UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

USER'S GUIDE FOR GSREF: A PERSONAL COMPUTER BIBLIOGRAPHIC REFERENCE SYSTEM Version 3.1

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ILLUSTRATIONS

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INTRODUCTION

Basic information

The GSREF program and accompanying utility program can be used to store, retrieve and organize a set of bibliographic citations. The GSREF programs can also be used for various data management functions that enable one to use a personal computer more effectively.

What materials are necessary to use these programs? You need a computer, a disk operating system (DOS), and a working familiarity with the use of the computer and DOS.

If the computer is a member of the IBM Personal Computer family, or is closely compatible with the IBM PC family, all operations executed by this set of programs will run on your computer. If you computer isn't an IBM PC-compatible, but uses the MS-DOS operating system, the programs will probably work. However, these programs were not tested on all brands and models of the various machines. Adhere to the following directions carefully no matter what computer you are using.

The computer should have at least 128,000 characters of memory (128K) and at least one disk drive. These programs will work with any conventional disk drive and printer.

Finally, to achieve the best results with these programs, familiarity with the basics of computer usage and DOS are essential. You don't need to be an expert to use these programs; however, you will need to be familiar with the ideas incumbent to DOS usage. If you are not sure about any of these matters, seek the advice of someone more experienced.

The GSREF programs are easy to use; they facilitate daily work by organizing reference material and assist in accurate and consistent data retrieval.

Getting acquainted

The best way to become familiar with the use of these programs is to read through this manual.

Naturally, the most interesting way to become familiar with these programs is to use them. However, you are strongly encouraged NOT to spend hours entering references, until you are thoroughly familiar with what GSREF can do and just as importantly what it can not do! The best approach is to enter a few references and try out all of the features with this small data base and then if you feel that the programs will be helpful, proceed to implementing larger data bases.

These programs are in the public domain and can be freely copied and given to others.

THE GSREF PROGRAM

In all areas of science there has been a virtual explosion of articles and publications that threaten to overcome people's ability to read and remember material that is vital to their staying current with the state of knowledge in their subject area. The program described in this manual can be invaluable in keeping track of the existence, content and location of published material. The program allows the user to store a bibliographical

citation with keywords that allow the citation to be recalled later by content, keyword(s) or reference number. If the material is filed by reference number, it can also provide a quick, convenient filing system. The citations are always retrieved in an alphabetic sequence and can be stored in a publication style text file for direct inclusion in a report prepared using word processing systems. The system is written in FORTRAN and is highly portable among micro and mini computer systems. Currently the system is implemented on an IBM Personal Computer using the DOS System.

The program is loosely based on previous work done by Selner, Gettings and North (1981) while working as part of the U.S. Geological Survey-Saudi Arabian Mission. The rapid increase in the number of personal computers available to geoscientists in the Mission allowed some of the capabilities of the first system to be moved down to the micro level and to allow interactive updating and maintenance of personal data bases.

What is a GSREF data base?

A GSREF data base consists of three DOS files: an Index File, a Keywords File and a Main Data File. The user supplies the name of the data base and the program will supply the appropriate extension for each of the files. The data base name should be limited to alphabetic characters (A-Z) and must not contain a period since the data base name is used as the filename plus an appropriate extension for the actual DOS filenames. The contents, format and access techniques used by the program for each of the three file types is described below. The user specifies the name of the data base to be used as the first action required when the program begins; however, he can switch to a different data base by choosing the appropriate option from the Main Menu. The following is a brief description of the functional usage that GSREF makes of each of the files. For further detail, see the Technical Information portion of this manual.

Index file

The Index File will have an extension of ".NDX". The file is used to maintain the alphabetical sequence of entries, the location of the text within the Main Data File and the number and value of keywords for each citation.

Keyword file

The Keyword File will have an extension of ".KEY". The file is used to contain all of the keyword values that have been entered. It is used to check for errors in data entry and in retrieval by keyword.

Main data file

The Main Data File will have an extension of ".DAT". The file contains the actual lines of text that make up a citation. The file is used for retrieval by text in content and the specific records for a citation are displayed in all forms of retrieval if a citation is selected.

