UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MDS-CRIB USER'S MANUAL: USING GIPSY

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INTRODUCTION

The Computerized Resources Information Bank (CRIB) is a computerized data file containing detailed mineral resource information. CRIB provides a central location for storing and organizing a large volume and variety of data. It also provides an environment in which to conduct computerized searches of mineral resource data. CRIB was created by the U.S. Geological Survey's Branch of Resource Analysis in 1972, and has had new information added on a continuous basis since that time. CRIB's main function is to accept, organize, and store detailed geologic information so it can be readily made available to users.

Users and contributors include personnel in the U.S. Geological Survey, other government agencies, state surveys, and private companies. Input to the file, in the form of new records or updates for existing records, is usually provided by government geologists or state geologic agencies under intergovernmental agreements. These reporters submit their data on mineral occurrences, mines, and prospects using standardized forms (Appendix A). The forms contain standard fields with unique labels. New records are each assigned a unique record ID when entered into the system. Data within CRIB can be manipulated and output to produce reports and tables using GIPSY or maps and other graphics using other software packages.

GIPSY is a computerized information storage system used by a variety of data systems within the U.S. Geological Survey and the Department of Interior. The acronym GIPSY stands for General Information Processing SYstem. This software was developed by the University of Oklahoma in the sixties and was put up on the U.S. Geological Survey/Department of Interior computer in 1969. The GIPSY storage system is composed of two major parts: a dictionary that defines the fields and controls the format when records are printed; and the records themselves. In addition, GIPSY allows creation of index files where only the record locations and certain limited field information is stored to allow rapid and economical search of the contained fields.

GIPSY is very flexible - there are no restrictions as to field or record length, character type, or coding except for those restrictions imposed by the data base developers. GIPSY has several utilities that provide for the addition, deletion, and correction of data with minimum effort. The use of system dictionaries allows a large variety of file arrangements and products to be available without user programming. GIPSY is preprogrammed so that an understanding of logic is more important to using the system than is a knowledge of programming or computers. Overall these characteristics make GIPSY one of the most useful systems available for dealing with large amounts of descriptive data.

The following sections discuss how to access GIPSY on U.S. Geological Survey computers, GIPSY commands, retrieval Job Control Language, tricks to making successful retrievals, differences

using GIPSY on the GEISCO (General Electric Information System COmpany) system, and contacts for additional information.

ACCESSING THE SYSTEM

There are presently two systems available to access CRIB data; the General Electric Information Services Company (GEISCO) makes CRIB available to public users through its worldwide MARK 3000 Service using the acroynym MDS (Minerals Data System). Government agencies may access the files directly through the U. S. Geological Survey's AMDAHL computer. Both computers utilize GIPSY for the storage and retrieval of MDS-CRIB data. General information on MDS-CRIB is available from one of the following CRIB Representatives:

Don Huber
U.S.G.S., MS 84
345 Middlefield Rd.
Menlo Park, CA 94025

415-323-8111, x2906
FTS 467-2906

Laure Wallace
U.S.G.S., MS 920
National Center
Reston, VA 22092

703-860-6455
FTS 928-6455

PUBLIC USERS

Public users may access the MDS-CRIB file through the General Electric Information Services Company (GEISCO) MARK 3000 Service. More detailed information and user accounts may be obtained for the G. E. system by contacting: University of Oklahoma, Information Systems Programs, P.O. Box 3030, Norman, Oklahoma, 73070. An example G. E. retrieval is contained in Appendix B.

GOVERNMENT ACCESS

U. S. Geological Survey and other government employees have two methods available to access MDS-CRIB. Batch retrievals (sequential processing usually via punched cards) of CRIB information can be made from any of the U. S. Geological Survey's Regional Centers and from some of its Water Resources Division's field offices. User's may also interact "on-line" with the data through a time-sharing operation (TSO).

User ID's and account numbers may be acquired by contacting the MDS-CRIB staff in Reston, Virginia: 703-860-6455 (FTS 928-6455), or, MDS-CRIB Staff, USGS, MS 920, National Center, Reston Reston, VA 22092.

Batch

Though the trend is towards online usage of computers, batch retrievals may prove more cost effective for of certain types of requests. The following is a list, in card format, of the Job Control Language (JCL) that must precede the user's GIPSY commands

to retrieve and process a data set:

```
job card (contact CRIB staff or Computer Center Division for
     details)
//D EXEC QUESTRAN,DNAME='VG9195J.DICT1.CRIBD1',
//DUNIT=ONLINE,RNAME='VG9195J.W0001.CRIB1',
//UNIT=ONLINE,CLOCK=15,SPACE=800,TRACK=90,RGN=300K
//QUESTRAN.SYSWRKO DD SYSOUT=A
//QUESTRAN.SYSRDR DD *
   your GIPSY commands (discussed in detail later)
/*
//
```

TSO Retrievals

An example of logging onto TSO on the AMDAHL computer is contained in Figure 1. Computer prompts are in italics, user responses are in standard upper case print. Prolonged waits (up to several minutes) may occur in several places:

1. after the procedure name has been entered and before acknowledgement of logon
2. after "special messages" before receiving "READY"
3. after entering "EXEC GIPALL"
4. after entering the TSOSAVE file

The local TYMNET, FTS, and direct dial phone numbers needed to access the AMDAHL computer are available from your nearest MDS-CRIB Representative.

TSO ACCESS
FOR CRIB MASTER FILE

ENTER WYLBUR/TSO/M204A
TSO
READY TO IBM
LOGON
IK356700A ENTER USERID -
DG0000G
ENTER PASSWORD
?WORD
ENTER PROCEDURE NAME
GIPSY
DG0000G LOGON IN PROGRESS AT 11:59:08 ON JUNE 23, 1981
SPECIAL MESSAGES
READY
TERM LINESIZE(120)
READY
EXEC GIPALL
FILE LPRINT NOT FREED, IS NOT ALLOCATED
ENTER THE NAME OF THE FILE TO BE SEARCHED
VG9195J.W0001.CRIB1
ENTER THE NAME OF THE DICTIONARY FILE
VG9195J.DICT1.CRIBD1
ENTER THE NAME OF THE TSOSAVE FILE
DG0000G.TSOSAVE (*note user enters her User ID, followed by a dot, followed by "TSOSAVE")
GIPSY - UNIVERSITY OF OKLAHOMA 12:04 P.M. TUESDAY JUNE 23, 1981

?

Figure 1

GIPSY COMMANDS

GIPSY employs a user language composed of commands and modifiers for the commands, called parameters. The 12 user commands (fig. 2) in GIPSY can be divided into 4 types: those that search the file; those that process retrieved information; those that produce specific forms of output; and a set of auxiliary commands. The commands will be discussed roughly in the order they might be used for a GIPSY retrieval.

FORM

"FORM" is an auxiliary command used to signal the name of the dictionary the user wishes to use. This command is always given at the beginning of each GIPSY search/retrieval to specify the dictionary to be used to search CRIB. The name of the dictionary is specified on the following card (batch jobs) or line (TSO retrievals) (fig. 3). A different dictionary may be specified to print the records in a variety of formats. At this time, CRIB records may be printed in two formats. The main dictionary "CRIB" prints out all of the information contained within each CRIB record as shown in Appendix C-1. The "MINIMUM" dictionary prints only required information in a compressed format (Appendix C-2).

SELECT

The "SELECT" command is used to initiate a search. In a single job, "SELECT" may be used once or several times. Two types of condition statements must be used in conjunction with the "SELECT" command; variable descriptions and logic statements.

Variable Descriptions

Variable descriptions provide factors for record selection. For example, the user may wish to see records for gold placers in California. The subset selected from CRIB must reflect three characteristics: the state must be "California", the commodity "gold", and the deposit type "placer".

Variable descriptors are given one at a time and are designated from "A" to "Z" (fig. 4). Only 26 designators can be listed for each use of a "SELECT" or "ITERATE". Descriptors consist of a data label and, optionally, a specific alphanumeric string bound by "<" and ">". Data labels are specified using a unique alphanumeric code. These codes are given in bold-faced type on the CRIB input form (Appendix A). Therefore the data labels and the variable descriptors for our example retrieval of gold placers

COMMANDS

BACK	Used to return to a previous subset for additional processing (restricted to most recent set of iterations).
COPY	Generated fixed field, fixed length records for output.
COUNT	For a given field in a data set, will provide counts of the number of times each different data string occurs in that field.
DEFINE	(TSO only) Displays names and contents of forms in the dictionary.
DUMP	Dumps records in internal GIPSY format to tape or disk.
END	(TSO only) Closes out GIPSY operations.
FORM	Specifies dictionary to be used to search or print a data set. Must occur at least once at beginning of each retrieval.
ITERATE	Allows additional search on a previous subset only.
LIST	Prints designated items of records in their entirety.
PRINT	Instructs system to print selected records using last named form as printing control.
SELECT	Initiates retrieval.
SORT	Sorts selected records and reconstructs ouput file in desired ascending or descending sequence.
SUM	For a given item/label will sum all values, determine average, and display maximum and minimum values.
TOTAL	Provides same information as SUM. TOTAL will also generate a total for up to 20 fields.

