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Estimating Boiling Water Reactor Decommissioning Costs

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

Final Report

Prepared by
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Pacific Northwest National Laboratory
Operated by
Battelle Memorial Institute

Prepared for
U.S. Nuclear Regulatory Commission

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ABSTRACT

Nuclear power plant licensees are required to submit to the U.S. Nuclear Regulatory Commission (NRC) for review their decommissioning 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 boiling water reactor (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 have 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 National Laboratory for the NRC.

This document supported the effort 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 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. The computer software can be purchased from the Department of Energy, Energy Science and Technology Software Center, P.O. Box 1020, Oak Ridge, TN 37831-1020, Phone: (423) 576-2606.

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Further technical information can be obtained from Mr. George J. Mencinsky, Office of Nuclear Regulatory Research, Mail Stop T-9 F31, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Telephone (301) 415-6206.

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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 CECP. See Section 1.2.).

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

1.2 INSTALLATION

The CECP 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 CECP 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 CECP Diskette

INSTALL.EXE	MBE.EXE	HANF.DAT
CECP-BWR.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 CECP installation program to be discussed shortly. Files **CECP-BWR.EXE**, **MB1.EXE**, **MB2.EXE**, **MB3.EXE**, and **MBA.EXE** through **MBI.EXE** make up the CECP 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 CECP 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 (Chapter 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 CECF 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, **B.LOC**, in the same subdirectory as your program files. Do not delete this file; it tells the CECF 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 CECF output files while remaining within the CECF 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 CECF file. Second, the line widths of many CECF 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 CECF, provided a Hewlett-Packard LaserJet III or IV printer is connected to your LPT1 port.

Before installing the CECF software, it is strongly recommended that you make a backup copy of the CECF 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 CECP 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 **cecp-bwr**<ENTER> to run the CECP program.

1.2.2 Manual Installation

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

1. Create a subdirectory on your hard disk to hold the CECP 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 CECP 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:

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

You have just created a file, **B.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 b.loc<ENTER>
C:\BWRDATA<Ctrl-Z><ENTER>
```

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

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

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 **B.LOC** file contains the wrong subdirectory, as discussed in the next paragraph.

FIGURE 1.1. A Fatal Error Message

A second kind of error occurs if the CECP cannot find your **B.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 **B.LOC** file will be created containing the subdirectory you typed in, and the CECP Main Menu should appear. If **B.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 **B.LOC** and perform Step 5 of Section 1.2.2.

FIGURE 1.2. An Example of a Missing **B.LOC** File

The last error associated with CECP 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.

```
CECP (BWR) MAIN MENU

GENERAL COSTS AND UNIT COST FACTORS
  1 Labor Rates, Burial Costs, Constants
  2 Unit Cost Factors for Decontamination
  3 Unit Cost Factors for Contam. Systems

SITE-SPECIFIC COSTS AND PARAMETERS
  A Site Information
  B Decommissioning Schedules
  C Special Equipment Costs
  D Building Decontamination Costs
  E Contaminated System Costs
  F Nuclear Steam Supply Systems Costs
  G Staffing Costs
  H Undistributed Costs
  I Final Summary Report

