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DEPDOSE: An Interactive, Microcomputer Based Program to
Calculate Doses from Exposure to Radionuclides
Deposited on the Ground
Volume I, User's Manual

Leborah A. Beres* and Andrew P. Hull+

*Present address: 50 Wisteria Street
Edison, New Jersey 08817

+Safety and Environmental Protection Division
Brookhaven National Laboratory
Upton, New York

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Deborah A. Beres* and Andrew P. Hull

*Present address: 50 Wisteria Street
Edison, New Jersey 08817

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Safety and Environmental Protection Division
Brookhaven National Laboratory
Upton, New York 11973

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1.0 INTRODUCTION

DEPDOSE is an interactive, menu driven, microcomputer based program designed to rapidly calculate committed dose from radionuclides deposited on the ground. The program is designed to require little or no computer expertise on the part of the user.

The program consisting of a dose calculation section and a library maintenance section. These selections are available to the user from the main menu.

The dose calculation section provides the user with the ability to calculate committed doses, determine the decay time needed to reach a particular dose, cross compare deposition data from separate locations, and approximate a committed dose based on a measured exposure rate.

The library maintenance section allows the user to review and update dose modifier data as well as to build and maintain libraries of radionuclide data, dose conversion factors, and default deposition data.

The program is structured to provide the user easy access for reviewing data prior to running the calculation. Deposition data can either be entered by the user or imported from other databases. Results can either be displayed on the screen or sent to the printer.

1.1 Document Contents

Section 2 of this user's manual describes the equipment requirements and procedures needed to install and start the program. Section 3 describes how the program operates. The structure of the code is available in Volume 2.

2.0 INSTALLING AND STARTING DEPDOSE

2.1 Computer Hardware Requirements

The hardware and software required to load and run DEPDOSE is presented in Table 1.

TABLE 1
COMPUTER HARDWARE CONFIGURATIONS

Microcomputer:	IBM or IBM compatible (IBM AT recommended)
Math Coprocessor:	Software selectable
Memory Requirements:	(To be determined)
Disk Drive Configuration:	Can be operated from either a high density floppy (1.2 megabytes) or from a hard drive
Operating System:	MS-DOS version 3.0 or higher
Monitor:	Default is Mono; Color (CGA, EGA, or VGA) is software selectable
Printer:	All printouts are designed for a dot matrix printer 80 characters by 66 lines

2.2 Installing DEPDOSE

DEPDOSE may be run from either a high density floppy drive or from a hard drive. It is recommended that DEPDOSE be run from a hard drive both to speed up execution and to help ensure that there is ample room for the data and library files which are created by the program.

2.2.1 Installing DEPDOSE for a Floppy Drive

1. Turn on the computer.
2. All files needed to run DEPDOSE are supplied on the high density (1.2 megabyte) diskette which may be provided. However, do not run the program from the master copy. Instead, make a backup copy of the master diskette and run the program using the backup. Consult your DOS manual for information on how to make a duplicate of a diskette.

3. Place the backup diskette in drive A.
4. Type **A:** and press **Enter**.
5. Type **INSTALL** and press **Enter** to setup the program for a monochrome monitor; type **INSTALLC** and press **Enter** to setup the program for a color monitor.

2.2.2 Installing the Program on a Hard Drive

This installation procedure assumes that the hard disk is formatted and the necessary DOS files have been copied to the disk. If this is not the case, consult your DOS manual for information on how to complete that procedure prior to installing this program.

Do not reformat the hard disk if it has already been formatted. Doing so will result in the loss of all information stored on that drive.

The program can be installed on a hard drive either by running the **INSTALL** program provided on the program diskette or by following the procedure listed below.

RUNNING INSTALL FROM THE HIGH DENSITY DISKETTES

1. Turn on the computer.
2. If you are loading the program from the high density diskettes then place the diskette labeled **DEPDOSE PROGRAM FILES** in drive A. If you are installing the program using the double density diskettes then place the diskette labeled **DEPDOSE INSTALL DISK** in drive A.

3. If you are installing the program from the double density diskettes then type **C:** and press **Enter**. For a monochrome monitor type **COPY A:INSTALL C:** and press **Enter**; for a color monitor type **COPY A:INSTALL C:** and press **Enter**.

If you are installing the program from the high density diskette then type **A:** and press **Enter**.

4. Type **INSTALL** (or **INSTALLC**) and press **Enter**.

The program is now loaded onto the hard drive in subdirectory **C:\DEPDOSE**.

ALTERNATE INSTALLATION PROCEDURE:

1. Turn on the computer.
2. Type **CD C:** and press **Enter** to change to the root directory.
3. Type **MD C:\DEPDOSE** and press **Enter** to create a subdirectory for the program.
4. Type **CD\DEPDOSE** and press **Enter** to move to the newly created subdirectory.
5. Insert the diskette labeled **DEPDOSE PROGRAM FILES** into drive A. (If program is being loaded using double density diskettes, place the diskette marked **DEPDOSE PROGRAM FILES I** into drive A.)
6. Type **COPY A:*.EXE C:** and press **Enter** to copy all executable files. (If program is being loaded using double density diskettes, place the diskette marked **DEPDOSE PROGRAM FILES II** into drive A and repeat this step.)
7. Type **COPY A:*.PRG C:** and press **Enter** to copy all library files except those for the default deposition libraries.
8. Type **CD C:** and press **Enter** to change back to the root directory.
9. To setup **DEPDOSE** for a monochrome monitor type **COPY A:B&W.BAT C:DEPDOSE.BAT** and press **Enter** to copy the batch file for running the program into the root directory. To setup **DEPDOSE** for a color monitor type **COPY A:COLOR.BAT C:DEPDOSE.BAT** and press **Enter** to copy the batch file for running the program into the root directory.

The program is now loaded onto the hard drive in subdirectory **C:\DEPDOSE**.

2.3 Starting DEPDOSE

1. It is recommended that all memory resident programs be cleared from memory prior to starting DEPDOSE. This can be done by performing either a soft or hard boot. To perform a soft boot, press the **Ctrl, Alt, and Delete** keys simultaneously. A hard boot consists of turning the computer off and waiting a few seconds before turning the machine back on. This step may be skipped if the machine was just started.
2. If running the program from drive C type **CD C:** and press **Enter** to change to the root directory. If running the program from drive A then type **A:** and press **Enter**.
3. Type **DEPDOSE** and press **Enter** to start the program.

3.0 RUNNING DEPDOSE

3.1 Program Behavior

3.1.1 Menus

Menu selection is made using the Enter key after positioning the pointer with the up and down arrow keys. The position of the pointer can also be changed by entering the first letter of the menu items. The pointer position also responds the **Home** and **End** keys (top and bottom respectively).

3.1.2 Data Entry

At various points in the program, the user will be prompted to input data to the code. The prompt will be of the following form:

Data Description (units) _____

The blank line following the bold arrow is the data field. A prompt at the bottom of the screen will provide more information about the data which is allowed for that field.

Movement from field to field is accomplished with the four directional arrow keys (up, down, left, and right) as well as with the **Home** and **End** keys (top and bottom). If the field is blank, begin entering data. A prompt at the bottom of the page indicates the expected format.

If there is data in the field, striking a key to begin data entry will replace that data with the new data and leave the user in EDIT MODE. EDIT MODE can also be entered by striking the F2 function key.

Both Insert and Overstrike are available in EDIT MODE. The **Insert** key toggles between INSERT and OVERSTRIKE. The cursor is double its normal height when OVERSTRIKE is active.

EDIT MODE is exited and data is placed in the field by striking the **Enter** key. Control is returned to the calling menu if all fields are empty and the User enters Yes to the question "Is data entry complete? (Y/N)".

3.1.3 Multiple screens

When more than one screen is needed to display information, the **Pg Up** and **Pg Dn** keys are used to move between the screens. The activation of this option is indicated at the bottom of the screen (see Figure 9).

3.2 Main Menu

Figure 1 illustrates the first menu the user will see upon starting DEPDOSE.

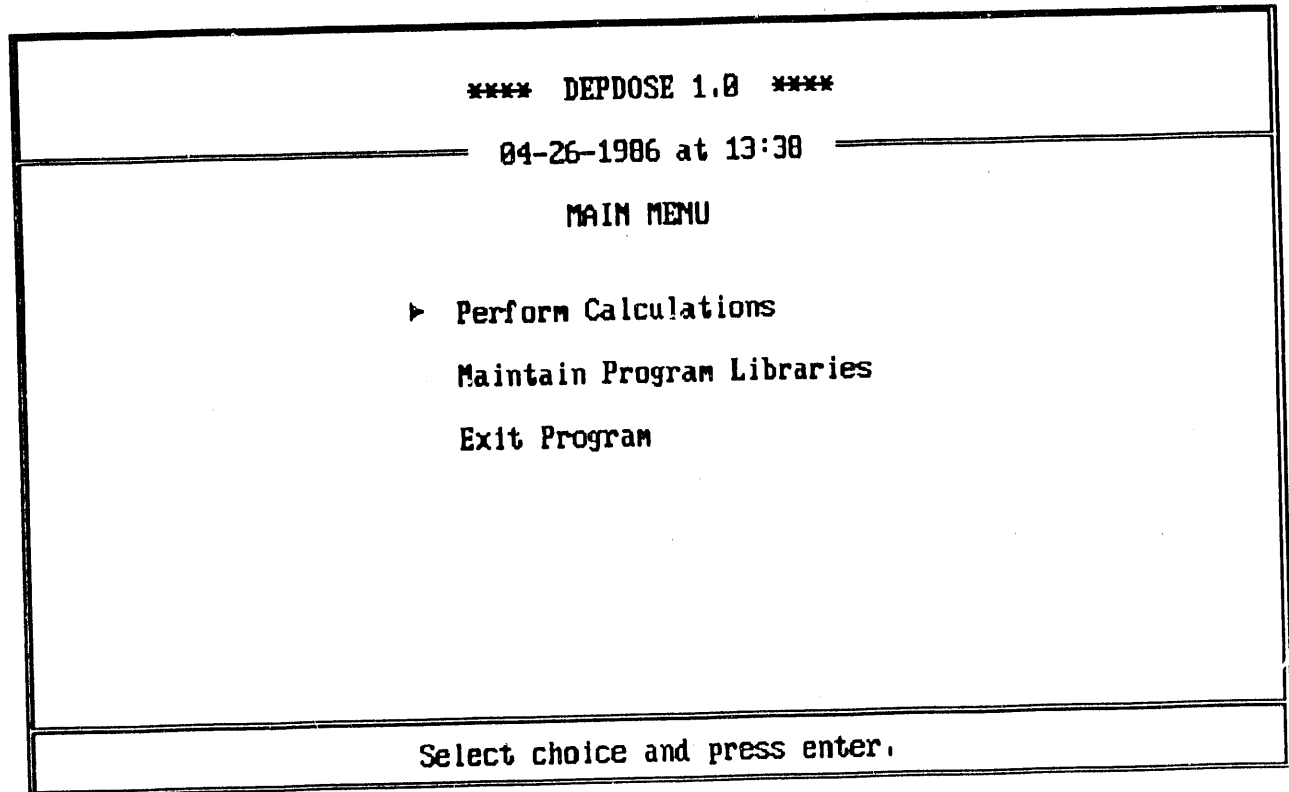


Figure 1. DEPDOSE main menu.

The menu choice default to the calculation routines since, once the libraries are initialized, this will be the primary choice of the user. However, this User's Manual discusses the program libraries first since each must be in place before any calculation may be run. Thus, the library maintenance menu is discussed in Section 3.3 and the calculation menu is discussed in Section 3.4.

3.3 Library Maintenance Menu

The program is designed to allow the user to create and maintain radionuclide libraries, dose factor libraries, and default deposition libraries. The dose modifying factors may also be accessed through this routine. Figure 2 presents the menu selections.

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:39 -----
PROGRAM LIBRARIES MENU
▶ Radionuclide Libraries
Dose Factor Libraries
Modifying Factor Libraries
Default Deposition Data Libraries
Program Constants Library
Return To Main Menu

Select choice and press enter.

Figure 2. Program libraries menu.

3.3.1 Radionuclide Data Libraries

Figure 3 illustrates the Radionuclide Data Library maintenance menu. Both the Radionuclide Data Library and the Default Nuclide List are accessible through this menu choice. The Radionuclide Data Library is designed to contain information for a maximum of 100 nuclides. The user may add and delete nuclides, edit nuclide data, and display or print the nuclide library.

The user may edit and view the Default Nuclide List from this menu. This option allows the user to select, from those available in the radionuclide data library, the nuclides for which the user will be prompted to add deposition data when entering source term information.

```
**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:40 -----
                                RADIONUCLIDE LIBRARIES MENU

      Add  Nuclide To Library List
      Edit  Nuclide Library Data

      Delete Nuclide From Library List
      View  Nuclide Library Data

      Edit  Default Nuclide List
      View  Default Nuclide List

      Return To Previous Menu

Note:  Dose Factor libraries are updated when
       Add or Delete option is selected.

-----
                                Select choice and press enter.
```

Figure 3. Radionuclide libraries menu.

Figure 4 illustrates the screen used to enter which nuclide is to be added, deleted, or edited. If the nuclide is being added to the library, control passes to the screen illustrated in Figure 5.

The dose factor libraries, which are discussed in Section 3.3.2, are indexed to the Radionuclide Data Library. Thus, if any dose factor libraries are active (see Section 3.3.2 for the definition of an active dose factor file) when a nuclide is being added to the Radionuclide Data Library, the user will be prompted to add data (in units of mrem/hr per uCi/sq m) for that library (see Figure 6). If the user does not wish to enter the data at that time, entering a blank field will set the dose factor to zero. The user can then edit the dose factor library at a later date.