Figure 2.

FORM

BATCH	TSO
FORM	?
CRIB	FORM

	CRIB

Always specified first in QUESTRAN retrieval before "select".

May specify a different form for printing.

Figure 3.

VARIABLE DESCRIPTIONS

A. B10

B. C10< F >

C. B20<N>

D. GEN< RE>

E. C30<ITE >

F. A77<02N> THRU <04N>

G. M60< 20 >

H. M60 EQ 20

I. M60 GT 20

J. M60 LT 20

K. M60 10 THRU 20

L. D1A EQ D2A

M. D1A LT D2A

N. D1A GT D2A

Figure 4.

in California would be as follows:

A50	(state)	<CA>	(California)
C10	(commodity)	<AU>	(gold)
C40	(deposit type)	<PLACER>	

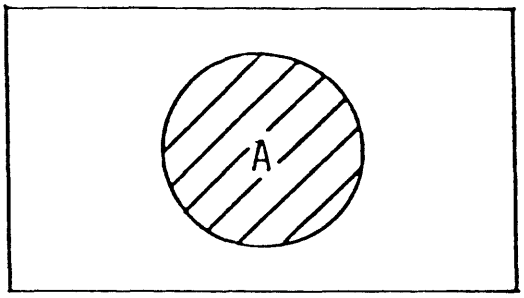
Data formats used for variable descriptors are shown using the alphanumeric codes of appropriate CRIB labels in Figure 4. The following explanations give the conditions on retrieving data using the formats and options shown in descriptors "A" through "N".

A. Selection is made on the existence (presence) of the label in a record. Example: the user may want to select only those records containing deposit type data.
B. Select any data containing the word " N " (a word is defined as a string of one or more characters or numbers bounded by blanks).
C. Select only on the existence of "N". All words containing "N" will be selected.
D. In this format, the prefix " RE" is selected. Records with the words " REPEAT" and " RESISTANCE" in label A1A will be retrieved, but not those with "SPREADING".
E. This format is used for a suffix search. "CHALCOPYRITE" and "TENNANTITE" will be retrieved but not "NITRITES".
F. This setup retrieves on the range of "02N" to "04N" and includes "02N", "02S", "03N", "03S", and "04N", but not "04S". (See Appendix D on GIPSY sorting.)
G. In this example, the character string of "20" will be selected. The string "20.0" will not.
H. In this format, the numeric value 20 will be selected be it "20.0", "020", "20", or "20.".
I. Records with a numeric value greater than (GT) 20 will be selected.
J. Records with a numeric value less than (LT) 20 will be selected.
K. This option selects a range of numbers, all with a values from 10 to 20, inclusive.
L-N. Numbers under two labels can be compared. In these cases, the numeric values in labels D1A and D2A are compared. (EQ = equal, LT = less than, GT = greater than).

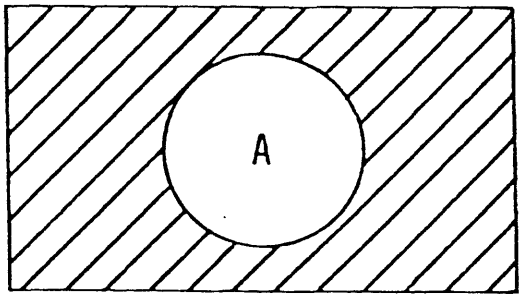
Logic Statements

The variable descriptors are combined in a logic statement to retrieve the desired subset of data. This combination is accomplished using Booleon Logic (fig. 5). Booleon Logic uses 3 operators: AND; OR; and NOT. "AND" requires that both statements on either side of the operator be true. "OR" requires that only one set of conditions need be met. "NOT" selects those records not in the following descriptor. Within GIPSY, the user may use the words "NOT", "AND", or "OR" or may employ the symbols "¬",

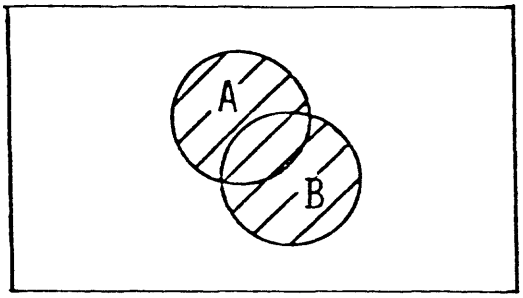
Booleon Logic



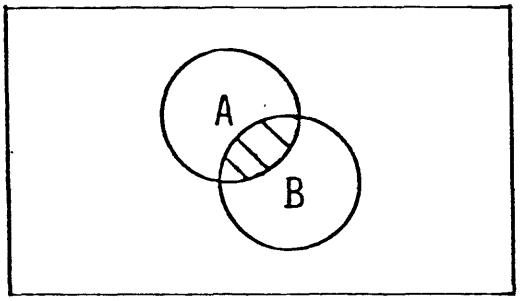
LOGIC A



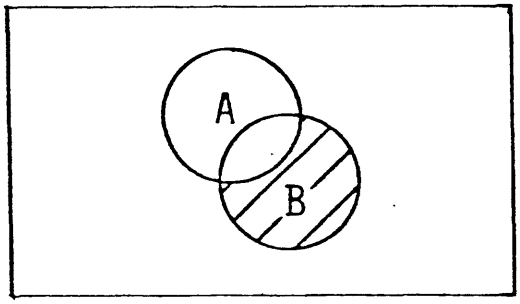
LOGIC NOT A



LOGIC A OR B
(A+B)



LOGIC A AND B
(A*B)



LOGIC NOT A AND B
((NOT A)*B)

Figure 5.

"*", or "+", respectively.

If variable descriptor "A" is given as "A50<UT>" (state = Utah) and variable descriptor "B" is given as "C40<PLACER>" (deposit type = placer), the data selected using the logic statements in Figure 5 would be as follows:

"LOGIC A" would select all records for the state of Utah.

"LOGIC ¬ A" would select all the records in CRIB, both US and international, except for those in the state of Utah.

"LOGIC A+B" would select all the records in Utah, plus any other records in CRIB listing "PLACER" as the deposit type.

"LOGIC A*B" would select placer deposits in the state of Utah.

"LOGIC (¬ A) * B" would select all placer deposits in CRIB except for those in Utah.

Format

In addition to specifying correct variables and employing appropriate logic statements, successful GIPSY retrievals also require certain formats/procedures for batch and TSO retrievals. Figure 6 shows the variable descriptors and logic statements for conducting the same search in batch and TSO modes.

In the batch example each line represents one card. The command "SELECT" always starts in column one. Note that the variable descriptors and logic statement are indented one space. This formatting is necessary to making a batch retrieval work.

In contrast, the TSO retrieval in Figure 6 requires no special spacing and the user is prompted to specify whether the search is to be a "full" ot "term" search, what each of the variables is to be, and what logic is desired. In the example, the computer generated the characters in italicized print, as well as the dashed line following "SELECT". Note that the computer prompted for another variable after one was specified until the user hit the carriage return without keying any characters. GIPSY also prompted for logic statements until just a carriage return was hit.

Term Searches

Term searches are used to search what is called an "index". Indexes for CRIB store 3 labels: commodity (C10), state (A50), and country (A40) information along with the physical location of the complete CRIB record containing this information. TERM searches save computer time and money by searching the small amount of data in the index as a first-cut operation for a Master

SELECT

BATCH

```
SELECT
 A. A50<ID>
 B. A70< 47>
 C. A80<112> thru <113>
 LOGIC A*B*C
```

TSO

```
?
SELECT
----------
FULL OR TERM SEARCH?
F
A. A50<ID>
B. A70< 47>
C. A80<112> THRU <113>
D.↵
LOGIC A*B*C
    SEARCH
LOGIC↵
```

Selecting for MDS-CRIB records for the Choteau 2° sheet in Idaho: Latitude 47°-48°N, Longitude 112°-114°W.

* The symbol "↵" is given for a carraige return.

Figure 6.

File search where country, state, or commodity can be used to narrow the number of records to be perused.