*** Press Alt-X to Exit; V,P to View/Print Files ***
```

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 CECP creates from it. The data dependencies in the figure show what portions of the data file are used by the CECP to create the output files. For example, when you leave Menu Item D, the CECP 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. CECP File Relationships

In addition to the result files, the CECP produces one additional file, an input parameter file. This file uses a **BIN** suffix. Thus, the **REACTOR1.BIN** file, for example, lists all user-supplied input parameters (from all menus) that the CECP used to produce the REACTOR1 study. An example **BIN** file is shown in Appendix A.

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

Although the algorithms used by the CECP for calculating unit cost factors and work difficulty factors are not discussed in this manual, all the parameters used in the algorithms are presented in this report, in Tables 3.2 and 3.3, followed by discussions of the basis for each parameter. Information on the algorithms 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 CECP 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 58 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: 58	
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)	26.370
2	Craft hourly rate (\$/hr)	49.700
3	Crew leader hourly rate (\$/hr)	54.840
4	Radiation operator hourly rate (\$/hr)	36.820
5	Engineer hourly rate (\$/hr)	59.090
6	Average shift differential (%)	5.000
7	Profit on equipment and material (%)	15.000
8	Utility overhead (%)	42.000
9	DOC overhead (%)	110.000
10	DOC profit (%)	15.000
11	Density of poured concrete (lb/ft ³)	144.000
12	Density of reinforced conc (lb/ft ³)	200.000
13	Density of stainless steel (lb/ft ³)	500.000
14	DOT 17-H steel drum, 55-gal (\$/ea)	26.950
15	Plastic sheets/bags (\$/ft ²)	0.040
16	Blotting paper (\$/ft ²)	0.320
17	Gas torch consumables (\$/hr)	6.750
18	Burial costs/ft ³ at geologic repos (\$)	6500.000
19	Transportation escalation factor	1.000
20	Waste burial escalation factor	1.000
21	License termination survey cost (\$)	1058344.000
22	Standard box width (ft)	4.000
23	Standard box depth (ft)	4.000
24	Standard box length (ft)	6.000
25	Standard box (\$)	645.000
26	Mod. maritime container 2 x 8 x 20 (\$)	4600.000
27	Mod. maritime container 4 x 8 x 20 (\$)	4965.000
28	Std. maritime cont. 8 x 8.5 x 20 (\$)	3650.000
29	Pipe hanger container cost (\$)	4600.000
30	Pipe hanger container weight (lb)	2500.000
31	Pipe hanger container volume (ft ³)	320.000
32	Cask liner for 8-120B cask (\$)	4695.000
33	Small cask liner for 8-120B cask (\$)	3200.000
34	NAC-LWT liner (\$)	1000.000
35	Canister for GTCC material (\$)	520.000
36	Special steel box 4 x 4 x 3 (\$)	430.000
37	Special steel box 4 x 4 x 2.5 (\$)	400.000
38	Special steel box 4 x 4 x 1.5 (\$)	365.000
39	Special steel box 4 x 8 x 1.5 (\$)	730.000
40	Special steel box 6.7 x 8.9 x 14 (\$)	4510.000
41	Special steel box 6.1 x 8.9 x 14 (\$)	4106.000
42	Special steel box 6.7 x 7.3 x 14 (\$)	3700.000
43	Special steel box 4 x 10 x 14 (\$)	3025.000
44	Special steel box 4.5 x 7.3 x 14 (\$)	2485.000
45	Special steel box 94 x 115 x 26 in (\$)	1050.000
46	High integrity container (HIC) (\$)	7825.000
47	NuPac 14/210H cask rental (\$/day)	1250.000
48	CNS 8-120B cask rental (\$/day)	1250.000
49	NAC LWT cask rental (\$/day)	3130.000
50	TN-8 cask rental (\$/day)	3340.000
51	Laundry services (\$/person-shift)	21.000
52	Uncompacted drums of waste (drums/day)	5.000

TABLE 3.1. (cont)

53	Dry waste compaction ratio	5.000
54	Small tools (% of direct labor costs)	2.000
55	Piping/equip/HXs (curies/ft ²)	0.006
56	RCS piping (curies/ft ²)	0.100
57	Maint. allow. (\$/yr) (SAFSTOR only)	17379.000
58	Length (ft) to which pipes will be cut	15.000

- 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 burial cost 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.

- 29-31: These items apply to the 8 x 2 x 20-ft container used in pipe hanger disposal. Permissible values for Item 31 are from 160 cubic feet to 1280 cubic feet.
- 31-33: 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.
- 34: The cost of a NAC legal weight truck (LWT) cask liner.
- 35: The cost of the canister used for packaging greater-than-class-C (GTCC) material.
- 36-39: Cost of the boxes used for shipping certain RPV components and reactor internals to a low-level waste burial site.
- 40-44: Cost of the boxes used to transport the fuel racks to the low-level waste burial site.
- 45: Cost of the special form-fitted container used to transport the sacrificial shield segments to the low-level waste burial site.
- 46: The cost of one polyethylene high-integrity container (HIC).
- 47-50: These are the daily rental charges for the casks used in shipping radioactive waste.
- 51: 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.
- 52-53: 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 52 is 6 and Item 53 is 3, then two 55-gallon drums of compacted waste are produced daily. Item 53 must be greater than or equal to 1 but not greater than 25.
- 54: This item sets the cost for small tools based on a percentage of direct labor costs.
- 55-56: These items refer to the assumed surface contamination levels (in curies per square foot) for the component types indicated. These levels are at shutdown.
- 57: 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.

- 58: 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 58 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: 58 File in use: REACTOR1.BD	
↑↓ Home End PgUp PgDn Select item	Enter Data Save Alt-X Quit

Save Data to a File

Enter name of new data file: default

*** ERROR ***

Can't use DEFAULT.BD for a new file name.

Press any key to continue.

FIGURE 3.2. A File Name Error Message

3.1.4 Exiting

To leave this portion of the CECP, 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 CECP 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 127 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 (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
Number of records: 127		
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 (\$/ft ²)	0.070
63	Handrails: Wipe usage rate (ft ² /ft)	1.350
64	Handrails: Washing fluid (\$/gal)	15.000
65	Handrails: Washing fluid usage (ft/gal)	430.000
66	Gratings: Removal rate (ft ² /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/ft ²)	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
127	Asbestos: Total Cost (\$)	0.000

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.

Removal of Asbestos (Item 127)

It is postulated that asbestos will be removed by an outside contractor at a total cost set by Item 127.

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 172 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 Lg Pump:	Duration (in minutes)	90.000
64 Lg Pump:	Height adjustment (%)	10.000
65 Lg Pump:	Respiratory prot. adjust. (%)	20.000
66 Lg Pump:	Rad/ALARA activities (min)	25.000
67 Lg Pump:	Suit-up and unsuit time (min)	120.000
68 Lg Pump:	Work break time (min)	30.000
69 Lg Pump:	Number of laborers	2.000
70 Lg Pump:	Number of crafts	1.000
71 Lg Pump:	Number of crew leaders	0.500
72 Lg Pump:	Number of rad monitors	0.500
73 Lg Pump:	Gases (hours)	0.017
74 Sm Pump:	Duration (in minutes)	40.000
75 Sm Pump:	Height adjustment (%)	0.000
76 Sm Pump:	Respiratory prot. adjust. (%)	20.000
77 Sm Pump:	Rad/ALARA activities (min)	25.000
Number of records: 172		
File in use: REACTOR1.BD		
↑↓ Home End PgUp PgDn Select item ← Ehter 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 15 categories of potentially contaminated system components:

1. Large Piping	9. Small Heat Exchangers
2. Small Piping	10. Large Electrical Equipment
3. Large Valves	11. Small Electrical Equipment
4. Small Valves	12. Large Miscellaneous
5. Tanks	13. Small Miscellaneous
6. Large Pumps	14. Large Hangers
7. Small Pumps	15. Small Hangers
8. Large Heat Exchangers	

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 used during the removal operation is specified by items 11 through 13. Items 11 and 12 are required for piping and valves only; items 11 through 13 are not required for tanks. Note that the unit costs for items 11 through 13 are specified by the user in lines 15 through 17 of Menu Item 1.

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 (ft ²)	15.000
12 Lg Pipe: Plastic (ft ²)	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 (ft ²)	10.000
25 Sm Pipe: Plastic (ft ²)	25.000
26 Sm Pipe: Gases (hours)	0.017
27 Lg Valve: Duration (in minutes)	87.000
28 Lg Valve: Height adjustment (%)	10.000

TABLE 3.3. (contd)

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 (ft ²)	15.000
38 Lg Valve:	Plastic (ft ²)	37.500
39 Lg Valve:	Gases (hours)	0.033
40 Sm Valve:	Duration (in minutes)	0.000
41 Sm Valve:	Height adjustment (%)	0.000
42 Sm Valve:	Respiratory prot. adjust. (%)	0.000
43 Sm Valve:	Rad/ALARA activities (min)	0.000
44 Sm Valve:	Suit-up and unsuit time (min)	0.000
45 Sm Valve:	Work break time (min)	0.000
46 Sm Valve:	Number of laborers	0.000
47 Sm Valve:	Number of crafts	0.000
48 Sm Valve:	Number of crew leaders	0.000
49 Sm Valve:	Number of rad monitors	0.000
50 Sm Valve:	Absorbent material (ft ²)	0.000
51 Sm Valve:	Plastic (ft ²)	0.000
52 Sm Valve:	Gases (hours)	0.000
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 Lg Pump:	Duration (in minutes)	90.000
64 Lg Pump:	Height adjustment (%)	10.000
65 Lg Pump:	Respiratory prot. adjust. (%)	20.000
66 Lg Pump:	Rad/ALARA activities (min)	25.000
67 Lg Pump:	Suit-up and unsuit time (min)	120.000
68 Lg Pump:	Work break time (min)	30.000
69 Lg Pump:	Number of laborers	2.000
70 Lg Pump:	Number of crafts	1.000
71 Lg Pump:	Number of crew leaders	0.500
72 Lg Pump:	Number of rad monitors	0.500
73 Lg Pump:	Gases (hours)	0.017
74 Sm Pump:	Duration (in minutes)	40.000
75 Sm Pump:	Height adjustment (%)	0.000
76 Sm Pump:	Respiratory prot. adjust. (%)	20.000
77 Sm Pump:	Rad/ALARA activities (min)	25.000
78 Sm Pump:	Suit-up and unsuit time (min)	120.000
79 Sm Pump:	Work break time (min)	30.000
80 Sm Pump:	Number of laborers	2.000
81 Sm Pump:	Number of crafts	1.000
82 Sm Pump:	Number of crew leaders	0.500
83 Sm Pump:	Number of rad monitors	0.500
84 Sm Pump:	Gases (hours)	0.017
85 Lg HX:	Duration (in minutes)	90.000
86 Lg HX:	Height adjustment (%)	0.000

TABLE 3.3. (contd)

87 Lg HX:	Respiratory prot. adjust. (%)	20.000
88 Lg HX:	Rad/ALARA activities (min)	25.000
89 Lg HX:	Suit-up and unsuit time (min)	120.000
90 Lg HX:	Work break time (min)	30.000
91 Lg HX:	Number of laborers	2.000
92 Lg HX:	Number of crafts	1.000
93 Lg HX:	Number of crew leaders	0.500
94 Lg HX:	Number of rad monitors	0.500
95 Lg HX:	Gases (hours)	0.017
96 Sm HX:	Duration (in minutes)	40.000
97 Sm HX:	Height adjustment (%)	0.000
98 Sm HX:	Respiratory prot. adjust. (%)	20.000
99 Sm HX:	Rad/ALARA activities (min)	25.000
100 Sm HX:	Suit-up and unsuit time (min)	120.000
101 Sm HX:	Work break time (min)	30.000
102 Sm HX:	Number of laborers	2.000
103 Sm HX:	Number of crafts	1.000
104 Sm HX:	Number of crew leaders	0.500
105 Sm HX:	Number of rad monitors	0.500
106 Sm HX:	Gases (hours)	0.017
107 Lg Elec:	Duration (in minutes)	60.000
108 Lg Elec:	Height adjustment (%)	0.000
109 Lg Elec:	Respiratory prot. adjust. (%)	20.000
110 Lg Elec:	Rad/ALARA activities (min)	25.000
111 Lg Elec:	Suit-up and unsuit time (min)	120.000
112 Lg Elec:	Work break time (min)	30.000
113 Lg Elec:	Number of laborers	2.000
114 Lg Elec:	Number of crafts	1.000
115 Lg Elec:	Number of crew leaders	0.500
116 Lg Elec:	Number of rad monitors	0.500
117 Lg Elec:	Gases (hours)	0.017
118 Sm Elec:	Duration (in minutes)	40.000
119 Sm Elec:	Height adjustment (%)	0.000
120 Sm Elec:	Respiratory prot. adjust. (%)	20.000
121 Sm Elec:	Rad/ALARA activities (min)	25.000
122 Sm Elec:	Suit-up and unsuit time (min)	120.000