Figure 7 illustrates the screen used to edit the Radionuclide Data Library.

A screen similar to that in Figure 4 is used to delete data from the Radionuclide Data Library. Each nuclide which is entered is placed in a holding array. When a blank field is entered, the data for each nuclides in the array are deleted from the library. Dose factors for each nuclide are also deleted from each active dose factor file.

Figures 8 and 9 illustrate the view Radionuclide Data Library menu and the format for displaying the library, respectively. A sample printout of the Radionuclide Data Library is presented in Section 3.6.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:41 -----
ADD TO RADIONUCLIDE DATA LIBRARY

Enter radionuclide to be added to list:  ▶  ___Zr-95

Use following form: Te-131m

```

Figure 4. Add to radionuclide data library; enter nuclide.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:41 -----
ADD TO RADIONUCLIDE DATA LIBRARY

Radionuclide:           Zr- 95
Half-life:              ▶  _____
Unit for half-life:    -
Progeny #1:             _____
Fraction of Time:      _____
Progeny #2:             _____
Fraction of Time:      _____
Data entry complete?   N

Use following form (must be greater than zero): n.nnE+nn or nn.mnnn

```

Figure 5. Add to radionuclide data library; enter nuclide data.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:44 -----
Enter Data For KOCHER03
(mRem/hr per uCi/sq meter)

Zr- 95      ▶ _____1
Data entry complete?      N

Use following form: n.nnE+nn

```

Figure 6. Add to radionuclide data library; enter dose factor data.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:19 -----
EDIT RADIONUCLIDE DATA LIBRARY

Enter radionuclide to be edited: ▶ ___Zr-95

Use following form: Te-131m

```

Figure 7. Edit radionuclide data library; enter nuclide.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:43 -----
VIEW RADIONUCLIDE DATA LIBRARY

  Display Radionuclide Data Library
  Print  Radionuclide Data Library
  Return To Previous Menu

Select choice and press enter.

```

Figure 8. View radionuclide data library.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1989 at 13:44 -----
DISPLAY RADIONUCLIDE DATA LIBRARY

```

Index	Parent	Half-life	Progeny 1	Fraction	Progeny 2	Fraction
1	Sr- 90	2.77E+01 Y	Y - 90	1.0000	-----	0.0000
2	Y - 90	6.40E+01 H	-----	0.0000	-----	0.0000
3	Sr- 91	9.67E+00 H	Y - 91m	0.7300	Y - 91	0.2700
4	Y - 91m	5.03E+01 M	-----	0.0000	-----	0.0000
5	Nb- 95m	0.66E+01 H	Nb- 95	1.0000	-----	0.0000
6	Nb- 95	3.51E+01 D	-----	0.0000	-----	0.0000
7	Zr- 95	6.40E+01 D	Nb- 95m	0.0078	Nb- 95	0.9922
8	Mo- 99	6.60E+01 H	Tc- 99m	0.8860	Tc- 99	0.1140
9	Tc- 99m	6.02E+00 H	Tc- 99	1.0000	-----	0.0000
10	Tc- 99	2.13E+05 Y	-----	0.0000	-----	0.0000

```

PGUP          Select ENTER to return to previous menu.          PGDN

```

Figure 9. Display radionuclide data library.

3.3.2 Dose Factor Libraries

Dose factors are used by DEPDOSE to convert from activity per area to a dose rate. Figure 11 illustrates the dose factor libraries menu.

```
**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:45 -----
DOSE FACTOR LIBRARIES MENU

  ▶ Add      Dose Factor Library
    Edit    Dose Factor Library
    Delete  Dose Factor Library
    View    Dose Factor Library

Archive Dose Factor Library
Restore Dose Factor Library

Return To Previous Menu

Select choice and press enter.
```

Figure 11. Dose factor libraries menu.

DEPDOSE allows the user to create up to 20 dose factor libraries each containing 100 dose factors. These libraries are indexed to the Radionuclide Data Library. When data is entered for a new dose factor library, the user is prompted to enter a dose factor for each nuclide in the Radionuclide Data Library. The dose factor value will be set to zero if a blank is entered for a given nuclide.

Figures 12 through 19 illustrate the screens used to create a dose factor library.

First, the user is requested to enter a name for the new library. This screen is illustrated by Figure 12. Next, the user is presented with a list of units (Figures 13 and 14). The user may enter the dose factor data either in units of exposure/dose rate

First, the user is requested to enter a name for the new library. This screen is illustrated by Figure 12. Next, the user is presented with a list of units (Figures 13 and 14). The user may enter the dose factor data either in units of exposure/dose rate per unit area or exposure/dose per unit area. Control now passes to the screen illustrated in Figure 15 where the user is asked whether contributions from the progeny are included in the parent's value. Based on the user's response, a flag is set which will be used by the dose calculation routine.

If the user choose to enter data in units of exposure/dose rate per unit area, the next screen he/she will see is the one illustrated in Figure 16. This screen displays the user's answers to the preceding questions and asks whether library creation should continue. If the user enters a Y for yes, he/she will be prompted to enter data for each nuclide in the Radionuclide Data Library. This is illustrated in Figure 19.

If the user choose to enter data in units of exposure per unit area, he/she will be asked to enter the length of the exposure period. Figure 17 illustrates this request for information. As shown in Figure 18, this response will also be echoed to the user when he/she is asked to confirm that the library be created.

All dose factor data is converted to units of mrem/hr per uCi/sq m prior to being stored.


```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:20 -----
ADD DOSE FACTOR LIBRARY
----- Current Library Names -----
1 KOCHERB3      11 -----
2 HUBBELL      12 -----
3 TEST         13 -----
4 -----      14 -----
5 -----      15 -----

6 -----      16 -----
7 -----      17 -----
8 -----      18 -----
9 -----      19 -----
10 -----     20 -----

Enter file name (8 characters max; A-Z & 0-9): ▶ _Testlib

```

Figure 12. Add dose factor library; enter name.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:20 -----
Entering Data For TESTLIB
----- Units -----
1 mRem/hr per uCi/sq m      11 uR/yr per uCi/sq m
2 mRem/hr per pCi/sq cm    12 uR/yr per pCi/sq cm
3 mRad/hr per uCi/sq m     13 mS/hr per Bq/sq cm
4 mRad/hr per pCi/sq cm   14 S/hr per Bq/sq cm
5 mRem/yr per uCi/sq m    15 mS/yr per Bq/sq cm

6 mRem/yr per pCi/sq cm   16 S/yr per Bq/sq cm
7 mRad/yr per uCi/sq m    17 mG/hr per Bq/sq cm
8 mRad/yr per pCi/sq cm  18 G/hr per Bq/sq cm
9 uR/hr per uCi/sq m     19 mG/yr per Bq/sq cm
10 uR/hr per pCi/sq cm   20 G/yr per Bq/sq cm

PGUP                               Select index number: ▶ 1                               PGDM

```

Figure 13. Add dose factor library; choose units screen 1.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:22 -----
      Entering Data For TESTLIB
----- Units -----           ----- Units -----
21 mRem per uCi/sq m           31 -----
22 mRem per pCi/sq cm          32 -----
23 mRad per uCi/sq m           33 -----
24 mRad per pCi/sq cm          34 -----
25 uR per uCi/sq m             35 -----

26 uR per pCi/sq cm            36 -----
27 mS per Bq/sq cm             37 -----
28 S per Bq/sq cm              38 -----
29 mG per Bq/sq cm             39 -----
30 G per Bq/sq cm              40 -----
-----

PGUP          Select index number: ▶ _21          PGDN

```

Figure 14. Add dose factor library; select units screen 2.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:21 -----
      Entering Data For TESTLIB
      Assumed units are mRem/hr per uCi/sq m

      Are contributions to dose from progeny
      included in parent's value?           : ▶ N

-----

Enter Y or N.

```

Figure 15. Add dose factor library; progeny contribution question.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:21 -----
      Entering Data For TESTLIB
The data to be entered is in units of mRem/hr per uCi/sq m.
Contribution to dose from progeny is not included with parent.

      Continue to create library?      > Y

Enter Y or N.

```

Figure 16. Add dose factor library; confirm choices screen.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:22 -----
      Entering Data For TESTLIB
Assumed units are mRem per uCi/sq m

      Total Exposure Period: 1.00E+00
      Exposure Period Units: > d

      Data entry complete?      N

Enter either S, M, H, D, or Y

```

Figure 17. Add dose factor library; enter exposure period.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:22 -----
      Entering Data For TESTLIB

The data to be entered is in units of mRem per uCi/sq m.
This assumes an exposure period of 1.00E+00 day.
Contribution to dose from progeny is included with parent.

      Continue to create library?      ► N

Enter Y or N.

```

Figure 18. Add dose factor library; confirmation screen showing exposure period.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 14:21 -----
      Entering Data For TESTLIB

The data to be entered is in units of mRem/hr per uCi/sq m.
Contribution to dose from progeny is not included with parent.

      Enter data for nuclide Co- 58  ► _____1

Use following form: n.mE+nn or nn.nnnn

```

Figure 19. Add dose factor library; enter dose factor data.

In addition to creating dose factor libraries, the user may edit, delete, display, or print any active library. Figure 20 illustrates the screen used to select a dose factor library for either deleting, editing, displaying, or printing. Figure 21 illustrates the screen used to edit a dose factor library. Figure 22 illustrates the screen used to confirm the library which is to be deleted.

```
**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:48 -----
SELECT DOSE FACTOR LIBRARY
----- Current Library Names -----
1 KOCHERB3          11 -----
2 HUBBELL           12 -----
3 TESTLIB           13 -----
4 -----          14 -----
5 -----          15 -----
6 -----          16 -----
7 -----          17 -----
8 -----          18 -----
9 -----          19 -----
10 -----         20 -----

Enter index number:  ▸ _1
```

Figure 20. Select dose factor library.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
          04-26-1986 at 13:50
          Displaying Data For KOCHER03
          (mRem/hr per uCi/sq meter)

```

Sr- 90	0.00E+00	Rh-103m	1.37E-05	Te-129m	7.47E-04
Y - 90	0.00E+00	Ru-103	5.78E-03	Te-129	1.41E-03
Sr- 91	0.00E+00	Rh-106	4.26E-03	I -131	4.69E-03
Y - 91m	0.00E+00	Ru-106	0.00E+00	Sb-131	0.00E+00
Nb- 95m	8.36E-04	Cd-115	2.72E-03	Te-131m	1.64E-02
Nb- 95	8.95E-03	Sb-127	8.10E-03	Te-131	6.08E-03
Zr- 95	8.65E-03	Te-127m	8.10E-05	I -132	2.71E-02
Mo- 99	2.32E-03	Te-127	1.28E-04	Te-132	2.86E-03
Tc- 99m	1.71E-03	I -129	2.57E-04	I -133	7.64E-03
Tc- 99	7.22E-09	Sb-129	0.00E+00	Cs-134m	3.33E-04