GSREF Menus

The GSREF program makes use of menus to simplify the user interface. The program utilizes two menus: A Main Menu and a Data Management Menu (figs. 1 and 2): The Main Menu supports mainly retrieval functions; the Data

Management Menu, data base management functions. The user chooses a function by typing the number that appears to the left of the desired function utilizing the keys at the top of the keyboard, followed by a carriage return. The program then executes the selected function. For further detail on Menus, see the Technical Information section of this Manual.

How do I start a GSREF data base?

When the GSREF program starts, it initially requests the name of a data base. If you haven't previously created the Data Base, depress the carriage return (or enter key). The program will now display the Main Menu. Select the Data Base Management Menu by depressing the 4 key followed by a carriage return (or enter). The Data Base Management Menu is then displayed on the screen. Note that one of the choices is to Start Up a Data Base. This is done by depressing the 4 key followed by a carriage return. The program will now request the name of the data base. Type the name followed by a carriage return. The program will now return to the Data Base Management Menu.

How do I put data into a GSREF data base?

Interactive data entry

The most direct way to put data into a GSREF Data Base is to proceed to the Data Management Menu and choose the first option "Add a New Entry" by typing a 1 followed by a carriage return. The program will request the data. You can enter less than the maximum number of 80 characters per line. Each line must be terminated by a carriage return and an extra carriage return signifies the end of data for the citation. As you respond to the questions for keywords, the program will check the value you type against the list of keywords previously designated for this data base. Those keywords it recognizes actuate a request for another keyword. Keywords that have not been used before will generate a question that asks if this is a new keyword value. The program has checked the value you typed against the current keyword list and it did not find a match. If you made a typing mistake, simply reply N followed by a carriage return; if it is a new value that should be entered on the list, respond with Y and a carriage return. Note that one of the options of the Data Base Management Menu is an option that allows you to enter a new keyword value. You may prefer to enter all of the possible values into the list prior to entering any citations. This will allow you to always regard the question of mismatching as a possible typographical error on input. When all of the keywords have been entered for a new reference, simply enter an extra carriage return to indicate the end of data for the keyword field. The program will type the reference number that it has assigned and write the data to disk. The program will return to the Data Base Management Menu.

Data entry via a word processing program

Another method of putting data in a GSREF Data Base is to use a Word Processing program to create a text file that contains the bibliographic citations. If you choose to use this method, there are several characteristics that the text file must have.

G S R E F

M A I N M E N U

CURRENT DATA BASE:

1 - KEYWORD SELECTION

2 - REFERENCE NUMBER SELECTION

3 - CONTEXT SELECTION

4 - DATA BASE MANAGEMENT MENU

5 - REVIEW DATA BASE

6 - CHANGE DEVICE/STYLE OF OUTPUT

7 - CHANGE TO DIFFERENT DATA BASE

8 - EXIT

ENTER CHOICE

Figure 1 - Main menu

G S R E F

D A T A M A N A G E M E N T M E N U

CURRENT DATA BASE:

1 - ADD A NEW ENTRY

2 - ADD A KEYWORD

3 - START UP A DATA BASE

4 - DELETE AN ENTRY

5 - EDIT AN ENTRY

6 - IMPORT A FILE CREATED BY A TEXT PROCESSOR

7 - LIST KEYWORDS (SORTED)

8 - RETURN TO MAIN MENU

ENTER CHOICE

Figure 2 - Data management menu

1. Each line must end with a carriage return.
2. You must end each bibliographic citation with a "special" ASCII character that marks the end of the last line of the citation. This character must be immediately prior to the carriage return of the last line. Some word processing programs such as Volkswriter create text files that are directly compatible. Volkswriter uses an ASCII character (020) as a paragraph marker (or hard carriage return) to mark the end of a citation. Wordstar files can be used directly by inserting a "\" character (ASCII 097) at the end of each citation.