123 Sm Elec:	Work break time (min)	30.000
124 Sm Elec:	Number of laborers	2.000
125 Sm Elec:	Number of crafts	1.000
126 Sm Elec:	Number of crew leaders	0.500
127 Sm Elec:	Number of rad monitors	0.500
128 Sm Elec:	Gases (hours)	0.017
129 Lg Misc:	Duration (in minutes)	90.000
130 Lg Misc:	Height adjustment (%)	10.000
131 Lg Misc:	Respiratory prot. adjust. (%)	20.000
132 Lg Misc:	Rad/ALARA activities (min)	25.000
133 Lg Misc:	Suit-up and unsuit time (min)	120.000
134 Lg Misc:	Work break time (min)	30.000
135 Lg Misc:	Number of laborers	2.000
136 Lg Misc:	Number of crafts	1.000
137 Lg Misc:	Number of crew leaders	0.500
138 Lg Misc:	Number of rad monitors	0.500
139 Lg Misc:	Gases (hours)	0.017
140 Sm Misc:	Duration (in minutes)	40.000
141 Sm Misc:	Height adjustment (%)	0.000
142 Sm Misc:	Respiratory prot. adjust. (%)	20.000
143 Sm Misc:	Rad/ALARA activities (min)	25.000

TABLE 3.3. (contd)

144 Sm Misc:	Suit-up and unsuit time (min)	120.000
145 Sm Misc:	Work break time (min)	30.000
146 Sm Misc:	Number of laborers	2.000
147 Sm Misc:	Number of crafts	1.000
148 Sm Misc:	Number of crew leaders	0.500
149 Sm Misc:	Number of rad monitors	0.500
150 Sm Misc:	Gases (hours)	0.017
151 Lg Hanger:	Duration (in minutes)	60.000
152 Lg Hanger:	Height adjustment (%)	0.000
153 Lg Hanger:	Respiratory prot. adjust. (%)	20.000
154 Lg Hanger:	Rad/ALARA activities (min)	25.000
155 Lg Hanger:	Suit-up and unsuit time (min)	120.000
156 Lg Hanger:	Work break time (min)	30.000
157 Lg Hanger:	Number of laborers	3.000
158 Lg Hanger:	Number of crafts	1.500
159 Lg Hanger:	Number of crew leaders	0.500
160 Lg Hanger:	Number of rad monitors	0.500
161 Lg Hanger:	Gases (hours)	0.583
162 Sm Hanger:	Duration (in minutes)	20.000
163 Sm Hanger:	Height adjustment (%)	0.000
164 Sm Hanger:	Respiratory prot. adjust. (%)	20.000
165 Sm Hanger:	Rad/ALARA activities (min)	25.000
166 Sm Hanger:	Suit-up and unsuit time (min)	120.000
167 Sm Hanger:	Work break time (min)	30.000
168 Sm Hanger:	Number of laborers	3.000
169 Sm Hanger:	Number of crafts	1.500
170 Sm Hanger:	Number of crew leaders	0.500
171 Sm Hanger:	Number of rad monitors	0.500
172 Sm Hanger:	Gases (hours)	0.167

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. Cnsmp. 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, Barnwell, Generic)	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 CECP will update the data file **REACTOR1.BD**.

To exit this portion of the CECP, 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 two fields: **Name of Period** and **Duration (Years)**. 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 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 reappear.

MENU ITEM B: DECOMMISSIONING SCHEDULES	
Name of Period	Duration (Years)
1 Planning and Preparation	-2.5
2 Defuel and Layup	1.2
3 Spent Fuel Pool Operations	3.4
4 Deferred Dismantlement	1.7
5 UNDEFINED	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

Period descriptions may be up to 30 characters long. The time duration field is in years and decimal fractions of years and is defined in relation to reactor shutdown, which occurs at year zero. Times before shutdown are negative, and all periods are to be entered chronologically. The first period in this example, "Planning and Preparation," has a duration of 2.5 years, and since this period occurs before reactor shutdown, it is negative.

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.

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 CECF 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	Duration (Years)
1 Planning and Preparation	-2.5
2 Defuel and Layup	1.2
3 Spent Fuel Pool Operations	3.4
4 Extended Safe Storage	53.7
5 Deferred Dismantlement	1.7

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 underwater 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 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 CECP will create the file **REACTOR1.BD**.

To leave this portion of the CECP, 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.) The last line, just above the

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

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 the 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-

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

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

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 CECF 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.

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 Elec. (electrical components greater than 100 pounds)
11. Sm Elec. (electrical components 100 pounds or less)
12. Lg Misc. (miscellaneous equipment greater than 100 pounds)
13. Sm Misc. (miscellaneous equipment less than 100 pounds)
14. Lg Hngr. (large piping hanger, for pipes greater than 4 inches in diameter)
15. Sm Hngr. (small piping hanger, for pipes 4 inches or less in diameter)

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 CECP 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 (↑, ↓, →, ←, <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 (14 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. Pressing → 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 ← 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 <Enter>. 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 <BackSpace>, , or 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>; 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 <Enter> 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 CECF will update the REACTOR1.BD data file. You exit this portion of the CECF 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: 157 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)	30
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
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 (ft ²)	20
29	RCS Pipe (18"-24"): Plastic (ft ²)	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 (ft ³)	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

TABLE 4.1. (contd)

44	RCS Pipe (26"-30"):	Number of rad monitors	0.5
45	RCS Pipe (26"-30"):	Absorbent material (ft ²)	20
46	RCS Pipe (26"-30"):	Plastic (ft ²)	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 (ft ³)	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 (ft ²)	20
63	RCS Pipe (36"-72"):	Plastic (ft ²)	50
64	RCS Pipe (36"-72"):	Gases (hours)	0.33
65	RCS Pipe (36"-72"):	Dose rate (millirem/hr)	70
66	RCS Insulation Volume (ft ³)		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
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 (ft ² /min)	8
98	Surf Wash Crew:	Vacuum hose replacement (\$)	1180
99	Surf Wash Crew:	HEPA filter replacement (\$)	300

TABLE 4.1. (contd)

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 (ft ³)	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 (ft ²)	200
112	Recirc Pumps: Plastic (ft ²)	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 (ft ²)	42000
123	Condenser: Tube bundle cross section (ft ²)	375
124	Condenser: Cost of material sawed (\$/ft ²)	325
125	Condenser: 10 X 10 X 25 container cost (\$)	5500
126	Condenser: 10 X 10 X 25 container weight (ft ³)	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 (ft ²)	4500
131	MSR: 5 X 5 X 38 container cost (\$)	4500
132	MSR: 5 X 5 X 38 container weight (ft ³)	4300
133	MSR: Dose rate (millirem/hr)	1
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

TABLE 4.1. (contd)

153	DS & RFC:	Total wall area (ft ²)	7774
154	DS & RFC:	Total floor area (ft ²)	2215
155	SF Pool:	Total wall area (ft ²)	6900
156	SF Pool:	Total floor area (ft ²)	1368
157	SF Pool:	Volume (ft ³)	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. (Note: the cutting times for the RPV and RPV internals were determined from external calculations, and only the results are contained in the CECF code. The user cannot change these times.)
- 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 CECP 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 CECP 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

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 Tech. (Staff)	43950	61	U	0	*	0	0	0	
19 Health Physics Tech. (Crew)	43950	61	U	0	*	0	0	0	
Number of records: 72 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

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. 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 CECP 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 Sections 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-yr/yr for Phase 1			*	*	0	0	0
11 Chemistry Technician				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 Tech. (Staff)	43950	61	U	0	*	0	0	0
19 Health Physics Tech. (Crew)	43950	61	U	0	*	0	0	0

Number of records: 72 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 CECP 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 CECP and return to the Main Menu as described in Section 3.1.4.

4.8 MENU ITEM H: UNDISTRIBUTED COSTS

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

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

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

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.

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 CECP 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 CECP 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 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

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

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

Reactor2, you would select **REACTOR1** and press <Enter>. The CECF will now automatically create new **REACTOR2.BD** and **REACTOR2.BRG** files to reflect the increased person-hours resulting from the increased work difficulty factors. Whether or not you decide to make use of the sensitivity case option, the CECF 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 CECF 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 radio-active 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 Burial 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:

\$ ~~88.90~~ 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. In addition to **TEST.BRI**, the CECF has also created for you a list (**TEST.BIN**) of the input parameters the CECF used to create the **TEST** results.

To view the files you created (**TEST.BRD**, **TEST.BRE**, **TEST.BRF**, **TEST.BRG**, **TEST.BRI**, and **TEST.BIN**), 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 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 CECP permits is the data input file that came on the distribution diskette.) Press <Enter> to select **TEST.BRI**. The CECP 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 CECP will use this editor until you change it again from this menu. To exit from the File Viewer Menu, press <Esc>.

FIGURE 6.1. The File Viewer Menu

FIGURE 6.2. Selecting Summary Output Files

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 CECP 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.

APPENDIX A

CECP OUTPUT FILES

APPENDIX A

CECP OUTPUT FILES

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

*** Feed and Condensate

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Chemical Waste Processing

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Containment Instrument Air

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

*** Fuel Pool Cooling and Cleanup

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Condensate Demineralizers

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Equipment Drain Processing

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

TABLE A.1. Contents of File TEST.BRE (contd)

8 Inch Air Operated Valve	Lg Valve Sea-Van	1	14	320
6 Inch Air Operated Valve	Lg Valve Sea-Van	1	7	180
6 Inch Check Valve	Lg Valve Sea-Van	2	6	150
6 Inch Flow Element	Lg Valve Sea-Van	1	6	150
6 Inch Flow Sight Glass	Lg Misc. Sea-Van	1	5	120
