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National Radiobiology Archives Distributed Access User's Manual

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NATIONAL RADIOBIOLOGY ARCHIVES

Distributed Access

Version 1.0

USER'S MANUAL

November 1991

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This software package may be run under Paradox Runtime (Copyright 1990, Borland International, all rights reserved). End users who run **NRA Distributed Access** under Paradox Runtime agree to the following:

- acknowledge that Paradox Runtime is owned by Borland International and may not be copied,
- look to PNL, the application developer, and not Borland International, for any support services required by this application,
- take no action against Borland International for any damages resulting from the use of this application, it being understood that Paradox Runtime is provided by Borland International "AS IS" and without warranties or liabilities for any damages.

If you are reasonably comfortable working in the DOS environment and have access to an IBM PC/AT or better microcomputer with 3.5 megabytes of hard disk storage available, you may install and use NRA Distributed Access without recourse to the remainder of this manual.

Installing the Software

To install the software, insert the diskette labeled **NRA Distributed Access 1** in a floppy disk drive and type:

A:\INSTALL A: C:

where **A:** is the name of the source floppy disk drive and **C:** is the name of the target hard disk drive.

Starting NRA Distributed Access

You must invoke NRA Distributed Access from the **\NRA** subdirectory on the hard disk. Move to the subdirectory by typing:

CD \NRA

To start NRA Distributed Access using Paradox® Runtime, type:

NRA

You should see the NRA Distributed Access title screen:

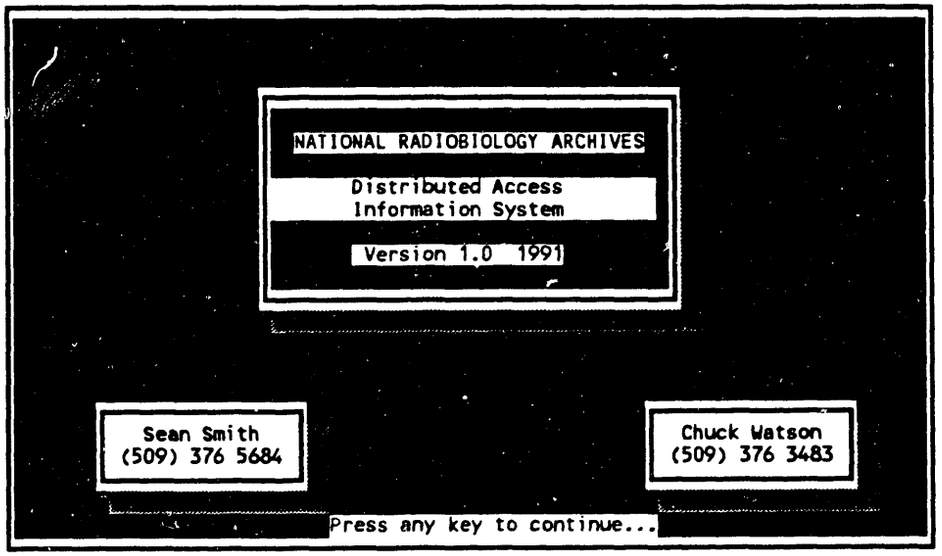


Table of Contents

This User's Manual describes installation and use of the National Radiobiology Archives (NRA) Distributed Access package. The package consists of a **distributed subset** of information representative of the NRA databases and database **access software** which provide an introduction to the scope and style of the NRA Information Systems.

What is the NRA?

The National Radiobiology Archives is a comprehensive effort to gather, organize, and catalog original data, representative specimens, and supporting materials related to significant radiobiology studies. This provides researchers with information for analyses which compare or combine results of these and other studies and with materials for analysis by advanced molecular biology techniques. The NRA concentrated initially on studies of beagle dogs exposed to ionizing radiation at Argonne National Laboratory (ANL), the Inhalation Toxicology Research Institute (ITRI), the Pacific Northwest Laboratory (PNL), the University of California at Davis (DAVIS), and the University of Utah (UTAH). Rodent studies, primarily those conducted at Oak Ridge National Laboratory (ORNL) and at ANL are being added. The NRA will be receiving a donation of information from the life-span study of beagle dogs conducted at Colorado State University (CSU).

The NRA uses a three task approach to the challenge of organizing material from diverse sources. The microcomputer based NRA **Information Systems** include: experimental design documentation, animal does-effect summaries, laboratory specific detailed databases, bibliographic citations, and an inventory of the documents and specimens. The NRA works closely with database managers at the participating laboratories to insure that electronic information is accurately translated into the NRA format. The initial donation to the NRA **Document Archives** is the collection of reprints and other materials supporting his book *Radioactivity and Health, A History* by J. Newell Stannard. The NRA **Specimen Archives** has tissue specimens and histopathology blocks from more than 1000 dogs donated by DAVIS. The specimens are organized and housed in a protected environment. These databases and archives are maintained through bar code readable labels.

Computer database technology is essential to integrating such a broad and diverse collection of information. The NRA Information Systems has developed several inter-related databases, each of which follows the relational model. There are three major databases: the Dose-effects Summary, the Collection Inventory, and the Bibliography. These are commonly referred to as the SUMMARY, INVENTORY, and BIBLIOGRAPHY databases and are illustrated in the NRA Distributed Access package. In addition, the information systems contains many detailed database tables. These are copies of laboratory specific files translated from various computers and information management systems to the microcomputer environment and a common database management system. These DETAILED databases are not included in the NRA Distributed Access package.

Information Distribution Philosophy

Information in the NRA Summary, Inventory, and Bibliography database is available on request. Printed reports have been provided in the past. The completion of the NRA Distributed Access package is the realization of a long standing goal of the NRA staff and advisory committee. Now, information may be easily distributed to the user in an electronic form which preserves the relationships between the various database tables.

In the future, a subset of requested information will be extracted by the NRA staff and placed on diskette along with the access software. This user's manual and the diskette(s) will be sent to the information requester.

Distributed Subset

NRA Distributed Access package includes a representative subset of the extensive NRA Information Systems database maintained at the Pacific Northwest Laboratory. The introductory subset consists of summary records for 100 control animals from various laboratories. It also contains 100 typical records from the bibliographic citation database. Inventory records showing the location of animal specimens and cited documents are also included. The introductory subset is described on page 39.

Access Software

The Distributed Access menus, forms, and reports are independent of the dataset. They comprise a relational database management system configured especially for the National Radiobiology Archives. It is designed to show the scope of the system by allowing the user to browse records with the databases' associated main forms. Several simple searches have been included to illustrate potential data extractions. Printed reports may be produced.

The Distributed Access system is menu driven, and on-screen help is available at all times.

Other Subsets

Other subsets, or the full NRA Information Systems database, may be accessed through menus provided with the NRA Distributed Access package. The NRA will select and distribute subsets of information upon request.

Scope and Purpose of User's Guide

This document is designed for the user. The manual includes: an overview of the NRA distributed access concept, a discussion of hardware requirements, instructions for installing and executing the software on the user's computer, descriptions and examples of menus, instructions for printing reports of database contents, a description of the database tables and alphabetized reference sections. A companion document, *NRA Distributed Access Programmer's Manual* describes details of the implementation.

Typographic Conventions

When you are instructed to use the keyboard, the keys will be in ***bold italics***. Most keys are identified by the characters on the keyboard. The spacebar is always shown as ***Spacebar***. Note that some keyboards use ***Page Up*** and/or ***PgUp*** and ***Page Down*** and/or ***PgDn***. These sets of keys are functionally equivalent.

Text you are instructed to enter appears as **large bold** type. Commands are shown in UPPER CASE and must be typed exactly as shown. Lower case input indicates user-specified names or text. All input lines are terminated by pressing the ***Enter*** key.

Keyboard Conventions

When instructed to use the keyboard, the keys are identified by name, (e.g., ***Enter***) with the exceptions of the ***Spacebar*** and the arrow keys. The arrow keys are identified as ***Up Arrow, Down Arrow, Right Arrow***, and ***Left Arrow***. When two keys are to be pressed simultaneously, the plus sign is used, (e.g., ***Control+Break***).

The keys which control movement of the cursor on the screen are collectively called the ***cursor control*** keys.

The function keys are called ***F1***, ***F2***, ***F3***, ...

Highlighted

Throughout this user's guide, the word *highlighted* refers to text and areas which are emphasized (with more contrast) to stand out from their surroundings. When something is highlighted it usually means it is selected or is about to be chosen.

Trademarks

The IBM PS/2 and AT, and DOS are products of International Business Machines Corp, P.O. Box 1328, Boca Raton, Florida 33429-1328.

Paradox is a registered trademark of Borland International, 1800 Greenhills Road, P.O. Box 660001, Scotts Valley, California 95066-0001.

Distribution Media

NRA Distributed Access is supplied on either 3-1/2 inch (1.44 megabyte) or 5-1/4 inch (1.2 megabyte) high-density floppy diskettes formatted under PC DOS. The diskettes are labelled **NRA Distributed Access 1** and **NRA Distributed Access 2**.

Software Package Contents

An automated procedure controls installation of the software onto the host computer's hard disk. The software is provided in compressed format and a public domain utility is used to decompress the software.

Distribution via NESC

Distribution of the NRA Distributed Access package (software and introductory subset of the NRA database), in accordance with DOE Order 1360.4A (10-7-87) is through the National Energy Software Center (NESC). Requests for this software may be made to:

Director
National Energy Software Center
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

NESC will provide users notice of updates to the NRA Distributed Access package when they become available.

Security

Maintenance of the integrity and confidentiality of the software package and associated subject data files is the responsibility of the user. No special provisions for accessibility of the program or data files are included in the software package.

Error Reporting and Assistance

If you have any unexplained error messages while running NRA Distributed Access or if you need assistance, please contact:

Sean Smith
Pacific Northwest Laboratory
Post Office Box 999 P7-82
Richland, WA 99352

Phone: (509) 376-5684
FAX: (509) 376-4533

Hardware

The NRA Distributed Access package may be implemented on any IBM® PS/2, AT or fully-compatible computer configured with either a 5-1/4 inch or 3-1/2 inch high density floppy disk drive. A minimum of 3.5 megabytes of available on-line disk storage is necessary to install the software. A minimum of 512 kilobytes of RAM should be available. If printed reports are desired, a printer must be available to the computer.

Operating System

This software will execute under DOS 3.3 or later version.

Paradox®

The NRA Distributed Access system, as well as the primary NRA Information Systems were developed in Paradox®, a database management product of Borland International. The NRA Distributed Access menus operate through the runtime application version of Paradox®. The license from Borland to Pacific Northwest Laboratory allows unlimited distributed of such runtime applications. Use of the NRA Distributed Access package does not require Paradox® ownership or usage skills.

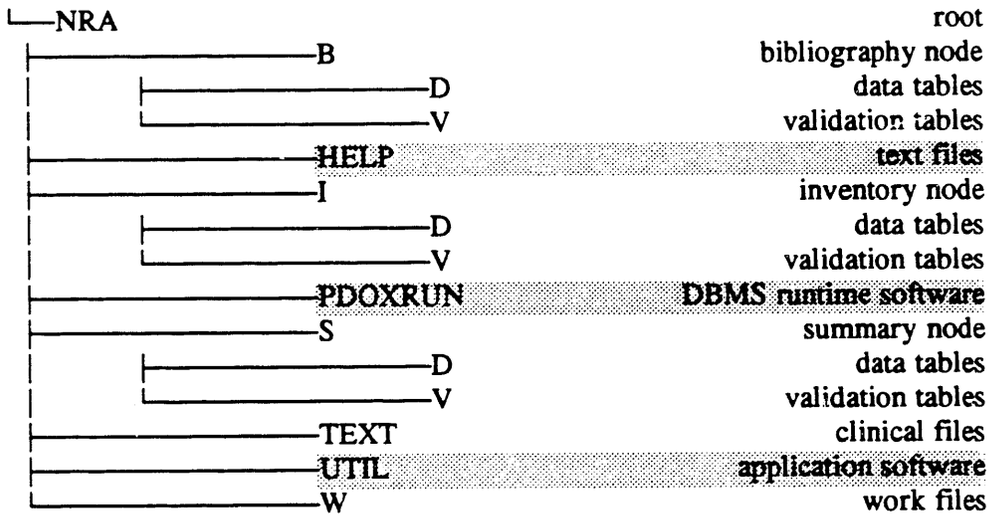
Paradox® versus Paradox® Runtime Execution

NRA Distributed Access menus may also be run under Paradox® Version 3.5. Users who have a licensed copy of Paradox® on their computer may wish to take advantage of the *ad hoc* query facility, via F10 ASK, to explore retrieval strategies not supported in the NRA Distributed Access search menus. Paradox® users may also access alternative report and screen formats associated with the tables which are not available under the runtime application. Instructions for accessing NRA Distributed Access from Paradox® will be found on page 13.

\NRA

The directory **\NRA** and its subdirectories contain the distributed subset of database tables and the access mechanism consisting of the Paradox® Runtime software, scripts and help text. This relationship between access software and database information is shown by shading the access software in the following diagram.

NRA directory tree



Distribution Media

NRA Distributed Access package is supplied on two or more diskettes. The installation process will expand the compressed database and software and move it to the hard disk. You will need approximately 3,500,000 bytes of free disk space. If you have multiple disk partitions on your computer, you must choose where to place the NRA Distributed Access package. **These instructions are for installing from A: to C:.** In the instructions below, you may substitute B for A and some other hard disk drive letter for C.

Diskette 1

Insert the diskette labeled **NRA Distributed Access 1** in the drive. Invoke the INSTALL.BAT program on the diskette. You must supply two drive identifiers to the install program. The first is the letter of the diskette drive, the second is the letter of the destination drive.

C:> **A:\INSTALL A: C:**

You will see the following screen:

```
'
'
'
                NRA Distributed Access

                NATIONAL RADIOBIOLOGY ARCHIVES
                Information Systems Demonstration
'
                Installation Procedure
'
                Pacific Northwest Laboratory
                Richland WA
'
                Contact:  Sean Smith   (509) 376-5684
'
'
INSTRUCTIONS
Install command:   INSTALL (source drive) (destination drive)
       Example:    INSTALL A: C:
'
'
NRA Distributed Access will be decompressed from drive a: to drive c:

Press CONTROL-BREAK if this is incorrect.
Strike a key when ready . . .
```

If you change your mind

If you do not want to proceed with the installation, enter ***Control+Break*** to abort the process. You may abort at any time in the installation process.

If you strike any key except ***Control+Break*** the installation process will start.

Several directories will be built on the hard disk. The root directory for this application is called NRA.

What if subdirectory NRA is already there?