When using TSO to access CRIB, the user is automatically asked if a full or term search is desired. By responding with a "T" or "TERM", the user is restricted to searching country, state, and commodity information in the index in the first search. The index is able to contain all the necessary information for the Master File in about 4100 "records". The example of a TSO search in Figure 7 shows that the index search selected 16 out of 4092 records as meeting the criteria of state equals "ID".

Unless the result of the index search is negative, the user should respond "YES" to the computer query about creating a file from the index subset. The computer will then ask the user to specify a subset number for the file. Generally, "1" is the best subset number to assign, although any integer may be used with the subsequent subsets being assigned numbers incremented by one. At this point, the system will locate the records the index search has selected. In Figure 7, the 16 index records contained the locations of 48 CRIB records with "ID" as the state code.

The user may respond "NO", or "N", to the computer's query to construct a file from the index subset. This prevents the computer from retrieving the full records from their storage locations. The result is that a "PRINT" command will only produce a listing of the country, state, and commodity labels, not the selected records.

The computer then asks if the user wishes to further narrow the data set by printing "ITERATE?". If the user reponds "YES", or "Y", he is prompted with a designator and can specify labels otherr than those for country, state, or commodity.

The batch process for a term search is essentially like that done using TSO, except that a file is automatically constructed from the index subset and, of course, the user is unable to be prompted. A batch TERM search requires 2 additional cards to be added to the standard QUESTRAN retrieval cards; " TERM" and " INDEX" cards.

In summary, the TERM search method is an efficient initial search step when country, state, or commodity can be used to narrow a data set. This method not only saves user time (a TERM search takes less than 1/4 the waiting time of a full search), but also uses fewer CPU's to select and create a file of the desired records and thus may save the user money.

ITERATE

The ITERATE command works essentially like SELECT, but may search only a previously existing subset. ITERATE is followed by variable descriptors and logic statements as in the SELECT command. Successive use of the ITERATE command produces smaller and smaller subsets as shown in the batch job commands in Figure 8, columns 1 and 2. Unless used in conjunction with a BACK command, ITERATE will search the immdiately preceding subset.

SELECT
(INDEXED SEARCH)

BATCH

```
SELECT
 TERM
 A. A50<ID>
 LOGIC A
INDEX
ITERATE
 A. A70< 47>
 B. A80<112> THRU <113>
 LOGIC A*B
```

These jobs select all records in Idaho, then refine the set to the latitude and longitude of the Choteau quadrangle.

TSO

```
?
SELECT
----------
FULL OR TERM SEARCH?
T
A. A50<ID>
     STATE CODE ...
B.↵
LOGIC A
    SEARCH
LOGIC↵
15:34:52.1 SEARCH BEGINNING
15:34:57.7 SEARCH COMPLETED
SEARCHED 4092                INDEX
SELECTED   16      SUBSET
VARIABLES SATISFIED
     A      16
CONSTRUCT FILE FROM INDEX SUBSET?
YES
  SPECIFY SUBSET NO.
1
  SUBSET 1 HAS : : :48:RECORDS
ITERATE?
YES
A. A70< 47>
B. A80<112> THRU <113>
C.↵
LOGIC A*B
    SEARCH
LOGIC↵
```

Figure 7.

```
ORM

CRIB

LECT

A. A20
      STATUS OF EXPLOR. OR DEV.

LOGIC A
   SEARCH
8128132.2 SEARCH BEGINNING
8130138.5 SEARCH COMPLETED

SEARCHED   51348

SELECTED   22840       SUBSET    1

VARIABLES  SATISFIED

    A      22840

ITERATE

A. NO
      NO PRODUCTION

LOGIC A
   SEARCH
8130138.5 SEARCH BEGINNING
8132119.9 SEARCH COMPLETED

SEARCHED   22840

SELECTED    4951       SUBSET    2

VARIABLES  SATISFIED

    A       4951

ITERATE

A. A20<1>
      STATUS OF EXPLOR. OR DEV.

LOGIC NOT A
   SEARCH
8132120.2 SEARCH BEGINNING
8133131.3 SEARCH COMPLETED

SEARCHED    4951

SELECTED    2220       SUBSET

VARIABLES  SATISFIED

    A       2731

ITERATE

A. A20<2>
      STATUS OF EXPLOR. OR DEV.

B. A20<3>
      STATUS OF EXPLOR. OR DEV.

LOGIC A*B
   SEARCH
8133131.3 SEARCH BEGINNING
8134125.4 SEARCH COMPLETED

SEARCHED    2220

SELECTED    2209       SUBSET    4

VARIABLES  SATISFIED

    A       2191

    B         18

ITERATE

A. A21


LOGIC A
   SEARCH
8134125.5 SEARCH BEGINNING
8135103.9 SEARCH COMPLETED

SEARCHED    2209

SELECTED     102       SUBSET    5

VARIABLES  SATISFIED

    A        102

SORT

 B10 7
END OF SORT


COPY

 '       '

 B10 7

 '  A A20     3'

BACK
4

ITERATE

 A. A21

LOGIC NOT A
   SEARCH
8135123.9 SEARCH BEGINNING
8136112.8 SEARCH COMPLETED

SEARCHED    2209

SELECTED    2107       SUBSET    5

VARIABLES  SATISFIED

    A        102

SORT

 B10 7
END OF SORT


COPY

 '       '

 B10 7

 '  A A20     2'

BACK
1

ITERATE

 A. YES
      YES

LOGIC A
   SEARCH
8138136.9 SEARCH BEGINNING
8144133.1 SEARCH COMPLETED

SEARCHED   22840

SELECTED    8527       SUBSET    2

VARIABLES  SATISFIED

    A       8527

ITERATE

A. A20<3>
      STATUS OF EXPLOR. OR DEV.

LOGIC A
   SEARCH
8144133.4 SEARCH BEGINNING
8147142.4 SEARCH COMPLETED

SEARCHED    8527

SELECTED     471       SUBSET    3

VARIABLES  SATISFIED

    A        471

ITERATE

 A. A21


LOGIC A
   SEARCH
8147142.5 SEARCH BEGINNING
8148125.7 SEARCH COMPLETED

SEARCHED     471

SELECTED      30       SUBSET    4

VARIABLES  SATISFIED

    A         30

SORT

 B10 7
END OF SORT


COPY

 '       '

 B10 7

 '  A A20     5'

BACK
3

ITERATE

 A. A21


LOGIC NOT A
   SEARCH
8149110.1 SEARCH BEGINNING
8149151.9 SEARCH COMPLETED

SEARCHED     471

SELECTED     441       SUBSET    4

VARIABLES  SATISFIED

    A         30

SORT

 B10 7
END OF SORT
```


Figure 8.

Used with the BACK command, ITERATE will search other previously created subsets.

Figure 9 shows the use of ITERATE in TSO mode. After a SELECT or ITERATE step, whether the SELECT is for a full or term search, the user is asked if an iteration on that step's results is required. If the user responds "NO" or "N", the prompt "?" will be given and a new command should be entered. If the user responds "YES" or "Y", the computer will prompt for an additional variable description(s) by printing a designator(s), A-Z. The results of this search will result in another subset with a number designation incremented by one over the previous subset. One may use ITERATE to respond to a "?" at any time following an initial SELECT. When the ITERATE is initiated by the user in response to a "?", the system prompt the user for the subset number the ITERATE operation will operate against.

BACK

The BACK command may be used to return to a previously existing subset for further searching or processing. Use of this command with ITERATE may create new subsets and cause others to be lost. When returning to a previous subset N, those subsets with a number greater than N will be lost.

The batch example in Fig. 8 shows the command BACK followed by the number 4 in column 2. This action returns the user to the last previously existing SUBSET 4. The ITERATE that follows creates a new SUBSET 5 in column 3, the SUBSET 5 in column 2 is lost. The BACK command in column 3 returns the user to SUBSET 1 in column 1, the ITERATE that follows creates a new SUBSET 2 and all previously existing subsets with numbers greater than 2 are lost.

SORT

SORT is a processing command that arranges the records from the preceding SELECT sequence as the user wishes (see Appendix C on GIPSY sorting). There are 2 main specifications to the SORT command: 1) the fields and lengths to be used to order the records; and 2) the direction of ordering.