Data entry complete? N

Use following form: n.nnE+nn

Figure 21. Edit dose factor library.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
          04-26-1986 at 14:21
          About to delete KOCHER03 dose factor library
          Enter Y to continue or N to exit.

```

Figure 22. Confirm deletion of dose factor library.

Figure 23 illustrates the format used to display a dose factor library. A sample printout of a dose factor library is presented in Section 3.6.

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****					
04-26-1986 at 13:51					
Displaying Data For KOCHER03 (mRem/hr per uCi/sq meter)					
1	Sr- 90	0.00E+00	11	Rh-103m	1.37E-05
2	Y - 90	0.00E+00	12	Ru-103	5.70E-03
3	Sr- 91	0.00E+00	13	Rh-106	4.26E-03
4	Y - 91m	0.00E+00	14	Ru-106	0.00E+00
5	Nb- 95m	0.36E-04	15	Cd-115	2.72E-03
6	Nb- 95	0.95E-03	16	Sb-127	0.10E-03
7	Zr- 95	0.65E-03	17	Te-127m	0.10E-05
8	Mo- 99	2.32E-03	18	Te-127	1.28E-04
9	Tc- 99m	1.71E-03	19	I -129	2.57E-04
10	Tc- 99	7.22E-09	20	Sb-129	0.00E+00
PGUP	Select ENTER to return to previous menu.				PGDN

Figure 23. Display dose factor library.

The user may archive a dose factor library rather than delete it. The screen used to select a dose factor file to be archived is the same as that illustrated in Figure 20.

An archived file contains the nuclide name as well as the dose factor associated with that nuclide. When an archived dose factor file is restored, only those dose factors for which there currently exists data in the Nuclide Data Library are restored. Thus, if nuclides are either added or deleted from the Radionuclide Data Library after a dose factor file is archived, care must be taken to verify the correct number of values when the library is restored.

Since the Radionuclide Data Library and the dose factor libraries are cross indexed, if a nuclide is added to the Radionuclide Data Library, the user is prompted to enter a dose factor for that nuclide for each active dose factor library. Similarly, if a nuclide is deleted, the dose factor for that nuclide will be deleted from each active dose factor library.

3.3.3 Dose Modifying Factor Libraries

Two dose modifying factor libraries are accessible to the user from this routine. The first, the Default Modifying Factors Library, contains values used by the program to calculate and modify the dose. The second library is the Transmission Factors Library. This library contains a list of transmission factors for various commonly encountered situations (WASH-1400).

DEPDOSE decays the nuclides for the initial decay time supplied by the user (see Figure 25) prior to calculating the dose. The equations used are the recurrence formula derived by John Hamawi (Ha70). The equations are provided in Volume II, Technical Description Document.

The unshielded dose may be modified using one of the four factors provided in the Default Modifying Factors Library. These include a ground roughness factor, decontamination factor, weathering factor, and one unspecified factor. Transmission factors 1 through 3 applied for the fractions of time given by occupancy factors 1 through 3 respectively, are used to calculate the shielded dose.

Figure 24 illustrates menu options provided for the modifying factors libraries. As can be seen, the user may either edit or print the Default Modifying Factors Library. Figure 25 illustrates the screen used to editing the Default Modifying Factors Library.

The Transmission Factors Library has only been provided to the user as a quick reference to some of the more common transmission factors available in the literature. However, the library has been stored as an ASCII file. It can be edited (added to, deleted from, or changed) using any word processor capable of storing a file in ASCII format. Figure 26 illustrates the screen used to display the Transmission Factors Library.

Sample printouts of the contents of both libraries are presented in Section 3.6.

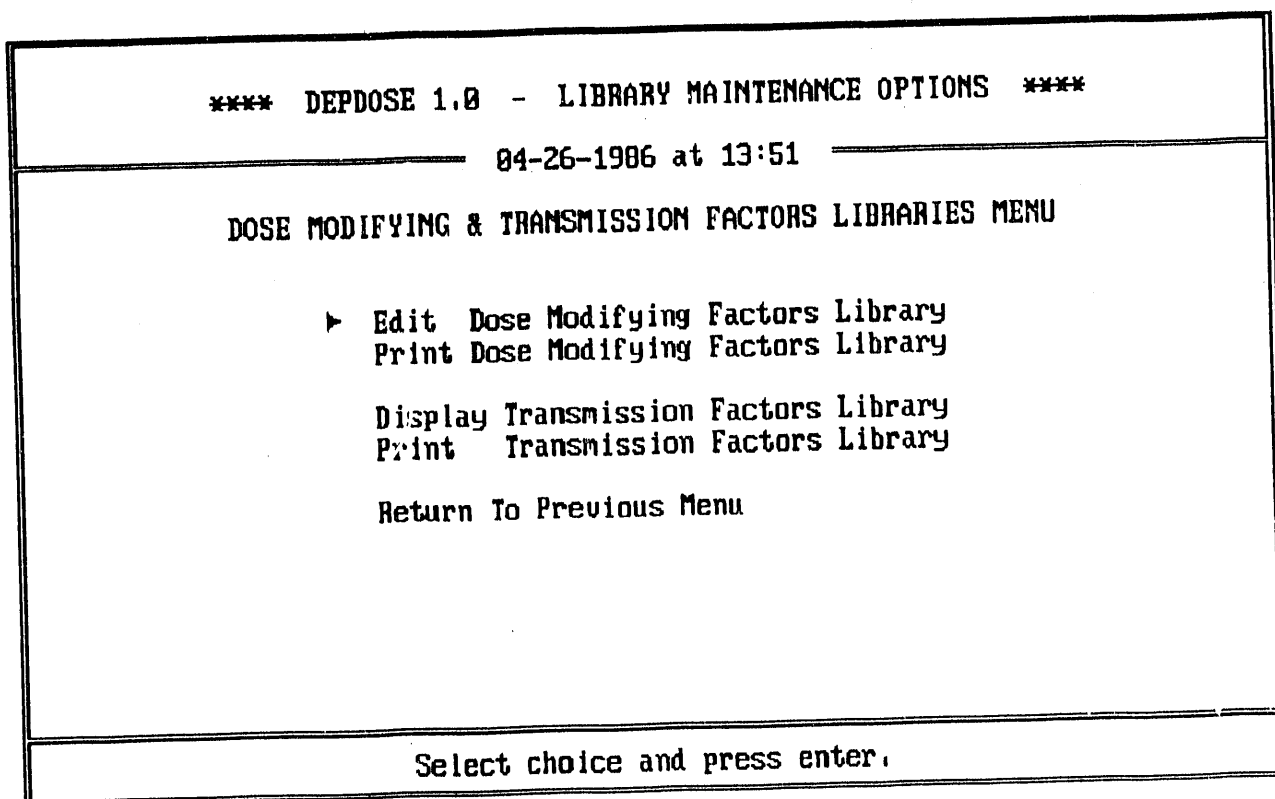


Figure 24. Dose modifying and transmission factors menu.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:51 -----
EDIT DOSE MODIFYING FACTORS

Initial Decay Time (days): 1
Exposure Time (days) : 3.65E+02
Occupancy Factor 1 : 1.00E+00
Transmission Factor 1: 1.00E+00

Ground Roughness Factor : 1.00E+00
Decontamination Factor : 1.00E+00
Occupancy Factor 2 : 0.00E+00
Transmission Factor 2: 0.00E+00

Weathering Factor : 1.00E+00
Unspecified Factor : 1.00E+00
Occupancy Factor 3 : 0.00E+00
Transmission Factor 3: 0.00E+00

Data entry complete? N

```

Use following forms: n.nnE+nn or nn.nnn

Figure 25. Edit dose modifying factors.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:52 -----
DISPLAY TRANSMISSION FACTORS LIBRARY

1 m above infinite smooth plane          1.0      -
1 m above ordinary ground                0.7      0.47 - 0.85
1 m above center 50 ft road; 50% decon.  0.55     0.4  - 0.6

Car on 50 ft road; 100% contaminated     0.5      0.4  - 0.7
Car on 50 ft road; 50% decontaminated    0.5      0.4  - 0.6
Car on 50 ft road; 100% decontaminated   0.25     0.2  - 0.5

Trains                                    0.4      0.3  - 0.5

PGUP          Select ENTER to return to previous menu.          PGDN

```

Figure 26. Display transmission factors library.

3.3.4 Default Deposition Data Libraries

Figure 27 illustrates the default deposition data libraries menu. In addition to creating a library, the user may delete, edit, display, or print any existing default deposition data library.

```
**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:52 -----
                DEFAULT DEPOSITION LIBRARY MENU

    ▶ Enter Default Deposition Source Term
      Edit Default Deposition Source Term
      Delete Default Deposition Source Term
      View Default Deposition Source Term
      Return To Previous Menu

Select choice and press enter.
```

Figure 27. Default deposition library menu.

DEPDOSE allows the user to create up to 20 default deposition data libraries. Figures 28 through 31 illustrates the screens used to create a library. First the user enters a descriptive title (Figure 28). Next the user is prompted to enter a nuclide (Figure 29). If the nuclide is in the Radionuclide Data Library, the user is asked to enter deposition data (activity per unit area) for that nuclide (Figure 30). Data entry is terminated by entering a blank screen. The source term is automatically normalized to 1 uCi/sq m by the data entry routine. Control now jumps to the edit screen so that the user may see the normalized information (Figure 31).

Figure 32 illustrates the screen used to select a default deposition library for deleting, editing, displaying, and printing. Figure 33 illustrates the screen used to confirm the deletion of a default deposition library.

Figure 34 illustrates the view default deposition library menu. Figure 35 illustrates the format used to display a default deposition data library. A sample printout of a default deposition data library is presented in Section 3.6.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:41 -----
ADD DEFAULT DEPOSITION LIBRARY

-----
-----
-----
-----
-----
-----
-----
-----
-----
-----

Enter title for new library:      ▶  ___WASH-1400 RELEASE FRACTIONS

A maximum of 30 characters is allowed

```

Figure 28. Add default deposition library; enter name.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:41 -----
Entering data for WASH-1400 RELEASE FRACTIONS

Enter radionuclide name          : ▶  ___Mo-95

Use following form: Te-131m

```

Figure 29. Add default deposition library; enter nuclide.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:41 -----
      Entering data for WASH-1400 RELEASE FRACTIONS

Enter radionuclide name           :  _Ru-103
Enter deposition data (activity/area):  _0.03

Use following forms: n.nnE+nn

```

Figure 30. Add default deposition library; enter activity per unit area.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:46 -----
      EDIT DEFAULT DEPOSITION DATA FOR WASH-1400 RELEASE FRACTIONS
      ----- uCi per square meter -----

Mo- 99   ▶ 4.76E-3   I -132   1.43E-01   Cs-137   7.93E-02
Ru-103   4.76E-03   Te-132   4.76E-02   Ba-140   1.59E-02
Ru-106   4.76E-03   I -133   1.43E-01   La-140   1.59E-02
Te-129m  4.76E-02   Cs-134   7.93E-02   Ce-141   6.35E-04
I -131   1.43E-01   I -135   1.43E-01   Ce-144   0.35E-04

Te-131m  4.76E-02   Cs-136   7.93E-02   Np-239   6.35E-04

Data entry complete?  N

Use following form: n.nnE+nn

```

Figure 31. Edit default deposition data library.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:46 -----
EDIT DEFAULT DEPOSITION LIBRARY

1 WASH-1400 RELEASE FRACTIONS      11 -----
2 -----                          12 -----
3 -----                          13 -----
4 -----                          14 -----
5 -----                          15 -----
6 -----                          16 -----
7 -----                          17 -----
8 -----                          18 -----
9 -----                          19 -----
10 -----                         20 -----

Enter Index number:  ▶ _1

```

Figure 32. Select default deposition library.

```

**** DEPDOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:47 -----
DELETE DEPOSITION DATA

About to delete default deposition data for
WASH-1400 RELEASE FRACTIONS

Enter Y to continue or N to exit.

```

Figure 33. Confirm deletion of default deposition library.

```

**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:40 -----
VIEW DEFAULT DEPOSITION LIBRARY

> Display Default Deposition Data Library
Print Default Deposition Data Library
Return To Previous Menu

Select choice and press enter.

```

Figure 34. View default deposition library menu.

```

**** DEPOSE.1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:40 -----
Displaying Data For WASH-1400 RELEASE FRACTIONS
(uCi/sq meter)

Mo- 99  4.76E-03    I -132  1.43E-01    Cs-137  7.93E-02
Ru-103  4.76E-03    Te-132  4.76E-02    Ba-140  1.59E-02
Ru-106  4.76E-03    I -133  1.43E-01    La-140  1.59E-02
Te-129m 4.76E-02    Cs-134  7.93E-02    Ce-141  6.35E-04
I -131  1.43E-01    I -135  1.43E-01    Ce-144  6.35E-04

Te-131m 4.76E-02    Cs-136  7.93E-02    Np-239  6.35E-04

PGUP          Select ENTER to return to previous menu.          PGDN

```

Figure 35. Display default deposition library.

3.3.5 Program Constants Library

This option allows the user access to several constants used by the program. These constants are the preventive protective action guide (PAG), the emergency PAG, and the factor used to convert from rem to roentgen. Figure 36 presents the values used by the program.

```
**** DEPOSE 1.0 - LIBRARY MAINTENANCE OPTIONS ****
----- 04-26-1986 at 13:53 -----
      EDIT SYSTEM DEFAULT VALUES

Emergency PAG (mrem/yr):      5.00E+02
Preventive PAG (mrem/yr):    1.00E+02
Roentgen per rem           :    1.04E+00
Data entry complete?       ▶ N

      Enter Y to continue.
```

Figure 36. Program constants library.

3.4 Dose Calculation Section

DEPDOSE is designed to allow the user to select and edit source term information, select a dose factor library, and edit the dose modifying factors prior to performing a calculation. The user may calculate total dose or decay time. Two different sets of deposition data may also be compared. These options are available from the menu illustrated in Figure 37.

```
**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:54 -----
                                CALCULATION MENU

                                ▶ Select Deposition Data
                                Select Dose Factor Library
                                Confirm Modifying Factors
                                View Transmission Factors

                                Calculate Committed Dose
                                Calculate Decay Time
                                Compare Deposition Data

                                Return To Main Menu
                                Exit Program

                                Select choice and press enter.
```

Figure 37. Calculation menu.

3.4.1 Select/Enter Deposition Data

DEPDOSE is designed to allow the user to enter deposition data, import deposition data from other database, or choose from previously entered data (either user entered or imported). The user may also select a source term from the Default Deposition Library. Figure 38 illustrates these menu options.

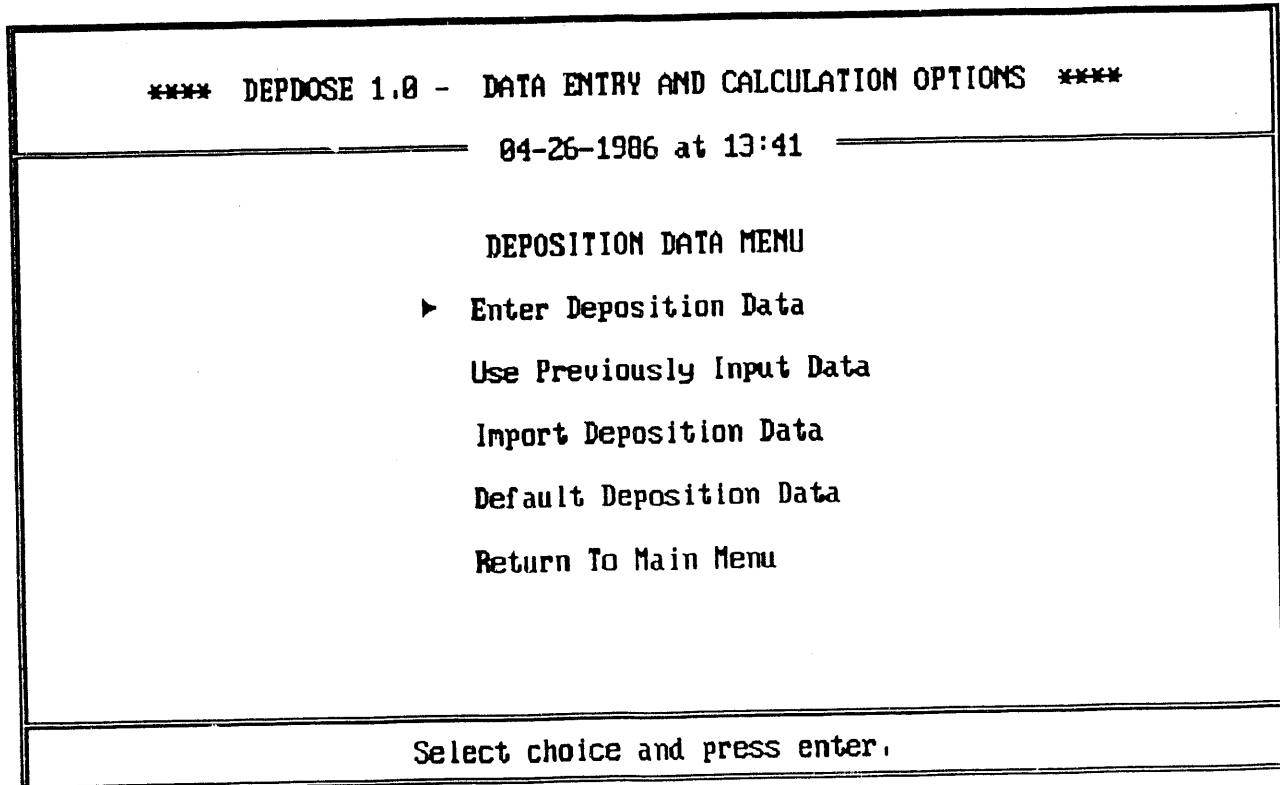


Figure 38. Deposition data menu.

