32	0		
*** Reactor Core Isolation Cooling							
Pelton Wheel Turbine and RCIC Pump	Lg Misc.	Sea-Van	1	13,790	158		
Barometric Condenser	Lg Misc.	Sea-Van	1	1,219	2		
Condenser Pump	Lg Pump	Sea-Van	1	1,496	2		
Water Leg Pump	Lg Pump	Sea-Van	1	876	19		
Vacuum Pump	Lg Pump	Sea-Van	1	999	1		
Vacuum Tank	Tank	Sea-Van	1	898	2		
Steam Condensate Drip Pot	Tank	Sea-Van	1	240	0		
8 Inch Suction Strainer	Lg Misc.	Sea-Van	2	145	1		
3/4 Inch Steam Trap	Sm Misc.	Sea-Van	4	55	1		
10 Inch Exhaust Drip Chamber	Lg Misc.	Sea-Van	1	680	2		
Turbine Exhaust Sparger	Lg Misc.	Sea-Van	1	530	2		
10 Inch MOV	Lg Valve	Sea-Van	3	1,610	18		
10 Inch Check Valve	Lg Valve	Sea-Van	1	880	14		
8 Inch Valve	Lg Valve	Sea-Van	2	1,125	15		
8 Inch Check Valve	Lg Valve	Sea-Van	1	1,125	15		
6 Inch MOV	Lg Valve	Sea-Van	2	740	11		
6 Inch Valve	Lg Valve	Sea-Van	3	588	7		
6 Inch Check Valve	Lg Valve	Sea-Van	2	588	7		
6 Inch Air Operated Check Valve	Lg Valve	Sea-Van	1	420	6		
6 Inch Restricting Orifice	Lg Valve	Sea-Van	2	490	6		
4 Inch MOV	Lg Valve	Sea-Van	2	420	6		
4 Inch Hydraulic Control Valve	Lg Valve	Sea-Van	3	268	3		
3 Inch Restricting Orifice	Lg Valve	Sea-Van	1	450	6		
2 Inch MOV	Sm Valve	Sea-Van	2	99	1		
2 Inch Air Operated Valve	Sm Valve	Sea-Van	4	75	1		
2 Inch Valve	Sm Valve	Sea-Van	1	75	1		
2 Inch Check Valve	Sm Valve	Sea-Van	4	75	1		
2 Inch Relief Valve	Sm Valve	Sea-Van	6	55	1		
2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	64	1		
1 1/2 Inch MOV	Sm Valve	Sea-Van	2	55	1		
1 1/2 Valve	Sm Valve	Sea-Van	1	62	1		
1 1/2 Check Valve	Sm Valve	Sea-Van	2	62	1		
1 1/2 Inch Relief Valve	Sm Valve	Sea-Van	1	46	1		
	Sm Valve	Sea-Van	1	50	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

Component Description	Category	Disposal	Qty	Wgt(1b)	Vol(ft3)	Tanks	
						Dia(ft)	Hgt(ft)
1 1/2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	46	1		
1 Inch Air Operated Valve	Sm Valve	Sea-Van	5	50	1		
1 Inch Pressure Control Valve	Sm Valve	Sea-Van	1	60	1		
1 Inch Valve	Sm Valve	Sea-Van	5	50	1		
1 Inch Restricting Orifice	Sm Valve	Sea-Van	9	38	1		
3/4 Inch Air Solenoid	Sm Valve	Sea-Van	1	32	0		
3/4 Inch Pressure Control Valve	Sm Valve	Sea-Van	2	50	1		
Dragon Valve (excess flow check)	Sm Valve	Sea-Van	8	50	1		
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	204	32	0		
*** Residual Heat Removal							
RHR Pump	Lg Pump	Sea-Van	3	17,164	235		
Water Leg Pump	Lg Pump	Sea-Van	1	875	19		
Drywell Upper Spray Ring Header	Lg Pipe	Sea-Van 0	135	140	1		
Drywell Lower Spray Ring Header	Lg Pipe	Sea-Van 0	206	140	1		
Wetwell Spray Ring Header	Lg Pipe	Sea-Van	260	45	0		
Suppression Pool Suction Strainers	Lg Misc.	Sea-Van	6	430	11		
RHR Heat Exchanger	Lg HX	Sea-Van	2	64,295	566		
24 Inch MOV	Lg Valve	Sea-Van	3	15,750	89		
20 Inch MOV	Lg Valve	Sea-Van	2	9,000	78		
20 Inch Valve	Lg Valve	Sea-Van	1	9,000	78		
18 Inch MOV	Lg Valve	Sea-Van	11	10,140	61		
18 Inch Valve	Lg Valve	Sea-Van	8	10,140	61		
18 Inch Check Valve	Lg Valve	Sea-Van	5	6,084	54		
18 Inch Flow Element	Lg Valve	Sea-Van	3	6,084	54		
18 Inch Restricting Orifice	Lg Valve	Sea-Van	2	6,084	54		
16 Inch MOV	Lg Valve	Sea-Van	4	6,000	44		
14 Inch MOV	Lg Valve	Sea-Van	4	3,400	34		
14 Inch Valve	Lg Valve	Sea-Van	2	3,400	34		
14 Inch Air Operated Check Valve	Lg Valve	Sea-Van	3	2,140	31		
14 Inch Restricting Orifice	Lg Valve	Sea-Van	2	2,080	31		
12 Inch MOV	Lg Valve	Sea-Van	3	2,240	25		
12 Inch Valve	Lg Valve	Sea-Van	3	2,240	25		
12 Inch Air Operated Check Valve	Lg Valve	Sea-Van	3	1,280	22		
12 Inch Restricting Orifice	Lg Valve	Sea-Van	1	1,200	22		
10 Inch Valve	Lg Valve	Sea-Van	2	1,610	18		
10 Inch Check Valve	Lg Valve	Sea-Van	1	880	14		
8 Inch MOV	Lg Valve	Sea-Van	2	1,125	15		
8 Inch Air Operated Control Valve	Lg Valve	Sea-Van	1	740	11		
6 Inch MOV	Lg Valve	Sea-Van	3	588	7		
6 Inch Valve	Lg Valve	Sea-Van	3	588	7		
6 Inch Check Valve	Lg Valve	Sea-Van	4	420	6		

TABLE 7.1. Contents of File TEST.BRE (contd)

6 Inch Ganged Restricting Orifice	Lg Valve Sea-Van	3	680	8
6 Inch Restricting Orifice	Lg Valve Sea-Van	2	400	6
6 Inch Relief Valve	Lg Valve Sea-Van	2	500	7
6 Inch Flow Element	Lg Valve Sea-Van	1	420	6
4 Inch MOV	Lg Valve Sea-Van	4	268	3
4 Inch Valve	Lg Valve Sea-Van	2	268	3
4 Inch Check Valve	Lg Valve Sea-Van	1	180	3
3 Inch MOV	Sm Valve Sea-Van	3	153	1
3 Inch Valve	Sm Valve Sea-Van	11	153	1
3 Inch Check Valve	Sm Valve Sea-Van	1	100	1
2 1/2 Inch Air Operated Control Valve	Sm Valve Sea-Van	1	90	1
2 Inch MOV	Sm Valve Sea-Van	1	75	1
2 Inch Valve	Sm Valve Sea-Van	8	75	1
2 Inch Check Valve	Sm Valve Sea-Van	4	55	1
2 Inch Relief Valve	Sm Valve Sea-Van	2	64	1
1 1/2 Inch MOV	Sm Valve Sea-Van	2	62	1
1 1/2 Inch Valve	Sm Valve Sea-Van	3	62	1
1 1/2 Inch Check Valve	Sm Valve Sea-Van	3	46	1
1 1/2 Inch Stop Check Valve	Sm Valve Sea-Van	2	50	1
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	46	1
1 Inch MOV	Sm Valve Sea-Van	2	50	1
1 Inch Valve	Sm Valve Sea-Van	8	50	1
1 Inch Check Valve	Sm Valve Sea-Van	1	38	1
1 Inch Relief Valve	Sm Valve Sea-Van	8	42	1
Dragon Valve (excess flow check)	Sm Valve Sea-Van	4	50	1
3/4 Inch Solenod Valve	Sm Valve Sea-Van	4	40	1
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	227	32	0

*** Misc. Recirculation System Components

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
24 Inch MOV	Lg Valve	Sea-Van	2	10,500	89		
24 Inch MOV	Lg Valve	Sea-Van	4	10,500	89		
3/4 Inch Check Valve	Sm Valve	Sea-Van	2	25	0		
3/4 Inch Valve	Sm Valve	Sea-Van	76	32	0		
3/4 Inch Restricting Orifice	Sm Valve	Sea-Van	28	25	0		
3/4 Inch Flow Element	Sm Valve	Sea-Van	12	25	0		
3/4 Inch Relief Valve	Sm Valve	Sea-Van	2	27	0		
3/4 Inch MOV	Sm Valve	Sea-Van	2	32	0		
1 Inch Valve	Sm Valve	Sea-Van	92	50	1		
1 Inch Restricting Orifice	Sm Valve	Sea-Van	10	38	1		
2 Inch Valve	Sm Valve	Sea-Van	4	75	1		
Dragon Valve (excess Flow check)	Sm Valve	Sea-Van	30	50	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Reactor Water Cleanup						----- Tanks -----	
Component Description	Category	Disposal	Qty	Wgt(lb)	Vol (ft3)	Dia(ft)	Hgt(ft)
RWCU Pump	Lg Pump	Sea-Van	2	1,300	20		
Cleanup Hold Pump	Lg Pump	Sea-Van	2	1,177	16		
Cleanup Precoat Pump	Lg Pump	Sea-Van	1	1,000	13		
Sludge Discharge Pump	Lg Pump	Sea-Van	1	625	13		
Decant Pump	Lg Pump	Sea-Van	1	225	6		
Non-Regenerative Heat Exchanger	Lg HX	Sea-Van	2	9,000	149		
Regenerative Heat Exchanger	Lg HX	Sea-Van	3	9,100	120		
Filter Demineralizer	Tank	Sea-Van	2	7,000	11	3.00	8.90
Batch Tank	Tank	Sea-Van	1	500	4	2.60	4.00
Phase Separator Tank	Tank	Sea-Van	2	4,500	27	10.20	8.90
Precoat Agitator	Sm Misc.	Sea-Van	1	60	1		
6 Inch MOV	Lg Valve	Sea-Van	7	588	7		
6 Inch Valve	Lg Valve	Sea-Van	2	588	7		
6 Inch Check Valve	Lg Valve	Sea-Van	1	588	7		
6 Inch Flow Element	Lg Valve	Sea-Van	2	588	7		
6 Inch Restricting Orifice	Lg Valve	Sea-Van	1	588	7		
4 Inch MOV	Lg Valve	Sea-Van	6	268	3		
4 Inch Air Operated Valve	Lg Valve	Sea-Van	16	268	3		
4 Inch Flow Element	Lg Valve	Sea-Van	1	268	3		
4 Inch Valve	Lg Valve	Sea-Van	11	268	3		
4 Inch Check Valve	Lg Valve	Sea-Van	4	268	3		
4 Inch Relief Valve	Lg Valve	Sea-Van	1	268	3		
4 Inch Restricting Orifice	Lg Valve	Sea-Van	1	268	3		
3 Inch Air Operated Valve	Sm Valve	Sea-Van	16	153	1		
3 Inch Valve	Sm Valve	Sea-Van	4	153	1		
3 Inch Check Valve	Sm Valve	Sea-Van	2	153	1		
3 Inch Flow Element	Sm Valve	Sea-Van	2	153	1		
2 Inch Air Operated Valve	Sm Valve	Sea-Van	6	90	1		
2 Inch Valve	Sm Valve	Sea-Van	10	90	1		
2 Inch Check Valve	Sm Valve	Sea-Van	1	90	1		
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	50	0		
1 Inch Valve	Sm Valve	Sea-Van	21	50	0		
1 Inch Relief Valve	Sm Valve	Sea-Van	5	50	0		
Excess Flow Check Valve	Sm Valve	Sea-Van	3	35	0		
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	129	30	0		
1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	2	20	0		
1/2 Inch Valve	Sm Valve	Sea-Van	2	20	0		
1/2 Inch Check Valve	Sm Valve	Sea-Van	2	15	0		

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Reactor Building Equipment & Floor Drains

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Drain Sump Pump	Lg Pump	Sea-Van	4	1,153	21		
Drain Sump Pump	Lg Pump	Sea-Van	3	1,432	22		
Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	1,496	61		
Drywell Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	1,496	61		
6 Inch Air Operated Valve	Lg Valve	Sea-Van	4	180	6		
6 Inch Restricting Orifice	Lg Valve	Sea-Van	24	150	6		
4 inch Valve	Lg Valve	Sea-Van	7	100	3		
4 Inch Check Valve	Lg Valve	Sea-Van	1	80	2		
4 Inch Restricting Orifice	Lg Valve	Sea-Van	6	80	2		
3 Inch Air Operated Valve	Sm Valve	Sea-Van	18	65	1		
3 Inch Valve	Sm Valve	Sea-Van	9	65	1		
2 Inch Valve	Sm Valve	Sea-Van	5	40	1		
2 Inch Check Valve	Sm Valve	Sea-Van	5	35	1		
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	35	1		
1 1/2 Inch Valve	Sm Valve	Sea-Van	1	35	1		
1 1/2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	25	1		
1 1/2 Flow Element	Sm Valve	Sea-Van	1	25	1		
1 Inch Valve	Sm Valve	Sea-Van	4	28	1		
1 Inch Flow Element	Sm Valve	Sea-Van	2	20	1		
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	12	16	0		

*** Sample System

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Sample Rack	Lg Misc.	Sea-Van	4	180	12		
Fume Hood With Sink	Tank	Sea-Van	4	260	2	1.84	3.00
Constant Temperature Bath	Lg Misc.	Sea-Van	4	140	4		
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	40	0		
3/4 Inch Solenoid Valve	Sm Valve	Sea-Van	4	30	0		
1/2 Inch Air Operated Valve	Lg Valve	Sea-Van	2	25	0		

*** Standby Gas Treatment

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
2 Inch Check Valve	Sm Valve	Sea-Van	42	55	1		
18 Inch Valve	Lg Valve	Sea-Van	2	4,900	61		
18 Inch MOV Damper	Lg Misc.	Sea-Van	14	1,240	89		
18 Inch AOV Damper	Lg Misc.	Sea-Van	2	1,240	89		
SGT Filter Unit	Lg Misc.	Sea-Van	2	19,600	281		

TABLE 7.1. Contents of File TEST.BRE (contd)

3/4 inch Valve	Sm Valve Sea-Van	8	30	0		
Blower	Lg Misc. Sea-Van	4	4,500	121		
*** Heater Vents and Drains						
Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks ----- Dia(ft) Hgt(ft)
Steam Evaporator Drain Tank	Tank	Sea-Van	2	1,977	5	3.00 4.00
Heater Drain Tank	Tank	Sea-Van	2	13,820	32	4.00 7.90
Moisture Separator Drain Tank	Tank	Sea-Van	2	3,777	30	4.60 8.90
Reheater Drain Tank	Tank	Sea-Van	4	2,497	10	3.00 7.80
Reheater Drain Tank	Tank	Sea-Van	4	13,820	32	4.00 7.90
20 Inch Valve	Lg Valve	Sea-Van	2	5,800	77	
18 Inch Air Operated Valve	Lg Valve	Sea-Van	1	4,900	61	
18 inch Flow Element	Lg Valve	Sea-Van	2	4,160	51	
18 inch Valve	Lg Valve	Sea-Van	2	4,900	77	
16 Inch Flow Element	Lg Valve	Sea-Van	5	2,791	33	
16 Inch Check Valve	Lg Valve	Sea-Van	4	2,791	33	
16 Inch MOV	Lg Valve	Sea-Van	5	4,230	50	
16 Inch Air Operated Valve	Lg Valve	Sea-Van	9	4,230	50	
16 Inch Valve	Lg Valve	Sea-Van	7	4,230	50	
12 Inch Air Operated Valve	Lg Valve	Sea-Van	7	2,500	28	
12 Inch MOV	Lg Valve	Sea-Van	12	2,500	28	
12 Inch Valve	Lg Valve	Sea-Van	6	2,500	28	
12 Inch Flow Element	Lg Valve	Sea-Van	2	2,100	23	
10 Inch MOV	Lg Valve	Sea-Van	9	1,610	18	
10 Inch Air Operated Valve	Lg Valve	Sea-Van	13	1,610	18	
8 Inch MOV	Lg Valve	Sea-Van	6	1,125	15	
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	1,125	15	
8 Inch Check Valve	Lg Valve	Sea-Van	8	740	11	
8 Inch Flow Element	Lg Valve	Sea-Van	6	740	11	
6 Inch MOV	Lg Valve	Sea-Van	6	588	7	
6 Inch Valve	Lg Valve	Sea-Van	4	588	7	
6 Inch Check Valve	Lg Valve	Sea-Van	2	420	6	
6 Inch Air Operated Valve	Lg Valve	Sea-Van	13	588	7	
6 Inch Flow Element	Lg Valve	Sea-Van	4	420	6	
4 Inch MOV	Lg Valve	Sea-Van	12	268	3	
4 Inch Air Operated Valve	Lg Valve	Sea-Van	8	268	3	
4 Inch Valve	Lg Valve	Sea-Van	6	268	3	
4 Inch Flow Element	Lg Valve	Sea-Van	1	180	3	
3 Inch MOV	Sm Valve	Sea-Van	12	153	1	
3 Inch Air Operated Valve	Sm Valve	Sea-Van	8	153	1	
3 Inch Valve	Sm Valve	Sea-Van	10	153	1	
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	100	1	
3 Inch Flow Element	Sm Valve	Sea-Van	4	100	1	

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch Air Operated Valve	Sm Valve Sea-Van	2	75	1
2 Inch Valve	Sm Valve Sea-Van	152	75	1
1 Inch Valve	Sm Valve Sea-Van	319	50	1
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	160	32	0
1/2 Inch Valve	Sm Valve Sea-Van	2	25	0
2 1/2 Inch Valve	Sm Valve Sea-Van	3	131	1
1 1/2 Inch MOV	Sm Valve Sea-Van	1	62	1
1 1/2 Inch Valve	Sm Valve Sea-Van	2	62	1
1 1/2 Inch Check Valve	Sm Valve Sea-Van	1	50	1

*** Miscellaneous Items

Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
TIP Drive Unit	Lg Misc.	Sea-Van	5	796	31		
TIP Indexing Unit	Sm Misc.	Sea-Van	8	20	1		
TIP Ball Valve	Sm Valve	Sea-Van	5	50	1		
Explosive Shear Valve	Sm Valve	Sea-Van	5	50	1		
TIP Shield Pig	Lg Misc.	Sea-Van	5	340	1		
TIP Tubing	Lg Misc.	Sea-Van	1	650	45		
Hogger (Mechanical Vacuum Pump)	Lg Misc.	Sea-Van	2	6,985	14		
Refueling Bridge	Lg Misc.	Sea-Van	1	54,886	800		
Reactor Service Platform	Lg Misc.	Sea-Van	1	11,475	728		
Refueling Mast	Lg Misc.	Sea-Van	2	650	22		
Control Rod Drive Removal Turntable	Lg Misc.	Sea-Van	1	5,489	160		
Control Rod Drive Removal Trolley	Lg Misc.	Sea-Van	1	380	40		
In-Core Instrument Grapple	Sm Misc.	Sea-Van	1	80	1		
Fuel Support Piece Grapple	Sm Misc.	Sea-Van	1	90	2		
Control Blade Grapple	Lg Misc.	Sea-Van	1	130	5		
Spent Fuel Pool Work Table	Lg Misc.	Sea-Van	1	860	25		
Fuel Prep Machine	Lg Misc.	Sea-Van	2	840	30		
Channel Measurement Machine	Lg Misc.	Sea-Van	1	930	25		
Blade Guide	Lg Misc.	Sea-Van	185	160	7		
In-Core Instrument Strongback	Lg Misc.	Sea-Van	1	220	11		
Ass't In-Core Manip., Crows Feet, etc.	Lg Misc.	Sea-Van	1	200	5		
In-Vessel Manipulator Pole	Sm Misc.	Sea-Van	20	30	1		
Drywell Recirculation Fan	Lg Misc.	Sea-Van	9	560	15		
Stud Tensioner	Lg Misc.	Sea-Van	4	2,300	6		
RPV Head Strongback	Lg Misc.	Sea-Van	1	8	4,700		
Dryer/Separator Strongback	Lg Misc.	Sea-Van	1	1,333	15		
SRV Tailpipe and Sparger	Lg Pipe	Sea-Van	2,761	19	1		
24 Inch Suppression Pool Downcomer	Lg Pipe	Sea-Van	47	95	3		
28 Inch Suppression Pool Downcomer	Lg Pipe	Sea-Van	47	129	4		
Reactor Head Space Frame (Portions)	Lg Misc.	Sea-Van	1	1,240	18		
Upper Drywell Spray Header	Lg Pipe	Sea-Van	147	50	1		

TABLE 7.1. Contents of File TEST.BRE (contd)

Lower Drywell Spray Header	Lg Pipe	Sea-Van	222	50	1		
Suppression Pool Spray Header	Lg Pipe	Sea-Van	267	19	0		
*** Other Piping							
Component Description	Category	Disposal	Qty	Wgt(lb)	Vol(ft3)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
< 2" (Carbon Steel) Rx Bldg	Sm Pipe	Sea-Van	7,620	2	0		
3" to 10" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	12,870	19	0		
12" to 16" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	1,660	82	1		
< 2" (Stainless) Rx Bldg	Sm Pipe	Sea-Van	20,240	2	0		
3" to 10" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	1,640	6	0		
12" to 16" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	177	27	1		
< 2" (Carbon Steel) Cont Bldg	Sm Pipe	Sea-Van	860	3	0		
3" to 10" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	3,560	39	0		
12" to 16" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	690	95	1		
< 2" (Stainless) Cont Bldg	Sm Pipe	Sea-Van	12,600	2	0		
3" to 10" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	360	21	0		
12" to 16" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	210	92	1		
< 2" (Carbon Steel) Turb Bldg	Sm Pipe	Sea-Van	10,940	3	0		
3" to 10" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	8,640	30	0		
12" to 16" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	5,400	72	1		
3" to 10" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	125	26	0		
12" to 16" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	340	42	1		
< 2" (Carbon Steel) Rad Bldg	Sm Pipe	Sea-Van	10,130	2	0		
3" to 10" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	10,950	15	0		
12" to 16" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	1,100	58	1		
< 2" (Stainless) Rad Bldg	Sm Pipe	Sea-Van	3,770	3	0		
3" to 10" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	3,370	7	0		
12" to 16" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	180	21	1		

NOTE: For piping, "Qty" refers to feet of piping. For other categories
 "Qty" refers to the number of items of equipment.

