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State of Idaho

INEL Oversight
Program

USER'S GUIDE:

**DATABASE OF LITERATURE PERTAINING TO THE UNSATURATED ZONE AND
SURFACE WATER-GROUND WATER INTERACTIONS
AT THE IDAHO NATIONAL ENGINEERING LABORATORY**

**by L. Flint Hall
INEL Oversight Program**

**State of Idaho
INEL Oversight Program
Technical Report 93-02**

May 1993

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TABLE OF CONTENTS

Introduction	1
Description of Database Contents and Structure	1
askSam InfoSift	2
Importing	2
Search Capabilities	2
Conducting A Search	4
WordPerfect	5
Importing	5
Search Capabilities	5
Conducting A Search	6
R:BASE	6
Importing	6
Search Capabilities	7
Conducting a Search	8
Conducting a Search from the R> Prompt	9
Conducting a Search from the Abstract Menu Program	10
Acknowledgements	11
Trademarks and Copyrights	11
APPENDIX A	
References Abstracted as of May 1993	14
APPENDIX B	
Data Field Parameter List	28
APPENDIX C	
askSam System Information	33
APPENDIX D	
R:BASE Menu and Importing Program Documentation	34
System Information	35
Menu Program	35
Table Layouts	37

Example of menu screen from menu program RDMENU.CMD:	39
Example of report produced by report form ABRPT (menu option 8): . . .	40
Example of report produced by report form ABSRPT (menu options 4,5):	41
Example of report produced by report form BIBRPT (menu option 7): . .	42
Listing of menu program RDMENU.CMD	43
Listing of abstract import program CNVABS.CMD	46

Introduction

Since its beginnings in 1949, hydrogeologic investigations at the Idaho National Engineering Laboratory (INEL) have resulted in an extensive collection of technical publications providing information concerning ground water hydraulics and contaminant transport within the unsaturated zone. Considerable time would be necessary to understand the scope and conclusions of all previously conducted investigations pertaining to a specific aspect of the unsaturated zone.

Funding has been provided by the Department of Energy through the Department of Energy Idaho Field Office in a grant to compile an INEL-wide summary of unsaturated zone studies based on a literature search. This grant is administrated by the State of Idaho INEL Oversight Program with work being conducted by researchers at the University of Idaho.

The unsaturated zone at the INEL ranges from 200 ft. to more than 600 ft. thick. This zone is hydrogeologically complex, consisting of fractured basalt and interbedded sediments. Waste water disposed in unlined ponds has resulted in formation of bodies of water perched on sediments or dense basalt above the regional aquifer in some areas. This water eventually travels to the regional aquifer. Hydrogeologic characteristics of this zone, contaminant properties and water availability control transport to the aquifer.

University of Idaho researchers are conducting a review of technical documents produced at or pertaining to the INEL, which present or discuss processes in the unsaturated zone and surface water-ground water interactions. Results of this review are being compiled as an electronic database. Fields are available in this database for document title and associated identification number, author, source, abstract, and summary of information (including types of data and parameters). AskSam®, a text-based database system, was chosen. WordPerfect 5.1® is being used as a text-editor to input data records into askSam.

Description of Database Contents and Structure

As of May 1993, 149 documents have been reviewed. A bibliography compiled by the Oversight Program is the primary reference from which documents are identified for review (Appendix A).

Documents which are determined to have information pertinent to the unsaturated zone are included in the database. Title, abstract and index are examined for references to the unsaturated zone. Sections of documents are read, and data included in documents are noted in the database. A summary of the document is compiled if the document's abstract does not adequately describe the scope of unsaturated zone information. Data descriptors and parameters identified are listed

in Appendix B. Documents describing only stratigraphy or saturated zone hydrogeology are not completely reviewed or included in the database.

The complete database record for an individual document consists of three fields or records. Figure 1 describes the structure of documents within the askSam database. The first record consists of individual data fields for title, authors, document source, document publication date, document identification number, number of pages, and confirmation that the document exists on file with reviewers. Document abstract or summary and data description fields comprise the second and third data records.

The size of each record is limited to twenty lines of eighty text characters (1600 characters). Complete database records for each document (consisting of the records 1, 2, and 3, and their corresponding data fields) are compiled with a word processor (WordPerfect) and then imported to askSam to create a complete database in askSam format.

The intent of this database is to allow an individual who is not familiar with the scope of previous investigations at the INEL to search for documents based on data within the fields described in the previous paragraphs. The resulting database and the WordPerfect file used to create it will be made available on 3.5" diskette by the INEL Oversight Program. This manual will describe three means of searching information within the database: askSam InfoSift®, WordPerfect 5.1, and R:BASE®.

askSam InfoSift

The complete askSam database software used to generate the database is not needed to search a database. AskSam Systems produces three low-cost software packages to serve as distribution tools providing read-only access to databases created with askSam. These packages (HyPeruse, HyperSift, and InfoSift) differ in size of the executable programs, search features, and price. Appendix C provides information concerning these programs. InfoSift was determined to be the most effective combination of these factors and is discussed below.

Importing

InfoSift will use the askSam database file directly. No import procedure is necessary.

Search Capabilities

A request can consist of a specific text string, a combination of wildcard place holders and text string, or text and Boolean operators. Every text string or word in the entire database is searched.