INPUT DEPOSITION DATA OPTION

Figure 39 presents the menu which the user will see when he/she selects the option to enter deposition data. This menu allows the user to verify the Default Nuclides List prior to beginning data entry (see Section 3.3.1 for a description of the Default Nuclide List).

<p>**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****</p> <hr/> <p>04-26-1986 at 13:54</p> <p>ENTER DEPOSITION DATA</p> <p>▶ Edit Default Nuclide List</p> <p>Enter Deposition Data</p> <p>Return To Previous Menu</p>
<p>Select choice and press enter.</p>

Figure 39. Enter deposition data menu.

DEPDOSE allows the user to enter a maximum of 20 sets of deposition data. The user is prompted for both descriptive information and deposition data. Table 2 presents a list of the descriptive information. The user will also be prompted to input deposition data for each nuclide in the default nuclide list in units of uCi/sq m (see Section 3.3.1). The screens used when entering deposition data are illustrated in Figures 40 and 41.

Table 2

Descriptive Data Requested During Entry of Deposition Data

Log Number ⁽¹⁾	:	10 alphanumeric characters max.
Location Description	:	30 alphanumeric characters max.
Distance (miles)	:	nn.nnn or n.nnE+nn
Sector	:	single alphabetical character
Bearing (degrees)	:	nn.nnn or n.nnE+nn
Collection Date	:	MM/DD/YY
Collection Time	:	HH/MM
Analysis Date	:	MM/DD/YY
Analysis Time	:	HH/MM
Exposure Rate (mR/hr)	:	nn.nnn or n.nnE+nn

(1) Must enter value for data to be saved.

If the user does not enter a log number, the routine is exited without prompting the user to input deposition data and no descriptive data is saved. If either blanks or zero values are entered for each nuclide, the routine will also exit the routine without saving any data.

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****

04-26-1986 at 13:55

ENTER DEPOSITION DATA

Log Number: ▶ _____ 4001

Location - Description: _____
 - Distance: _____
 - Bearing: _____
 - Sector: _____

Collection - Date: _____ Analysis - Date: _____
 - Time: _____ - Time: _____

Exposure Rate: _____ mR/hr

Data entry complete? N

10 character alphanumeric description.)

Figure 40. Enter deposition data; screen 1.

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****

04-26-1986 at 13:55

ENTER DEPOSITION DATA FOR LOG NUMBER 4001
 ----- uCi per square meter -----

Co- 58	▶	_____	Rh-103m	_____	I -131	_____
Co- 60		_____	Ru-103	_____	Te-131m	_____
Rb- 86		_____	Rh-106	_____	Te-131	_____
Sr- 89		_____	Ru-106	_____	I -132	_____
Nb- 95m		_____	Cd-115	_____	Tc-132	_____
Nb- 95		_____	Sb-127	_____	I -133	_____
Zr- 95		_____	Te-127m	_____	Cs-134	_____
Mo- 99		_____	Te-127	_____	I -135	_____
Tc- 99m		_____	Te-129m	_____	Cs-136	_____
Tc- 99		_____	Te-129	_____	Ba-137m	_____

Data entry complete? N More nuclides on next page.

PGUP Use following form: n.mE+nn PGDM

Figure 41. Enter deposition data; screen 2.

USING PREVIOUSLY INPUT DATA

Upon selection of this option, the user is requested to select from either user entered data or data which has been imported from another database. Once this choice is made, a list of log numbers is presented from which the user may select. Figures 42 and 43 illustrate these screens.

Once a set of data has been chosen, the user may edit, delete, display, or print the information. This menu is illustrated in Figure 44.

Figure 45 illustrates the edit deposition data menu. The user may either edit the existing data for the chosen log number or add data for additional nuclides. The screens used to edit the deposition data are illustrated in Figures 46 and 47. The screens used when entering additional nuclide data are presented in Figures 48 and 49.

Figure 50 illustrates the delete deposition data screen. Data for a log number is not deleted unless the user confirms the choice.

Figures 51 and 52 illustrates the display deposition data screens. A sample printout of a set of deposition data is presented in Section 3.6.

```
**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:49 -----
SELECT SOURCE OF DEPOSITION DATA

  ▶ User Entered Deposition Data
    Imported Deposition Data
    Return To Previous Menu

Select choice and press enter.
```

Figure 42. Select source of deposition data menu.

```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 15:06 -----
SELECT USER ENTERED DEPOSITION DATA LOG NUMBER

----- Current Log Numbers -----

  1 1001          11 -----
  2 1002          12 -----
  3 2001          13 -----
  4 -----      14 -----
  5 -----      15 -----

  6 -----      16 -----
  7 -----      17 -----
  8 -----      18 -----
  9 -----      19 -----
 10 -----      20 -----

Enter Index number: ▶ _1

```

Figure 43. Select deposition data log number.

```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:57 -----
DEPOSITION DATA MENU

▶ Edit   Deposition Data
Delete  Deposition Data
Display Deposition Data
Print   Deposition Data
Return  To Previous Menu

Select choice and press enter.

```

Figure 44. Deposition data menu.

**** DEPOSE 1.8 - DATA ENTRY AND CALCULATION OPTIONS ****

04-26-1986 at 13:58

EDIT DEPOSITION DATA FOR LOG NUMBER 2881

- ▶ Edit Deposition Data
- Enter Addition Nuclide Data
- Return To Previous Menu

Select choice and press enter.

Figure 45. Edit deposition data menu.


```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:57 -----
                EDIT DEPOSITION DATA FOR LOG NUMBER 1001

Location Description :   DOE Chernobyl Deposition Data
Distance (miles)    :   0.00E+00      Bearing (degrees):   0.00E+00
Sector              :   -
Collection Date     :   _____   Analysis Date      :   04/26/86
Collection Time    :   _____   Analysis Time       :   11:00
Exposure Rate (uR/hr): 0.00E+00
Data entry complete? > Y

PGUP                               Enter Y to continue.                               PGDN

```

Figure 46. Edit deposition data; screen 1.

```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:58 -----
                EDIT DEPOSITION DATA FOR LOG NUMBER 1001
                ----- uCi per square meter -----

Nb- 95m      0.00E+00   Cd-115      2.83E-03   Te-132      9.25E-02
Nb- 95       1.19E-03   Sb-127     3.17E-03   I -133     1.45E-01
Zr- 95       9.25E-04   Te-127m    0.00E+00   Cs-134     1.71E-02
Mo- 99       6.47E-03   Te-127     0.00E+00   I -135     0.00E+00
Tc- 99m      0.00E+00   Te-129m    1.74E-02   Cs-136     7.13E-03

Tc- 99       0.00E+00   Te-129     0.00E+00   Ba-137m    0.00E+00
Rh-103m     0.00E+00   I -131     5.42E-01   Cs-137     2.96E-02
Ru-103      0.00E+00   Te-131m    2.96E-03   Ba-140     1.41E-02
Rh-106      0.00E+00   Te-131     0.00E+00   La-140     9.91E-03
Ru-106      6.34E-03   I -132     9.25E-02   Ce-141     1.35E-03

Data entry complete? > N      More nuclides on next page.

PGUP                               Enter Y to continue.                               PGDN

```

Figure 47. Edit deposition data; screen 2.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
      84-26-1986 at 15:07
ENTER DEPOSITION DATA FOR LOG NUMBER 2001

Enter radionuclide name           : I-131

Use following form: I-131m

```

Figure 48. Enter additional deposition data; enter nuclide.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
      84-26-1986 at 15:08
ENTER DEPOSITION DATA FOR LOG NUMBER 2001

Enter radionuclide name           : I-131
Enter deposition data (uCi/sq m)  : 1E-3

Use following forms: n.mE+nn

```

Figure 49. Enter additional deposition data; enter activity per unit area (uCi/sq m).

```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
      84-26-1986 at 13:51

      DELETE DEPOSITION DATA

**** DELETE DEPOSITION DATA FOR LOG NUMBER 2001? ****

Enter Y to continue or N to exit.

```

Figure 50. Confirm deletion of deposition data.

```

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
      84-26-1986 at 13:50

      DISPLAY DEPOSITION DATA FOR LOG NUMBER 1001

Location Description : DOE Chernobyl Deposition Data
Distance (miles)    : NA           Bearing (degrees): NA
Sector              : NA
Collection Date     : NA           Analysis Data    : 84/26/86
Collection Time     : NA           Analysis Time    : 11:00
Exposure Rate (uR/hr): 1.00E+00

PGUP                Select ENTER to return to previous menu.                PGDM

```

Figure 51. Display deposition data; screen 1.

**** DEPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****

84-26-1986 at 13:50

DISPLAY DEPOSITION DATA FOR LOG NUMBER 1001
 uCi per square meter

Nb- 95m	0.00E+00	Cd-115	2.03E-03	I -132	9.25E-02
Nb- 95	1.19E-03	Sb-127	3.17E-03	Te-132	9.25E-02
Zr- 95	9.25E-04	Te-127m	0.00E+00	I -133	1.45E-01
Mo- 99	6.47E-03	Te-127	0.00E+00	Cs-134	1.71E-02
Tc- 99m	0.00E+00	I -129	0.00E+00	I -135	0.00E+00
Tc- 99	0.00E+00	Te-129m	1.74E-02	Xe-135m	0.00E+00
Rh-103m	0.00E+00	Te-129	0.00E+00	Xe-135	0.00E+00
Ru-103	0.00E+00	I -131	5.42E-01	Cs-136	7.13E-03
Rh-106	0.00E+00	Te-131m	2.96E-03	Ba-137m	0.00E+00
Ru-106	6.34E-03	Te-131	0.00E+00	Cs-137	2.96E-02

PGUP

Select ENTER to return to previous menu.

PGDN

Figure 52. Display deposition data; screen 2.

IMPORTING DEPOSITION DATA

DEPDOSE is designed to import data written to an ASCII file by external databases. Details on how the file is structured are presented in Appendix B. DEPDOSE will import data for up to 20 log numbers. Importing data results in the loss of any previously imported data. Figure 53 presents an illustration of the screen used to input into DEPDOSE the name of the file containing deposition data to be imported.

```
**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 14:05 -----
                                IMPORT DEPOSITION DATA

Enter name of import file:      ▶ _____A:ASSESS.DAT

                                Include path information.
```

Figure 53. Import deposition data; enter file name.

3.4.2 Select Dose Factor Libraries

This menu choice allows the user to designate which dose factor library is to be used to calculating doses. Figure 20 illustrates the screen used to make the selection.

3.4.3 Confirm Modifying Factors

This menu selection allows the user to edit the dose modifying factors which are discussed in detail in Section 3.4.2. The screen used to edit the dose modifying factors is presented in Figure 25.

3.4.4 View Shielding Factors

This menu selection allows the user to display shielding factors found in the literature for various commonly encountered situations (WASH-1400). Figure 26 illustrates the screen used to display the Shielding Factors library.

3.4.5 Calculate Committed Dose

Prior to selecting this option, the user must select a set of deposition data and a dose factor library. Since the calculation uses the dose modifying factors, the user should verify that their values are correct.

Figures 54 through 56 illustrate the screens for the dose calculation option. The user's selection of deposition data and dose factors are displayed for confirmation (Figure 54). If the answer to the question of whether to continue the calculation is no (N) then the routine is exited and control passes back to the calculation menu (Figure 37). The calculation continues if the response is yes (Y).

If exposure data is available, the user is asked whether or not he/she would like to ratio the results to different exposure data (Figure 55). If the answer is yes, the user is prompted for the new exposure data (Figure 56). **The undecayed deposition data will be multiplied by the ratio of the new exposure data to the old exposure data. Thus, if the new exposure is twice that of the old exposure, the deposition data will be doubled and all other values will be doubled.** The user will not see these screens if no exposure rate data is available for the chosen deposition data set.

Upon completion of the calculation, the user may choose to view a summary of the doses and/or print various sections of a multiple page dose report. Figure 57 illustrates the menu selections for displaying and printing doses. Figure 58 illustrates the display summary screen. A sample of the dose report is presented in Section 3.6.

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****

04-26-1986 at 13:52

COMMITTED DOSE CALCULATION

Selected Deposition Data Log Number: 1001

Selected Dose Factor Library : KOCHER83

Enter Y to continue or N to exit.

Figure 54. Committed dose calculation; confirm selection of deposition data and dose factor library.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:56 -----

COMMITTED DOSE CALCULATION

Measured Exposure Rate (uR/hr):  1.00E+00

Do you wish to calculate the dose based on
a different measured exposure rate?