If there is already a directory called NRA on your hard disk, you will see the following screen:

```
,
,
,
A copy of NRA Distributed Access already exists on c:
,
Compressed NRA Distributed Access will overwrite existing version on c:
Press CONTROL-BREAK to cancel overwrite
```

If you press any key except ***Control+Break***, the installation process will start. If you press ***Control+Break***, the process will stop. You may then take decide how to proceed.

Install confirmation display

Once you have started the installation process, you will see the names of the expanded files as they are moved from the diskette to the hard disk. The screen will look something like the following:

```
Press CONTROL-BREAK if this is incorrect.
Strike a key when ready . . .
Zoo:  nra.bat      -- extracted
Zoo:  disp.db      -- extracted
Zoo:  disp.f1      -- extracted
Zoo:  disp.f12     -- extracted
Zoo:  disp.px      -- extracted
Zoo:  disp.r1      -- extracted
Zoo:  disp.r10     -- extracted
Zoo:  species.db   -- extracted
Zoo:  species.f1   -- extracted
Zoo:  species.f12  -- extracted
Zoo:  species.f2   -- extracted
Zoo:  species.px   -- extracted
Zoo:  species.r    -- extracted
Zoo:  species.r1   -- extracted
Zoo:  species.r10  -- extracted
Zoo:  sv.doc       -- extracted
Zoo:  ani.db       -- extracted
Zoo:  ani.f        -- extracted
Zoo:  ani.f1       -- extracted
Zoo:  ani.f10      -- extracted
Zoo:  ani.f11      -- extracted
Zoo:  ani.f12      -- extracted
Zoo:  ani.f2       --
```

Prompt for next

Eventually, the last file on the first diskette will be extracted and you will be

diskette

prompted to insert the diskette labeled **NRA Distributed Access 2**.

```
Zoo:  tiss_qua.hlp -- extracted
Zoo:  tissue_c.hlp -- extracted
Zoo:  title.hlp    -- extracted
Zoo:  wgt_firs.hlp -- extracted
'
Insert NRA Distributed Access Diskette 2 in a:

Strike a key when ready . . .
```

Diskette 2

Another list of files moving from diskette to hard disk will be shown on the screen. Finally, the process will terminate with the following message:

```
'
NRA Distributed Access successfully installed.

'
Type NRA to run NRA Distributed Access.
Strike a key when ready . . .
```

Using Paradox® Runtime as supplied

To use the NRA distributed database access software with the runtime version of Paradox®, simply set your DOS default to the disk drive containing the NRA Distributed Access package (assume it is C:), change your default directory to NRA and enter the command NRA.

```
C:
CD \
CD NRA
NRA
```

Using your own copy of Paradox®

If you have a copy of Paradox® 3.5 or greater, you may invoke the NRA distributed database access software from within Paradox®. This will allow you to perform *ad hoc* queries using the F10 ASK feature which is not supported in the runtime version. Set your DOS default to the directory containing NRA Distributed Access and get into Paradox® in your usual way. Then run the script MAIN which is stored in subdirectory UTIL.

```
C:
CD \
CD NRA
PARADOX

F10
SCRIPTS
PLAY
UTIL\MAIN
```

Menu Navigation

The NRA Distributed Access system is completely menu driven. Menu items may be selected by moving the menu selection bar with the ***cursor control*** keys and hitting the ***Enter*** key, or by pressing the first letter of the menu choice. The menu choice which will be selected is *highlighted*.

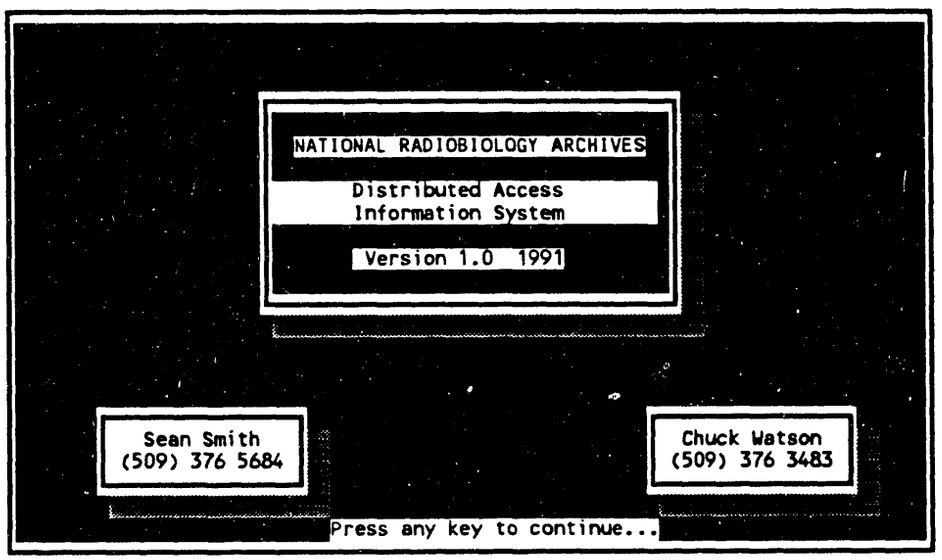
The ***Escape*** key will always move you up one level in the menus. You may exit from the NRA Distributed Access application from any menu by selecting "Quit". Feel free to use the F1 key to obtain a help window at any time.

Before the Main Menu

When you start the NRA Distributed Access system, you will see three screens before you get to the Main Menu. The Title screen assures you that you are running the NRA Distributed Access system and indicates the version number. The two subsequent license screens are a necessary legal requirement.

Title Screen

The title screen is the first screen you will see.



License Agreement Screen

The second screen shows the Department of Energy license agreement:

This computer software has been developed under sponsorship of the Department of Energy (DOE). Any further distribution by any holder of this software package, its accompanying documentation, or other data therein outside of DOE offices or other DOE contractors, unless otherwise specifically provided for, is prohibited without the approval of the National Energy Software Center (NESC). Requests from outside DOE and its contractors shall be submitted to:

Director, National Energy Software Center,
Argonne National Laboratory,
9700 South Cass Avenue,
Argonne, Illinois 60439.

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Press any key to continue...

Paradox® Runtime Disclaimer

The third screen shows the Paradox® Runtime disclaimer:

This software package is running under Paradox Runtime (Copyright 1990, Borland International, all rights reserved). By pressing a key to continue, you agree to:

- acknowledge that Paradox Runtime is owned by Borland International and may not be copied,
- look to PNL, the application developer, and not Borland International, for any support services required by this application,
- take no action against Borland International for any damages resulting from the use of this application, it being understood that Paradox Runtime is provided by Borland International "AS IS" and without warranties or liabilities for any damages.

Press any key to continue...

Menu Structure

MAIN MENU	
INFORMATION	Information display
SUMMARY	Go to Summary Menu
HOLDINGS	Information display
BROWSE	Data display
SEARCHES	Go to Search Menu
ANIMAL	Select animal(s)
ASSIGNED_ID	Select animal(s)
STUDY	Select animals in study(s)
T-EFFECT	Select animals by effect(s)
T-DOSE	Select animals by dose(s)
RETURN	Go to Summary Menu
MAIN	Go to Main Menu
QUIT	Go to DOS
RETURN	Go to Main Menu
QUIT	Go to DOS
INVENTORY	Go to Inventory Menu
HOLDINGS	Information display
BROWSE	Data display
SEARCHES	Go to Search Menu
ANIMAL	Select animal(s)
ASSIGNED_ID	Select animal(s)
STUDY	Select animals by study(s)
RETURN	Go to Inventory Menu
MAIN	Go to Main Menu
QUIT	Go to DOS
RETURN	Go to Main Menu
QUIT	Go to DOS
BIBLIOGRAPHY	Go to Bibliography Menu
HOLDINGS	Information display
BROWSE	Data display
SEARCHES	Go to Search Menu
AUTHOR	Select books by author(s)
TITLE	Select books by title(s)
YEAR	Select books by year(s)
RETURN	Go back to Bibliography Menu
MAIN	Go to Main Menu
QUIT	Go to DOS
RETURN	Go to Main Menu
QUIT	Go to DOS
DETAIL	Information display
HOLDINGS	Information Display
RETURN	Go to Main Menu
QUIT	Go to DOS
HELP	Information display
PURPOSE	Information display
CURSOR KEY	Information display
FUNCTION KEY	Information display
RETURN	Go back to Help Menu
QUIT	Go to DOS
QUIT	Go to DOS

Main Menu

National Radiobiology Archives

MAIN MENU

Information	Description of the National Radiobiology Archives.
Summary	Access the animal related Dose-effects database.
Inventory	Access Specimen and Documents Inventory database.
Bibliography	Access the Bibliographic citation database.
Detail	Description of the Detailed database tables.
HELP	How to use this software.
Quit	Exit, return to DOS.

Summary Menu

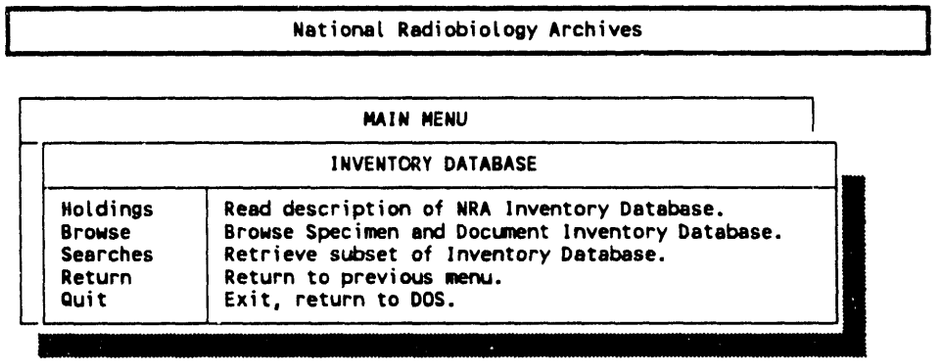
National Radiobiology Archives

MAIN MENU

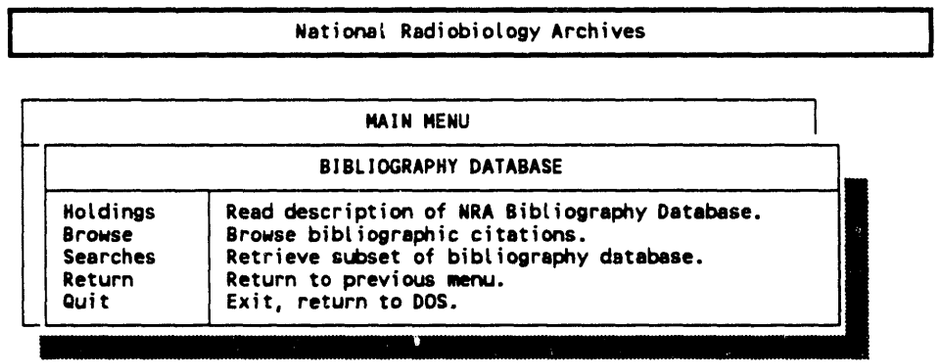
SUMMARY DATABASE

Holdings	Read description of NRA Summary Database holdings.
Browse	Browse Dose-effects Summary Database.
Searches	Retrieve subset of Dose-effects Summary Database.
Return	Return to previous menu.
Quit	Exit, return to DOS.