SORT may be used to arrange records using one field or several fields. In Figure 10, the TSO example shows records being ordered by the CRIB record ID. A "/" is used to indicate that the user has completed his listing of SORT fields. Notice that the field codes (A60, A10, B10) are followed by integers. These integers specify the number of characters to be sorted within each field. The CRIB record ID only contains 7 characters, so that "B10 7" will result in all the characters being taken into acoount in the sort. Other fields, such as NAME (A10), are of variable length and frequently too long for all the characters to be used for the SORT. In this case, a number is chosen that

USING ITERATE ON TSO

```
SELECT
----------
FULL OR TERM SEARCH?
F
A. A50< VA >
       STATE CODE .....
B.
LOGIC A
    SEARCH
LOGIC
10:29:37.4 SEARCH BEGINNING
10:31:37.4     37703 RECORDS SEARCHED     396 RECORDS SELECTED
10:32:49.3 SEARCH COMPLETED
 SEARCHED    51713
 SELECTED      760   SUBSET 1
VARIABLES SATISFIED
    A          760
ITERATE?
YES
A. C10< AU >
      COMMODITIES PRESENT ....
B.
LOGIC A
    SEARCH
LOGIC
10:49:51.4 SEARCH BEGINNING
10:50:28.2 SEARCH COMPLETED
 SEARCHED      760
 SELECTED      226   SUBSET 2
VARIABLES SATISFIED
    A          226
ITERATE?
NO
?
ITERATE
----------
SPECIFY SUBSET NO.
1
```

Figure 9.

```
A. C10< AG >
       COMMODITIES PRESENT....

B.↵
LOGIC A
    SEARCH

LOGIC↵
10:53:43.0 SEARCH BEGINNING

10:54:17.0 SEARCH COMPLETED
 SEARCHED      760
 SELECTED       32
VARIABLES SATISFIED
    A          32
```

NOTE THAT A COMPUTER PROMPT OF *ITERATE?* ALLOWS THE USER TO ITERATE ONLY ON THE IMMEDIATELY PRECEDING SUBSET. TO ITERATE ON AN EARLIER SUBSET, THE USER MUST WAIT FOR A *?* PROMPT.

Figure 9 (continued).

SORT

BATCH

```
SORT

 B10 7
```

OUTPUT would be sorted as:

```
  DC11127
  W029567
  W029568
  W029569
```

MDS/CRIB records sorted in ascending order by record number.

TSO

```
?

SORT
----------
ASCENDING OR DESCENDING ORDER?

A

B10 7

/
```

```
SORTD

 B10 7
```

OUTPUT would be sorted as:

```
  W029569
  W029568
  W029567
  DC11127
```

MDS/CRIB records sorted in descending order by record number.

```
?

SORT
----------
ASCENDING OR DESCENDING ORDER?

D

B10 7

/
```

Figure 10.

should order most of the names. This command can sort up to 25 fields and no more than a total of 106 characters.

In Figure 10, "A10" is sorted for 15 characters. Assuming the 5 mines in Figure 11 are present, sorting for 15 characters will have one of the 2 results shown. The reason is that the Consolidated Mining shafts' names differ by only 1 character and that character is in the thirtieth position. The SORT does not recognize any difference so that either shaft may appear first in the listing. The Consolidated Mining names are in contrast to the Bluebell Cu Occurrence and Mine. For these 2 names, the difference occurs starting with the tenth character and since "C" comes before "M", the Bluebell Cu Occurrence is listed first.

SORT may also be used to sort numeric fields or mixed alphanumeric fields. In the case of mixed fields, alpha characters come before numbers in an ascending sequence in a mixed field. Examples of computer sorting/ordering are shown in Appendix C. To sort only by numbers in mixed or numeric fields, the following format is used:

```
SORT
 FIELD x.y
```

This sort will select the first number in the field to be sorted, sort on "x" digits ($x \leq 8$), and assume a decimal point "y" digits from the right.

SORT may also be used to sort on the existence of a label. For:

```
SORT
 FIELD 'YES' 'NO'
```

SORT will assume and sort on "YES" if the field is present and "NO" if the field is not present.

The second specification that needs to be made when using the SORT command besides the field name(s) and length(s), is whether the user wishes to sort the records in ascending or descending order. Ascending order sorts first on alpha characters starting with "A" and then on numbers starting with "0". Figure 9 shows how to specify ascending or descending sorts in both Batch and TSO modes

COUNT

The COUNT command will list the different data strings within a data field or data fields (up to 25), as well as the number of times (frequency) each data string occurs. The possible formats for the COUNT command are:

A. For characters

```
COUNT
 FIELD x     (x ≤ 70 TSO, x ≤ 100 Batch)
```

MINE NAMES - SORT "A10 15"

Bluebell Mine
J. D. Clampett's Claim
Consolidated Mining Ezra No. 2 Shaft
Consolidated Mining Ezra No. 1 Shaft
Wolf Whistle Creek Placer
Bluebell Cu Occurrence

Sorted in ascending order for 15 spaces, the names would be ordered as follows:

Bluebell Cu Occurrence
Bluebell Mine
Consolidated Mining Ezra No. 2 Shaft
Consolidated Mining Ezra No. 1 Shaft
J. D. Clampett's Claim
Wolf Whistle Creek Placer

OR

Bluebell Cu Occurrence
Bluebell Mine
Consolidated Mining Ezra No. 1 Shaft
Consolidated Mining Ezra No. 2 Shaft
J. D. Clampett's Claim
Wolf Whistle Creel Placer

FIGURE 11.

B. For numbers
```
COUNT
 FIELD x:y  (x ≤ 21, y ≤ 8)
```

C. For presence of label
```
COUNT
 FIELD 'PRESENT' 'NO'
```

In formats A and B, "x" defines the number of characters to form the data strings. The data strings are the first "x" characters in the field in format A. In format B, the first number in the field is assumed to have "x" characters with the decimal point "y" digits from the right.

Format C again shows the use of 2 literals "PRESENT" and "NO", respectively, for the presence and absence of that label for a given record. Any word or code up to 10 characters may be used as the literals, but the word or code within the first set of single quotes always will be used if the label is present. The second literal will be output only if the label is not present.

Figure 12 shows the results of a COUNT used for counties in Virginia. The frequency of 30-character strings in A60 (county) was noted and the sum of the frequencies printed at the bottom.

SUM

The SUM command (fig. 13) will select the first number in a mixed or numeric field and give the following information:

Number of occurrences	N
Algebraic sum of all occurrences	SUM
Arithmetic mean (SUM/N)	AVE
Maximum value	MAX
Minimum value	MIN

SUM may be used for up to 9 separate items.

TOTAL

TOTAL provides the same information as SUM, but in addition will provide a total of the fields, i.e. the sums of all "N" values and "SUM" values, the arithmetic mean of all the "AVE" values and the maximum and minimum value of the "MAX" and "MIN" values, respectively (fig. 14). TOTAL is generally not appropriate for use with CRIB fields.

PRINT

PRINT (fig. 15) is the least specialized of the output commands. This command uses the last specified dictionary (FORM) as

BATCH

```
COUNT
 A60 30
```

TSO

```
?
COUNT
---------
TERMINAL OR PRINTER?
T
A60 30
/
```

Example of COUNT done for counties in Virginia:

VALUE	FREQUENCY
ALLEGANY	2
AMHERST-APPOMATTOX	1
ANNE ARUNDEL	1
AUGUSTA/ROCKBRIDGE	1
BEDFORD	1
CARROLL	2
CARROLL-GRAYSON	1
CITY OF WASHINGTON	1
FAIRFAX	1
FLOYD	1
FREDERICK	1
GRAYSON-CARROLL	1
HARFORD	2
LEE-WISE	1
LOUISA	5
PRINCE GEORGES	3
ROCKBRIDGE	1
ROCKINGHAM	1
RUSSELL	3
***	
SCOTT	1
SHENANDOAH	1
SMYTH-WYTHE-PULASKI	1
STAFFORD	1
067	2
155	1
TOTAL	37

Figure 12.

SUM

BATCH

SUM

M210

M25

TSO

```
?
SUM
-------------
M210
M25
/
```

Summing temperatures and depths
for 40 geothermal wells in Oregon.

LABEL	N	SUM	AVE	MAX	MIN
M210	40	5218	130.45	210	45
M25	40	7991	199.75	312	90

Figure 13.

```
                    TOTAL

BATCH                TSO
TOTAL                ?
 D1A                 TOTAL
 D2A                 ----------
 D3A                 D1A
                     D2A
                     D3A
                     /
```

LABEL	*(N)*	*SUM*	*AVE*	*MAX*	*MIN*
D1A	*1231*	*185,466,287*	*150,663.10885*	*18,710,000*	*60*
D2A	*1337*	*211,691,809*	*158,333.43979*	*35,942,319*	*35*
D3A	*1340*	*193,586,271*	*144,467.36641*	*15,920,575*	*18*
TOTAL	*3908*	*590,744,367*	*151,162.837*	*35,942,319*	*18*

Figure 14.