TABLE 7.1. Contents of File TEST.BRE (contd)

File: E:\BWR\TEST.BRE
Plant Name: WASH NUCLEAR 2

+++++
+ POTENTIALLY RADIOACTIVE SYSTEMS: CREW-HOURS, PERSON-HOURS, ETC. +
+++++

*** Control Rod Drive System

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
CRD Blade	Lg Misc.	Sea-Van	460	1,411.7	5,646.7	3,588.0	4.9	5.729
CRD Mechanism	Lg Misc.	Sea-Van	225	690.5	2,762.0	1,755.0	2.4	0.000
Direction Control Set	Sm Misc.	Sea-Van	185	232.9	931.7	592.0	0.8	0.000
Scram Valve	Sm Valve	Sea-Van	370	0.0	0.0	0.0	0.0	0.067
Scram Accumulator	Lg Misc.	Sea-Van	210	644.5	2,577.8	1,638.0	0.3	0.000
CRD Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.0	0.042
Scram Discharge Volume	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Pump Suction Filter	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
CRD Drive Water Filter	Sm Misc.	Sea-Van	2	2.5	10.1	6.4	0.0	0.000
3/4 Inch Valve	Sm Valve	Sea-Van	2,042	0.0	0.0	0.0	0.0	0.063
1 Inch Valve	Sm Valve	Sea-Van	185	0.0	0.0	0.0	0.0	0.011
2 Inch Valve	Sm Valve	Sea-Van	379	0.0	0.0	0.0	0.0	0.074
4 Inch Valve	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.004
2 Inch Restricting Orifice	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
2 Inch Flow Control Valve	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
1 Inch Air-Operated Vent	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
2 Inch Air-Operated Drain	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
2 Inch Flow Element	Sm Misc.	Sea-Van	2	2.5	10.1	6.4	0.0	0.000
1 Inch Flow Element	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
Instrument Root Valve	Sm Valve	Sea-Van	39	0.0	0.0	0.0	0.0	0.001
				3,037	12,178	7,738	8	5.991

*** Feed and Condensate

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Condensate Booster Pump	Lg Pump	Sea-Van	3	9.2	36.8	23.4	0.0	0.564
Condensate Pump	Lg Pump	Sea-Van	3	9.2	36.8	23.4	0.0	0.983
Gland Exhaust Condenser	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Air Ejector Condenser	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Off-Gas Condenser	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Condensate Storage Tanks	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Seal Steam Evaporator	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Seal Steam Evaporator Blowdown Cooler	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000

TABLE 7.1. Contents of File TEST.BRE (contd)

24 Inch MOV	Lg Valve Sea-Van	16	47.5	261.1	165.9	0.0	0.232
24 Inch Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.044
24 Inch Stop-Check Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.029
24 Inch Air-Operated Check Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.015
24 Inch Flow-Element	Lg Valve Sea-Van	4	11.9	65.3	41.5	0.0	0.058
20 Inch MOV	Lg Valve Sea-Van	14	41.5	228.4	145.1	0.0	0.141
20 Inch Valve	Lg Valve Sea-Van	8	23.7	130.5	82.9	0.0	0.081
20 Inch Check Valve	Lg Valve Sea-Van	6	17.8	97.9	62.2	0.0	0.061
20 Inch Air-Operated Check	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.010
20 Inch Flow Element	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.030
18 Inch MOV	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.016
18 Inch Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.016
16 Inch MOV	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.019
16 Inch Air Control Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.006
16 Inch Air-Operated Check	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.006
16 Inch Flow Element	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.013
16 Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.019
16 Inch Check	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.006
12 Inch Air-Operated Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.008
12 Inch Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.011
12 Inch Flow Element	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.004
10 Inch Air-Operated Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.003
10 Inch Valve	Lg Valve Sea-Van	10	29.7	163.2	103.7	0.0	0.029
10 Inch Flow Element	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.009
8 Inch Air-Operated Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.002
6 Inch Air-Operated Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.004
3 Inch Air-Operated Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.001
3 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2-1/2 MOV	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2-1/2 Inch Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2-1/2 Inch Check Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Air-Operated Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van	21	0.0	0.0	0.0	0.0	0.004
1 1/2 Inch Valve	Sm Valve Sea-Van	16	0.0	0.0	0.0	0.0	0.002
1 1/2 Inch Relief Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 Inch MOV	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Air-Operated Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	79	0.0	0.0	0.0	0.0	0.005
1 Inch Check Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve Sea-Van	20	0.0	0.0	0.0	0.0	0.001
1 Inch Restricting Orifice	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
3/4 Inch Relief Valve	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.000
1/2 Inch Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1/2 Inch Restricting Orifice	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	119	0.0	0.0	0.0	0.0	0.004
			343	1,812	1,151	0	2.447

*** Chemical Waste Processing

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Chemical Waste Tank	Tank	Sea-Van	2	59.1	324.8	206.4	2.7	0.613
Detergent Drain Tank	Tank	Sea-Van	2	30.6	168.4	107.0	0.9	0.136
Detergent Drain Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.1	0.023
Concentrator Feed Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.1	0.023
Chemical Waste Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.2	0.026
Detergent Drain Filter	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.1	0.000
Chemical Addition Tank	Tank	Sea-Van	2	21.0	115.7	73.5	0.0	0.029
Tank Agitators	Sm Misc.	Sea-Van	2	2.5	10.1	6.4	0.0	0.000
Chemical Addition Pump	Sm Pump	Sea-Van	2	2.5	10.1	6.4	0.0	0.023
Distillate Tank	Tank	Sea-Van	2	59.1	324.8	206.4	0.1	0.613
Distillate Tank Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.0	0.018
Distillate Polishing Demineralizer	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Decon Solution Concentrator	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
Decon Solution Concentrator Waste Tank	Tank	Sea-Van	2	30.3	166.7	105.9	0.6	0.098
Decon Concentrator Bottom Recycle Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.1	0.073
Decon Concentrator Condenser	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
Decon Concentrator Pre Heater	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
Decon Concentrator Waste Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.012
Chemical Waste Stream Mixer	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Condensate Receiver Tank	Tank	Sea-Van	2	26.0	142.9	90.8	0.0	0.095
Condensate Receiver Tank Pump	Sm Pump	Sea-Van	2	2.5	10.1	6.4	0.0	0.020
8 Inch Air-Operated Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
6 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
4 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.002
4 Inch Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.003
4 Inch Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
4 Inch Flow Element	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
3 Inch MOV	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Air-Operated Valve	Sm Valve	Sea-Van	15	0.0	0.0	0.0	0.0	0.006
3 Inch Valve	Sm Valve	Sea-Van	14	0.0	0.0	0.0	0.0	0.005
3 Inch Check Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.002
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Flow Element	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Air-Operated Valve	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.002

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch Valve	Sm Valve Sea-Van	25	0.0	0.0	0.0	0.0	0.0	0.005
2 Inch Check Valve	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.0	0.001
2 Inch Relief Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.0	0.000
2 Inch Flow Element	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch Air-Operated Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	31	0.0	0.0	0.0	0.0	0.0	0.004
1 1/2 Inch Check Valve	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.0	0.000
1 Inch Air-Operated Valve	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	23	0.0	0.0	0.0	0.0	0.0	0.001
1 Inch Check Valve	Sm Valve Sea-Van	12	0.0	0.0	0.0	0.0	0.0	0.001
1 Inch Restricting Orifice	Sm Valve Sea-Van	6	0.0	0.0	0.0	0.0	0.0	0.000
Instrument Root Valves (Typ. 3/4" Globe)	Sm Valve Sea-Van	96	0.0	0.0	0.0	0.0	0.0	0.003
		357	1.858	1,180		5		1.853

*** Containment Instrument Air	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
6 Inch Valve	Lg Valve Sea-Van		1	3.0	16.3	10.4	0.0	0.001
6 Inch Check Valve	Lg Valve Sea-Van		1	3.0	16.3	10.4	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van		100	0.0	0.0	0.0	0.0	0.019
2 Inch Check Valve	Sm Valve Sea-Van		2	0.0	0.0	0.0	0.0	0.000
2 Inch Relief Valve	Sm Valve Sea-Van		1	0.0	0.0	0.0	0.0	0.000
1 1/4 Inch 3-Way Valve	Sm Valve Sea-Van		62	0.0	0.0	0.0	0.0	0.005
1 1/4 Inch 4-Way Valve	Sm Valve Sea-Van		4	0.0	0.0	0.0	0.0	0.000
3/4 Inch Valve	Sm Valve Sea-Van		3	0.0	0.0	0.0	0.0	0.000
3/4 Inch Relief Valve	Sm Valve Sea-Van		2	0.0	0.0	0.0	0.0	0.000
1/2 Inch Valve	Sm Valve Sea-Van		48	0.0	0.0	0.0	0.0	0.001
Instrument Air Accumulators	Lg Misc. Sea-Van		22	67.5	270.1	171.6	0.0	0.000
				73	303	192	0	0.028

*** Fuel Pool Cooling and Cleanup	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
FPCC Pumps	Lg Pump Sea-Van		2	6.1	24.6	15.6	0.0	0.107
FPCC Demineralizer	Tank Sea-Van		2	26.0	142.8	90.8	0.2	0.092
Skimmer Surge Tank	Tank Sea-Van		2	39.4	216.9	137.8	0.4	0.342
Resin Eductor	Tank Sea-Van		1	8.2	45.3	28.8	0.1	0.001
FPCC Heat Exchanger	Lg HX Sea-Van		2	6.1	24.6	15.6	0.0	0.613
Supp. Pool Cleanup Pump	Lg Pump Sea-Van		1	3.1	12.3	7.8	0.0	0.022
Resin Tank Agitator	Sm Misc. Sea-Van		2	2.5	10.1	6.4	0.0	0.000

TABLE 7.1. Contents of File TEST.BRE (contd)

Component Description	Category	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Fuel Pool Precoat Pump	Lg Pump Sea-Van	1	3.1	12.3	7.8	0.0	0.017
Dust Evacuator (Precoat)	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
FPCC Hold Pump	Lg Pump Sea-Van	2	6.1	24.6	15.6	0.0	0.019
FPCC Output Diffusers	Lg Pipe Sea-Van	120	23.7	130.5	82.9	0.2	0.083
FPCC Precoat Tank	Tank Sea-Van	1	10.5	57.8	36.7	0.1	0.014
FPCC Resin Tank	Tank Sea-Van	1	10.5	57.8	36.7	0.1	0.014
10 Inch Valve (No internals)	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.006
10 Inch Valve	Lg Valve Sea-Van	4	11.9	65.3	41.5	0.0	0.011
10 Inch Check Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.009
10 Inch Flow Element	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.009
8 Inch MOV	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Valve	Lg Valve Sea-Van	5	14.8	81.6	51.8	0.0	0.010
8 Inch Check Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.002
6 Inch MOV	Lg Valve Sea-Van	10	29.7	163.2	103.7	0.0	0.012
6 Inch Valve	Lg Valve Sea-Van	14	41.5	228.4	145.1	0.0	0.017
6 Inch Check Valve	Lg Valve Sea-Van	3	8.9	48.9	31.1	0.0	0.004
6 Inch Air Operated Valve	Lg Valve Sea-Van	9	26.7	146.8	93.3	0.0	0.011
6 Inch Flow Element	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Air Operated Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Check Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Flow Element	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Air Operated Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Check Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Relief Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	10	0.0	0.0	0.0	0.0	0.001
1 Inch Check Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	75	0.0	0.0	0.0	0.0	0.002
			327	1,751	1,112	2	1.428

*** Condensate Demineralizers

Component Description	Category	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Filter Demineralizers	Tank Sea-Van	6	100.0	549.7	349.3	0.0	0.615
Resin Trap (with basket)	Lg Misc. Sea-Van	6	18.4	73.7	46.8	0.0	0.000
Demineralizer Hold Pump	Lg Pump Sea-Van	6	18.4	73.7	46.8	0.0	0.071
Condensate Backwash Receiving Tank	Tank Sea-Van	1	29.8	164.0	104.2	0.0	0.344

TABLE 7.1. Contents of File TEST.BRE (contd)

Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.019
Condensate Decant Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.019
Condensate Backwash Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.019
Condensate Phase Separator Tank	Tank	Sea-Van	2	67.0	368.6	234.2	0.0	0.782
34 Foot Loop Seal	Lg Pipe	Sea-Van	150	29.7	163.2	103.7	0.0	0.079
36 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.033
20 Inch Butterfly Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.019
18 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.008
12 Inch Butterfly Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.023
12 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	12	35.6	195.8	124.4	0.0	0.045
12 Inch Flow Element	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.023
8 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	22	65.3	359.0	228.1	0.0	0.042
8 Inch Butterfly Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Air Operated Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.002
8 Inch Check Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.010
8 Inch Flow Element	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
6 Inch Air Operated Valve	Lg Valve	Sea-Van	12	35.6	195.8	124.4	0.0	0.015
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	21	62.3	342.6	217.7	0.0	0.025
6 Inch Check Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
4 Inch Air Operated Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.003
4 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
3 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Air Operated Butterfly Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.002
3 Inch Butterfly Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Air Operated Butterfly Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.001
2 Inch Butterfly Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
2 Inch Valve	Sm Valve	Sea-Van	43	0.0	0.0	0.0	0.0	0.008
2 Inch Check Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2 Inch Relief Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	13	0.0	0.0	0.0	0.0	0.001
1 Inch Valve	Sm Valve	Sea-Van	18	0.0	0.0	0.0	0.0	0.001
1 Inch Check Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	149	0.0	0.0	0.0	0.0	0.005
				581	3,126	1,987	0	2.232

*** Equipment Drain Processing

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Waste Demineralizer	Tank	Sea-Van	1	14.2	78.2	49.7	0.2	0.066

TABLE 7.1. Contents of File TEST.BRE (contd)

Waste Collector Filter	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Waste Filter Hold Pump	Lg Pump Sea-Van	1	3.1	12.3	7.8	0.0	0.014
Waste Collector Tank and Eductor	Tank Sea-Van	1	35.0	192.4	122.2	0.6	0.441
Waste Collector Pump	Lg Pump Sea-Van	1	3.1	12.3	7.8	0.0	0.023
Spent Resin Tank	Tank Sea-Van	1	15.2	83.6	53.1	0.4	0.054
Spent Resin Pump	Lg Pump Sea-Van	1	3.1	12.3	7.8	0.0	0.012
Waste Surge Tank and Eductor	Tank Sea-Van	1	46.4	255.3	162.2	1.1	0.846
Waste Surge Pump	Lg Pump Sea-Van	1	3.1	12.3	7.8	0.0	0.023
Waste Sample Tank and Eductor	Tank Sea-Van	2	63.4	349.0	221.7	0.8	0.685
Waste Sample Pump	Lg Pump Sea-Van	2	6.1	24.6	15.6	0.0	0.040
8 Inch Air Operated Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.002
6 Inch Air Operated Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Check Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Flow Element	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Flow Sight Glass	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
4 Inch Air Operated Valve	Lg Valve Sea-Van	27	80.1	440.5	279.9	0.1	0.016
4 Inch Valve	Lg Valve Sea-Van	14	41.5	228.4	145.1	0.0	0.008
4 Inch Check Valve	Lg Valve Sea-Van	13	38.6	212.1	134.8	0.0	0.008
4 Inch Resin Strainer	Sm Misc. Sea-Van	1	1.3	5.0	3.2	0.0	0.000
4 Inch Restricting Orifice	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.004
4 Inch Flow Element	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Resin Screen	Sm Misc. Sea-Van	5	6.3	25.2	16.0	0.0	0.000
3 Inch Air Operated Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.001
3 Inch Valve	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.003
3 Inch Check Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Restricting Orifice	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Air Operated Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van	14	0.0	0.0	0.0	0.0	0.003
2 Inch Check Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
2 Inch Relief Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Flow Element	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
1 1/2 Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	6	0.0	0.0	0.0	0.0	0.000
1 Inch Check Valve	Sm Valve Sea-Van	10	0.0	0.0	0.0	0.0	0.001
1 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	55	0.0	0.0	0.0	0.0	0.002
			384	2,066	1,313	4	2.261

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Extraction Steam						
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs
24 Inch MOV	Lg Valve	Sea-Van	6	17.8	97.9	62.2
24 Inch Stop Check Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2
20 Inch MOV	Lg Valve	Sea-Van	10	29.7	163.2	103.7
20 Inch Stop Check Valve	Lg Valve	Sea-Van	10	29.7	163.2	103.7
18 Inch MOV	Lg Valve	Sea-Van	5	14.8	81.6	51.8
18 Inch Stop Check Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8
16 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7
16 Inch Stop Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7
8 Inch Air Operated Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2
6 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5
4 Inch Air Operated Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5
2 Inch Air Operated Valve	Sm Valve	Sea-Van	10	0.0	0.0	0.0
2 Inch Restricting Orifice	Sm Valve	Sea-Van	12	0.0	0.0	0.0
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	85	0.0	0.0	0.0
				178	979	622
						0
						0.510

*** High/Low Pressure Core Spray						
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs
24" Suction Strainer	Lg Misc.	Sea-Van	2	6.1	24.6	15.6
18 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4
24 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4
3 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
3 Inch Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
14 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4
20 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4
12 X 24 Inch Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8
16 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4
2 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
1 X 2 Inch Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8
1 Inch Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
1 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
1 1/2 X 2 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7
12 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1
10 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4
12 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7
3/4 Inch Valve	Sm Valve	Sea-Van	42	0.0	0.0	0.0
24 Inch Suction Strainer	Lg Misc.	Sea-Van	2	6.1	24.6	15.6
Vent Strainer	Sm Misc.	Sea-Van	1	1.3	5.0	3.2
						0.0
						0.000
						0.008
						0.016
						0.000
						0.000
						0.004
						0.009
						0.122
						0.006
						0.000
						0.022
						0.000
						0.000
						0.000
						0.002
						0.011
						0.003
						0.007
						0.001
						0.000
						0.000

TABLE 7.1. Contents of File TEST.BRE (contd)

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
3/4 Inch Valve	Sm Valve	Sea-Van	28	0.0	0.0	0.0	0.0	0.001
24 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.016
3/4 Inch Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.000
14 X 24 Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.077
Pump Pit	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
16 Inch Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.006
12 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.004
12 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.008
16 Inch Flow Control Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.006
6 Inch Flow Control Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
1 X 2 Inch Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.022
1 1/2 Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
12 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.004
3/4 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
94 474 301 0 0.359								
*** Miscellaneous Drains								
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Misc. Drain Tank #1	Tank	Sea-Van	1	13.0	71.3	45.3	0.0	0.045
Misc. Drain Tank #2 (includes pumps)	Tank	Sea-Van	1	16.8	92.5	58.8	0.0	0.104
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
4 Inch Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.003
3 Inch MOV	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.003
3 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
3 Inch Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
3 Inch Check Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Strainer	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.003
3 Inch Restricting Orifice	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
3 Inch Flow Element	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 Inch MOV	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Air Operated Valve	Sm Valve	Sea-Van	11	0.0	0.0	0.0	0.0	0.002
2 Inch Valve	Sm Valve	Sea-Van	11	0.0	0.0	0.0	0.0	0.002
2 Inch Restricting Orifice	Sm Valve	Sea-Van	26	0.0	0.0	0.0	0.0	0.005
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve	Sea-Van	7	0.0	0.0	0.0	0.0	0.000
1 Inch Steam Trap	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	47	0.0	0.0	0.0	0.0	0.001

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Valve	Sm Valve Sea-Van	14	0.0	0.0	0.0	0.0	0.000
2 1/2 Inch Air operated Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 1/2 Inch Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
			51	278	177	0	0.180

*** Main Steam and MS Leakage Control

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
72 Inch MOV (Butterfly)	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.050
Stop Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.1	0.087
Interceptor Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.1	0.087
30 Inch MSIV	Lg Valve	Sea-Van	8	23.7	130.5	82.9	0.1	0.208
24 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.015
24 Inch Relief Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.1	0.058
20 Inch Relief Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.020
16 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.006
16 Inch Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.013
14 Inch Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.009
14 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.009
12 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.008
12 Inch Stop Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.008
30 Inch Flow Restrictor	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.1	0.078
8 Inch AO SRV	Lg Valve	Sea-Van	18	53.4	293.7	186.6	0.3	0.035
10 Inch Vacuum Breaker	Lg Misc.	Sea-Van	36	110.5	441.9	280.8	0.5	0.000
24 X 12 Inch Quencher	Lg Misc.	Sea-Van	18	55.2	221.0	140.4	0.2	0.000
10 Inch MOV	Lg Valve	Sea-Van	8	23.7	130.5	82.9	0.1	0.023
10 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.006
8 Inch Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.1	0.010
8 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.002
6 Inch MOV	Lg Valve	Sea-Van	9	26.7	146.8	93.3	0.2	0.011
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Relief Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.1	0.005
4 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
4 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
3 Inch MOV	Sm Valve	Sea-Van	11	0.0	0.0	0.0	0.0	0.004
3 Inch Air Operated Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.002
3 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
3 Inch Flow Element	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 Inch MOV	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
2 Inch Air Operated Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve	Sea-Van	393	0.0	0.0	0.0	0.0	0.076
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	7	0.0	0.0	0.0	0.0	0.001

TABLE 7.1. Contents of File TEST.BRE (contd)

1 1/2 Inch Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve Sea-Van	7	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	75	0.0	0.0	0.0	0.0	0.004
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	195	0.0	0.0	0.0	0.0	0.006
1/2 Inch Valve	Sm Valve Sea-Van	163	0.0	0.0	0.0	0.0	0.003
1 Inch Steam Trap	Sm Misc. Sea-Van	35	44.1	176.3	112.0	0.2	0.000
2 Inch Strainer	Sm Misc. Sea-Van	4	5.0	20.1	12.8	0.0	0.000
4 Inch Strainer	Lg Misc. Sea-Van	2	6.1	24.6	15.6	0.0	0.000
8 Inch Relief Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Strainer	Lg Misc. Sea-Van	4	12.3	49.1	31.2	0.1	0.000
Gland Steam Condenser	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Ejector Condenser	Lg Misc. Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Bypass Valve Assembly	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Steam Evaporator	Lg Misc. Sea-Van	2	6.1	24.6	15.6	0.0	0.000
28 Inch HOV Governor Valve	Lg Valve Sea-Van	8	23.7	130.5	82.9	0.1	0.191
1/2 Inch Valve (MSLC)	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.000
3/4 Inch Valve (MSLC)	Sm Valve Sea-Van	28	0.0	0.0	0.0	0.0	0.001
1 Inch Flow Element (MSLC)	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Valve (MSLC)	Sm Valve Sea-Van	14	0.0	0.0	0.0	0.0	0.001
1 Inch Check Valve (MSLC)	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Flow Element (MSLC)	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch MOV (MSLC)	Sm Valve Sea-Van	20	0.0	0.0	0.0	0.0	0.002
1 1/2 Check Valve (MSLC)	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
MSLC Fan (3 Inch)	Lg Misc. Sea-Van	2	6.1	24.6	15.6	0.0	0.000
MSLC Heater	Lg Misc. Sea-Van	4	12.3	49.1	31.2	0.1	0.000
			587	2,826	1,796	3	1.052

*** Radioactive Floor Drain Processing

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Floor Drain Demineralizer	Tank	Sea-Van	1	14.2	78.2	49.7	0.3	0.066
Floor Drain Sample Tank	Tank	Sea-Van	1	31.7	174.4	110.8	0.1	0.339
Floor Drain Sample Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.020
Floor Drain Filter Aid Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.008
Floor Drain Filter Hold Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.012
Floor Drain Filter	Lg Misc. Sea-Van		1	3.1	12.3	7.8	0.0	0.000
Floor Drain Collector Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.023
Floor Drain Collector Tank	Tank	Sea-Van	1	35.0	192.4	122.2	0.5	0.441
Waste Decant Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.012
Waste Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.016
Waste Sludge Phase Sep. Tank w/ 2 Eductors	Tank	Sea-Van	1	30.1	165.5	105.1	1.4	0.270
8 Inch Air Operated Valve	Lg Valve Sea-Van		2	5.9	32.6	20.7	0.0	0.004
6 Inch Air Operated Valve	Lg Valve Sea-Van		3	8.9	48.9	31.1	0.0	0.004

TABLE 7.1. Contents of File TEST.BRE (contd)

6 Inch Check Valve	Lg Valve Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Flow Site Glass	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
4 Inch MOV	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Air Operated Valve	Lg Valve Sea-Van	21	62.3	342.6	217.7	0.2	0.013
4 Inch Valve	Lg Valve Sea-Van	18	53.4	293.7	186.6	0.2	0.011
4 Inch Check Valve	Lg Valve Sea-Van	11	32.6	179.5	114.0	0.1	0.007
4 Inch Restricting Orifice	Lg Valve Sea-Van	4	11.9	65.3	41.5	0.0	0.002
4 Inch Resin Strainer	Lg Misc. Sea-Van	1	3.1	12.3	7.8	0.0	0.000
3 Inch Air Operated Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.002
3 Inch Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
3 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
3 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Flow Site Glass	Sm Valve Sea-Van	2	2.5	10.1	6.4	0.0	0.000
2 Inch Air Operated Valve	Sm Misc. Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van	9	0.0	0.0	0.0	0.0	0.002
2 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
2 Inch Relief Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Stop Check Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Flow Site Glass	Sm Misc. Sea-Van	2	2.5	10.1	6.4	0.0	0.000
2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Inch Air Operated Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 Inch Solenoid Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Ball Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Flow Site Glass	Sm Misc. Sea-Van	1	1.3	5.0	3.2	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	50	0.0	0.0	0.0	0.0	0.002
1/2 Inch Solenoid Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1/2 Inch Check Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.000
			329	1,758	1,117	3	1.261

*** Turbine & Rad Waste Bldg. Drains							
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem
EDR Sump Pump	Lg Pump	Sea-Van	6	18.4	73.7	46.8	0.3
FDR Sump Pump	Lg Pump	Sea-Van	7	21.5	85.9	54.6	0.3
Chemical Drain Sump Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0
6 Inch Restricting Orifice	Lg Valve	Sea-Van	19	56.4	310.0	197.0	0.1
3 Inch Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.002
3 Inch Check Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.002

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch MOV	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.002
2 Inch Check Valve	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.002
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	22	0.0	0.0	0.0	0.0	0.001
			99	482	306	1	0.311

*** Offgas

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Catalytic Recombiner Vessel	Tank	Sea-Van	2	28.1	154.4	98.1	0.3	0.088
Preheater Heat Exchanger	Lg HX	Sea-Van	2	6.1	24.6	15.6	0.0	1.489
Offgas Condenser	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.1	0.000
Water Separator	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Lab Vacuum Pump	Sm Pump	Sea-Van	4	5.0	20.1	12.8	0.0	0.010
Water Separator	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Charcoal Ads. Vessel	Tank	Sea-Van	8	134.7	740.6	470.6	1.3	0.824
Cooler Condenser	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
Seal Water Trap	Lg Pipe	Sea-Van	20	4.0	21.8	13.8	0.0	0.010
Pre-Filter Vessel	Tank	Sea-Van	2	23.6	130.0	82.6	0.2	0.075
After-Filter Vessel	Tank	Sea-Van	2	23.6	130.0	82.6	0.2	0.075
Dessicant Dryers	Lg Misc.	Sea-Van	4	12.3	49.1	31.2	0.4	0.000
Dryer Heater	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.1	0.000
Dryer Chiller	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Regen Blower	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
6 Inch Air Operated Valve	Lg Valve	Sea-Van	9	26.7	146.8	93.3	0.1	0.011
6 Inch Valve	Lg Valve	Sea-Van	18	53.4	293.7	186.6	0.1	0.022
4 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
4 Inch Air Operated Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.002
3 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.002
2 Inch Air Operated Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.002
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 1/2 Relief Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Flow Element	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	16	0.0	0.0	0.0	0.0	0.001
1 Inch Valve	Sm Valve	Sea-Van	30	0.0	0.0	0.0	0.0	0.002
1 Inch Relief Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	89	0.0	0.0	0.0	0.0	0.003
				372	1,956	1,243	3	2.620

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Reactor Building Closed Cooling Water								
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
RBCCW Heat Exchanger	Lg HX	Sea-Van	3	9.2	36.8	23.4	0.0	3.636
RBCCW Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.0	0.056
RBCCW Surge Tank	Tank	Sea-Van	1	12.9	70.8	45.0	0.0	0.033
Drywell Cooler (w/ two axial fans)	Lg Misc.	Sea-Van	5	15.3	61.4	39.0	0.0	0.000
14 Inch MOV	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.004
12 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.011
10 Inch MOV	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.020
10 Inch Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.017
10 Inch Check Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.011
10 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.003
8 Inch MOV	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.010
8 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Flow Element	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.008
6 Inch Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.007
6 Inch Check Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
6 Inch Air Operated Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch MOV	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.004
4 Inch Air Operated Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.002
3 Inch Valve	Sm Valve	Sea-Van	9	0.0	0.0	0.0	0.0	0.003
3 Inch Electro-Hydraulic Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Valve	Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.002
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve	Sea-Van	7	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	149	0.0	0.0	0.0	0.0	0.005
				216	1,140	724	0	3.851
*** Reactor Core Isolation Cooling								
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Pelton Wheel Turbine and RCIC Pump	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Barometric Condenser	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Condenser Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.004
Water Leg Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.022
Vacuum Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.002
Vacuum Tank	Tank	Sea-Van	1	10.5	57.6	36.6	0.0	0.010

TABLE 7.1. Contents of File TEST.BRE (contd)

