

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Earthquake Data Archiving and Retrieval System: User's Manual

G. R. Crane, W. H. K. Lee, and M. E. O'Neill

Open-File Report 85-368

April, 1985

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

CONTENTS

Introduction and System Overview	1
What the System's For	1
How the System Works	1
What Libraries are Available	2
Getting Started	3
User Registration	3
Required Equipment	3
Logging On	3
Sample Sign-on Session	4
Logging Out	5
Searching for Data Sets	6
Introduction	6
Query System	6
The HELP Command	8
The SEARCH Command	8
The TYPE Command	15
The SAMPLE Command	15
The EXAMINE Command	16
The RETRIEVE Command	16
The COMMENT Command	16
Example session	17
References	23
Figure 1	24

INTRODUCTION AND SYSTEM OVERVIEW

What the System's For

A major problem in processing and analyzing earthquake-related data is getting a particular data set in a form that one can use. We are usually too busy to document our computer programs and our data. As a result, they may be useless to others, or even to ourselves, after a few months. The USGS Earthquake Data Archiving and Retrieval System is designed to help in documenting, archiving, and retrieving our earthquake data. The purpose of this User's Manual is to show how one can query and retrieve data from the USGS Earthquake Data Archive.

How the System Works

The overall scheme for organizing earthquake-related data is illustrated in Figure 1. We assume that data along with descriptions of contents and formats are provided by contributors in the form of magnetic tapes or punched cards. These input data sets are first read onto a disk for editing with the "Edit System". An archivist then uses the "Archive System" to place the edited data sets onto a "Staging Disk" and finally onto archival tapes. In the archiving process, data sets are copied, verified, and indexed in a "Database". Subsequently, the "Backup System" is used to backup the archived data sets independently via the SLAC Archive System. From the users' point of view, the "Query System" is available to search the "Database" for desired data sets. The result of a search is a list of pointers to the desired data sets on the archival tapes. The pointers are passed to the "Retrieval System", which first looks for the data sets on the "Staging Disk". If the data sets are there, the response is immediate and the data sets can be output to a magnetic tape or to the printer. Otherwise, data sets are retrieved from the archival tapes and placed on the "Staging Disk" with a delay of about 30 minutes.

Because of the vast amounts of earthquake-related data, it is not economical or necessary to have all the data online. However, we do keep a sample of all the archived data sets online for users to examine before full retrieval. The "Staging Disk" has a capacity of 160 megabytes; thus it can hold several hundred data sets temporarily. The "Retrieval System" scratches out the least used data sets when it adds data sets from the archival tapes, so that eventually the "Staging Disk" will contain only the most frequently used data sets.

For more information on the design and implementation of the USGS Earthquake Data Archiving and Retrieval System, please see Lee, Scharre, and Crane (1983) and Crane, Lee, and Newberry (1984).

What Libraries are Available

Before we describe the contents of the Earthquake Data Archive, we would like to introduce some definitions. A data set is a unit of information-- it may be a computer program to locate earthquakes, or it may be a set of arrival times for an earthquake sequence, or it may be any convenient collection of data. In order for a data set to be useful to others, it must be self-explanatory and have a set of indexes for retrieval purposes. A data set may contain one or more data records. A data record is the smallest unit of data that is involved in data manipulations, e.g., sorting and merging operations. For example, a data record could contain the P- and S-arrival times at a particular station for a particular earthquake, and one might wish to merge all such data records for a given earthquake.

Now let us consider how to document a data set. We are aware that scientific papers published in journals follow a rather rigid format-- title, author(s), institution(s), abstract, text, figures, tables, and references. In a similar manner, a data set should contain all the relevant information, not just a set of numbers. The journal editor sees to it that the papers are in good order, and similarly, a data archivist must play the role of the journal editor, asking if the documentation is adequate and complete. Although it is common to document a data set on separate sheets of paper, we think that this is a mistake because the documentation tends to get lost and is then unavailable when needed. Therefore, under our archiving and retrieval system, a data set will not be archived unless it has documentation incorporated within it.

Next, we will consider how to specify a data record. It is obvious that if one wishes to shuffle a set of data records, each data record must be uniquely labelled. Since a data record may contain a variety of information, an identification must be included to specify the type of data and its format. At present, numerous formats exist for various earthquake-related data or even for a specific type of earthquake data. Since it is not practical to ask others to abandon their favorite formats, we are setting up two distinct libraries for our archiving and retrieval system: a General Library (GL) for data sets with arbitrary data structures and formats and a Standardized Library (SL) for data sets using our specified data structure. We have also set up Waveform Libraries (CL for CUSP waveform data and WL for general waveform data) to handle the extremely large volume of seismic waveform data.