4 Inch Air Operated Valve	Lg Valve Sea-Van	27	3	100
4 Inch Valve	Lg Valve Sea-Van	14	3	100
4 Inch Check Valve	Lg Valve Sea-Van	13	2	80
4 Inch Resin Strainer	Sm Misc. Sea-Van	1	3	80
4 Inch Restricting Orifice	Sm Valve Sea-Van	7	2	80
4 Inch Flow Element	Lg Valve Sea-Van	1	2	80
4 Inch Resin Screen	Sm Misc. Sea-Van	5	1	70
3 Inch Air Operated Valve	Sm Valve Sea-Van	4	1	65
3 Inch Valve	Sm Valve Sea-Van	7	1	65
3 Inch Check Valve	Sm Valve Sea-Van	2	1	60
3 Inch Restricting Orifice	Sm Valve Sea-Van	1	1	60
3 Inch Flow Element	Sm Valve Sea-Van	1	1	60
2 Inch Air Operated Valve	Sm Valve Sea-Van	4	1	40
2 Inch Valve	Sm Valve Sea-Van	14	1	40
2 Inch Check Valve	Sm Valve Sea-Van	2	1	35
2 Inch Relief Valve	Sm Valve Sea-Van	1	1	40
2 Inch Flow Element	Sm Valve Sea-Van	3	1	35
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	2	1	35
1 1/2 Inch Valve	Sm Valve Sea-Van	5	1	35
1 1/2 Check Valve	Sm Valve Sea-Van	3	0	30
1 Inch Air Operated Valve	Sm Valve Sea-Van	4	0	30
1 Inch Valve	Sm Valve Sea-Van	6	0	30
1 Inch Check Valve	Sm Valve Sea-Van	10	0	25
1 Inch Flow Element	Sm Valve Sea-Van	1	0	25
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	55	0	32

*** Extraction Steam

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

TABLE A.1. Contents of File TEST.BRE (contd)

12 Inch Check Valve	Lg Valve Sea-Van	1	15	1,200
3/4 Inch Air Operated Valve	Sm Valve Sea-Van	1	0	30

*** Miscellaneous Drains

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks ----- Dia(ft) Hgt(ft)
Misc. Drain Tank #1	Tank	Sea-Van	1	36	1,073	4.00 8.90
Misc. Drain Tank #2 (includes pumps)	Tank	Sea-Van	1	43	1,441	5.60 15.10
6 Inch Valve	Lg Valve	Sea-Van	2	7	588	
4 Inch Valve	Lg Valve	Sea-Van	5	3	268	
3 Inch MOV	Sm Valve	Sea-Van	8	1	153	
3 Inch Air Operated Valve	Sm Valve	Sea-Van	3	1	153	
3 Inch Valve	Sm Valve	Sea-Van	3	1	153	
3 Inch Check Valve	Sm Valve	Sea-Van	2	1	100	
3 Inch Strainer	Sm Valve	Sea-Van	8	1	130	
3 Inch Restricting Orifice	Sm Valve	Sea-Van	4	1	100	
3 Inch Flow Element	Sm Valve	Sea-Van	2	1	100	
2 Inch MOV	Sm Valve	Sea-Van	1	1	75	
2 Inch Air Operated Valve	Sm Valve	Sea-Van	11	1	75	
2 Inch Valve	Sm Valve	Sea-Van	11	1	75	
2 Inch Restricting Orifice	Sm Valve	Sea-Van	26	1	55	
1 1/2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	1	62	
1 1/2 Inch Valve	Sm Valve	Sea-Van	2	1	62	
1 Inch Air Operated Valve	Sm Valve	Sea-Van	8	1	50	
1 Inch Valve	Sm Valve	Sea-Van	7	1	50	
1 Inch Steam Trap	Sm Valve	Sea-Van	2	1	90	
Instrument Root Valve (typ. 3/4" globe)	Sm Valve	Sea-Van	47	0	32	
1/2 Inch Valve	Sm Valve	Sea-Van	14	1	90	
2 1/2 Inch Air operated Valve	Sm Valve	Sea-Van	2	1	131	
2 1/2 Inch Valve	Sm Valve	Sea-Van	3	1	131	

*** Main Steam and MS Leakage Control

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks ----- Dia(ft) Hgt(ft)
72 Inch MOV (Butterfly)	Lg Valve	Sea-Van	1	2,300	21,300	
Stop Valve	Lg Valve	Sea-Van	6	89	7,100	
Interceptor Valve	Lg Valve	Sea-Van	6	89	7,100	
30 Inch MSIV	Lg Valve	Sea-Van	8	170	1,400	
24 Inch MOV	Lg Valve	Sea-Van	1	89	7,100	
24 Inch Relief Valve	Lg Valve	Sea-Van	4	90	9,230	
20 Inch Relief Valve	Lg Valve	Sea-Van	2	86	7,700	
16 Inch MOV	Lg Valve	Sea-Van	1	50	4,230	
16 Inch Check Valve	Lg Valve	Sea-Van	2	40	3,380	

TABLE A.1. Contents of File TEST.PRE (contd)

14 Inch Check Valve	Lg Valve Sea-Van	2	29	2,220
14 Inch MOV	Lg Valve Sea-Van	2	31	2,760
12 Inch MOV	Lg Valve Sea-Van	2	28	2,500
12 Inch Stop Check Valve	Lg Valve Sea-Van	2	31	1,970
30 Inch Flow Restrictor	Lg Valve Sea-Van	4	52	3,000
8 Inch AO SRV	Lg Valve Sea-Van	18	29	2,030
10 Inch Vacuum Breaker	Lg Misc. Sea-Van	36	15	900
24 X 12 Inch Quencher	Lg Misc. Sea-Van	18	448	1,650
10 Inch MOV	Lg Valve Sea-Van	8	18	1,610
10 Inch Valve	Lg Valve Sea-Van	2	18	1,610
8 Inch Valve	Lg Valve Sea-Van	5	15	1,125
8 Inch Check Valve	Lg Valve Sea-Van	1	11	740
6 Inch MOV	Lg Valve Sea-Van	9	7	588
6 Inch Valve	Lg Valve Sea-Van	2	7	588
6 Inch Check Valve	Lg Valve Sea-Van	1	6	420
6 Inch Relief Valve	Lg Valve Sea-Van	4	7	500
4 Inch MOV	Lg Valve Sea-Van	2	3	268
4 Inch Valve	Lg Valve Sea-Van	2	3	268
3 Inch MOV	Sm Valve Sea-Van	11	1	153
3 Inch Air Operated Valve	Sm Valve Sea-Van	6	1	153
3 Inch Valve	Sm Valve Sea-Van	4	1	153
3 Inch Flow Element	Sm Valve Sea-Van	2	1	100
2 Inch MOV	Sm Valve Sea-Van	2	1	75
2 Inch Air Operated Valve	Sm Valve Sea-Van	5	1	75
2 Inch Valve	Sm Valve Sea-Van	393	1	75
1 1/2 Inch Air Operated Valve	Sm Valve Sea-Van	7	1	62
1 1/2 Inch Valve	Sm Valve Sea-Van	4	1	62
1 Inch Air Operated Valve	Sm Valve Sea-Van	7	1	50
1 Inch Valve	Sm Valve Sea-Van	75	1	50
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	195	0	32
1/2 Inch Valve	Sm Valve Sea-Van	163	0	25
1 Inch Steam Trap	Sm Misc. Sea-Van	35	1	90
2 Inch Strainer	Sm Misc. Sea-Van	4	1	95
4 Inch Strainer	Lg Misc. Sea-Van	2	4	220
8 Inch Relief Valve	Lg Valve Sea-Van	2	15	1,029
8 Inch Strainer	Lg Misc. Sea-Van	4	5	520
Gland Steam Condenser	Lg Misc. Sea-Van	1	55	8,900
Ejector Condenser	Lg Misc. Sea-Van	2	922	14,600
Bypass Valve Assembly	Lg Misc. Sea-Van	1	571	11,600
Steam Evaporator	Lg Misc. Sea-Van	2	3,809	29,674
28 Inch HOV Governor Valve	Lg Valve Sea-Van	8	100	8,000
1/2 Inch Valve (MSLC)	Sm Valve Sea-Van	8	0	25
3/4 Inch Valve (MSLC)	Sm Valve Sea-Van	28	0	32
1 Inch Flow Element (MSLC)	Sm Valve Sea-Van	2	1	38
1 Inch Valve (MSLC)	Sm Valve Sea-Van	14	1	50

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TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Radioactive Floor Drain Processing

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Turbine & Rad Waste Bldg. Drains

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

*** Offgas

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Catalytic Recombiner Vessel	Tank	Sea-Van	2	24	999	4.60	6.90
Preheater Heat Exchanger	Lg HX	Sea-Van	2	150	1,185		
Offgas Condenser	Lg Misc.	Sea-Van	1	260	1,976		
Water Separator	Lg Misc.	Sea-Van	1	4	598		
Lab Vacuum Pump	Sm Pump	Sea-Van	4	1	90		
Water Separator	Lg Misc.	Sea-Van	2	5	2,994		
Charcoal Ads. Vessel	Tank	Sea-Van	8	90	8,980	4.00	22.80
Cooler Condenser	Lg Misc.	Sea-Van	2	24	1,995		
Seal Water Trap	Lg Pipe	Sea-Van	20	0	19		
Pre-Filter Vessel	Tank	Sea-Van	2	13	2,495	3.00	10.60
After-Filter Vessel	Tank	Sea-Van	2	13	2,495	3.00	10.60
Dessicant Dryers	Lg Misc.	Sea-Van	4	28	1,371		
Dryer Heater	Lg Misc.	Sea-Van	2	54	7,984		
Dryer Chiller	Lg Misc.	Sea-Van	2	366	4,990		

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Reactor Building Closed Cooling Water

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

TABLE A.1. Contents of File TEST.BRE (contd)

2 Inch Air Operated Valve	Sm Valve Sea-Van	1	1	45
2 Inch Valve	Sm Valve Sea-Van	10	1	45
2 Inch Relief Valve	Sm Valve Sea-Van	1	1	48
1 Inch Valve	Sm Valve Sea-Van	6	0	30
1 Inch Relief Valve	Sm Valve Sea-Van	7	0	32
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	149	0	32

*** Reactor Core Isolation Cooling

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks -----	
						Dia(ft)	Hgt(ft)
Pelton Wheel Turbine and RCIC Pump	Lg Misc.	Sea-Van	1	158	13,790		
Barometric Condenser	Lg Misc.	Sea-Van	1	2	1,219		
Condenser Pump	Lg Pump	Sea-Van	1	2	1,496		
Water Leg Pump	Lg Pump	Sea-Van	1	19	876		
Vacuum Pump	Lg Pump	Sea-Van	1	1	999		
Vacuum Tank	Tank	Sea-Van	1	2	898	2.24	3.00
Steam Condensate Drip Pot	Tank	Sea-Van	1	0	240	0.70	2.50
8 Inch Suction Strainer	Lg Misc.	Sea-Van	2	1	145		
3/4 Inch Steam Trap	Sm Misc.	Sea-Van	4	1	55		
10 Inch Exhaust Drip Chamber	Lg Misc.	Sea-Van	1	2	680		
Turbine Exhaust Sparger	Lg Misc.	Sea-Van	1	2	530		
10 Inch MOV	Lg Valve	Sea-Van	3	18	1,610		
10 Inch Check Valve	Lg Valve	Sea-Van	1	14	880		
8 Inch MOV	Lg Valve	Sea-Van	2	15	1,125		
8 Inch Valve	Lg Valve	Sea-Van	1	15	1,125		
8 Inch Check Valve	Lg Valve	Sea-Van	2	11	740		
6 Inch MOV	Lg Valve	Sea-Van	3	7	588		
6 Inch Valve	Lg Valve	Sea-Van	2	7	588		
6 Inch Check Valve	Lg Valve	Sea-Van	1	6	420		
6 Inch Air Operated Check Valve	Lg Valve	Sea-Van	2	6	490		
6 Inch Restricting Orifice	Lg Valve	Sea-Van	2	6	420		
4 Inch MOV	Lg Valve	Sea-Van	3	3	268		
4 Inch Hydraulic Control Valve	Lg Valve	Sea-Van	1	6	450		
3 Inch Restricting Orifice	Sm Valve	Sea-Van	2	1	99		
2 Inch MOV	Sm Valve	Sea-Van	4	1	75		
2 Inch Air Operated Valve	Sm Valve	Sea-Van	1	1	75		
2 Inch Valve	Sm Valve	Sea-Van	4	1	75		
2 Inch Check Valve	Sm Valve	Sea-Van	6	1	55		
2 Inch Relief Valve	Sm Valve	Sea-Van	1	1	64		
2 Inch Restricting Orifice	Sm Valve	Sea-Van	2	1	55		
1 1/2 Inch MOV	Sm Valve	Sea-Van	1	1	62		
1 1/2 Valve	Sm Valve	Sea-Van	2	1	62		
1 1/2 Check Valve	Sm Valve	Sea-Van	1	1	46		
1 1/2 Inch Relief Valve	Sm Valve	Sea-Van	1	1	50		

TABLE A.1. Contents of File TEST.BRE (contd)

1 1/2 Inch Restricting Orifice	Sm Valve Sea-Van	1	1	46
1 Inch Air Operated Valve	Sm Valve Sea-Van	5	1	50
1 Inch Pressure Control Valve	Sm Valve Sea-Van	1	1	60
1 Inch Valve	Sm Valve Sea-Van	5	1	50
1 Inch Restricting Orifice	Sm Valve Sea-Van	9	1	38
3/4 Inch Air Solenoid	Sm Valve Sea-Van	1	0	32
3/4 Inch Pressure Control Valve	Sm Valve Sea-Van	2	1	50
Dragon Valve (excess flow check)	Sm Valve Sea-Van	8	1	50
Instrument Root Valve (typ. 3/4" globe)	Sm Valve Sea-Van	204	0	32

*** Residual Heat Removal

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Misc. Recirculation System Components

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

TABLE A.1. Contents of File TEST.BRE (contd)

*** Reactor Water Cleanup

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

TABLE A.1. Contents of File TEST.BRE (contd)

*** Reactor Building Equipment & Floor Drains

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

*** Sample System

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

*** Standby Gas Treatment

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

TABLE A.1. Contents of File TEST.BRE (contd)

3/4 inch Valve	Sm Valve Sea-Van	8	0	30
Blower	Lg Misc. Sea-Van	4	121	4,500

*** Heater Vents and Drains

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

TABLE A.1. Contents of File TEST.BRE (contd)

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

*** Miscellaneous Items

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

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TABLE A.1. Contents of File TEST.BRE (contd)

Lower Drywell Spray Header	Lg Pipe	Sea-Van	222	1	50
Suppression Pool Spray Header	Lg Pipe	Sea-Van	267	0	19

*** Other Piping

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

*** Small Hangers (2" pipe or less)

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks ----- Dia(ft) Hgt(ft)	
Small Hangers (2" pipe or less)	Sm Hngr.	Sea-Van	7,500	1	83		

*** Large Hangers (>2" pipe)

Component Description	Category	Disposal	Qty	Vol(ft3)	Wgt(lb)	----- Tanks ----- Dia(ft) Hgt(ft)	
Large Hangers (>2" pipe)	Lg Hngr.	Sea-Van	5,000	4	354		

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

TABLE A.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 A.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 A.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 A.1. Contents of File TEST.BRE (contd)

2 Inch Valve	Sm Valve Sea-Van	25	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	0.001
2 Inch Relief Valve	Sm Valve Sea-Van	2	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	3	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	0.004
1 1/2 Check Valve	Sm Valve Sea-Van	8	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	0.000
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	23	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	0.001
1 Inch Restricting Orifice	Sm Valve Sea-Van	6	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	0.003
			357	1,858	1,180	5	1.853

*** Containment Instrument Air

Component Description	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

Component Description	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	5.7	22.7	14.4	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 A.1. Contents of File TEST.BRE (contd)