Steam Condensate Drip Pot	Tank	Sea-Van	1	8.3	45.4	28.8	0.0	0.002
8 Inch Suction Strainer	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
3/4 Inch Steam Trap	Sm Misc.	Sea-Van	4	5.0	20.1	12.8	0.0	0.000
10 Inch Exhaust Drip Chamber	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Turbine Exhaust Sparger	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
10 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.009
10 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.003
8 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.002
8 Inch Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
6 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Air Operated Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Restricting Orifice	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
4 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.002
4 Inch Hydraulic Control Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
3 Inch Restricting Orifice	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 Inch MOV	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Check Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.001
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Restricting Orifice	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch MOV	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Relief Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.000
1 Inch Pressure Control Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.000
1 Inch Restricting Orifice	Sm Valve	Sea-Van	9	0.0	0.0	0.0	0.0	0.001
3/4 Inch Air Solenoid	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3/4 Inch Pressure Control Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
Dragon Valve (excess flow check)	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	204	0.0	0.0	0.0	0.0	0.006
				120	609	387	0	0.088

*** Residual Heat Removal

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
RHR Pump	Lg Pump	Sea-Van	3	9.2	36.8	23.4	0.0	0.346

TABLE 7.1. Contents of File TEST.BRE (contd)

Water Leg Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.022
Drywell Upper Spray Ring Header	Lg Pipe	Sea-Van	135	26.7	146.8	93.3	0.0	0.000
Drywell Lower Spray Ring Header	Lg Pipe	Sea-Van	0	40.7	224.1	142.4	0.0	0.000
Wetwell Spray Ring Header	Lg Pipe	Sea-Van	260	51.4	282.8	179.7	0.0	0.117
Suppression Pool Suction Strainers	Lg Misc.	Sea-Van	6	18.4	73.7	46.8	0.0	0.000
RHR Heat Exchanger	Lg HX	Sea-Van	2	6.1	24.6	15.6	0.1	5.608
24 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.044
20 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.020
20 Inch Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.008
18 Inch MOV	Lg Valve	Sea-Van	11	32.6	179.5	114.0	0.0	0.090
18 Inch Valve	Lg Valve	Sea-Van	8	23.7	130.5	82.9	0.0	0.065
18 Inch Check Valve	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.041
18 Inch Flow Element	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.025
18 Inch Restricting Orifice	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.016
16 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.026
14 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.018
14 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.009
14 Inch Air Operated Check Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.013
14 Inch Restricting Orifice	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.009
12 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.011
12 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.011
12 Inch Air Operated Check Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.011
12 Inch Restricting Orifice	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.004
10 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.006
10 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.003
8 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Air Operated Control Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.002
6 Inch MOV	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
6 Inch Valve	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
6 Inch Check Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
6 Inch Ganged Restricting Orifice	Lg Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.004
6 Inch Restricting Orifice	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Relief Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.002
4 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.001
4 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
3 Inch MOV	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
3 Inch Valve	Sm Valve	Sea-Van	11	0.0	0.0	0.0	0.0	0.004
3 Inch Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 1/2 Inch Air Operated Control Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch MOV	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
2 Inch Valve	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.002
2 Inch Check Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Relief Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000

TABLE 7.1. Contents of File TEST.BRE (contd)

1 1/2 Inch MOV	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Check Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Stop Check Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch MOV	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.000
1 Inch Check Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Relief Valve	Sm Valve Sea-Van	8	0.0	0.0	0.0	0.0	0.000
Dragon Valve (excess flow check)	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
3/4 Inch Solenod Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	227	0.0	0.0	0.0	0.0	0.007
			426	2,286	1,452	0	6.573

*** Misc. Recirculation System Components

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
24 Inch MOV	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.1	0.029
24 Inch MOV	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.1	0.058
3/4 Inch Check Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
3/4 Inch Valve	Sm Valve	Sea-Van	76	0.0	0.0	0.0	0.0	0.002
3/4 Inch Restricting Orifice	Sm Valve	Sea-Van	28	0.0	0.0	0.0	0.0	0.001
3/4 Inch Flow Element	Sm Valve	Sea-Van	12	0.0	0.0	0.0	0.0	0.000
3/4 Inch Relief Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
3/4 Inch MOV	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve	Sea-Van	92	0.0	0.0	0.0	0.0	0.005
1 Inch Restricting Orifice	Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
Dragon Valve (excess Flow check)	Sm Valve	Sea-Van	30	0.0	0.0	0.0	0.0	0.001
				18	98	62	0	0.099

*** Reactor Water Cleanup

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
RWCU Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	5.1	0.045
Cleanup Hold Pump	Lg Pump	Sea-Van	2	6.1	24.6	15.6	0.2	0.039
Cleanup Precoat Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.1	0.017
Sludge Discharge Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.1	0.017
Decant Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.010
Non-Regenerative Heat Exchanger	Lg HX	Sea-Van	2	6.1	24.6	15.6	4.3	1.446
Regenerative Heat Exchanger	Lg HX	Sea-Van	3	9.2	36.8	23.4	6.4	1.752

TABLE 7.1. Contents of File TEST.BRE (contd)

Filter Demineralizer	Tank	Sea-Van	2	23.5	129.5	82.3	22.5	0.065
Batch Tank	Tank	Sea-Van	1	10.5	57.8	36.7	0.0	0.014
Phase Separator Tank	Tank	Sea-Van	2	49.2	270.7	172.0	0.2	0.296
Precoat Agitator	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
6 Inch MOV	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.2	0.008
6 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.1	0.002
6 Inch Check Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
6 Inch Flow Element	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.1	0.002
6 Inch Restricting Orifice	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch MOV	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.2	0.004
4 Inch Air Operated Valve	Lg Valve	Sea-Van	16	47.5	261.1	165.9	0.5	0.010
4 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Valve	Lg Valve	Sea-Van	11	32.6	179.5	114.0	0.3	0.007
4 Inch Check Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.1	0.002
4 Inch Relief Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 inch Restricting Orifice	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
3 Inch Air Operated Valve	Sm Valve	Sea-Van	16	0.0	0.0	0.0	0.0	0.006
3 Inch Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
3 Inch Check Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
3 Inch Flow Element	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.001
2 Inch Valve	Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.002
2 Inch Check Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve	Sea-Van	21	0.0	0.0	0.0	0.0	0.001
1 Inch Relief Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.000
Excess Flow Check Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	129	0.0	0.0	0.0	0.0	0.004
1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1/2 Inch Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1/2 Inch Check Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
				279	1,475	937	40	3.759

*** Reactor Building Equipment & Floor Drains

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Drain Sump Pump	Lg Pump	Sea-Van	4	12.3	49.1	31.2	0.0	0.094
Drain Sump Pump	Lg Pump	Sea-Van	3	9.2	36.8	23.4	0.0	0.072
Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	3.1	12.3	7.8	0.0	0.030
Drywell Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	3.1	12.3	7.8	0.0	0.030
6 Inch Air Operated Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
6 Inch Restricting Orifice	Lg Valve	Sea-Van	24	71.2	391.6	248.8	0.1	0.029
4 inch Valve	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.004

TABLE 7.1. Contents of File TEST.BRE (contd)

4 Inch Check Valve	Lg Valve Sea-Van	1	3.0	16.3	10.4	0.0	0.001
4 Inch Restricting Orifice	Lg Valve Sea-Van	6	17.8	97.9	62.2	0.0	0.004
3 Inch Air Operated Valve	Sm Valve Sea-Van	18	0.0	0.0	0.0	0.0	0.007
3 Inch Valve	Sm Valve Sea-Van	9	0.0	0.0	0.0	0.0	0.003
2 Inch Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
2 Inch Check Valve	Sm Valve Sea-Van	5	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Flow Element	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sm Valve Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1 Inch Flow Element	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	12	0.0	0.0	0.0	0.0	0.000
			152	796	506	0	0.282

*** Sample System

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Sample Rack	Lg Misc.	Sea-Van	4	12.3	49.1	31.2	0.0	0.000
Fume Hood With Sink	Tank	Sea-Van	4	37.6	206.5	131.2	0.0	0.030
Constant Temperature Bath	Lg Misc.	Sea-Van	4	12.3	49.1	31.2	0.0	0.000
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3/4 Inch Solenoid Valve	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.000
1/2 Inch Air Operated Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.000
				68	337	214	0	0.030

*** Standby Gas Treatment

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
2 Inch Check Valve	Sm Valve	Sea-Van	42	0.0	0.0	0.0	0.0	0.008
18 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.015
18 Inch MOV Damper	Lg Misc.	Sea-Van	14	43.0	171.9	109.2	0.0	0.000
18 Inch AOV Damper	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
SGT Filter Unit	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
3/4 inch Valve	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.000
Blower	Lg Misc.	Sea-Van	4	12.3	49.1	31.2	0.0	0.000
				73	303	192	0	0.024

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Heater Vents and Drains								
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Steam Evaporator Drain Tank	Tank	Sea-Van	2	21.1	116.0	73.7	0.0	0.034
Heater Drain Tank	Tank	Sea-Van	2	25.9	142.3	90.4	0.0	0.082
Moisture Separator Drain Tank	Tank	Sea-Van	2	28.3	155.4	98.7	0.0	0.107
Reheater Drain Tank	Tank	Sea-Van	4	47.0	258.4	164.2	0.0	0.116
Reheater Drain Tank	Tank	Sea-Van	4	51.7	284.6	180.8	0.0	0.164
20 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.020
18 Inch Air Operated Valve	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.008
18 Inch Flow Element	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.016
18 Inch Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.016
16 Inch Flow Element	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.032
16 Inch Check Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.026
16 Inch MOV	Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.032
16 Inch Air Operated Valve	Lg Valve	Sea-Van	9	26.7	146.8	93.3	0.0	0.058
16 Inch Valve	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.045
12 Inch Air Operated Valve	Lg Valve	Sea-Van	7	20.8	114.2	72.6	0.0	0.027
12 Inch MOV	Lg Valve	Sea-Van	12	35.6	195.8	124.4	0.0	0.012
12 Inch Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.006
12 Inch Flow Element	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
10 Inch MOV	Lg Valve	Sea-Van	9	26.7	146.8	93.3	0.0	0.026
10 Inch Air Operated Valve	Lg Valve	Sea-Van	13	38.6	212.1	134.8	0.0	0.037
8 Inch MOV	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.012
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.004
8 Inch Check Valve	Lg Valve	Sea-Van	8	23.7	130.5	82.9	0.0	0.015
8 Inch Flow Element	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.012
6 Inch MOV	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.007
6 Inch Valve	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
6 Inch Check Valve	Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
6 Inch Air Operated Valve	Lg Valve	Sea-Van	13	38.6	212.1	134.8	0.0	0.016
6 Inch Flow Element	Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
4 Inch MOV	Lg Valve	Sea-Van	12	35.6	195.8	124.4	0.0	0.007
4 Inch Air Operated Valve	Lg Valve	Sea-Van	8	23.7	130.5	82.9	0.0	0.005
4 Inch Valve	Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.004
4 Inch Flow Element	Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.001
3 Inch MOV	Sm Valve	Sea-Van	12	0.0	0.0	0.0	0.0	0.004
3 Inch Air Operated Valve	Sm Valve	Sea-Van	8	0.0	0.0	0.0	0.0	0.003
3 Inch Valve	Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.004
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Flow Element	Sm Valve	Sea-Van	4	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.000
2 Inch Valve	Sm Valve	Sea-Van	152	0.0	0.0	0.0	0.0	0.030
1 Inch Valve	Sm Valve	Sea-Van	319	0.0	0.0	0.0	0.0	0.018
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	160	0.0	0.0	0.0	0.0	0.005

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
2 1/2 Inch Valve	Sm Valve Sea-Van	3	0.0	0.0	0.0	0.0	0.001
1 1/2 Inch MOV	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Valve	Sm Valve Sea-Van	2	0.0	0.0	0.0	0.0	0.000
1 1/2 Inch Check Valve	Sm Valve Sea-Van	1	0.0	0.0	0.0	0.0	0.000
			660	3,632	2,308	1	1.029

*** Miscellaneous Items

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
TIP Drive Unit	Lg Misc.	Sea-Van	5	15.3	61.4	39.0	0.0	0.000
TIP Indexing Unit	Sm Misc.	Sea-Van	8	10.1	40.3	25.6	0.0	0.000
TIP Ball Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.001
Explosive Shear Valve	Sm Valve	Sea-Van	5	0.0	0.0	0.0	0.0	0.001
TIP Shield Pig	Lg Misc.	Sea-Van	5	15.3	61.4	39.0	1.1	0.000
TIP Tubing	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Hogger (Mechanical Vacuum Pump)	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Refueling Bridge	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Reactor Service Platform	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Refueling Mast	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Control Rod Drive Removal Turntable	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Control Rod Drive Removal Trolley	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
In-Core Instrument Grapple	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
Fuel Support Piece Grapple	Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
Control Blade Grapple	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Spent Fuel Pool Work Table	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Fuel Prep Machine	Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Channel Measurement Machine	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Blade Guide	Lg Misc.	Sea-Van	185	567.7	2,271.0	1,443.0	0.4	0.000
In-Core Instrument Strongback	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Ass't In-Core Manip., Crows Feet, etc.	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
In-Vessel Manipulator Pole	Sm Misc.	Sea-Van	20	25.2	100.7	64.0	0.0	0.000
Drywell Recirculation Fan	Lg Misc.	Sea-Van	9	27.6	110.5	70.2	0.0	0.000
Stud Tensioner	Lg Misc.	Sea-Van	4	12.3	49.1	31.2	0.0	0.000
RPV Head Strongback	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Dryer/Separator Strongback	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
SRV Tailpipe and Sparger	Lg Pipe	Sea-Van	2,761	546.0	3,003.2	1,908.3	0.5	2.488
24 Inch Suppression Pool Downcomer	Lg Pipe	Sea-Van	47	9.3	51.1	32.5	0.0	0.095
28 Inch Suppression Pool Downcomer	Lg Pipe	Sea-Van	47	9.3	51.1	32.5	0.0	0.111
Reactor Head Space Frame (Portions)	Lg Misc.	Sea-Van	1	3.1	12.3	7.8	0.0	0.000
Upper Drywell Spray Header	Lg Pipe	Sea-Van	147	29.1	159.9	101.6	0.0	0.153

TABLE 7.1. Contents of File TEST.BRE (contd)

Lower Drywell Spray Header	Lg Pipe	Sea-Van	222	43.9	241.5	153.4	0.0	0.230
Suppression Pool Spray Header	Lg Pipe	Sea-Van	267	52.8	290.4	184.5	0.1	0.140
				1,425	6,735	4,279	2	3.219
*** Other Piping								
Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
< 2" (Carbon Steel) Rx Bldg	Sm Pipe	Sea-Van	7,620	1,056.6	5,811.5	3,692.7	2.0	0.989
3" to 10" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	12,870	2,545.3	13,999.2	8,895.3	4.9	7.347
12" to 16" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	1,660	328.3	1,805.6	1,147.3	0.6	2.010
< 2" (Stainless) Rx Bldg	Sm Pipe	Sea-Van	20,240	2,806.6	15,436.4	9,808.5	5.4	2.626
3" to 10" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	1,640	324.3	1,783.9	1,133.5	0.6	0.936
12" to 16" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	177	35.0	192.5	122.3	0.1	0.214
< 2" (Carbon Steel) Cont Bldg	Sm Pipe	Sea-Van	860	119.3	655.9	416.8	0.2	0.112
3" to 10" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	3,560	704.1	3,872.3	2,460.6	1.3	2.032
12" to 16" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	690	136.5	750.5	476.9	0.3	0.835
< 2" (Stainless) Cont Bldg	Sm Pipe	Sea-Van	12,600	1,747.2	9,609.6	6,106.1	3.3	1.635
3" to 10" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	360	71.2	391.6	248.8	0.1	0.205
12" to 16" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	210	41.5	228.4	145.1	0.1	0.254
< 2" (Carbon Steel) Turb Bldg	Sm Pipe	Sea-Van	10,940	1,517.0	8,343.6	5,301.6	2.9	1.419
3" to 10" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	8,640	1,708.7	9,398.1	5,971.7	3.3	4.932
12" to 16" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	5,400	1,068.0	5,873.8	3,732.3	2.0	6.539
3" to 10" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	125	24.7	136.0	86.4	0.0	0.071
12" to 16" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	340	67.2	369.8	235.0	0.1	0.412
< 2" (Carbon Steel) Rad Bldg	Sm Pipe	Sea-Van	10,130	1,404.7	7,725.8	4,909.1	2.7	1.314
3" to 10" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	10,950	2,165.6	11,910.7	7,568.3	4.1	6.251
12" to 16" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	1,100	217.5	1,196.5	760.3	0.4	1.332
< 2" (Stainless) Rad Bldg	Sm Pipe	Sea-Van	3,770	522.8	2,875.3	1,827.0	1.0	0.456
3" to 10" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	3,370	666.5	3,665.7	2,329.2	1.3	1.924
12" to 16" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	180	35.6	195.8	124.4	0.1	0.218
				19,314	106,229	67,499	37	44.063

NOTE: For piping, "Qty" refers to feet of piping. For other categories
 "Qty" refers to the number of items of equipment.

TABLE 7.1. Contents of File TEST.BRE (contd)

File: E:\BWR\TEST.BRE
Plant Name: WASH NUCLEAR 2

+++++
+ POTENTIALLY RADIOACTIVE SYSTEMS: REMOVAL, TRANSPORTATION, DISPOSAL COSTS (DOLLARS) +
+++++

*** Control Rod Drive System

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
CRD Blade	Lg Misc.	Sea-Van	460	195,010	25,377	926	230,995	452,308
CRD Mechanism	Lg Misc.	Sea-Van	225	95,130	14,895	544	125,060	235,628
Direction Control Set	Sm Misc.	Sea-Van	185	31,888	2,041	74	17,138	51,141
Scram Valve	Sm Valve	Sea-Van	370	0	3,572	130	29,991	33,694
Scram Accumulator	Lg Misc.	Sea-Van	210	88,167	4,055	148	34,044	126,414
CRD Pump	Lg Pump	Sea-Van	2	848	1,103	40	9,264	11,255
Scram Discharge Volume	Lg Misc.	Sea-Van	2	847	552	20	4,632	6,051
Pump Suction Filter	Lg Misc.	Sea-Van	2	844	110	4	926	1,885
CRD Drive Water Filter	Sm Misc.	Sea-Van	2	347	28	1	232	607
3/4 Inch Valve	Sm Valve	Sea-Van	2,042	0	8,449	308	72,927	81,684
1 Inch Valve	Sm Valve	Sea-Van	185	0	1,276	47	10,711	12,033
2 Inch Valve	Sm Valve	Sea-Van	379	0	4,704	172	39,498	44,374
4 Inch Valve	Lg Valve	Sea-Van	7	4,001	259	9	2,172	6,441
2 Inch Restricting Orifice	Sm Misc.	Sea-Van	1	172	8	0	69	250
2 Inch Flow Control Valve	Lg Misc.	Sea-Van	2	840	44	2	371	1,256
1 Inch Air-Operated Vent	Sm Misc.	Sea-Van	1	173	12	0	104	290
2 Inch Air-Operated Drain	Lg Misc.	Sea-Van	1	420	20	1	168	608
2 Inch Flow Element	Sm Misc.	Sea-Van	2	345	14	1	116	475
1 Inch Flow Element	Sm Misc.	Sea-Van	1	172	4	0	35	211
Instrument Root Valve	Sm Valve	Sea-Van	39	0	43	2	361	406
				419,204	66,566	2,429	578,814	1,067,013

*** Feed and Condensate

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Condensate Booster Pump	Lg Pump	Sea-Van	3	1,533	10,941	399	91,864	104,737
Condensate Pump	Lg Pump	Sea-Van	3	2,085	19,943	728	167,441	190,197
Gland Exhaust Condenser	Lg Misc.	Sea-Van	1	437	1,225	45	10,283	11,989
Air Ejector Condenser	Lg Misc.	Sea-Van	2	1,076	4,018	147	33,738	38,980
Off-Gas Condenser	Lg Misc.	Sea-Van	1	469	272	10	2,287	3,038
Condensate Storage Tanks	Lg Misc.	Sea-Van	2	3,500	30,667	1,119	257,482	292,768
Seal Steam Evaporator	Lg Misc.	Sea-Van	2	1,082	8,172	298	68,614	78,166
Seal Steam Evaporator Blowdown Cooler	Lg Misc.	Sea-Van	2	842	130	5	1,088	2,065

TABLE 7.1. Contents of File TEST.BRE (contd)

24 Inch MOV	Lg Valve Sea-Van	16	9,145	34,755	1,268	291,807	336,975
24 Inch Valve	Lg Valve Sea-Van	3	1,715	6,517	238	54,714	63,183
24 Inch Stop-Check Valve	Lg Valve Sea-Van	2	1,143	2,607	95	21,886	25,730
24 Inch Air-Operated Check Valve	Lg Valve Sea-Van	1	572	1,379	50	11,580	13,581
24 Inch Flow-Element	Lg Valve Sea-Van	4	2,286	5,075	185	42,613	50,160
20 Inch MOV	Lg Valve Sea-Van	14	8,002	17,378	634	145,903	171,917
20 Inch Valve	Lg Valve Sea-Van	8	4,572	9,930	362	83,373	98,238
20 Inch Check Valve	Lg Valve Sea-Van	6	3,429	4,469	163	37,518	45,579
20 Inch Air-Operated Check	Lg Valve Sea-Van	1	572	828	30	6,948	8,377
20 Inch Flow Element	Lg Valve Sea-Van	3	1,715	2,234	82	18,759	22,789
18 Inch MOV	Lg Valve Sea-Van	2	1,143	2,797	102	23,483	27,526
18 Inch Valve	Lg Valve Sea-Van	2	1,143	2,797	102	23,483	27,526
16 Inch MOV	Lg Valve Sea-Van	3	1,715	2,482	91	20,843	25,131
16 Inch Air Control Valve	Lg Valve Sea-Van	1	572	828	30	6,948	8,377
16 Inch Air-Operated Check	Lg Valve Sea-Van	1	572	538	20	4,516	5,645
16 Inch Flow Element	Lg Valve Sea-Van	2	1,143	993	36	8,337	10,510
16 Valve	Lg Valve Sea-Van	3	1,715	2,482	91	20,843	25,131
16 Inch Check	Lg Valve Sea-Van	1	572	496	18	4,169	5,255
12 Inch Air-Operated Valve	Lg Valve Sea-Van	2	1,143	883	32	7,411	9,469
12 Inch Valve	Lg Valve Sea-Van	3	1,715	1,241	45	10,422	13,423
12 Inch Flow Element	Lg Valve Sea-Van	1	572	248	9	2,084	2,913
10 Inch Air-Operated Valve	Lg Valve Sea-Van	1	572	226	8	1,899	2,705
10 Inch Valve	Lg Valve Sea-Van	10	5,715	2,220	81	18,643	26,660
10 Inch Flow Element	Lg Valve Sea-Van	3	1,715	364	13	3,057	5,149
8 Inch Air-Operated Valve	Lg Valve Sea-Van	2	1,143	310	11	2,605	4,070
8 Inch Valve	Lg Valve Sea-Van	1	572	155	6	1,303	2,035
6 Inch Air-Operated Valve	Lg Valve Sea-Van	3	1,715	265	10	2,223	4,212
3 Inch Air-Operated Valve	Sm Valve Sea-Van	1	0	21	1	177	199
3 Inch Valve	Sm Valve Sea-Van	4	0	84	3	709	796
3 Inch Flow Element	Sm Valve Sea-Van	1	0	14	1	116	130
2-1/2 MOV	Sm Valve Sea-Van	5	0	83	3	695	781
2-1/2 Inch Valve	Sm Valve Sea-Van	5	0	83	3	695	781
2-1/2 Inch Check Valve	Sm Valve Sea-Van	4	0	39	1	324	364
2 Inch Air-Operated Valve	Sm Valve Sea-Van	5	0	52	2	434	488
2 Inch Valve	Sm Valve Sea-Van	21	0	217	8	1,824	2,049
1 1/2 Inch Valve	Sm Valve Sea-Van	16	0	137	5	1,149	1,291
1 1/2 Inch Relief Valve	Sm Valve Sea-Van	3	0	21	1	174	195
1 Inch MOV	Sm Valve Sea-Van	2	0	14	1	116	130
1 Inch Air-Operated Valve	Sm Valve Sea-Van	3	0	21	1	174	195
1 Inch Valve	Sm Valve Sea-Van	79	0	545	20	4,574	5,139
1 Inch Check Valve	Sm Valve Sea-Van	2	0	10	0	88	99
1 Inch Relief Valve	Sm Valve Sea-Van	20	0	116	4	973	1,093
1 Inch Restricting Orifice	Sm Valve Sea-Van	2	0	10	0	88	99
3/4 Inch Relief Valve	Sm Valve Sea-Van	7	0	39	1	324	364
1/2 Inch Valve	Sm Valve Sea-Van	3	0	10	0	87	98

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Check Valve	Sm Valve Sea-Van	3	0	6	0	52	59
1/2 Inch Restricting Orifice	Sm Valve Sea-Van	3	0	7	0	63	70
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	119	0	525	19	4,410	4,954
			67,607	181,919	6,639	1,527,412	1,783,578