In summary, we have (1) a General Library for data sets that we have archived more or less as received, (2) a Standardized Library for data sets that we have converted to standardized formats (these can be searched at the record level with newly developed programs not documented here), and (3) two Waveform Libraries for digital seismic data. For a brief summary of what data sets have been archived, please consult the Open-File Reports of the series "USGS Earthquake Data Archiving and Retrieval System: Archived Data Sets".

GETTING STARTED

User Registration

Anyone interested in accessing the USGS Earthquake Data Archive System should contact:

Willie Lee
Mail stop 977
U.S. Geological Survey
345 Middlefield Road
Menlo Park, Calif. 94025

(415) 323-8111 x2630
or FTS 467-2630

Qualified persons will be notified, and a computer account will be assigned for their use.

Required Equipment

The SLAC Computer accepts 300-baud or 1200-baud dial-in telephone service. The 1200-baud service requires a special modem, either Bell 212A or its equivalent. The modem or acoustic coupler should be set to FULL duplex. Normal settings for ASCII terminals are:

PARITY	EVEN
DUPLEX	HALF on terminal; FULL on modem. (Local copy = HALF, echo = FULL on some terminals.)
CODE	ASCII
SPEED	300 or 30 (depending on whether speed is shown in bits or characters per second) for 300 baud operation; 1200 or 120 for 1200 baud operation.

If your terminal does not display what you type, try the FULL duplex setting on the terminal.

Logging On

To connect your terminal to the SLAC Computer via a telephone line, call the appropriate number (through FTS or long distance):

(415) 854-7635 (for either 300 baud or 1200 baud).

If there is an answer and a high-pitched tone, complete the connection by placing the telephone receiver into the coupler and pressing the RETURN key. You should then get the SLAC logon message.

If you get a busy signal, it means that all the computer ports are currently in use (please call again in a few minutes). If there is a ring and no answer, the computer is currently unavailable. You may then call (415) 854-3300 x 2520 for a tape-recorded message on the SLAC Computer status.

Sample Sign-on Session

A sample of what you will see on your terminal as you log in is shown below, with additional comments on the right.

```
SLAC MICOM SWITCH (Ver 2K)
Common Classes: VM, 24VM, 43VM, HELP
ENTER CLASS: vm          <--- You type "vm" and carriage return)
GO

VM/370 ONLINE           <--- You type carriage return
!                       <--- again after this
.logon gsmp1            <--- After the period (.) appears
                        <--- type in "logon gsmp1" (or gsmp2)

ENTER PASSWORD:
XXXXXXXXX               <--- Your password

LOGMSG - 08:12:56 PST THURSDAY 12/06/84
* Message of the day *
LOGON AT 15:30:49 PST THURSDAY 12/06/84
SLAC SP3 CMS 307 11/08/84

WHL197 ( 197 G ) RO
WHL198 ( 198 H ) RO

WELCOME TO USGS EARTHQUAKE DATA ARCHIVE SYSTEM

INITIALIZING ...

INVENTORY program -- if in trouble type HELP

Available INVENTORY commands:
  DISplay, HELp, LISt, SAMple, SEARch, EXIt

:--?

---- Do your search and retrieval (see later sections) ----
```

Helpful hints: (1) The following will help you get out of trouble if it happens to you.

... <— If you hit ATTN or BREAK key twice in
CP rapid succession, you will be trapped
in 'CP' (the operating system control
program).
b <— Type 'b' and carriage return to escape.
:~? <— You are now back in the Archive System.

(2) To abort a line you are typing, hit ATTN or
BREAK key once.

Logging Out

After you have finished accessing the USGS Earthquake Data Archiving and Retrieval System, type "exit" to exit from the system and be logged out of the SLAC Computer.

```
:~? exit  
*** Leaving the Archive System ***  
CONNECT = 00:05:48 VIRTCPU = 000:004:19 TOTALCPU = 000:010:11  
LOGOFF AT 16:03:33 PST THURSDAY 12/06/84
```

SEARCHING FOR DATA SETS

Introduction

In the USGS Archiving and Retrieval System, the basic unit of retrieval is a data set. Each data set is indexed by data class, data subclass, author, institution, keywords, and minimum/maximum values of time, latitude, and longitude.