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	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 Valve	Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
3 Inch Check Valve	Sm Valve	Sea-Van	2	0.0	0.0	0.0	0.0	0.001
2 Inch Air Operated Valve	Sm Valve	Sea-Van	3	0.0	0.0	0.0	0.0	0.001
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	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
				326	1,749	1,111	2	1.428

*** Condensate Demineralizers

Component Description	Category	Disposal	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 A.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 A.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 A.1. Contents of File TEST.BRE (contd)

*** Extraction Steam							
Component Description							
Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curties
Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.097
Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.097
Lg Valve	Sea-Van	10	29.7	163.2	103.7	0.0	0.095
Lg Valve	Sea-Van	10	29.7	163.2	103.7	0.0	0.095
Lg Valve	Sea-Van	10	29.7	163.2	103.7	0.0	0.095
Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.038
Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.038
Lg Valve	Sea-Van	5	14.8	81.6	51.8	0.0	0.038
Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.012
Lg Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.012
Lg Valve	Sea-Van	6	17.8	97.9	62.2	0.0	0.012
Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.005
Lg Valve	Sea-Van	4	11.9	65.3	41.5	0.0	0.002
Sm Valve	Sea-Van	10	0.0	0.0	0.0	0.0	0.002
Sm Valve	Sea-Van	12	0.0	0.0	0.0	0.0	0.002
Instrument Root Valve (typ. 3/4" globe)	Sea-Van	85	0.0	0.0	0.0	0.0	0.003
*** High/Low Pressure Core Spray							
Component Description							
Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curties
Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.008
Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.016
Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.004
Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.009
Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.122
Lg Valve	Sea-Van	1	3.0	16.3	10.4	0.0	0.006
Sm Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 X 2 Inch Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.022
1 Inch Check Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 Inch Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
1 1/2 X 2 Inch Valve	Sea-Van	1	0.0	0.0	0.0	0.0	0.000
6 Inch Valve	Sea-Van	2	5.9	32.6	20.7	0.0	0.002
12 Inch Valve	Sea-Van	3	8.9	48.9	31.1	0.0	0.011
10 Inch MOV	Sea-Van	1	3.0	16.3	10.4	0.0	0.003
12 Inch MOV	Sea-Van	2	5.9	32.6	20.7	0.0	0.007
3/4 Inch Valve	Sea-Van	42	0.0	0.0	0.0	0.0	0.001
Lg Misc.	Sea-Van	2	6.1	24.6	15.6	0.0	0.000
Sm Misc.	Sea-Van	1	1.3	5.0	3.2	0.0	0.000
Vent Strainer	Sea-Van	1	1.3	5.0	3.2	0.0	0.000

TABLE A.1. Contents of File TEST.BRE (contd)

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 A.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 A.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 Inch 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 A.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 Misc. Sea-Van	2	2.5	10.1	6.4	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	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 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	Curies
EDR Sump Pump	Lg Pump	Sea-Van	6	18.4	73.7	46.8	0.3	0.120
FDR Sump Pump	Lg Pump	Sea-Van	7	21.5	85.9	54.6	0.3	0.140
Chemical Drain Sump Pump	Lg Pump	Sea-Van	1	3.1	12.3	7.8	0.0	0.020
6 Inch Restricting Orifice	Lg Valve	Sea-Van	19	56.4	310.0	197.0	0.1	0.023
3 Inch Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.002
3 Inch Check Valve	Sm Valve	Sea-Van	6	0.0	0.0	0.0	0.0	0.002

TABLE A.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	5.7	22.7	14.4	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	1,954	1,242	3	2.620

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TABLE A.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	8.5	34.0	21.6	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	
				215	1,137	722	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 A.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 A.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 0	135	26.7	146.8	93.3	0.0	0.000
Drywell Lower Spray Ring Header	Lg Pipe Sea-Van 0	206	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	5.7	22.7	14.4	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 A.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
			425	2,284	1,451	0	6.573

*** Misc. Recirculation System Components

Component Description	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
24 Inch HOV	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	5.7	22.7	14.4	3.9	1.446
Regenerative Heat Exchanger	Lg HX	Sea-Van	3	8.5	34.0	21.6	5.9	1.752

TABLE A.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
				277	1,470	934	39	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	2.8	11.3	7.2	0.0	0.030
Drywell Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	2.8	11.3	7.2	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 A.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	794	504	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 A.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 A.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 A.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

TABLE A.1. Contents of File TEST.BRE (contd)

*** Small Hangers (2" pipe or less)	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Component Description								
Small Hangers (2" pipe or less)	Sm Hngr.	Sea-Van	7,500	4,721.3	25,967.2	16,500.0	0.9	0.000
				4,721	25,967	16,500	1	0.000
*** Large Hangers (>2" pipe)	Category	Disposal	Qty	Crew-Hrs	Pers-Hrs	Exp Hrs	Pers-Rem	Curies
Component Description								
Large Hangers (>2" pipe)	Lg Hngr.	Sea-Van	5,000	9,442.6	51,934.4	33,000.0	1.8	0.000
				9,443	51,934	33,000	2	0.000

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

TABLE A.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 A.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 A.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 A.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	812	1,238	45	10,399	12,494
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 A.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
				61,211	9,251	338	77,892	148,691

*** 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 A.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 A.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 A.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 A.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 A.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 A.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 A.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 A.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	843	327	12	2,744	3,926
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
				68,531	19,982	729	167,772	257,015

TABLE A.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	1,305	6,799	248	57,083	65,435
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
				39,925	12,704	464	106,668	159,761

*** 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 A.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 A.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	95	21,835	29,675
Drywell Lower Spray Ring Header	Lg Pipe	Sea-Van	0	206	7,849	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	1,550	17,735	647	148,902	168,834
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 A.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 Solenoid 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
			80,834	93,087	3,397	781,948	959,267

*** Misc. Recirculation System Components

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
24 Inch MOV	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	843	2,482	91	20,843	24,259
Regenerative Heat Exchanger	Lg HX	Sea-Van	3	1,250	3,765	137	31,612	36,765

TABLE A.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
				51,494	14,435	527	121,198	187,654

*** 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	406	206	8	1,732	2,352
Drywell Equipment Drain Heat Exchanger	Lg HX	Sea-Van	1	406	206	8	1,732	2,352
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 A.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 A.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

TABLE A.1. Contents of File TEST.BRE (contd)

*** Small Hangers (2" pipe or less)

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Small Hangers (2" pipe or less)	Sm Hngr.	Sea-Van	7,500	906,136	88,999	3,506	450,041	1,448,682
				906,136	88,999	3,506	450,041	1,448,682

*** Large Hangers (>2" pipe)

Component Description	Category	Disposal	Qty	Removal	Container	Transport	Disposal	Tot. Costs
Large Hangers (>2" pipe)	Lg Hngr.	Sea-Van	5,000	1,815,040	254,294	10,017	1,285,883	3,365,234
				1,815,040	254,294	10,017	1,285,883	3,365,234

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

Table A.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 A.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 A.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 A.2. Contents of File TEST.BRD (contd)

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

*** Reactor Bldg

Component Description	Activity	Time	Exposure		Pers-Rem
		(hours)	Pers-hours	Pers-hours	
Drywell Head Laydown	Conc Wash	8.4	33.7	8.4	0.01
Drywell Head Laydown	Conc Rmvl	93.3	326.7	186.7	0.31
RPV Head Laydown	Conc Wash	3.0	12.1	3.0	0.00
RPV Head Laydown	Conc Rmvl	67.2	235.2	134.4	0.22
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	25.4	88.8	50.8	0.08
RHR "B" Heat Exchanger Rm	Conc Wash	2.3	9.2	2.3	0.00
RHR "B" Heat Exchanger Rm	Conc Rmvl	25.4	88.8	50.8	0.08
Fuel Pool Cooling HX/Pump	Conc Wash	3.1	12.3	3.1	0.01
Fuel Pool Cooling HX/Pump	Conc Rmvl	54.3	190.0	108.6	0.18
RWCU Heat Exchanger Rm	Conc Wash	6.6	26.3	6.6	0.01
RWCU Heat Exchanger Rm	Conc Rmvl	43.7	152.8	87.3	0.14
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	28.4	99.5	56.9	0.09
CRD HCU Area East	Conc Wash	4.7	18.9	4.7	0.01
CRD HCU Area East	Conc Rmvl	21.0	73.4	41.9	0.07
CRD HCU Area West	Conc Wash	4.3	17.1	4.3	0.01
CRD HCU Area West	Conc Rmvl	18.9	66.3	37.9	0.06
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	90.8	317.9	181.7	0.30
TIP Room	Conc Wash	0.9	3.8	0.9	0.00
TIP Room	Conc Rmvl	12.4	43.5	24.9	0.04
Main Steam Tunnel	Conc Wash	2.5	9.9	2.5	0.00
Main Steam Tunnel	Conc Rmvl	54.8	191.9	109.6	0.18
Drywell Floor	Conc Wash	16.9	67.5	16.9	0.03
Drywell Floor	Conc Rmvl	373.9	1,308.5	747.7	1.22
Under Vessel CRD Area	Conc Wash	1.1	4.2	1.1	0.00
Under Vessel CRD Area	Conc Rmvl	23.5	82.1	46.9	0.08
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	462.6	1,619.0	925.1	1.52
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	23.5	82.4	47.1	0.08
RHR "A" Pump Room	Conc Wash	5.0	19.9	5.0	0.01
RHR "A" Pump Room	Conc Rmvl	11.1	38.7	22.1	0.04
RHR "B" Pump Room	Conc Wash	6.7	26.7	6.7	0.01
RHR "B" Pump Room	Conc Rmvl	14.8	51.7	29.5	0.05
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 A.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 (hours)	Pers-hours	Exposure Pers-hours	Pers-Rem
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	215.6	754.6	431.2	0.71
Hot Machine Shop	Conc Wash	3.0	12.1	3.0	0.00
Hot Machine Shop	Conc Rmvl	40.3	141.1	80.6	0.13
East Demin Valve Room	Conc Wash	6.7	26.7	6.7	0.01
East Demin Valve Room	Conc Rmvl	59.1	206.8	118.2	0.19
West Demin Valve Room	Conc Wash	6.5	26.0	6.5	0.01
West Demin Valve Room	Conc Rmvl	57.6	201.6	115.2	0.19
Concentrator Area (2)	Conc Wash	1.0	4.0	1.0	0.00
Concentrator Area (2)	Conc Rmvl	11.1	38.7	22.1	0.04
Centrifuge and Conc Waste	Conc Wash	3.3	13.2	3.3	0.01
Centrifuge and Conc Waste	Conc Rmvl	14.6	51.0	29.2	0.05
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	31.4	109.9	62.8	0.10
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 (hours)	Pers-hours	Exposure Pers-hours	Pers-Rem