*** Chemical Waste Processing

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Chemical Waste Tank	Tank	Sea-Van	2	11,442	3,052	111	25,628	40,233
Detergent Drain Tank	Tank	Sea-Van	2	5,869	1,114	41	9,354	16,377
Detergent Drain Pump	Lg Pump	Sea-Van	2	846	106	4	892	1,848
Concentrator Feed Pump	Lg Pump	Sea-Van	2	846	154	6	1,295	2,301
Chemical Waste Pump	Lg Pump	Sea-Van	2	848	291	11	2,441	3,590
Detergent Drain Filter	Lg Misc.	Sea-Van	1	421	344	13	2,889	3,667
Chemical Addition Tank	Tank	Sea-Van	2	4,009	138	5	1,158	5,310
Tank Agitators	Sm Misc.	Sea-Van	2	346	22	1	185	554
Chemical Addition Pump	Sm Pump	Sea-Van	2	344	106	4	892	1,345
Distillate Tank	Tank	Sea-Van	2	11,442	3,052	111	25,628	40,233
Distillate Tank Pump	Lg Pump	Sea-Van	2	845	140	5	1,176	2,166
Distillate Polishing Demineralizer	Lg Misc.	Sea-Van	1	512	138	5	1,157	1,811
Decon Solution Concentrator	Lg Misc.	Sea-Van	2	918	2,069	76	17,369	20,432
Decon Solution Concentrator Waste Tank	Tank	Sea-Van	2	5,795	432	16	3,627	9,869
Decon Concentrator Bottom Recycle Pump	Lg Pump	Sea-Van	2	866	512	19	4,301	5,698
Decon Concentrator Condenser	Lg Misc.	Sea-Van	2	876	1,401	51	11,760	14,088
Decon Concentrator Pre Heater	Lg Misc.	Sea-Van	2	892	1,910	70	16,033	18,905
Decon Concentrator Waste Pump	Lg Pump	Sea-Van	1	423	77	3	647	1,151
Chemical Waste Stream Mixer	Lg Misc.	Sea-Van	2	840	68	2	567	1,477
Condensate Receiver Tank	Tank	Sea-Van	2	4,978	577	21	4,847	10,424
Condensate Receiver Tank Pump	Sm Pump	Sea-Van	2	352	62	2	521	937
8 Inch Air-Operated Valve	Lg Valve	Sea-Van	2	1,143	94	3	787	2,028
6 Inch MOV	Lg Valve	Sea-Van	2	1,143	50	2	417	1,611
6 Inch Valve	Lg Valve	Sea-Van	3	1,715	74	3	625	2,417
4 Inch MOV	Lg Valve	Sea-Van	4	2,286	55	2	463	2,807
4 Inch Valve	Lg Valve	Sea-Van	5	2,858	69	3	579	3,508
4 Inch Check Valve	Lg Valve	Sea-Van	2	1,143	22	1	185	1,351
4 Inch Flow Element	Lg Valve	Sea-Van	2	1,143	22	1	185	1,351
3 Inch MOV	Sm Valve	Sea-Van	2	0	18	1	151	169
3 Inch Air-Operated Valve	Sm Valve	Sea-Van	15	0	134	5	1,129	1,268
3 Inch Valve	Sm Valve	Sea-Van	14	0	126	5	1,054	1,184
3 Inch Check Valve	Sm Valve	Sea-Van	5	0	41	2	347	390
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0	8	0	69	78
3 Inch Flow Element	Sm Valve	Sea-Van	1	0	8	0	69	78
2 Inch Air-Operated Valve	Sm Valve	Sea-Van	8	0	44	2	371	416

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch Valve	Sm Valve Sea-Van	25	0	138	5	1,158	1,301
2 Inch Check Valve	Sm Valve Sea-Van	7	0	34	1	284	319
2 Inch Relief Valve	Sm Valve Sea-Van	2	0	11	0	93	104
2 Inch Flow Element	Sm Valve Sea-Van	3	0	14	1	122	137
1 1/2 Inch Air-Operated Valve	Sm Valve Sea-Van	3	0	14	1	122	137
1 1/2 Inch Valve	Sm Valve Sea-Van	31	0	150	5	1,256	1,411
1 1/2 Inch Check Valve	Sm Valve Sea-Van	8	0	33	1	278	312
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	4	0	17	1	139	156
1 Inch Air-Operated Valve	Sm Valve Sea-Van	7	0	29	1	243	273
1 Inch Valve	Sm Valve Sea-Van	23	0	95	3	799	898
1 Inch Check Valve	Sm Valve Sea-Van	12	0	41	2	347	390
1 Inch Restricting Orifice	Sm Valve Sea-Van	6	0	21	1	174	195
Instrument Root Valves (Typ. 3/4" Globe)	Sm Valve Sea-Van	96	0	424	15	3,557	3,996

65,141 17,552 641 147,372 230,706

*** Containment Instrument Air

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
6 Inch Valve	Lg Valve	Sea-Van	1	572	25	1	208	806
6 Inch Check Valve	Lg Valve	Sea-Van	1	572	21	1	174	767
2 Inch Valve	Sm Valve	Sea-Van	100	0	552	20	4,632	5,204
2 Inch Check Valve	Sm Valve	Sea-Van	2	0	10	0	81	91
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0	6	0	49	55
1 1/4 Inch 3-Way Valve	Sm Valve	Sea-Van	62	0	470	17	3,949	4,436
1 1/4 Inch 4-Way Valve	Sm Valve	Sea-Van	4	0	33	1	278	312
3/4 Inch Valve	Sm Valve	Sea-Van	3	0	13	0	111	125
3/4 Inch Relief Valve	Sm Valve	Sea-Van	2	0	7	0	58	65
1/2 Inch Valve	Sm Valve	Sea-Van	48	0	132	5	1,112	1,249
Instrument Air Accumulators	Lg Misc.	Sea-Van	22	9,256	865	32	7,260	17,413
				10,399	2,133	78	17,911	30,522

*** Fuel Pool Cooling and Cleanup

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
FPCC Pumps	Lg Pump	Sea-Van	2	876	320	12	2,689	3,897
FPCC Demineralizer	Tank	Sea-Van	2	4,976	952	35	7,990	13,952
Skimmer Surge Tank	Tank	Sea-Van	2	7,638	3,253	119	27,312	38,321
Resin Eductor	Tank	Sea-Van	1	1,567	11	0	93	1,671
FPCC Heat Exchanger	Lg HX	Sea-Van	2	876	1,238	45	10,399	12,558
Supp. Pool Cleanup Pump	Lg Pump	Sea-Van	1	428	160	6	1,344	1,938
Resin Tank Agitator	Sm Misc.	Sea-Van	2	349	22	1	185	557

TABLE 7.1. Contents of File TEST.BRE (contd)

Fuel Pool Precoat Pump	Lg Pump	Sea-Van	1	425	86	3	724	1,238
Dust Evacuator (Precoat)	Lg Misc.	Sea-Van	1	421	32	1	266	720
FPCC Hold Pump	Lg Pump	Sea-Van	2	845	118	4	994	1,961
FPCC Output Diffusers	Lg Pipe	Sea-Van	120	4,572	473	17	4,190	9,252
FPCC Precoat Tank	Tank	Sea-Van	1	2,005	69	3	579	2,655
FPCC Resin Tank	Tank	Sea-Van	1	2,005	69	3	579	2,655
10 Inch Valve (No internals)	Lg Valve	Sea-Van	2	1,143	84	3	706	1,937
10 Inch Valve	Lg Valve	Sea-Van	4	2,286	276	10	2,316	4,888
10 Inch Check Valve	Lg Valve	Sea-Van	3	1,715	153	6	1,285	3,159
10 Inch Flow Element	Lg Valve	Sea-Van	3	1,715	153	6	1,285	3,159
8 Inch MOV	Lg Valve	Sea-Van	2	1,143	88	3	741	1,976
8 Inch Valve	Lg Valve	Sea-Van	5	2,858	221	8	1,853	4,939
8 Inch Check Valve	Lg Valve	Sea-Van	1	572	33	1	278	884
6 Inch MOV	Lg Valve	Sea-Van	10	5,715	248	9	2,084	8,057
6 Inch Valve	Lg Valve	Sea-Van	14	8,002	348	13	2,918	11,280
6 Inch Check Valve	Lg Valve	Sea-Van	3	1,715	62	2	521	2,300
6 Inch Air Operated Valve	Lg Valve	Sea-Van	9	5,144	223	8	1,876	7,251
6 Inch Flow Element	Lg Valve	Sea-Van	1	572	21	1	174	767
4 Inch Air Operated Valve	Lg Valve	Sea-Van	1	572	14	1	116	702
4 Inch Check Valve	Lg Valve	Sea-Van	1	572	11	0	93	676
4 Inch Flow Element	Lg Valve	Sea-Van	1	572	11	0	93	676
3 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0	18	1	151	169
3 Inch Valve	Sm Valve	Sea-Van	1	0	9	0	75	85
3 Inch Check Valve	Sm Valve	Sea-Van	2	0	17	1	139	156
2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0	17	1	139	156
2 Inch Valve	Sm Valve	Sea-Van	5	0	28	1	232	260
2 Inch Check Valve	Sm Valve	Sea-Van	1	0	5	0	41	46
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0	6	0	52	59
1 1/2 Inch Valve	Sm Valve	Sea-Van	1	0	5	0	41	46
1 Inch Valve	Sm Valve	Sea-Van	10	0	48	2	405	455
1 Inch Check Valve	Sm Valve	Sea-Van	1	0	4	0	35	39
1 Inch Relief Valve	Sm Valve	Sea-Van	2	0	10	0	88	99
1 Inch Flow Element	Sm Valve	Sea-Van	1	0	4	0	35	39
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	75	0	331	12	2,779	3,122
				61,276	9,251	338	77,892	148,756

*** Condensate Demineralizers

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Filter Demineralizers	Tank	Sea-Van	6	19,218	9,661	353	81,115	110,347
Resin Trap (with basket)	Lg Misc.	Sea-Van	6	2,571	1,738	63	14,590	18,963
Demineralizer Hold Pump	Lg Pump	Sea-Van	6	2,540	290	11	2,432	5,272
Condensate Backwash Receiving Tank	Tank	Sea-Van	1	5,791	2,100	77	17,629	25,596

TABLE 7.1. Contents of File TEST.BRE (contd)

Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	427	127	5	1,070	1,629
Condensate Decant Pump	Lg Pump	Sea-Van	1	427	127	5	1,070	1,629
Condensate Backwash Pump	Lg Pump	Sea-Van	1	427	127	5	1,070	1,629
Condensate Phase Separator Tank	Tank	Sea-Van	2	12,995	1,931	70	16,214	31,211
34 Foot Loop Seal	Lg Pipe	Sea-Van	150	5,715	392	14	3,480	9,602
36 Inch Flow Element	Lg Valve	Sea-Van	1	572	248	9	2,084	2,913
20 Inch Butterfly Valve	Lg Valve	Sea-Van	2	1,143	1,076	39	9,032	11,290
18 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	1	572	428	16	3,590	4,604
12 Inch Butterfly Valve	Lg Valve	Sea-Van	6	3,429	927	34	7,782	12,171
12 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	12	6,859	1,854	68	15,563	24,343
12 Inch Flow Element	Lg Valve	Sea-Van	6	3,429	828	30	6,948	11,235
8 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	22	12,574	1,608	59	13,502	27,743
8 Inch Butterfly Valve	Lg Valve	Sea-Van	2	1,143	146	5	1,227	2,522
8 Inch Air Operated Valve	Lg Valve	Sea-Van	1	572	103	4	868	1,547
8 Inch Check Valve	Lg Valve	Sea-Van	5	2,858	297	11	2,490	5,655
8 Inch Flow Element	Lg Valve	Sea-Van	2	1,143	110	4	926	2,184
6 Inch Air Operated Valve	Lg Valve	Sea-Van	12	6,859	621	23	5,211	12,713
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	103	4	868	2,119
6 Inch Air Operated Butterfly Valve	Lg Valve	Sea-Van	21	12,002	1,014	37	8,511	21,564
6 Inch Check Valve	Lg Valve	Sea-Van	3	1,715	112	4	938	2,768
4 Inch Air Operated Valve	Lg Valve	Sea-Van	5	2,858	124	5	1,042	4,029
4 Inch Check Valve	Lg Valve	Sea-Van	1	572	18	1	151	741
3 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0	36	1	301	338
3 Inch Air Operated Butterfly Valve	Sm Valve	Sea-Van	6	0	99	4	834	937
3 Inch Butterfly Valve	Sm Valve	Sea-Van	1	0	17	1	139	156
3 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0	11	0	93	104
2 Inch Air Operated Butterfly Valve	Sm Valve	Sea-Van	6	0	46	2	382	429
2 Inch Butterfly Valve	Sm Valve	Sea-Van	2	0	15	1	127	143
2 Inch Valve	Sm Valve	Sea-Van	43	0	445	16	3,734	4,195
2 Inch Check Valve	Sm Valve	Sea-Van	5	0	34	1	289	325
2 Inch Relief Valve	Sm Valve	Sea-Van	3	0	27	1	226	254
1 1/2 Inch Valve	Sm Valve	Sea-Van	1	0	8	0	67	75
1 Inch Air Operated Valve	Sm Valve	Sea-Van	13	0	81	3	677	761
1 Inch Valve	Sm Valve	Sea-Van	18	0	112	4	938	1,054
1 Inch Check Valve	Sm Valve	Sea-Van	5	0	21	1	174	195
1 Inch Relief Valve	Sm Valve	Sea-Van	6	0	35	1	292	328
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	149	0	658	24	5,521	6,203
				109,552	27,752	1,013	233,198	371,515

*** Equipment Drain Processing

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Waste Demineralizer	Tank	Sea-Van	1	2,728	276	10	2,314	5,328

TABLE 7.1. Contents of File TEST.BRE (contd)

Waste Collector Filter	Lg Misc. Sea-Van	1	452	550	20	4,621	5,644
Waste Filter Hold Pump	Lg Pump Sea-Van	1	424	97	4	811	1,335
Waste Collector Tank and Eductor	Tank Sea-Van	1	6,792	3,107	113	26,089	36,102
Waste Collector Pump	Lg Pump Sea-Van	1	428	86	3	724	1,241
Spent Resin Tank	Tank Sea-Van	1	2,907	200	7	1,677	4,791
Spent Resin Pump	Lg Pump Sea-Van	1	423	31	1	259	715
Waste Surge Tank and Eductor	Tank Sea-Van	1	9,066	5,554	203	46,630	61,452
Waste Surge Pump	Lg Pump Sea-Van	1	428	86	3	724	1,241
Waste Sample Tank and Eductor	Tank Sea-Van	2	12,275	4,229	154	35,503	52,161
Waste Sample Pump	Lg Pump Sea-Van	2	853	140	5	1,176	2,175
8 Inch Air Operated Valve	Lg Valve Sea-Van	1	572	44	2	371	988
6 Inch Air Operated Valve	Lg Valve Sea-Van	1	572	25	1	208	806
6 Inch Check Valve	Lg Valve Sea-Van	2	1,143	41	2	347	1,533
6 Inch Flow Element	Lg Valve Sea-Van	1	572	21	1	174	767
6 Inch Flow Sight Glass	Lg Misc. Sea-Van	1	422	17	1	139	578
4 Inch Air Operated Valve	Lg Valve Sea-Van	27	15,432	372	14	3,127	18,944
4 Inch Valve	Lg Valve Sea-Van	14	8,002	193	7	1,621	9,823
4 Inch Check Valve	Lg Valve Sea-Van	13	7,430	143	5	1,204	8,783
4 Inch Resin Strainer	Sm Misc. Sea-Van	1	174	11	0	93	278
4 Inch Restricting Orifice	Sm Valve Sea-Van	7	0	77	3	648	729
4 Inch Flow Element	Lg Valve Sea-Van	1	572	11	0	93	676
4 Inch Resin Screen	Sm Misc. Sea-Van	5	866	48	2	405	1,321
3 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	36	1	301	338
3 Inch Valve	Sm Valve Sea-Van	7	0	63	2	527	592
3 Inch Check Valve	Sm Valve Sea-Van	2	0	17	1	139	156
3 Inch Restricting Orifice	Sm Valve Sea-Van	1	0	8	0	69	78
3 Inch Flow Element	Sm Valve Sea-Van	1	0	8	0	69	78
2 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	22	1	185	208
2 Inch Valve	Sm Valve Sea-Van	14	0	77	3	648	729
2 Inch Check Valve	Sm Valve Sea-Van	2	0	10	0	81	91
2 Inch Relief Valve	Sm Valve Sea-Van	1	0	6	0	46	52
2 Inch Flow Element	Sm Valve Sea-Van	3	0	14	1	122	137
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	2	0	10	0	81	91
1 1/2 Inch Valve	Sm Valve Sea-Van	5	0	24	1	203	228
1 1/2 Check Valve	Sm Valve Sea-Van	3	0	12	0	104	117
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	17	1	139	156
1 Inch Valve	Sm Valve Sea-Van	6	0	25	1	208	234
1 Inch Check Valve	Sm Valve Sea-Van	10	0	34	1	289	325
1 Inch Flow Element	Sm Valve Sea-Van	1	0	3	0	29	33
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	55	0	243	9	2,038	2,290
			72,531	15,988	584	134,238	223,341

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Extraction Steam								
Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
24 Inch MOV	Lg Valve	Sea-Van	6	3,429	5,875	214	49,329	58,848
24 Inch Stop Check Valve	Lg Valve	Sea-Van	6	3,429	4,708	172	39,533	47,842
20 Inch MOV	Lg Valve	Sea-Van	10	5,715	7,999	292	67,162	81,168
20 Inch Stop Check Valve	Lg Valve	Sea-Van	10	5,715	6,399	234	53,729	66,078
18 Inch MOV	Lg Valve	Sea-Van	5	2,858	3,379	123	28,370	34,730
18 Inch Stop Check Valve	Lg Valve	Sea-Van	5	2,858	2,703	99	22,696	28,356
16 Inch MOV	Lg Valve	Sea-Van	2	1,143	1,167	43	9,796	12,149
16 Inch Stop Check Valve	Lg Valve	Sea-Van	2	1,143	933	34	7,837	9,948
8 Inch Air Operated Valve	Lg Valve	Sea-Van	6	3,429	931	34	7,816	12,210
6 Inch MOV	Lg Valve	Sea-Van	4	2,286	324	12	2,724	5,346
4 Inch Air Operated Valve	Lg Valve	Sea-Van	4	2,286	148	5	1,241	3,681
2 Inch Air Operated Valve	Sm Valve	Sea-Van	10	0	103	4	868	976
2 Inch Restricting Orifice	Sm Valve	Sea-Van	12	0	91	3	764	859
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	85	0	375	14	3,150	3,538
				34,293	35,137	1,282	295,017	365,729

*** High/Low Pressure Core Spray								
Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
24" Suction Strainer	Lg Misc.	Sea-Van	2	851	104	4	876	1,835
18 Inch MOV	Lg Valve	Sea-Van	1	572	676	25	5,674	6,946
24 Inch Check Valve	Lg Valve	Sea-Van	1	572	979	36	8,222	9,808
3 Inch Valve	Sm Valve	Sea-Van	1	0	21	1	177	199
3 Inch Check Valve	Sm Valve	Sea-Van	1	0	14	1	116	130
14 Inch MOV	Lg Valve	Sea-Van	1	572	381	14	3,196	4,162
20 Inch Check Valve	Lg Valve	Sea-Van	1	572	828	30	6,948	8,377
12 X 24 Inch Pump	Lg Pump	Sea-Van	1	832	8,327	304	69,911	79,373
16 Inch Check Valve	Lg Valve	Sea-Van	1	572	221	8	1,853	2,653
2 Inch Valve	Sm Valve	Sea-Van	1	0	12	0	104	117
1 X 2 Inch Pump	Lg Pump	Sea-Van	1	427	25	1	210	663
1 Inch Check Valve	Sm Valve	Sea-Van	1	0	7	0	58	65
1 Inch Valve	Sm Valve	Sea-Van	1	0	7	0	58	65
1 1/2 X 2 Inch Valve	Sm Valve	Sea-Van	1	0	12	0	104	117
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
12 Inch Valve	Lg Valve	Sea-Van	3	1,715	927	34	7,782	10,457
10 Inch MOV	Lg Valve	Sea-Van	1	572	222	8	1,864	2,666
12 Inch MOV	Lg Valve	Sea-Van	2	1,143	618	23	5,188	6,971
3/4 Inch Valve	Sm Valve	Sea-Van	42	0	521	19	4,377	4,917
24 Inch Suction Strainer	Lg Misc.	Sea-Van	2	851	104	4	876	1,835
Vent Strainer	Sm Misc.	Sea-Van	1	174	13	0	110	298

TABLE 7.1. Contents of File TEST.BRE (contd)

3/4 Inch Valve	Sm Valve Sea-Van	28	0	116	4	973	1,093
24 Inch MOV	Lg Valve Sea-Van	1	572	979	36	8,222	9,808
3/4 Inch Check Valve	Sm Valve Sea-Van	1	0	4	0	35	39
1 1/2 Inch Valve	Sm Valve Sea-Van	4	0	34	1	287	323
14 X 24 Pump	Lg Pump Sea-Van	1	451	2,924	107	24,549	28,030
Pump Pit	Lg Misc. Sea-Van	1	422	55	2	463	942
16 Inch Valve	Lg Valve Sea-Van	1	572	221	8	1,853	2,653
12 Inch MOV	Lg Valve Sea-Van	1	572	309	11	2,594	3,486
12 Inch Valve	Lg Valve Sea-Van	2	1,143	618	23	5,188	6,971
16 Inch Flow Control Valve	Lg Valve Sea-Van	1	572	556	20	4,667	5,814
6 Inch Flow Control Valve	Lg Valve Sea-Van	1	572	81	3	681	1,336
6 Inch Valve	Lg Valve Sea-Van	1	572	81	3	681	1,336
1 X 2 Inch Pump	Lg Pump Sea-Van	1	427	25	1	210	663
1 1/2 Check Valve	Sm Valve Sea-Van	1	0	7	0	58	65
3 Inch Valve	Sm Valve Sea-Van	1	0	21	1	177	199
12 Inch Check Valve	Lg Valve Sea-Van	1	572	166	6	1,390	2,133
3/4 Inch Air Operated Valve	Sm Valve Sea-Van	1	0	4	0	35	39
			17,009	20,381	744	171,124	209,258

*** Miscellaneous Drains

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Misc. Drain Tank #1	Tank	Sea-Van	1	2,483	148	5	1,242	3,879
Misc. Drain Tank #2 (includes pumps)	Tank	Sea-Van	1	3,237	199	7	1,669	5,112
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
4 Inch Valve	Lg Valve	Sea-Van	5	2,858	185	7	1,552	4,601
3 Inch MOV	Sm Valve	Sea-Van	8	0	169	6	1,417	1,592
3 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0	63	2	532	597
3 Inch Valve	Sm Valve	Sea-Van	3	0	63	2	532	597
3 Inch Check Valve	Sm Valve	Sea-Van	2	0	28	1	232	260
3 Inch Strainer	Sm Valve	Sea-Van	8	0	143	5	1,204	1,353
3 Inch Restricting Orifice	Sm Valve	Sea-Van	4	0	55	2	463	520
3 Inch Flow Element	Sm Valve	Sea-Van	2	0	28	1	232	260
2 Inch MOV	Sm Valve	Sea-Van	1	0	10	0	87	98
2 Inch Air Operated Valve	Sm Valve	Sea-Van	11	0	114	4	955	1,073
2 Inch Valve	Sm Valve	Sea-Van	11	0	114	4	955	1,073
2 Inch Restricting Orifice	Sm Valve	Sea-Van	26	0	197	7	1,656	1,860
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0	26	1	215	242
1 1/2 Inch Valve	Sm Valve	Sea-Van	2	0	17	1	144	161
1 Inch Air Operated Valve	Sm Valve	Sea-Van	8	0	55	2	463	520
1 Inch Valve	Sm Valve	Sea-Van	7	0	48	2	405	455
1 Inch Steam Trap	Sm Valve	Sea-Van	2	0	25	1	208	234
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	47	0	207	8	1,742	1,957

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Valve	Sm Valve Sea-Van	14	0	174	6	1,459	1,639
2 1/2 Inch Air operated Valve	Sm Valve Sea-Van	2	0	36	1	303	341
2 1/2 Inch Valve	Sm Valve Sea-Van	3	0	54	2	455	511
			9,721	2,321	85	19,484	31,610

*** Main Steam and MS Leakage Control

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
72 Inch MOV (Butterfly)	Lg Valve	Sea-Van	1	572	2,938	107	24,665	28,281
Stop Valve	Lg Valve	Sea-Van	6	3,429	5,875	214	49,329	58,848
Interceptor Valve	Lg Valve	Sea-Van	6	3,429	5,875	214	49,329	58,848
30 Inch MSIV	Lg Valve	Sea-Van	8	4,572	1,545	56	12,969	19,143
24 Inch MOV	Lg Valve	Sea-Van	1	572	979	36	8,222	9,808
24 Inch Relief Valve	Lg Valve	Sea-Van	4	2,286	5,092	186	42,752	50,316
20 Inch Relief Valve	Lg Valve	Sea-Van	2	1,143	2,124	78	17,833	21,177
16 Inch MOV	Lg Valve	Sea-Van	1	572	583	21	4,898	6,074
16 Inch Check Valve	Lg Valve	Sea-Van	2	1,143	932	34	7,828	9,937
14 Inch Check Valve	Lg Valve	Sea-Van	2	1,143	612	22	5,141	6,919
14 Inch MOV	Lg Valve	Sea-Van	2	1,143	761	28	6,392	8,324
12 Inch MOV	Lg Valve	Sea-Van	2	1,143	690	25	5,790	7,648
12 Inch Stop Check Valve	Lg Valve	Sea-Van	2	1,143	543	20	4,562	6,269
30 Inch Flow Restrictor	Lg Valve	Sea-Van	4	2,286	1,655	60	13,896	17,897
8 Inch AO SRV	Lg Valve	Sea-Van	18	10,288	5,039	184	42,312	57,823
10 Inch Vacuum Breaker	Lg Misc.	Sea-Van	36	15,340	4,469	163	37,518	57,490
24 X 12 Inch Quencher	Lg Misc.	Sea-Van	18	8,843	4,096	149	34,392	47,480
10 Inch MOV	Lg Valve	Sea-Van	8	4,572	1,776	65	14,915	21,328
10 Inch Valve	Lg Valve	Sea-Van	2	1,143	444	16	3,729	5,332
8 Inch Valve	Lg Valve	Sea-Van	5	2,858	776	28	6,514	10,175
8 Inch Check Valve	Lg Valve	Sea-Van	1	572	102	4	857	1,534
6 Inch MOV	Lg Valve	Sea-Van	9	5,144	730	27	6,128	12,028
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
6 Inch Check Valve	Lg Valve	Sea-Van	1	572	58	2	486	1,118
6 Inch Relief Valve	Lg Valve	Sea-Van	4	2,286	276	10	2,316	4,888
4 Inch MOV	Lg Valve	Sea-Van	2	1,143	74	3	621	1,840
4 Inch Valve	Lg Valve	Sea-Van	2	1,143	74	3	621	1,840
3 Inch MOV	Sm Valve	Sea-Van	11	0	232	8	1,949	2,189
3 Inch Air Operated Valve	Sm Valve	Sea-Van	6	0	127	5	1,063	1,194
3 Inch Valve	Sm Valve	Sea-Van	4	0	84	3	709	796
3 Inch Flow Element	Sm Valve	Sea-Van	2	0	28	1	232	260
2 Inch MOV	Sm Valve	Sea-Van	2	0	21	1	174	195
2 Inch Air Operated Valve	Sm Valve	Sea-Van	5	0	52	2	434	488
2 Inch Valve	Sm Valve	Sea-Van	393	0	4,065	148	34,131	38,344
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	7	0	60	2	503	565