Please note that we do not index in fine detail on the data set level. For the time index, we use the earliest date and the latest date applicable to the data; these are given as year, month, and day. Latitude and longitude indexes are given only to one decimal place, although the data themselves may have more decimal places.

In the search procedure, we assume that the user is interested in data sets that have time, latitude, or longitude indexes that fall within a specified ranges of values. For example, we may have the following 6 data sets which have been archived, each of which is characterized by a time index (year, month, day) as follows:

Data Set	Time Index (beginning date, ending date)
#1	19000101, 19831231
#2	19250712, 19340816
#3	19360101, 19400331
#4	19360101, 19680630
#5	19420701, 19570831
#6	19550201, 19721005

If the user desires data sets with data from years 1900 to 1983, then all data sets should be included. If he is interested in data sets with data from years 1935 to 1945, then data sets #1, #3, #4, and #5 should be included. Although data set #1 spans the years from 1900 to 1983, it may or may not contain any records with years between 1935 and 1945. The reason is that we index the data set in general and not its records in particular.

Query System

The Query System is a part of the Archiving and Retrieval System; it is designed to help you search the archived data. Once you find the data sets of interest, you may display a sample on your terminal or retrieve the data sets in their entirety from the archival tapes. After data sets have been retrieved, you may output them to a magnetic tape or to the printer.

Please note that the Query System does not distinguish the upper from the lower case of the alphabet. The Query System prompts will be issued to you in the upper case. You may type the answers in either upper or lower case. You may skip any prompt by hitting the Return key on your terminal. If you don't understand the prompt, simply type the word "help" or the question mark symbol (?). The Query System will then explain the prompt and provide a list of possible answers for you. Throughout this document, the quote

symbol (") will be used to highlight the prompt messages or suggested answers; you need not type the quote symbol (") in answering the prompt.

The Query System supports the following commands:

- HELP:** To display help at any point in the system.
(See page 8)
- SEARCH:** To initiate the search prompting and to help you to find the desired data sets. The result of a search is a LIST of desired data sets.
(See page 8)
- TYPE:** To type the results of a search at the terminal.
(See page 15)
- SAMPLE:** To display a sample of the contents of any particular data set.
(See page 15)
- EXAMINE:** To allow you to examine the LIST of desired data sets and to either keep or delete a particular data set from the LIST.
(See page 16)
- RETRIEVE:** To retrieve data sets specified on the LIST of desired data sets and to store them on the Staging Disk. If the data sets are already on the Staging Disk (e.g., if they have been retrieved by previous users), then this command will respond immediately. Otherwise, the data sets must be retrieved from the archival tapes, and there will be a delay of about 30 minutes.
(See page 16)
- PRINTOUT:** To print a copy of the retrieved data sets for you in Menlo Park.
(Not yet available)
- TAPEOUT:** To write a magnetic tape for you in Menlo Park.
(Not yet available).
- COMMENT:** To allow a user to enter a multiple-line comment for the USGS staff.
(See page 16)
- EXIT:** To exit from the Query System and be logged off.

The above commands in the Query System are rather self-explanatory, except for the "SEARCH" command, which will be discussed in detail below.

The HELP Command

If you need extra help at any point, issue the "help" command. A short help message will be displayed on your terminal, in some cases with possible responses.

The SEARCH Command

If you type "search" when the Query System prompts you for "COMMAND?", you will initiate the search prompting which is designed to help you to find the desired data sets. When you answer the prompts, the Query System will try to find the data sets that fit your answers. Since some of the prompts may not be applicable to your particular search need, we allow you to hit the Return key on your terminal to skip the prompt. If you don't understand the prompt, type "help" or "?", and the Query System will then explain the prompt for you.

After you type the "search" command, the following prompts will be issued to you:

(1) "LIBRARY?"

This prompt allows you to search in different data libraries. Your answer may be one or more; if you answer more than one library, separate each with a comma (,). For example, if you are interested in searching the General and the Standardized Libraries, type "GL, SL" for this prompt. The following are valid library names.

GL (General):	Data sets are given as supplied by authors.
SL (Standardized):	Data sets are given in standardized formats.
WL (Waveform):	Data sets are general earthquake waveforms.
CL (CUSP):	Data sets are earthquake waveforms from the CUSP system.

(2) "DATA CLASS(ES)?"

This prompt allows you to search for different classes of data. If your answer is more than one data class, you must use a comma (,) to separate them. For example, if you are interested in earthquake and geodetic data, type "earthquake, geodetic" for this prompt. The following are valid data class names.