Feed Pump Skid Area (2)	Conc Wash	2.2	8.7	2.2	0.00
Feed Pump Skid Area (2)	Conc Rmvl	48.0	167.9	96.0	0.16
Drain Trench	Conc Wash	1.0	4.2	1.0	0.00
Drain Trench	Conc Rmvl	23.2	81.4	46.5	0.08
Air Ejector Condenser Rooms	Conc Wash	5.0	20.0	5.0	0.01
Air Ejector Condenser Rooms	Conc Rmvl	22.1	77.5	44.3	0.07
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	43.3	151.6	86.6	0.14
Sumps	Mtl Wash	6.4	25.4	6.4	0.01
Sumps	Mtl Rmvl	11.5	63.5	40.3	0.07

TABLE A.2. Contents of File TEST.BRD (contd)

+++++
+ BUILDING DECONTAMINATION: COSTS (DOLLARS) +
+++++

*** 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	13,291	545	60	7,258	
RPV Head Laydown	Conc Wash	419	0	0	910	
RPV Head Laydown	Conc Rmvl	9,567	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	3,613	148	16	1,973	
RHR "B" Heat Exchanger Rm	Conc Wash	316	0	0	687	
RHR "B" Heat Exchanger Rm	Conc Rmvl	3,613	148	16	1,973	
Fuel Pool Cooling HX/Pump	Conc Wash	423	0	0	920	
Fuel Pool Cooling HX/Pump	Conc Rmvl	7,729	317	35	4,221	
RWCU Heat Exchanger Rm	Conc Wash	906	0	0	1,969	
RWCU Heat Exchanger Rm	Conc Rmvl	6,218	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	4,048	166	18	2,211	
CRD HCU Area East	Conc Wash	652	0	0	1,417	
CRD HCU Area East	Conc Rmvl	2,985	122	13	1,630	
CRD HCU Area West	Conc Wash	590	0	0	1,282	
CRD HCU Area West	Conc Rmvl	2,695	111	12	1,472	
Scream 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	12,934	530	58	7,063	
TIP Room	Conc Wash	129	0	0	281	
TIP Room	Conc Rmvl	1,772	73	8	967	
Main Steam Tunnel	Conc Wash	342	0	0	742	
Main Steam Tunnel	Conc Rmvl	7,806	320	35	4,263	
Drywell Floor	Conc Wash	2,329	0	0	5,063	
Drywell Floor	Conc Rmvl	53,231	2,183	239	29,068	
Under Vessel CRD Area	Conc Wash	146	0	0	318	
Under Vessel CRD Area	Conc Rmvl	3,339	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	65,864	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	3,352	137	15	1,830	
RHR "A" Pump Room	Conc Wash	688	0	0	1,495	
RHR "A" Pump Room	Conc Rmvl	1,576	65	7	861	
RHR "B" Pump Room	Conc Wash	920	0	0	1,999	
RHR "B" Pump Room	Conc Rmvl	2,103	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	

TABLE A.2. Contents of File TEST.BRD (contd)

Drywell & Wetwell Metal Liners	Mt1 Rmvl	14,279	37,899	1,383	318,202
Sumps	Mt1 Wash	877	0	0	1,907
Sumps	Mt1 Rmvl	2,202	2,192	80	18,403

*** Rad Waste/Control Bldg

Component Description	Activity	Removal	Container	Transport	Disposal
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	30,700	1,259	138	16,764
Hot Machine Shop	Conc Wash	419	0	0	910
Hot Machine Shop	Conc Rmvl	5,741	235	26	3,135
East Demin Valve Room	Conc Wash	920	0	0	2,000
East Demin Valve Room	Conc Rmvl	8,413	345	38	4,594
West Demin Valve Room	Conc Wash	897	0	0	1,950
West Demin Valve Room	Conc Rmvl	8,201	336	37	4,479
Concentrator Area (2)	Conc Wash	138	0	0	300
Concentrator Area (2)	Conc Rmvl	1,576	65	7	861
Centrifuge and Conc Waste	Conc Wash	455	0	0	990
Centrifuge and Conc Waste	Conc Rmvl	2,077	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	4,469	183	20	2,440
Sumps	Mt1 Wash	877	0	0	1,907
Sumps	Mt1 Rmvl	2,202	2,192	80	18,403

*** Turbine Generator Bldg

Component Description	Activity	Removal	Container	Transport	Disposal
Feed Pump Skid Area (2)	Conc Wash	299	0	0	650
Feed Pump Skid Area (2)	Conc Rmvl	6,832	280	31	3,731
Drain Trench	Conc Wash	145	0	0	315
Drain Trench	Conc Rmvl	3,310	136	15	1,808
Air Ejector Condenser Rooms	Conc Wash	690	0	0	1,500
Air Ejector Condenser Rooms	Conc Rmvl	3,154	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	6,166	253	28	3,367
Sumps	Mt1 Wash	877	0	0	1,907
Sumps	Mt1 Rmvl	2,202	2,192	80	18,403

TABLE A.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:	205,736
Container Costs:	8,437
Shipping Costs:	922
Burial Costs:	112,348
Burial Volume:	2,317 ft3
Number of Drums:	313.07
Crew Hours:	1,445
Pers-Hours:	5,057
Pers-Rem:	4.73

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 A.2. Contents of File TEST.BRD (contd)

Concrete Removal--

Surface Area:	4,655 ft2
Weight Removed:	55,856 lb
Removal Costs:	61,177
Container Costs:	2,509
Shipping Costs:	274
Burial Costs:	33,407
Burial Volume:	689 ft3
Number of Drums:	93.09
Crew Hours:	430
Pers-Hours:	1,504
Pers-Rem:	1.41

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:	19,462
Container Costs:	798
Shipping Costs:	87
Burial Costs:	10,628
Burial Volume:	219 ft3
Number of Drums:	29.62
Crew Hours:	137
Pers-Hours:	478
Pers-Rem:	0.45

TABLE A.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 A.3. **TEST.BRF** was created from Menu Item F in Chapter 6. All terms in Table A.3 should be self-explanatory. A summary of these costs appears in **TEST.BRI**, discussed below.

TABLE A.3. Contents of File TEST.BRF

File name: E:\BWR\TEST.BRF

COSTS (IN DOLLARS) FOR REACTOR PRESSURE VESSEL AND INTERNALS

RPV INTERNAL COMPONENTS	LABOR	CONTAINERS	TRANSPORT	DISPOSAL	TOTAL
Equipment Setup, Testing, Removal	77,974				77,974
Core Shroud	63,577	13,000	418,233	1,365,000	1,859,811
Top Fuel Guide	170,336	2,080	87,668	218,400	478,484
Shroud Support	20,562	6,570	544	30,535	58,210
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	48,290	9,390	32,436	36,921	127,037
Limiters, Housings, Inst. Guides	89,879	14,895	544	125,060	230,378
Steam Separator	150,304	33,945	37,142	241,798	463,189
Steam Dryer	12,060	14,895	544	125,060	152,559
TOTALS FOR RPV INTERNALS	781,421	130,250	788,867	2,857,727	4,558,265

REACTOR PRESSURE VESSEL	LABOR	CONTAINERS	TRANSPORT	DISPOSAL	TOTAL
Equipment Setup, Testing, Removal	51,983				51,983
Insulation	0	7,300	181	131,906	139,387
Upper Flange	6,136	4,300	604	33,928	44,967
Upper Head	7,404	2,800	317	17,306	27,827
Lower Flange	5,727	4,000	604	30,048	40,379
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	11,337	6,020	1,268	69,864	88,489
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	183,115	180,470	118,998	949,971	1,432,553

RPV Internals

Crew Hours	Pers Hours	Exposure Hours	Pers-Rem
2,405.18	21,646.61	1,615.79	112.22

Pressure Vessel

Crew Hours	Pers Hours	Exposure Hours	Pers-Rem
563.62	5,072.58	416.47	35.05

A detailed report of staffing (overhead) costs by decommissioning period is provided by **TEST.BRG** in Table A.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 A.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
Other Overhead Costs for Planning and Preparation					0
Total Overhead Costs for Planning and Preparation					5,678,936

TABLE A.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 Tech. (Staff)	Utility	43,950	70,759	17.280	1,222,733
Health Physics Tech. (Crew)	Utility	43,950	70,759	1.920	135,859
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
Other Overhead Costs for Defuel and Layup					0
Total Overhead Costs for Defuel and Layup					16,660,453

TABLE A.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
Other Overhead Costs for Spent Fuel Pool Operations					0
Total Overhead Costs for Spent Fuel Pool Operations					2,400,806

TABLE A.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 A.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					11,271,449
Other Overhead Costs for Deferred Dismantlement					121,100
Total Overhead Costs for Deferred Dismantlement					16,290,279

The last output file, **TEST.BRI**, is shown in Table A.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 CECP 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 A.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)							Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist	Total				
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)							Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist	Total				
Removal of NSSS ⁽⁴⁾											
RPV Internals	0	781,421	130,250	788,867	2,857,727	0	4,558,265	8,500	2,405	21,647	112.22
Chemical Decontamination	13,250,000	0	0	0	466,302	0	13,716,302	4,600	2,160	12,960	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	781,421	130,250	788,867	3,324,029	0	18,281,194	13,100	4,613	34,799	158.02

	Costs (dollars)							Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist	Total				
Dry Active Waste Costs for this Period ⁽⁵⁾											
Dry Active Waste	0	0	7,770	687	104,869	0	113,327	2,162	0	0	0.00

	Costs (dollars)							Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist	Total				
Undistributed Costs											
Utility Staff ⁽¹⁾	0	0	0	0	0	16,660,453	16,660,453	0	0	165,734	165.73
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	526,400	526,400	0	0	0	0.00
Small Tools and Minor Equipment ⁽⁷⁾	0	0	0	0	0	15,628	15,628	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	22,260,381	22,260,381	0	0	165,734	165.73
Totals for PERIOD 2	13,256,628	781,421	138,020	789,554	3,428,898	22,260,381	40,654,902	15,262	4,613	200,533	323.75

Table A.5 Contents of File TEST.BRI (contd)

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

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

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

	Costs (dollars)						Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist				
Removal of NSSS ⁽⁴⁾										
Reactor Pressure Vessel and Insulation	0	183,115	180,470	118,998	949,971	0	1,432,553	13,152	564	5,073
Sacrificial Shield	0	750,000	63,000	10,872	1,112,261	0	1,936,133	9,759	720	3,600
Recirculation Pumps	0	16,224	0	600	252,852	0	269,676	5,214	33	180
RCS Piping	0	1,041,231	475,837	18,744	2,846,048	0	4,381,861	33,102	5,397	29,683
RCS Piping Insulation	0	0	23,175	1,151	418,753	0	443,078	8,635	0	0
Main Turbine	0	243,372	476,640	21,681	4,001,921	0	4,743,613	61,440	1,280	7,040
Main Turbine Condenser	28,927	465,637	283,250	13,180	4,799,854	0	5,590,848	85,800	2,315	12,564
Moisture Separator Reheaters	3,099	116,362	60,860	2,476	524,469	0	707,266	7,960	635	3,456
Feed Water Heaters	17,453	48,674	8,000	5,328	1,512,736	0	1,592,191	27,680	384	1,920
Turbine Feed Pumps	4,363	9,126	5,465	1,521	275,883	0	296,359	5,074	80	392
Structural Beams, Plates, & Cable Trays	0	440,350	151,800	5,980	863,555	0	1,461,685	10,560	2,316	12,738
Spent Fuel Racks	0	826,875	79,579	3,241	727,988	0	1,637,683	11,717	444	4,000
Spent Fuel Pool Decon Costs	5,539	0	0	0	0	0	5,539	0	40	161
Spent Fuel Pool Water Treatment Costs	450,000	0	23,475	18,988	40,554	0	533,018	600	432	2,592
Totals	509,382	4,140,966	1,831,551	222,760	18,326,843	0	25,031,503	280,693	14,639	83,399

Table A.5 Contents of File TEST.BRI (contd)

	Costs (dollars)						Total	Cu Ft	C-Hrs	Pers-Hrs	Pers-Rem
	Decon	Remove	Package	Ship	Bury	Undist					
Removal of Contaminated Plant Systems ⁽⁸⁾											
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	61,211	9,251	338	77,892	0	148,691	1,192	326	1,749	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	68,531	19,982	729	167,772	0	257,015	2,576	372	1,954	3.10
Reactor Building Closed Cooling Water	0	39,925	12,704	464	106,668	0	159,761	1,638	215	1,137	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	80,834	93,087	3,397	781,948	0	959,267	11,999	425	2,284	0.31
Misc. Recirculation System Components	0	3,429	10,120	369	84,971	0	98,890	1,305	18	98	0.20
Reactor Water Cleanup	0	51,494	14,435	527	121,198	0	187,654	1,861	277	1,470	39.45
Reactor Building Equipment & Floor Drains	0	27,813	2,769	101	23,245	0	53,928	357	152	794	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
Small Hangers (2" pipe or less)	0	906,136	88,999	3,506	450,041	0	1,448,682	6,191	4,721	25,967	0.90
Large Hangers (>2" pipe)	0	1,815,040	254,294	10,017	1,285,883	0	3,365,234	17,690	9,443	51,934	1.80
Totals	0	8,164,723	1,313,690	48,939	10,206,598	0	19,733,949	148,968	43,723	233,372	112.15
----- 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	237,506	83,036	3,644	738,689	0	1,102,935	11,933	1,901	7,129	6.16
Rad Waste/Control Bldg	13,363	63,380	4,701	354	51,810	0	133,608	971	538	1,955	1.63
Turbine Generator Bldg	5,503	21,665	2,990	167	29,031	0	59,356	502	188	701	0.58
Waste Water Solidification Costs	141,560	0	31,300	28,589	49,442	0	250,891	800	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	1,191,266	246,614	40,282	3,088,099	0	4,839,144	57,139	10,023	34,068	17.69