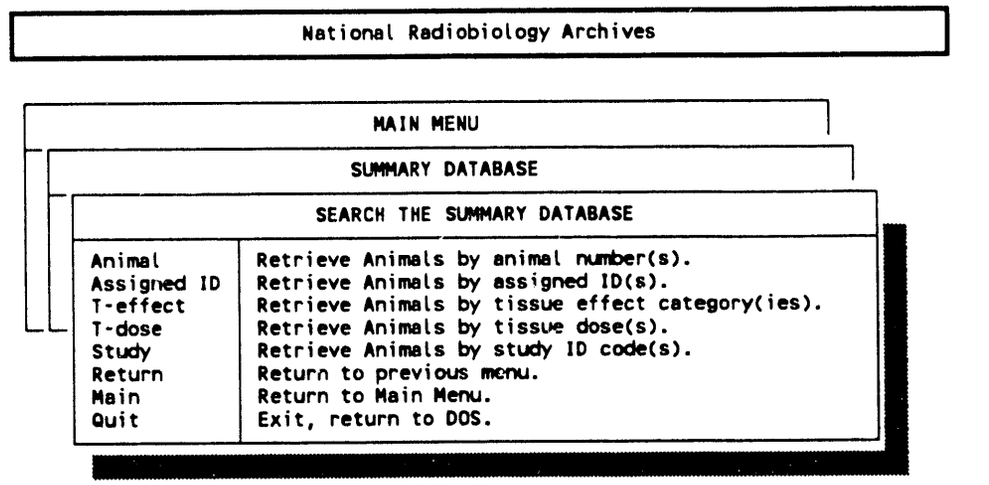
Inventory Menu



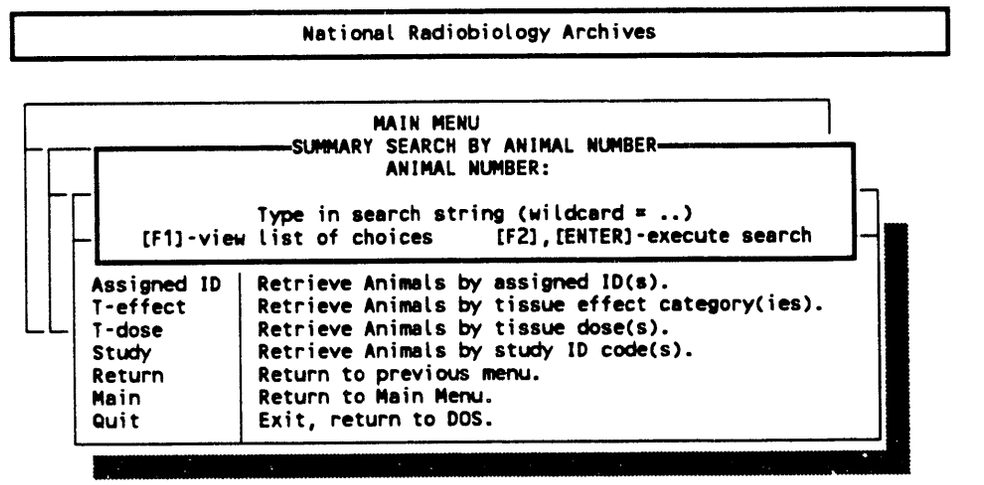
Bibliography Menu



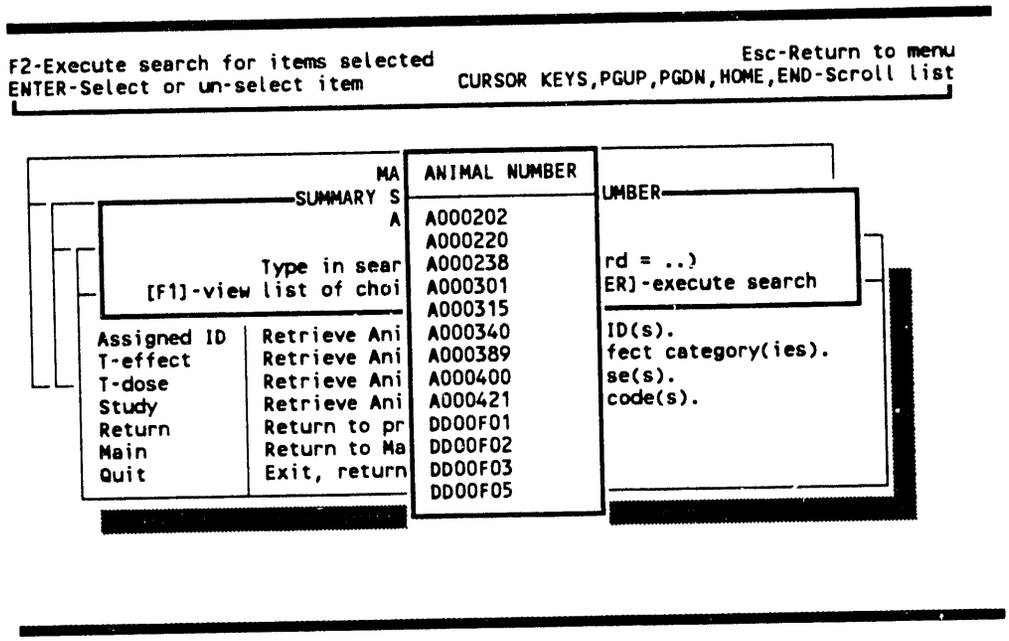
Summary Database Search Menu



Search by Animal Number



F1 option shows list of animals



Printer Assumptions

The NRA Distributed Access package is designed to help people understand the scope of the National Radiobiology Archives Information Systems. It has a limited capacity to create reports. You may direct these reports to a DOS file and use them as any other ASCII file. You may also direct these reports to your printer. The printed reports will be directed to LPT1. They do not require graphics or special fonts; they are designed for a generic printer.

NRA Philosophy on Reports

Reports reflecting the browse screens are part of the NRA Distributed Access system. However, summary reports, tabulating information such as number of animals with a specific neoplasm are not provided. Summary reporting is basically an *ad hoc* activity requiring Paradox usage and familiarity.

The printed reports contain more information than is shown on the screen. The reports are designed to display as much of the database contents as possible, therefore, they do not mimic the screen. The browse screens are designed to provide a reasonable view of the records to aid in the selection of subsets for analysis. The reports are intended to be part of the analysis.

Printed reports of the clinical description of an animal or of the menu help files may also be obtained.

Summary Database Browse - Print option, F6

The F6 (PRINT) key is functional on browse screens. If you were browsing the Summary database, and were viewing animal DD00F01, you would see the following:

```
F1-HELP     [CTRL][Z]-ZOOM   ESC-RETURN TO MENU            VIEWING RECORD 2 OF 65
F3-UPIMAGE F4-DNIMAGE F5-CLN_TXT F6-PRINT    HOME,END,↑,↓,PGUP,PGDN-SCAN RECORDS
                          NATIONAL RADIOBIOLOGY ARCHIVES
ANIMAL: DD00F01      PRIMARY: Y          CONTROL: Y   ACCESSION_DATE: 12/12/90
LAB: D University of California, Davis
STUDY: 02 DAVIS-1961 strontium-90, dietary
GROUP: 01 Control
SPECIES: Canis familiaris, Beagle
ASSIGNED_ID: DD00F01                     SIRE: D61C06Z  DAM: D62G088
BIRTH: 12/14/63      SEX: F
1ST_INSULT: 12/14/63 1ST_INSULT_AGE: 0.0  LAST:  6/06/65 LAST_INSULT_AGE:  1.5
INSULT:              kBq/kg    PBB       1ST_WEIGHT:
REMOVAL:             REMOVAL_AGE: ERROR
DEATH:  3/24/81      DEATH_AGE:  17.3     RESULTS_FINAL: P
E Euthanized - killed because death was judged imminent.
COD: Metastatic mammary carcinoma
FINDINGS: Metastatic mammary carcinoma

        TEFFECT TABLE                          TDOSE TABLE
TISSUE          MORPHOLOGY          TISSUE        DOSE         DATE
SKIN+MAMMARY    INFLAMMATION        SKELETAL SYST  Gy          3/24/81
SKIN+MAMMARY    ALTERED GROWTH
SKIN+MAMMARY    BENIGN NEOPLASM
HEMOLYMPH       ALTERED GROWTH
```

At that time, if you press F6, the top of the screen would display the print option menu:

```
FILE  PRINTER  EXIT
Send Report to file...
                          NATIONAL RADIOBIOLOGY ARCHIVES
ANIMAL: DD00F01      PRIMARY: Y          CONTROL: Y   ACCESSION_DATE: 12/12/90
LAB: D University of California, Davis
STUDY: 02 DAVIS-1961 strontium-90, dietary
GROUP: 01 Control
SPECIES: Canis familiaris, Beagle
ASSIGNED_ID: DD00F01                     SIRE: D61C06Z  DAM: D62G088
BIRTH: 12/14/63      SEX: F
1ST_INSULT: 12/14/63 1ST_INSULT_AGE: 0.0  LAST:  6/06/65 LAST_INSULT_AGE:  1.5
INSULT:              kBq/kg    PBB       1ST_WEIGHT:
REMOVAL:             REMOVAL_AGE: ERROR
DEATH:  3/24/81      DEATH_AGE:  17.3     RESULTS_FINAL: P
E Euthanized - killed because death was judged imminent.
COD: Metastatic mammary carcinoma
FINDINGS: Metastatic mammary carcinoma

        TEFFECT TABLE                          TDOSE TABLE
TISSUE          MORPHOLOGY          TISSUE        DOSE         DATE
SKIN+MAMMARY    INFLAMMATION        SKELETAL SYST  Gy          3/24/81
SKIN+MAMMARY    ALTERED GROWTH
SKIN+MAMMARY    BENIGN NEOPLASM
HEMOLYMPH       ALTERED GROWTH
```

Output to File

Selection of the FILE option prompts you to enter the name of the output file. Enter the name (maximum of 8 characters) without file type suffix. The software will append ".RPT" automatically.

```
Enter an 8 character file name:test
File with .RPT will be placed in C:\NRA\
                    NATIONAL RADIOBIOLOGY ARCHIVES
ANIMAL: DD00F01      PRIMARY: Y          CONTROL: Y   ACCESSION_DATE: 12/12/90
LAB: D University of California, Davis
STUDY: 02 DAVIS-1961 strontium-90, dietary
GROUP: 01 Control
SPECIES: Canis familiaris, Beagle
ASSIGNED_ID: DD00F01                     SIRE: D61C06Z  DAM: D62G088
BIRTH: 12/14/63      SEX: F
1ST_INSULT: 12/14/63 1ST_INSULT_AGE: 0.0  LAST:  6/06/65 LAST_INSULT_AGE:  1.5
INSULT:              kBq/kg    PBB       1ST_WEIGHT:
REMOVAL:             REMOVAL_AGE: ERROR
DEATH:  3/24/81      DEATH_AGE:  17.3     RESULTS_FINAL: P
E Euthanized - killed because death was judged imminent.
COD: Metastatic mammary carcinoma
FINDINGS: Metastatic mammary carcinoma

        TEFFECT TABLE                    TDOSE TABLE
TISSUE          MORPHOLOGY       TISSUE        DOSE        DATE
SKIN+MAMMARY    INFLAMMATION     SKELETAL SYST  Gy         3/24/81
SKIN+MAMMARY    ALTERED GROWTH
SKIN+MAMMARY    BENIGN NEOPLASM
HEMOLYMPH       ALTERED GROWTH
```

After you enter the file name, in this case "test", the following display will indicate that the file is being created.

```
                Sending report to file: C:\NRA\test.RPT

                    NATIONAL RADIOBIOLOGY ARCHIVES
ANIMAL: DD00F01      PRIMARY: Y          CONTROL: Y   ACCESSION_DATE: 12/12/90
LAB: D University of California, Davis
STUDY: 02 DAVIS-1961 strontium-90, dietary
GROUP: 01 Control
SPECIES: Canis familiaris, Beagle
ASSIGNED_ID: DD00F01                     SIRE: D61C06Z  DAM: D62G088
BIRTH: 12/14/63      SEX: F
1ST_INSULT: 12/14/63 1ST_INSULT_AGE: 0.0  LAST:  6/06/65 LAST_INSULT_AGE:  1.5
INSULT:              kBq/kg    PBB       1ST_WEIGHT:
REMOVAL:             REMOVAL_AGE: ERROR
DEATH:  3/24/81      DEATH_AGE:  17.3     RESULTS_FINAL: P
E Euthanized - killed because death was judged imminent.
COD: Metastatic mammary carcinoma
FINDINGS: Metastatic mammary carcinoma

        TEFFECT TABLE                    TDOSE TABLE
TISSUE          MORPHOLOGY       TISSUE        DOSE        DATE
SKIN+MAMMARY    INFLAMMATION     SKELETAL SYST  Gy         3/24/81
SKIN+MAMMARY    ALTERED GROWTH
SKIN+MAMMARY    BENIGN NEOPLASM
HEMOLYMPH       ALTERED GROWTH
```

Output to Printer

If you choose to send the output directly to the printer, the following message will appear:

```
                    Sending report to the printer

                    NATIONAL RADIOBIOLOGY ARCHIVES
ANIMAL: DD00F01      PRIMARY: Y          CONTROL: Y   ACCESSION_DATE: 12/12/90
LAB: D University of California, Davis
STUDY: 02 DAVIS-1961 strontium-90, dietary
GROUP: 01 Control
SPECIES: Canis familiaris, Beagle
ASSIGNED_ID: DD00F01                     SIRE: D61C06Z  DAM: D62G088
BIRTH: 12/14/63      SEX: F
1ST_INSULT: 12/14/63 1ST_INSULT_AGE: 0.0  LAST:  6/06/65 LAST_INSULT_AGE:  1.5
INSULT:              kBq/kg    PBB       1ST_WEIGHT:
REMOVAL:             REMOVAL_AGE: ERROR
DEATH:  3/24/81      DEATH_AGE:  17.3     RESULTS_FINAL: P
E Euthanized - killed because death was judged imminent.
COD: Metastatic mammary carcinoma
FINDINGS: Metastatic mammary carcinoma

        TEFFECT TABLE                    TDOSE TABLE
TISSUE          MORPHOLOGY       TISSUE         DOSE        DATE
SKIN+MAMMARY    INFLAMMATION     SKELETAL SYST  Gy          3/24/81
SKIN+MAMMARY    ALTERED GROWTH
SKIN+MAMMARY    BENIGN NEOPLASM
SKIN+MAMMARY    ALTERED GROWTH
```

Animal Summary Report example

The report generated by the steps shown above is:

NATIONAL RADIOBIOLOGY ARCHIVES

10/07/91 SUMMARY DATABASE REPORT Page: 1

********** Animal Summary **********

```
ANIMAL_ID:      DD00F01
LAB_ID:         D  University of California, Davis
STUDY_ID:       02  DAVIS-1961 strontium-90, dietary
GROUP_ID:       01  Control
SPECIES:        01  Canis familiaris, Beagle
PRIMARY:        Y
CONTROL:        Y
RESULTS_FINAL:  P
ASSIGNED_ID:    DD00F01
SEX:            F
SIRE_ID:        D61C06Z
DAM_ID:         D62G08B
LITTER_NO:      0307
BIRTH_DATE:     12/14/63
BURDEN_TYPE:    PBB
QTY_INSULT_SI:
UNITS_SI:       kBq/kg
QTY_INSULT_TD:
UNITS_TRAD:
FIRST_INSULT:   12/14/63
FINAL_INSULT:   6/06/65
FIRST_INS_WGT:   grams
REMOVAL_DATE:
DEATH_DATE:     3/24/81
DISPOSITION:    E  Euthanized - killed because death was judged imminent.
TISS_ANALYSIS:  H
COD:            Metastatic mammary carcinoma
FINDINGS:       Metastatic mammary carcinoma
ACCESSION_DATE: 12/12/90
```

********** Effects Summary for Animal Table **********

TOPO_CODE	TOPOGRAPHY	MORPH_CODE	MORPHOLOGY	DX
T010009	SKIN+MAMMARY	M400009	INFLAMMATION	H
T010009	SKIN+MAMMARY	M700009	ALTERED GROWTH	B
T010009	SKIN+MAMMARY	M800000	BENIGN NEOPLASM	H
T050009	HEMOLYMPH	M700009	ALTERED GROWTH	P
T080009	LYMPH NODES	M800000	BENIGN NEOPLASM	H
T080009	LYMPH NODES	M800010	BENIGN OR MALIG?	B
T100009	BONE + MUSCL	M700009	ALTERED GROWTH	P
T100009	BONE + MUSCL	M800000	BENIGN NEOPLASM	B
T202009	RESP, LOWER	M400009	INFLAMMATION	H
T202009	RESP, LOWER	M800000	BENIGN NEOPLASM	H
T501109	DIGESTIVE, U	M800000	BENIGN NEOPLASM	H
T560009	LIVER	M400009	INFLAMMATION	H
T560009	LIVER	M500009	DEGENERATION	H

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NATIONAL RADIOBIOLOGY ARCHIVES

10/07/91 SUMMARY DATABASE REPORT Page: 2

********** Effects Summary for Animal Table **********

TOPO_CODE	TOPOGRAPHY	MORPH_CODE	MORPHOLOGY	DX
T560009	LIVER	M800000	BENIGN NEOPLASM	C
T701109	KIDNEY	M400009	INFLAMMATION	H
T702009	FEMALE REPRO	M400009	INFLAMMATION	B
T702009	FEMALE REPRO	M700009	ALTERED GROWTH	B
T702009	FEMALE REPRO	M800000	BENIGN NEOPLASM	H
T900009	ENDOCRINE	M500009	DEGENERATION	H
T900009	ENDOCRINE	M800000	BENIGN NEOPLASM	H

```
TX00009     CNS + EYES        M500009     DEGENERATION      H
TX00009     CNS + EYES        M800000     BENIGN NEOPLASM   H

********** Tissue Dose Summary for Animal Table **********

TISSUE_CATEGORY: SKELETAL SYS
DOSE_UNITS:      Gy
LAST_NORMAL:            TYPE_LAST_NORMAL:    DOSE_LAST_NORMAL:
DOSE_ERR_LAST_NORMAL:
DATE_CLIN_DX:           TYPE_CLIN_DX    :    DOSE_CLIN_DX    :
DOSE_ERR_CLIN_DX    :
DATE_TISS_DX:  3/24/81  TYPE_TISS_DX    : H  DOSE_TISS_DX    :
DOSE_ERR_TISS_DX    :

                    NATIONAL RADIOBIOLOGY ARCHIVES
```

Report shows more than screen

Note that there are several fields shown on the report which are not shown on the screen. This is due to space limitations on the screen. The reports will show the full database record for the animal. The report is divided into three sections, the ANIMAL TABLE is printed at the top, the TISSUE EFFECTS TABLE is in the middle, and the TISSUE DOSE TABLE is shown at the bottom.