1. EARTHQUAKE

Data for earthquakes recorded by seismic instruments, such as WWNSS, local networks; data may include some explosions.

2. ELECTROMAGNETIC

Data measured by electromagnetic instruments, such as electric field, magnetic field, conductivity, resistivity, etc.

3. EXPLOSION

Data for explosions recorded by seismic instruments, such as refraction profiles.

4. GEOCHEMICAL

Data related to geochemistry, such as radon, helium, hydrogen, carbon dioxide, etc.

5. GEODETTIC

Data measured by geodetic instruments (usually intermittently), such as triangulation, trilateration, leveling, alignment array, gravity, etc.

6. GEOLOGIC

Data derived from geologic observations, such as fault data, well logs, etc.

7. HYDROLOGIC

Data related to hydrology, such as water well level, water well temperature, etc.

8. STRAIN

Data measured by strain instruments (usually continuously), such as creepmeters, dilatometers, strainmeters, tiltmeters, etc.

9. STRONG-MOTION

Data for earthquakes recorded by strong-motion instruments.

10. MISCELLANEOUS

Data not included in the above classes, such as animal behavior, heat flow, etc.

(3) "DATA SUBCLASS(ES)?"

This prompt allows you to search for different subclasses of data within a given selected data class. If your answer is more than one data subclass, you must use a comma (,) to separate them. For example, if you have selected "earthquake" as the data class and are interested in phase and summary data, type "phase, summary" for this prompt. The following data subclasses are recommended:

1. Earthquake data subclasses:

Phase -- phase data, i.e., arrival times, amplitudes, signal durations, etc. of earthquakes

Station -- data related to recording stations, such as station coordinates, instrument types, etc.

Summary -- summary data, i.e., origin time, hypocenter coordinate, magnitude, etc. of earthquakes

Waveform -- waveform data from earthquake signals

Focal mechanism

2. Electromagnetic data subclasses:

Electric -- e.g., electric field and field gradient

Magnetic -- e.g., magnetic field and field gradient

Conductivity, resistivity, etc.

3. Explosion data subclasses:

Phase -- phase data, i.e., arrival times, amplitudes, etc. of explosions

Station -- data related to recording stations, such as station coordinates, instrument types, etc.

Shotpoint -- data related to shotpoints, such as origin times, coordinates, etc.

Waveform -- waveform data from explosion signals

4. Geochemical data subclasses:

Radon

Helium

Hydrogen

Carbon dioxide

5. Geodetic data subclasses:

Triangulation

Trilateration

Leveling

Alignment array

Gravity

6. Geologic data subclasses:

Fault

Well log

Trench log

7. Hydrologic data subclasses:

Water level

Water temperature

8. Strain data subclasses:

Creep

Dilatational strain

Linear strain

Tilt

9. Strong-motion data subclasses:

Scale -- raw acceleration data that have been scaled after digitization

Hifric -- scale data that have been corrected for instrument response

Coravd -- corrected and filtered acceleration data together with the integrated velocity and displacement data

Velocity response spectra

Fourier amplitude spectra

10. Miscellaneous data subclasses:

Computer program

Animal behavior

Heat flow

Other (please specify)

(4) "DATE (BEGINNING,ENDING)?"

To find data sets with time indexes that fall within a specified period, enter the beginning and the ending dates. The two dates should be separated by a comma (,) and be each in the order of year, month, and day. For example, March 21, 1983 should be entered as "830321" or "19830321". An asterisk (*) may be used to default to either the earliest or the latest date; e.g., "*", 830321" will find data sets with time indexes that fall on or before March 21, 1983.

(5) "AUTHOR NAME(S)?"

To find data sets by one or more authors, enter their names. Within the category of author name(s) we include the real author(s) and person(s) associated with the data set, such as principal investigator and person submitting the data. For example, if you enter "j.p. eaton", then all data sets authored by J.P. Eaton will be found. To find data sets by different authors, separate each author name by a comma (,). For example, if you are interested in data sets by J.P. Eaton and data sets by S.W. Stewart, type "j.p. eaton, s.w. stewart". Names may be last name only, initials and last name, or full name, e.g., eaton, j.p. eaton, or jerry p.eaton.

(6) "INSTITUTION NAME(S)?"

This prompt allows you to find data sets by one or more institutions. For simplicity in indexing, we have used the following abbreviations. Therefore, you must use the given abbreviations to find the data sets. Data sets from different institutions may be found by typing in their abbreviations separated by a comma (,). For example, if you want data sets from California Institute of Technology and data sets from University of Washington, type "CIT, UWA" for this prompt.