Enter Y to continue or N to exit.

```

Figure 55. Committed dose calculation; use measured exposure rate question.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 13:56 -----

COMMITTED DOSE CALCULATION

Measured Exposure Rate (uR/hr):  1.00E+00
New Exposure Rate      (uR/hr):>  _____2

Use following form: n.nnE+nn

```

Figure 56. Committed dose calculation; enter new exposure rate (uR/hr).


```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 14:41 -----
DOSE REPORT MENU

▶ Display Summary Only
  Display Summary & Print Full Report
  Display Summary & Print Dose Report
  Display Summary & Print Dose/Summary Report

Select choice and press enter.

```

Figure 57. Dose report menu.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 14:41 -----
PROJECTED DOSE FOR SAMPLE LOG NUMBER 1001
Calculation performed at 14:41:33

***** SUMMARY REPORT *****

Unshielded 365 Day Committed Dose: 5.53D+00 mRem
            % of Preventive PAG   : 5.5
            % of Emergency PAG    : 1.1

Shielded   365 Day Committed Dose: 5.53D+00 mRem
            % of Preventive PAG   : 5.5
            % of Emergency PAG    : 1.1

Press any key to continue.

```

Figure 58. Display summary report.

3.4.6 Calculate Decay Time

This option allows the user to calculate how long a set of radionuclides each with a given activity must be allowed to decay before a desired dose is reached. The user must choose a set of deposition data and a dose factor library prior to selecting this option.

Figure 59 illustrates the screen used to enter the desired dose. The initial decay time refers to the time the activity will be allowed to decay prior to calculating the first dose. If the first dose calculated is less than the desired dose, the routine will return the initial decay time and the dose calculated using it as an assumption.

If the first dose calculated is greater than the desired dose, the routine will first estimate the decay time needed to reach a dose less than the desired dose. Once this number is known, the routine will interpolate between the high and low dose to determine a guess at the correct decay time. The program will continue to perform interpolations until either the differences in the 'guesses' are within the convergence criteria (0.01 %) or the maximum allowed number of interpolations has been performed. Both the convergence criteria and the maximum number of interpolations may be changed by the user (see Figure 57).

Figure 60 illustrates the results returned by the calculation. Upon pressing any key, control passes to the menu for displaying and printing doses (see Figure 57).

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 14:33 -----
                CALCULATE DECAY TIME USING
                DEPOSITION DATA FOR LOG NUMBER 1001

Location Description : DOE Chernobyl Deposition Data

Collection Date      : NA           Analysis Data      : 04/26/86
Collection Time     : NA           Analysis Time      : 11:00

Initial Decay Time (days)      : 1.00E+00
Desired Unshielded Dose (mRem)  : 4.00E+00

Maximum Number of Iterations    : 5.00E+01
Convergence Criteria for Decay Time: 1.00E-02

Data entry complete?           ▶ N

```

Enter Y to continue.

Figure 59. Calculate decay time; enter desired dose.

```

**** DEPDOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 15:14 -----
                DOSE CALCULATED USING DEPOSITION DATA FOR LOG NUMBER 1001

Desired Dose (mRem)      : 4.00D+00
Calculated Dose (mRem)   : 4.00D+00

Decay Time Assumed (days): 1.12D+02
Number of Iterations     : 34

```

Press any key to continue.

Figure 60. Calculate decay time; display results.

3.4.7 Compare Deposition Data

This option allows the user to compare two different sets of deposition data by decaying the set with the earlier analysis date to that of the second.

Upon selecting this option, the user is prompted to select two sets of deposition data using the same screens illustrated in Figures 42 and 43. Once the sets have been selected, the user is requested to verify the choices (see Figure 61). Upon verification, the calculation is performed and the two sets of deposition data are printed (see Section 3.6). If the user does not confirm the choices, control is returned to the main calculation menu (see Figure 37).

```
**** DEPPOSE 1.0 - DATA ENTRY AND CALCULATION OPTIONS ****
----- 04-26-1986 at 14:35 -----
      COMPARE DEPOSITION DATA FOR LOG NUMBER 400
Location Description : BETWEEN MUD LAKE & LAKE SHANQUILA
Collection Date      : 04/26/86      Analysis Date      : 04/26/86
Collection Time      : 11:33         Analysis Time      : 11:33

      WITH DEPOSITION DATA FOR LOG NUMBER 451
Location Description : POINT #11 (SEE MAP)
Collection Date      : 04/27/86      Analysis Data      : 04/27/86
Collection Time      : 13:30         Analysis Time      : 13:30

Enter Y to continue or N to exit.
```

Figure 61. Compare deposition data; confirm selection of deposition data.

3.5 Exiting the Program

Execution may be terminated from either the main menu or the calculation menu. Figure 62 presents the screen viewed following a normal exit.

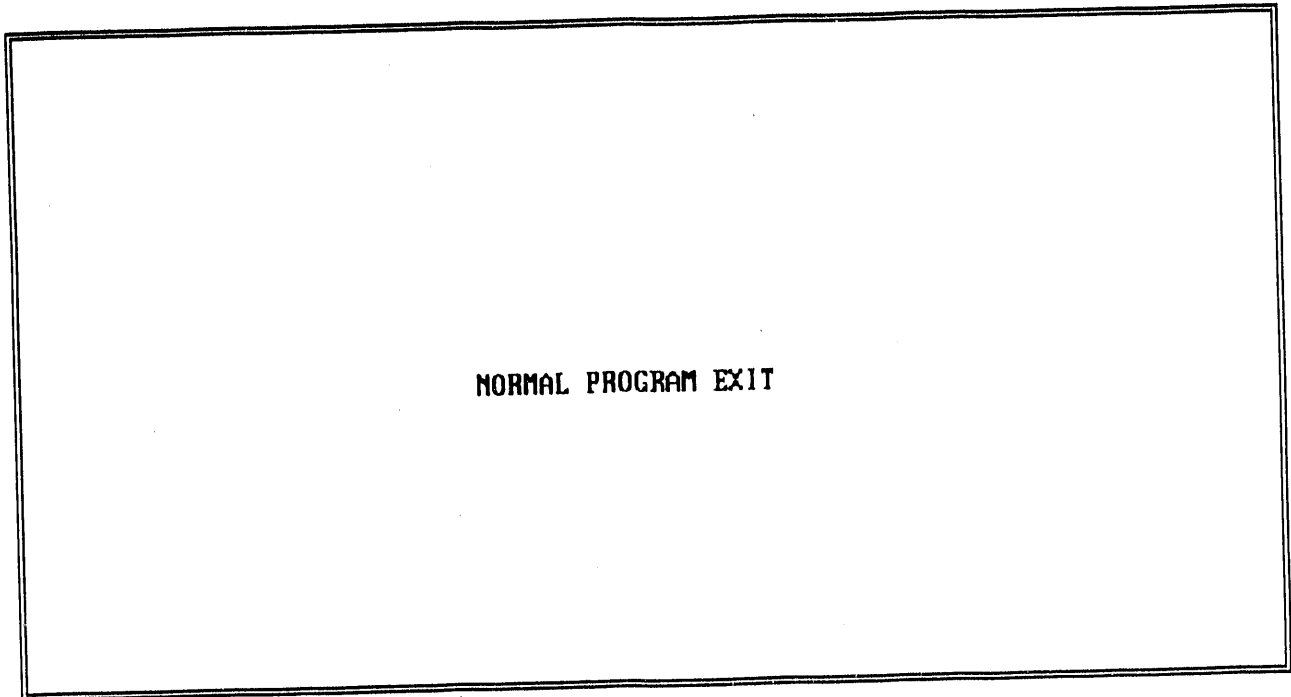


Figure 62. Normal exit message.

3.6 Sample Printouts

DEPDOSE RADIONUCLIDE DATA LIBRARY
05-20-1989 as of 12:13

Index	Parent	Halflife	Progeny 1	Fraction	Progeny 2	Fraction
1	Sr- 90	2.77E+01 Y	Y - 90	1.0000	-----	0.0000
2	Y - 90	6.40E+01 H	-----	0.0000	-----	0.0000
3	Sr- 91	9.67E+00 H	Y - 91m	0.7300	Y - 91	0.2700
4	Y - 91m	5.03E+01 M	-----	0.0000	-----	0.0000
5	Y - 91	5.85E+01 D	-----	0.0000	-----	0.0000
6	Nb- 95m	8.66E+01 H	Nb- 95	1.0000	-----	0.0000
7	Nb- 95	3.51E+01 D	-----	0.0000	-----	0.0000
8	Zr- 95	6.40E+01 D	Nb- 95m	0.0078	Nb- 95	0.9922
9	Mo- 99	6.60E+01 H	Tc- 99m	0.8860	Tc- 99	0.1140
10	Tc- 99m	6.02E+00 H	Tc- 99	1.0000	-----	0.0000
11	Tc- 99	2.13E+05 Y	-----	0.0000	-----	0.0000
12	Rh-103m	5.61E+01 M	-----	0.0000	-----	0.0000
13	Ru-103	3.95E+01 D	Rh-103m	0.9974	-----	0.0000
14	Rh-106	2.99E+01 S	-----	0.0000	-----	0.0000
15	Ru-106	3.68E+02 D	Rh-106	1.0000	-----	0.0000
16	Cd-115	4.46E+01 D	-----	0.0000	-----	0.0000
17	Sb-127	9.30E+01 H	Te-127m	0.1600	Te-127	0.8400
18	Te-127m	1.09E+02 D	Te-127	0.9920	-----	0.0000
19	Te-127	9.40E+00 H	-----	0.0000	-----	0.0000
20	I -129	1.57E+07 Y	-----	0.0000	-----	0.0000
21	Sb-129	4.30E+00 H	Te-129m	1.0000	-----	0.0000
22	Te-129m	3.36E+01 D	Te-129	0.6290	I -129	0.3710
23	Te-129	6.87E+01 M	-----	0.0000	-----	0.0000
24	I -131	8.04E+00 D	-----	0.0000	-----	0.0000
25	Sb-131	2.60E+01 M	Te-131m	0.0700	Te-131	0.9300
26	Te-131m	3.00E+01 H	Te-131	0.2220	I -131	0.7780
27	Te-131	2.50E+01 M	I -131	1.0000	-----	0.0000
28	I -132	2.26E+00 H	-----	0.0000	-----	0.0000
29	Te-132	7.82E+01 H	I -132	1.0000	-----	0.0000
30	I -133	2.08E+01 H	-----	0.0000	-----	0.0000
31	Cs-134m	2.90E+00 H	Cs-134	1.0000	-----	0.0000
32	Cs-134	2.06E+00 Y	-----	0.0000	-----	0.0000
33	I -134	5.20E+01 M	-----	0.0000	-----	0.0000
34	I -135	6.68E+00 H	-----	0.0000	-----	0.0000
35	Cs-136	1.32E+01 D	-----	0.0000	-----	0.0000
36	Ba-137m	2.52E+00 M	-----	0.0000	-----	0.0000
37	Cs-137	3.02E+01 Y	Ba-137m	0.9460	-----	0.0000
38	Ba-140	1.28E+01 C	La-140	1.0000	-----	0.0000
39	La-140	4.02E+01 H	-----	0.0000	-----	0.0000
40	Ce-141	3.25E+01 D	-----	0.0000	-----	0.0000

DEPPOSE RADIONUCLIDE DATA LIBRARY
05-20-1989 as of 12:14

Index	Parent	Halflife		Progeny 1	Fraction	Progeny 2	Fraction
41	La-141	3.87E+00	H	Ce-141	1.0000	-----	0.0000
42	Ce-144	2.84E+02	D	Pr-144m	0.0143	Pr-144	0.9857
43	Pr-144m	7.20E+00	M	Pr-144	0.9994	-----	0.0000
44	Pr-144	1.73E+01	M	-----	0.0000	-----	0.0000
45	U -235	7.10E+08	Y	-----	0.0000	-----	0.0000
46	Np-239	2.36E+00	D	Pu-239	1.0000	-----	0.0000
47	Pu-239	2.44E+04	Y	U -235	1.0000	-----	0.0000
48	-----	0.00E+00		-----	0.0000	-----	0.0000
49	-----	0.00E+00		-----	0.0000	-----	0.0000
50	-----	0.00E+00		-----	0.0000	-----	0.0000
51	-----	0.00E+00		-----	0.0000	-----	0.0000
52	-----	0.00E+00		-----	0.0000	-----	0.0000
53	-----	0.00E+00		-----	0.0000	-----	0.0000
54	-----	0.00E+00		-----	0.0000	-----	0.0000
55	-----	0.00E+00		-----	0.0000	-----	0.0000
56	-----	0.00E+00		-----	0.0000	-----	0.0000
57	-----	0.00E+00		-----	0.0000	-----	0.0000
58	-----	0.00E+00		-----	0.0000	-----	0.0000
59	-----	0.00E+00		-----	0.0000	-----	0.0000
60	-----	0.00E+00		-----	0.0000	-----	0.0000
61	-----	0.00E+00		-----	0.0000	-----	0.0000
62	-----	0.00E+00		-----	0.0000	-----	0.0000
63	-----	0.00E+00		-----	0.0000	-----	0.0000
64	-----	0.00E+00		-----	0.0000	-----	0.0000
65	-----	0.00E+00		-----	0.0000	-----	0.0000
66	-----	0.00E+00		-----	0.0000	-----	0.0000
67	-----	0.00E+00		-----	0.0000	-----	0.0000
68	-----	0.00E+00		-----	0.0000	-----	0.0000
69	-----	0.00E+00		-----	0.0000	-----	0.0000
70	-----	0.00E+00		-----	0.0000	-----	0.0000
71	-----	0.00E+00		-----	0.0000	-----	0.0000
72	-----	0.00E+00		-----	0.0000	-----	0.0000
73	-----	0.00E+00		-----	0.0000	-----	0.0000
74	-----	0.00E+00		-----	0.0000	-----	0.0000
75	-----	0.00E+00		-----	0.0000	-----	0.0000
76	-----	0.00E+00		-----	0.0000	-----	0.0000
77	-----	0.00E+00		-----	0.0000	-----	0.0000
78	-----	0.00E+00		-----	0.0000	-----	0.0000
79	-----	0.00E+00		-----	0.0000	-----	0.0000
80	-----	0.00E+00		-----	0.0000	-----	0.0000