Inventory Browse Screen example

The following screen is an example browse of the inventory database.

```
            Sending report to file: C:\NRA\test_inv.RPT

                  NATIONAL RADIOBIOLOGY ARCHIVES

ANIMAL_ID: U000246      QUALIFIER:        QUANITITY:        BAR_CODE: U000019

                        SUMMARY ANIMAL TABLE

LAB-STUDY_GROUP: U-01-02    SEX: M    BORN:  2/20/54       DIED:  6/06/68
ASSIGNED_ID: M010R00

                        INVENTORY MASTER TABLE

ITEM:       SLD.PAR                              ACCESSION_DATE:  8/06/90
SNODOG:
CONTAINER: SLD.CAB
ANI_QTY:       4       ITEM_QTY:
COMMENTS:

                      INVENTORY LOCATION TABLE
LAB: U  BUILDING: 0586   ROOM: 0071  CABINET: A     SHELF: 0002  POS: 0005
```

Inventory Report example

The report produced from the screen above is:

```
                              NATIONAL RADIOBIOLOGY ARCHIVES

10/07/91                        INVENTORY DATABASE REPORT                        Page:  1

****************************** Inventory Detail Table ******************************

ANIMAL_ID: U000246  QUALIFIER:   QUANTITY:    BAR_CODE: U000019

********************************** Animal Summary **********************************

ANIMAL_ID:       U000246
LAB_ID:          U
STUDY_ID:        02
GROUP_ID:        01
SPECIES:         01
PRIMARY:         Y
CONTROL:         Y
RESULTS_FINAL:   N
ASSIGNED_ID:     M010R00
SEX:             M
SIRE_ID:         U009910
DAM_ID:          U009912
LITTER_NO:       0000
BIRTH_DATE:      2/20/54
BURDEN_TYPE:
QTY_INSULT_SI:
UNITS_SI:
QTY_INSULT_TD:   0
UNITS_TRAD:
FIRST_INSULT:    7/27/55
FINAL_INSULT:    7/27/55
FIRST_INS_WGT:   10900 grams
REMOVAL_DATE:
DEATH_DATE:      6/06/68
DISPOSITION:     E
TISS_ANALYSIS:   H
COD:             not available
FINDINGS:        NEPHRITIS
ACCESSION_DATE:  11/09/90

****************************** Inventory Master Table ******************************

ITEM:       SLD.PAR          ACCESSION_DATE: 8/06/90
FORE_CODE:
SNODOG:
CONTAINER:  SLD.CAB
ANI_QTY:    4
ITEM_QTY:
COMMENTS:



                              NATIONAL RADIOBIOLOGY ARCHIVES
                              NATIONAL RADIOBIOLOGY ARCHIVES

10/07/91                        INVENTORY DATABASE REPORT                        Page:  2

****************************** Inventory Location Table ******************************

LAB:        U
DATE:       8/06/90
STATUS:     I
BUILDING:   0586
ROOM:       0071
CABINET:    A
SHELF:      0002
POS:        0005
```

Bibliography Browse Screen example

An example browse screen from the bibliography database is shown below:

```
Enter an 8 character file name:test_bib
File with .RPT will be placed in C:\NRA\
                    NATIONAL RADIOBIOLOGY ARCHIVES
BAR_CODE: 0000292
TITLE: Inhalation Toxicology Research Institute Annual Report

SUBTITLE:

JOURNAL:
JOURNAL_SUBTITLE:
PUBLISHER: Lovelace Foundation
LOCATION: Albuquerque NM
VOLUME:             YEAR:1983  PAGES: 455
REPORT_NO: LMF-107
DOC_TYPE: LAB.AR    DONOR_ID: JNS  LAB_ID: I
                  BIBLIOGRAPHY AUTHOR TABLE
  LAST_NAME          FIRST_NAME          MIDDLE_NAME        STATUS
  Marshall           T                   C                    E        1
  Guilmette          R                   Q                    E        2
  Byers              R                   L                    E        3

                  INVENTORY LOCATION TABLE
LAB: P  BUILDING: 3767   ROOM: 0018  CABINET: 0004  SHELF: 0002  POS: 0005 1
```

Bibliography Report example

The report produced from the example above contains more information than will fit on the screen.

NATIONAL RADIOBIOLOGY ARCHIVES

10/07/91 BIBLIOGRAPHY DATABASE REPORT Page: 1

********** Bibliography Book Table **********

BAR_CODE: 0000292
TITLE: Inhalation Toxicology Research Institute Annual Report
SUBTITLE:
JOURNAL:
J_SUBTITLE:
PUBLISHER: Lovelace Foundation
LOCATION: Albuquerque NM
VOLUME: YEAR: 1983 PAGES: 455
REPORT_NO: LMF-107
DOC_TYPE: LAB.AR DONOR_ID: JNS LAB_ID: I
ABSTRACT: N KEYWORD: N INVENTORY_FLAG: Y

********** Bibliography Author Table **********

LAST_NAME	FIRST_NAME	MIDDLE	STATUS	RANK
Marshall	T	C	E	1
Guilmette	R	Q	E	2
Byers	R	L	E	3
Martinez	B	S	E	4

********** Inventory Location Table **********

LAB: P
DATE: 12/12/90
STATUS:
BUILDING: 3767
ROOM: 0018
CABINET: 0004
SHELF: 0002
POS: 0005

NATIONAL RADIOBIOLOGY ARCHIVES

Types of Information Available

There are four general categories of information available in the NRA Information Systems. The **summary** and **detailed** databases are related specifically to animals used in dose-effects studies. The **inventory** database is related to physical materials in the NRA Document and Specimen Archives. The **bibliography** database provides access to published materials in Radiobiology. The purpose of this section is to describe the scope and magnitude of the full database maintained at PNL. The next section describes the distributed subset.

The NRA Information System consists of many relational database tables, only a few are included in the subset distributed with the NRA Distributed Access Package. The following description of the full information systems structure is provided so that you will be aware of the scope of information available on request.

Active disk storage

The disk storage in use at the NRA in October, 1991 is summarized in the following table:

Category:	Paradox	Summary	Inventory	Biblio	Details
Megabytes:	2.0	11	1.5	.9	30
Tables:	n/a	8	5	2	43

Summary Database

There are 8 tables in the Summary Database. These tables and their associated validation tables and indexes require about 11 megabytes of disk storage.

Lab

The Lab table contains descriptions of the donating laboratories, including the name and address of the PI.

```
Paradox table name:          LAB
record length in bytes:      628
fields per record:            11
records available:             7
```

The Lab table is complete, and its contents have been reviewed by the PI's.

Study

The Study table contains descriptions of the studies. It describes the completion status, type and frequency of insult, chemical form and age of the animals. It includes a short narrative abstract.

Paradox table name:	STU
record length in bytes:	612
fields per record:	12
records available:	62

The Study table is complete for the 5 beagle laboratories, and its contents have been reviewed by the PI's. Records for CSU and ORNL are under review.

Group

The Group table contains descriptions of the groups within each study. It describes the completion status, number of animals, and quantity of insult.

Paradox table name:	GRO
record length in bytes:	204
fields per record:	9
records available:	444

The Group table is complete for the 5 beagle laboratories, and its contents have been reviewed by the PI's. Records for CSU and ORNL are under review.

Animal

The Animal table contains descriptions of the individual animals. It contains demographic information (birth, death, parents, etc.), insult information, and a brief description of the cause of death or findings.

Paradox table name:	ANI	
record length in bytes:	356	
fields per record:	27	
records available:	14,700	
ANL	108	Study 04 only
DAVIS	1,437	Study 01 incomplete
ITRI	1,645	
ORNL	9,765	2 studies
PNL	498	Study 01 and 02 incomplete
UTAH	1,247	

The Animal table is growing as the donating laboratories contribute additional information.

Tissue Dose

The Tissue Dose table contains descriptions of the dose delivered to various tissues. It has fields for 3 doses: on the date the tissue was last observed to be normal, on the date of diagnosis, and at death. At present, only the dose at death is available.

Paradox table name:	TDOSE
record length in bytes:	83
fields per record:	15
records available:	1,886

The Tissue Dose table will grow as the donating laboratories contribute additional information.

Function

The Function table contains a description of a function used to compute dose to

a tissue category at a given time.

Paradox table name:	FUNCTION
record length in bytes:	92
fields per record:	5
records available:	0

The Function table is empty pending donation of additional information.

Tissue Effect

The Tissue Effect table contains summary descriptions of the effect observed in various tissues.

Paradox table name:	TEFFECT
record length in bytes:	21
fields per record:	3
records available:	41,092
ANL	820
DAVIS	9,151
ORNL	11,813
UTAH	19,308

The Tissue Effect table will grow as the donating laboratories contribute additional information.

Control

The Control table relates each control animal to the study or studies for which it is a control.

Paradox table name:	CONTROL
record length in bytes:	10
fields per record:	4
records available:	908
ANL	120
DAVIS	219
ITRI	266
PNL	130
UTAH	173

The Control table is growing as the donating laboratories contribute additional information.

Inventory Database

The Inventory database has 5 tables which occupy about 1.5 megabytes of disk space:

Master

The Master table contains descriptions of each container in the specimen archives and each document in the records archives. This is the definition of the bar code labels.

Paradox table name:	MASTER
record length in bytes:	73
fields per record:	8
records available:	3,224

Location
The Location table indicates the physical location of each item listed in the Master table. An additional record is added to the location table when an inventory item is moved or loaned.

Paradox table name:	LOCATION
record length in bytes:	33
fields per record:	9
records available:	3,251

Detail
The Detail table relates individual animals to inventory bar codes.

Paradox table name:	DETAIL
record length in bytes:	17
fields per record:	4
records available:	12,229

Patron
The Patron table describes users of the Document of Specimen Archives.

Paradox table name:	PATRON
record length in bytes:	141
fields per record:	10
records available:	1

Loan
The Loan table associates bar codes in the Master table with a person in the Patron table when materials are on loan.

Paradox table name:	LOAN
record length in bytes:	18
fields per record:	3
records available:	1

Bibliography Database

The Bibliography database consists of 4 tables, only 2 are in use. At this early stage in its development, the bibliography database requires less than 1 megabyte of disk space.

Book
The Book table holds general bibliographic information for each item in the documents archives. The books are related to the physical location in the inventory database by the bar code label.

Paradox table name:	BOOK
record length in bytes:	688
fields per record:	17
records available:	369

Author
The Author table contains names of authors.

Paradox table name:	AUTHOR
record length in bytes:	55
fields per record:	6
records available:	480

Key Word
The Key Word table is not implemented.

Abstract
The Abstract table is not implemented.

Detailed Database Tables

The detailed tables are laboratory specific topical files translated to the Paradox® database management system. The NRA provides documentation of the translation but does not attempt to convert information to standardized formats.

For example, each life-span study of beagles produced a computer file of serial body weights. The NRA is collecting these files, translating them to the Paradox database management system, and documenting their structure. The NRA is not attempting to merge the weight data from the donating laboratories. Thus, there is no standardization of weight units (grams, kilograms, etc.), date format (mmddyy or yymmdd, etc.) or format of the data value (integer, real, etc.). Users of the detailed databases are expected to normalize the data for their specific purpose.

Selection of the Introductory subset

A representative subset of the NRA Information Systems database was selected for inclusion in the Distributed Access package. A few typical control animals from each donating laboratory were chosen to make a total group of 100 animals. Dosimetry and effects records associated with these 100 animals were also selected. Similarly, 100 representative bibliographic citations were included. Finally, the animals and books were matched with the inventory database to extract associated records. The composition of this **introductory subset** is discussed in detail below.

Disk Storage Requirements

The NRA Distributed Access package, configured with the introductory subset, requires 3.5 megabytes of disk storage. The disk space required in kilobytes is shown in this tree diagram, where the mandatory access software is shaded.

NRA Directory Tree
Storage used by Distributed Access Package

tree structure	*function*	*kilobytes*
NRA	root	0
B	bibliography node	0
D	data tables	240
V	validation tables	15
HELP	text files	55
I	inventory node	0
D	data tables	89
V	validation tables	22
PDOXRUN	DBMS software	1,480
S	summary node	0
D	data tables	373
V	validation tables	27
TEXT	clinical files	15
UTIL	application software	915
W	work files	250

Space required for Access Software	2,450
Space required for Distributed Subset	1,050
Space required for NRA Distributed Access Package	3,500

Summary Database

There are 8 tables in the Summary Database. While these tables and their associated validation tables and indexes currently occupy about 11 megabytes of disk storage at the NRA, the introductory subset is less than 500 kilobytes.