After creating the text file, start the GSREF program and, assuming you have an existing data base, enter the name when requested and a carriage return. Proceed to the Data Management Menu and select the option to "Import a Text File" by typing a 6 and a carriage return. The program will request the DOS filename of the text file. Enter the name and a carriage return. The program will then request the style of the input data. For this case enter a 1 and a carriage return. The program will then request the ASCII value of the character marking the end of each reference. For a Volkswriter created file enter 020 and a carriage return. The program will then ask if you wish to enter keywords for each citation as they are read in and filed. Respond as you choose. If you say no (N), the program will proceed to file each of the citations with no further intervention. If you respond yes (Y), the program will allow you to enter up to twelve keywords for each citation and then file the citation. The procedure of entering keywords is described above under the Interactive Data Entry section. The program will proceed back to the Data Management Menu when all of the citations have been filed.

How do I retrieve information from my data base?

The best method of retrieving data will vary with the circumstances; the program attempts to allow you maximum flexibility in that you can simply browse, you can be very specific (reference number) or you can use logic based on your knowledge of the subject matter stored in the data base to make sure that you get exactly those entries that you want. It is strongly recommended that you spend some time simply playing with a small sample data base that contains a few entries and attempt the various types of retrieval to make sure that the data you enter in your final data base has the proper content and structure to permit you to retrieve it as anticipated.

Retrieval by keyword and text in content utilize a process of specifying a selection criteria that involves one or more lines each containing three elements: a prefix, a test value and a connector. The prefix has two possible values FOR to indicate a true test against the test value and NOT to indicate a false test against the test value. The test value is a string of characters surrounded by tab characters. It can consist of up to 12 characters for a keyword retrieval and up to 24 characters for a text in content retrieval. The connector element allows you to connect lines logically. The values can be AND and OR. The AND connector means that the current line and the next line must both be true for a citation to be retrieved. The OR connector means that the current line (and possible other previous lines if AND was used previously) and the following line are independent and either being true will result in a citation being selected. The connector can be omitted on the last line since there will not be a

succeeding line. Generally most retrievals can be done with a one or two line set of specifications; however, you can use up to 45 lines to specify the criteria. You must enter a final carriage return to signify that all of the criteria has been entered. The program will then display the criteria on the screen and request that you confirm that it is correct. Keep in mind that AND joins criteria and both must be true; OR separates the criteria and either can be true. If you are using the screen as the output device, GSREF will pause between retrieved entries to allow you time to read the citation and when you wish to proceed with the search, you must enter a carriage return to allow the program to continue the search.

Output devices and styles

GSREF allows you a choice of three different output devices and two different styles of formatting the information sent to the output device. The available devices are the screen (default at program start), the printer and a disk file. The types of output format are a publication style where only the lines of text for a citation are displayed and a data base style where the reference number is added to the front of the first line and the keywords are listed below the text (default at program start). You have the option of changing the output device and style from the Main Menu. You simply type a 6 and a carriage return and the program will request that you identify the desired output device by choosing from a three option menu by entering a number (1, 2 or 3) and a carriage return. You will then be asked to choose one of the two styles of format (Fig. 3) by typing a number (1 or 2) and a carriage return. The program then returns to the Main Menu.

Retrieval by browsing

The simplest way to retrieve data from a GSREF Data Base is to choose the REVIEW DATA BASE option from the Main Menu. This option allows you to browse through citations in the data base alphabetically. Each citation is brought to the screen first and then you can route it to the current output device in the current style of output. If you do not wish to send the citation to the output device, simply enter a carriage return. You are then asked whether you wish to move forward, backward or quit. If you wish to move forward, simply depress the carriage return (or type an F and a carriage return). To go backwards to the previous citation, enter a B and a carriage return. To return to the Main Menu, enter a Q and a carriage return. Assuming you are not at the beginning or end of the data base (you cannot go past either end), the next citation will appear on the screen and you again start making choices about output, etc. To return to the Main Menu enter a Q in response to the direction question.

Retrieval by reference number

GSREF assigns a number to each citation as it was entered in the data base. If you remember the numbers of the entries, you can retrieve them by selecting the RETRIEVAL BY REFERENCE NUMBER option from the Main Menu. You are then requested to enter an integer number followed by a carriage return. The citation will then appear on the screen and you can route it to the output device as in the browsing option (see above). When you have seen all the entries that you wish to examine, enter a carriage return (or a zero and a carriage return) to return to the Main Menu.