TABLE 7.1. Contents of File TEST.BRE (contd)

1 1/2 Inch Valve	Sm Valve Sea-Van	4	0	34	1	287	323
1 Inch Air Operated Valve	Sm Valve Sea-Van	7	0	48	2	405	455
1 Inch Valve	Sm Valve Sea-Van	75	0	517	19	4,342	4,878
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	195	0	861	31	7,226	8,118
1/2 Inch Valve	Sm Valve Sea-Van	163	0	562	21	4,719	5,301
1 Inch Steam Trap	Sm Misc. Sea-Van	35	6,048	434	16	3,648	10,146
2 Inch Strainer	Sm Misc. Sea-Van	4	693	52	2	440	1,187
4 Inch Strainer	Lg Misc. Sea-Van	2	843	61	2	510	1,416
8 Inch Relief Valve	Lg Valve Sea-Van	2	1,143	284	10	2,383	3,820
8 Inch Strainer	Lg Misc. Sea-Van	4	1,688	287	10	2,409	4,394
Gland Steam Condenser	Lg Misc. Sea-Van	1	437	1,227	45	10,306	12,015
Ejector Condenser	Lg Misc. Sea-Van	2	1,072	4,027	147	33,813	39,059
Bypass Valve Assembly	Lg Misc. Sea-Van	1	504	1,600	58	13,432	15,595
Steam Evaporator	Lg Misc. Sea-Van	2	1,443	8,185	299	68,723	78,650
28 Inch HOV Governor Valve	Lg Valve Sea-Van	8	4,572	8,827	322	74,110	87,831
1/2 Inch Valve (MSLC)	Sm Valve Sea-Van	8	0	28	1	232	260
3/4 Inch Valve (MSLC)	Sm Valve Sea-Van	28	0	124	5	1,038	1,166
1 Inch Flow Element (MSLC)	Sm Valve Sea-Van	2	0	10	0	88	99
1 Inch Valve (MSLC)	Sm Valve Sea-Van	14	0	97	4	811	911
1 Inch Check Valve (MSLC)	Sm Valve Sea-Van	4	0	21	1	176	198
1 1/2 Inch Flow Element (MSLC)	Sm Valve Sea-Van	4	0	25	1	213	239
1 1/2 Inch MOV (MSLC)	Sm Valve Sea-Van	20	0	138	5	1,158	1,301
1 1/2 Check Valve (MSLC)	Sm Valve Sea-Van	2	0	13	0	107	120
MSLC Fan (3 Inch)	Lg Misc. Sea-Van	2	847	124	5	1,042	2,018
MSLC Heater	Lg Misc. Sea-Van	4	1,683	69	3	579	2,334
			100,597	80,604	2,942	676,761	860,904

*** Radioactive Floor Drain Processing

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Floor Drain Demineralizer	Tank	Sea-Van	1	2,728	275	10	2,312	5,326
Floor Drain Sample Tank	Tank	Sea-Van	1	6,134	2,114	77	17,752	26,077
Floor Drain Sample Pump	Lg Pump	Sea-Van	1	427	70	3	588	1,088
Floor Drain Filter Aid Pump	Lg Pump	Sea-Van	1	422	36	1	301	760
Floor Drain Filter Hold Pump	Lg Pump	Sea-Van	1	424	96	4	809	1,333
Floor Drain Filter	Lg Misc. Sea-Van		1	426	550	20	4,621	5,618
Floor Drain Collector Pump	Lg Pump	Sea-Van	1	428	86	3	724	1,241
Floor Drain Collector Tank	Tank	Sea-Van	1	6,792	3,107	113	26,089	36,102
Waste Decant Pump	Lg Pump	Sea-Van	1	424	31	1	259	715
Waste Sludge Discharge Mixing Pump	Lg Pump	Sea-Van	1	425	87	3	734	1,250
Waste Sludge Phase Sep. Tank w/ 2 Eductors	Tank	Sea-Van	1	5,799	1,668	61	14,003	21,531
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	1,143	88	3	741	1,976
6 Inch Air Operated Valve	Lg Valve	Sea-Van	3	1,715	74	3	625	2,417

TABLE 7.1. Contents of File TEST.BRE (contd)

6 Inch Check Valve	Lg Valve Sea-Van	2	1,143	41	2	347	1,533
6 Inch Flow Site Glass	Lg Misc. Sea-Van	1	420	14	1	116	550
4 Inch MOV	Lg Valve Sea-Van	1	572	14	1	116	702
4 Inch Air Operated Valve	Lg Valve Sea-Van	21	12,002	290	11	2,432	14,734
4 Inch Valve	Lg Valve Sea-Van	18	10,288	248	9	2,084	12,629
4 Inch Check Valve	Lg Valve Sea-Van	11	6,287	121	4	1,019	7,432
4 Inch Restricting Orifice	Lg Valve Sea-Van	4	2,286	44	2	371	2,702
4 Inch Resin Strainer	Lg Misc. Sea-Van	1	420	34	1	289	746
3 Inch Air Operated Valve	Sm Valve Sea-Van	5	0	45	2	376	423
3 Inch Valve	Sm Valve Sea-Van	3	0	27	1	226	254
3 Inch Check Valve	Sm Valve Sea-Van	3	0	25	1	208	234
3 Inch Flow Element	Sm Valve Sea-Van	1	0	8	0	64	72
3 Inch Flow Site Glass	Sm Misc. Sea-Van	2	346	11	0	93	450
2 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	22	1	185	208
2 Inch Valve	Sm Valve Sea-Van	9	0	50	2	417	468
2 Inch Check Valve	Sm Valve Sea-Van	3	0	14	1	122	137
2 Inch Relief Valve	Sm Valve Sea-Van	1	0	6	0	46	52
2 Inch Stop Check Valve	Sm Valve Sea-Van	1	0	6	0	46	52
2 Inch Flow Site Glass	Sm Misc. Sea-Van	2	345	8	0	69	423
2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0	5	0	41	46
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	2	0	10	0	81	91
1 1/2 Inch Valve	Sm Valve Sea-Van	1	0	5	0	41	46
1 Inch Relief Valve	Sm Valve Sea-Van	1	0	4	0	35	39
1 1/2 Inch Flow Element	Sm Valve Sea-Van	1	0	4	0	35	39
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	17	1	139	156
1 Inch Check Valve	Sm Valve Sea-Van	3	0	10	0	87	98
1 Inch Solenoid Valve	Sm Valve Sea-Van	1	0	4	0	35	39
1 Inch Ball Valve	Sm Valve Sea-Van	1	0	4	0	35	39
1 Inch Flow Site Glass	Sm Misc. Sea-Van	1	172	3	0	23	198
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	50	0	103	4	868	976
1/2 Inch Solenoid Valve	Sm Valve Sea-Van	2	0	4	0	35	39
1/2 Inch Check Valve	Sm Valve Sea-Van	5	0	10	0	87	98
			61,567	9,496	347	79,727	151,136

*** Turbine & Rad Waste Bldg. Drains

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
EDR Sump Pump	Lg Pump	Sea-Van	6	2,560	1,067	39	8,956	12,622
FDR Sump Pump	Lg Pump	Sea-Van	7	2,987	1,028	38	8,633	12,685
Chemical Drain Sump Pump	Lg Pump	Sea-Van	1	427	202	7	1,699	2,335
6 Inch Restricting Orifice	Lg Valve	Sea-Van	19	10,859	393	14	3,300	14,567
3 Inch Valve	Sm Valve	Sea-Van	6	0	54	2	452	507
3 Inch Check Valve	Sm Valve	Sea-Van	6	0	50	2	417	468

TABLE 7.1. Contents of File TEST.BRE (contd)

2 Inch MOV	Sm Valve Sea-Van	3	0	17	1	139	156
2 Inch Valve	Sm Valve Sea-Van	8	0	44	2	371	416
2 Inch Check Valve	Sm Valve Sea-Van	8	0	39	1	324	364
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	22	0	97	4	815	916
			16,834	2,990	109	25,105	45,038

*** Offgas

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Catalytic Recombiner Vessel	Tank	Sea-Van	2	5,371	276	10	2,314	7,970
Preheater Heat Exchanger	Lg HX	Sea-Van	2	907	327	12	2,744	3,990
Offgas Condenser	Lg Misc.	Sea-Van	1	469	273	10	2,288	3,040
Water Separator	Lg Misc.	Sea-Van	1	422	82	3	692	1,200
Lab Vacuum Pump	Sm Pump	Sea-Van	4	690	50	2	417	1,159
Water Separator	Lg Misc.	Sea-Van	2	844	826	30	6,934	8,634
Charcoal Ads. Vessel	Tank	Sea-Van	8	25,951	9,908	362	83,188	119,408
Cooler Condenser	Lg Misc.	Sea-Van	2	858	550	20	4,620	6,049
Seal Water Trap	Lg Pipe	Sea-Van	20	762	52	2	439	1,256
Pre-Filter Vessel	Tank	Sea-Van	2	4,524	688	25	5,778	11,015
After-Filter Vessel	Tank	Sea-Van	2	4,524	688	25	5,778	11,015
Dessicant Dryers	Lg Misc.	Sea-Van	4	1,720	756	28	6,350	8,854
Dryer Heater	Lg Misc.	Sea-Van	2	873	2,202	80	18,490	21,646
Dryer Chiller	Lg Misc.	Sea-Van	2	964	1,376	50	11,556	13,947
Regen Blower	Lg Misc.	Sea-Van	2	856	386	14	3,242	4,498
6 Inch Air Operated Valve	Lg Valve	Sea-Van	9	5,144	223	8	1,876	7,251
6 Inch Valve	Lg Valve	Sea-Van	18	10,288	447	16	3,752	14,503
4 Inch MOV	Lg Valve	Sea-Van	2	1,143	28	1	232	1,403
4 Inch Air Operated Valve	Lg Valve	Sea-Van	4	2,286	55	2	463	2,807
3 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0	18	1	151	169
3 Inch Valve	Sm Valve	Sea-Van	6	0	54	2	452	507
2 Inch Air Operated Valve	Sm Valve	Sea-Van	4	0	22	1	185	208
2 Inch Valve	Sm Valve	Sea-Van	10	0	55	2	463	520
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0	14	1	122	137
1 1/2 Inch Valve	Sm Valve	Sea-Van	4	0	19	1	162	182
1 1/2 Relief Valve	Sm Valve	Sea-Van	1	0	5	0	43	48
1 1/2 Flow Element	Sm Valve	Sea-Van	2	0	8	0	69	78
1 Inch Air Operated Valve	Sm Valve	Sea-Van	16	0	66	2	556	624
1 Inch Valve	Sm Valve	Sea-Van	30	0	124	5	1,042	1,171
1 Inch Relief Valve	Sm Valve	Sea-Van	2	0	9	0	74	83
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	89	0	393	14	3,298	3,705
			68,596	19,982	729	167,772	257,079	

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Reactor Building Closed Cooling Water								
Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
RBCCW Heat Exchanger	Lg HX	Sea-Van	3	1,402	6,799	248	57,083	65,531
RBCCW Pump	Lg Pump	Sea-Van	2	860	970	35	8,147	10,013
RBCCW Surge Tank	Tank	Sea-Van	1	2,459	161	6	1,355	3,981
Drywell Cooler (w/ two axial fans)	Lg Misc.	Sea-Van	5	2,151	1,131	41	9,495	12,819
14 Inch MOV	Lg Valve	Sea-Van	1	572	137	5	1,146	1,859
12 Inch Valve	Lg Valve	Sea-Van	3	1,715	302	11	2,536	4,564
10 Inch MOV	Lg Valve	Sea-Van	7	4,001	531	19	4,458	9,009
10 Inch Valve	Lg Valve	Sea-Van	6	3,429	455	17	3,821	7,722
10 Inch Check Valve	Lg Valve	Sea-Van	4	2,286	204	7	1,714	4,212
10 Inch Flow Element	Lg Valve	Sea-Van	1	572	51	2	428	1,053
8 Inch MOV	Lg Valve	Sea-Van	5	2,858	234	9	1,969	5,069
8 Inch Valve	Lg Valve	Sea-Van	2	1,143	94	3	787	2,028
8 Inch Air Operated Valve	Lg Valve	Sea-Van	2	1,143	94	3	787	2,028
8 Inch Flow Element	Lg Valve	Sea-Van	4	2,286	132	5	1,112	3,535
6 Inch Valve	Lg Valve	Sea-Van	6	3,429	174	6	1,459	5,068
6 Inch Check Valve	Lg Valve	Sea-Van	4	2,286	83	3	695	3,067
6 Inch Air Operated Valve	Lg Valve	Sea-Van	1	572	29	1	243	845
6 Inch Flow Element	Lg Valve	Sea-Van	1	572	21	1	174	767
4 Inch MOV	Lg Valve	Sea-Van	7	4,001	116	4	973	5,094
4 Inch Air Operated Valve	Lg Valve	Sea-Van	1	572	17	1	139	728
4 Inch Valve	Lg Valve	Sea-Van	3	1,715	50	2	417	2,183
3 Inch Valve	Sm Valve	Sea-Van	9	0	99	4	834	937
3 Inch Electro-Hydraulic Valve	Sm Valve	Sea-Van	3	0	33	1	278	312
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0	6	0	52	59
2 Inch Valve	Sm Valve	Sea-Van	10	0	62	2	521	585
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0	7	0	56	62
1 Inch Valve	Sm Valve	Sea-Van	6	0	25	1	208	234
1 Inch Relief Valve	Sm Valve	Sea-Van	7	0	31	1	259	291
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	149	0	658	24	5,521	6,203
				40,021	12,704	464	106,668	159,857
*** Reactor Core Isolation Cooling								
Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Pelton Wheel Turbine and RCIC Pump	Lg Misc.	Sea-Van	1	455	1,902	69	15,968	18,394
Barometric Condenser	Lg Misc.	Sea-Van	1	421	168	6	1,412	2,007
Condenser Pump	Lg Pump	Sea-Van	1	420	206	8	1,732	2,366
Water Leg Pump	Lg Pump	Sea-Van	1	427	121	4	1,014	1,567
Vacuum Pump	Lg Pump	Sea-Van	1	420	138	5	1,157	1,719
Vacuum Tank	Tank	Sea-Van	1	1,993	124	5	1,040	3,162

TABLE 7.1. Contents of File TEST.BRE (contd)

Steam Condensate Drip Pot	Tank	Sea-Van	1	1,570	33	1	278	1,883
8 Inch Suction Strainer	Lg Misc.	Sea-Van	2	840	40	1	336	1,217
3/4 Inch Steam Trap	Sm Misc.	Sea-Van	4	690	30	1	255	976
10 Inch Exhaust Drip Chamber	Lg Misc.	Sea-Van	1	420	94	3	787	1,305
Turbine Exhaust Sparger	Lg Misc.	Sea-Van	1	421	73	3	614	1,110
10 Inch MOV	Lg Valve	Sea-Van	3	1,715	666	24	5,593	7,998
10 Inch Check Valve	Lg Valve	Sea-Van	1	572	121	4	1,019	1,716
8 Inch MOV	Lg Valve	Sea-Van	2	1,143	310	11	2,605	4,070
8 Inch Valve	Lg Valve	Sea-Van	1	572	155	6	1,303	2,035
8 Inch Check Valve	Lg Valve	Sea-Van	2	1,143	204	7	1,714	3,068
6 Inch MOV	Lg Valve	Sea-Van	3	1,715	243	9	2,043	4,009
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
6 Inch Check Valve	Lg Valve	Sea-Van	1	572	58	2	486	1,118
6 Inch Air Operated Check Valve	Lg Valve	Sea-Van	2	1,143	135	5	1,135	2,418
6 Inch Restricting Orifice	Lg Valve	Sea-Van	2	1,143	116	4	973	2,236
4 Inch MOV	Lg Valve	Sea-Van	3	1,715	111	4	931	2,761
4 Inch Hydraulic Control Valve	Lg Valve	Sea-Van	1	572	62	2	521	1,157
3 Inch Restricting Orifice	Sm Valve	Sea-Van	2	0	27	1	229	258
2 Inch MOV	Sm Valve	Sea-Van	4	0	41	2	347	390
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0	10	0	87	98
2 Inch Valve	Sm Valve	Sea-Van	4	0	41	2	347	390
2 Inch Check Valve	Sm Valve	Sea-Van	6	0	46	2	382	429
2 Inch Relief Valve	Sm Valve	Sea-Van	1	0	9	0	74	83
2 Inch Restricting Orifice	Sm Valve	Sea-Van	2	0	15	1	127	143
1 1/2 Inch MOV	Sm Valve	Sea-Van	1	0	9	0	72	81
1 1/2 Valve	Sm Valve	Sea-Van	2	0	17	1	144	161
1 1/2 Check Valve	Sm Valve	Sea-Van	1	0	6	0	53	60
1 1/2 Inch Relief Valve	Sm Valve	Sea-Van	1	0	7	0	58	65
1 1/2 Inch Restricting Orifice	Sm Valve	Sea-Van	1	0	6	0	53	60
1 Inch Air Operated Valve	Sm Valve	Sea-Van	5	0	34	1	289	325
1 Inch Pressure Control Valve	Sm Valve	Sea-Van	1	0	8	0	69	78
1 Inch Valve	Sm Valve	Sea-Van	5	0	34	1	289	325
1 Inch Restricting Orifice	Sm Valve	Sea-Van	9	0	47	2	396	445
3/4 Inch Air Solenoid	Sm Valve	Sea-Van	1	0	4	0	37	42
3/4 Inch Pressure Control Valve	Sm Valve	Sea-Van	2	0	14	1	116	130
Dragon Valve (excess flow check)	Sm Valve	Sea-Van	8	0	55	2	463	520
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	204	0	900	33	7,559	8,492
				21,223	6,607	241	55,471	83,542

*** Residual Heat Removal

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
RHR Pump	Lg Pump	Sea-Van	3	1,398	7,102	259	59,626	68,384

TABLE 7.1. Contents of File TEST.BRE (contd)

Water Leg Pump	Lg Pump Sea-Van	1	428	121	4	1,013	1,566
Drywell Upper Spray Ring Header	Lg Pipe Sea-Van 0	135	5,144	2,601	95	21,835	29,675
Drywell Lower Spray Ring Header	Lg Pipe Sea-Van 0	206	7,849	3,968	145	33,319	45,282
Wetwell Spray Ring Header	Lg Pipe Sea-Van	260	9,907	1,624	59	14,021	25,611
Suppression Pool Suction Strainers	Lg Misc. Sea-Van	6	2,549	356	13	2,988	5,905
RHR Heat Exchanger	Lg HX Sea-Van	2	1,665	17,735	647	148,902	168,949
24 Inch MOV	Lg Valve Sea-Van	3	1,715	6,517	238	54,714	63,183
20 Inch MOV	Lg Valve Sea-Van	2	1,143	2,482	91	20,843	24,560
20 Inch Valve	Lg Valve Sea-Van	1	572	1,241	45	10,422	12,280
18 Inch MOV	Lg Valve Sea-Van	11	6,287	15,383	561	129,159	151,391
18 Inch Valve	Lg Valve Sea-Van	8	4,572	11,188	408	93,934	110,102
18 Inch Check Valve	Lg Valve Sea-Van	5	2,858	4,195	153	35,225	42,432
18 Inch Flow Element	Lg Valve Sea-Van	3	1,715	2,517	92	21,135	25,459
18 Inch Restricting Orifice	Lg Valve Sea-Van	2	1,143	1,678	61	14,090	16,973
16 Inch MOV	Lg Valve Sea-Van	4	2,286	3,310	121	27,791	33,508
14 Inch MOV	Lg Valve Sea-Van	4	2,286	1,876	68	15,748	19,979
14 Inch Valve	Lg Valve Sea-Van	2	1,143	938	34	7,874	9,989
14 Inch Air Operated Check Valve	Lg Valve Sea-Van	3	1,715	885	32	7,434	10,066
14 Inch Restricting Orifice	Lg Valve Sea-Van	2	1,143	574	21	4,817	6,555
12 Inch MOV	Lg Valve Sea-Van	3	1,715	927	34	7,782	10,457
12 Inch Valve	Lg Valve Sea-Van	3	1,715	927	34	7,782	10,457
12 Inch Air Operated Check Valve	Lg Valve Sea-Van	3	1,715	530	19	4,447	6,710
12 Inch Restricting Orifice	Lg Valve Sea-Van	1	572	166	6	1,390	2,133
10 Inch Valve	Lg Valve Sea-Van	2	1,143	444	16	3,729	5,332
10 Inch Check Valve	Lg Valve Sea-Van	1	572	121	4	1,019	1,716
8 Inch MOV	Lg Valve Sea-Van	2	1,143	310	11	2,605	4,070
8 Inch Air Operated Control Valve	Lg Valve Sea-Van	1	572	102	4	857	1,534
6 Inch MOV	Lg Valve Sea-Van	3	1,715	243	9	2,043	4,009
6 Inch Valve	Lg Valve Sea-Van	3	1,715	243	9	2,043	4,009
6 Inch Check Valve	Lg Valve Sea-Van	4	2,286	232	8	1,945	4,472
6 Inch Ganged Restricting Orifice	Lg Valve Sea-Van	3	1,715	281	10	2,362	4,368
6 Inch Restricting Orifice	Lg Valve Sea-Van	2	1,143	110	4	926	2,184
6 Inch Relief Valve	Lg Valve Sea-Van	2	1,143	138	5	1,158	2,444
6 Inch Flow Element	Lg Valve Sea-Van	1	572	58	2	486	1,118
4 Inch MOV	Lg Valve Sea-Van	4	2,286	148	5	1,241	3,681
4 Inch Valve	Lg Valve Sea-Van	2	1,143	74	3	621	1,840
4 Inch Check Valve	Lg Valve Sea-Van	1	572	25	1	208	806
3 Inch MOV	Sm Valve Sea-Van	3	0	63	2	532	597
3 Inch Valve	Sm Valve Sea-Van	11	0	232	8	1,949	2,189
3 Inch Check Valve	Sm Valve Sea-Van	1	0	14	1	116	130
2 1/2 Inch Air Operated Control Valve	Sm Valve Sea-Van	1	0	12	0	104	117
2 Inch MOV	Sm Valve Sea-Van	1	0	10	0	87	98
2 Inch Valve	Sm Valve Sea-Van	8	0	83	3	695	781
2 Inch Check Valve	Sm Valve Sea-Van	4	0	30	1	255	286
2 Inch Relief Valve	Sm Valve Sea-Van	2	0	18	1	148	167

TABLE 7.1. Contents of File TEST.BRE (contd)

1 1/2 Inch MOV	Sm Valve Sea-Van	2	0	17	1	144	161
1 1/2 Inch Valve	Sm Valve Sea-Van	3	0	26	1	215	242
1 1/2 Inch Check Valve	Sm Valve Sea-Van	3	0	19	1	160	180
1 1/2 Inch Stop Check Valve	Sm Valve Sea-Van	2	0	14	1	116	130
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0	6	0	53	60
1 Inch MOV	Sm Valve Sea-Van	2	0	14	1	116	130
1 Inch Valve	Sm Valve Sea-Van	8	0	55	2	463	520
1 Inch Check Valve	Sm Valve Sea-Van	1	0	5	0	44	49
1 Inch Relief Valve	Sm Valve Sea-Van	8	0	46	2	389	437
Dragon Valve (excess flow check)	Sm Valve Sea-Van	4	0	28	1	232	260
3/4 Inch Solenod Valve	Sm Valve Sea-Van	4	0	22	1	185	208
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	227	0	1,002	37	8,411	9,450
			80,949	93,087	3,397	781,948	959,382

*** Misc. Recirculation System Components

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
24 Inch HOV	Lg Valve	Sea-Van	2	1,143	2,896	106	24,317	28,462
24 Inch MOV	Lg Valve	Sea-Van	4	2,286	5,792	211	48,634	56,925
3/4 Inch Check Valve	Sm Valve	Sea-Van	2	0	7	0	58	65
3/4 Inch Valve	Sm Valve	Sea-Van	76	0	335	12	2,816	3,164
3/4 Inch Restricting Orifice	Sm Valve	Sea-Van	28	0	97	4	811	911
3/4 Inch Flow Element	Sm Valve	Sea-Van	12	0	41	2	347	390
3/4 Inch Relief Valve	Sm Valve	Sea-Van	2	0	7	0	63	70
3/4 Inch MOV	Sm Valve	Sea-Van	2	0	9	0	74	83
1 Inch Valve	Sm Valve	Sea-Van	92	0	634	23	5,327	5,984
1 Inch Restricting Orifice	Sm Valve	Sea-Van	10	0	52	2	440	494
2 Inch Valve	Sm Valve	Sea-Van	4	0	41	2	347	390
Dragon Valve (excess Flow check)	Sm Valve	Sea-Van	30	0	207	8	1,737	1,951
				3,429	10,120	369	84,971	98,890

*** Reactor Water Cleanup

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
RWCU Pump	Lg Pump	Sea-Van	2	855	359	13	3,011	4,238
Cleanup Hold Pump	Lg Pump	Sea-Van	2	853	325	12	2,726	3,915
Cleanup Precoat Pump	Lg Pump	Sea-Van	1	425	138	5	1,158	1,726
Sludge Discharge Pump	Lg Pump	Sea-Van	1	425	86	3	724	1,238
Decant Pump	Lg Pump	Sea-Van	1	423	31	1	261	716
Non-Regenerative Heat Exchanger	Lg HX	Sea-Van	2	907	2,482	91	20,843	24,323
Regenerative Heat Exchanger	Lg HX	Sea-Van	3	1,346	3,765	137	31,612	36,861