Document 1

Record 1

Title
Author
Source
Date
Document Number
On file?
Pages

(20 lines x 80 Characters)

Record 2

Abstract/Document Summary

(20 lines x 80 Characters)

Record 3

Data

(20 lines x 80 Characters)

Two wildcard characters are available, "*" and "?."

The "*" can hold the place of many letters. Each "?" holds the place of one letter.

Example:

"bar*" will match Barracough, barometer, barrier

"barr??" will match barrow

Boolean logic commands are surrounded by { and } to allow the program to distinguish them from ordinary text strings. Most useful commands are listed below:

{case}	Case and text string matched; "The" matches "The," "the" does not match "The." Normally, InfoSift is not case sensitive.
{or}	Barracough {or} Jensen will return data records containing either Barracough or Jensen or both.
{and}	Barracough {and} Jensen will return data records containing both Barracough and Jensen somewhere within the record.
{not}	Barracough {not} Jensen will return data records containing Barracough but not Jensen.

Conducting A Search

The most convenient way to run the program is to copy the InfoSift executable file to the same directory as the askSam database file. For this example, both database and InfoSift exist on a disk in the A drive.

1. Invoke InfoSift:

A:\infosift inel.ask

The working screen consists of a header containing program information at the top of the screen, the field for entering requests, and the field where the retrieved data are displayed.

2. Define a search:

Barracough {and} Jensen <enter>

For each document (collection of three records: record one containing document title, authors, sources, document number, date, number of pages, on file?; record two containing abstract or summary; and record three containing data), each record will be searched for the text strings

"Barraclough" and "Jensen." Documents where both of these strings occur in an individual record will be returned, and the occurrence of these strings will be highlighted.

3. Moving to next record:

"L" will move page to the previous screen. "P" will print the screen to the printer assigned to LPT1. The escape key will end the search. Any other key will page to the next screen. The header summarizes available commands.

4. Ending the current search, Beginning a new search:

The escape key will end the search, clear the data field of the screen, and place the cursor on the request field. A new request is begun by entering a new search parameter. The return key will return the previous search parameter.

5. Exiting the program:

The program is exited by pressing the escape key while the cursor is on the search field. The screen is returned to the a: prompt.

WordPerfect

WordPerfect is a popular word processing package which is readily available. The package was utilized by University of Idaho project members to create the askSam input file. Thus, a WordPerfect file was created as the database was developed.

Importing

Since a WordPerfect document was generated concurrently with the database file, no import procedures are necessary. The WordPerfect file also includes any macros or commands used by askSam and all data field labels and identifiers.

Search Capabilities

WordPerfect has a standard search function, invoked by using the F2 and {shift} - F2 keys. After pressing the F2 key the user is prompted to enter a text string. After the text string is entered, F2 is pressed again. WordPerfect will search from that point in the document forward until an exact match to that string is found. The search for that string is continued by pressing the F2 key once more. The {shift} - F2 key functions as the F2 with the exception that the search is initiated at that point in the document and progresses backward to the front of the

document.

Additional search functions can be defined by creating macros within WordPerfect.

Conducting A Search

A search is conducted by pressing the F2 key or {shift} F2 at a specific point within the document. A text string is entered at the cursor. The cursor is advanced until that specific text string is located or the end of a document is encountered. The escape key will conclude the search, leaving the cursor at that point.

WordPerfect macros can be developed which could reproduce the Boolean search capabilities of InfoSift.

R:BASE

R:BASE is a fourth generation relational database system which utilizes commands based on SQL (sequential query language). This database system has features and operating characteristics similar to other fourth generation databases (e.g., Oracle, Nomad). R:BASE is designed to operate in a DOS environment on a PC. It offers features such as a graphical interface, report writing functions, and an internal programming language.

Importing

An ASCII file of known structure can be imported into R:BASE, and a database table generated from that file. The WordPerfect file used to generate the askSam database has field delimiters within the text. These delimiters can be used to parse the file into columns and rows within an R:BASE table. Once an R:BASE program has been written, most of the work of importing a text file can be made transparent to the user.

Importing askSam document into R:BASE:

1. Prepare the document for importing by:
 - a. Remove the askSam macro data from the WordPerfect file (all text and characters before the first pipe character [|]).
 - b. Remove all indents from the ABSTRACT and DATA text blocks.
 - c. Insure that no data fields are blank.
2. Save the file as ASCII using the WordPerfect textout function (ctrl-f5, "DOS Text").

3. Import to R:BASE through Gateway as ASCII fixed-length, 80 characters. The result will be a table with one column and numerous rows.
4. Using the internal programming language, search for the field delimiters (Title, Author, Source, Date, Doc_no, On_file, Pages, Abstract, Data), parsing into 9 columns and combining rows where necessary. The result is a table consisting of 9 columns with a single row for each document.

An R:BASE program has been written to aid importing the askSam WordPerfect file, creating the complete database table, and conducting searches. This program is run from within R:BASE and provides a menu. A listing of the program and accompanying documentation are included in Appendix D.

Search Capabilities

R:BASE utilizes ANSI standard SQL to allow the user to search by any character or string within the entire database. The "SELECT" statement is the primary means of extracting data. The command allows the user to:

- View all or selected columns from one or more tables.
- Include an argument to limit a search. The argument can be defined by the "WHERE..." command. Boolean operators are used with this command to establish a value.
- New columns or tables can be created from the results of a search or by combining existing columns.
- Results of a search can be ordered. For example, a search result can be displayed in order of document number or year of publication.