Retrieval by keyword

From the Main Menu you choose KEYWORD SELECTION by typing a 1 followed by a carriage return. You are then prompted by an example line that illustrates the format of each line of selection criteria to be entered. You should now enter the test criteria, line by line, ending each line with a carriage return. When all lines have been entered, depress the carriage return a final time to signify that you are finished. The program will then display the search criteria on the screen. It reformats lines containing the connector OR so that the logic is more obvious. The program then asks you to verify that the criteria are correct. If so, depress the carriage return. If not, enter a N and a carriage return to restart search criteria designation. When the entire file has been searched, the program returns to the Main Menu.

Retrieval by text in content

From the Main Menu choose Text in Content Selection by typing a 3 followed by a carriage return. You are then prompted by an example line that illustrates the format of each line of selection criteria to be entered. You should now enter the test criteria, line by line, ending each line with a carriage return. When all lines have been entered, depress the carriage return a final time to signify that you are finished. The program will then display the search criteria on the screen. It reformats lines containing the connector OR so that the logic is more obvious. The program then asks you to verify that the criteria are correct. If so, depress the carriage return. If not, enter a N and a carriage return to restart search criteria designation. When the entire file has been searched, the program returns to the Main Menu.

Special Cases

How to send the entire GSREF data base to the output device

If an occasion arises in which it is desirable to choose every citation within a GSREF Data Base; the procedure is as follows:

1. From the Main Menu choose the option to Change Device/Style by typing a 7 and a carriage return. Select the desired output device and style. The program will return to the Main Menu.
2. From the Main Menu choose the option for Text in Content Selection by typing a 3 and a carriage return. When the program requests the search criteria, enter a prefix of FOR followed by a tab character, a string of four blank characters (depress space bar on keyboard four times) and another tab character followed by a carriage return. Enter another carriage return to signify end of search criteria. The program will display the search criteria in a normal fashion and request confirmation. Enter a Y and a carriage return. All of the citations will be written to the output device in alphabetical sequence. When completed, the program returns to the Main Menu.

How to create new GSREF data bases from existing GSREF data bases

If an occasion arises in which it is desirable to create a GSREF Data Base using a subset of the citations that are a part of an existing GSREF Data Base, the procedure is as follows:

Style 1 Output

Agnew, A. F., and Gries, J. P., 1960, South Dakota oil--past, present, and future: American Association of Petroleum Geologists, Rocky Mountain Section Geological Rec., February 1960, p. 85-95.

Style 2 Output

REFERENCE NUMBER 1 CONTAINS 3 LINES OF TEXT 2 KEYWORDS

Agnew, A. F., and Gries, J. P., 1960, South Dakota oil--past, present, and future: American Association of Petroleum Geologists, Rocky Mountain Section Geological Rec., February 1960, p. 85-95.

KEYWORDS:

PETROLEUM AAPG

Figure 3 - Available styles of output

1. From the Main Menu choose the option to Change Device/Style by typing a 7 and a carriage return. Select the disk output option by typing a 3 followed by a carriage return. The program will request a full DOS filename. Enter the full DOS filename followed by a carriage return. Choose the Data Base style of output by typing a 2 followed by a carriage return. The program will return to the Main Menu.
2. From the Main Menu choose any of the options for retrieval. Follow a normal procedure for the type of selection desired.
3. When the program has completed the selection process and has returned to the Main Menu, choose the Data Management Menu by typing a 4 followed by a carriage return. Choose the Start a Data Base option by typing a 3 followed by a carriage return. Enter the name of the new GSREF Data Base followed by a carriage return. The program will return to the Data Management Menu.
4. Choose the option to Import a Text File by typing a 6 followed by a carriage return. When requested to supply the DOS filename, enter the DOS filename of the file created in step 1. When the program requests the style of the input, respond with a 2 followed by a carriage return. The program will then proceed to file the citations in the new GSREF Data Base and automatically build the Keyword File for the new GSREF Data Base using only keywords contained in the input file. NOTE: the citations are renumbered starting with 1 in increments of 1. When completed, the program returns to the Data Management Menu.