TABLE 7.1. Contents of File TEST.BRE (contd)

Filter Demineralizer	Tank	Sea-Van	2	4,503	1,931	70	16,211	22,715
Batch Tank	Tank	Sea-Van	1	2,005	69	3	579	2,655
Phase Separator Tank	Tank	Sea-Van	2	9,448	1,241	45	10,422	21,156
Precoat Agitator	Sm Misc.	Sea-Van	1	173	8	0	69	251
6 Inch MOV	Lg Valve	Sea-Van	7	4,001	568	21	4,766	9,355
6 Inch Valve	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
6 Inch Check Valve	Lg Valve	Sea-Van	1	572	81	3	681	1,336
6 Inch Flow Element	Lg Valve	Sea-Van	2	1,143	162	6	1,362	2,673
6 Inch Restricting Orifice	Lg Valve	Sea-Van	1	572	81	3	681	1,336
4 Inch MOV	Lg Valve	Sea-Van	6	3,429	222	8	1,862	5,521
4 Inch Air Operated Valve	Lg Valve	Sea-Van	16	9,145	591	22	4,965	14,723
4 Inch Flow Element	Lg Valve	Sea-Van	1	572	37	1	310	920
4 Inch Valve	Lg Valve	Sea-Van	11	6,287	407	15	3,414	10,122
4 Inch Check Valve	Lg Valve	Sea-Van	4	2,286	148	5	1,241	3,681
4 Inch Relief Valve	Lg Valve	Sea-Van	1	572	37	1	310	920
4 inch Restricting Orifice	Lg Valve	Sea-Van	1	572	37	1	310	920
3 Inch Air Operated Valve	Sm Valve	Sea-Van	16	0	338	12	2,835	3,185
3 Inch Valve	Sm Valve	Sea-Van	4	0	84	3	709	796
3 Inch Check Valve	Sm Valve	Sea-Van	2	0	42	2	354	398
3 Inch Flow Element	Sm Valve	Sea-Van	2	0	42	2	354	398
2 Inch Air Operated Valve	Sm Valve	Sea-Van	6	0	74	3	625	702
2 Inch Valve	Sm Valve	Sea-Van	10	0	124	5	1,042	1,171
2 Inch Check Valve	Sm Valve	Sea-Van	1	0	12	0	104	117
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0	7	0	58	65
1 Inch Valve	Sm Valve	Sea-Van	21	0	145	5	1,216	1,366
1 Inch Relief Valve	Sm Valve	Sea-Van	5	0	34	1	289	325
Excess Flow Check Valve	Sm Valve	Sea-Van	3	0	14	1	122	137
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	129	0	534	19	4,481	5,035
1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	2	0	6	0	46	52
1/2 Inch Valve	Sm Valve	Sea-Van	2	0	6	0	46	52
1/2 Inch Check Valve	Sm Valve	Sea-Van	2	0	4	0	35	39
				51,655	14,435	527	121,198	187,815

*** Reactor Building Equipment & Floor Drains

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Drain Sump Pump	Lg Pump	Sea-Van	4	1,712	636	23	5,341	7,712
Drain Sump Pump	Lg Pump	Sea-Van	3	1,285	592	22	4,975	6,874
Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	438	206	8	1,732	2,384
Drywell Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	438	206	8	1,732	2,384
6 Inch Air Operated Valve	Lg Valve	Sea-Van	4	2,286	99	4	834	3,223
6 Inch Restricting Orifice	Lg Valve	Sea-Van	24	13,717	496	18	4,169	18,400
4 inch Valve	Lg Valve	Sea-Van	7	4,001	97	4	811	4,911

TABLE 7.1. Contents of File TEST.BRE (contd)

4 Inch Check Valve	Lg Valve Sea-Van	1	572	11	0	93	676
4 Inch Restricting Orifice	Lg Valve Sea-Van	6	3,429	66	2	556	4,054
3 Inch Air Operated Valve	Sm Valve Sea-Van	18	0	161	6	1,355	1,522
3 Inch Valve	Sm Valve Sea-Van	9	0	81	3	677	761
2 Inch Valve	Sm Valve Sea-Van	5	0	28	1	232	260
2 Inch Check Valve	Sm Valve Sea-Van	5	0	24	1	203	228
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	1	0	5	0	41	46
1 1/2 Inch Valve	Sm Valve Sea-Van	1	0	5	0	41	46
1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	0	3	0	29	33
1 1/2 Flow Element	Sm Valve Sea-Van	1	0	3	0	29	33
1 Inch Valve	Sm Valve Sea-Van	4	0	15	1	130	146
1 Inch Flow Element	Sm Valve Sea-Van	2	0	6	0	46	52
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	12	0	26	1	222	250
			27,878	2,769	101	23,245	53,992

*** Sample System

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Sample Rack	Lg Misc.	Sea-Van	4	1,700	99	4	834	2,637
Fume Hood With Sink	Tank	Sea-Van	4	7,152	143	5	1,204	8,504
Constant Temperature Bath	Lg Misc.	Sea-Van	4	1,687	77	3	648	2,415
1 Inch Air Operated Valve	Sm Valve	Sea-Van	1	0	6	0	46	52
3/4 Inch Solenoid Valve	Sm Valve	Sea-Van	4	0	17	1	139	156
1/2 Inch Air Operated Valve	Lg Valve	Sea-Van	2	1,143	7	0	58	1,208
				11,682	349	13	2,930	14,973

*** Standby Gas Treatment

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
2 Inch Check Valve	Sm Valve	Sea-Van	42	0	319	12	2,675	3,005
18 Inch Valve	Lg Valve	Sea-Van	2	1,143	1,352	49	11,348	13,892
18 Inch MOV Damper	Lg Misc.	Sea-Van	14	6,205	2,394	87	20,102	28,789
18 Inch AOV Damper	Lg Misc.	Sea-Van	2	886	342	12	2,872	4,113
SGT Filter Unit	Lg Misc.	Sea-Van	2	944	5,406	197	45,392	51,939
3/4 inch Valve	Sm Valve	Sea-Van	8	0	33	1	278	312
Blower	Lg Misc.	Sea-Van	4	1,796	2,482	91	20,843	25,212
				10,974	12,328	450	103,510	127,263

TABLE 7.1. Contents of File TEST.BRE (contd)

*** Heater Vents and Drains		Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Component	Description								
Steam Evaporator Drain Tank		Tank	Sea-Van	2	4,022	545	20	4,579	9,166
Heater Drain Tank		Tank	Sea-Van	2	4,950	3,812	139	32,006	40,907
Moisture Separator Drain Tank		Tank	Sea-Van	2	5,412	1,042	38	8,747	15,239
Reheater Drain Tank		Tank	Sea-Van	4	8,978	1,378	50	11,566	21,972
Reheater Drain Tank		Tank	Sea-Van	4	9,899	7,624	278	64,012	81,814
20 Inch Valve		Lg Valve	Sea-Van	2	1,143	1,600	58	13,432	16,234
18 Inch Air Operated Valve		Lg Valve	Sea-Van	1	572	676	25	5,674	6,946
18 inch Flow Element		Lg Valve	Sea-Van	2	1,143	1,147	42	9,634	11,967
18 inch Valve		Lg Valve	Sea-Van	2	1,143	1,352	49	11,348	13,892
16 Inch Flow Element		Lg Valve	Sea-Van	5	2,858	1,925	70	16,159	21,012
16 Inch Check Valve		Lg Valve	Sea-Van	4	2,286	1,540	56	12,928	16,810
16 Inch MOV		Lg Valve	Sea-Van	5	2,858	2,917	106	24,491	30,372
16 Inch Air Operated Valve		Lg Valve	Sea-Van	9	5,144	5,250	192	44,084	54,670
16 Inch Valve		Lg Valve	Sea-Van	7	4,001	4,084	149	34,287	42,521
12 Inch Air Operated Valve		Lg Valve	Sea-Van	7	4,001	2,414	88	20,264	26,767
12 Inch MOV		Lg Valve	Sea-Van	12	6,859	4,137	151	34,739	45,886
12 Inch Valve		Lg Valve	Sea-Van	6	3,429	2,069	76	17,369	22,943
12 Inch Flow Element		Lg Valve	Sea-Van	2	1,143	579	21	4,863	6,607
10 Inch MOV		Lg Valve	Sea-Van	9	5,144	1,998	73	16,779	23,994
10 Inch Air Operated Valve		Lg Valve	Sea-Van	13	7,430	2,887	105	24,236	34,658
8 Inch MOV		Lg Valve	Sea-Van	6	3,429	931	34	7,816	12,210
8 Inch Air Operated Valve		Lg Valve	Sea-Van	2	1,143	310	11	2,605	4,070
8 Inch Check Valve		Lg Valve	Sea-Van	8	4,572	816	30	6,855	12,274
8 Inch Flow Element		Lg Valve	Sea-Van	6	3,429	612	22	5,141	9,205
6 Inch MOV		Lg Valve	Sea-Van	6	3,429	487	18	4,085	8,019
6 Inch Valve		Lg Valve	Sea-Van	4	2,286	324	12	2,724	5,346
6 Inch Check Valve		Lg Valve	Sea-Van	2	1,143	116	4	973	2,236
6 Inch Air Operated Valve		Lg Valve	Sea-Van	13	7,430	1,054	38	8,851	17,374
6 Inch Flow Element		Lg Valve	Sea-Van	4	2,286	232	8	1,945	4,472
4 Inch MOV		Lg Valve	Sea-Van	12	6,859	444	16	3,724	11,042
4 Inch Air Operated Valve		Lg Valve	Sea-Van	8	4,572	296	11	2,483	7,362
4 Inch Valve		Lg Valve	Sea-Van	6	3,429	222	8	1,862	5,521
4 Inch Flow Element		Lg Valve	Sea-Van	1	572	25	1	208	806
3 Inch MOV		Sm Valve	Sea-Van	12	0	253	9	2,126	2,388
3 Inch Air Operated Valve		Sm Valve	Sea-Van	8	0	169	6	1,417	1,592
3 Inch Valve		Sm Valve	Sea-Van	10	0	211	8	1,772	1,990
3 Inch Restricting Orifice		Sm Valve	Sea-Van	1	0	14	1	116	130
3 Inch Flow Element		Sm Valve	Sea-Van	4	0	55	2	463	520
2 Inch Air Operated Valve		Sm Valve	Sea-Van	2	0	21	1	174	195
2 Inch Valve		Sm Valve	Sea-Van	152	0	1,572	57	13,201	14,830
1 Inch Valve		Sm Valve	Sea-Van	319	0	2,200	80	18,470	20,750
Instrument Root Valve (typ. 3/4" globe)		Sm Valve	Sea-Van	160	0	706	26	5,929	6,661

TABLE 7.1. Contents of File TEST.BRE (contd)

1/2 Inch Valve	Sm Valve Sea-Van	2	0	7	0	58	65
2 1/2 Inch Valve	Sm Valve Sea-Van	3	0	54	2	455	511
1 1/2 Inch MOV	Sm Valve Sea-Van	1	0	9	0	72	81
1 1/2 Inch Valve	Sm Valve Sea-Van	2	0	17	1	144	161
1 1/2 Inch Check Valve	Sm Valve Sea-Van	1	0	7	0	58	65
			126,994	60,138	2,195	504,925	694,252

*** Miscellaneous Items

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
TIP Drive Unit	Lg Misc. Sea-Van		5	2,154	549	20	4,609	7,332
TIP Indexing Unit	Sm Misc. Sea-Van		8	1,386	22	1	185	1,594
TIP Ball Valve	Sm Valve Sea-Van		5	0	34	1	289	325
Explosive Shear Valve	Sm Valve Sea-Van		5	0	34	1	289	325
TIP Shield Pig	Lg Misc. Sea-Van		5	2,098	234	9	1,969	4,310
TIP Tubing	Lg Misc. Sea-Van		1	434	90	3	753	1,280
Hogger (Mechanical Vacuum Pump)	Lg Misc. Sea-Van		2	851	1,927	70	16,177	19,025
Refueling Bridge	Lg Misc. Sea-Van		1	745	7,570	276	63,556	72,147
Reactor Service Platform	Lg Misc. Sea-Van		1	519	1,583	58	13,288	15,447
Refueling Mast	Lg Misc. Sea-Van		2	857	179	7	1,505	2,548
Control Rod Drive Removal Turntable	Lg Misc. Sea-Van		1	455	757	28	6,356	7,596
Control Rod Drive Removal Trolley	Lg Misc. Sea-Van		1	433	52	2	440	927
In-Core Instrument Grapple	Sm Misc. Sea-Van		1	173	11	0	93	277
Fuel Support Piece Grapple	Sm Misc. Sea-Van		1	173	12	0	104	290
Control Blade Grapple	Lg Misc. Sea-Van		1	422	18	1	151	591
Spent Fuel Pool Work Table	Lg Misc. Sea-Van		1	429	119	4	996	1,548
Fuel Prep Machine	Lg Misc. Sea-Van		2	861	232	8	1,945	3,047
Channel Measurement Machine	Lg Misc. Sea-Van		1	429	128	5	1,077	1,639
Blade Guide	Lg Misc. Sea-Van		185	78,275	4,082	149	34,276	116,782
In-Core Instrument Strongback	Lg Misc. Sea-Van		1	425	30	1	255	711
Ass't In-Core Manip., Crows Feet, etc.	Lg Misc. Sea-Van		1	422	28	1	232	682
In-Vessel Manipulator Pole	Sm Misc. Sea-Van		20	3,451	83	3	695	4,232
Drywell Recirculation Fan	Lg Misc. Sea-Van		9	3,834	695	25	5,836	10,391
Stud Tensioner	Lg Misc. Sea-Van		4	1,690	1,269	46	10,653	13,658
RPV Head Strongback	Lg Misc. Sea-Van		1	767	1	0	9	777
Dryer/Separator Strongback	Lg Misc. Sea-Van		1	426	184	7	1,544	2,160
SRV Tailpipe and Sparger	Lg Pipe Sea-Van		2,761	105,202	7,121	260	65,656	178,239
24 Inch Suppression Pool Downcomer	Lg Pipe Sea-Van		47	1,791	613	22	5,150	7,576
28 Inch Suppression Pool Downcomer	Lg Pipe Sea-Van		47	1,791	835	30	7,009	9,665
Reactor Head Space Frame (Portions)	Lg Misc. Sea-Van		1	427	171	6	1,436	2,040
Upper Drywell Spray Header	Lg Pipe Sea-Van		147	5,601	1,005	37	8,909	15,552

TABLE 7.1. Contents of File TEST.BRE (contd)

Lower Drywell Spray Header	Lg Pipe	Sea-Van	222	8,459	1,517	55	13,455	23,487
Suppression Pool Spray Header	Lg Pipe	Sea-Van	267	10,173	699	25	6,194	17,092
				235,156	31,884	1,164	275,090	543,294

*** Other Piping

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
< 2" (Carbon Steel) Rx Bldg	Sm Pipe	Sea-Van	7,620	203,424	2,575	94	25,984	232,077
3" to 10" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	12,870	490,385	33,547	1,224	338,552	863,709
12" to 16" (Carbon Steel) Rx Bldg	Lg Pipe	Sea-Van	1,660	63,251	18,865	688	171,720	254,524
< 2" (Stainless) Rx Bldg	Sm Pipe	Sea-Van	20,240	540,328	5,667	207	74,694	620,896
3" to 10" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	1,640	62,489	1,384	51	13,285	77,208
12" to 16" (Stainless) Rx Bldg	Lg Pipe	Sea-Van	177	6,744	652	24	5,779	13,199
< 2" (Carbon Steel) Cont Bldg	Sm Pipe	Sea-Van	860	22,959	414	15	3,817	27,204
3" to 10" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	3,560	135,647	19,247	702	177,461	333,056
12" to 16" (Carbon Steel) Cont Bldg	Lg Pipe	Sea-Van	690	26,291	9,021	329	81,056	116,698
< 2" (Stainless) Cont Bldg	Sm Pipe	Sea-Van	12,600	336,370	3,215	117	38,058	377,760
3" to 10" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	360	13,717	1,033	38	9,279	24,066
12" to 16" (Stainless) Cont Bldg	Lg Pipe	Sea-Van	210	8,002	2,673	98	23,074	33,847
< 2" (Carbon Steel) Turb Bldg	Sm Pipe	Sea-Van	10,940	292,055	4,300	157	45,494	342,006
3" to 10" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	8,640	329,210	35,152	1,283	337,363	703,008
12" to 16" (Carbon Steel) Turb Bldg	Lg Pipe	Sea-Van	5,400	205,756	53,622	1,957	494,416	755,751
3" to 10" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	125	4,763	450	16	3,884	9,113
12" to 16" (Stainless) Turb Bldg	Lg Pipe	Sea-Van	340	12,955	1,965	72	17,653	32,645
< 2" (Carbon Steel) Rad Bldg	Sm Pipe	Sea-Van	10,130	270,431	3,116	114	33,888	307,548
3" to 10" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	10,950	417,228	23,106	843	233,179	674,356
12" to 16" (Carbon Steel) Rad Bldg	Lg Pipe	Sea-Van	1,100	41,913	8,814	322	80,233	131,282
< 2" (Stainless) Rad Bldg	Sm Pipe	Sea-Van	3,770	100,644	1,440	53	13,822	115,959
3" to 10" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	3,370	128,407	3,114	114	31,426	163,061
12" to 16" (Stainless) Rad Bldg	Lg Pipe	Sea-Van	180	6,859	531	19	4,773	12,182
				3,719,826	233,902	8,537	2,258,891	6,221,156

NOTE: For piping, "Qty" refers to feet of piping. For other categories
 "Qty" refers to the number of items of equipment.

Table 7.2 is **TEST.BRD**, a building decontamination file created from Menu Item D in Chapter 6. The first three sections of this file have the same general format as **TEST.BRE**. Most of the terms in the file are defined in Section 4.4. The removal, container, transport, and disposal costs have the same meanings as for **TEST.BRE**, discussed above.

For the case of metal and surface washing, nothing is actually removed, so "removal" costs refer to the labor costs associated with washing or decontaminating the surfaces. Because nothing is shipped, container costs and transportation costs are zero. However, there is a waste water processing cost (set by Menu Item 2). This cost is reflected in the disposal cost column.

The last part of the file is a general building summary of costs, person-hours and other parameters associated with each type of building decontamination activity: concrete and metal washing, concrete and metal removal, concrete cutting, handrail and stair tread decontamination, and floor grating removal.

TABLE 7.2. Contents of File TEST.BRD

File Name: E:\BWR\TEST.BRD

Plant Name: WASH NUCLEAR 2

+++++
+ BUILDING COMPONENTS TO BE DECONTAMINATED +
+++++

*** Reactor Bldg

Component Description	Activity	Length (ft.)	Width (ft.)	Depth (in.)	Orientation
Drywell Head Laydown	Conc Wash	45.0	45.0	N/A	Floor
Drywell Head Laydown	Conc Rmvl	31.8	31.8	1.000	Floor
RPV Head Laydown	Conc Wash	27.0	27.0	N/A	Floor
RPV Head Laydown	Conc Rmvl	27.0	27.0	1.000	Floor
Space Frame	Conc Wash	17.3	17.3	N/A	Floor
Refueling Floor Cavities	Mtl Rmvl	134.2	134.2	0.250	Floor
Refuel Floor Alcove Pit	Conc Wash	23.7	23.7	N/A	Floor
RHR "A" Heat Exchanger Rm	Conc Wash	23.5	23.5	N/A	Floor
RHR "A" Heat Exchanger Rm	Conc Rmvl	16.6	16.6	1.000	Floor
RHR "B" Heat Exchanger Rm	Conc Wash	23.5	23.5	N/A	Floor
RHR "B" Heat Exchanger Rm	Conc Rmvl	16.6	16.6	1.000	Floor
Fuel Pool Cooling HX/Pump	Conc Wash	27.1	27.1	N/A	Floor
Fuel Pool Cooling HX/Pump	Conc Rmvl	24.2	24.2	1.000	Floor
RWCU Heat Exchanger Rm	Conc Wash	39.7	39.7	N/A	Floor
RWCU Heat Exchanger Rm	Conc Rmvl	21.7	21.7	1.000	Floor
Standby Liquid Control	Conc Wash	25.1	25.1	N/A	Floor
Instrument Rack Trough (9)	Conc Wash	11.7	11.7	N/A	Floor
RWCU Pump Rm	Conc Wash	17.5	17.5	N/A	Floor
RWCU Pump Rm	Conc Rmvl	17.5	17.5	1.000	Floor
CRD HCU Area East	Conc Wash	33.7	33.7	N/A	Floor
CRD HCU Area East	Conc Rmvl	15.1	15.1	1.000	Floor
CRD HCU Area West	Conc Wash	32.0	32.0	N/A	Floor
CRD HCU Area West	Conc Rmvl	14.3	14.3	1.000	Floor
Scram Discharge Volume Area	Conc Wash	14.4	14.4	N/A	Floor
Recirc HPU Area (2)	Conc Wash	12.6	12.6	N/A	Floor
CRD Repair Room	Conc Wash	31.4	31.4	N/A	Floor
CRD Repair Room	Conc Rmvl	31.4	31.4	1.000	Floor
TIP Room	Conc Wash	15.0	15.0	N/A	Floor
TIP Room	Conc Rmvl	11.6	11.6	1.000	Floor
Main Steam Tunnel	Conc Wash	24.4	24.4	N/A	Floor
Main Steam Tunnel	Conc Rmvl	24.4	24.4	1.000	Floor
Drywell Floor	Conc Wash	63.6	63.6	N/A	Floor
Drywell Floor	Conc Rmvl	63.6	63.6	1.000	Floor
Under Vessel CRD Area	Conc Wash	15.9	15.9	N/A	Floor
Under Vessel CRD Area	Conc Rmvl	15.9	15.9	1.000	Floor
Instrument Racks (8 racks)	Conc Wash	7.5	7.5	N/A	Floor
North Valve Room	Conc Wash	14.5	14.5	N/A	Floor
South Valve Room	Conc Wash	15.8	15.8	N/A	Floor
Wetwell Floor	Conc Wash	70.8	70.8	N/A	Floor
Wetwell Floor	Conc Rmvl	70.8	70.8	1.000	Floor
Control Rod Drive Pump Rm	Conc Wash	39.8	39.8	N/A	Floor
Control Rod Drive Pump Rm	Conc Wash	30.8	30.8	N/A	Floor
RCIC Pump Rm	Conc Wash	29.2	29.2	N/A	Floor
RCIC Pump Rm	Conc Rmvl	16.0	16.0	1.000	Floor
RHR "A" Pump Room	Conc Wash	34.6	34.6	N/A	Floor
RHR "A" Pump Room	Conc Rmvl	10.9	10.9	1.000	Floor
RHR "B" Pump Room	Conc Wash	40.0	40.0	N/A	Floor
RHR "B" Pump Room	Conc Rmvl	12.6	12.6	1.000	Floor
RHC "C" Pump Room	Conc Wash	30.4	30.4	N/A	Floor

TABLE 7.2. Contents of File TEST.BRD (contd)

LPCS Pump Room	Conc Wash	24.2	24.2	N/A	Floor
HPCS Pump Room	Conc Wash	24.2	24.2	N/A	Floor
Drywell & Wetwell Metal Liners	Mtl Wash	77.5	77.5	N/A	Floor
Drywell & Wetwell Metal Liners	Mtl Wash	162.4	162.4	N/A	Wall
Drywell & Wetwell Metal Liners	Mtl Rmvl	77.5	77.5	0.250	Floor
Drywell & Wetwell Metal Liners	Mtl Rmvl	162.4	162.4	0.250	Wall
Sumps	Mtl Wash	39.1	39.1	N/A	Floor
Sumps	Mtl Rmvl	39.1	39.1	0.250	Floor

*** Rad Waste/Control Bldg

Component Description	Activity	Length (ft.)	Width (ft.)	Depth (in.)	Orientation
Rx Bldg Exhaust Fan Area	Conc Wash	38.7	38.7	N/A	Floor
Demineralizer Crane Overhead	Conc Wash	24.5	24.5	N/A	Floor
Demin and Filter Pits (16)	Conc Wash	48.3	48.3	N/A	Floor
Demin and Filter Pits (16)	Conc Rmvl	48.3	48.3	1.000	Floor
Hot Machine Shop	Conc Wash	27.0	27.0	N/A	Floor
Hot Machine Shop	Conc Rmvl	20.9	20.9	1.000	Floor
East Demin Valve Room	Conc Wash	40.0	40.0	N/A	Floor
East Demin Valve Room	Conc Rmvl	25.3	25.3	1.000	Floor
West Demin Valve Room	Conc Wash	39.5	39.5	N/A	Floor
West Demin Valve Room	Conc Rmvl	25.0	25.0	1.000	Floor
Concentrator Area (2)	Conc Wash	15.5	15.5	N/A	Floor
Concentrator Area (2)	Conc Rmvl	10.9	10.9	1.000	Floor
Centrifuge and Conc Waste	Conc Wash	28.1	28.1	N/A	Floor
Centrifuge and Conc Waste	Conc Rmvl	12.6	12.6	1.000	Floor
Charcoal Adsorber Area	Conc Wash	32.2	32.2	N/A	Floor
Rad Waste Tank Areas	Conc Wash	106.4	106.4	N/A	Floor
Rad Waste Tank Areas	Conc Rmvl	18.4	18.4	1.000	Floor
Sumps	Mtl Wash	39.1	39.1	N/A	Floor
Sumps	Mtl Rmvl	39.1	39.1	0.250	Floor