The SELECT statement might be structured as such:

"SELECT (all or specific column) FROM (specific table) WHERE (specific row and specific condition being tested)"

The "CONTAINS" qualifier will normally be used within the WHERE clause since searches will usually be carried out to identify portions of text within columns, as opposed to the entire text string within that column. Additionally, since the searches are for portions of column contents (when the CONTAINS qualifier is used), wildcards are not needed.

Example:

The statement:

```
R> SELECT #1 FROM abstrct WHERE authors CONTAINS 'barr' and
authors + CONTAINS 'jen'
```

will return titles (the data contained within column 1 of the table "abstrct")
for documents with the text string "barr"

Barraclough, J.T., and Jensen, R.G.

The statement:

```
R> SELECT #1, FROM abstrct WHERE authors CONTAINS 'barr' or
authors + CONTAINS 'jen'
```

will return titles for documents which contain either "barr" or "jen"

Barraclough, J.T., Robertson, J.B, and Janzer, V.J.

and

Bagby, J.C., White, L.J., and Jensen, R.G.

The statement:

```
R> SELECT #1 FROM abstrct WHERE authors CONTAINS 'barr' and not
authors + CONTAINS 'jen'
```

will return title for documents which contain "barr" but not "Jen"

Barraclough, J.T.; Robertson, J.B, and Janzer, V.J.

The statement:

```
R> SELECT #1 FROM abstrct WHERE authors CONTAINS 'barr' and p_year
< + '1966'
```

will return titles for documents which contain "barr" and have a publication
date prior to 1966

Barraclough, J.T., Teasdale, W.E., and R.G. Jensen, 1965.

Conducting a Search

Searches can be conducted from the R:BASE pull-down menu system, the R> prompt within R:BASE, and from the menu program developed to accompany the abstract database.

Searches conducted from the R> prompt and the menu program are described here.

Conducting a Search from the R> Prompt

1. Invoke R:BASE and move to the R> prompt:

Once in R:BASE, and the R:BASE "Databases" pull-down menu is displayed, use the cursor to highlight the database name and press <enter> (this connects the database). Press <esc> and then move the cursor to highlight the R> prompt choice and press <enter> to move to the R> prompt.

2. Define a search (Enter a SELECT Statement):

```
R> SELECT #1, FROM abstrct WHERE authors CONTAINS 'Ansley'
```

The program will return the text string from column 1 where the authors column (#2) contains the string 'Ansley'. This output can be sent to the screen, a printer, or file. Due to the size of the columns in our database, only one column will be displayed on the screen (or in the printer or file output). At completion, the R> prompt is returned.

3. Beginning a new search or repeating a search:

```
R> <pgup>
```

The <pgup> or <pgdn> keys can be used to move thorough the previous R:BASE statements. To repeat a statement, move to the end of that statement and press <enter>. A new search is begun by entering a new select statement.

4. Exiting R:BASE:

```
R> exit <enter>
```

The database will be disconnected and the R:BASE terminated.

Conducting a Search from the Abstract Menu Program

As with importing the abstract text file into R:BASE, the actual mechanics of conducting a search and formatting the information to display on the screen can be made transparent to a user by creating a program in R:BASE. The program created provides a menu allowing several search options. Searches conducted using these options are discussed below.

Invoking an R:BASE program

1. Enter R:BASE, move to the R> prompt
2. Run the menu program

R> RUN R&DMENU.CMD <enter>

The program menu will appear on the screen.

Conducting Searches

Menu choices 4, 5, 6 allow searches on all or portions of the database file. Each of these choices allows the option of printing the search result to the printer on LPT1.

1. Search on words in the DATA or ABSTRACT fields (menu choice 4)

the program responds:

Do you wish this report printed? (Y/N)

N <enter>

Search by Doc. Number, Author, or Title? (D/A/T)

The user is then prompted to enter document number, words for author search, or words for title search. All or a portion of the document number, author, or words in the title can be entered. If the search results in a hit, a screen of all the document information, including reference, abstract and data will be displayed. The <esc> key will return to the menu; any other key will advance to the next page. Failure to make a hit will result in an error message; the menu will be displayed. If the menu is not displayed at that time, pressing <esc> will return the menu.

2. Search on words in the DATA or ABSTRACT fields (menu choice 5)

the program responds:

Do you wish this report printed? (Y/N)

N <enter>

The user is then prompted to enter data search word(s). The search results (entire document reference, abstract and data) are displayed on the screen. The <esc> key will exit; any other key will continue displaying.

3. Search on DATA words, view reference (menu choice 6)

the program responds:

Do you wish this report printed? (Y/N)

N <enter>

The user is then prompted to enter data search word(s). The search results (document number and document title) are displayed on the screen. The <esc> key will exit; any other key will continue the display.

The menu includes options to print the entire reference list and reference, abstract and data fields for all records. The menu option 0 will exit the menu program and return to the R> prompt.

Acknowledgements

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Trademarks and Copyrights

askSam® is a registered copyright of askSam Systems.
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WordPerfect® is a registered copyright of the WordPerfect Corporation.
R:Base® is a registered trademark of Microrim, Inc.