GSREF UTILITY PROGRAMS

PRTREF Program

This program is one of the utility routines that are used in association with GSREF data bases. PRTREF allows the user to create a printout of the contents of the Main Data File in a formal manner. The user is requested to supply the name of the data base, a title that is printed at the top of each page, the page number for the starting page and whether the keywords should be suppressed or printed. The program will not split the printing of an entry between pages. It checks to see if an entry will fit on a page and if not, it spaces down the output page and places the page number at the center of the 61st line. The entry will then be placed in its entirety after the title line on the next page. The program increments the page number by one on each successive page. The user must set the printer for a line width of 132. Generally, this is done using the DOS system command MODE (MODE LPT1:132).

XREF Program

This program is one of the utility routines that operates on data bases created and maintained by GSREF. The program creates a sorted listing of the keywords used in the data base and lists the reference number of all the entries in which each keyword was used. The keywords are listed on the left side of the output and reference numbers on the right side. The user is requested to provide a 70-character title that will appear on the top of each page of the listing. The program provides a page number at the bottom of each page starting with one (1). It is recommended that the name of the data base

and the date be included as part of the title. The output listing is directed to the line printer (LPT1).

TECHNICAL INFORMATION

Programming language

GSREF is written in MS-FORTRAN and conforms to Subset FORTRAN, as described in ANSI X3.9-1978 and includes extensions to the subset language. Some of the extensions are features of the full ANSI standard, commonly known as FORTRAN 77. The program was developed on an IBM XT using the Microsoft FORTRAN Compiler for the PC-DOS Operating System (Version 2.0). The transfer of the program to other computers (either micro or mini) would involve some minor modification of file opening and closing statements. Direct access of file records is used extensively due to the use of a double-threaded list in the Index File to maintain the alphabetic sequence. The dollar sign character ($) is used in some formats to prevent the screen from advancing after a write statement. This could be removed for FORTRAN compilers that do not support this feature.

Data base file structure

Index file

The index file is a direct access file that is unformatted and has a record length of 38 bytes. Each record consists of 19 sixteen bit integer values stored in an array of 19 elements. The first record of the file is a special record and its contents are as follows:

Word	Contents
1	Last reference number used.
2	Always 1.
3	Last record used in the Main Data File.
4	Always zero (unused).
5	First citation in alphabetic sequence.
6-19	Always zero (unused).

Subsequent records (one for each citation) contain the following information:

Word	Contents
1	Reference number.
2	Starting record in the Main Data File.
3	Final record in the Main Data File.
4	Previous reference number in alphabetic sequence. (zero for starting record in sequence)
5	Next reference number in alphabetic sequence. (zero for final record in sequence)
6	First two characters of first line of citation in uppercase.
7	Number of keywords.
8-19	Keyword numbers corresponding to position in keyword list.

Keyword list file

This file consists of direct access records that are unformatted. Each record consists of one 12-character value. The first record contains the number of keywords in the list encoded as the first four ASCII characters. Subsequent records contain a keyword value.

Main data file

The Main Data File is a direct access file in which each record is formatted and consists of 80 characters that contain the following:

Character(s)	Contents
1-80	Eighty characters of text

Program structure

The program consists of a small main program and fifteen subroutines. There is one blank common block used in the program that contains the integer variables that are used as logical unit numbers, the character variables that contain the names of files that are used and the variable containing the current value of the style of printout desired. There is one named common block that contains the keyword list for the current data base. Each of the program modules are briefly described as follows:

MAIN

The main program sets up values for the logical units that are used throughout the system of subroutines and the default output device and default output style. It also supports the Main Menu and controls branching to the appropriate subroutine as selected by the user.

SETUP

This subroutine requests the user to enter the Data Base Name and then sets the three filenames for the Index File, Keywords File and the Main Data File. It only stores the values into the common variables and does not open or close any files.

LENGTH

This is a utility routine that computes the length of a character string stored as a CHARACTER*1 array. It searches backwards in the string for the first non-blank character and sets the length to this value. It is used by the SETUP and OUTPT subroutines and could be replaced with a built-in function if the compiler supports one.

SELREF

This subroutine does the selection by reference number and reads in the Index File and calls the OUTPT subroutine for printing. Input to this subroutine from the terminal consists of typing reference numbers in any sequence as desired in response to a prompt (:). When finished selecting, the user types a zero (0) followed by a character return and the subroutine returns to the Main Menu.