Lab

The distributed subset contains the complete Lab table. There are 7 rows. A representative row is shown below:

```
10/09/91          LAB TABLE EXAMPLE REPORT                Page   1


LAB_ID:       I
ACRONYM:      ITRI
LAB_NAME:     Inhalation Toxicology Research Institute
DIVISION:     Lovelace Biomedical and Environmental Research
              Institute, Inc.
ADDRESS_1:    Inhalation Toxicology Research Institute
ADDRESS_2:    Biomedical and Environmental Research
ADDRESS_3:    PO Box 5890
ADDRESS_4:    Albuquerque, NM  87185
PHONE:        505 845 1090
CONTACT:      Dr. Bruce B. Boecker
```

Study

The distributed subset contains the complete Study table. A representative report showing two of the 62 study records is shown below. It describes the completion status, type and frequency of insult, chemical form and age of the animals. It includes a short narrative abstract.

```
10/09/91          STUDY TABLE EXAMPLE REPORT              Page   1

LAB_ID: R -> ORNL  Oak Ridge National Laboratory
-----------------------------------------------

STUDY_ID:          01                        NRA accession date:  6/06/91
NRA_STUDY_NAME:    ORNL-1977-Gamma Ray, single dose exposure at 10
                   weeks, female only
LAB_STUDY_NAME:    Cs-137 gamma rays @ 0.4 Gy/min to BALB/cBd and
                   RFM/Bd mice
PI:                Ullrich and Storer
STUDY_STATUS:      F -> Final, the analysis for this is complete.
STUDY_INSULT:      Gamma Ray                 ->gamma ray
CHEMICAL_FORM:     2000 curie cesium-137 source
STUDY_MODE:        EXT  -> External Exposure
STUDY_FREQUENCY:   S    -> Single
STUDY_AGE:         10WK -> The mean age of all the animals in this
                           study is 10 weeks.
STUDY_SYNOPSIS:    4729 BALB/cBd and RFM/Bd female mice were exposed
                   to 0, 0.5, or 2.0 Gy at 0.4 Gy/min.  Results were
                   reported in: R.L. Ullrich and J.B. Storer,
                   Radiation Research 80, 303 - 324 (1970)


STUDY_ID:          02                        NRA accession date:  6/06/91
NRA_STUDY_NAME:    ORNL-1987-Gamma Ray, single dose exposure at 10
                   weeks, male and female
LAB_STUDY_NAME:    Cs-137 gamma rays @ 0.4 Gy/min to C3Hf/Bd and
                   C57BL/6Bd mice
PI:                Storer and Fry
STUDY_STATUS:      F -> Final, the analysis for this is complete.
STUDY_INSULT:      Gamma Ray                 ->gamma ray
CHEMICAL_FORM:     2000 curie cesium-137 source
STUDY_MODE:        EXT  -> External Exposure
STUDY_FREQUENCY:   S    -> Single
STUDY_AGE:         10WK -> The mean age of all the animals in this
                           study is 10 weeks.
STUDY_SYNOPSIS:    5034 C3Hf/Bd and C57BL/6Bd male and female mice
                   were exposed to 0, 0.5, 1.0 or 2.0 Gy at 0.4
                   Gy/min.  Results were reported in:  J.B. Storer,
                   T.J. Mitchell, and R.J.M. Fry, Radiation Research
                   114, 331 - 353 (1988).
```

Group

The distributed subset contains the complete Group table. A representative example of one of the 444 group records is shown below. It contains descriptions of the groups within each study. It describes the completion status, number of animals, and quantity of insult.

```
10/09/91                    GROUP TABLE EXAMPLE REPORT                    Page   1


LAB_ID----------: A  ->ANL                          NRA accession date: 12/01/90
                    ->Argonne National Laboratory
STUDY_ID--------: 04 ->ANL-1961 cesium-137
                  PI ->Bill Norris / Tom Fritz
GROUP_ID--------: 01
NRA_GROUP_NAME--: 3.2 to 3.8 uCi/kg, Quantity Injected (single inj.) at 5
                  months old
LAB_GROUP_NAME--: 5 month group
GROUP_STATUS----: P  -> Provisional, the analysis of this is considered
N_ANIMALS-------:  15   provisional and may change in the future.
GRO_INSULT_QTY--: 3.2 to 3.8
GRO_INSULT_UNITS: uCi/kg   -> microcuries per kilogram
```

Animal

The introductory subset distributed with the NRA Distributed Access package contains 100 records from the Animal table. These are descriptions of the individual animals which contain demographic information (birth, death, parents, etc.), insult information, and a brief description of the cause of death or findings.

The 100 records were selected from the control animal population at each donating laboratory.

Laboratory	*Controls*
ANL	9
DAVIS	16
ITRI	11
ORNL	35
PNL	13
UTAH	16

A representative record, for Davis dog D00F01, is shown below.

```
10/09/91      ANI TABLE EXAMPLE REPORT        Page   1


ANIMAL_ID:        DD00F01                       NRA accession date: 12/12/90

LAB_ID:           D
STUDY_ID:         02
GROUP_ID:         01
SPECIES:          01  -> Canis familiaris, Beagle
PRIMARY:          Y
CONTROL:          Y
RESULTS_FINAL:    P
ASSIGNED_ID:      DD00F01
SEX:              F
SIRE_ID:          D61C06Z
DAM_ID:           D62G08B
LITTER_NO:        0307
BIRTH_DATE:       12/14/63
BURDEN_TYPE:      PBB       -> Peak body burden
QTY_INSULT_SI:       0
```

```
INSULT_UNITS_SI:   kBq/kg    -> kiloBecquerel/kilogram
QTY_INSULT_TRADITIONAL:
INSULT_UNITS_TRADITIONAL:
FIRST_INSULT:      12/14/63
FINAL_INSULT:       6/06/65
WGT_FIRST_INSULT:    9000 grams
REMOVAL_DATE:
DEATH_DATE:         3/24/81
DISPOSITION:       E -> Euthanized - killed because death was judged
                        imminent.
TISS_QUALITY:        ->
CAUSE_OF_DEATH:    Metastatic mammary carcinoma
FINDINGS:          Metastatic mammary carcinoma
```

Tissue Effect

The introductory subset contains 699 Tissue Effect records. These summarize observations in major tissue categories for each animal. A few records for Davis dog D00F01 are shown below.

```
10/09/91              TEFFECT TABLE EXAMPLE REPORT                Page   1

ANIMAL_ID:         DD00F01                      NRA accession date:  3/01/91

TISSUE_CATEGORY:  T080009   -> NRA category  3: Lymph Nodes
MORP_CATEGORY:    M800010   -> Neoplasm, uncertain whether benign or
                               malignant
DX:               B         -> Biopsy or Surgical removal with Histopath
                               exam

TISSUE_CATEGORY:  T100009   -> NRA category  4: Muscloskeletal system
MORP_CATEGORY:    M700009   -> NRA category: Alterations; Hypertrophy,
                               Hyperplasia, etc.
DX:               P         -> Physical exam or observation, i.e. palpation

TISSUE_CATEGORY:  T100009   -> NRA category  4: Muscloskeletal system
MORP_CATEGORY:    M800000   -> Neoplasm, benign
DX:               B         -> Biopsy or Surgical removal with Histopath
                               exam

TISSUE_CATEGORY:  T202009   -> NRA category  6: Respiratory system, Lower
MORP_CATEGORY:    M400009   -> NRA category: Inflamation and Fibrosis
DX:               H         -> Histopathology exam of Necropsy specimen

TISSUE_CATEGORY:  T202009   -> NRA category  6: Respiratory system, Lower
MORP_CATEGORY:    M800000   -> Neoplasm, benign
DX:               H         -> Histopathology exam of Necropsy specimen

TISSUE_CATEGORY:  T501109   -> NRA category  7: Disestive system, Upper
                               (Liver excluded)
MORP_CATEGORY:    M800000   -> Neoplasm, benign
DX:               H         -> Histopathology exam of Necropsy specimen

TISSUE_CATEGORY:  TX00009   -> NRA category 14: Nervous system including
                               Eyes
MORP_CATEGORY:    M800000   -> Neoplasm, benign
DX:               H         -> Histopathology exam of Necropsy specimen
```

Tissue Dose

The introductory subset contains one Tissue Dose record per animal. Since these descriptions of the dose delivered to various tissues are intended for exposed animals, artificial records indicating zero dose to the whole body were created for use in the subset. In the full NRA Information System, records are stored in the Tissue Dose table only for exposed animals with well characterized dosimetry.

Function

The Function table will not be distributed until dose function information is available.

Control

The introductory subset has a Control table containing 109 records. Since all animals in the subset are controls, there is one record for each. In addition, the 9 ANL animals served as controls for more than one study, therefore there is an additional record associating each with study "00" as well as study "04".

Inventory Database

The Inventory database has 5 tables which occupy about 1.5 megabytes of disk space in the NRA Information System. The introductory subset contains a representative subset which only requires about 100 kilobytes of storage space.

Master

The Master table in the introductory subset contains 180 records. These describe each container in the specimen archives and each document in the records archives. This is the definition of the bar code labels.

The records selected for the subset are directly related to the Animal and Book tables. The NRA Inventory database was joined with the 100 animal subset to identify 80 inventory Master records. In addition 100 inventory Master records related to the 100 bibliography Book records were selected. A few representative records are shown below. The example includes bibliography as well as tissue specimen inventory master records.

```
10/09/91                    MASTER TABLE EXAMPLE REPORT                    Page   1


BAR_CODE:         0000212                              NRA accession date: 11/15/90
FORE_CODE:
ITEM_CODE:        LAB.AR     -> LABORATORY ANNUAL REPORT
SNODOG_CODE:                 ->
CONTAINER_CODE:              ->
ANI_QTY:
ITM_QTY:
COMMENTS:         Stannard Collection

BAR_CODE:         0000234                              NRA accession date: 11/15/90
FORE_CODE:
ITEM_CODE:        LAB.AR     -> LABORATORY ANNUAL REPORT
SNODOG_CODE:                 ->
CONTAINER_CODE:              ->
ANI_QTY:
ITM_QTY:
COMMENTS:         Stannard Collection

BAR_CODE:         D000912                              NRA accession date:  1/21/91
FORE_CODE:
ITEM_CODE:        TIS.FOR    -> TISSUE SPECIMEN IN FORMALIN
SNODOG_CODE:                 ->
CONTAINER_CODE:   TIS.TUB    -> PLASTIC TUB FOR TISSUES
ANI_QTY:             7
ITM_QTY:            58
COMMENTS:

BAR_CODE:         DBX0002                              NRA accession date:  2/01/90
FORE_CODE:
ITEM_CODE:        TIS.FOR    -> TISSUE SPECIMEN IN FORMALIN
SNODOG_CODE:                 ->
CONTAINER_CODE:   BOX.SHP    -> CARDBOARD BOX SHIPPED FROM DAVIS
ANI_QTY:             15
ITM_QTY:             47
COMMENTS:         formalin looks OK

BAR_CODE:         U000019                              NRA accession date:  8/06/90
FORE_CODE:
ITEM_CODE:        SLD.PAR    -> PARAFFIN SLIDE
```

```
SNODOG_CODE:              ->
CONTAINER_CODE: SLD.CAB   -> SLIDE CABINET
ANI_QTY:              4
ITM_QTY:
COMMENTS:

BAR_CODE:       U000622                              NRA accession date:  9/12/90
FORE_CODE:
ITEM_CODE:      CLN.REC   -> CLINICAL RECORDS
SNODOG_CODE:              ->
CONTAINER_CODE: FIL.CAB   -> FILE CABINET
ANI_QTY:             32
ITM_QTY:
COMMENTS:

BAR_CODE:       U001440                              NRA accession date: 11/08/90
FORE_CODE:
ITEM_CODE:      BLK.PAR   -> PARAFFIN BLOCK
SNODOG_CODE:              ->
CONTAINER_CODE: BLK.CAB   -> PARAFFIN BLOCK CABINET
ANI_QTY:              2
ITM_QTY:
COMMENTS:       SOUTH OF DOOR
```

Location

The introductory subset contains 180 Location records associated with the 180 inventory Master records. These indicate where the container or bibliographic item is physically located. A few representative records are shown below.

```
10/09/91                LOCATION TABLE EXAMPLE REPORT                Page   1

BAR_CODE:       0000212
LOCATION_DATE:  11/15/90
STATUS:
LAB:            P      -> PNL    Pacific Northwest Laboratory
BUILDING:       3767
ROOM:           0018
CABINET:        0003
SHELF:          0005
POS:            0020

BAR_CODE:       D000912
LOCATION_DATE:   1/21/91
STATUS:
LAB:            P      -> PNL    Pacific Northwest Laboratory
BUILDING:       331G
ROOM:           CENT
CABINET:        0001
SHELF:          0003
POS:            0001

BAR_CODE:       DBX0002
LOCATION_DATE:   2/01/90
STATUS:         I
LAB:            P      -> PNL    Pacific Northwest Laboratory
BUILDING:       331G
ROOM:           CENT
CABINET:        ?
SHELF:          ?
POS:            ?

BAR_CODE:       U000019
LOCATION_DATE:   8/06/90
STATUS:         I
LAB:            U      -> UTAH   University of Utah
BUILDING:       0586
ROOM:           0071
CABINET:        A
SHELF:          0002
POS:            0005

BAR_CODE:       U001440
LOCATION_DATE:  11/08/90
STATUS:
LAB:            U      -> UTAH   University of Utah
BUILDING:       0404
ROOM:           Bsmt
CABINET:        X-X
SHELF:          0006
POS:            W-W
```

Detail

The introductory subset contains 135 Detail table records which relate individual animals to inventory bar codes. The example below illustrates how one bar code, D000912, can have many associated detail records. In this case, D000912 is the bar code label applied to a plastic tub containing many bags of tissue specimens. Each bag is associated with a single dog.

```
10/09/91                    DETAIL TABLE EXAMPLE REPORT                    Page   1


BAR CODE:    D000912
ANIMAL ID:   DD00F24
QUALIFIER:   B     -> Biopsy
QUANTITY:    3

BAR CODE:    D000912
ANIMAL ID:   DD00F24
QUALIFIER:   N     -> Necropsy
QUANTITY:    2

BAR CODE:    D000912
ANIMAL ID:   DD00F29
QUALIFIER:   B     -> Biopsy
QUANTITY:    2

BAR CODE:    D000912
ANIMAL ID:   DD00F29
QUALIFIER:   N     -> Necropsy
QUANTITY:    4

BAR CODE:    D000912
ANIMAL ID:   DD00F32
QUALIFIER:   B     -> Biopsy
QUANTITY:    12

BAR CODE:    D000912
ANIMAL ID:   DD00F32
QUALIFIER:   N     -> Necropsy
QUANTITY:    2

BAR CODE:    D000912
ANIMAL ID:   DD00M26
QUALIFIER:   B     -> Biopsy
QUANTITY:    13

BAR CODE:    D000912
ANIMAL ID:   DD00M26
QUALIFIER:   N     -> Necropsy
QUANTITY:    2
```

Loan

The Loan table will not be included in the NRA Distributed Access package. Printed information about loans may be obtained on request.

Patron

The Patron table will not be included in the NRA Distributed Access package. Printed information about patrons may be obtained on request.

Bibliography Database

The Bibliography database consists of 4 tables, only 2 of them are in use. At this early stage in its development, the bibliography database requires less than 1 megabyte of disk space at the NRA. One hundred records were selected for the introductory subset, they occupy less than 250 kilobytes of storage space.