APPENDICES

APPENDIX A
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APPENDIX B
Data Field Parameter List

Primary Word**Compounding Phrases**

air quality	particulate, specific radionuclide, specific chemical
airborne waste	concentration, volume, radioactivity, dispersion factors
alluvial sediment	
aquifer	air, thickness, depth
atterberg limits	
background concentrations	
barometric efficiency	
basalt	altitude, thickness, contour, flow group, flow unit
bearing capacity	
big game	
Big Lost River	cross sections, discharge
borehole	geophysical log, flow, pressure, completion, location
bulk density	
bulk mineralogy	
buried waste soil	
caliper log	
capillary pressure	
cation exchange capacity	
clay mineralogy	
clay content	
climatology	
channel cross sections	
channel roughness coefficients	

compressive strength	
consumptive use	
contaminant plumes	
core description	
dam break	
diffusion coefficient	
discharge	Big Lost River
discharge-drawdown	
dispersivity	
distribution coefficient	
driller's log	
ecology	flora, fauna
equilibrium water saturation	
evaporation	
fence diagram	
foodstuff	sampling
flood frequency	
flood routing	
gamma-gamma log	
gamma-ray log	
gradient	hydraulic
grain size distribution	
ground water discharge	
hazardous waste	
Henry's constant	
humidity	
hydraulic conductivity	
hydrograph	well, Big Lost River
hydrology	
INEL diversion discharge	

infiltration rate	
injection test	
instrumentation	
irrigation	water rights
leaching column study	
liquid waste	volume, radioactivity, extent, distribution, specific radionuclide, specific ion, specific chemical, source, concentration
lithologic log	
lithology	
mineralogy	specific constituent
modeling	parameters, results
moisture equivalent	
moisture retention	
moisture content	
monitoring program	
neutron log	
organic	
perched water	altitude, thickness, radioactivity, specific ion, specific radionuclide
permeability	
petrology	
pH	
population	
porosity	effective
precipitation	concentration, specific radionuclide, specific chemical
pumpage	
radiation	solar, short wave, long wave, ionizing
recharge	Big Lost River, Snake River, irrigation seepage

recharge curves
regional economy

income, housing, schools, health services,
transportation services, labor force, employment,
agriculture

regional water table
resistivity

soil

retardation factor
saturation capacity
sediment

thickness, altitude, specific radionuclide,
radioactivity, specific chemical

seepage
seismic activity
small mammals

geology, faults, earthquakes

snow fall
snow melt
soil gas
soil moisture profile
solid waste

radioactivity, volume, container, specific
radionuclide, source, location

specific yield
specific conductance
specific retention
specific gravity
stage-discharge relations

storativity

stratigraphy

generalized

streamflow gage

location, discharge

surface soil

specific radionuclide, specific chemical

surficial sediment

thickness, altitude, radioactivity, specific
radionuclide, specific chemical

temperature	air, dew point, soil
texture	
transmissivity	
travel time	
vapor concentration	
vegetation	
velocity	
vesicle	size, percent
volcanic activity	vents, lava flows, rift zones
waste stream	
water budget	
water quality	volume, extent, specific radionuclide, specific ion
water supply and delivery systems	
water surface profiles	
well	use, depth, location
wind	direction, speed, rose
x-ray diffraction	

APPENDIX C
askSam® System Information

**NOTE: THE FOLLOWING IS PROVIDED FOR INFORMATIONAL PURPOSES
ONLY AND DOES NOT IMPLY ENDORSEMENT
BY THE INEL OVERSIGHT PROGRAM**

askSam® Systems: InfoSift®

Description: A compact information search and retrieval tool for databases.

Features: **Size** - InfoSift occupies only 25 kilobytes of disk space; the program and 330 kilobytes of data can be stored on a single floppy disk.

Access time - InfoSift uses the same text "search engine" that askSam does, so even large databases can be completely scanned in a very short time. Example: On a PC AT, InfoSift can completely scan a 1-megabyte data file for a character string in less than six seconds.

Data storage - InfoSift stores only the data, not field names, for maximum efficiency. However, InfoSift's output can be overlaid with a user-defined template so that field names will appear when the data are printed.

Requirements: 128 kilobytes of RAM; PC-DOS or MS-DOS 2.0 or higher; one floppy-disk drive. InfoSift is a query and retrieval program only; askSam is required to create new files and add or edit records.

Compatibility: IBM PC XT, AT, PS/2 and true compatibles.

**For further
Information:** Contact askSam systems, 1-800-800-1997.

APPENDIX D
R:BASE Menu and Importing Program Documentation

TABLE OF CONTENTS

System Information	35
Menu Program	35
Table Layouts	37
Example of menu screen from menu program RDMENU.CMD	39
Example of report produced by report form ABRPT	40
Example of report produced by report form ABSRPT	41
Example of report produced by report form BIBRPT	42
Listing of menu program RDMENU.CMD	43
Listing of abstract import program CNVABS.CMD	46

APPENDIX D

R:BASE Menu and Importing Program Documentation

LITERATURE DATABASE SYSTEM

Purpose:

- 1) To import text data from a WordPerfect file provided to INEL Oversight Program by the University of Idaho and create a manipulatable database from that data.
- 2) Prepare the bibliographic and abstract data for eventual transfer to the state's Environmental Data Management System (EDMS).