DEPPOSE RADIONUCLIDE DATA LIBRARY
05-20-1989 as of 12:14

Index	Parent	Halflife	Progeny 1	Fraction	Progeny 2	Fraction
81	-----	0.00E+00	-----	0.0000	-----	0.0000
82	-----	0.00E+00	-----	0.0000	-----	0.0000
83	-----	0.00E+00	-----	0.0000	-----	0.0000
84	-----	0.00E+00	-----	0.0000	-----	0.0000
85	-----	0.00E+00	-----	0.0000	-----	0.0000
86	-----	0.00E+00	-----	0.0000	-----	0.0000
87	-----	0.00E+00	-----	0.0000	-----	0.0000
88	-----	0.00E+00	-----	0.0000	-----	0.0000
89	-----	0.00E+00	-----	0.0000	-----	0.0000
90	-----	0.00E+00	-----	0.0000	-----	0.0000
91	-----	0.00E+00	-----	0.0000	-----	0.0000
92	-----	0.00E+00	-----	0.0000	-----	0.0000
93	-----	0.00E+00	-----	0.0000	-----	0.0000
94	-----	0.00E+00	-----	0.0000	-----	0.0000
95	-----	0.00E+00	-----	0.0000	-----	0.0000
96	-----	0.00E+00	-----	0.0000	-----	0.0000
97	-----	0.00E+00	-----	0.0000	-----	0.0000
98	-----	0.00E+00	-----	0.0000	-----	0.0000
99	-----	0.00E+00	-----	0.0000	-----	0.0000
100	-----	0.00E+00	-----	0.0000	-----	0.0000

DEPDOSE DOSE FACTOR LIBRARY DATA
05-20-1989 as of 12:14

KOCHER83 Dose Factors

	Nuclide	mrem/hr per uCi/sq m		Nuclide	mrem/hr per uCi/sq m
1	Sr- 90	0.00E+00	36	Ba-137m	7.18E-03
2	Y - 90	0.00E+00	37	Cs-137	3.13E-05
3	Sr- 91	0.00E+00	38	Ba-140	2.52E-03
4	Y - 91m	0.00E+00	39	La-140	2.54E-02
5	Y - 91	2.31E-05	40	Ce-141	1.02E-03
6	Nb- 95m	8.36E-04	41	La-141	0.00E+00
7	Nb- 95	8.95E-03	42	Ce-144	2.50E-04
8	Zr- 95	8.65E-03	43	Pr-144m	1.18E-04
9	Mo- 99	2.32E-03	44	Pr-144	2.03E-03
10	Tc- 99m	1.71E-03	45	U -235	0.00E+00
11	Tc- 99	7.22E-09	46	Np-239	2.22E-03
12	Rh-103m	1.37E-05	47	Pu-239	4.64E-06
13	Ru-103	5.78E-03	48	-----	0.00E+00
14	Rh-106	4.26E-03	49	-----	0.00E+00
15	Ru-106	0.00E+00	50	-----	0.00E+00
16	Cd-115	2.72E-03	51	-----	0.00E+00
17	Sb-127	8.10E-03	52	-----	0.00E+00
18	Te-127m	8.10E-05	53	-----	0.00E+00
19	Te-127	1.28E-04	54	-----	0.00E+00
20	I -129	2.57E-04	55	-----	0.00E+00
21	Sb-129	0.00E+00	56	-----	0.00E+00
22	Te-129m	7.47E-04	57	-----	0.00E+00
23	Te-129	1.41E-03	58	-----	0.00E+00
24	I -131	4.69E-03	59	-----	0.00E+00
25	Sb-131	0.00E+00	60	-----	0.00E+00
26	Te-131m	1.64E-02	61	-----	0.00E+00
27	Te-131	6.08E-03	62	-----	0.00E+00
28	I -132	2.71E-02	63	-----	0.00E+00
29	Te-132	2.86E-03	64	-----	0.00E+00
30	I -133	7.64E-03	65	-----	0.00E+00
31	Cs-134m	3.33E-04	66	-----	0.00E+00
32	Cs-134	1.83E-02	67	-----	0.00E+00
33	I -134	3.07E-02	68	-----	0.00E+00
34	I -135	1.71E-02	69	-----	0.00E+00
35	Cs-136	2.48E-02	70	-----	0.00E+00

DEPDOSE DOSE FACTOR LIBRARY DATA
 05-20-1989 as of 12:14

KOCHER83 Dose Factors

Nuclide		mrem/hr per uCi/sq m	Nuclide		mrem/hr per uCi/sq m
71	-----	0.00E+00	86	-----	0.00E+00
72	-----	0.00E+00	87	-----	0.00E+00
73	-----	0.00E+00	88	-----	0.00E+00
74	-----	0.00E+00	89	-----	0.00E+00
75	-----	0.00E+00	90	-----	0.00E+00
76	-----	0.00E+00	91	-----	0.00E+00
77	-----	0.00E+00	92	-----	0.00E+00
78	-----	0.00E+00	93	-----	0.00E+00
79	-----	0.00E+00	94	-----	0.00E+00
80	-----	0.00E+00	95	-----	0.00E+00
81	-----	0.00E+00	96	-----	0.00E+00
82	-----	0.00E+00	97	-----	0.00E+00
83	-----	0.00E+00	98	-----	0.00E+00
84	-----	0.00E+00	99	-----	0.00E+00
85	-----	0.00E+00	100	-----	0.00E+00

DEPDOSE DOSE MODIFYING FACTORS LIBRARY
05-20-1989 as of 12:14

Initial Decay Time (days):	1.00E+01	Exposure Time (days)	: 3.65E+02
Ground Roughness	: 1.00E+00	Weathering Factor	: 1.00E+00
Decontamination Factor	: 1.00E+00	Unspecified Factor	: 1.00E+00
Occupancy Factor 1	: 1.00E+00	Transmission Factor 1	: 1.00E+00
Occupancy Factor 2	: 0.00E+00	Transmission Factor 2	: 0.00E+00
Occupancy Factor 3	: 0.00E+00	Transmission Factor 3	: 0.00E+00

DEPDOSE SHIELDING FACTORS LIBRARY
05-20-1989 as of 12:14

1 m above infinite smooth plane	1.0		-
1 m above ordinary ground	0.7	0.47	- 0.85
1 m above center 50 ft road; 50% decon.	0.55	0.4	- 0.6
Car on 50 ft road; 100% contaminated	0.5	0.4	- 0.7
Car on 50 ft road; 50% decontaminated	0.5	0.4	- 0.6
Car on 50 ft road; 100% decontaminated	0.25	0.2	- 0.5
 Trains	 0.4	 0.3	 - 0.5
1&2 story wood frame house; no basement	0.4	0.2	- 0.5
1&2 story block & brick home; no basement	0.2	0.04	- 0.4
House with basement; 1-2 walls fully exposed	0.1	0.03	- 0.15
1-story & basement; <2 ft basement wall exposed	0.05	0.03	- 0.07
2-story & basement; <2 ft basement wall exposed	0.03	0.02	- 0.05
 3-4 stories (5,000-10,000 sq ft/floor); 1&2 floor	 0.05	 0.01	 - 0.08
3-4 stories (5,000-10,000 sq ft/floor); basement	0.01	0.001	- 0.07
 Multistory (>10,000 sq ft/floor); upper floor	 0.01	 0.001	 - 0.02
Multistory (>10,000 sq ft/floor); basement	0.005	0.001	- 0.01

DEPPOSE DEFAULT DEPOSITION LIBRARY DATA
 WASH-1400 RELEASE FRACTIONS
 05-20-1989 as of 12.15

Nuclide	uCi/sq m	Nuclide	uCi/sq m	Nuclide	uCi/sq m	Nuclide	uCi/sq m
Mo- 99	4.76E-03	Te-129m	4.76E-02	Cs-134	7.93E-02	Ce-144	6.35E-04
Tc- 99m	0.00E+00	Te-129	0.00E+00	I -135	1.43E-01	Pr-144m	0.00E+00
Tc- 99	0.00E+00	I -131	1.43E-01	Cs-136	7.93E-02	Pr-144	0.00E+00
Rh-103m	0.00E+00	Te-131m	4.76E-02	Ba-137m	0.00E+00	U -235	0.00E+00
Ru-103	4.76E-03	Te-131	0.00E+00	Cs-137	7.93E-02	Np-239	6.35E-04
Rh-106	0.00E+00	I -132	1.43E-01	Ba-140	1.59E-02	Pu-239	0.00E+00
Ru-106	4.76E-03	Te-132	4.76E-02	La-140	1.59E-02		
I -129	0.00E+00	I -133	1.43E-01	Ce-141	6.35E-04		

DEPOSITION DATA FOR LOG NUMBER 5001
05-20-1989 as of 12:16

Location Description : CALC TEST

Distance (miles) : 0.00E+00 Bearing (degrees): 0.00E+00
Sector : NA

Collection Date : NA Analysis Date : NA
Collection Time : NA Analysis Time : NA

Exposure Rate (uR/hr): NA

Nuclide uCi/sq m Nuclide uCi/sq m Nuclide uCi/sq m Nuclide uCi/sq

Nb- 95m 1.00E+00 Nb- 95 1.00E+00 Zr- 95 1.00E+00

***** PROJECTED DOSE FOR SAMPLE LOG NUMBER 5001 *****
 Calculation performed on 05-21-1989 at 22:29

Description: CALC TEST

Distance : 0.00E+00 miles
 Bearing : 0.00E+00 degrees

Sector: NA

Collection Date : NA Analysis Data : NA
 Collection Time : NA Analysis Time : NA

Exposure Rate (uR/hr) : NA Exposure Rate Ratio : 1.00E+00

Initial Decay Time (days): 0.00E+00 Exposure Time (days) : 3.65E+02

Ground Roughness : 1.00E+00 Weathering Factor : 1.00E+00
 Contamination Factor : 1.00E+00 Unspecified Factor : 1.00E+00

Occupancy Factor 1 : 1.00E+00 Transmission Factor 1 : 1.00E+00
 Occupancy Factor 2 : 0.00E+00 Transmission Factor 2 : 0.00E+00
 Occupancy Factor 3 : 0.00E+00 Transmission Factor 3 : 0.00E+00

Nuclide	Halflife	After Decay				
		uCi per sq m	% of Total	Ratio to Cs-137	uR/hr	urem/hr
95m	8.66E+01 H	1.00E+00	33.3	-----	8.69E-01	8.36E-01
95	3.51E+01 D	1.00E+00	33.3	-----	9.31E+00	8.95E+00
95	6.40E+01 D	1.00E+00	33.3	-----	9.00E+00	8.65E+00
Totals:		3.00E+00			1.92E+01	1.84E+01

***** PROJECTED DOSE FOR SAMPLE LOG NUMBER 5001 *****
 Calculation performed on 05-21-1989 at 22:29

Description: CALC TEST

Distance : 0.00E+00 miles Sector: NA
 Bearing : 0.00E+00 degrees

Collection Date : NA Analysis Data : NA
 Collection Time : NA Analysis Time : NA

Exposure Rate (uR/hr) : NA Exposure Rate Ratio : 1.00E+00

Initial Decay Time (days): 0.00E+00 Exposure Time (days) : 3.65E+02

Ground Roughness : 1.00E+00 Weathering Factor : 1.00E+00
 Decontamination Factor : 1.00E+00 Unspecified Factor : 1.00E+00

Occupancy Factor 1 : 1.00E+00 Transmission Factor 1 : 1.00E+00
 Occupancy Factor 2 : 0.00E+00 Transmission Factor 2 : 0.00E+00
 Occupancy Factor 3 : 0.00E+00 Transmission Factor 3 : 0.00E+00

Nuclide	Halflife	uCi per sq m	% of Total	Before Decay		
				Ratio to Cs-137	uR/hr	urem/hr
Nb- 95m	8.66E+01 H	1.00E+00	33.3	-----	8.69E-01	8.36E-01
Nb- 95	3.51E+01 D	1.00E+00	33.3	-----	9.31E+00	8.95E+00
Zr- 95	6.40E+01 D	1.00E+00	33.3	-----	9.00E+00	8.65E+00
Totals:		3.00E+00			1.92E+01	1.84E+01

***** PROJECTED DOSE FOR SAMPLE LOG NUMBER 5001 *****
 Calculation performed on 05-21-1989 at 22:29

Description: CALC TEST

Distance : 0.00E+00 miles Sector: NA
 Bearing : 0.00E+00 degrees

Collection Date : NA Analysis Data : NA
 Collection Time : NA Analysis Time : NA

Exposure Rate (uR/hr) : NA Exposure Rate Ratio : 1.00E+00

Initial Decay Time (days): 0.00E+00 Exposure Time (days) : 3.65E+02

Ground Roughness : 1.00E+00 Weathering Factor : 1.00E+00
 Contamination Factor : 1.00E+00 Unspecified Factor : 1.00E+00

Occupancy Factor 1 : 1.00E+00 Transmission Factor 1 : 1.00E+00
 Occupancy Factor 2 : 0.00E+00 Transmission Factor 2 : 0.00E+00
 Occupancy Factor 3 : 0.00E+00 Transmission Factor 3 : 0.00E+00