SELCON

This subroutine does the selection by text in content and reads the Index File and the Main Data File. The subroutine sets up values for calling the GETTST subroutine and then calls it to get the tests that are to be made. It then uses the Index File to access the Main Data File in alphabetic sequence and tests each citation against the specified test criteria. Those meeting the test criteria are sent to the OUTPT subroutine for printing. When finished processing all the entries, the subroutine closes the Index File and the Main Data File and returns to the main program and the Main Menu.

SELKEY

This subroutine does the selection by keyword and reads only the Index File. The subroutine sets up a parameter and then calls GETTST subroutine to read in the test criteria. The program then reads the records from the Index File in alphabetic sequence. Those records that meet the test criteria are passed to the OUTPT subroutine for printing. Records that do not contain keywords are ignored. When the last record is read, the program closes the Index File and returns to the main program and the Main Menu.

REVIEW

This subroutine allows the user to move through the file in a forward or backward fashion in alphabetic sequence. The subroutine uses the Index File and the Main Data File. As each citation is displayed on the screen, the user has the option to send it to the output device or not (carriage return=N). The user is then requested to indicate the direction of movement (or his desire to quit). An attempt to move beyond the limits of the file either beginning or end will result in a message indicating that he is attempting to move outside the limits of the file. The user can respond to the direction question with a carriage return in which case the subroutine assumes a direction of forward to the next record in the sequence. When the user indicates that he wishes to quit (response of Q to direction question), the program closes the Index and Main Data files and returns to the main program and the Main Menu.

DATAMGT

This subroutine supports all aspects of updating any of the three files that make up a data base: Index, Keywords and Main Data. The subroutine begins by displaying a menu from which the user selects the function that is desired. Based on his selection the subroutine branches to one of seven routines that are independent.

The first of these routines allows the user to enter a new citation to the data base. This section of code reads the Keywords File into the keyword list array for use in checking the validity of keyword entries. The user is then requested to enter the text for the citation ending with an extra carriage return. After the text has been entered, the program requests a series of keywords. A blank keyword indicates end of keyword entry. Each keyword is checked against the keyword list. If the keyword is in the keyword list, the program loops for the next keyword. If the keyword is not on the list, the program asks if this is a new keyword. If the response is yes, then the keyword list and the Keywords File is updated. If the response is no, then the program prints a message indicating that it is an incorrect keyword. The Index File is then searched to determine the correct position in the data base according to the contents of the first line of the citation. The Main Data File is updated by adding the new citation on the end of the current records in the Main Data File. The Index File is updated by calling subroutine FILEIT and then the program asks if another citation is to be added. If the response is yes (Y), then the process repeats; if no (N), then the program returns to the Data Management Menu.

The second independent section allows the user to add a keyword citation to the Keywords File. The user is requested to type in the new keyword and the program then proceeds to add the new keyword to the end of the Keywords File and the first record is updated with the new number of keywords. The program then asks if an additional keyword entry is desired. If the answer is yes (Y), the process repeats; if no (N), the program returns to the Data Management Menu.

The third subroutine is used only at the initiation of a data base. The subroutine requests the user to provide the data base name. This is a protection feature to avoid the possibility of destroying the current data base. It then proceeds to set up the appropriate files and records within the Keywords and Index files that control their usage. The program then returns to the Data Management Menu.

The fourth routine allows the user to delete a citation. The physical records will still exist and occupy space in the files (Main, Data and Index); however, the contents of the records in the Main Data File are overwritten and the alphabetic thread in the Index file is re-established to remove the citation completely. The reference number is considered to be used and is not re-allocated.

The fifth routine allows the user to edit (re-enter) an entire line of text that was previously entered as a part of a citation. NOTE: the user can only change existing lines. New lines of text CANNOT be added. The program displays each line on the screen and asks if it is OK. If the response is yes (Y), then the line is skipped and the next line displayed. If the response is no (N), then the user is asked to enter the line correctly. The routine permits the user to fix minor typing or spelling errors. The keywords are then listed and the user may modify the list.