Objectives:

- 1) Develop a methodology for importing text data from various sources to an SQL-based database system.

System Information

Database Management System:	R:Base 3.1
Database:	RDABS
Tables:	ABSTRCT, TEMP
Views:	None
Programs:	R&DMENU.CMD, CNVABS.CMD
Forms:	DOCFORM
Reports:	ABRPT, ABSRPT, BIBRPT

Menu Program

A program was developed using the R:Base internal programming language to assist in importing abstract data into a manipulatable database, and to assist in searching and editing the resulting database table. The program R&DMENU.CMD provides 10 options, described below:

Option 1: "Import ASCII File into database"

This option invokes the import program GATEWAY within R:Base. Prior to choosing this option, a text file consisting of only the delimited abstract data must be created from the original WordPerfect file. Any blank lines or text preceding the first delimiter must be removed before creating the text file. All fields must not be left blank and contents of

the Doc_No field must be unique. Import this file to the column TXT within the table TEMP of the database RDABS as fixed length ASCII, 80 character, text format.

Option 2: "Build ABSTRACT Table"

This option calls the program CNVABS.CMD, written in the internal R:Base language. CNVABS.CMD looks to the table TEMP created through option 1, and searches for the column delimiters (Title, Authors, Source, P_Year, Doc_No, On_File, Pages, Abstract, Data). Delimiters are removed as contents of TEMP are parsed into 9 columns based on those delimiters (Title, Authors, Source, P_Year, Doc_No, On_File, Pages, Abstract, Data). Following this operation, control is returned to the menu program.

Option 3: "Edit ABSTRCT Table"

The user is prompted for a specific document number to edit, or to press <enter> to return the first document in the table. The edit form contains nine fields. Edits are made within a specific field. The <enter> key cycles through the fields; the <F-7> key calls the next document; <F-8> calls the previous document. Edits are saved automatically. To exit the form, <esc> moves the cursor to EXIT on the top menu bar and <enter> returns the user to the R&D Menu.

Option 4: "View Selected Abstracts"

The user is prompted for "D", "A", or "T" to determine type of search (search using Document number, Author, Title). The user is then prompted to enter document number or word for title or author search. All or a portion of the document number or search word can be entered. The resolution is then scrolled to the screen displaying the complete reference, abstract and data field. <esc> returns control to the menu.

Option 5: "Search on Data Words or Abstract; View Abstract"

The user is prompted "Do you wish this report printed?" A response "Y" will send the search result to LPT1 as opposed to displaying the resolution to the screen. The user is prompted to enter data words for search. The resolution is scrolled to the screen displaying the complete reference, abstract and data field. <esc> returns control to the menu.

Option 6: "Search on Data Words or Abstract; View Reference"

The user is prompted "Do you wish this report printed?" A response "Y" will send the search result to LPT1 as opposed to displaying the resolution to the screen. The user is prompted to enter data words for search. The resolution is scrolled to the screen displaying the document number and title. <esc> returns control to the menu.

Option 7: "Print Entire Bibliography"

Complete references for database contents are printed to LPT1 in alphabetical order.

Option 8: "Print All Abstracts"

Complete references and complete abstract and data fields for database contents are printed to LPT1 in alphabetical order.

Option 9: "Clear Tables and Pack Database"

This option should be used prior to importing abstract data into the database. This option clears all contents of the TEMP and ABSTRACT tables and then packs the database.

Option 0: "Exit from Application"

The R&DABS database is disconnected and the R> prompt is returned.

Table Layouts**TEMP Table**

This table is the import table created from the text file derived from the original WordPerfect file. It consists of a single column, formatted text, 90 characters width.

<u>Column</u>	<u>Format</u>	<u>Width</u>
TXT	Text	90

ABSTRACT Table

This table contains document information, the abstract and data. It is filled by the CNVABS.CMD program using the contents of the table TEMP.

<u>Column</u>	<u>Format</u>	<u>Width</u>
Title	text	256
Authors	text	160
Source	text	160
P_Year	text	4
Doc_No	text	24
On_File	text	1
Pages	text	4
Abstract	note	
Data	note	