Book

The introductory subset contains 100 records from the Book table. These hold general bibliographic information for each item in the documents archives. The books are related to physical location in the inventory database by the bar code label. Two records are shown below.

```
10/09/91                    BOOK TABLE EXAMPLE REPORT                    Page   1


BAR_CODE:           0000001
TITLE:              Life-Span Effects of Ionizing Radiation in the Beagle Dog
SUBTITLE:           A Summary Account of Four Decades of Research Funded by
                    the U.S. Department of Energy and Its Predecessor Agencies
JOURNAL:
JOURNAL_SUBTITLE:
PUBLISHER:          Pacific Northwest Laboratories
LOCATION:           Richland, Washington
VOLUME:
PUB_YR:             1989
PAGES:              323
REPORT_NO:          PNL-6822;UC-408
DOC_TYPE:           BOOK        -> A complete book (related code: CHAPTER)
DONOR_ID:           RCT         -> Roy C. Thompson
LAB_ID:                         ->
                                ->
ABSTRACT_FLAG:      N
KEY_WORD_FLAG:      N
INVENTORY_FLAG:     Y

BAR_CODE:           0000212
TITLE:              Laboratory for Energy Related Health Research
SUBTITLE:           Annual Report Fiscal Year 1985
JOURNAL:
JOURNAL_SUBTITLE:
PUBLISHER:          University of California, Davis
LOCATION:           Davis, CA
VOLUME:
PUB_YR:             1987
PAGES:              144
REPORT_NO:          UCD 472-131
DOC_TYPE:           LAB.AR      -> A laboratory annual report.
DONOR_ID:           JNS         -> J. Newell Stannard
LAB_ID:             D           -> DAVIS
                                -> University of California, Davis
ABSTRACT_FLAG:      N
KEY_WORD_FLAG:      N
INVENTORY_FLAG:     Y
```

Author

The introductory subset contains 147 records from the Author table. These contain names of authors as shown below.

```
10/09/91                   AUTHOR TABLE EXAMPLE REPORT                   Page   1


BAR_CODE:     0000001
STATUS:       A -> Author
RANK:              1
LAST_NAME:    Thompson
FIRST_NAME:   Roy
MIDDLE:       C

BAR_CODE:     0000212
STATUS:       D -> Director
RANK:              1
LAST_NAME:    Overstreet
FIRST_NAME:   James
MIDDLE:       W.

BAR_CODE:     0000212
STATUS:       D -> Director
RANK:              2
LAST_NAME:    Raabe
FIRST_NAME:   Otto
MIDDLE:       G.
```

Key Word
The Key Word table is not implemented.

Abstract
The Abstract table is not implemented.

Help screens are available at all times. They are invoked by pressing ***F1***. There are two types of help, menu related and cursor related.

Each menu has an option which will display textual help describing the menu and the contents of the database which may be examined through that menu. These help screens are printed on the following pages in alphabetical order.

Bibliography

If the user selects "Holdings" from the Bibliography Menu, the following text appears in a scrolling window:

```
                    NRA INFORMATION SYSTEMS
                BIBLIOGRAPHY DEMONSTRATION

The NRA Information Systems include experimental design documentation,
animal summaries, document catalogs, specimen catalogs, and bibliographic
citations organized in this relational database.  There are three major
databases:  the Dose-effects Summary, the Collection Inventory, and the
Bibliography.  These are commonly referred to as the SUMMARY, INVENTORY,
and BIBLIOGRAPHY databases.

This demonstration BIBLIOGRAPHY database application contains
representative records from two tables (BOOK and AUTHOR).

                          BIBLIOGRAPHY
                        Status October 1, 1991

Table       Records     Comments

BOOK          369       Bibliographic citation, indexed by
                        bar-code label defined in Inventory
                        Database table Master.

AUTHOR        480       One or more records for each Book,
                        related by bar code label.

KEY WORD                Not implemented.

ABSTRACT                Not implemented.

Browsing through the BOOK Table you may view the author(s) in the
corresponding AUTHOR Table.  These Tables are also linked to the
Location Table indicating the physical location of the book.  Examples
of these retrievals are included.  You may obtain a subset of the
bibliography based on:

                        TITLE
                        AUTHOR
                        YEAR
```

Cursor Control

If the user selects "Cursor" from the Help Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEM
CURSOR CONTROL KEYS

You may move the cursor with the keyboard cursor control keys only; this software does not support use of a mouse or track ball.

The cursor controls, which are available on any screen, are shown at the bottom or at the top of the screen. Selection of an inappropriate cursor control key will cause a beep. The cursor controls are intuitive; they are slightly different depending on the type of screen you are viewing.

Menus:

The cursor is shown as a highlighted menu option.

Left arrow	Beep
Right arrow	Beep
Up arrow	Up one choice
Down arrow	Down one choice
PgDn	Beep
PgUp	Beep
Home	Top choice
End	Bottom choice

Help Screens:

The cursor is shown as a highlighted line of text, you may scroll up or down within the help window by using the cursor down or cursor up key.

Left arrow	Beep
Right arrow	Beep
Up arrow	Up one choice
Down arrow	Down one choice
PgDn	Scroll down one full window
PgUp	Scroll up one full window
Home	First line of text
End	Last line of text

Browse Screen:

The cursor is shown as a small blinking underscore character (or some other symbol if you have customized the cursor display on your computer).

You may use any of the arrow keys to move the cursor from field to field on the screen, while the PgUp, PgDn, Home and End keys scroll the records in the database.

You may use the F3 or F4 keys to move the cursor to a different window on the browse screen.

Left arrow	Next field to the left
Right arrow	Next field to the right
Up arrow	Up one field
Down arrow	Down one field
PgDn	Next RECORD
PgUp	Previous RECORD
Home	First RECORD
End	Last RECORD

Detail

If the user selects "Detail" from the Main Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
DETAIL TABLES

The NRA data includes PARADOX tables and documentation of laboratory specific information. These tables are donated by the laboratories in the format which is most convenient to their use. The NRA has transformed these to the PARADOX structure, and compiled detailed documentation of the fields and relationship between fields in them.

THESE DETAIL TABLES ARE NOT SUPPLIED WITH THIS DEMONSTRATION

The most extensive collection of detail tables is that donated by the University of California at Davis. The list below illustrates the breadth of this collection.

Documented Davis Detail Tables

Table Name	Rows	Comments
BONES	380	Summary of bone related effects.
COBALT_C	222	One demographic record per dog in the Cobalt study. Source of sparse records in ANI_D for study 05.
COD	1263	SNODOG coded cause of death as printed in annual report table.
COMP	11582	SNODOG coded complaint portion of POMR, used as source of TEFFECT.
CS_ALL	1078	One demographic record per dog in studies 02, 03, and 04. Source of most fields in ANI_D for those studies.
DIAG	15227	SNODOG coded diagnosis portion of POMR, used as source of TEFFECT.
DOSIMETR	852	Dosimetry table developed by Otto Raabe. Source of WGT_FIRST_INSULT in ANI_D
HISTO	19402	SNODOG coded histopathology in multi-record "medical story" format. Used as source for TEFFECT.
MISSTISS	8630	Catalog of ANIMAL_ID and SNODOG topography codes for which exhaustive physical search failed to locate tissue specimen in Davis archives.
NOTUMORS	3967	Animals with non-neoplastic problems, developed by Bill Spangler.
POMR	10119	Problem Oriented Medical Record developed by Russ White. Summarizes each medical problem in studies 02, 03, and 04 using simple coding system. See COMP and DIAG for SNODOG entries.
TUMORS	3646	Description in English of tumors found in biopsies and at necropsy. Developed by Roger Culbertson.
TUMOR_MI	2990	Identical to TUMORS, but restricted to non-primary tumors.
WEIGHTS	953	Terminal organ weights in grams.

XRAY_CS	352	One demographic record for each dog in study 01. Source of sparse records in ANI_D for study 01
XRAY_TUM	10643	Similar to Tumors.

Function Keys

If the user selects "Function" from the Help Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
FUNCTION KEYS

ESC The ESC ("Escape") key is used to bring back the previous screen.

F1 The F1 ("HELP") key may be used at any time to obtain on-screen help.

F2 The F2 ("DO_IT!") key is used to start a search from a search criteria selection screen.

F3 The F3 ("UP IMAGE") key is used to move up one table on a browse screen. You can press F3 or F4 to move the cursor among the tables on the browse screen. F3 key actions are cyclic. Repeated use of F3 will cycle the cursor position through all the tables on the browse screen.

F4 The F4 ("DN IMAGE") key is used to move down one table on a browse screen. You can press F4 or F3 to move the cursor among the tables on the browse screen. F4 key actions are cyclic. Repeated use of F4 will cycle the cursor position through all the tables on the browse screen.

F5 The F5 ("CLINICAL TEXT") key is used to open a view window showing the clinical text associated with an animal. The F5 key is only functional on browse screens.

F6 The F6 ("PRINT") key is used to send reports to a file or the printer. This is not the equivalent of the DOS Print Screen button; F6 produces an expansion of all the scrolling images on the screen.

F7 through F12 The remaining function keys are not activated.

Inventory

If the user selects "Holdings" from the Inventory Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
INVENTORY DEMONSTRATION

The NRA holdings inventory database contains information about materials in the Records Repository and the Tissue Archives. The organizing concept is the bar code label which is associated with each item or a container of items. A single bar code is related to an individual document in the records repository, or associated with a container holding tissue specimens.

This demonstration application contains representative records from the inventory database. Simple searches by BAR_CODE and ANIMAL_ID are provided. The following table illustrates the scope of the NRA Inventory Database:

NRA Database Status
October 1, 1991

Bar-Code Labels:

Recipient of Pre-printed Labels	Label Range		Assigned	Used
ANL: T. Fritz, D. Doyle	A000001	A000900	7/1/90	0
DAVIS: J. Parks, O. Raabe	D000001	D000900	9/10/90	0
ITRI: B. Boecker	I000001	I000360	1/11/91	0
LBL: P. Durbin	LBL0001	LBL0360	12/4/90	0
NRA Document Archives: E. Ligotke	0000001	0000900	9/10/90	0
NRA Specimen Archives: L. Smith	DBX0001	DBX0064	8/1/90	64
NRA Specimen Archives: L. Smith	D000901	D001260	11/15/90	1001
PNL: G. Dagle	P000001	P003105	6/11/91	1240
UTAH: S. Miller, W. Angus	U000001	U001801	9/10/90	1482

Inventory Database:

Table Name	Records	Comments
MASTER	3224	One record per document in the Documents Archives or container in the Specimen Archives. Each document/container and Master record is identified by a bar code label. STANNARD 369 DAVIS 137 PNL 1240 UTAH 1482
LOCATION	3251	One or more records for each Master, additional record whenever container is moved or loaned.
DETAIL	122259	One or more records for each Master relating individual animals to containers of materials. DAVIS 2746 PNL 1240 UTAH 8243
PATRON	1	Similar to a Library Card.
LOAN	27	Relates Master to Patron when materials are on loan. REECo JNS Boxes

---

If the user selects "Information" from the Main Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
GENERAL DESCRIPTION

The National Radiobiology Archives (NRA) project is a comprehensive effort to gather, organize, and catalog original data, representative specimens, and other supporting materials related to significant radiobiology studies. This provides researchers with information for analyses which compare or combine results of these and other studies and with materials for analysis by advanced molecular biology techniques. The NRA has concentrated on studies of animals exposed to ionizing radiation at Argonne National Laboratory, Oak Ridge National Laboratory, the Inhalation Toxicology Research Institute, the Pacific Northwest Laboratory, the University of California at Davis, and the University of Utah.

The NRA utilizes a three task approach to organize materials from diverse sources. These are the Informational Systems Computer Database, the Tissue Archive and the Document Archive. The Informational Database, Document Archive and Tissue Archive are maintained through bar code readable labels.

The NRA Information Systems includes experimental design documentation, animal summaries, document catalogs, specimen catalogs, and bibliographic citations organized on a microcomputer. We work closely with database managers at the participating laboratories to insure that electronic information is accurately translated into the NRA format.

The initial donation to the NRA Document Archives includes the collection of documents from J. Newell Stannard in support of his book, RADIOACTIVITY AND HEALTH, A HISTORY.

The NRA Specimen Archives has received more than 1000 dog tissue specimens and histopathology blocks from DAVIS. The specimens are organized and housed in a protected environment.

Computer database technology is essential to integrating such a broad and diverse collection of information. The NRA staff are developing several inter-related databases, each follows the relational model. There are three major databases: the Dose-effects Summary, the Collection Inventory, and the Bibliography. These are commonly referred to as the SUMMARY, INVENTORY, and BIBLIOGRAPHY databases.

This demonstration application contains a paired-down version of the NRA Information System. It is designed to show the scope of the system by allowing the user to browse records with the databases' associated main forms. Several simple searches have been included to illustrate potential data extractions.

The following table illustrates the scope of the NRA summary database:

Summary Database:

Table	Lab Name	Records	Comments
LAB		6	
STUdy		60	
GROup		444	
ANImal		14700	
	ANL	108	Study 04 only.
	DAVIS	1437	Incomplete records for study 01.
	ITRI	1645	
	ORNL	9765	
	PNL	498	Study 01 and 02 incomplete.
	UTAH	1247	
TDOSE		1886	Dose to specific tissues.
	DAVIS	863	Skeleton.
	UTAH	1023	Skeleton.
TEFFECT		41092	Effects summarized by tissue and morphology categories.
	ANL	820	
	DAVIS	9151	
	ORNL	11813	

UTAH	19308	
FUNCTION	0	Dose to tissue category as a function of time.
CONTROL	908	One record for each use of a control animal on a study. Some animals were controls for more than one study.
ANL	120	
DAVIS	219	
ITRI	266	
ORNL	3579	
PNL	130	
UTAH	173	

Purpose

If the user selects "Purpose" from the Help Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
PURPOSE

This software is a demonstration program showing the type of information available in the National Radiobiology Archives Information System. Browse screens allow access to selected fields in the major tables. Data searches are provided for answering simple queries. These queries will extract a subset of the information to be viewed on the browse screen. Printed reports may be produced showing more information than will fit on the browse screen.

A representative subset of the NRA Informational Database is distributed with this program. The user will be able to "play" with this subset and determine what type of data request would be most useful from the full NRA Information System.