*** Turbine Generator Bldg

Component Description	Activity	Length (ft.)	Width (ft.)	Depth (in.)	Orientation
Feed Pump Skid Area (2)	Conc Wash	22.8	22.8	N/A	Floor
Feed Pump Skid Area (2)	Conc Rmvl	22.8	22.8	1.000	Floor
Drain Trench	Conc Wash	15.9	15.9	N/A	Floor
Drain Trench	Conc Rmvl	15.9	15.9	1.000	Floor
Air Ejector Condenser Rooms	Conc Wash	34.6	34.6	N/A	Floor
Air Ejector Condenser Rooms	Conc Rmvl	15.5	15.5	1.000	Floor
Condensate Pump Skids (3)	Conc Wash	12.0	12.0	N/A	Floor
Booster Pump Skids (3)	Conc Wash	15.0	15.0	N/A	Floor
Miscellaneous Areas	Conc Wash	75.5	75.5	N/A	Floor
Miscellaneous Areas	Conc Rmvl	21.7	21.7	1.000	Floor
Sumps	Mtl Wash	39.1	39.1	N/A	Floor
Sumps	Mtl Rmvl	39.1	39.1	0.250	Floor

TABLE 7.2. Contents of File TEST.BRD (contd)

+++++
+ BUILDING DECONTAMINATION: TIMES AND EXPOSURES +
+++++

*** Reactor Bldg

Component Description	Activity	Time	Exposure		
		(hours)	Pers-hours	Pers-hours	Pers-Rem
Drywell Head Laydown	Conc Wash	8.4	33.7	8.4	0.01
Drywell Head Laydown	Conc Rmvl	121.3	424.7	242.7	0.40
RPV Head Laydown	Conc Wash	3.0	12.1	3.0	0.00
RPV Head Laydown	Conc Rmvl	87.4	305.7	174.7	0.29
Space Frame	Conc Wash	1.2	5.0	1.2	0.00
Refueling Floor Cavities	Mtl Rmvl	54.1	297.3	188.9	0.31
Refuel Floor Alcove Pit	Conc Wash	2.3	9.3	2.3	0.00
RHR "A" Heat Exchanger Rm	Conc Wash	2.3	9.2	2.3	0.00
RHR "A" Heat Exchanger Rm	Conc Rmvl	33.0	115.5	66.0	0.11
RHR "B" Heat Exchanger Rm	Conc Wash	2.3	9.2	2.3	0.00
RHR "B" Heat Exchanger Rm	Conc Rmvl	33.0	115.5	66.0	0.11
Fuel Pool Cooling HX/Pump	Conc Wash	3.1	12.3	3.1	0.01
Fuel Pool Cooling HX/Pump	Conc Rmvl	70.6	247.0	141.1	0.23
RWCU Heat Exchanger Rm	Conc Wash	6.6	26.3	6.6	0.01
RWCU Heat Exchanger Rm	Conc Rmvl	56.8	198.7	113.5	0.19
Standby Liquid Control	Conc Wash	2.6	10.5	2.6	0.00
Instrument Rack Trough (9)	Conc Wash	0.6	2.3	0.6	0.00
RWCU Pump Rm	Conc Wash	1.3	5.1	1.3	0.00
RWCU Pump Rm	Conc Rmvl	37.0	129.4	73.9	0.12
CRD HCU Area East	Conc Wash	4.7	18.9	4.7	0.01
CRD HCU Area East	Conc Rmvl	27.3	95.4	54.5	0.09
CRD HCU Area West	Conc Wash	4.3	17.1	4.3	0.01
CRD HCU Area West	Conc Rmvl	24.6	86.1	49.2	0.08
Scram Discharge Volume Area	Conc Wash	0.9	3.5	0.9	0.00
Recirc HPU Area (2)	Conc Wash	0.7	2.7	0.7	0.00
CRD Repair Room	Conc Wash	4.1	16.4	4.1	0.01
CRD Repair Room	Conc Rmvl	118.1	413.3	236.2	0.39
TIP Room	Conc Wash	0.9	3.8	0.9	0.00
TIP Room	Conc Rmvl	16.2	56.6	32.4	0.05
Main Steam Tunnel	Conc Wash	2.5	9.9	2.5	0.00
Main Steam Tunnel	Conc Rmvl	71.3	249.4	142.5	0.23
Drywell Floor	Conc Wash	16.9	67.5	16.9	0.03
Drywell Floor	Conc Rmvl	486.0	1,701.0	972.0	1.59
Under Vessel CRD Area	Conc Wash	1.1	4.2	1.1	0.00
Under Vessel CRD Area	Conc Rmvl	30.5	106.7	61.0	0.10
Instrument Racks (8 racks)	Conc Wash	0.2	0.9	0.2	0.00
North Valve Room	Conc Wash	0.9	3.5	0.9	0.00
South Valve Room	Conc Wash	1.0	4.2	1.0	0.00
Wetwell Floor	Conc Wash	20.9	83.5	20.9	0.03
Wetwell Floor	Conc Rmvl	601.3	2,104.7	1,202.7	1.97
Control Rod Drive Pump Rm	Conc Wash	6.6	26.4	6.6	0.01
Control Rod Drive Pump Rm	Conc Wash	4.0	15.9	4.0	0.01
RCIC Pump Rm	Conc Wash	3.5	14.2	3.5	0.01
RCIC Pump Rm	Conc Rmvl	30.6	107.1	61.2	0.10
RHR "A" Pump Room	Conc Wash	5.0	19.9	5.0	0.01
RHR "A" Pump Room	Conc Rmvl	14.4	50.4	28.8	0.05
RHR "B" Pump Room	Conc Wash	6.7	26.7	6.7	0.01
RHR "B" Pump Room	Conc Rmvl	19.2	67.2	38.4	0.06
RHC "C" Pump Room	Conc Wash	3.9	15.4	3.9	0.01
LPCS Pump Room	Conc Wash	2.5	9.8	2.5	0.00
HPCS Pump Room	Conc Wash	2.5	9.8	2.5	0.00
Drywell & Wetwell Metal Liners	Mtl Wash	25.0	100.0	25.0	0.04
Drywell & Wetwell Metal Liners	Mtl Wash	131.9	527.6	131.9	0.22

TABLE 7.2.. Contents of File TEST.BRD (contd)

Drywell & Wetwell Metal Liners	Mtl Rmvl	25.6	140.9	89.5	0.15
Drywell & Wetwell Metal Liners	Mtl Rmvl	74.3	408.5	259.6	0.43
Sumps	Mtl Wash	6.4	25.4	6.4	0.01
Sumps	Mtl Rmvl	11.5	63.5	40.3	0.07

*** Rad Waste/Control Bldg

Component Description	Activity	Time	Exposure		Pers-Rem
		(hours)	Pers-hours	Pers-hours	
Rx Bldg Exhaust Fan Area	Conc Wash	6.3	25.0	6.3	0.01
Demineralizer Crane Overhead	Conc Wash	2.5	10.0	2.5	0.00
Demin and Filter Pits (16)	Conc Wash	9.7	38.9	9.7	0.02
Demin and Filter Pits (16)	Conc Rmvl	280.3	981.0	560.6	0.92
Hot Machine Shop	Conc Wash	3.0	12.1	3.0	0.00
Hot Machine Shop	Conc Rmvl	52.4	183.5	104.8	0.17
East Demin Valve Room	Conc Wash	6.7	26.7	6.7	0.01
East Demin Valve Room	Conc Rmvl	76.8	268.8	153.6	0.25
West Demin Valve Room	Conc Wash	6.5	26.0	6.5	0.01
West Demin Valve Room	Conc Rmvl	74.9	262.1	149.8	0.25
Concentrator Area (2)	Conc Wash	1.0	4.0	1.0	0.00
Concentrator Area (2)	Conc Rmvl	14.4	50.4	28.8	0.05
Centrifuge and Conc Waste	Conc Wash	3.3	13.2	3.3	0.01
Centrifuge and Conc Waste	Conc Rmvl	19.0	66.4	37.9	0.06
Charcoal Adsorber Area	Conc Wash	4.3	17.3	4.3	0.01
Rad Waste Tank Areas	Conc Wash	47.2	188.6	47.2	0.08
Rad Waste Tank Areas	Conc Rmvl	40.8	142.8	81.6	0.13
Sumps	Mtl Wash	6.4	25.4	6.4	0.01
Sumps	Mtl Rmvl	11.5	63.5	40.3	0.07

*** Turbine Generator Bldg

Component Description	Activity	Time	Exposure		Pers-Rem
		(hours)	Pers-hours	Pers-hours	
Feed Pump Skid Area (2)	Conc Wash	2.2	8.7	2.2	0.00
Feed Pump Skid Area (2)	Conc Rmvl	62.4	218.3	124.8	0.20
Drain Trench	Conc Wash	1.0	4.2	1.0	0.00
Drain Trench	Conc Rmvl	30.2	105.8	60.4	0.10
Air Ejector Condenser Rooms	Conc Wash	5.0	20.0	5.0	0.01
Air Ejector Condenser Rooms	Conc Rmvl	28.8	100.8	57.6	0.09
Condensate Pump Skids (3)	Conc Wash	0.6	2.4	0.6	0.00
Booster Pump Skids (3)	Conc Wash	0.9	3.8	0.9	0.00
Miscellaneous Areas	Conc Wash	23.8	95.0	23.8	0.04
Miscellaneous Areas	Conc Rmvl	56.3	197.0	112.6	0.18
Sumps	Mtl Wash	6.4	25.4	6.4	0.01
Sumps	Mtl Rmvl	11.5	63.5	40.3	0.07

TABLE 7.2. Contents of File TEST.BRD (contd)

+++++
+ BUILDING DECONTAMINATION: COSTS (DOLLARS) +
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*** Reactor Bldg
Component Description      Activity      Removal      Container      Transport      Disposal
-----
Drywell Head Laydown      Conc Wash      1,163          0          0          2,527
Drywell Head Laydown      Conc Rmvl      17,278         545         60          7,258
RPV Head Laydown          Conc Wash      419            0          0           910
RPV Head Laydown          Conc Rmvl      12,437         392         43          5,224
Space Frame                Conc Wash      173            0          0           375
Refueling Floor Cavities   Mtl Rmvl      10,383        25,889        945        217,364
Refuel Floor Alcove Pit    Conc Wash      322            0          0           700
RHR "A" Heat Exchanger Rm  Conc Wash      316            0          0           687
RHR "A" Heat Exchanger Rm  Conc Rmvl      4,697         148         16          1,973
RHR "B" Heat Exchanger Rm  Conc Wash      316            0          0           687
RHR "B" Heat Exchanger Rm  Conc Rmvl      4,697         148         16          1,973
Fuel Pool Cooling HX/Pump  Conc Wash      423            0          0           920
Fuel Pool Cooling HX/Pump  Conc Rmvl      10,048         317         35          4,221
RWCU Heat Exchanger Rm     Conc Wash      906            0          0          1,969
RWCU Heat Exchanger Rm     Conc Rmvl      8,083         255         28          3,395
Standby Liquid Control     Conc Wash      362            0          0           786
Instrument Rack Trough (9) Conc Wash      79             0          0           173
RWCU Pump Rm              Conc Wash      177            0          0           385
RWCU Pump Rm              Conc Rmvl      5,263         166         18          2,211
CRD HCU Area East          Conc Wash      652            0          0          1,417
CRD HCU Area East          Conc Rmvl      3,880         122         13          1,630
CRD HCU Area West          Conc Wash      590            0          0          1,282
CRD HCU Area West          Conc Rmvl      3,504         111         12          1,472
Scram Discharge Volume Area Conc Wash      120            0          0           260
Recirc HPU Area (2)        Conc Wash      92             0          0           200
CRD Repair Room            Conc Wash      566            0          0          1,230
CRD Repair Room            Conc Rmvl      16,814         530         58          7,063
TIP Room                   Conc Wash      129            0          0           281
TIP Room                   Conc Rmvl      2,303         73          8           967
Main Steam Tunnel          Conc Wash      342            0          0           742
Main Steam Tunnel          Conc Rmvl      10,147         320         35          4,263
Drywell Floor              Conc Wash      2,329          0          0          5,063
Drywell Floor              Conc Rmvl      69,200        2,183        239        29,068
Under Vessel CRD Area      Conc Wash      146            0          0           318
Under Vessel CRD Area      Conc Rmvl      4,341         137         15          1,824
Instrument Racks (8 racks) Conc Wash      32             0          0           70
North Valve Room           Conc Wash      121            0          0           262
South Valve Room           Conc Wash      144            0          0           312
Wetwell Floor              Conc Wash      2,882          0          0          6,264
Wetwell Floor              Conc Rmvl      85,623        2,701        295        35,967
Control Rod Drive Pump Rm  Conc Wash      911            0          0          1,980
Control Rod Drive Pump Rm  Conc Wash      547            0          0          1,189
RCIC Pump Rm              Conc Wash      489            0          0          1,062
RCIC Pump Rm              Conc Rmvl      4,358         137         15          1,830
RHR "A" Pump Room          Conc Wash      688            0          0          1,495
RHR "A" Pump Room          Conc Rmvl      2,049         65          7           861
RHR "B" Pump Room          Conc Wash      920            0          0          1,999
RHR "B" Pump Room          Conc Rmvl      2,734         86          9          1,149
RHC "C" Pump Room          Conc Wash      531            0          0          1,155
LPCS Pump Room             Conc Wash      338            0          0           735
HPCS Pump Room             Conc Wash      338            0          0           735
Drywell & Wetwell Metal Liners Mtl Wash      3,451          0          0          7,500
Drywell & Wetwell Metal Liners Mtl Wash      18,169          0          0        32,975
Drywell & Wetwell Metal Liners Mtl Rmvl      4,905         8,620        315        72,373

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TABLE 7.2. Contents of File TEST.BRD (contd)

Drywell & Wetwell Metal Liners	Mtl Rmvl	14,279	37,899	1,383	318,202
Sumps	Mtl Wash	877	0	0	1,907
Sumps	Mtl Rmvl	2,202	2,192	80	18,403

*** Rad Waste/Control Bldg

Component Description	Activity	Removal	Container	Transport	Disposal
<hr/>					
Rx Bldg Exhaust Fan Area	Conc Wash	863	0	0	1,875
Demineralizer Crane Overhead	Conc Wash	345	0	0	750
Demin and Filter Pits (16)	Conc Wash	1,343	0	0	2,920
Demin and Filter Pits (16)	Conc Rmvl	39,910	1,259	138	16,764
Hot Machine Shop	Conc Wash	419	0	0	910
Hot Machine Shop	Conc Rmvl	7,463	235	26	3,135
East Demin Valve Room	Conc Wash	920	0	0	2,000
East Demin Valve Room	Conc Rmvl	10,937	345	38	4,594
West Demin Valve Room	Conc Wash	897	0	0	1,950
West Demin Valve Room	Conc Rmvl	10,662	336	37	4,479
Concentrator Area (2)	Conc Wash	138	0	0	300
Concentrator Area (2)	Conc Rmvl	2,049	65	7	861
Centrifuge and Conc Waste	Conc Wash	455	0	0	990
Centrifuge and Conc Waste	Conc Rmvl	2,700	85	9	1,134
Charcoal Adsorber Area	Conc Wash	596	0	0	1,295
Rad Waste Tank Areas	Conc Wash	6,510	0	0	14,149
Rad Waste Tank Areas	Conc Rmvl	5,810	183	20	2,440
Sumps	Mtl Wash	877	0	0	1,907
Sumps	Mtl Rmvl	2,202	2,192	80	18,403

*** Turbine Generator Bldg

Component Description	Activity	Removal	Container	Transport	Disposal
<hr/>					
Feed Pump Skid Area (2)	Conc Wash	299	0	0	650
Feed Pump Skid Area (2)	Conc Rmvl	8,882	280	31	3,731
Drain Trench	Conc Wash	145	0	0	315
Drain Trench	Conc Rmvl	4,303	136	15	1,808
Air Ejector Condenser Rooms	Conc Wash	690	0	0	1,500
Air Ejector Condenser Rooms	Conc Rmvl	4,100	129	14	1,722
Condensate Pump Skids (3)	Conc Wash	83	0	0	180
Booster Pump Skids (3)	Conc Wash	129	0	0	281
Miscellaneous Areas	Conc Wash	3,279	0	0	7,127
Miscellaneous Areas	Conc Rmvl	8,016	253	28	3,367
Sumps	Mtl Wash	877	0	0	1,907
Sumps	Mtl Rmvl	2,202	2,192	80	18,403

TABLE 7.2. Contents of File TEST.BRD (contd)

+++++
+ SUMMARY OF BUILDING DECONTAMINATION DATA (ALL COSTS IN DOLLARS) +
+++++

*** Reactor Bldg

Concrete Washing--

Surface Area:	30,537 ft2
Decon Costs:	17,562
Crew Hours:	127
Pers-Hours:	509
Pers-Rem:	0.21

Metal Washing--

Surface Area:	33,906 ft2
Decon Costs:	22,497
Crew Hours:	163
Pers-Hours:	653
Pers-Rem:	0.27

Concrete Removal--

Surface Area:	15,653 ft2
Weight Removed:	187,840 lb
Removal Costs:	267,457
Container Costs:	8,437
Shipping Costs:	922
Burial Costs:	112,348
Burial Volume:	2,317 ft3
Number of Drums:	313.07
Crew Hours:	1,878
Pers-Hours:	6,574
Pers-Rem:	6.15

Metal Removal--

Surface Area:	51,926 ft2
Weight Removed:	540,900 lb
Removal Costs:	31,769
Container Costs:	74,599
Shipping Costs:	2,723
Burial Costs:	626,342
Burial Volume:	9,616 ft3
Number of Vans:	15.02
Crew Hours:	165
Pers-Hours:	910
Pers-Rem:	0.95

*** Rad Waste/Control Bldg

Concrete Washing--

Surface Area:	21,711 ft2
Decon Costs:	12,486
Crew Hours:	90
Pers-Hours:	362
Pers-Rem:	0.15

Metal Washing--

Surface Area:	1,526 ft2
Decon Costs:	877
Crew Hours:	6
Pers-Hours:	25
Pers-Rem:	0.01

TABLE 7.2. Contents of File TEST.BRD (contd)

Concrete Removal--

Surface Area:	4,655 ft2
Weight Removed:	55,856 lb
Removal Costs:	79,530
Container Costs:	2,509
Shipping Costs:	274
Burial Costs:	33,407
Burial Volume:	689 ft3
Number of Drums:	93.09
Crew Hours:	559
Pers-Hours:	1,955
Pers-Rem:	1.83

Metal Removal--

Surface Area:	1,526 ft2
Weight Removed:	15,893 lb
Removal Costs:	2,202
Container Costs:	2,192
Shipping Costs:	80
Burial Costs:	18,403
Burial Volume:	283 ft3
Number of Vans:	0.44
Crew Hours:	12
Pers-Hours:	63
Pers-Rem:	0.07

*** Turbine Generator Bldg

Concrete Washing--

Surface Area:	8,042 ft2
Decon Costs:	4,625
Crew Hours:	34
Pers-Hours:	134
Pers-Rem:	0.05

Metal Washing--

Surface Area:	1,526 ft2
Decon Costs:	877
Crew Hours:	6
Pers-Hours:	25
Pers-Rem:	0.01

Concrete Removal--

Surface Area:	1,481 ft2
Weight Removed:	17,770 lb
Removal Costs:	25,301
Container Costs:	798
Shipping Costs:	87
Burial Costs:	10,628
Burial Volume:	219 ft3
Number of Drums:	29.62
Crew Hours:	178
Pers-Hours:	622
Pers-Rem:	0.58

TABLE 7.2. Contents of File TEST.BRD (contd)

Metal Removal--	
Surface Area:	1,526 ft2
Weight Removed:	15,893 lb
Removal Costs:	2,202
Container Costs:	2,192
Shipping Costs:	80
Burial Costs:	18,403
Burial Volume:	283 ft3
Number of Vans:	0.44
Crew Hours:	12
Pers-Hours:	63
Pers-Rem:	0.07

Reactor pressure vessel costs are provided by TEST.BRF, shown in Table 7.3. TEST.BRF was created from Menu Item F in Chapter 6. All terms in Table 7.3 should be self-explanatory. A summary of these costs appears in TEST.BRI, discussed below.

TABLE 7.3. Contents of File TEST.BRF

File name: E:\BWR\TEST.BRF

COSTS (IN DOLLARS) FOR REACTOR PRESSURE VESSEL AND INTERNALS

REACTOR PRESSURE VESSEL	CUTTING	CONTAINERS	TRANSPORT	DISPOSAL	TOTAL
Insulation	0	7,300	181	131,906	139,387
Upper Flange	7,404	4,300	604	33,928	46,235
Upper Head	6,136	2,800	317	17,306	26,559
Lower Flange	5,454	4,000	604	30,048	40,106
Non-Act. RPV Wall	28,585	25,550	3,171	174,659	231,965
Act. RPV Wall	48,492	86,400	111,040	138,411	384,343
Lower Head	11,862	6,020	1,268	69,864	89,014
Nozzles	11,999	19,860	725	166,747	199,330
Studs & Nuts	0	4,380	362	20,357	25,099
Skirt, Base Ring, & Collar	11,453	19,860	725	166,747	198,785
TOTALS FOR RPV	131,385	180,470	118,998	949,971	1,380,823

RPV INTERNAL COMPONENTS	CUTTING	CONTAINERS	TRANSPORT	DISPOSAL	TOTAL
Core Shroud	63,577	13,000	418,233	1,365,000	1,859,811
Top Fuel Guide	167,607	2,080	87,668	218,400	475,755
Shroud Support	20,280	6,570	544	30,535	57,928
Jet Pumps & Support Ring	64,962	16,695	145,651	663,367	890,676
Core Support Plate	83,476	14,085	36,757	36,804	171,122
Orif. Fuel Supports	0	4,695	29,347	14,783	48,825
CRD Guides	239,478	9,390	32,436	36,921	318,225
Limiters, Housings, Inst. Guides	89,506	14,895	544	125,060	230,004
Steam Separator	149,956	33,945	37,142	241,798	462,841
Steam Dryer	12,060	14,895	544	125,060	152,559
TOTALS FOR RPV INTERNALS	890,902	130,250	788,867	2,857,727	4,667,746

RPV Internals

Crew Hours	Pers Hours	Exposure Hours	Pers-Rem
4,113.24	37,019.13	2,613.62	209.09

PRESSURE VESSEL

Crew Hours	Pers Hours	Exposure Hours	Pers-Rem
606.59	5,459.35	385.44	39.57

A detailed report of staffing (overhead) costs by decommissioning period is provided by **TEST.BRG** in Table 7.4. This file was created from Menu Item G in Chapter 6. The names of the decommissioning periods are as defined by Menu Item B. Job descriptions preceded by a tilde (~) are discussed in Section 4.7.1.