Slide	Decayed uCi/sq m	Effective Hours	KOCHER83 uRem/hr per uCi/sq m	-- Unshielded --		--- Shielded ---	
				Total mrem	% of Total	Total mrem	% of Total
- 95m	1.00E+00	1.25E+02	8.36E-01	1.19E-01	0.2	1.19E-01	0.2
- 95	1.00E+00	1.21E+03	8.95E+00	3.10E+01	62.1	3.10E+01	62.1
- 95	1.00E+00	2.17E+03	8.65E+00	1.88E+01	37.7	1.88E+01	37.7

Totals: 4.99E+01 4.99E+01

***** PROJECTED DOSE FOR SAMPLE LOG NUMBER 5001 *****
Calculation performed on 05-21-1989 at 22:29

Description: CALC TEST

Distance : 0.00E+00 miles Sector: NA
Bearing : 0.00E+00 degrees

Collection Date : NA Analysis Data : NA
Collection Time : NA Analysis Time : NA

Exposure Rate (uR/hr) : NA Exposure Rate Ratio : 1.00E+00

Initial Decay Time (days): 0.00E+00 Exposure Time (days) : 3.65E+02

Ground Roughness : 1.00E+00 Weathering Factor : 1.00E+00
Decontamination Factor : 1.00E+00 Unspecified Factor : 1.00E+00

Occupancy Factor 1 : 1.00E+00 Transmission Factor 1 : 1.00E+00
Occupancy Factor 2 : 0.00E+00 Transmission Factor 2 : 0.00E+00
Occupancy Factor 3 : 0.00E+00 Transmission Factor 3 : 0.00E+00

***** SUMMARY REPORT *****

Unshielded 365 Day Committed Dose: 4.99E+01 mrem
% of Preventive PAG : 49.9
% of Emergency PAG : 10.0

Shielded 365 Day Committed Dose: 4.99E+01 mrem
% of Preventive PAG : 49.9
% of Emergency PAG : 10.0

***** COMPARISON OF SAMPLE LOG NUMBERS 451 AND 400 *****

Calculation performed on 05-20-1989 at 12:17

Log Number : 451
Description: POINT #11 (SEE MAP)

Distance : 1.80E+01 miles
Bearing : 2.73E+02 degrees
Collection Date: 06/26/8
Collection Time: 13:30

Sector: N
Analysis Date: 06/26/88
Analysis Time: 13:30

Log Number : 400
Description: BETWEEN MUD LAKE & LAKE SHANQUILA

Distance : 1.25E+01 miles
Bearing : 3.00E+02 degrees
Collection Date: 06/25/8
Collection Time: 11:33

Sector: P
Adjusted Analysis Date: 06/26/88
Adjusted Analysis Time: 13:30

Nuclide	Halflife	-----451-----		-----400-----	
		uCi/sq m	% of Total	uCi/sq m	% of Total
Sr- 91	9.67E+00 H	6.50E-02	5.2	4.83E-11	0.0
Nb- 95	3.51E+01 D	2.10E-02	1.7	9.61E-04	0.6
Zr- 95	6.40E+01 D	2.30E-02	1.8	9.88E-04	0.6
Ru-103	3.95E+01 D	1.50E-01	12.0	6.87E-03	4.0
Ru-106	3.68E+02 D	3.70E-02	3.0	1.70E-03	1.0
I -131	8.04E+00 D	3.60E-01	28.9	1.28E-01	73.9
I -133	2.08E+01 H	1.40E-03	0.1	2.36E-04	0.1
Cs-134	2.06E+00 Y	1.90E-01	15.2	8.09E-03	4.7
Cs-137	3.02E+01 Y	1.40E-01	11.2	4.90E-03	2.8
Ba-140	1.28E+01 D	0.00E+00	0.0	1.04E-02	6.0
La-140	4.02E+01 H	2.60E-01	20.8	1.09E-02	6.3
Total		1.25E+00		Total	1.73E-01

3.7 Error Handling

3.7.1 Illegal Field Entries

The field entry routine is designed so as to not allow certain keys to be entered. For example, in fields designated as integers only, the user will only be allowed to enter the numbers 0 to 9. Trying to enter any other value, will result in the user hearing a beep.

Only positive numbers may be entered (greater than or equal to zero). Thus, the user is prevented from entering a sign (+ or -) as the first value in a field designated as a number. The user is only allowed to enter a sign following an E when entering a number in scientific notation (example: 1.0E+1).

3.7.2 Illegal Values

The user is provided with information at the bottom of the screen as to what values are valid for a given field. If the value entered by the user is not valid for the field, a message will be displayed at the bottom of the screen indicating to the user what is wrong. This message will be displayed for approximately 3 seconds after which the field prompt will again be displayed. The user does not need to strike any keys to return to the field prompt.

3.7.3 Printer Errors

Any time the user sends output to the printer, he/she will see a message on the screen requesting that the printer be checked. At this point the user should verify that the printer is turned on and loaded with paper. Striking any key will then allow the program to print the requested information.

If the user does not check the printer, DEPDOSE's error handling routine will trap on the fact that the printer is not available. If the printer is not turned on or is out of paper, a message will be displayed identifying the problem. Once the problem is fixed, the user may resume program operation by pressing any key. If the printer is not attached, a message will be displayed telling the user that the print routine is being bypassed.

The routine which detects printer errors is slow. QuickBASIC is designed to allow time to correct printer problems before it reports that the printer is turned off or out of paper. If printing does not commence in a relatively short time frame, the user should begin checking the printer rather than wait, what may be up to a minute, for the error trapping routine to display its message.

3.7.4 Missing Files

Each time DEPDOSE opens a file for use, a variable is set equal to the name of that file. If the program can not find the file, the error trapping routine will display then name of that file and terminate the program. Appendix A of this manual can be used to determine what the purpose of the file was so that proper steps can be taken to replace it.

3.7.5 Unanticipated Errors

The error handling routine in DEPDOSE will display QuickBASIC's standard message for that error. Program execution is then terminated.

4.0 REFERENCES

Ha70 Hamawi J. N., "A Useful Recurrence Formula for the Equations of Radioactive Decay", Nuc. Tech., 11, 84 (1970).

WASH-1400 Nuclear Regulatory Commission, "Calculation of Reactor Accident Consequences, Appendix VI to Reactor Safety Study", WASH-1400 (1975).

APPENDIX A

Tables A.1 and A.2 presents a list of the program files which must reside in the program directory. Program files created by an executable file need not be present at startup.

TABLE A.1

DEPDOSE Program Files

MAINMENU	EXE ⁽¹⁾	Main code; builds and maintains libraries; provides access to calculation module.
CALC	EXE ⁽¹⁾	Build and maintain deposition data libraries; setup data for calculations; provides access to library maintenance module.
RECALC5	EXE ⁽¹⁾	Fortran routine; calculates decay of activity and committed dose.
ARCHIVE	PRG ⁽¹⁾	Program file used by MAINMENU.EXE; contains names of archived dose factor files.
DEFAULT	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains list of nuclides which will serve as deposition data input prompts.
DEFLOG	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains names of default deposition data libraries.
DFCONVRT	PRG ⁽¹⁾	Program file used by MAINMENU.EXE when building dose factor libraries.
DEFDATA	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.exe; contains 30 character description of the default deposition libraries.
DFNAMES	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains names of active dose factor libraries.
DF_FLAG	PRG ⁽¹⁾	Library file created by MAINMENU.EXE and used by RECALC5.EXE; contains flags for each dose factor library indicating whether progeny doses are included with parent.
DOSES	PRG	Program file created by RECALC5.EXE and used by CALC.EXE; contains the results of a calculation.

(1) Must be present at startup.

TABLE A.1
(Continue)

DEPDOSE Program Files

FOOTERS	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains data entry prompts and error messages.
IMPRTLOG	PRG	Program file created by CALC.EXE; log numbers of data imported from other databases (see Appendix B).
LOGFILE	PRG ⁽¹⁾	Program file used by CALC.EXE; contains log numbers of user entered deposition data.
MODIFIER	PRG ⁽¹⁾	Library file accessible from MAINMENU.EXE, CALC.EXE, and RECALC5.EXE; contains decay time, exposure time, and dose modifiers.
NUCLIDE	PRG ⁽¹⁾	Library file accessible from MAINMENU.EXE and used by RECALC5.EXE; contains halflife and progeny yield data for up to 100 nuclides.
RATIO	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains data used to calculate the dose based on a user entered exposure rate.
READFOR	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains names of files to be read by RECALC5.EXE.
RECALC	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains desired dose, convergence criteria and maximum number of iterations allowed for decay time calculation.
SETTINGS	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains program constants
SHIELD	PRG ⁽¹⁾	Library file used by MAINMENU.EXE and CALC.EXE; contains list of transmission factors.
TEMPMOD	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains changed MODIFIER.PRG data for use when calculating decay time.

(1) Must be present at startup.

TABLE A.1
(Continued)

DEPDOSE Program Files

TEMPMOD1	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains changed MODIFIER.PRG data for use when comparing deposition data.
TEMPMOD2	PRG	Program file created by CALC.EXE and used by RECALC5.EXE; contains changed MODIFIER.PRG data for use when comparing deposition data.
TITLES	PRG ⁽¹⁾	Program file used by MAINMENU.EXE and CALC.EXE; contains screen titles and messages.
???????	PRG	Dose factor library files created by MAINMENU.EXE and used by CALC.EXE; contains dose rate factors for each file in the Radionuclide Data Library.

(1) Must be present at startup.

Table A.2 presents a list of the DEPDOSE created data files.

TABLE A.2

Data Files Created by DEPDOSE

ACTINDEX	0nn	Data file relating deposition data in ACTIVITY.0nn to data in Radionuclide Data Library; nn can range from 01 to 20.
ACTIVITY	0nn	Data file containing deposition data entered by the user; nn can range from 01 to 20.
DEFACTIV	0nn	Data file containing deposition data for Default Deposition Data Library nn; nn can range from 01 to 20.
DEFINDEX	0nn	Data file relating deposition data in DEFACTIV.0nn to data in Radionuclide Data Library; nn can range from 01 to 20.
IMPRTACT	0nn	Data file containing deposition data imported for another database; nn can range from 01 to 20.
IMPRTIND	0nn	Index file relating deposition data in IMPRTACT.0nn to data in Radionuclide Data Library; nn can range from 01 to 20.

LOG#, COLLECT TIME, COLLECT DATE, ANALYSIS TIME, ANALYSIS DATE, ISOTOPE ACTIVITY, ACTIVITY UNITS, MEASURED EXPOSURE, EXPOSURE UNITS, MDA, MDA UNITS, BEARING, DISTANCE, SECTOR, LOCATION