<u>Code</u>	<u>Institution Name</u>	<u>Institution Address</u>
ABAG	ASSOCIATION OF BAY AREA GOVERNMENTS	BERKELEY, CA 94705
BMR	BUREAU OF MINERAL RESOURCES	CANBERRA CITY, AUSTRALIA
BRN	BROWN UNIVERSITY	PROVIDENCE, RI 02912
CDMG	CALIFORNIA DIVISION OF MINES AND GEOLOGY	SACRAMENTO, CA 95816
CIT	CALIFORNIA INSTITUTE OF TECHNOLOGY	PASADENA, CA 91125
CNL	CORNELL UNIVERSITY	ITHACA, NY 14853

DAM	DAMES AND MOORE	SAN FRANCISCO, CA 94111
DOO	DOMINION OBSERVATORY	OTTAWA, CANADA
ERI	EARTHQUAKE RESEARCH INSTITUTE	UNIVERSITY OF TOKYO TOKYO, JAPAN
FDCC	FOOTHILL-DE ANZA COMMUNITY COLLEGE	LOS ALTOS HILLS, CA 94022
GIT	GEORGIA INSTITUTE OF TECHNOLOGY	ATLANTA, GA 30332
GSD	U. S. GEOLOGICAL SURVEY	DENVER, CO 80225
GSMP	U. S. GEOLOGICAL SURVEY	MENLO PARK, CA 94025
GSR	U. S. GEOLOGICAL SURVEY	RESTON, VA
HVD	HARVARD UNIVERSITY	CAMBRIDGE, MA 02138
ISC	INTERNATIONAL SEISMOLOGICAL CENTRE	NEWBURY, U.K.
JMA	JAPAN METEROLOGICAL AGENCY	TOKYO, JAPAN
LAA	LEIGHTON AND ASSOCIATES, INC.	IRVINE, CA 92714
LGO	LAMONT-DOHERTY GEOLOGICAL OBSERVATORY	PALISADES, NY 10964
LMG	LAMAR-MERIFIELD GEOLOGISTS, INC.	SANTA MONICA, CA 90401
MIT	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	CAMBRIDGE, MA 02139
NEMG	NEVADA BUREAU OF MINES AND GEOLOGY	RENO, NV 89557
NEIS	NATIONAL EARTHQUAKE INFORMATION SERVICE	DENVER, CO 80225
NGDC	NATIONAL GEOPHYSICAL DATA CENTER	325 BROADWAY BOULDER, CO 80303
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	BOULDER, CO 80302
NWU	NORTHWESTERN UNIVERSITY	EVANSTON, IL 60201
OSU	OREGON STATE UNIVERSITY	CORVALLIS, OR 97331
PENN	PENNSYLVANIA STATE UNIVERSITY	UNIVERSITY PARK, PA 16802

SFSU	SAN FRANCISCO STATE UNIVERSITY	SAN FRANCISCO, CA 94132
SLU	SAINT LOUIS UNIVERSITY	SAINT LOUIS, MO 63156
SRI	STANFORD RESEARCH INSTITUTE	MENLO PARK, CA 94025
SSS	S-CUBED	LA JOLLA, CA 92038
SSU	SONOMA STATE UNIVERSITY	ROHNERT PARK, CA 94928
STU	STANFORD UNIVERSITY	STANFORD, CA 94035
SUNB	STATE UNIVERSITY OF NEW YORK	BINGHAMTON, NY 13901
TAM	TEXAS A & M UNIVERSITY	COLLEGE STATION, TX 77843
TERA	TERA CORPORATION	BERKELEY, CA 94704
UCB	UNIVERSITY OF CALIFORNIA	BERKELEY, CA 94720
UCLA	UNIVERSITY OF CALIFORNIA	LOS ANGELES, CA 90024
UCOL	UNIVERSITY OF COLORADO	BOULDER, CO 80309
UCSB	UNIVERSITY OF CALIFORNIA	SANTA BARBARA, CA 93106
UCSC	UNIVERSITY OF CALIFORNIA	SANTA CRUZ, CA 95064
UCSD	UNIVERSITY OF CALIFORNIA	SAN DIEGO, CA 92093
UKAN	UNIVERSITY OF KANSAS	KANSAS CITY, KS 66045
UNV	UNIVERSITY OF NEVADA	RENO, NV 89557
USC	UNIVERSITY OF SOUTHERN CALIFORNIA	LOS ANGELES, CA 90089
USCR	UNIVERSITY OF SOUTH CAROLINA	COLUMBIA, SC 29208
UUT	UNIVERSITY OF UTAH	SALT LAKE CITY, UT 84112
UWA	UNIVERSITY OF WASHINGTON	SEATTLE, WA 98195
UWI	UNIVERSITY OF WISCONSIN	MADISON, WI 53706

(7) "KEYWORD(S)?"