PRINT

BATCH	TSO
PRINT	?
	PRINT

	TERMINAL OR PRINTER?
	T

DEFAULTS:
1) each record will begin printing on new page.
2) each line will contain 80 characters (GIPSY will allow up to 120).
3) will print all records in selected data set in their entirety.

OVERRIDE PARAMETERS:

NOPAGE -- will not start a new page with each record.

LINESIZE XXX -- width of print line.

RECS = N -- maximum number of records to be printed.

EXAMPLES:

```
PRINT LINESIZE = 120 NOPAGE

PRINT RECS = 20

PRINT LINESIZE = 120 NOPAGE RECS = 100
```

Figure 15.

a basis for printing records. When PRINT is used without any override parameters, each record will print in its entirety with 80 characters per line and with each record starting at the top of a new page. Override parameters for PRINT are NOPAGE, RECS, and LINESIZE. The standard CRIB dictionary will print in an optimal manner if 120 characters per line are allowed or "LINESIZE=120". NOPAGE will save paper by allowing each record to start printing immediately after the preceding record rather than at the top of a new page. RECS allow the user to specify a maximum number of records to be printed. The 3 examples in Figure 12 do the following: 1) "PRINT LINESIZE=120 NOPAGE" allows 120 characters per line with each record printing immediately after the preceding record; 2) "PRINT RECS=20" will print 80 characters per line, each record starting on a new page, and a maximum of 20 records; 3) "PRINT LINESIZE=120 NOPAGE RECS=100" will allow 120 characters per line, with no more than 100 records printing immediately after each other.

When printing entire records at a terminal when using TSO, the computer will pause every 20 lines and print "***". The user may respond with a carriage return and the computer will continue to print the desired data set. Alternatively, the user may respond with "//" and return to the GIPSY command level, i.e. the computer will print "?" and the user may enter another command.

LIST

LIST (fig. 16) allows the user to look at specified fields (up to 99) without having entire records printed out. LIST will print the fields asked for in their entirety. Figure 17 shows the results of the Batch LIST request in Figure 16. LIST will generally print information for all the records selected, however, the RECS override may be used to specify a maximum number of records for which information will be printed.

LIST does not require that each field have a character length specified. The field labels are listed in the desired order, one per line. As with SORT, a "/" follows the last label to be processed. As with the PRINT command, when using TSO the computer will pause every 20 lines to allow the user to discontinue the output. User responses are the same as with the PRINT command.

COPY

COPY is the most versatile of the output commands. It is this command that can be used to generate tables, formatted tapes, and provide standard output for interface between GIPSY and processing systems requiring fixed fields. The parameters for copying information are given by specifying the fields needed and the number of characters to be copied from the fields (fig. 18). The user is limited to 98 field specifications and a total length of 2000 characters for each use of the COPY command.

With the COPY command, the user specifies the maximum number

LIST

BATCH

```
LIST RECS=10
 A10
 C10
 C40
 B10
```

List name, commodities, and deposit type for 10 records in MDS/CRIB.

TSO

```
?
LIST
----------------
TERMINAL OR PRINTER?
T
A10
C10
C40
/
```

List name, commodities, deposit type, and CRIB record-ID.

Figure 16.

EXAMPLE LIST OUTPUT

```
COMMODITIES PRESENT.....  PUM
DEPOSIT TYPES: STRATIFIED
RECORD NO.....  DC08423

COMMODITIES PRESENT.....  PUM
DEPOSIT TYPES: STRATIFIED VOLCANIC
RECORD NO.....  DC08456

COMMODITIES PRESENT.....  PUM
DEPOSIT TYPES: VOLCANIC
RECORD NO.....  DC08651

COMMODITIES PRESENT.....  CLY3
DEPOSIT TYPES: BEDDED
RECORD NO.....  DC11285

COMMODITIES PRESENT.....  AU
DEPOSIT TYPES: PLACER
RECORD NO.....  D004041

DEPOSIT NAME.....  ABBATOUR CLAIM
COMMODITIES PRESENT.....  AG
DEPOSIT TYPES: VEIN
RECORD NO.....  W026660

DEPOSIT NAME.....  ABLE PLACER
COMMODITIES PRESENT.....  AU
DEPOSIT TYPES: PLACER
RECORD NO.....  D004073

DEPOSIT NAME.....  ACE PLACER
COMMODITIES PRESENT.....  AU
DEPOSIT TYPES: PLACER
RECORD NO.....  D004047

DEPOSIT NAME.....  AGNES PROPERTY
COMMODITIES PRESENT.....  PB  CU
DEPOSIT TYPES: VEIN
RECORD NO.....  DC08409

DEPOSIT NAME.....  AJAX PLACER
COMMODITIES PRESENT.....  AU
DEPOSIT TYPES: PLACER
RECORD NO.....  DC11291
```

Figure 17.

COPY

BATCH

```
COPY
' '
B10 9
A10 25
' '
C10 20
```

TSO

```
?
COPY
----------------
TERMINAL OR WORKFILE?
T
' '
B10 9
A10 25
' '
C10 20
' '
YES 'YES' ' '
/
```

PARTIAL LISTING OF OUTPUT:

```
DC00019  ANGELUS, BLACK BEAUTY, BL  UNF
DC00245  GROVER                     FLD  MIC  BE   NB   YES
DC00324  CHRISTIE WARD-LUCKY THIRT  RAE  BE   NB   FLD  YES
DC00456  K-L GREEN RANCH            BE   MON  QTZ  FLD  YES
DC00457  LITTLE ABNER PEGMATITE     BE   RAE  FLD  MON  YES
DC00458  ROSCOE GULCH PEGMATITES    FLD  MIC  BE   MON
DC00476  BACHMAN RANCH PEGMATITE    BE   FLD  QTZ  MIC
DC00480  RAMSTETTER RANCH           MO   FLD  QTZ  MIC  YES
DC00631  JOHN REED                  FE   AG   AU   PB
DC00663  TURQUOISE CHIEF, POOR BOY  CU   U    GEM       YES
DC01104  OPPORTUNITY                MIC  BE   NB   TA
DC01124  MONZONITE, NEW ANNIVERSAR  BE   NB   TA   GAR  YES
DC01125  WILLOW CREEK               FLD  BE   MIC  NB
DC01129                             BE   MIC  NB   TA   YES
DC01130  BROWN DERBY #4,5, WHITE S  MIC  BE   GEM  GAR  YES
DC01165  BONUS EXTENSION            BE   NB   TA   MIC
DC01539  THORIUM MTN., GENERAL IKE  TH   U    RAE  AU   YES
DC01581  BIGGER MICA MINE           BE   MIC  FLD  NB   YES
DC01599                             FLD  MIC  QTZ  RAE
***
```

Figure 18.

of characters to be printed for each field. For example, if one specifies that A10 (name) is to be copied for 30 characters, names that are longer will be cut off past the thirtieth character. This allows several labels to be fit across each line on a page to create tables.

For jobs going to the user's terminal or a printer, the user should limit the COPY string to the 120 character line length for each record. Exceeding the 120 characters will generate additional whole or partial lines of printing. In addition, when COPY command output goes to a terminal or printer, the first space is used for carriage control line spacing. The three choices are:

'Ø'	single spacing (Ø=blank)
'0'	double spacing
'-'	triple spacing

The user's choice should be a COPY command parameter; for double spacing, the copy command would start as follows.

```
COPY
 '1'
```

In Figure 18, the user chose single spacing. Any other characters in this position for printed ouput will produce undesirable results.

Figure 19 lists the possible parameter formats allowed when using the COPY command. Format 1 is the most common, printing the first x characters of the label. Format 2 will find the first number listed in each field and will put it in the standard format of x characters with y decimal places. Format 3 is useful for creating table headings; the character string within the single quotes will be printed for each record in the data set. Format 4 prints the characters in the first set of single quotes if that label is present, and the characters in the second set of single quotes if the label is not present in a record. "NEW RECORD" causes the immediately preceding COPY parameters to output without reading a new input record. As with LIST and SORT, a "/" indicates the end of the user's list of parameters.

Creating Tables

When creating tables using the COPY command, there are a few tricks to achieving a professional product. In Figure 18, literals were used to insert 2 blanks between A10 (name) and C10 (commodities); keeping the 2 fields from running together. The same was done between C10 and YES (production).

Headings can be created for tables when running jobs in the batch mode. This process uses a dummy record to generate headings as in Figure 20.