TABLE 7.4. Contents of File TEST.BRG

Overhead Costs (in dollars) for Planning and Preparation

Job Description	Overhead Position	Annual Salary	Annual Salary w/Ovhd	Pers-yrs per Period	Total
Plant Manager	Utility	113,580	180,592	0.125	22,574
Assistant Plant Manager	Utility	96,497	152,465	0.125	19,058
Secretary	Utility	25,103	50,407	0.125	6,301
Contracts/Procurement Spec.	Utility	46,307	92,382	0.625	57,739
Chemistry Supervisor	Utility	62,098	95,010	0.250	23,753
Quality Assurance Manager	Utility	74,518	136,368	0.625	85,230
Health Physics Supervisor	Utility	62,098	99,357	0.125	12,420
Nuclear Records Specialist	Utility	52,490	89,758	0.250	22,440
Training Manager	Utility	62,098	153,382	0.250	38,346
Operations Manager	Utility	87,955	138,969	0.125	17,371
Plant Engineer	Utility	62,098	98,115	5.000	490,575
Maintenance Manager	Utility	80,875	123,739	0.125	15,467
Licensing Specialist (Lawyer)	Utility	61,224	200,202	0.125	25,025
Security Manager	Utility	74,518	119,229	0.125	14,904
Project Manager	DOC	91,210	220,272	2.500	550,680
Assistant Project Manager	DOC	73,820	178,275	2.500	445,688
Secretary/Clerk	DOC	19,805	47,829	12.500	597,863
Lawyer/Financial Administrator	DOC	62,420	150,744	5.000	753,720
Contracts Specialist/Buyer	DOC	48,600	117,369	2.500	293,423
Procurement Specialist	DOC	44,200	106,743	2.500	266,858
Accountant	DOC	48,600	117,369	5.000	586,845
Engineer	DOC	50,890	122,899	5.000	614,495
Drafting Specialist	DOC	28,080	67,813	7.500	508,598
Quality Assurance Engineer	DOC	34,710	83,825	2.500	209,563
Utility Overhead Costs for Planning and Preparation					851,203
DOC Overhead Costs for Planning and Preparation					4,827,733
Total Overhead Costs for Planning and Preparation					5,678,936

TABLE 7.4. Contents of File TEST.BRG (contd)

Overhead Costs (in dollars) for Defuel and Layup

Job Description	Overhead Position	Annual Salary	Annual Salary w/Ovhd	Pers-yrs per Period	Total
Plant Manager	Utility	113,580	180,592	1.200	216,710
Assistant Plant Manager	Utility	96,497	152,465	1.200	182,958
Secretary	Utility	25,103	50,407	7.200	362,930
Clerk Typist	Utility	21,653	40,058	19.200	769,114
Accountant	Utility	45,738	94,678	2.400	227,227
Contracts/Procurement Spec.	Utility	46,307	92,382	3.600	332,575
Industrial Safety Specialist	Utility	52,494	109,712	3.600	394,963
Planning/Scheduling Engineer	Utility	55,046	94,129	1.200	112,955
Radioactive Ship. Specialist	Utility	68,019	108,830	3.600	391,788
Chemistry Supervisor	Utility	62,098	95,010	1.200	114,012
Chemistry Technician	Utility	43,950	69,441	4.800	333,317
Quality Assurance Manager	Utility	74,518	136,368	1.200	163,642
Quality Assurance Engineer	Utility	60,085	113,741	4.800	545,957
Quality Assurance Technician	Utility	41,992	79,071	9.600	759,082
Health Physics Supervisor	Utility	62,098	99,357	1.200	119,228
~Sr. Health Physics Technician	Utility	56,899	92,745	4.800	445,176
Health Physics/ALARA Planner	Utility	56,899	92,745	1.200	111,294
~Health Physics Technician	Utility	43,950	70,759	19.200	1,358,592
Nuclear Records Specialist	Utility	52,490	89,758	1.200	107,710
Training Manager	Utility	62,098	153,382	1.200	184,058
Operations Manager	Utility	87,955	138,969	1.200	166,763
Administration Manager	Utility	74,518	127,426	1.200	152,911
Operations Supervisor	Utility	65,286	104,784	4.800	502,963
~Control Operator	Utility	48,318	76,342	19.200	1,465,766
~Plant Equipment Operator	Utility	43,950	69,441	19.200	1,333,267
Plant Engineer	Utility	62,098	98,115	4.800	470,952
Maintenance Manager	Utility	80,875	123,739	1.200	148,487
Maintenance Supervisor	Utility	74,518	114,013	4.800	547,262
Licensing Specialist (Lawyer)	Utility	61,224	200,202	3.600	720,727
~Craftsman	Utility	43,950	67,244	19.200	1,291,085
Custodian	Utility	30,742	47,035	2.400	112,884
Security Manager	Utility	74,518	119,229	1.200	143,075
Security Shift Supervisor	Utility	41,992	67,187	4.800	322,498
Security Patrolman	Utility	33,342	53,347	38.400	2,048,525
Utility Overhead Costs for Defuel and Layup					16,660,453
DOC Overhead Costs for Defuel and Layup					0
Total Overhead Costs for Defuel and Layup					16,660,453

TABLE 7.4. Contents of File TEST.BRG (contd)

Overhead Costs (in dollars) for Spent Fuel Pool Operations

Job Description	Overhead Position	Annual Salary	Annual Salary w/Ovhd	Pers-yrs per Period	Total
Plant Manager	Utility	113,580	180,592	0.340	61,401
Assistant Plant Manager	Utility	96,497	152,465	0.340	51,838
Secretary	Utility	25,103	50,407	0.340	17,138
Clerk Typist	Utility	21,653	40,058	1.700	68,099
Accountant	Utility	45,738	94,678	0.340	32,191
Contracts/Procurement Spec.	Utility	46,307	92,382	0.340	31,410
Industrial Safety Specialist	Utility	52,494	109,712	0.340	37,302
Radioactive Ship. Specialist	Utility	68,019	108,830	0.340	37,002
Chemistry Technician	Utility	43,950	69,441	0.340	23,610
Quality Assurance Technician	Utility	41,992	79,071	0.340	26,884
Health Physics Supervisor	Utility	62,098	99,357	0.340	33,781
~Sr. Health Physics Technician	Utility	56,899	92,745	1.020	94,600
Nuclear Records Specialist	Utility	52,490	89,758	0.340	30,518
Operations Manager	Utility	87,955	138,969	0.340	47,249
Administration Manager	Utility	74,518	127,426	0.340	43,325
Operations Supervisor	Utility	65,286	104,784	0.340	35,627
~Control Operator	Utility	48,318	76,342	1.360	103,825
~Plant Equipment Operator	Utility	43,950	69,441	2.040	141,660
Plant Engineer	Utility	62,098	98,115	0.340	33,359
Maintenance Supervisor	Utility	74,518	114,013	0.340	38,764
Licensing Specialist (Lawyer)	Utility	61,224	200,202	0.340	68,069
~Craftsman	Utility	43,950	67,244	1.360	91,452
Custodian	Utility	30,742	47,035	0.680	31,984
Security Manager	Utility	74,518	119,229	0.340	40,538
Security Shift Supervisor	Utility	41,992	67,187	1.020	68,531
Security Patrolman	Utility	33,342	53,347	2.720	145,104
Project Manager	DOC	91,210	220,272	0.500	110,136
Assistant Project Manager	DOC	73,820	178,275	0.500	89,137
Secretary/Clerk	DOC	19,805	47,829	2.500	119,573
Lawyer/Financial Administrator	DOC	62,420	150,744	1.000	150,744
Contracts Specialist/Buyer	DOC	48,600	117,369	0.500	58,684
Procurement Specialist	DOC	44,200	106,743	0.500	53,371
Accountant	DOC	48,600	117,369	1.000	117,369
Engineer	DOC	50,890	122,899	1.000	122,899
Drafting Specialist	DOC	28,080	67,813	1.500	101,719
Quality Assurance Engineer	DOC	34,710	83,825	0.500	41,913
Utility Overhead Costs for Spent Fuel Pool Operations					1,435,261
DOC Overhead Costs for Spent Fuel Pool Operations					965,545
Total Overhead Costs for Spent Fuel Pool Operations					2,400,806

TABLE 7.4. Contents of File TEST.BRG (contd)

Overhead Costs (in dollars) for Deferred Dismantlement

Job Description	Overhead Position	Annual Salary	Annual Salary w/Ovhd	Pers-yrs per Period	Total
Plant Manager	Utility	113,580	180,592	1.700	307,006
Secretary	Utility	25,103	50,407	1.700	85,692
Clerk Typist	Utility	21,653	40,058	6.800	272,394
Accountant	Utility	45,738	94,678	1.700	160,953
Contracts/Procurement Spec.	Utility	46,307	92,382	1.700	157,049
Industrial Safety Specialist	Utility	52,494	109,712	1.500	164,568
Radioactive Ship. Specialist	Utility	68,019	108,830	1.500	163,245
Chemistry Technician	Utility	43,950	69,441	0.400	27,776
Quality Assurance Engineer	Utility	60,085	113,741	1.700	193,360
Health Physics/ALARA Planner	Utility	56,899	92,745	1.700	157,667
Nuclear Records Specialist	Utility	52,490	89,758	1.700	152,589
Training Manager	Utility	62,098	153,382	1.500	230,073
Operations Manager	Utility	87,955	138,969	3.000	416,907
~Control Operator	Utility	48,318	76,342	4.500	343,539
~Plant Equipment Operator	Utility	43,950	69,441	4.500	312,484
Plant Engineer	Utility	62,098	98,115	6.000	588,690
Maintenance Supervisor	Utility	74,518	114,013	1.500	171,019
Licensing Specialist (Lawyer)	Utility	61,224	200,202	1.700	340,343
~Craftsman	Utility	43,950	67,244	5.100	342,944
Custodian	Utility	30,742	47,035	3.400	159,919
Security Manager	Utility	74,518	119,229	0.200	23,846
Security Shift Supervisor	Utility	41,992	67,187	0.600	40,312
Security Patrolman	Utility	33,342	53,347	1.600	85,355
Project Manager	DOC	91,210	220,272	1.700	374,462
Assistant Project Manager	DOC	73,820	178,275	1.700	303,068
Secretary/Clerk	DOC	19,805	47,829	13.600	650,474
Industrial Safety Specialist	DOC	47,600	114,954	4.500	517,293
Planning/Scheduling Engineer	DOC	52,630	127,101	5.100	648,215
Radioactive Shipment Spec.	DOC	55,950	135,119	1.500	202,678
Lawyer/Financial Administrator	DOC	62,420	150,744	0.800	120,595
Contracts/Accounting Super.	DOC	62,420	150,744	1.700	256,265
Contracts Specialist/Buyer	DOC	48,600	117,369	1.700	199,527
Procurement Specialist	DOC	44,200	106,743	1.500	160,114
Accountant	DOC	48,600	117,369	1.700	199,527
Health Physics Supervisor	DOC	61,550	148,643	1.700	252,693
Health Physics/ALARA Planner	DOC	51,440	124,228	1.700	211,188
Engineering Supervisor	DOC	61,140	147,653	1.500	221,479
D&D Operations Supervisor	DOC	61,140	147,653	4.500	664,438
Engineer	DOC	50,890	122,899	12.000	1,474,788
Drafting Specialist	DOC	28,080	67,813	4.500	305,158
Quality Assurance Supervisor	DOC	61,140	147,653	1.700	251,010
Quality Assurance Engineer	DOC	34,710	83,825	1.700	142,503

TABLE 7.4. Contents of File TEST.BRG (contd)

Quality Assurance Technician	DOC	31,710	76,580	6.000	459,480
~Sr. Health Physics Technician	DOC	51,440	124,228	5.100	633,563
~Health Physics Technician	DOC	31,710	76,580	18.000	1,378,440
~Health Phys. Tech (m. hand.)	DOC	31,710	76,580	3.000	229,740
~Craftsman (mat'l handling)	DOC	42,810	103,386	3.000	310,158
~Utility Operator (m. hand.)	DOC	36,470	88,075	3.000	264,225
~Crew Leader (m. hand.)	DOC	47,230	114,060	1.500	171,090
Tool Crib Attendant	DOC	31,770	76,725	3.000	230,175
Protective Clothing Attendant	DOC	31,770	76,725	3.000	230,175
Licensing Engineer	DOC	50,890	122,899	1.700	208,928
Safety Consultant	Other	242,200	242,200	0.500	121,100

Utility Overhead Costs for Deferred Dismantlement					4,897,730
DOC Overhead Costs for Deferred Dismantlement					11,392,549
Total Overhead Costs for Deferred Dismantlement					16,290,279

The last output file, **TEST.BRI**, is shown in Table 7.5. This file, produced from Menu Item I in Chapter 6, summarizes the data shown in **TEST.BRE**, **TEST.BRD**, and **TEST.BRG**. The data are organized into the decommissioning periods defined by Menu Item B. The notes following the table explain where each cost item originates.

The last part of each **BRI** file shows total decommissioning costs reorganized into the categories of labor and materials, energy, and waste disposal. These categories provide the cost terms in the decommissioning cost escalation formula presented in 10 CFR 50.75(c). That formula has been slightly modified to exclude escalation of property taxes and nuclear insurance costs from the calculation. The revised formula is

$$\text{Estimated Cost (year X)} = [\text{Reduced Cost (base year)}] [A L_x + B E_x + C B_x] + \text{Taxes \& Insurance (year X)},$$

where base year is the year for which the CECF input data are applicable. (The base year for **TEST.BRI** is 1993). Each **BRI** file provides the following elements of this equation: Reduced Cost (base year), the base-year labor and materials fraction (A), the base-year energy fraction (B), and the base-year disposal cost fraction (C). The user supplies the factors L_x , E_x , and B_x , which are the escalation of labor, energy, and waste disposal costs from the base year until the year of the estimate (year X). The user must also supply the taxes and insurance costs for year X. A complete discussion of the escalation equation will be found in the Report on Waste Burial Charges.⁽¹⁾

Table 7.5 Contents of File TEST.BRI

Final Summary Report for TEST

PERIOD 1: Planning and Preparation (Year -2.5000 to Year 0.0000)

	Costs (dollars)										
	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Undistributed Costs											
Utility Staff ⁽¹⁾	0	0	0	0	0	851,203	851,203	0	0	0	0.00
DOC Staff ⁽¹⁾	0	0	0	0	0	4,827,733	4,827,733	0	0	0	0.00
Regulatory Costs ⁽²⁾	0	0	0	0	0	357,330	357,330	0	0	0	0.00
Special Tools and Equipment ⁽³⁾	0	0	0	0	0	3,422,975	3,422,975	0	0	0	0.00
Totals	0	0	0	0	0	9,459,241	9,459,241	0	0	0	0.00
Totals for PERIOD 1	0	0	0	0	0	9,459,241	9,459,241	0	0	0	0.00

PERIOD 2: Defuel and Layup (Year 0.0000 to Year 1.2000)

	Costs (dollars)										
	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Removal of NSSS ⁽⁴⁾											
RPV Internals	0	890,902	130,250	788,867	2,857,727	0	4,667,746	8,500	4,113	37,019	209.09
Chemical Decontamination	13,250,000	0	0	0	466,302	0	13,716,302	4,600	1,408	8,448	45.70
RFC & D/S Pool Decon Costs	6,628	0	0	0	0	0	6,628	0	48	192	0.10
Totals	13,256,628	890,902	130,250	788,867	3,324,029	0	18,390,676	13,100	5,569	45,660	254.89

	Costs (dollars)										
	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Dry Active Waste Costs for this Period ⁽⁵⁾											
Dry Active Waste	0	0	9,381	830	126,602	0	136,813	2,611	0	0	0.00

	Costs (dollars)										
	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Undistributed Costs											
Utility Staff ⁽¹⁾	0	0	0	0	0	16,660,453	16,660,453	0	0	169,728	169.73
Regulatory Costs ⁽²⁾	0	0	0	0	0	431,160	431,160	0	0	0	0.00
Environmental Monitoring Costs ⁽²⁾	0	0	0	0	0	58,324	58,324	0	0	0	0.00
Laundry Services ⁽⁶⁾	0	0	0	0	0	565,392	565,392	0	0	0	0.00
Small Tools and Minor Equipment ⁽⁷⁾	0	0	0	0	0	17,818	17,818	0	0	0	0.00
Chemical Decontamination Energy ⁽⁴⁾	0	0	0	0	0	238,000	238,000	0	0	0	0.00
Plant Power Usage ⁽²⁾	0	0	0	0	0	1,135,296	1,135,296	0	0	0	0.00
Nuclear Liability Insurance ⁽²⁾	0	0	0	0	0	3,195,120	3,195,120	0	0	0	0.00
Totals	0	0	0	0	0	22,301,563	22,301,563	0	0	169,728	169.73
Totals for PERIOD 2	13,256,628	890,902	139,631	789,697	3,450,631	22,301,563	40,829,051	15,711	5,569	215,388	424.61

Table 7.5 Contents of File TEST.BRI (contd)

PERIOD 3: Spent Fuel Pool Operations (Year 1.2000 to Year 4.6000)

	Costs (dollars)										
Undistributed Costs	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Utility Staff ⁽¹⁾	0	0	0	0	0	1,435,261	1,435,261	0	0	12,022	10.27
DOC Staff ⁽¹⁾	0	0	0	0	0	965,545	965,545	0	0	0	0.00
Regulatory Costs ⁽²⁾	0	0	0	0	0	86,761	86,761	0	0	0	0.00
Environmental Monitoring Costs ⁽²⁾	0	0	0	0	0	16,524	16,524	0	0	0	0.00
Laundry Services ⁽⁶⁾	0	0	0	0	0	31,559	31,559	0	0	0	0.00
Plant Power Usage ⁽²⁾	0	0	0	0	0	18,361	18,361	0	0	0	0.00
Nuclear Liability Insurance ⁽²⁾	0	0	0	0	0	2,040,000	2,040,000	0	0	0	0.00
Totals	0	0	0	0	0	4,594,011	4,594,011	0	0	12,022	10.27
Totals for PERIOD 3	0	0	0	0	0	4,594,011	4,594,011	0	0	12,022	10.27

PERIOD 4: Deferred Dismantlement (Year 4.6000 to Year 6.3000)

Removal of NSSS ⁽⁴⁾	Costs (dollars)						Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem	
	Decon	Remove	Package	Ship	Bury	Undist					Total
Reactor Pressure Vessel and Insulation	0	131,385	180,470	118,998	949,971	0	1,380,823	13,152	607	5,459	39.57
Sacrificial Shield	0	750,000	63,000	10,872	1,112,261	0	1,936,133	9,759	720	3,600	24.95
Recirculation Pumps	0	16,224	0	600	252,852	0	269,676	5,214	33	180	1.87
RCS Piping	0	1,041,231	475,837	18,744	2,846,048	0	4,381,861	33,102	5,397	29,683	261.59
RCS Piping Insulation	0	0	23,175	1,151	418,753	0	443,078	8,635	0	0	0.00
Main Turbine	0	243,372	476,640	21,681	4,001,921	0	4,743,613	61,440	1,280	7,040	2.37
Main Turbine Condenser	28,927	465,637	283,250	13,180	4,799,854	0	5,590,848	85,800	2,315	12,564	4.36
Moisture Separator Reheaters	3,099	116,362	60,860	2,476	524,469	0	707,266	7,960	635	3,456	1.20
Feed Water Heaters	17,453	48,674	8,000	5,328	1,512,736	0	1,592,191	27,680	384	1,920	0.67
Turbine Feed Pumps	4,363	9,126	5,465	1,521	275,883	0	296,359	5,074	80	392	0.14
Structural Beams, Plates, & Cable Trays	0	440,350	151,800	5,980	863,555	0	1,461,685	10,560	2,316	12,738	4.42
Spent Fuel Racks	0	826,875	79,579	3,241	727,988	0	1,637,683	11,717	444	4,000	1.09
Spent Fuel Pool Decon Costs	5,539	0	0	0	0	0	5,539	0	40	161	0.04
Spent Fuel Pool Water Treatment Costs	450,000	0	23,475	18,988	40,554	0	533,018	600	432	2,592	1.20
Totals	509,382	4,089,236	1,831,551	222,760	18,326,843	0	24,979,772	280,693	14,682	83,785	343.47

Table 7.5 Contents of File TEST.BRI (contd)

----- Costs (dollars) -----											
Removal of Contaminated Plant Systems ⁽⁸⁾	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Control Rod Drive System	0	419,204	66,566	2,429	578,814	0	1,067,013	8,580	3,037	12,178	8.49
Feed and Condensate	0	67,607	181,919	6,639	1,527,412	0	1,783,578	23,450	343	1,812	0.24
Chemical Waste Processing	0	65,141	17,552	641	147,372	0	230,706	2,263	357	1,858	5.30
Containment Instrument Air	0	10,399	2,133	78	17,911	0	30,522	275	73	303	0.02
Fuel Pool Cooling and Cleanup	0	61,276	9,251	338	77,892	0	148,756	1,192	327	1,751	1.51
Condensate Demineralizers	0	109,552	27,752	1,013	233,198	0	371,515	3,577	581	3,126	0.22
Equipment Drain Processing	0	72,531	15,988	584	134,238	0	223,341	2,061	384	2,066	3.51
Extraction Steam	0	34,293	35,137	1,282	295,017	0	365,729	4,529	178	979	0.07
High/Low Pressure Core Spray	0	17,009	20,381	744	171,124	0	209,258	2,627	94	474	0.08
Miscellaneous Drains	0	9,721	2,321	85	19,484	0	31,610	299	51	278	0.05
Main Steam and MS Leakage Control	0	100,597	80,604	2,942	676,761	0	860,904	10,390	587	2,826	2.94
Radioactive Floor Drain Processing	0	61,567	9,496	347	79,727	0	151,136	1,224	329	1,758	3.04
Turbine & Rad Waste Bldg. Drains	0	16,834	2,990	109	25,105	0	45,038	385	99	482	0.70
Offgas	0	68,596	19,982	729	167,772	0	257,079	2,576	372	1,956	3.10
Reactor Building Closed Cooling Water	0	40,021	12,704	464	106,668	0	159,857	1,638	216	1,140	0.31
Reactor Core Isolation Cooling	0	21,223	6,607	241	55,471	0	83,542	852	120	609	0.11
Residual Heat Removal	0	80,949	93,087	3,397	781,948	0	959,382	11,999	426	2,286	0.32
Misc. Recirculation System Component	0	3,429	10,120	369	84,971	0	98,890	1,305	18	98	0.20
Reactor Water Cleanup	0	51,655	14,435	527	121,198	0	187,815	1,861	279	1,475	40.26
Reactor Building Equipment & Floor Drains	0	27,878	2,769	101	23,245	0	53,992	357	152	796	0.14
Sample System	0	11,682	349	13	2,930	0	14,973	45	68	337	0.01
Standby Gas Treatment	0	10,974	12,328	450	103,510	0	127,263	1,589	73	303	0.02
Heater Vents and Drains	0	126,994	60,138	2,195	504,925	0	694,252	7,752	660	3,632	0.50
Miscellaneous Items	0	235,156	31,884	1,164	275,090	0	543,294	4,110	1,425	6,735	2.26
Other Piping	0	3,719,826	233,902	8,537	2,258,891	0	6,221,156	30,151	19,314	106,229	36.86
Totals	0	5,444,112	970,397	35,416	8,470,674	0	14,920,599	125,086	29,563	155,486	110.28
----- Costs (dollars) -----											
Decontamination of Site Buildings ⁽⁹⁾	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Reactor Bldg	40,059	299,227	83,036	3,644	738,689	0	1,164,656	11,933	2,334	8,647	7.58
Rad Waste/Control Bldg	13,363	81,733	4,701	354	51,810	0	151,961	971	667	2,406	2.05
Turbine Generator Bldg	5,503	27,504	2,990	167	29,031	0	65,195	502	229	845	0.71
Waste Water Solidification Costs	141,560	0	31,300	28,589	49,442	0	250,891	808	389	1,167	0.32
Removal of HVAC Ducts	0	289,831	40,150	1,993	761,531	0	1,093,505	14,960	3,443	10,330	4.38
Removal of HVAC Equipment	0	68,351	61,410	4,143	1,138,636	0	1,272,540	22,096	363	1,813	2.81
Building Cranes	72,399	131,622	10,950	544	221,821	0	437,336	4,080	588	3,132	0.16
Floor Drains	0	378,911	12,077	848	97,137	0	488,973	1,797	2,613	7,840	1.66
Totals	272,884	1,277,179	246,614	40,282	3,088,099	0	4,925,057	57,147	10,627	36,180	19.67

Table 7.5 Contents of File TEST.BRI (contd)

----- Costs (dollars) -----											
Dry Active Waste Costs for this Period ⁽⁵⁾	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Dry Active Waste	0	0	92,425	8,177	1,247,350	0	1,347,953	25,721	0	0	0.00
----- Costs (dollars) -----											
Site Termination Survey ⁽¹⁰⁾	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Termination Survey Costs	0	0	0	0	0	1,058,344	1,058,344	0	0	0	0.00
----- Costs (dollars) -----											
Undistributed Costs	Decon	Remove	Package	Ship	Bury	Undist	Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
Utility Staff ⁽¹⁾	0	0	0	0	0	4,897,730	4,897,730	0	0	29,328	16.01
DOC Staff ⁽¹⁾	0	0	0	0	0	11,271,449	11,271,449	0	0	69,888	38.16
Consultant/Other Staff ⁽¹⁾	0	0	0	0	0	121,100	121,100	0	0	0	0.00
DOC Mobilization/Demobilization Cost ⁽²⁾	0	0	0	0	0	2,640,000	2,640,000	0	0	0	0.00
Regulatory Costs ⁽²⁾	0	0	0	0	0	610,810	610,810	0	0	0	0.00
Environmental Monitoring Costs ⁽²⁾	0	0	0	0	0	82,625	82,625	0	0	0	0.00
Laundry Services ⁽⁶⁾	0	0	0	0	0	983,500	983,500	0	0	0	0.00
Small Tools and Minor Equipment ⁽⁷⁾	0	0	0	0	0	219,914	219,914	0	0	0	0.00
Plant Power Usage ⁽²⁾	0	0	0	0	0	1,608,336	1,608,336	0	0	0	0.00
Nuclear Liability Insurance ⁽²⁾	0	0	0	0	0	2,037,620	2,037,620	0	0	0	0.00
Totals	0	0	0	0	0	24,473,084	24,473,084	0	0	99,216	54.18
=====											
Totals for PERIOD 4	782,266	10,810,527	3,140,987	306,635	31,132,967	25,531,428	71,704,809	488,648	54,872	374,667	527.60
=====											
GRAND TOTALS	14,038,894	11,701,429	3,280,618	1,096,332	34,583,597	61,886,243	126,587,112	504,359	60,441	602,077	962.48
GRAND TOTALS with 25% contingency	17,548.617	14,626,787	4,100,772	1,370,415	43,229,496	77,357,803	158,233,890	504,359	60,441	602,077	962.48

Table 7.5 Contents of File TEST.BRI (contd)

Listed below are the fractions of the total cost that are attributable to labor and materials (A), energy and transportation (B), and waste burial (C). Property taxes and nuclear liability insurance are not included.

Cost Category	Cost Fraction	Costs (Dollars) w/o Contingency	Costs (Dollars) with 25% Contingency
A (labor and materials):	0.676	80,634,451	100,793,063
B (energy and transportation):	0.034	4,096,324	5,120,406
C (waste burial):	0.290	34,583,597	43,229,496
		-----	-----
A + B + C (\$)		119,314,372	149,142,965
Taxes and Insurance (\$)		7,272,740	9,090,925
		=====	=====
Grand Totals (\$)		126,587,112	158,233,890

- (1) From Menu Item G. A summary of TEST.BRG.
- (2) From Menu Item H. Adjusted for the length of each decommissioning period, where applicable.
- (3) From Menu Item C. Total costs of special equipment entered in Menu Item C.
- (4) From Menu Item F. A summary of the NSSS costs shown in TEST.BRF.
- (5) From Menu Item I. Based on lines 49 and 50 of Menu Item 1.
- (6) From Menu Item I. Based on total person-hours for all activities in each period and on line 48 of Menu Item 1.
- (7) From Menu Item I. Equal to direct labor costs (exclusive of any contractor costs) times the factor on line 51 of Menu Item 1.
- (8) From Menu Item E. A summary of the system costs shown in TEST.BRE.
- (9) From Menu Item D. A summary of the building decon costs shown in TEST.BRD. Also includes waste water disposal costs and large equipment costs calculated from the data entered in Menu Item 2.
- (10) From Menu Item D. Calculated from line 21 of Menu Item 1 and line 2 of Menu Item A.

7.1 REFERENCES

1. Report on Waste Burial Charges - Escalation of Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities. NUREG-1307 Revision 4, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., June 1994.

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11. ABSTRACT (200 words or less)

With the issuance of the Decommissioning Rule (July 27, 1988), nuclear power plant licensees are required to submit to the U.S. Regulatory Commission (NRC) for review, decommissioning plans and cost estimates. This user's manual and the accompanying Cost Estimating Computer Program (CECP) software provide a cost-calculating methodology to the NRC staff that will assist them in assessing the adequacy of the licensee submittals. The CECP, designed to be used on a personal computer, provides estimates for the cost of decommissioning BWR power stations to the point of license termination. Such cost estimates include component, piping, and equipment removal costs; packaging costs; decontamination costs; transportation costs; burial costs; and manpower costs. In addition to costs, the CECP also calculates burial volumes, person-hours, crew-hours, and exposure person-hours associated with decommissioning.

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