This prompt allows you to search for data sets that have been coded with keywords or any significant words that appear in their titles. Typical keywords are geographic region, such as "California"; locality name, such as "Parkfield"; and data set designation given by the author. If you want to search for multiple keywords, use a comma (,) to separate each keyword. For example, if you are interested in data sets with keyword of Parkfield or with data set

designation Z80A, type in "parkfield, Z80A".

(8) "LATITUDE (BOTTOM, TOP)?"

This prompt allows you to find data sets that fall within a specified area bounded by a latitude interval. Enter the bottom (or the southernmost) latitude and the top (or northernmost) latitude of your desired area. The two latitude limits should be separated by a comma (,), and each latitude must have either N (for northern hemisphere) or S (for southern hemisphere) following the latitude value in units of degrees. For example, if you are interested in all data sets that may contain information about Brazil, you may enter "34.OS, 4.ON".

(9) "LONGITUDE (LEFT-SIDE, RIGHT-SIDE)?"

This prompt allows you to find data sets that fall within a specified area bounded by a longitude interval. Enter the left-side longitude and the right-side longitude of your desired area. The two longitude limits should be separated by a comma (,), and each longitude must have either E (for eastern hemisphere), or W (for western hemisphere) following the longitude value in units of degrees. For example, if you are interested in all data sets that may contain information about Brazil, you may enter "74.OW, 35.5W".

The TYPE Command

The "type" command is used to display at the terminal the result of a previous search. One gets a list of data sets with their identifying names and titles.

The SAMPLE Command

Because of the vast amounts of earthquake-related data, it is not economical or necessary to have all the earthquake-related data online. However, we do keep a sample of all the archived data sets online for users to examine before full retrieval. Once you have performed a successful "search" and identified the data sets that you are interested in, you can examine the short sample stored on-line before costly or unnecessary retrieval. If you type "sample" when the Query System prompts you for "COMMAND?", you will initiate the sample display program. The program will then prompt you for the data set name, such as "GL000050". Each data set name is composed of the library identification and a 6-digit integer number.

If the sample can be found on-line, it will be displayed to you 20 lines at a time. After each 20 lines you have the option to return to the query system prompt or to display the next 20 lines. The on-line samples range in length from 100-150 lines.

You may optionally specify the data set name when issuing the "sample" command, i.e. "sample GLO00050".

The EXAMINE Command

The "examine" command is used to selectively examine the list of data sets one by one and either keep or delete each from the list. The resultant list can then be used to retrieve the actual data sets from tape.

The RETRIEVE Command

The "retrieve" command is used to retrieve from tape any data sets in the current list which are not already on-line. You must have a search result list before issuing the RETRIEVE command. If any requested data sets are not already on-line, the system will submit a request to mount the appropriate tape and retrieve the data sets to disk.

The COMMENT Command

The "comment" command is used to send a short comment to the USGS data archive administrator. You will be prompted for your name and message.

EXAMPLE SESSION

+-----+
| The SEARCH Command |
+-----+

Available QUERY commands:

EXAMine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? search

... Searching USGS Earthquake Data Archive ...

If in trouble, type HELP.

To skip a question, press RETURN key.

:LIBRARY? sl

-Result: 59 RECORDS

:CLASS? earthquake

-Result: 58 RECORDS

:SUBCLASS? phase

-Result: 18 RECORDS

:DATE (BEGIN,END)?

:AUTHOR(S)?

:INSTITUTION(S)?

:KEYWORD(S)?

:LATITUDE (BOTTOM, TOP)?

:LONGITUDE (LEFTSIDE, RIGHTSIDE)?

18 records found

Records in ACTIVE FILE A1

Enter TYPE to list records found

+-----+
 | The TYPE Command |
 +-----+

Available QUERY commands:

EXAmine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? type

Dsn	Begin	End	Title
SL000057	740101	741231	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR THE YEAR 1974 COMPILED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.
SL000058	750101	750630	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR JAN/JUN 1975 BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.
SL000059	750701	751231	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR JUL/DEC 1975 BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.