1. A30 x	IN THIS FORMAT, THE FIRST "X" NUMBER OF CHARACTERS FROM A30 WILL BE PRINTED. BLANKS ARE INSERTED IF THERE ARE NO DATA.
2. A30 x.y	IN THIS FORMAT, THE FIRST NUMBER IN A30 WILL BE PRINTED WITH "X" NUMBER OF DIGITS AND "Y" NUMBER OF DECIMAL PLACES. THE DECIMAL POINT IS ASSUMMED.
3. 'STRING'	A LITERAL CHARACTER STRING CAN BE INSERTED BY PUTTING THE STRING BETWEEN SINGLE QUOTES. THIS STRING WOULD BE PRINTED FOR EVERY RECORD. MAXIMUM LENGTH = 60 CHARACTERS.
4. DATE 'YES' 'NO'	IF THE FIELD LABEL "DATE" IS PRESENT, THE FIRST LITERAL WILL BE PRINTED. THE SECOND LITERAL WILL PRINT IF "DATE" IS NOT PRESENT IN A RECORD. EACH LITERAL MUST BE 10 CHARACTERS OR LESS.
5. NEW RECORD	THIS PHRASE CAUSES THE OUTPUT CREATED TO THIS POINT TO OUTPUT WITHOUT READING A NEW INPUT RECORD.

COPY DEFAULTS: ALL RECORDS IN SUBSET COPIED,
MAXIMUM LENGTH 2000 CHARACTERS,
MAXIMUM OF 98 PARAMETERS.

COPY OVERRIDES:	RECS=N	INDICATES MAXIMUM NUMBER OF RECORDS TO BE COPIED.
	MPRM=N	INDICATES MAXIMUM NUMBER OF PARAMETERS.
	SIZE=N	INDICATES MAXIMUM SIZE OF OUTPUT RECORD.

Figure 19.

CREATING HEADINGS FOR TABLES

```
SELECT
 A. B10                              select all desired records
 LOGIC A
ITERATE
 A. B10<D000000>                     use a known record as a dummy
                                       to generate headings
 LOGIC A
COPY
 ' '                                 space control (single space)
 'MINE NAME              '           headings
 'RECORD NUMBER    '
 'COMMODITIES    '
 'LAT/LONG     '
 NEW RECORD
 ' '
 '----------------------'            Underlining
 '------------------'
 '--------------'
 '------------'
BACK
 1
COPY
 ' '
 A10 25
 '  '
 B10 9
```

Figure 20.

```
C10 30
' '
A70 9
A80 10
```

Headings may be created for batch run jobs, but this method will not work on TSO.

Figure 20 (continued).

END

This command may be entered after a "?" prompt by the user. END will return the user to the AMDAHL command level for logoff and close all GIPSY files.

APPENDIX A
MDS-CRIB INPUT FORM

U.S. CRIB-SITE FORM

RECORD IDENTIFICATION

*RECORD NUMBER **B10** <_____>
*RECORD TYPE **B20** <X 1>
DEPOSIT NUMBER **B40** <_____>
*REPORT DATE **G1** <_____> YR. MO.
*INFORMATION SOURCE **B30** <_____>
+FILE LINK IDENT. **B50** <_____>

*REPORTER(SUPERVISOR) **G2** <_____ (_____>
(last, first, middle initial) *(last, first, middle initial)*

*REPORTER AFFILIATION **G5** <_____>
*SITE NAME **A10** <_____>
+SYNONYMS **A11** <_____>

LOCATION

+MINING DISTRICT/AREA **A30** <_____>
*COUNTY **A60** <_____>
*STATE **A50** <_____>
*COUNTRY **A40** <U
*PHYSIOGRAPHIC PROV **A63** <_____>
*DRAINAGE AREA **A62** <_____>
*LAND STATUS **A64** <_____ (_____>
*QUADRANGLE NAME **A90** <_____ (_____)>
*QUADRANGLE SCALE **A100** <_____>
SECOND QUAD NAME **A92** <_____ (_____)>
SECOND QUAD SCALE **A91** <_____>
+ELEVATION **A107** <_____>

UTM

*NORTHING **A120** <_____>
*EASTING **A130** <_____>
*ZONE NUMBER **A110** <+ _____>

*ACCURACY

ACCURATE **ACC** *(circle)*
ESTIMATED **EST** <_____>

GEODETIC

+LATITUDE **A70** <_____ _____ _____ N
+LONGITUDE **A80** <_____ _____ _____ W

CADASTRAL

+TOWNSHIP(S) **A77** <_____ : _____ : _____ : _____>
+RANGE(S) **A78** <_____ : _____ : _____ : _____>
+SECTION(S) **A79** <_____ : _____ : _____>
+SECTION FRACTION(S) **A76** <_____>
+MERIDIAN(S) **A81** <_____>

+POSITION FROM NEAREST PROMINENT LOCALITY **A82** <_____>
+LOCATION COMMENTS **A83** <_____>

* ESSENTIAL INFORMATION
+ ESSENTIAL SOMETIMES OR HIGHLY RECOMMENDED

COMMODITY INFORMATION

*COMMODITIES PRESENT **C10** <
*ORE MINERALS **C30** <
COMMODITY SUBTYPES **C41** <
+GEN. ANALYTICAL DATA **C43** <
COM. INFO. COMMENTS **C50** <

* SIGNIFICANCE

PRODUCER

MAJOR PRODUCTS **MAJOR** <>
MINOR PRODUCTS **MINOR** <>
POTENTIAL PRODUCTS **POTEN** <>
OCCURRENCES **OCCUR** <>

NON-PRODUCER

MAIN COMMODITIES PRESENT **C11** <
MINOR COMMODITIES PRESENT **C12** <

OCCURRENCES **OCCUR** <

*PRODUCTION

PRODUCER

PRODUCTION **YES** *(circle)* PRODUCTION SIZE **SML** **MED** **LGE** *(circle one)*

NON-PRODUCER

PRODUCTION **UND** **NO** *(circle one)*

EXPLORATION OR DEVELOPMENT

*STATUS

PRODUCER

STATUS AND ACTIVITY **A20** <>

NON-PRODUCER

STATUS AND ACTIVITY **A20** <>

+DISCOVERER **L20** <
+YEAR OF DISCOVERY **L10** < > +NATURE OF DISCOVERY **L30** < > +YEAR OF FIRST PRODUCTION **L40** < > +YEAR OF LAST PRODUCTION **L45** <
+PRESENT/LAST OWNER **A12** <
+PRESENT/LAST OPERATOR **A13** <
EXPL./DEV.COMMENTS **L110** <

DESCRIPTION OF DEPOSIT

*DEPOSIT TYPE(S) **C40** <
DEPOSIT FORM/SHAPE **M10** <
+DEPTH TO TOP **M20** < > +UNITS **M21** < > +MAXIMUM LENGTH **M40** < > +UNITS **M41** <
+DEPTH TO BOTTOM **M30** < > +UNITS **M31** < > +MAXIMUM WIDTH **M50** < > +UNITS **M51** <
*DEPOSIT SIZE **M15** <**SMALL**> **M15** <**MEDIUM**> **M15** <**LARGE**> *(circle one)* +MAXIMUM THICKNESS **M60** < > +UNITS **M61** <
+STRIKE **M70** < > +DIP **M80** <
+DIRECTION OF PLUNGE **M100** < > +PLUNGE **M90** <
+DEP. DESC. COMMENTS **M110** <

DESCRIPTION OF WORKINGS

*Workings are: SURFACE **M120** UNDERGROUND **M130** BOTH **M140** *(circle one)*

+DEPTH BELOW SURFACE **M160** < > +UNITS **M161** < >

+LENGTH OF WORKINGS **M170** < > +UNITS **M171** < >

+OVERALL LENGTH **M190** < > +UNITS **M191** < >

+OVERALL WIDTH **M200** < > +UNITS **M201** < >

+OVERALL AREA **M210** < > +UNITS **M211** < >

DESC. OF WORK. COM. **M220** <

GEOLOGY

+AGE OF HOST ROCK(S) **K1** <

+HOST ROCK TYPE(S) **K1A** <

+AGE OF IGNEOUS ROCK(S) **K2** <

+IGNEOUS ROCK TYPE(S) **K2A** <

+AGE OF MINERALIZATION **K3** <

+PERT. MINERALS (NOT ORE) **K4** <

+ORE CONTROL/LOCUS **K5** <

+MAJ REG. TRENDS/STRUCT. **N5** <

+TECTONIC SETTING **N15** <

+SIGNIFICANT LOCAL STRUCT. **N70** <

+SIGNIFICANT ALTERATION **N75** <

+PROCESS OF CONC./ENRICH. **N80** <

+FORMATION AGE **N30** <

+FORMATION NAME **N30A** <

SECOND FM AGE **N35** <

SECOND FM NAME **N35A** <

+IGNEOUS UNIT AGE **N50** <

+IGNEOUS UNIT NAME **N50A** <

SECOND IG UNIT AGE **N55** <

SECOND IG UNIT NAME **N55A** <

GEOLOGY COMMENTS **N85** <

GENERAL COMMENTS

GENERAL COMMENTS **GEN** <

* GENERAL REFERENCES

REFERENCE 1 **F1** <

REFERENCE 2 **F2** <

REFERENCE 3 **F3** <

REFERENCE 4 **F4** <

PROD *(circle if this page is used)*

PRODUCTION TABLES
(commodities, concentrates, ore, overburden)