GETTST

This subroutine reads the test criteria for a keyword or context selection and is called by the SELKEY and SELCON subroutines. The program looks for three components of a test condition: a prefix, a test value and a connector. The prefix values can be FOR or NOT. A FOR implies a positive sense to the test for equality (equal to the test value); a NOT implies a negative sense to the equality (not equal to the test value). The test value is the string (surrounded by tab characters) that is to be matched or not matched to the keyword or text in content in a citation. The connector can be either AND or OR (blank on last line). The connector associates this line of test condition with the next line of test condition. An OR value indicates that the next line is independent of this line (and previous lines if applicable) and is the start of a new test clause. An AND value indicates that the next line of test condition is associated with the current line and that both must be true for selection. A clause may consist of multiple test conditions connected with AND. A maximum of 45 test conditions may be entered.

The subroutine starts by indicating to the user the form of the input required: a prefix, a tab character, a test value; tab character and connector (can be omitted on last line). The subroutine then extracts the prefix, test value and connector and verifies their values. For the prefix it checks that the user has entered a FOR or a NOT. For a keyword it checks that the test value is on the keyword list. The connector can only be an AND or an OR except on the last line where the connector can be omitted. NOTE: both of the tab characters must be present on the last line of input to enable the subroutine to properly extract the test value field. Upon receiving a completely blank line or simply a carriage return, the subroutine displays the total number of lines of input, the various test conditions grouped into clauses and the number of test clauses. The user is then requested to confirm by answering yes (Y) or no (N) that the input is correct. If the response is yes, the program returns to the calling subroutine; if the response is no, the program returns to the start of the dialogue and conditions may be re-entered.

The subroutine uses the Keywords File when called by the SELKEY subroutine. The test value is limited to 12 characters for keywords and up to 24 characters for text in content.

OUTPT

This subroutine is the main output from the GSREF program. The subroutine routes output to the user selected device (default at start-up is screen) in the format that is selected by the user (default at start up time is type 2). The subroutine uses the index record contents passed to the subroutine to access the Main Data File and then reformats the data and sends it to the output device. If the output is in format type 1, trailing blanks at the end of each line of text are removed. If the output device is the screen, the program pauses to allow the user to read the citation and then depress the return key to continue (or Q to quit). The subroutine then returns to the calling routine.

SETPRT

This subroutine allows the user to change the output device and the style of the output format. It is called only by the main program when selected via the Main Menu. The user has three choices for output devices: screen, printer and disk file. If the disk file output is selected, the user is requested to supply the name of a file where the information is to be written. The user is then requested to select the style of the output. There are two choices:

1. a publication style consisting of the lines of text making up the citation,

or

2. a data base style consisting of the reference number, the lines of text and the keywords.

The values entered by the user for the output device and output style are stored variables that are in the common block. The subroutine then returns to the main program.

FILOPN

This subroutine performs all open statements for the data files except for the case of starting a data base. The program uses a parameter in common to tell which file is to be opened. It then performs the open statement and returns to the calling routine. The subroutine was implemented to ease the transfer of the program to other machines by reducing the number of statements that would have to be changed. The only other routine that contains an open statement is the DATAMGT subroutine where the files are all opened as new files rather than old files when starting a new data base.

LDKEY

This subroutine reads in the Keyword File and stores it into the list of keywords array. It is called by many different subroutines as necessary.

PACK

This subroutine assembles an alphabetic key for a citation by stripping out extraneous characters such as commas, periods, dashes, etc. from the first line of a citation. The key is then left justified and packed by removing leading blanks, tabs, etc. It is called by subroutine FILEIT.

BUBBLE

This subroutine does a sort of the keyword list array for the purpose of listing the keywords on the screen in alphabetic sequence.

FILEIT

This subroutine is used to add new records to the double threaded list of entries in the Index File. The program calls subroutine PACK to prepare a key that will be used to insert the new citation into the appropriate place in the alphabetic sequence that is maintained within the Index File. The threaded list is then searched and the new citation is patched into the list by updating the appropriate records within the Index File.

REFERENCE CITED

Selner, Gary I., Gettings, M. E., and North, B. M., 1981, REFBIB: A system for the storage and retrieval of bibliographic data: U.S. Geological Survey Open-File Report 81-0826; also 1981, U.S. Geological Survey Saudi Arabian Mission Miscellaneous Document 34, 78 p.