+-----+
 | The EXAMINE Command |
 +-----+

Available QUERY commands:
 EXAmine, EXIt, HELp, RETrieve, SAMple, SEARch

:-? examine

After each record is displayed, type YES or NO to
 keep it in the list or not

Jan. 30, 1985

Page 1

DSN	BEGIN	END	TITLE
SLO00057	740101	741231	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR THE YEAR 1974 COMPILED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.
			-Keep? yes
SLO00058	750101	750630	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR JAN/JUN 1975 COMPILED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.
			-Keep? no
SLO00059	750701	751231	HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA EARTHQUAKES FOR JUL/DEC 1975 COMPILED BY THE CALIFORNIA INSTITUTE OF TECHNOLOGY, CONVERTED TO USGS STANDARDIZED FORMAT.
			-Keep? yes

+-----+
| The SAMPLE Command |
+-----+

Available QUERY commands:

EXAmine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? sample sl000059

*** This is a sample of data set SL000059 ***

C#DSN=SL000059;SIZE=006017;DATE=051684;ARCH=JN;TAPE=SM9302;FILE=034

C*DATE: 19820518; 0; CPLCT75B;

C*CLASS: EARTHQUAKE; SUMMARY; PHASE;

C*PERSN: K. PIPER; J. T. NEWBERRY

C*ALPHA: 19750701; 19751231; 28.741N; 37.632N; 121.062W; 112.647W;

C*KEYWD: SOUTHERN CALIFORNIA;

C*TITLE: HYPOCENTERS AND PHASE DATA FOR SOUTHERN CALIFORNIA

C* FOR JUL/DEC 1975 COMPILED BY THE CALIF INST OF TECHNOLOGY,

C* CONVERTED TO USGS STANDARDIZED FORMAT.

C*AUTHOR: CALIFORNIA INSTITUTE OF TECHNOLOGY

C*INSTITUTION: CALIF INST OF TECHNOLOGY, PASADENA, CA 91125

C*ABSTRACT: THIS DATA SET IS THE RESULT OF CONV OF GLO00086 FROM

C* THE CIT FORMAT TO THE USGS STANDARDIZED FORMAT, COMPUTER

C* PROGRAM WRITTEN BY J. T. NEWBERRY, ARCHIVED AS GLO00138.

C*REFERENCE: FRIEDMAN, M. E., WHITCOMB, J. H., ALLEN, C. R.,

C* (1976). SEISMICITY OF THE SOUTHERN CALIF REGION:

C* 1 JANUARY 1972 TO 31 DECEMBER 1974, SEISMOLOGICAL LAB

:To display more (<CR>=YES)? no

+-----+
| The RETRIEVE Command |
+-----+

Available QUERY commands:

EXAmine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? retrieve

Setting up for retrieve...

GL000002 to be retrieved.

GL000003 to be retrieved.

Data sets requested = 4

Data sets to retrieve = 2

Retrieve job ready.. issue RETRIEVE SUBMIT

Available QUERY commands:

EXAmine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? retrieve submit

Submitting:

BATCH SUBMIT (NOPROF TIME 3 SEND RETRIEVE) ARCHGET HWRITE USGS

PUN FILE 0820 TO BMON COPY 001 NOHOLD

Job PUB006 submitted.

The EXIT Command

Available QUERY commands:

EXAmine, EXIt, HELp, RETrieve, SAMple, SEArch

:-? exit

Leaving SPIRES

R; T=2.04/5.20 22:12:36

REFERENCES

- Crane, G.R., Lee, W.H.K., and Newberry, J.T. (1984).
USGS Earthquake Data Archiving and Retrieval System:
Reference Manual. U.S. Geological Survey Open-File
Report 84-840, 159 pp.
- Lee, W.H.K., Scharre, D.C., and Crane, G.R. (1983).
A Computer-Based System for Organizing Earthquake-Related
Data. U.S. Geological Survey Open-File Report 83-518,
28 pp.
- Messier, T.M., O'Neill, M.E., and Lee, W.H.K. (1985).
USGS Earthquake Data Archiving and Retrieval System:
Archived Data Sets in the General Library (Volume 1).
U.S. Geological Survey Open-File Report 85-xxx, yyy pp.
- Newberry, J.T., Tottingham, D.M., and Lee, W.H.K. (1985).
USGS Earthquake Data Archiving and Retrieval System;
Archived Data Sets in the CUSP Waveform Library (Volume
1). U.S. Geological Survey Open-File Report 85-xxx,
yyy pp.
- Thordsen, J.J., Newberry, J.T. and Lee, W.H.K. (1985).
USGS Earthquake Data Archiving and Retrieval System:
Archived Data Sets in the Waveform Library (Volume 1).
U.S. Geological Survey Open-File Report 85-xxx, yyy pp.
- Tottingham, D.M., Newberry, J.T., and Lee, W.H.K. (1985).
USGS Earthquake Data Archiving and Retrieval System:
Archived Data Sets in the Standardized Library (Volume
1). U.S. Geological Survey Open-File Report 85-xxx,
yyy pp.