Address requests to:

Dr. Charles R. Watson, Ph.D.
Director, National Radiobiology Archives
Pacific Northwest Laboratory
P.O. Box 999 P7-82
Richland, WA 99352

Telephone: (509) 376-3483
FAX: (509) 376-4533

Summary

If the user selects "Holdings" from the Summary Menu, the following text appears in a scrolling window:

NRA INFORMATION SYSTEMS
SUMMARY DATABASE DEMONSTRATION

The NRA Information Systems include experimental design documentation, animal summaries, document and specimen catalogs, and bibliographic citations organized in this relational database. There are three major databases: the Dose-effects Summary, the Collection Inventory, and the Bibliography. These are commonly referred to as the SUMMARY, INVENTORY, and BIBLIOGRAPHY databases.

This demonstration SUMMARY database application contains three tables with all rows present: LAB, STUDY, and GROUP, and three tables with 100 typical records: ANIMAL, TISSUE EFFECT, and TISSUE DOSE.

The following table illustrates the scope of the NRA summary database:

SUMMARY DATABASE
Status October 1, 1991

Table	Lab Name	Rows	Comments
LAB		7	Each row defines one donor laboratory
			THE ENTIRE LAB TABLE IS INCLUDED.
STUdy		62	Complete definitions of all beagle studies included in Thompson (1989). CSU and ORNL to be added.
			THE ENTIRE STU TABLE IS INCLUDED.
GROup		444	Complete definitions of all groups of beagles included in Thompson (1989). CSU and ORNL to be added.
			THE ENTIRE GRO TABLE IS INCLUDED.
ANImal		14700	Demographic summary of each animal, including cause of death. Rows per laboratory shown below:
	ANL DOGS	108	Study 04 only.
	ANL MICE	0	
	CSU DOGS	0	
	DAVIS DOGS	1437	Incomplete records for study 01.
	ITRI DOGS	1645	
	ORNL MICE	9765	Two studies.
	PNL DOGS	498	Study 01 and 02 incomplete.
	PNL RATS	0	
	UTAH DOGS	1247	
			100 REPRESENTATIVE ROWS OF THE ANI TABLE ARE INCLUDED.
TDOSE		1886	Dose to specific tissues.
	DAVIS	863	Skeleton.
	UTAH	1023	Skeleton.
			100 ROWS OF TDOSE TABLE ARE INCLUDED.
TEFFECT		41092	Effects summarized by tissue and morphology categories.
	ANL	820	
	DAVIS	9151	
	ORNL	11813	
	UTAH	19308	
			699 ROWS OF TEFFECT TABLE ARE INCLUDED.
FUNCTION		0	Dose to tissue category as a function of time.

THE FUNCTION TABLE NOT INCLUDED.

CONTROL	938	One record for each use of a control animal on a study. Some animals were controls for more than one study.
ANL	120	
DAVIS	219	
ITRI	266	
ORNL	3579	
PNL	130	
UTAH	173	

109 ROWS OF CONTROL TABLE ARE INCLUDED.

You may browse rows in the ANIMAL table using a screen showing associated rows of the LAB, STUDY, GROUP, TISSUE DOSE, and TISSUE EFFECT tables.

You may search the demonstration database for subsets of rows based on:

ANIMAL ID
ASSIGNED ID
STUDY NAME
TISSUE EFFECT Summary Category
TISSUE DOSE Summary Category

There is help available for all positions of the cursor on the browse screens. The fields are presented in alphabetical order below. Many of these fields appear on several browse screens, so no attempt has been made to relate the field to a position on the screen.

Accession date

NRA FIELD NAME: ACCESSION_DATE DATA TYPE: D

The ACCESSION_DATE is the date assigned by the NRA to designate the day on which the Summary Database record was acquired or modified. The accession date of specimens in the Tissue Archive will be found in the Inventory database. The ACCESSION_DATE field is located in most of the database tables.

Animal ID

NRA FIELD NAME: ANIMAL_ID DATA TYPE: A8

The NRA ANIMAL_ID is an animal identification code (unique within each laboratory) with a single character prefix, LAB_ID, added. Some laboratories used sequential numbers, in that case, ANIMAL_ID is padded with leading zeros and then the prefix LAB_ID is added. Other laboratories used a combination of letters and numbers to identify an animal. In such cases the identifier is padded likewise with leading zeros and the LAB_ID.

The animal identifier used within the laboratory is stored in the Summary Database field ASSIGNED_ID.

Examples:

LAB	LAB_ID	ASSIGNED_ID	ANIMAL_ID
ANL	A	2	A000002
		COCO---202	A000202
		CS137--487	A000487
DAVIS	D	D00F05	DD00F05
		R50M01	DR50M01
		S30F02	DS30F02
ITRI	I	01-1379	I00002C
		05-300	I00052A
		02-981	IFD0147
ORNL	R	106-R01	R000001
		1014-R01	R002502
		9534-R02	R002941
PNL	P	140-C--755	P000755
		158-B--949	P000949
		182-B-1361	P001361
UTAH	U	M001P00	U000002
		F502P10+	U001596
		M085Q00H	U002377
		F109R00Y	U002414

Animal Quantity

NRA FIELD NAME: ANI_QTY DATA TYPE: A2

The ANIMAL QUANTITY is the number of animals associated with this container.

Assigned ID

NRA FIELD NAME: ASSIGNED_ID DATA TYPE: A10

The ASSIGNED_ID is the animal code used by the donor laboratory to refer to a specific animal. If the laboratory used a study dependent animal identification scheme, the ASSIGNED_ID is taken from laboratory usage. Other laboratories used the animal tattoo as the research animal identifier, in that case, the ASSIGNED_ID is a combination of the experiment name and animal tattoo. If no other information is available, ASSIGNED_ID is set equal to ANIMAL_ID (without the zero padding and LAB_ID prefix).

The animal identifier used within the NRA summary database is stored in field ANIMAL_ID

Examples:

LAB	LAB_ID	ASSIGNED_ID	ANIMAL_ID
ANL	A	2	A000002
		COCO---202	A000202
		CS137--487	A000487
DAVIS	D	D00F05	DD00F05
		R50M01	DR50M01
		S30F02	DS30F02
ITRI	I	01-1379	I00002C
		05-300	I00052A
		02-981	IFD0147
ORNL	R	106-R01	R000001
		1014-R01	R002502
		9534-R02	R002941
PNL	P	140-C--755	P000755
		158-B--949	P000949
		182-B-1361	P001361
UTAH	U	M001P00	U000002
		F502P10+	U001596
		M085Q00H	U002377
		F109R00Y	U002414

Bar Code

NRA FIELD NAME: BAR_CODE DATA TYPE: A7

BAR_CODE is a unique label applied by the NRA to materials or containers of materials in the Tissue Archives or the Document Archives.

Inventory Usage:
The BAR_CODE is the unique identifier of a physical object such as a bag of tissues or a folder of clinical records. It is used to link the MASTER, DETAIL, and LOCATION tables.

Bibliography Usage:
The BAR_CODE is the unique identifier of a document and is linked to the BOOK table and the inventory database where there is a record in the MASTER and LOCATION tables for each BOOK record.

Label generation:
BAR_CODE labels are printed by the NRA. A block of labels and associated data entry forms may be requested.

Birth Date

NRA FIELD NAME: BIRTH_DATE DATA TYPE: D

The BIRTH_DATE is the date of birth of the animal. An APPROXIMATE date is used for some RODENTS. If the birth date is unknown or was not supplied by the donating laboratory, the NRA staff assigned January 1 of the year of the experiment as the birth date.

Building

NRA FIELD NAME: BUILDING DATA TYPE: A4

The BUILDING field indicates the building in which the inventory item is stored.

Burden Type

NRA FIELD NAME: BURDEN_TYPE DATA TYPE: A8

The BURDEN_TYPE is a code which the best summarizes the method defined in the experimental protocol for expressing total insult. Codes are:

for external exposure studies:
EXPO = Exposure

for internal exposure studies:
PBB = Final body burden,
IBB = Initial body burden,
ILB = Initial lung burden,
LTRB = Long-term retained burden,
PBB = Peak body burden.

Cabinet

NRA FIELD NAME: CABINET DATA TYPE: A4

The CABINET field contains a code for the cabinet within a room within a building in which the inventory item is stored.

Cause of Death

NRA FIELD NAME: CAUSE_OF_DEATH DATA TYPE: A100

CAUSE_OF_DEATH is a brief summarization of the primary cause of death, that is, the terminal illness or condition. The cause of death is a laboratory dependent field, because each institution has a different philosophy and experimental protocol. Some studies (i.e. external exposure) focus on determination of cause of death, while others focus on specific cancer endpoints. The table below summarizes the situation.

SPECIAL USAGE: For animals which were terminated or removed from a study prior to death, the CAUSE_OF_DEATH will be the cause of termination and have a prefix:

REMOVED: reason animal was removed
TERMINATED: reason DAVIS beagle was terminated

Contributory causes, and incidental findings will be found in FINDINGS.

The CAUSE_OF_DEATH field will be set to "not available, see clinical records" for most of the beagle records until the contributing project directors supply the information.

Contact	Information stored in NRA CAUSE OF DEATH field
ANL Tom Fritz 312 972 3814	Cause of Death as determined by the PI after review of histopathology and clinical records. This information, plus additional observations, is repeated in the FINDINGS field.
Colorado State U. Steve Benjamin 303 491 8522	Cause of death (CSU records not available in NRA database at this time). This information, plus contributing factors, is repeated in the FINDINGS field.
ITRI Bruce Boecker 505 844 5376	"not available, see FINDINGS and clinical records." FINDINGS contains phrase used in annual report.
PNL Jim Park 509 376 3375	Very terse statement showing tumors and diseases. This phrase is shown in the annual report.
U.C. Davis Otto Raabe 916 752 7754	Cause of Death as published in the Davis Final Annual Report. If the animal was terminated, the cause of death is followed by: TERMINATED: reason mm/dd/yy. (This information, plus additional observations, is repeated in the FINDINGS field).
U. of Utah Scott Miller 801 581 5638	"not available, see FINDINGS and clinical records" FINDINGS contains the phrase reported in annual report. See also the narrative clinical/pathological summary for individual dogs.

Comments

NRA FIELD NAME: COMMENTS DATA TYPE: A20

The COMMENTS field allows storage of additional information about the item defined by this bar code.

Container

NRA FIELD NAME: CONTAINER_CODE DATA TYPE: A8

The CONTAINER_CODE is a coded description of the container defined by this bar code.

Examples:

CODE	TRANS
BLK.CAB	PARAFFIN BLOCK CABINET
BOOKCASE	BOOKCASE
BOX.SHP	CARDBOARD BOX SHIPPED FROM DAVIS
FIL.CAB	FILE CABINET
JAR.GLA	GLASS JAR
SLD.CAB	SLIDE CABINET
TIS.TUB	PLASTIC TUB FOR TISSUES

Control

NRA FIELD NAME: CONTROL DATA TYPE: A1

CONTROL is a (Y)es/(N)o flag answering the question whether or not the animal is considered a control animal. Most control animals were assigned to a specific study, however, some controls are part of a general control pool which was not assigned to a specific study. These general controls are assigned to STUDY_ID = 99.

Dam ID

NRA FIELD NAME: DAM_ID DATA TYPE: A7

The DAM_ID is an alphanumeric code assigned by the contributing laboratory to the dam (mother) of the animal. Unknown data are left NULL.

If possible, the DAM_ID corresponds to ANIMAL_ID in format, and the Dam is itself represented in the Summary Database. However, not every DAM_ID will have a corresponding row in the ANIMAL table because animals acquired early in the history of a particular colony had parents who were not part of the colony. In that case, the DAM_ID will conform to donating laboratory usage.

Death Date

NRA FIELD NAME: DEATH_DATE DATA TYPE: D

DEATH_DATE is the date the animal died or was euthanized. Live animals and many removed animals have the DEATH_DATE set to NULL. Animals which were removed may or may not have a DEATH_DATE, depending on the degree of follow-up by the laboratory.

Examples:

DISPOSITION	REMOVED_DATE	DEATH_DATE
A (Accidental)	NULL	NOT NULL
D (Died)	NULL	NOT NULL
E (Euthanized)	NULL	NOT NULL
S (Scheduled)	NULL	NOT NULL
X (Stillborn)	NULL	NOT NULL
R (Removed)	NOT NULL	usually NULL
R (Removed)	NOT NULL	NOT NULL (Lab has information)
T (Terminated)	NOT NULL	NOT NULL
NULL (indicating Live)	NULL	NULL

Disposition

NRA FIELD NAME: DISPOSITION DATA TYPE: A1

DISPOSITION is an alphanumeric code describing the death or removal of the animal.

Codes are:

A = accidental,
D = died,
E = euthanized,
R = removed (CULLED),
S = scheduled sacrifice,
T = terminated (a DAVIS specific code which indicates the date of amputation of a leg. It is assumed that the dog would have died on the termination date),
X = stillborn.

Live animals and those with unknown data have DISPOSITION set to NULL.

Document Type

NRA FIELD NAME: DOC_TYPE DATA TYPE: A8

The DOC_TYPE is a code for the type of document.

Examples:

CODE	TRANS
BOOK	A complete book or conference proceedings.
JOURNAL	A complete journal.
LAB.AR	A laboratory annual report.
REPORT	A report, generally unpublished.

Donor Identification

NRA FIELD NAME: DONOR_ID DATA TYPE: A3

The DONOR_ID is a 3 character intelligent code for the donor of a Bibliography item.

Examples:

CODE	TRANS
BBB	Bruce B. Boecker
CRW	Charles R. Watson
JNS	J. Newell Stannard
OGR	Otto G. Raabe
PWD	Patricia W. Durbin
RCT	Roy C. Thompson

Final Insult Date

NRA FIELD NAME: FINAL_INSULT DATA TYPE: D

The FINAL_INSULT Date is the day the insult terminated. If the animal was not insulted, or the date is unknown then FINAL_INSULT is left NULL. If the animal was given a single insult, FINAL_INSULT is set equal to FIRST_INSULT.

Designated study control animals may have a FINAL_INSULT which is not NULL but is set to the date of sham exposure.

The age at FINAL_INSULT is computed by subtracting FINAL_INSULT from BIRTH_DATE.

Findings

NRA FIELD NAME: FINDINGS DATA TYPE: A240

FINDINGS is a brief summarization of the significant findings for an animal. Clinical phrases are separated by ';'. Included in FINDINGS will be the one published in laboratory annual reports. If no information is available, FINDINGS will be set to NULL. If the animal was alive on the accession date, FINDINGS will be set to "Living on NRA Accession Date".

FINDINGS is a multipurpose text field, but some codes and syntax has been added by the NRA.