DH *(circle if this table is used)*

ANNUAL PRODUCTION

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR	GRADE
1)	D1	D1A	D1B	D1C	D1D	
2)	D2	D2A	D2B	D2C	D2D	
3)	D3	D3A	D3B	D3C	D3D	
4)	D4	D4A	D4B	D4C	D4D	
5)	D5	D5A	D5B	D5C	D5D	
6)	D6	D6A	D6B	D6C	D6D	
7)	D7	D7A	D7B	D7C	D7D	
8)	P1	P1A	P1B	P1C	P1D	
9)	P2	P2A	P2B	P2C	P2D	
10)	P3	P3A	P3B	P3C	P3D	
11)	P4	P4A	P4B	P4C	P4D	
12)	P5	P5A	P5B	P5C	P5D	
13)	P6	P6A	P6B	P6C	P6D	
14)	P7	P7A	P7B	P7C	P7D	

DH2 *(circle if this table is used)*

CUMULATIVE PRODUCTION

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEARS	GRADE
15)	G7	G7A	G7B	G7C	G7D	
16)	G8	G8A	G8B	G8C	G8D	
17)	G9	G9A	G9B	G9C	G9D	
18)	G10	G10A	G10B	G10C	G10D	
19)	G11	G11A	G11B	G11C	G11D	
20)	G12	G12A	G12B	G12C	G12D	
21)	G13	G13A	G13B	G13C	G13D	
22)	G14	G14A	G14B	G14C	G14D	
23)	G15	G15A	G15B	G15C	G15D	

SOURCE OF INFORMATION D9

COMMENTS D10

RESV *(circle if this page is used)*

RESERVES AND POTENTIAL RESOURCES TABLES

RESERVES AND POTENTIAL RESOURCES

EH *(circle if this table is used)*

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST	GRADE
1)	E1		E1A	E1B	E1C	E1D
2)	E2		E2A	E2B	E2C	E2D
3)	E3		E3A	E3B	E3C	E3D
4)	E4		E4A	E4B	E4C	E4D
5)	E5		E5A	E5B	E5C	E5D
6)	E6		E6A	E6B	E6C	E6D

SOURCE OF INFORMATION E7

COMMENTS E8

RESERVES ONLY

HH *(circle if this table is used)*

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST.	GRADE
1)	H1		H1A	H1B	H1C	H1D
2)	H2		H2A	H2B	H2C	H2D
3)	H3		H3A	H3B	H3C	H3D
4)	H4		H4A	H4B	H4C	H4D
5)	H5		H5A	H5B	H5C	H5D
6)	H6		H6A	H6B	H6C	H6D

SOURCE OF INFORMATION H7

COMMENTS H8

POTENTIAL RESOURCES

JH *(circle if this table is used)*

(fold along line)

	ITEM	ACCURACY	AMOUNT	THOUSAND UNITS	YEAR OF EST.	GRADE
1)	J1		J1A	J1B	J1C	J1D
2)	J2		J2A	J2B	J2C	J2D
3)	J3		J3A	J3B	J3C	J3D
4)	J4		J4A	J4B	J4C	J4D
5)	J5		J5A	J5B	J5C	J5D
6)	J6		J6A	J6B	J6C	J6D

SOURCE OF INFORMATION J7

COMMENTS J8

APPENDIX B
EXAMPLE G. E. RETRIEVAL

When accessing the CRIB Data Bank via the G. E. System, the look of the retrieval is different, but the GIPSY commands work the same as on the U. S. G. S. computer. The big difference between the systems is the response time. When retrieving data using TSO on the U. S. G. S. computers, the response time is a matter of minutes. On G. E., after submitting the pertinent commands, the user must disconnect from the system and wait 30 minutes for the retrieval to be finished. The user may then reenter the system and ask for the appropriate job.

The user should contact the University of Oklahoma for a user ID and the logon procedure. Once logged on, the following is an example of a G. E. retrieval (The user's responses are in brackets "[ ]" here only to distinguish them from the computer prompts):

ENTER FUNCTION: [C] (C stands for create)

CONTROL FILE NAME: [EXAMPLE] (the user may use any name)

ENTER NAME OF DATABASE TO BE USED: [CRIB]

BATCH COMMAND: [FORM]

FORM NAME: [CRIB]

BATCH COMMAND: [SELECT]

FULL OR TERM SEARCH: [F]

CONDITION:

A. : [A40<US>] (your criteria)

B. : [A50< SC >]

C. :

LOGIC [A * B]

BATCH COMMAND:

BEGINNING CHANGES TO CONTROL FILE- EXAMPLE

CMD: (CMD stands for command)

STANDARD RUN, DEFERRED RUN, OR NO RUN: [S]

JOB 4092 USERID ON INTRDR

ENTER FUNCTION: [S] (ends session)

END OF SESSION

READY

[LOGOFF]

Log back on in approximately one-half hour to get the results.

ENTER FUNCTION: [R] (R stands for retrieval)

ENTER A 4-DIGIT JOB NUMBER

JOB #: [4092] (This is the same number given you when the file was created)

1 REPORT FILES RETURNED

19 LINES RETURNED

DO YOU WANT TO: (the computer will give you approximately 8 alternatives)

YOUR CHOICE: [L] (L lists your job)

FORM

CRIB

SELECT

A. A40<US>

B. A50< SC >

LOGIC A * B

SEARCH

SEARCH BEGINNING

SEARCH COMPLETED

SEARCHED 51771

SELECTED 10 SUBSET 1

VARIABLES SATISFIED

A 46422

B 525

CHOOSE: [S] (S stands for stop)

ENTER FUNCTION: [S] (S stands for end of session)

END OF SESSION

READY

[LOGOFF]

This completes the G. E. retrieval process example. For more information on the different function, commands, or capabilities of the system, contact the University of Oklahoma.

APPENDIX C-1
PRINTOUT OF A CRIB RECORD

RECORD 00001

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
- RECORD NO..... DC08351
- RECORD TYPE..... X1M
- COUNTRY/ORGANIZATION. USGS
- INFORMATION SOURCE... 1
- FILE LINK ID..... CONSV
- DEPOSIT NO..... 546
- MAP CODE NO. OF REC..

REPORTER
- DATE..... 74 03
- UPDATED..... 79 05
- BY..... ROJSTACZER, STUART

NAME AND LOCATION
- DEPOSIT NAME..... BIG FOUR PROSPECT

- COUNTRY CODE..... US
- COUNTRY NAME: UNITED STATES

- STATE CODE..... MT
- STATE NAME: MONTANA

- COUNTY..... FLATHEAD
- DRAINAGE AREA..... 17 WEST FORK OF DAYTON CREEK
- PHYSIOGRAPHIC PROV..... 08 SALISH MTS
- LAND CLASSIFICATION..... 01

QUAD SCALE	QUAD NO OR NAME
1: 250000	WALLACE
1: 24000	PROCTOR

LATITUDE	LONGITUDE
47-57-53N	114-21-04W

- TWP..... 026N
- RANGE.... 021W
- SECTION.. 31
- MERIDIAN. MONTANA

- ALTITUDE.. 3900 FT

- POSITION FROM NEAREST PROMINENT LOCALITY: 2 MI NW OF BASIN MEADOWS

- LOCATION COMMENTS: WEST FORK OF DAYTON CREEK, NE BANK.

COMMODITY INFORMATION
- COMMODITIES PRESENT..... AG CU AU

MAIN COMMOD..... AG
MINOR COMMOD.... CU AU

COMMODITY SPECIALIST INFORMATION:

SPECIAL FIELD 1 3

ANALYTICAL DATA
SOURCE REFERENCE.. JOHNS, W. M., 1964 : MONTANA BUR. MINES AND GEOLOGY, BULL 42 , P. 47 .

ANALYTICAL DATA(GENERAL)
CHANNEL SAMPLE NORMAL TO VEIN ASSAYED 0.11 % CU, 0.20 OZ/TON AG, 0.001 OZ/TON AG

EXPLORATION AND DEVELOPMENT
STATUS OF EXPLOR. OR DEV. 2
YEAR OF DISCOVERY..... 1905
BY WHOM..... WILHLELM
NATURE OF DISCOVERY..... A
PRESENT/LAST OPERATOR.... BILL AND MATT WILHELM

EXPLOR. AND DEVELOP. COMMENTS:
LAST CLAIM HOLDERS WERE SONS OF ORIGINAL LOCATOR.