Table A.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	115,188	10,191	1,554,545	0	1,679,923	32,056	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	32,448	17.72
Consultant/Other Staff ⁽¹⁾	0	0	0	0	0	121,100	121,100	0	0	0	0.00
DOC Mobilization/Demobilization Costs ⁽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	1,083,113	1,083,113	0	0	0	0.00
Small Tools and Minor Equipment ⁽⁷⁾	0	0	0	0	0	273,642	273,642	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	24,626,426	24,626,426	0	0	61,776	33.73
=====											
Totals for PERIOD 4	782,266	13,496,955	3,507,042	322,172	33,176,085	25,684,770	76,969,290	518,856	68,386	412,615	502.53
=====											
GRAND TOTALS	14,038,894	14,278,376	3,645,063	1,111,726	36,604,983	61,998,403	131,677,444	534,119	72,999	625,170	836.55
=====											
GRAND TOTALS with 25% contingency	17,548,617	17,847,970	4,556,328	1,389,657	45,756,229	77,498,003	164,596,805	534,119	72,999	625,170	836.55

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Table A.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):	0.673	83,688,002	104,610,003
B (energy and transportation):	0.033	4,111,719	5,139,648
C (waste burial):	0.294	36,604,983	45,756,229
	A + B + C (\$)	124,404,704	155,505,880
	Taxes and Insurance (\$)	7,272,740	9,090,925
	Grand Totals (\$)	131,677,444	164,596,805

---- Burial Volumes by Waste Class ----

	Vol. (ft3)	Per Cent
Class A Waste:	514,723	96.37
Class B&C Waste:	19,152	3.59
GTCC Waste:	244	0.05
	534,119	100.00

- (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 52 and 53 of Menu Item 1.
- (6) From Menu Item I. Based on total person-hours for all activities in each period and on line 51 of Menu Item 1.
- (7) From Menu Item I. Equal to direct labor costs (exclusive of any contractor costs) times the factor on line 54 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.

In addition to the five output files discussed above, the CECF also produces a file containing a list of all the user-supplied input parameters from all applicable menu items. This input listing (BIN file) is created in Menu Item I, just after the CECF produces the BRI file. Table A.6 is TEST.BIN.

TABLE A.6. Contents of File TEST.BIN

TEST.BIN

This file contains the input parameters used to create TEST.BRI.
The parameters are listed by menu item. Note that there are no input parameters for Menu Items D and E. Inputs for Menu Item G are obvious from TEST.BRG and are not included here.

MENU 1 INPUTS --

1 Laborer hourly rate (\$/hr)	26.370
2 Craft hourly rate (\$/hr)	49.700
3 Crew leader hourly rate (\$/hr)	54.840
4 Radiation operator hourly rate (\$/hr)	36.820
5 Engineer hourly rate (\$/hr)	59.090
6 Average shift differential (%)	5.000
7 Profit on equipment and material (%)	15.000
8 Utility overhead (%)	42.000
9 DOC overhead (%)	110.000
10 DOC profit (%)	15.000
11 Density of poured concrete (lb/ft3)	144.000
12 Density of reinforced conc (lb/ft3)	200.000
13 Density of stainless steel (lb/ft3)	500.000
14 DOT 17-H steel drum, 55-gal (\$/ea)	26.950
15 Plastic sheets/bags (\$/ft2)	0.040
16 Blotting paper (\$/ft2)	0.320
17 Gas torch consumables (\$/hr)	6.750
18 Burial costs/ft3 at geologic repos (\$)	6500.000
19 Transportation escalation factor	1.000
20 Waste burial escalation factor	1.000
21 License termination survey cost (\$)	1058344.000
22 Standard box width (ft)	4.000
23 Standard box depth (ft)	4.000
24 Standard box length (ft)	6.000
25 Standard box (\$)	645.000
26 Mod. maritime container 2 x 8 x 20 (\$)	4600.000
27 Mod. maritime container 4 x 8 x 20 (\$)	4965.000
28 Std. maritime cont. 8 x 8.5 x 20 (\$)	3650.000
29 Pipe hanger container cost (\$)	4600.000
30 Pipe hanger container weight (lb)	2500.000
31 Pipe hanger container volume (ft3)	320.000
32 Cask liner for 8-120B cask (\$)	4695.000
33 Small cask liner for 8-120B cask (\$)	3200.000
34 NAC-LWT liner (\$)	1000.000
35 Canister for GTCC material (\$)	520.000
36 Special steel box 4 x 4 x 3 (\$)	430.000
37 Special steel box 4 x 4 x 2.5 (\$)	400.000
38 Special steel box 4 x 4 x 1.5 (\$)	365.000
39 Special steel box 4 x 8 x 1.5 (\$)	730.000
40 Special steel box 6.7 x 8.9 x 14 (\$)	4510.000
41 Special steel box 6.1 x 8.9 x 14 (\$)	4106.000
42 Special steel box 6.7 x 7.3 x 14 (\$)	3700.000
43 Special steel box 4 x 10 x 14 (\$)	3025.000
44 Special steel box 4.5 x 7.3 x 14 (\$)	2485.000

TABLE A.6. Contents of File TEST.BIN (contd)

45 Special steel box 94 x 115 x 26 in (\$)	1050.000
46 High integrity container (HIC) (\$)	7825.000
47 NuPac 14/210H cask rental (\$/day)	1250.000
48 CNS 8-120B cask rental (\$/day)	1250.000
49 NAC LWT cask rental (\$/day)	3130.000
50 TN-8 cask rental (\$/day)	3340.000
51 Laundry services (\$/person-shift)	21.000
52 Uncompacted drums of waste (drums/day)	5.000
53 Dry waste compaction ratio	5.000
54 Small tools (% of direct labor costs)	2.000
55 Piping/equip/HXs (curies/ft2)	0.006
56 RCS piping (curies/ft2)	0.100
57 Maint. allow. (\$/yr) (SAFSTOR only)	17379.000
58 Length (ft) to which pipes will be cut	15.000

MENU 2 INPUTS --

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
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 (ft2/hr)	130.000
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 Mt1 Rmvl: Staging (in minutes)	60.000
31 Mt1 Rmvl: Height adjustment (%)	10.000
32 Mt1 Rmvl: Respiratory prot. adj. (%)	20.000
33 Mt1 Rmvl: ALARA (minutes)	25.000
34 Mt1 Rmvl: Suit-up time (minutes)	120.000
35 Mt1 Rmvl: Breaks (minutes)	30.000

TABLE A.6. Contents of File TEST.BIN (contd)

36	Mt1 Rmvl:	Number of laborers	3.000
37	Mt1 Rmvl:	Number of crafts	1.500
38	Mt1 Rmvl:	Number of crew leaders	0.500
39	Mt1 Rmvl:	Number of rad monitors	0.500
40	Mt1 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
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

TABLE A.6. Contents of File TEST.BIN (contd)

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
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:	Absorbant material (ft ²)	11.875
126 Drains:	Plastic (ft ²)	50.000
127 Asbestos:	Total cost (\$)	0.000

MENU 3 INPUTS --

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

TABLE A.6. Contents of File TEST.BIN (contd)

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
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)	0.000
41	Sm Valve:	Height adjustment (%)	0.000
42	Sm Valve:	Respiratory prot. adjust. (%)	0.000
43	Sm Valve:	Rad/ALARA activities (min)	0.000
44	Sm Valve:	Suit-up and unsuit time (min)	0.000
45	Sm Valve:	Work break time (min)	0.000
46	Sm Valve:	Number of laborers	0.000
47	Sm Valve:	Number of crafts	0.000
48	Sm Valve:	Number of crew leaders	0.000
49	Sm Valve:	Number of rad monitors	0.000
50	Sm Valve:	Absorbent material (ft2)	0.000
51	Sm Valve:	Plastic (ft2)	0.000
52	Sm Valve:	Gases (hours)	0.000
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

TABLE A.6. Contents of File TEST.BIN (contd)

62	Tanks:	Number of rad monitors	0.500
63	Lg Pump:	Duration (in minutes)	90.000
64	Lg Pump:	Height adjustment (%)	10.000
65	Lg Pump:	Respiratory prot. adjust. (%)	20.000
66	Lg Pump:	Rad/ALARA activities (min)	25.000
67	Lg Pump:	Suit-up and unsuit time (min)	120.000
68	Lg Pump:	Work break time (min)	30.000
69	Lg Pump:	Number of laborers	2.000
70	Lg Pump:	Number of crafts	1.000
71	Lg Pump:	Number of crew leaders	0.500
72	Lg Pump:	Number of rad monitors	0.500
73	Lg Pump:	Gases (hours)	0.017
74	Sm Pump:	Duration (in minutes)	40.000
75	Sm Pump:	Height adjustment (%)	0.000
76	Sm Pump:	Respiratory prot. adjust. (%)	20.000
77	Sm Pump:	Rad/ALARA activities (min)	25.000
78	Sm Pump:	Suit-up and unsuit time (min)	120.000
79	Sm Pump:	Work break time (min)	30.000
80	Sm Pump:	Number of laborers	2.000
81	Sm Pump:	Number of crafts	1.000
82	Sm Pump:	Number of crew leaders	0.500
83	Sm Pump:	Number of rad monitors	0.500
84	Sm Pump:	Gases (hours)	0.017
85	Lg HX:	Duration (in minutes)	90.000
86	Lg HX:	Height adjustment (%)	0.000
87	Lg HX:	Respiratory prot. adjust. (%)	20.000
88	Lg HX:	Rad/ALARA activities (min)	25.000
89	Lg HX:	Suit-up and unsuit time (min)	120.000
90	Lg HX:	Work break time (min)	30.000
91	Lg HX:	Number of laborers	2.000
92	Lg HX:	Number of crafts	1.000
93	Lg HX:	Number of crew leaders	0.500
94	Lg HX:	Number of rad monitors	0.500
95	Lg HX:	Gases (hours)	0.017
96	Sm HX:	Duration (in minutes)	40.000
97	Sm HX:	Height adjustment (%)	0.000
98	Sm HX:	Respiratory prot. adjust. (%)	20.000
99	Sm HX:	Rad/ALARA activities (min)	25.000
100	Sm HX:	Suit-up and unsuit time (min)	120.000
101	Sm HX:	Work break time (min)	30.000
102	Sm HX:	Number of laborers	2.000
103	Sm HX:	Number of crafts	1.000
104	Sm HX:	Number of crew leaders	0.500
105	Sm HX:	Number of rad monitors	0.500
106	Sm HX:	Gases (hours)	0.017
107	Lg Elec:	Duration (in minutes)	60.000
108	Lg Elec:	Height adjustment (%)	0.000
109	Lg Elec:	Respiratory prot. adjust. (%)	20.000
110	Lg Elec:	Rad/ALARA activities (min)	25.000
111	Lg Elec:	Suit-up and unsuit time (min)	120.000
112	Lg Elec:	Work break time (min)	30.000
113	Lg Elec:	Number of laborers	2.000

TABLE A.6. Contents of File TEST.BIN (contd)

114	Lg Elec:	Number of crafts	1.000
115	Lg Elec:	Number of crew leaders	0.500
116	Lg Elec:	Number of rad monitors	0.500
117	Lg Elec:	Gases (hours)	0.017
118	Sm Elec:	Duration (in minutes)	40.000
119	Sm Elec:	Height adjustment (%)	0.000
120	Sm Elec:	Respiratory prot. adjust. (%)	20.000
121	Sm Elec:	Rad/ALARA activities (min)	25.000
122	Sm Elec:	Suit-up and unsuit time (min)	120.000
123	Sm Elec:	Work break time (min)	30.000
124	Sm Elec:	Number of laborers	2.000
125	Sm Elec:	Number of crafts	1.000
126	Sm Elec:	Number of crew leaders	0.500
127	Sm Elec:	Number of rad monitors	0.500
128	Sm Elec:	Gases (hours)	0.017
129	Lg Misc:	Duration (in minutes)	90.000
130	Lg Misc:	Height adjustment (%)	10.000
131	Lg Misc:	Respiratory prot. adjust. (%)	20.000
132	Lg Misc:	Rad/ALARA activities (min)	25.000
133	Lg Misc:	Suit-up and unsuit time (min)	120.000
134	Lg Misc:	Work break time (min)	30.000
135	Lg Misc:	Number of laborers	2.000
136	Lg Misc:	Number of crafts	1.000
137	Lg Misc:	Number of crew leaders	0.500
138	Lg Misc:	Number of rad monitors	0.500
139	Lg Misc:	Gases (hours)	0.017
140	Sm Misc:	Duration (in minutes)	40.000
141	Sm Misc:	Height adjustment (%)	0.000
142	Sm Misc:	Respiratory prot. adjust. (%)	20.000
143	Sm Misc:	Rad/ALARA activities (min)	25.000
144	Sm Misc:	Suit-up and unsuit time (min)	120.000
145	Sm Misc:	Work break time (min)	30.000
146	Sm Misc:	Number of laborers	2.000
147	Sm Misc:	Number of crafts	1.000
148	Sm Misc:	Number of crew leaders	0.500
149	Sm Misc:	Number of rad monitors	0.500
150	Sm Misc:	Gases (hours)	0.017
151	Lg Hanger:	Duration (in minutes)	60.000
152	Lg Hanger:	Height adjustment (%)	0.000
153	Lg Hanger:	Respiratory prot. adjust. (%)	20.000
154	Lg Hanger:	Rad/ALARA activities (min)	25.000
155	Lg Hanger:	Suit-up and unsuit time (min)	120.000
156	Lg Hanger:	Work break time (min)	30.000
157	Lg Hanger:	Number of laborers	3.000
158	Lg Hanger:	Number of crafts	1.500
159	Lg Hanger:	Number of crew leaders	0.500
160	Lg Hanger:	Number of rad monitors	0.500
161	Lg Hanger:	Gases (hours)	0.583
162	Sm Hanger:	Duration (in minutes)	20.000
163	Sm Hanger:	Height adjustment (%)	0.000
164	Sm Hanger:	Respiratory prot. adjust. (%)	20.000
165	Sm Hanger:	Rad/ALARA activities (min)	25.000

TABLE A.6. Contents of File TEST.BIN (contd)

166 Sm Hanger:	Suit-up and unsuit time (min)	120.000
167 Sm Hanger:	Work break time (min)	30.000
168 Sm Hanger:	Number of laborers	3.000
169 Sm Hanger:	Number of crafts	1.500
170 Sm Hanger:	Number of crew leaders	0.500
171 Sm Hanger:	Number of rad monitors	0.500
172 Sm Hanger:	Gases (hours)	0.167

MENU A INPUTS --

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, Barnwell, Generic)	HANFORD
11 Out-of-Compact Burial Fee Applies	NO

MENU B INPUTS --