04/15/92

~ ~ ~ INEL Oversight Program ~ ~ ~

LITERATURE DATA BASE MENU

~~~~~

1. Import ASCII File into Database
2. Build ABSTRACT Table
3. Edit ABSTRACT Table
4. View Selected Abstracts
5. Search on Data Words or Abstract, View Abstract
6. Search on Data Words, View Reference
7. Print Entire Bibliography
8. Print All Abstracts
9. Clear Tables and Pack Database
0. Exit from Application

Example of report produced by report form ABRPT (menu option 8):

---- Documents Report ----
Unsaturated Zone Documents

=====

TITLE:	Tritium in Ground Water at the Idaho National Engineering Laboratory, Idaho				
AUTHOR:	Mann, L. J. and L. D. Cecil				
SOURCE:	U. S. Geological Survey				
YEAR:	1990	Doc. No.:	DOE/IDO-22090	On File?	Y
PAGES:	35				

ABSTRACT:

From 1952 to 1988, approximately 30,900 curies of tritium were contained in waste water generated by the ICPP and TRA at the INEL. The waste water at the ICPP was discharged directly to the Snake River Plain aquifer through a disposal well until February 9, 1984, when routine use of the well was discontinued and an unlined infiltration pond was put into use. A second pond was put into use on October 17, 1985. Waste water disposed at the TRA has been discharged to one to three infiltration ponds since 1952. The average annual concentration of tritium in water from 26 selected wells at the INEL decreased from 250 pCi/ml in 1961 to 18 pCi/ml in 1988, a decrease of 93 percent. Four factors are responsible for this decrease in tritium concentration: (1) a decrease in the amount of tritium disposed annually to ponds and wells from 1961 to 1988; (2) the change from the use of a disposal well to infiltration ponds at the ICPP; (3) radioactive decay; and (4) dilution from recharge.

DATA: Big Lost River discharge liquid waste; radioactivity, volume, tritium. water quality; distribution, tritium.

Example of report produced by report form ABSRPT (menu options 4,5):

Document No.: DOE/IDO-22090
Title: Tritium In Ground Water at the Idaho National Engineering
Laboratory, Idaho
Authors: Mann, L. J. and L. D. Cecil
Source: U. S. Geological Survey
Year: 1990
On File?: Y
Pages: 35

ABSTRACT:

From 1952 to 1988, approximately 30,900 curies of tritium were contained in waste water generated by the ICPP and TRA at the INEL. The waste water at the ICPP was discharged directly to the Snake River Plain aquifer through a disposal well until February 9, 1984, when routine use of the well was discontinued and an unlined infiltration pond was put into use. A second pond was put into use on October 17, 1985. Waste water disposed at the TRA has been discharged to one to three infiltration ponds since 1952. The average annual concentration of tritium in water from 26 selected wells at the INEL decreased from 250 pCi/ml in 1961 to 18 pCi/ml in 1988, a decrease of 93 percent. Four factors are responsible for this decrease in tritium concentration: (1) a decrease in the amount of tritium disposed annually to ponds and wells from 1961 to 1988; (2) the change from the use of a disposal well to infiltration ponds at the ICPP; (3) radioactive decay; and (4) dilution from recharge.

DATA: Big Lost River discharge liquid waste; radioactivity, volume, tritium. water quality; distribution, tritium.

Example of report produced by report form BIBRPT (menu option 7):

---- Abstract Bibliography ----

- =====
- Adamic, M. L., J. R. Burr and G. J. McManus, 1984.
Baseline Levels of Controlled Pollutants in the Vicinity of ICPP Processes;
Westinghouse Idaho Nuclear Company, Inc; WINCO-1018; 52 pages.
- Anderson, S. R., 1989,
Stratigraphy of the Unsaturated Zone and Uppermost Part of the Snake River
Plain Aquifer at the Idaho Chemical Processing Plant and Test Reactors Area,
Idaho National Engineering Laboratory, Idaho; U. S. Geological Survey; DOE/ID-
22095; 71 pages.
- Anderson, S. R. and B. D. Lewis, 1989.
Stratigraphy of the Unsaturated Zone at the Radioactive Waste Management
Complex, Idaho National Engineering Laboratory, Idaho; U. S. Geological
Survey; IDO-22080; 54 pages.
- Ansley, S. L., L. C. Hull and S. M. Burns, 1988.
Shallow Drilling Report for CFA Landfills II and III - FY-1988; EG&G Idaho Inc;
EGG-EH-8291; 363 pages.
- Bagby, J. C., L. J. White and R. G. Jensen, 1985.
Water-Quality Data for Selected Wells on or near the Idaho National
Engineering Laboratory, 1949 through 1982; U. S. Geological Survey;
DOE/ID-22068; 800 pages.
- Barraclough, J. T. and R. G. Jensen, 1975.
Hydrologic Data for the Idaho National Engineering Laboratory Site, Idaho
1971 to 1973; U. S. Geological Survey; IDO-22055; 51 pages.
- Barraclough, J. T., B. D. Lewis and R. G. Jensen, 1981.
Hydrologic Conditions at the Idaho National Engineering Laboratory, Idaho
Emphasis: 1974-1978; U. S. Geological Survey; IDO-22060; 77 pages.

Listing of menu program RDMENU.CMD