Codes used in FINDINGS:

COD: Cause of Death (Davis)
COT: Cause of Termination from Study (Davis)

Information in the FINDINGS is not necessarily the CAUSE OF DEATH. In some studies (for example, the beagle inhalation studies), the cause of death may have been unrelated to the experimental insult and was not ascertained because it was not an important experimental variable. Conversely, the CAUSE OF DEATH, if known, is always the first phrase in the FINDINGS field.

First Insult Date

NRA FIELD NAME: FIRST_INSULT DATA TYPE: D

FIRST_INSULT is the date of the first experimental insult. If the animal was not insulted or the date is unknown then FIRST_INSULT is left NULL.

Designated study control animals may have a FIRST_INSULT which is not NULL but is set to the date of sham exposure.

The age at FIRST_INSULT is computed by subtracting the FIRST_INSULT from the BIRTH_DATE and converting from days to years.

There is a companion field: FINAL_INSULT which is the day the insult terminated. If the animal was given a single insult, FINAL_INSULT is set equal to FIRST_INSULT.

First Name

NRA FIELD NAME: FIRST_NAME DATA TYPE: A15

FIRST_NAME is the first name of the author.

Group Identification

NRA FIELD NAME: GROUP_ID DATA TYPE: A2

The GROUP_ID is the identifier for a group of animals within a study, consisting of a two digit (zero-filled) number between "00" and" 99", stored as ASCII characters. The combination of LAB_ID, STUDY_ID and GROUP_ID will be unique.

For beagles, GROUP_ID codes were assigned based on the row number of the tables found in appendix B of Roy Thompson's book. GROUP_ID "00" is used for undesignated controls if the STUDY_ID is "00". While GROUP_ID = "99" is used for ancillary animals associated with a study but not included in Thompson's book. Typically, these are non life-span animals.

For rodents, GROUP_ID codes were assigned based on discussions with the donating investigator.

Insult Units

NRA FIELD NAME: INSULT_UNITS_SI DATA TYPE: A8

The units of the insult in SI units. Control or unknown data are left NULL.

The following insult units are defined:

CODE	TRANS
E x F	Exposure in roentgens X Fraction (interval in days)
Gy	grays
Gy/day	grays per day
kBq/kg	kilobecquerels per kilogram
MBq	megabecquerels
MBq/kg	megabecquerels per kilogram
R	roentgens
g	grams
kg	kilograms
nCi	nanocuries
nCi/g	nanocuries per gram
nCi/kg	nanocuries per kilogram
rad	rads
rad/day	rads per day
uCi	microcuries
uCi/g	microcuries per gram
uCi/g Ca	microcuries per gram of dietary calcium
uCi/kg	microcuries per kilogram

Item

NRA FIELD NAME: ITEM_CODE DATA TYPE: A8

The ITEM_CODE is a coded description of the inventory item.

Examples:

CODE	TRANS
BIO.LOG	DOG BIOPSIES BOX LOGBOOK
BLK.PAR	PARAFFIN BLOCK
BON.ALC	BONE SPECIMEN IN ALCOHOL
BON.FOR	BONE SPECIMEN IN FORMALIN
BOOK	BOOK IN THE BIBLIOGRAPHY DATABASE
CLN.REC	CLINICAL RECORDS
JOURNAL	JOURNAL IN THE BIBLIOGRAPHY DATABASE
LAB.AR	LABORATORY ANNUAL REPORT
RAD.GPH	RADIOGRAPH
REPORT	REPORT IN THE BIBLIOGRAPHIC DATABASE
SLD.PAR	PARAFFIN SLIDE
SLD.RAD	SLIDE RADIOGRAPH
TIS.ALC	TISSUE SPECIMEN IN ALCOHOL
TIS.FOR	TISSUE SPECIMEN IN FORMALIN

Item Quantity

NRA FIELD NAME: ITM_QTY DATA TYPE: N

The ITEM_QTY is the approximate quantity of items in this bar coded container or unit.

Journal

NRA FIELD NAME: JOURNAL DATA TYPE: A120

JOURNAL is a text string containing the title of the journal.

Lab

NRA FIELD NAME: LAB DATA TYPE: A1

The LAB field is a code indicating the location of inventory items.

Examples:

P = PNL
U = UTAH

Laboratory Identification

NRA FIELD NAME: LAB_ID DATA TYPE: A1

LAB_ID is a code for the contributing laboratory. This code is assigned by the NRA. Valid codes are:

A = ANL, Argonne National Laboratory
B = BNL, Brookhaven National Laboratory
C = CSU, Colorado State University
D = Davis, Laboratory for Energy related Health Research (LEHR), University of California at Davis
I = ITRI, Inhalation Toxicology Research Institute
P = PNL, Battelle, Pacific Northwest Laboratory
R = ORNL, Oak Ridge National Laboratory
U = Utah, Radiobiology Laboratory, University of Utah

Last Name

NRA FIELD NAME: LAST_NAME DATA TYPE: A15

LAST_NAME is the last name of the author.

Litter Number

NRA FIELD NAME: LITTER_NO DATA TYPE: A4

LITTER_NO is an alphanumeric code assigned to each litter within a colony. This character string is padded with leading zeros. Unknown data are left NULL.

Middle Initial

NRA FIELD NAME: MIDDLE DATA TYPE: A15

MIDDLE is the middle name of the author.

Morphology Category

NRA FIELD NAME: MORPH_CATEGORY DATA TYPE: A7

The Morphology category is a SNODOG code. Normally, the user will see the translation.

The TISSUE_EFFECT (TEFFECT) table summarizes the effect observed in significant tissue categories for each animal. It contains from zero to several rows per animal. For ancillary animals (STUDY_ID = '99') there are zero rows in the TISSUE_EFFECT table. For other animals, there will be as many rows as necessary to summarize the clinical and histopathological observations.

The translated morphology categories are:

Inflammation
Degeneration
Growth abnormalities
Neoplasm, benign
Neoplasm, uncertain if benign
Carcinoma in situ
Malignant, primary
Malignant, contiguous spread
Malignant, microinvasive
Malignant, metastatic
Malignant, recurrent
Malignant, remission
Malignant, uncertain if primary

The translated tissue categories are:

Skin and Mammaries
Hemato and RE System & Blood
Lymph nodes
Musculoskeletal system
Respiratory system, upper
Respiratory system, lower
Digestive, upper (w/o liver)
Liver
Urinary Tract, upper
Urinary Tract, lower
Reproductive
Endocrine system
Nervous system including eyes

No Help Available

NRA FIELD NAME: none DATA TYPE: ?

No help for this field available.

Pages

NRA FIELD NAME: PAGES DATA TYPE: A12

The PAGES field contains the number of pages or a range as appropriate.

Position

NRA FIELD NAME: POS DATA TYPE: A4

The POS is the position of the container at the smallest level of the location hierarchy.

Primary

NRA FIELD NAME: PRIMARY DATA TYPE: A1

The PRIMARY field was designed as a (Y)es/(N)o flag answering the question whether or not a dog is considered part of the well-defined beagle life-span studies. Rodents are all designated as PRIMARY = 'Y'.

Ancillary dogs (not included in Roy Thompson's book) used for dosimetry or breeding purposes have PRIMARY set to 'N'. These dogs are included in the Summary Database only to provide the full geneologic history of the colony. Detailed records, including Tissue dose or Tissue effects will not be stored for PRIMARY = 'N' dogs.

In practice, some dogs not included in Roy's book (i.e. controls for A 04) have PRIMARY = 'Y' based on discussions between the NRA staff and the donating investigator.

Publisher

NRA FIELD NAME: PUBLISHER DATA TYPE: A80

PUBLISHER is a text string containing the name of the publisher of the book or document.

Publication Year

NRA FIELD NAME: PUB_YEAR DATA TYPE: A4

This is the publication year of the book or document.

Quantity of Insult

NRA FIELD NAME: QTY_INSULT_SI DATA TYPE: N

The quantity of insult to the animal in SI units based on the BURDEN_TYPE. See INSULT_UNITS_SI for units. Control or unknown data are left NULL.

Qualifier

NRA FIELD NAME: QUALIFIER DATA TYPE: A1

The QUALIFIER is used to give greater detail about the items associated with each animal in a particular container.

Examples:

CODE	Trans
B	Biopsy
L	Large
N	Necropsy

Quantity

NRA FIELD NAME: QUANTITY DATA TYPE: A2

The QUANTITY is the number of items associated with the animal in this container. If this record has a QUALIFIER, then the QUANTITY refers to the number of items of that type.

Rank

NRA FIELD NAME: RANK DATA TYPE: N

RANK is a numeric code describing the sort order of this author in a multi-author document.

Removal Date

NRA FIELD NAME: REMOVAL_DATE DATA TYPE: D

REMOVAL_DATE is the date the animal was removed from the experiment. REMOVAL_DATE is set to NULL for ALL animals except those which were removed from a study. Animals with a REMOVAL_DATE include those transferred from the colony (lost to follow up) and those culled from the study in order to satisfy the protocol. Removal date has been used by DAVIS and UTAH for their Beagle Dog studies.

Report Number

NRA FIELD NAME: REPORT_NO DATA TYPE: A40

The REPORT_NO is the report number(s) of the document. Multiple report numbers are separated by a '; ' character string. This number is usually assigned by the government or contracting agency.

Results Final

NRA FIELD NAME: RESULTS_FINAL DATA TYPE: A1

RESULTS_FINAL is a (Y)es/(N)o flag answering the question whether or not the animal's results are considered final. All animals have RESULTS_FINAL set to 'N' until written instructions from the PI authorize changing it to 'Y'.

Room

NRA FIELD NAME: ROOM DATA TYPE: A4

The ROOM indicates the room where the bar coded container is located.

Sex

NRA FIELD NAME: SEX DATA TYPE: A1

SEX is a single character code for the sex of the animal. The codes are:
F = (F)emale,
M = (M)ale,
U = (U)nknown.

Shelf

NRA FIELD NAME: SHELF DATA TYPE: A4

The SHELF indicates the shelf or drawer of the cabinet where this bar coded container is located. Typically, shelves are numbered from top to bottom and from left to right.

Sire Identification

NRA FIELD NAME: SIRE_ID DATA TYPE: A7

The SIRE_ID is an alphanumeric code assigned by the contributing laboratory to the sire (father) of the animal. Unknown data are left NULL.

If possible, the SIRE_ID corresponds to ANIMAL_ID in format, and the Sire is itself represented in the Summary Database. However, not every SIRE_ID will have a corresponding row in the ANIMAL table because animals acquired early in the history of a particular colony had parents who were not part of the colony. In that case, the SIRE_ID will conform to donating laboratory usage.

Snodog

NRA FIELD NAME: SNODOG_CODE DATA TYPE: A7

The SNODOG_CODE is a coded description of the inventory item. The code is used to describe the ITM_CODE to a further level of detail. If the first letter of the code is a 'T', then the code is SNODOG topography code. If the first letter is a 'R' then the code is a custom code used to further describe inventory items which are not tissues.

The SNODOG glossary is an NRA adaptation of SNOMED and SNOVET. These medical glossaries use a 5 character code and a 1 character prefix to define terms which are organized hierarchically. SNODOG is essentially identical to SNOMED and SNOVET, however, a 6 character code is used in place of the 5 character code. The 6th position is 0 when the SNODOG term is identical to the SNOMED/SNOVET term. NRA specific terms have non zero characters in the 6th position of the code.

Species

NRA FIELD NAME: SPECIES DATA TYPE: A2

SPECIES is an alphanumeric code for the species of the animal. NRA assigned codes are numbers between '01' and '99' stored as ASCII characters.

Codes are:

'01'	=	Canis familiaris, beagle,
'02'	=	Canis familiaris, St. Bernard.
'03'	=	Mus musculus, BALB/c Bd
'04'	=	Mus musculus, BFM
'05'	=	Mus musculus, C3Hf/Bd
'06'	=	Mus musculus, C57BL/6Bd
'99'	=	Unknown

Status

NRA FIELD NAME: STATUS DATA TYPE: A1

STATUS is a code describing the role of the person.

Codes are:

CODE	TRANS
A	Author
D	Director
E	Editor
O	Other

Study Identification

NRA FIELD NAME: STUDY_ID DATA TYPE: A2

The STUDY_ID is a unique NRA identifier of a study within a laboratory, consisting of a two digit (zero-fill) number between '00' and '99', stored as ASCII characters.

For the beagles, study codes were assigned based on the section number found in appendix 8 of Roy Thompson's book. STUDY_ID '00' is used for undesignated controls while STUDY_ID '99' is used for studies not described in Thompson's book.

For rodents, study codes are assigned based on discussions with the contributing investigator.

Sub Title

NRA FIELD NAME: SUBTITLE DATA TYPE: A120

SUBTITLE is a text string containing the subtitle of the book or document.

Tissue Category

NRA FIELD NAME: TISSUE_CATEGORY DATA TYPE: A7

The TISSUE_CATEGORY is a SNODOG code. The user normally deals with the translation.

The TISSUE_DOSE (TDOSE) table summarizes the dose to each significant tissue of each animal. It contains zero to several rows per animal. For ancillary animals, where STUDY ID is set to "99", and for controls, there will be zero rows in the TISSUE_DOSE table.

Pending receipt of tissue specific dose information, only one row per animal will be populated, that being for tissue_category "T000100 - Body as a whole"

The translated tissue categories are:

Body as a whole
Skin and Mammaries
Hemato and RE System & Blood
Lymph nodes
Musculoskeletal system
Respiratory system, upper
Respiratory system, lower
Digestive, upper (w/o liver)
Liver
Urinary Tract, upper
Urinary Tract, lower
Reproductive
Endocrine system
Nervous system including eyes

Tissue Quality

NRA FIELD NAME: TISS_QUALITY DATA TYPE: A1

TISS_QUALITY is an alphanumeric code describing the level of detail which was applied to the tissue pathology for this animal. The codes are:

N = no tissues taken,
G = Gross necropsy,
H = Histopathology,
1 = Gross examination of body, head not examined,
2 = Gross examination of head, body not examined,
3 = Histopathology of body, head not examined,
4 = Histopathology of head, body not examined,
5 = Gross examination of body, Histopathology of head,
6 = Gross examination of head, Histopathology of body.

Live animals and those with unknown data have TISS_QUALITY set to NULL.

Title

NRA FIELD NAME: TITLE DATA TYPE: A120

TITLE is a text string containing the title of the book or document.

Volume

NRA FIELD NAME: VOLUME DATA TYPE: A10

The VOLUME is the volume number assigned to the book or document by the publisher.

Weight at First Insult

NRA FIELD NAME: WGT_FIRST_INSULT DATA TYPE: N

The WGT_FIRST_INSULT is the animal's body weight, in grams, at the first experimental insult. Unknown or not applicable data are left NULL.

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