```

===== Schedule =====
      Period Name                      Start      Stop
      -----
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
===== Activities =====
      Activity Name                    Period
      -----
1 Remove RPV Internals                 Defuel and Layup
2 Perform Chemical Decon               Defuel and Layup
3 Remove Reactor Vessel                Deferred Dismantlement
4 Remove Recirc Pumps                  Deferred Dismantlement
5 Remove RCS Piping                    Deferred Dismantlement
6 Remove Turbine/Condenser             Deferred Dismantlement
7 Remove MSRs                          Deferred Dismantlement
8 Remove Other Large Equip             Deferred Dismantlement
9 Remove Spent Fuel Racks              Deferred Dismantlement
10 Remove Plant Systems                Deferred Dismantlement
11 Decontaminate Buildings             Deferred Dismantlement
12 Layup Spent Fuel Pool               *** Not Scheduled ***
  
```

MENU C INPUTS --

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

TABLE A.6. Contents of File TEST.BIN (contd)

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
20	Wall-saw, 35 h.p., w/Power unit (2 each)	44200
21	Slab-saw, 35 h.p. (2 each)	8800
22	Concrete drill w/HEPA-filtered dust collection system (4 ea)	17600
23	Concrete surface spaller (4 each)	39600
24	Portable ventilation enclosure (10 each)	33000
25	Vacuum cleaner, HEPA-filtered (3 each)	29700
26	Filtered-exhaust fan unit (4 each)	30800
27	Water vacuum	4000
28	Core drill stand	67200
29	Water hose (300 feet)	4000
30	Hydraulic hose (200 feet)	25200
31	Miscellaneous office supplies	130375

MENU F INPUTS --

1	RPV: Height (inches)	515.000
2	RPV: Diameter (inches)	190.000
3	RPV: Height adjustment (%)	0.000
4	RPV: Respiratory prot. adjust. (%)	20.000
5	RPV: Rad/ALARA activities (min)	25.000
6	RPV: Plasma-arc torch change-out factor (%)	46.000
7	RPV: Suit-up and unsuit time (min)	120.000
8	RPV: Work break time (min)	30.000
9	RPV: Number of laborers	4.000
10	RPV: Number of crafts	3.000
11	RPV: Number of crew leaders	1.000
12	RPV: Number of rad monitors	1.000
13	RPV: Dose rate, for removing int. (millirem/hr)	10.000
14	RPV: Dose rate, for cutting vessel (millirem/hr)	30.000
15	RCS Pipe (18"-24"): Total Length of piping (ft)	13419.000
16	RCS Pipe (18"-24"): Total Weight of piping (lb)	2412700.000
17	RCS Pipe (18"-24"): Total Volume of piping (ft3)	1758.000
18	RCS Pipe (18"-24"): Removal time (min)	100.000
19	RCS Pipe (18"-24"): Height adjustment (%)	10.000
20	RCS Pipe (18"-24"): Resp. prot. adjust. (%)	20.000
21	RCS Pipe (18"-24"): Rad/ALARA activities (min)	25.000

TABLE A.6. Contents of File TEST.BIN (contd)

22	RCS Pipe (18"-24"):	Suit-up and unsuit time (min)	120.000
23	RCS Pipe (18"-24"):	Work break time (min)	30.000
24	RCS Pipe (18"-24"):	Number of laborers	3.000
25	RCS Pipe (18"-24"):	Number of crafts	1.500
26	RCS Pipe (18"-24"):	Number of crew leaders	0.500
27	RCS Pipe (18"-24"):	Number of rad monitors	0.500
28	RCS Pipe (18"-24"):	Absorbent material (ft2)	20.000
29	RCS Pipe (18"-24"):	Plastic (ft2)	50.000
30	RCS Pipe (18"-24"):	Gases (hours)	0.330
31	RCS Pipe (18"-24"):	Dose rate (millirem/hr)	300.000
32	RCS Pipe (26"-30"):	Total Length of piping (ft)	2933.000
33	RCS Pipe (26"-30"):	Total Weight of piping (lb)	883745.000
34	RCS Pipe (26"-30"):	Total Volume of piping (ft3)	1758.000
35	RCS Pipe (26"-30"):	Removal time (min)	190.000
36	RCS Pipe (26"-30"):	Height adjustment (%)	10.000
37	RCS Pipe (26"-30"):	Resp. prot. adjust. (%)	20.000
38	RCS Pipe (26"-30"):	Rad/ALARA activities (min)	25.000
39	RCS Pipe (26"-30"):	Suit-up and unsuit time (min)	120.000
40	RCS Pipe (26"-30"):	Work break time (min)	30.000
41	RCS Pipe (26"-30"):	Number of laborers	3.000
42	RCS Pipe (26"-30"):	Number of crafts	1.500
43	RCS Pipe (26"-30"):	Number of crew leaders	0.500
44	RCS Pipe (26"-30"):	Number of rad monitors	0.500
45	RCS Pipe (26"-30"):	Absorbent material (ft2)	20.000
46	RCS Pipe (26"-30"):	Plastic (ft2)	50.000
47	RCS Pipe (26"-30"):	Gases (hours)	0.330
48	RCS Pipe (26"-30"):	Dose rate (millirem/hr)	300.000
49	RCS Pipe (36"-72"):	Total Length of piping (ft)	2159.000
50	RCS Pipe (36"-72"):	Total Weight of piping (lb)	582664.000
51	RCS Pipe (36"-72"):	Total Volume of piping (ft3)	1758.000
52	RCS Pipe (36"-72"):	Removal time (min)	220.000
53	RCS Pipe (36"-72"):	Height adjustment (%)	10.000
54	RCS Pipe (36"-72"):	Resp. prot. adjust. (%)	20.000
55	RCS Pipe (36"-72"):	Rad/ALARA activities (min)	25.000
56	RCS Pipe (36"-72"):	Suit-up and unsuit time (min)	120.000
57	RCS Pipe (36"-72"):	Work break time (min)	30.000
58	RCS Pipe (36"-72"):	Number of laborers	3.000
59	RCS Pipe (36"-72"):	Number of crafts	1.500
60	RCS Pipe (36"-72"):	Number of crew leaders	0.500
61	RCS Pipe (36"-72"):	Number of rad monitors	0.500
62	RCS Pipe (36"-72"):	Absorbent material (ft2)	20.000
63	RCS Pipe (36"-72"):	Plastic (ft2)	50.000
64	RCS Pipe (36"-72"):	Gases (hours)	0.330
65	RCS Pipe (36"-72"):	Dose rate (millirem/hr)	70.000
66	RCS Insulation Volume (ft3)		8635.000
67	RCS Insulation Weight (lb)		3200.000
68	Structural: Weight (lb)		1189312.000
69	Structural: Weight of cable & cable trays (lb)		51885.000
70	Structural: Number of cuts required		772.000
71	Structural: Linear feet of cuts		2420.000
72	Structural: Height adjustment (%)		0.000
73	Structural: Respiratory prot. adj. (%)		0.000

TABLE A.6. Contents of File TEST.BIN (contd)

74	Structural: Rad/ALARA activities (min)	25.000
75	Structural: Suit-up and unsuit time (min)	120.000
76	Structural: Work break time (min)	30.000
77	Structural: Dose rate (millirem/hr)	1.000
78	Eq Rmvl Crew: Height adjustment (%)	10.000
79	Eq Rmvl Crew: Resp. prot. adjust. (%)	20.000
80	Eq Rmvl Crew: Rad/ALARA activities (min)	25.000
81	Eq Rmvl Crew: Suit-up and unsuit time (min)	120.000
82	Eq Rmvl Crew: Work break time (min)	30.000
83	Eq Rmvl Crew: Number of laborers	3.000
84	Eq Rmvl Crew: Number of crafts	1.500
85	Eq Rmvl Crew: Number of crew leaders	0.500
86	Eq Rmvl Crew: Number of rad monitors	0.500
87	Surf Wash Crew: Suit-up time (minutes)	120.000
88	Surf Wash Crew: Breaks (minutes)	30.000
89	Surf Wash Crew: ALARA (minutes)	25.000
90	Surf Wash Crew: Warmup (minutes)	15.000
91	Surf Wash Crew: Cleanup (minutes)	50.000
92	Surf Wash Crew: Number of laborers	2.000
93	Surf Wash Crew: Number of crafts	1.000
94	Surf Wash Crew: Number of crew leaders	0.500
95	Surf Wash Crew: Number of rad monitors	0.500
96	Surf Wash Crew: Crew dose rate (millirem/hr)	3.000
97	Surf Wash Crew: Cleansing rate (ft2/min)	8.000
98	Surf Wash Crew: Vacuum hose replacement (\$)	1180.000
99	Surf Wash Crew: HEPA filter replacement (\$)	300.000
100	Surf Wash Crew: Misc. parts (\$)	2000.000
101	Surf Wash Crew: Waste water process. (\$/gal)	10.000
102	Recirc Pumps: Number of pumps	2.000
103	Recirc Pumps: Weight of one pump (lb)	96072.000
104	Recirc Pumps: Volume of one pump (ft3)	2607.000
105	Recirc Pumps: Rmvl. time (1 pump, minutes)	480.000
106	Recirc Pumps: Height adjustment (%)	10.000
107	Recirc Pumps: Respiratory prot. adj. (%)	20.000
108	Recirc Pumps: Rad/ALARA activities (min)	25.000
109	Recirc Pumps: Suit-up and unsuit time (min)	120.000
110	Recirc Pumps: Work break time (min)	30.000
111	Recirc Pumps: Absorbent material (ft2)	200.000
112	Recirc Pumps: Plastic (ft2)	500.000
113	Recirc Pumps: Gases (hours)	0.330
114	Recirc Pumps: Dose rate (millirem/hr)	300.000
115	Recirc Pumps: Shipping cradle cost (\$)	5000.000
116	Recirc Pumps: Shipping cradle weight (lb)	2000.000
117	Turbine: Weight (lb)	4300000.000
118	Turbine: Cutting Time (hours/cut)	6.500
119	Turbine: Dose rate (millirem/hr)	1.000
120	Condenser: Weight (lb)	3000000.000
121	Condenser: Cutting Time (hours/cut)	6.500
122	Condenser: Shell & tube bundle area (ft2)	42000.000
123	Condenser: Tube bundle cross section (ft2)	375.000
124	Condenser: Cost of material sawed (\$/ft2)	325.000
125	Condenser: 10 X 10 X 25 container cost (\$)	5500.000

TABLE A.6. Contents of File TEST.BIN (contd)

126	Condenser: 10 X 10 X 25 container weight (ft3)	5000.000
127	Condenser: Dose rate (millirem/hr)	1.000
128	MSR: Weight (lb)	460000.000
129	MSR: Cutting Time (hours/cut)	6.500
130	MSR: Area to be washed (ft2)	4500.000
131	MSR: 5 X 5 X 38 container cost (\$)	4500.000
132	MSR: 5 X 5 X 38 container weight (ft3)	4300.000
133	MSR: Dose rate (millirem/hr)	1.000
134	Turb Pump: Number of pumps	2.000
135	Turb Pump: Weight of each pump (lb)	132700.000
136	Turb Pump: Dose rate (millirem/hr)	1.000
137	FW Heaters: Number of heaters	16.000
138	FW Heaters: Weight of each heater (lb)	121680.000
139	FW Heaters: Dose rate (millirem/hr)	1.000
140	Fuel Racks: Weight of all fuel racks (lb)	608752.000
141	Fuel Racks: Large plastic bags, ea (\$)	1103.000
142	Fuel Racks: Removal contract (\$)	826875.000
143	Fuel Racks: Dose rate (millirem/hr)	1.000
144	Sac Shield: Subcontractor costs (\$)	750000.000
145	Sac Shield: Person-hours	3600.000
146	Sac Shield: Estimated dose (person-rem)	45.700
147	Chem Decon: Subcontractor costs (\$)	13250000.000
148	Chem Decon: Energy costs (\$)	238000.000
149	Chem Decon: Person-hours	12960.000
150	Chem Decon: Estimated dose (person-rem)	45.700
151	Chem Decon: Num of HICs req'd for chem decon	18.000
152	Chem Decon: Num of HICs req'd for spent IX resin	5.000
153	DS & RFC: Total wall area (ft2)	7774.000
154	DS & RFC: Total floor area (ft2)	2215.000
155	SF Pool: Total wall area (ft2)	6900.000
156	SF Pool: Total floor area (ft2)	1368.000
157	SF Pool: Volume (ft3)	54400.000

MENU H INPUTS --

Period 1:	Property Taxes (\$/year)	0.000
	Insurance (\$/year)	0.000
	Regulatory Costs (\$/year)	142932.000
	DOC Mobil/Demobil (\$)	0.000
	Energy Consumption Fraction	0.000
	Environ. Monitoring (\$/year)	0.000
Period 2:	Property Taxes (\$/year)	0.000
	Insurance (\$/year)	2662600.000
	Regulatory Costs (\$/year)	359300.000
	DOC Mobil/Demobil (\$)	0.000
	Energy Consumption Fraction	1.000
	Environ. Monitoring (\$/year)	48603.000

TABLE A.6. Contents of File TEST.BIN (contd)

Period 3:	Property Taxes (\$/year)	0.000
	Insurance (\$/year)	600000.000
	Regulatory Costs (\$/year)	25518.000
	DOC Mobil/Demobil (\$)	0.000
	Energy Consumption Fraction	0.006
	Environ. Monitoring (\$/year)	4860.000
Period 4:	Property Taxes (\$/year)	0.000
	Insurance (\$/year)	1198600.000
	Regulatory Costs (\$/year)	359300.000
	DOC Mobil/Demobil (\$)	2640000.000
	Energy Consumption Fraction	1.000
	Environ. Monitoring (\$/year)	48603.000
Period 5:	Property Taxes (\$/year)	0.000
	Insurance (\$/year)	0.000
	Regulatory Costs (\$/year)	0.000
	DOC Mobil/Demobil (\$)	0.000
	Energy Consumption Fraction	0.000
	Environ. Monitoring (\$/year)	0.000

A.1 REFERENCES

1. Report on Waste Burial Charges - Escalation of Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities. NUREG-1307 Revision 5, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, D.C., August 1995.

APPENDIX B

COMMENTS AND RESPONSES ON DRAFT BWR CECF USER'S GUIDE

APPENDIX B

COMMENTS AND RESPONSES ON DRAFT BWR CECF USER'S GUIDE

The NRC expresses its appreciation to all of those who took the time to read the draft User's Guide and to provide the many detailed comments. Those comments have all been carefully reviewed, responses prepared, and changes have been made to the subject guide, where appropriate, to improve the quality of the guide and software.

Nineteen letters were received by the NRC in response to its request for comments on the draft PWR study (NUREG/CR-5884) and the PWR User's Guide (NUREG/CR-6054). Of those 19 letters, 3 contained specific comments on both the PWR User's Guide and NUREG/CR-5884; the other 16 letters commented only on NUREG/CR-5884. Although the comments on the User's Guide were addressed specifically to the PWR version, some of the more generic comments applied equally well to the BWR version. Responses to these comments are presented here.

Each letter and its comments were assigned a number based on the chronological sequence of receipt by NRC and on the sequence of the comments in the letter, e.g., 006-1 is the first comment in the sixth letter received. Following the listing of commentors are the individual comments and the responses to those comments. Comments on the User's Guide were received from 006, 008A and 018 only.

006 Union Electric Operating Company. Ten comments.

008A The Nuclear Management and Resources Council. Twelve Comments.

018 Barry C. Mingst, META. Five Comments.

RESPONSES TO COMMENTOR 006

006-1 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

006-1 Response: N/A

006-2 Comment: When viewing an input file and not changing data, the user should be able to back directly out using the Alt-X combination (or preferably just Esc) without having to go through the "Save Data to a File" box.

006-2 Response: The user can back out easily by pressing "Alt-X", followed by "Enter". It is true that the "Save Data to a File" box will appear after "Alt-X" is pressed, but the "Enter" key

will remove this box and return the user to the main menu with no time delay. In fact, the CECF will respond to the "Alt-X, Enter" combination as quickly as the user can type them.

006-3 Comment: The program should provide for an automatic update of all files necessary to reflect changes to input parameters. Currently, only some files are updated automatically; but files related to decommissioning periods and overhead staffing must be updated manually before calculating final cost.

006-3 Response: This update feature would certainly be attractive. Unfortunately, due to the structure of the CECF modules, the cost of providing this feature is prohibitive. However, the new simplified CECF file structure and the discussion of CECF file dependencies (Chapter 2) should help the user minimize time and effort in the manual update process.

006-4 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

006-4 Response: N/A

006-5 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

006-5 Response: N/A

006-6 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

006-6 Response: N/A

006-7 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

006-7 Response: N/A

006-8 Comment: Line items listed as "Other" in the printout of *.BRG files are listed as "DOC" in the summary line. This is correctly addressed in *.BRI files.

- 006-8 Response: This comment was incorporated. The summary lines in *.BRG files are now broken out into Utility, DOC, and Other, and are now consistent with the *.BRI files.
- 006-9 Comment: Input screen and file *.BRE show volume and weight in opposite order. It would facilitate review if they were consistent.
- 006-9 Response: This suggestion was incorporated. Both now show volume and weight, in that order.
- 006-10 Comment: The data files (*.BD) may not be read in DOS. It would facilitate review and documentation if it were an ASCII text file.
- 006-10 Response: This suggestion was incorporated. A new ASCII file type (*.BIN) was developed which lists all user input parameters by menu item. The CECP now generates a *.BIN file at the same time it produces a *.BRI file. See Table A.6 for an example *.BIN file.

RESPONSES TO COMMENTOR 008A

- 008A-1 Comment: Industry review raised the question of the usefulness of the program in NUREG/CR-6270 to determine the validity of cost estimates submitted five years before projected end of operation. If the program is determined by the NRC to be worth further developing because it is judged useful, the user's manual for the BWR cost estimating computer program (CECP) and the software should be revised to ensure compatibility with the final NUREG/CR-6174 Volume 1 and 2.
- 008A-1 Response: NUREG/CR-6270 and software were revised to be compatible with the final version of NUREG/CR-6174.

NOTE: Comments 008A-2 through 008A-11 are identical to Comments 006-1 through 006-10 and will not be repeated here.

- 008A-12 Comment: [Comment applicable only to the PWR version (NUREG/CR-6054) of the User's Guide.]

008A-12 Response: N/A

RESPONSES TO COMMENTOR 018

- 018-1 Comment: **Page 3.2, Items 19-20:** What do these factors modify? Volume charges only? Surcharges?
- 018-1 Response: These escalation factors are just multipliers that multiply the entire cost, including volume and surcharges. For example, after the CECP calculates low-level burial costs, it then multiplies this cost by item 20.
- 018-2 Comment: **Page 3.11, 4th paragraph:** The time required for other operations that are "accounted for" in algorithms "within the CECP" must be specified. A reference here or a specification is needed for validation.
- 018-2 Response: NUREG/CR-6270 refers the user to Appendix C of NUREG/CR-6174 for a discussion of the algorithms used by the CECP.
- 018-3 Comment: **Page 3.18, Large and Small Pumps:** There is no difference in the default items for large and small pumps. This is not self-evident. Is it intentional?
- 018-3 Response: This was an error. The default times for large and small pumps have been corrected.
- 018-4 Comment: **Page 4.4, Figure 4.2:** This screen implies an intent by the NRC to maintain detailed information on every BWR. The intended use of this information (such as how the NRC intends to resolve the inevitable discrepancies between detailed studies) needs to be addressed in this report or in NUREG/CR-6174.
- 018-4 Response: When viewed out of context, this screen may or may not imply such an intent. Any such intent is regretted. As the Foreword indicates, Licensees need not use the CECP, nor does the NRC necessarily approve of or agree with the information contained within NUREG/CR-6270 and the associated software.
- 018-5 Comment: **Section 5:** One of the unfortunate aspects of the CECP (or any other fixed data base) is that the data base is designed for a specific waste charge structure. The waste cost data structure outlined in this section cannot handle intermediate waste handlers or changes in charge rate structures (which happens occasionally at existing sites, and will happen whenever a new site is opened). This is not a "problem" with the CECP, but it will require the CECP code

to be updated frequently, not just the data bases. This would be a significant regulatory and licensing problem if the NRC were to predicate its reviews or regulatory updates on the use of the CECF. This should preclude the requirement of use of the CECF by the utilities or the complete "agreement" of utility estimates with the CECF in future rule changes or licensing proceedings.

018-5 Response: This comment is correct. The CECF code would indeed have to be modified every time changes were made in the waste charge structure.

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11. ABSTRACT <i>(200 words or less)</i> Nuclear power plant licensees are required to submit to the U.S. Nuclear Regulatory Commission (NRC) for review decommissioning 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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