```

SET ECHO OFF
*(PROGRAM NAME: RDMENU.CMD )
*(PROGRAM DESCRIPTION: THIS PROGRAM RUNS THE R&D PROJECTS DATABASES )
*(AUTHOR'S NAME: VENNA MURRAY )
*(DATE WRITTEN: JANUARY 7, 1992 ) DATE MODIFIED: April 15 )
CLS
SET BELL OFF
SET NULL ' '
CLEAR ALL VAR
SET MULTI OFF
SET VAR CH = 99
SET VAR OP TEXT
SET VAR PA TEXT
SET VAR QR TEXT
CONNECT RDABS
WHILE CH <> 0 THEN
  NEW
  SHOW VAR #DATE AT 1,2
  SHOW VAR #TIME AT 1,71
  WRITE '---INEL Oversight Program---' AT 2,27
  WRITE 'R & D P R O J E C T S D A T A B A S E M E N U' AT 4,16
  WRITE '-----+
  -----' AT 5,16
  WRITE '1. Import ASCII File into Database' AT 7,20
  WRITE '2. Build ABSTRCT Table' AT 8,20
  WRITE '3. Edit ABSTRCT Table' AT 9,20
  WRITE '4. View Selected Abstracts' AT 10,20
  WRITE '5. Search on Data Words or Abstract, View Abstract' AT 11,20
  WRITE '6. Search on Data Words, View Reference' AT 12,20
  WRITE '7. Print Entire Bibliography ' AT 13,20
  WRITE '8. Print All Abstracts' AT 14,20
  WRITE '9. Clear Tables and Pack Database' AT 15,20
  WRITE '0. Exit from Application' AT 16,20
  FILLIN CH USING 'Enter Option Number: ' AT 19,2
  IF CH IS NULL THEN
    BREAK
  ENDIF
  SET VAR OP = ' '
  SET VAR PA = ' '
  SET VAR QR = ' '
  IF CH <> 0 THEN
    SET VAR LN = CH + 6
    WRITE '*' AT .LN,19
  ENDIF
  IF CH BETWEEN 5 AND 8 THEN
    ----- REPORTS
    FILLIN OP USING 'Do You Wish This Report Printed? (Y/N): ' AT 21,2
    IF OP = 'Y' THEN
      OUTPUT PRINT
    ELSE
      SET LINES 23
      OUTPUT PRNFILE.TXT ----- OUTPUT AT THE END OF CASE STATEMENT
    ENDIF
  ENDIF
  SWITCH (.CH)
  CASE 1
    GATEWAY

```

```

BREAK
CASE 2
  RUN CNVABS.CMD
  BREAK
CASE 3
  FILLIN QR USING 'Enter Document Number to Edit or <ENTER> for All: ' +
    AT 21,2
  IF QR EXISTS THEN
    EDIT USING DOCFORM WHERE DOC_NO = .QR
  ELSE
    EDIT USING DOCFORM ORDER BY AUTHORS
  ENDIF
  BREAK
CASE 4
  FILLIN OP USING 'Search by Doc. Number, Author, or Title? (D/A/T): ' +
    AT 21,2
  IF OP FAILS THEN
    BREAK
  ENDIF
  SET LINES 24
  OUT PRNFILE.TXT
  SWITCH .OP
  Case 'T'
    FILLIN QR USING 'Enter Word(s) for Title Search: ' AT 23,2
    PRINT ABSRPT WHERE TITLE CONTAINS .QR
    BREAK
  Case 'A'
    FILLIN QR USING 'Enter Word(s) for Author Search: ' AT 23,2
    PRINT ABSRPT WHERE AUTHORS CONTAINS .QR
    BREAK
  Case 'D'
    FILLIN QR USING 'Enter Document Number to Search: ' AT 23,2
    PRINT ABSRPT WHERE DOC_NO CONTAINS .QR
    BREAK
  ENDSW
  OUTPUT SCREEN
  TYPE PRNFILE.TXT
  PAUSE
  SET LINES 66
  BREAK
CASE 5
  FILLIN PA USING 'Enter Data Word(s) for Search: ' AT 23,2
  PRINT ABSRPT WHERE DATA OR ABSTRACT CONTAINS .PA
  BREAK
CASE 6
  FILLIN QR USING 'Enter Data Word(s) for Search: ' AT 23,2
  SELECT DOC_NO TITLE FROM ABSTRCT WHERE DATA CONTAINS .QR
  BREAK
CASE 7
  PRINT BIRPT ORDER BY AUTHORS
  NEW
  BREAK
CASE 8
  PRINT ABRPT ORDER BY AUTHORS
  NEW
  BREAK
CASE 9
  DELETE FROM TEMP WHERE TXT EXISTS
  DELETE FROM TEMP WHERE TXT FAILS
  DELETE FROM ABSTRCT WHERE TITLE EXISTS
  PACK
  BREAK

```

```
ENDSW
OUT SCREEN
IF OP IS NOT NULL THEN
  IF OP = 'N' THEN
    CLS
    TYPE PRNFILE.TXT
    PAUSE
    SET LINES 66
  ENDIF
ENDIF
IF CH <> 0 THEN
  SET VAR CH = 99
ENDIF
ENDWHILE
SET BELL ON
SET MESSAGES ON
DISCONNECT
CLS
SET ECHO ON
QUIT
```

---- DISPLAY REPORT TO SCREEN

Listing of abstract import program CNVABS.CMD