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:
SHEAR ZONE/VEIN
FORM/SHAPE OF DEPOSIT:

SIZE/DIRECTIONAL DATA
SIZE OF DEPOSIT..... SMALL
MAX WIDTH..... 12.5 IN
STRIKE OF OREBODY.... N 77 W
DIP OF OREBODY..... 82 S
COMMENTS(DESCRIPTION OF DEPOSIT):
QUARTZ VEIN IS VUGGY

DESCRIPTION OF WORKINGS
UNDERGROUND
LENGTH OF WORKINGS..... 435 FT

COMMENTS(DESCRIP. OF WORKINGS):
WORKINGS CONSIST OF ONE ADIT WITH A 75 FT DRIFT.

PRODUCTION
NO PRODUCTION

GEOLOGY AND MINERALOGY

AGE OF HOST ROCKS..... PREC
HOST ROCK TYPES..... LIGHT GRAY QUARTZITE AND MEDIUM GRAY ARGILLITE

PERTINENT MINERALOGY..... QUARTZ, AND ABUNDANT IRON OXIDES

GEOLOGICAL DESCRIPTIVE NOTES. 12.5 INCH VUGGY WHITE QTZ VEIN, 0.11% CU, 0.2 OZ AG, 0.001 OZ AU PER TON

GEOLOGY (SUPPLEMENTARY INFORMATION)
REGIONAL GEOLOGY
MAJOR REGIONAL STRUCTURES.. NW-PLUNGING ANTICLINE TO THE WEST; LARGE SCALE N-TRENDING AND W-TRENDING FAULTS TO THE EAST.
TECTONIC SETTING..... BELT BASIN

LOCAL GEOLOGY
NAMES/AGE OF FORMATIONS,UNITS,OR ROCK TYPES
AGE: PREC RAVALLI GROUP (UNDIFFERENTIATED)

COMMENTS (GEOLOGY AND MINERALOGY):
FISSURE VEINS IN THIS AREA TEND TO LIE PARALLEL TO FAULTS. COUNTRY ROCK STRIKES N 15 DEG W AND DIPS 30 DEG E.

GENERAL REFERENCES
1) JOHNS, W. M., 1964 , GEOLOGIC INVESTIGATIONS IN THE KOOTENAI-FLATHEAD AREA, NORTHWEST MONTANA: MONTANA BUR. MINES AND GEOLOGY BULL. 42 , PP. 46 - 47 .
2) JOHNS, W. M., 1970 , GEOLOGY AND MINERAL DEPOSITS OF LINCOLN AND FLATHEAD COUNTIES, MONTANA: MONTANA BUR. MINES AND GEOLOGY BULL. 79 , P 144 .
4) CONSV. DIV. COMP. DATE, 12-22-1970

APPENDIX C-2
"MINIMUM" CRIB PRINTOUT

- CRIB MINIMUM RECORD -

REC_ID... DC0E351

NAME..... BIG FOUR PROSPECT

DISTRICT.

COUNTRY.. US STATE: 30 COUNTY: FLATHEAD
PHYS_PROV 06 SALISH MTS
DRAINAGE. 17 WEST FORK OF DAYTON CREEK

TOWNSHIP. 026N LATITUDE. 47-57-53N
RANGE.... 021W LONGITUDE 114-21-04W
SECTIONS. 31
MERIDIAN. MONTANA

POSITION: 2 MI NW OF BASIN MEADOWS

COMMODITIES: AG CU AU

DEPOSIT TYPE: SHEAR ZONE/VEIN
DEPOSIT SIZE: SMALL
WORKINGS ARE UNDERGROUND

REC_TYPE. X1M
SOURCE... 1
FILE LINK CONSV
REPORTER.
UPDATER.. ROJSTACZER, STUART
LAND STAT 01
QUAD..... WALLACE
2ND QUAD. PROCTOR

DATE. 74 03
DATE. 79 05
SCALE 1: 250000
SCALE 1: 24000

STATUS... 2
NO PRODUCTION

RECORD 00017

APPENDIX D
ORDERING OF DATA (SORTING)

Computers sort or order data from left to right. When invoking a GIPSY sort or selecting a range of values or words (which in effect is dependent upon data ordering), the user specifies the number of spaces to be ordered and the computer will then order the data starting with the first character in each piece of data and working character by character to the right for the number of charracters specified. The hierarchy of sorting (ascending) is as follows:

(blank)
A
|
Z
0 (zero)
|
9
Other symbols

Sorting, or ordering, is best explained through the examples which follow.

I. Sorting by names or words

DATA SET: (N30)

-HASMARK FM

-MADISON LIMESTONE
-RED HILL MARBLE

-HASMARK FM.

-MADISON FM

-BELT SERIES

-MADISON QUARTZITE

-SCHAEFFER FM

GIPSY REQUEST:

```
SORT
 N30 15
```

INTERPRETATION: The user wishes to sort formation names in ascending (alphabetical) order using the first 15 characters of each name.

SORTED DATA:

BELT SERIES

HASMARK FM

HASMARK FM.

MADISON FM

MADISON LIMESTONE

MADISON QUARTZITE

RED HILL MARBLE

SCHAEFFER FM

|
15th char

ALTERNATE GIPSY REQUET: SORT
N30 8

SORTED DATA: BELT SERIES

HASMARK FM.)
) These may appear in
HASMARK FM) any order

MADISON FM)
)
MADISON QUARTZITE) These may appear
) in any order
MADISON LIMESTONE)

RED HILL MARBLE

SCHAEFFER FM
|
8th char

COMMENT: The alternate request did not specify a sufficient number of sorting characters to insure a unique and repeatable ordering of data. Note that when sorting by 15 spaces the "Hasmark Fm." with the period follows the "Hasmark Fm" without one, because blanks precede letters, numbers, and other characters.

II. SORTING BY NUMBERS (two data sets considered)

DATA SET: (M60)

A	B
0T	01.0
1	01.0
1.	01.0
13	13.0
2.1	02.1
2.	02.0
0.2	00.2

GIPSY REQUEST:

```
SORT
 M60 4
```

INTERPRETATION: The user wishes to sort this numeric field using 4 characters

SORTED DATA:

A	B
0T	00.2
0.2	01.0
1	01.0
13	01.0
1.	02.0
2.	02.1
2.1	13.0

COMMENT: Note that the data in column "B" which has a set decimal place and occupies 4 spaces sorted by numeric value while the data in column "A" did not.

III. Sorting mixed number and character fields (two data sets considered)

Data Set: (M80)

A	B
N12W	N12W
N 12 W	N12W
N 13 DEG W	N13E
12NW	N12W
EW	N90E
NO8W	NO8W
N8W	NO8W
N8E	NO8E

GIPSY REQUEST:

```
SORT
 M80 10
```

	A	B
SORTED DATA:	EW	N08E
	N 12 W	N08W
	N 13 DEG E	N08W
	N08W	N12W
	N12W	N12W
	N8E	N12W
	N8W	N13E
	12NW	N90E

COMMENT: Note that the formatted field sorts more attractively than the non-formatted version.

IV. Selecting data by numeric value

Data Set: (M60)
24
03
10.2
G100
24.
0.10
Less than 4.

GIPSY REQUEST:
```
SELECT
  A. M60 GT 10
  LOGIC A
```

Data Selected:
24
10.2
G100
24.

Alternate GIPSY REQUEST:
```
SELECT
  A. M60<24>
  LOGIC A
```

Data Selected:
24
24.

Alternate GIPSY Request:
```
Select
  A. M60 3 thru 50
  LOGIC A
```

Selected:
24
03
10.2
24.
Less than 4.

Alternate GIPSY Request: Select
A. M60 EQ 24
LOGIC A

Data Selected 24
24.

V. Selecting Data by Character Strings

Data Set: (GEN)

04N	Morning Glory
04S	Zoo Mine
03N	Happy Trails
Happy Days	Anteater
Miller	02S

GIPSY Request: Select
A. GEN<Animal>thru<Miller>
LOGIC A

Data Selected: Happy Days
Happy Trails
Anteater
Miller

Alternate GIPSY Request: Select
A.GEN<02N>THRU<04N>
LOGIC A

Data Selected: 02S
03N
04N

Alternate GIPSY Request: Select
A.AIA<ØAAA>THRU<ØHAA>
LOGIC A

Data Selected: Happy Days
Anteater