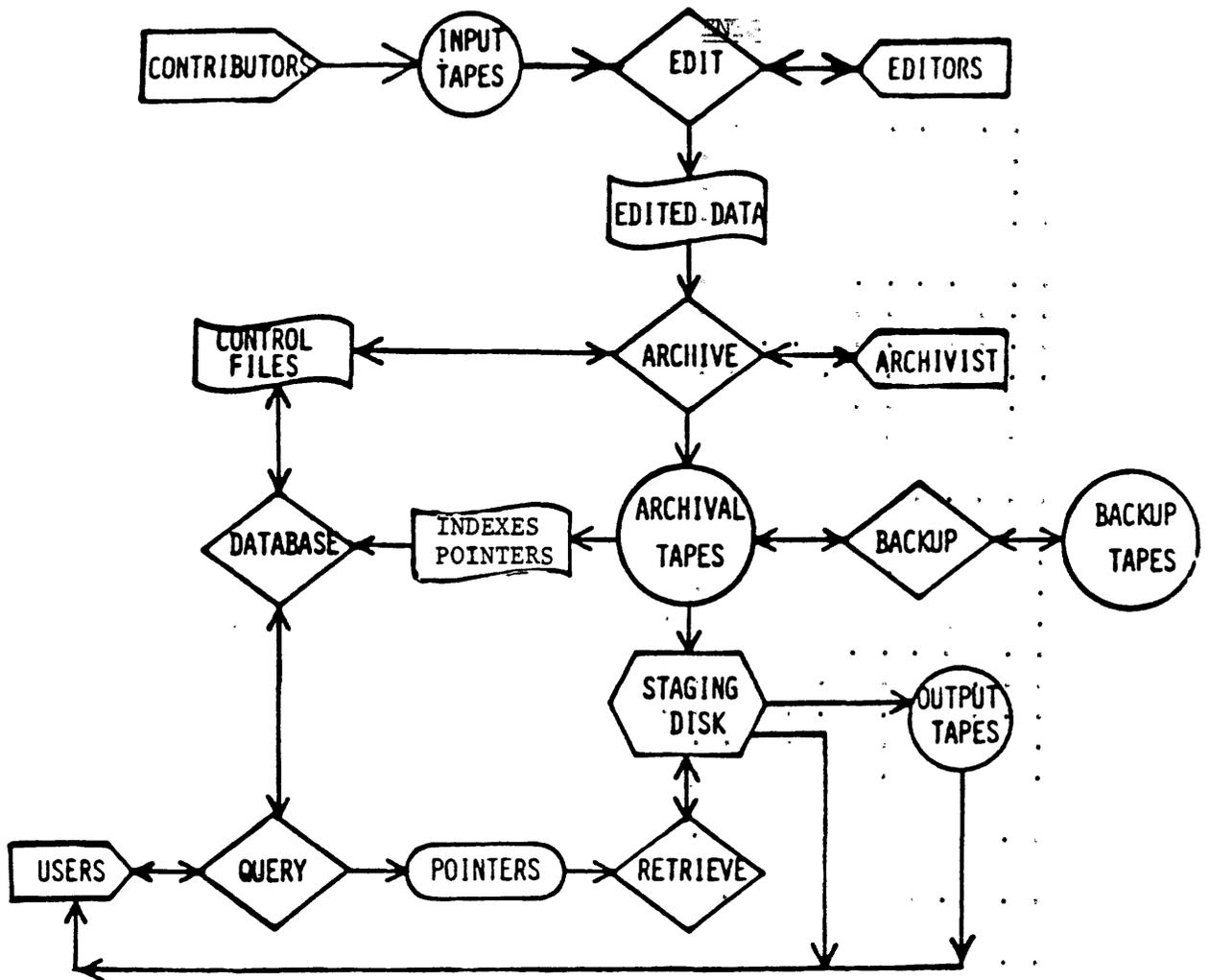


FIGURE 1. Overall scheme for organizing earthquake-related data.