```

*(PROGRAM NAME: CNVABS.CMD                                     )
*(PROGRAM DESCRIPTION: THIS PROGRAM CREATES A NEW ABSTRACT TABLE )
*(AUTHOR'S NAME: VENNA MURRAY                                   )
*(DATE WRITTEN: JANUARY 3, 1992                                DATE MODIFIED: )
SET CLEAR ON
SET BELL OFF
SET NULL ' '
CLEAR ALL VAR
SET VAR LN TEXT, TTL TEXT, ATH TEXT, SRC TEXT, 'R TEXT, DOC TEXT, FL TEXT
SET VAR PGS TEXT, ABT NOTE, DTA TEXT, TX TEXT, .ASTC TEXT
SET VAR PASS = 0, LNG = 0, LCT = 0
CLS
DECLARE C1 CURSOR FOR SELECT TXT FROM TEMP
OPEN C1
FETCH C1 INTO LN INDICATOR A1
WHILE (SQLCODE <> 100) THEN
  IF LN IS NULL OR LN FAILS THEN
    GOTO NXT
  ENDIF
  IF LN = '||' OR LN = '@' THEN
    GOTO NXT
  ENDIF
  SET VAR TX = (LJS(.LN,5))
  IF TX = 'Title' THEN
    ---- LEVEL BREAK: CREATE A ROW
    IF PASS = 1 THEN
      INSERT INTO ABSTRACT (TITLE, AUTHORS, SOURCE, P_YEAR, DOC_NO, +
        ON FILE, PAGES, ABSTRACT, DATA) VALUES(.TTL, .ATH, .SRC, .YR, +
        .DOC, .FL, .PGS, .ABT, .DTA)
      SET VAR TTL = ' ', ATH = ' ', SRC = ' ', YR = ' ', DOC = ' ', +
        FL = ' ', PGS = ' ', ABT = ' ', DTA = ' '
    ENDIF
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 6
    SET VAR TTL = (SGET(.LN,LNG,7))
    IF TTL CONTAINS '}' THEN
      SET VAR LNG = (SLEN(TTL))
      SET VAR LNG = LNG - 1
      SET VAR TTL = (SGET(.TTL,LNG,1))
    ENDIF
    SET VAR LASTC = 'T'
    GOTO NXT
  ENDIF
  IF TX = 'Pages' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 7
    SET VAR PGS = (SGET(.LN,LNG,7))
    SET VAR LASTC = ' '
    GOTO NXT
  ENDIF
  SET VAR TX = (LJS(.LN,6))
  IF TX = 'Author' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 8
    SET VAR ATH = (SGET(.LN,LNG,8))
    IF ATH CONTAINS '}' THEN
      SET VAR LNG = (SLEN(ATH))
      SET VAR LNG = LNG - 1
    ENDIF
  ENDIF

```

```

        SET VAR ATH = (SGET(.ATH,LNG,1))
    ENDIF
    SET VAR LASTC = 'A'
    GOTO NXT
ENDIF
IF TX = 'Source' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 8
    SET VAR SRC = (SGET(.LN,LNG,8))
    IF SRC CONTAINS '}' THEN
        SET VAR LNG = (SLEN(SRC))
        SET VAR LNG = LNG - 1
        SET VAR SRC = (SGET(.SRC,LNG,1))
    ENDIF
    SET VAR LASTC = 'S'
    GOTO NXT
ENDIF
SET VAR TX = (LJS(.LN,4))
IF TX = 'Year' THEN
    SET VAR YR = (SGET(.LN,4,6))
    SET VAR LASTC = ' '
ENDIF
IF TX = 'Data' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 6
    SET VAR DTA = (SGET(.LN,LNG,6))
    IF DTA CONTAINS '}' THEN
        SET VAR LNG = (SLEN(DTA))
        SET VAR LNG = LNG - 1
        SET VAR DTA = (SGET(.DTA,LNG,1))
    ENDIF
    SET VAR LASTC = 'D'
    GOTO NXT
ENDIF
IF LN CONTAINS 'Doc No' THEN
    SET VAR LCT = (SLOC(.LN,'Doc_No'))
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - LCT
    SET VAR DOC = (SGET(.LN,LNG,LCT))
    SET VAR LCT = (SLOC(.DOC,''))
    SET VAR LNG = LCT - 8
    SET VAR DOC = (SGET(.DOC,LNG,8))
    SET VAR LASTC = ' '
ENDIF
IF LN CONTAINS 'On File' THEN
    SET VAR LCT = (SLOC(.LN,'On_File'))
    SET VAR LCT = LCT + 8
    SET VAR FL = (SGET(.LN,1,LCT))
    SET VAR LASTC = ' '
ENDIF
SET VAR TX = (LJS(.LN,8))
IF TX = 'Abstract' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 10
    SET VAR ABT = (SGET(.LN,LNG,10))
    IF ABT CONTAINS '}' THEN
        SET VAR LNG = (SLEN(ABT))
        SET VAR LNG = LNG - 1
        SET VAR ABT = (SGET(.ABT,LNG,1))
    ENDIF
    SET VAR LASTC = 'B'
    GOTO NXT

```

```

ENDIF
IF LN CONTAINS '}' THEN
    SET VAR LNG = (SLEN(LN))
    SET VAR LNG = LNG - 1
    SET VAR LN = (SGET(.LN,LNG,1))
ENDIF
SWITCH (.LASTC)
    CASE 'T'
        SET VAR TTL = TTL + ' ' + LN
        BREAK
    CASE 'A'
        SET VAR ATH = ATH + ' ' + LN
        BREAK
    CASE 'S'
        SET VAR SRC = SRC + ' ' + LN
        BREAK
    CASE 'B'
        SET VAR ABT = ABT + ' ' + LN
        BREAK
    CASE 'D'
        SET VAR DTA = DTA + ' ' + LN
        BREAK
ENDSW
SET VAR PASS = 1
LABEL NXT
    FETCH C1 INTO LN INDICATOR A1
ENDWHILE
INSERT INTO ABSTRACT (TITLE, AUTHORS, SOURCE, P_YEAR, DOC NO, +
    ON FILE, PAGES, ABSTRACT, DATA) VALUES(.TTL, .ATH, .SRC, .YR, +
    .DOC, .FL, .PGS, .ABT, .DTA)
CLOSE C1
DROP CURSOR C1
SET CLEAR ON
RETURN

```

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END