427	14:23	06/25/88	14:23	06/25/88	ZR-95	0.13	UCI/M2	3.8E-4	UCI/M2	265	14.25	N	POINT #8	(SEE MAP)
424	12:37	06/25/88	12:37	06/25/88	BA-140	3.6	UCI/M2	6.7E-4	UCI/M2	260	11.25	N	POINT #5	(SEE MAP)
425	13:54	06/25/88	13:54	06/25/88	RU-106	3.4E-1	UCI/M2	2.4E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
400	11:33	06/25/88	11:33	06/25/88	BA-140	1.1E-2	UCI/M2	6.7E-4	UCI/M2	300	12.5	P	BETWEEN MUD LAKE & LAKE SHANQUILA	
426	14:23	06/25/88	14:23	06/25/88	1-131	5.6	UCI/M2	1.7E-4	UCI/M2	267	13.5	N	POINT #7	(SEE MAP)
425	13:54	06/25/88	13:54	06/25/88	1-133	1.2E-2	UCI/M2	4.4E-4	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
450	13:00	06/26/88	13:00	06/26/88	CS-137	1.0E-3	UCI/M2	1.8E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
400	11:33	06/25/88	11:33	06/25/88	RU-106	1.7E-3	UCI/M2	2.4E-3	UCI/M2	300	12.5	P	BETWEEN MUD LAKE & LAKE SHANQUILA	
427	14:23	06/25/88	14:23	06/25/88	RU-103	0.8	UCI/M2	2.3E-4	UCI/M2	265	14.25	N	POINT #8	(SEE MAP)
451	13:30	06/26/88	13:30	06/26/88	CS-134	0.19	UCI/M2	3.8E-3	UCI/M2	273	10	M	POINT #11	(SEE MAP)
424	12:37	06/25/88	12:37	06/25/88	CS-134	2.8	UCI/M2	1.9E-4	UCI/M2	260	11.25	N	POINT #5	(SEE MAP)
426	14:23	06/25/88	14:23	06/25/88	RU-106	0.64	UCI/M2	2.4E-4	UCI/M2	267	13.5	N	POINT #7	(SEE MAP)
425	13:54	06/25/88	13:54	06/25/88	BA-140	2.2	UCI/M2	6.7E-4	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
429	16:30	06/25/88	16:30	06/25/88	ZR-95	0.11	UCI/M2	3.8E-4	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	ZR-95	9.8E-2	UCI/M2	3.8E-4	UCI/M2	273	10	M	POINT #11	(SEE MAP)
424	12:37	06/25/88	12:37	06/25/88	LA-140	3.6	UCI/M2	6.7E-4	UCI/M2	260	11.25	N	POINT #5	(SEE MAP)
451	13:30	06/26/88	13:30	06/26/88	NB-95	2.1E-2	UCI/M2	3.2E-3	UCI/M2	273	10	M	POINT #11	(SEE MAP)
425	13:54	06/25/88	13:54	06/25/88	CS-134	1.7	UCI/M2	1.9E-4	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
426	14:23	06/25/88	14:23	06/25/88	1-133	2.2E-2	UCI/M2	4.4E-4	UCI/M2	267	13.5	N	POINT #7	(SEE MAP)
400	11:33	06/25/88	11:33	06/25/88	1-133	5.6E-4	UCI/M2	4.4E-4	UCI/M2	300	12.5	P	BETWEEN MUD LAKE & LAKE SHANQUILA	
428	15:45	06/25/88	15:45	06/25/88	LA-140	2.4	UCI/M2	6.7E-4	UCI/M2	267	15	N	POINT #9	(SEE MAP)
429	16:30	06/25/88	16:30	06/25/88	CS-134	0.89	UCI/M2	1.9E-4	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
429	16:30	06/25/88	16:30	06/25/88	NB-95	0.10	UCI/M2	1.6E-4	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	CS-134	7.8E-1	UCI/M2	1.9E-4	UCI/M2	273	10	M	POINT #11	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	NB-95	9.0E-2	UCI/M2	1.6E-4	UCI/M2	273	10	M	POINT #11	(SEE MAP)
400	11:33	06/25/88	11:33	06/25/88	NB-95	9.6E-4	UCI/M2	1.6E-4	UCI/M2	300	12.5	P	BETWEEN MUD LAKE & LAKE SHANQUILA	
425	13:54	06/25/88	13:54	06/25/88	SR-91	<MDA	UCI/M2	1.0E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
428	15:45	06/25/88	15:45	06/25/88	CS-137	1.1	UCI/M2	1.8E-4	UCI/M2	267	15	N	POINT #9	(SEE MAP)
429	16:30	06/25/88	16:30	06/25/88	BA-140	1.2	UCI/M2	6.7E-4	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	BA-140	1.0	UCI/M2	6.7E-4	UCI/M2	273	10	M	POINT #11	(SEE MAP)
451	13:30	06/26/88	13:30	06/26/88	LA-140	0.26	UCI/M2	1.3E-2	UCI/M2	273	10	M	POINT #11	(SEE MAP)
450	13:00	06/26/88	13:00	06/26/88	1-131	<MDA	UCI/M2	3.4E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
450	13:00	06/26/88	13:00	06/26/88	RU-103	<MDA	UCI/M2	6.6E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
451	13:30	06/26/88	13:30	06/26/88	CS-137	0.14	UCI/M2	1.8E-3	UCI/M2	273	10	M	POINT #11	(SEE MAP)
424	12:37	06/25/88	12:37	06/25/88	ZR-95	0.34	UCI/M2	3.8E-4	UCI/M2	260	11.25	N	POINT #5	(SEE MAP)
450	13:00	06/26/88	13:00	06/26/88	ZR-95	<MDA	UCI/M2	7.6E-3	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
426	14:23	06/25/88	14:23	06/25/88	BA-140	4.0	UCI/M2	6.7E-4	UCI/M2	267	13.5	N	POINT #7	(SEE MAP)
427	14:23	06/25/88	14:23	06/25/88	LA-140	5.8	UCI/M2	6.7E-4	UCI/M2	264	12.3	N	POINT #6	(SEE MAP)
427	14:23	06/25/88	14:23	06/25/88	RU-106	0.21	UCI/M2	2.4E-3	UCI/M2	265	14.25	N	POINT #8	(SEE MAP)
427	14:23	06/25/88	14:23	06/25/88	1-131	1.8	UCI/M2	1.7E-4	UCI/M2	265	14.25	N	POINT #8	(SEE MAP)
424	12:37	06/25/88	12:37	06/25/88	SR-91	1E-7	UCI/M2	1E-3	UCI/M2	260	11.25	N	POINT #5	(SEE MAP)
428	15:45	06/25/88	15:45	06/25/88	ZR-95	0.23	UCI/M2	3.4E-4	UCI/M2	267	15	N	POINT #9	(SEE MAP)
429	16:30	06/25/88	16:30	06/25/88	CS-137	0.54	UCI/M2	1.8E-4	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	CS-137	0.48	UCI/M2	1.8E-4	UCI/M2	273	10	M	POINT #11	(SEE MAP)
400	11:33	06/25/88	11:33	06/25/88	1-131	0.14	UCI/M2	1.7E-4	UCI/M2	300	12.5	P	BETWEEN MUD LAKE & LAKE SHANQUILA	
429	16:30	06/25/88	16:30	06/25/88	SR-91	<MDA	UCI/M2	1.0E-3	UCI/M2	270	15.75	N	POINT #10	(SEE MAP)
430	17:15	06/25/88	17:15	06/25/88	SR-95	<MDA	UCI/M2	1.0E-3	UCI/M2	273	10	M	POINT #11	(SEE MAP)
451	13:30	06/26/88	13:30	06/26/88	ZR-95	7.3E-2	UCI/M2	7.3E-2	UCI/M2	273	10	M	POINT #11	(SEE MAP)

400, 11:33, 06/25/88, RU-103, 7.0E-3, UCI/M2, 2.3E-4, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILLA

- 428, 15:45, 06/25/88, 15:45, 06/25/88, RU-103, 1.5, UCI/M2, 2.3E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
429, 16:30, 06/25/88, 16:30, 06/25/88, LA-140, 1.2, UCI/M2, 6.7E-4, UCI/M2, 270, 15.75, N, POINT #10 (SEE MAP)
430, 17:15, 06/25/88, 17:15, 06/25/88, LA-140, 1.0, UCI/M2, 6.7E-4, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, NB-95, 0.21, UCI/M2, 1.6E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
429, 16:30, 06/25/88, 16:30, 06/25/88, 1-131, 1.6, UCI/M2, 1.7E-4, UCI/M2, 270, 15.75, N, POINT #10 (SEE MAP)
430, 17:15, 06/25/88, 17:15, 06/25/88, 1-131, 1.4, UCI/M2, 1.7E-4, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, CS-134, <HDA, UCI/M2, 3.8E-3, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, SR-91, <HDA, UCI/M2, 1.0E-3, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, RU-103, 2.5, UCI/M2, 2.3E-4, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, BA-106, 0.26, UCI/M2, 1.3E-2, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, CS-137, 6.1E-1, UCI/M2, 1.8E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
424, 12:37, 06/25/88, 12:37, 06/25/88, CS-137, 4.9E-3, UCI/M2, 1.6E-4, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
400, 11:33, 06/25/88, 11:33, 06/25/88, ZR-95, 1.0E-3, UCI/M2, 3.8E-4, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILLA
400, 11:33, 06/25/88, 11:33, 06/25/88, ZR-95, 1.0E-3, UCI/M2, 3.8E-4, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILLA
450, 13:00, 06/26/88, 13:00, 06/26/88, LA-140, <HDA, UCI/M2, 1.3E-2, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, CS-134, 1.0, UCI/M2, 1.9E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, 1-133, 0.013, UCI/M2, 4.4E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
424, 12:37, 06/25/88, 12:37, 06/25/88, 1-133, 2.0E-2, UCI/M2, 4.4E-4, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
425, 13:54, 06/25/88, 13:54, 06/25/88, 1-131, 3.0, UCI/M2, 1.7E-4, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, CS-137, 1.9, UCI/M2, 1.8E-4, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, BA-140, 2.4, UCI/M2, 6.7E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
429, 16:30, 06/25/88, 16:30, 06/25/88, RU-106, 0.16, UCI/M2, 2.4E-3, UCI/M2, 270, 15.75, N, POINT #10 (SEE MAP)
430, 17:15, 06/25/88, 15:45, 06/25/88, RU-106, 0.16, UCI/M2, 2.4E-3, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, CS-134, 1.9, UCI/M2, 1.9E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
429, 16:30, 06/25/88, 16:30, 06/25/88, 1-133, 6.4E-3, UCI/M2, 4.4E-4, UCI/M2, 270, 15.75, N, POINT #10 (SEE MAP)
430, 17:15, 06/25/88, 17:15, 06/25/88, 1-133, 5.6E-3, UCI/M2, 4.4E-4, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
424, 12:37, 06/25/88, 12:37, 06/25/88, RU-106, 0.57, UCI/M2, 2.4E-3, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
425, 13:54, 06/25/88, 13:54, 06/25/88, RU-103, 1.3, UCI/M2, 2.3E-4, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, ZR-95, 0.39, UCI/M2, 3.8E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, LA-140, 1.3, UCI/M2, 6.7E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, NB-95, 0.12, UCI/M2, 1.6E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, RU-106, 0.38, UCI/M2, 2.4E-3, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
424, 12:37, 06/25/88, 12:37, 06/25/88, CS-137, 1.7, UCI/M2, 1.8E-4, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
429, 16:30, 06/25/88, 16:30, 06/25/88, RU-103, 0.72, UCI/M2, 2.3E-4, UCI/M2, 270, 15.75, N, POINT #10 (SEE MAP)
430, 17:15, 06/25/88, 17:15, 06/25/88, RU-103, 0.63, UCI/M2, 2.3E-4, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, SR-91, <HDA, UCI/M2, 6.5E-2, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
400, 11:33, 06/25/88, 11:33, 06/25/88, LA-140, 1.1E-2, UCI/M2, 6.7E-4, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILLA
424, 12:37, 06/25/88, 12:37, 06/25/88, 1-131, 5.0, UCI/M2, 1.7E-4, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
425, 13:54, 06/25/88, 13:54, 06/25/88, CS-137, 1.0, UCI/M2, 1.8E-4, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, CS-134, 3.1, UCI/M2, 1.9E-4, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, NB-95, <HDA, UCI/M2, 3.2E-3, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
400, 11:33, 06/25/88, 11:33, 06/25/88, CS-134, 8.1E-3, UCI/M2, 1.9E-4, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILLA
426, 14:23, 06/25/88, 13:54, 06/25/88, MB-95, 0.36, UCI/M2, 1.6E-4, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, SR-91, <HDA, UCI/M2, 1.0E-3, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
425, 13:54, 06/25/88, 13:54, 06/25/88, ZR-95, 0.21, UCI/M2, 3.8E-4, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
426, 14:23, 06/25/88, 13:54, 06/25/88, LA-140, 4.0, UCI/M2, 6.7E-4, UCI/M2, 267, 13.5, N, POINT #7 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, BA-140, 1.3, UCI/M2, 6.7E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, RU-106, <HDA, UCI/M2, 4.8E-2, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)

APPENDIX B

DEPDOSE imports data using a sequential read statement. The program expects to see 16 fields delimited by commas. Table B.1 presents the data required for each field.

Table B.1
Imported Deposition Data Fields

Field	Data Type	Data Discription	Field Width
1	Log Number	Alphanumerical	10
2	Collection Time	HH:MM	5
3	Collection Date	MM/DD YY	8
4	Analysis Time	HH:MM	5
5	Analysis Date	MM/DD/YY	8
6	Isotope	TE-131	7
7	Activity	n.nnE+/-nn	-
8	Activity Units	uCi/m ²	-
9	Measured Exposure	n.nnE+/-nn	-
10	Exposure Units	uR/hour	-
11	MDA	n.nnE+/-nn	-
12	MDA Units	uCi/m ²	-
13	Bearing	0 to 360 (degrees)	-
14	Distance	n.nnE+nn (miles)	-
15	Sector	A - Z	1
16	Location Description	Alphanumerical	45

The first 16 fields of the file will be ignored by the program. They may be used to store the field labels. DEPDOSE expects the data to be in units of uCi/m², therefore; the data for activity units, exposure units, and MDA units are not used.

In Table B.1, field width applies only to that data which is handled by DEPDOSE as a string variable. The field width is the maximum length of the string which DEPDOSE will store. Thus, if the location description is longer than 45 characters, only the first 45 will be saved.

A sample listing of a file, ASSESS.DAT, which may be imported by DEPDOSE is presented in Appendix C.

APPENDIX C
ASSESS.DAT Listing

428, 15:45, 06/25/88, 15:45, 06/25/88, SR-91, <MDA, UCI/M2,,, 1.0E-3, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, RU-106, 3.7E-2, UCI/M2,,, 4.8E-2, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, RU-103, 0.15, UCI/M2,,, 4.6E-3, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, I-133, <MDA, UCI/M2,,, 8.8E-3, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
428, 15:45, 06/25/88, 15:45, 06/25/88, I-131, 3.4, UCI/M2,,, 1.7E-4, UCI/M2, 267, 15, N, POINT #9 (SEE MAP)
427, 14:23, 06/25/88, 14:23, 06/25/88, I-133, 7.2E-3, UCI/M2,,, 4.4E-4, UCI/M2, 265, 14.25, N, POINT #8 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, I-131, 0.36, UCI/M2,,, 3.4E-3, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, BA-140, <MDA, UCI/M2,,, 1.3E-2, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
450, 13:00, 06/26/88, 13:00, 06/26/88, SR-91, <MDA, UCI/M2,,, 6.5E-2, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)
400, 11:33, 06/25/88, 11:33, 06/25/88, SR-91, 3.1E-10, UCI/M2,,, 1.0E-3, UCI/M2, 300, 12.5, P, BETWEEN MUD LAKE & LAKE SHANQUILA
424, 12:37, 06/25/88, 12:37, 06/25/88, RU-103, 2.2, UCI/M2,,, 2.3E-4, UCI/M2, 260, 11.25, N, POINT #5 (SEE MAP)
451, 13:30, 06/26/88, 13:30, 06/26/88, I-133, 1.4E-3, UCI/M2,,, 8.8E-3, UCI/M2, 273, 18, N, POINT #11 (SEE MAP)
425, 13:54, 06/25/88, 13:54, 06/25/88, NB-95, 0.19, UCI/M2,,, 1.0E-4, UCI/M2, 264, 12.3, N, POINT #6 (SEE MAP)

END

**DATE
FILMED**

4 / 15 / 92

