DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

GSMODS - A Personal Mineral Occurrence Database System

Reference Manual

Version 1.01

by

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Design Considerations

The Mineral Occurrence Database System (GSMODS) was developed to enhance the organization, analysis, and display of mineral occurrence information commonly used for an assessment of mineral resource potential. Assessment projects of this type generally produce a large volume of heterogeneous data that are difficult to assimilate and to summarize in a publishable form. GSMODS is a tool that can be used to improve the efficiency of the assessment process.

GSMODS was designed by first defining the various products of the system (maps and tables). Once the required products were known, the required information to be fed into the system to produce these products was easily determined. The system must be capable of producing the various tables and map overlays that are needed for the typical (and the not-so-typical) mineral resource assessment with the least effort possible on the part of the user. This broad goal implies several more specific goals. In order to generate tables that are of use to a variety of projects using diverse publication rules, the system must be flexible. The system must be capable of searching for and selecting parts of the database from the whole; it must be capable of sorting those parts or the entire database on the basis of the contained data; and it must be capable of sending the results to the computer screen for proofing, to the printer for display, and to disk for storage. The format of tabular data produced by the system must be flexible. To generate the map overlays needed for a mineral assessment project, the system must be able to find, select, and sort the data prior to generating overlays. Mineral assessments often include data which are related to specific areas such as mining districts or mineralized zones and data which are related to restricted locations such as outcrops or prospect pits. The system must be capable of displaying the outlines of areas as well as the locations of point localities.

In addition to providing the user with the products mentioned, several secondary goals were identified during the system design process. The system must be as accessible and as portable as possible; therefore, the system is implemented on a standard IBM PC (or PC clone) with standard peripheral equipment. To provide a permanent record of the information generated by each project and to make that information available to subsequent projects in machine-readable form, all data should be easily transferable to and from the U.S. Geological Survey's National Mineral Resource Data System (MRDS) without modification. MRDS is maintained by the Branch of Resource Analysis, Office of Mineral Resources, U.S.G.S., Reston, Va. A utility to make these transfers automatic will be included in a later version of GSMODS; it is not included in the current version. Production of usable map overlays depends heavily on the precision and accuracy of the location data entered into the system. To provide this

precision and accuracy at the least cost to the user, locations of points and area boundaries are transferred directly from maps to the database using a desktop digitizer. Because mineral resource databases tend to evolve as additional data are accumulated, the GSMODS data input and update facility includes full edit capability enabling the compilation of data directly on the keyboard without the necessity of first writing draft copy in a fixed entry format. Because data may be available in bits and pieces from various sources, the system will accept partial and extremely incomplete data as the database evolves. Partially complete records can be flagged if necessary so that they do not appear in tables or maps until they are more complete.

GSMODS is intended to put as few constraints on the user as possible. It is designed specifically to be used for the manipulation of metallic mineral occurrence data, but could be easily modified to accept data more useful to assessments of non-metallic resources. Specific data items are not required for each entry; the user can enter as much or as little data as he feels will be useful for his project. Flexibility and efficiency are the prime goals of this system. Comments regarding the enhancement of these goals are appreciated by the system designer.

Hardware Requirements

The following hardware is required to run the complete GSMODS system:

1. IBM PC, XT, AT, PS/2 (has not been tested), or close compatible with at least 320K RAM, high-capacity disk drive (such as a hard disk drive or removable-cartridge disk drive), parallel printer port, and serial port

2. Printer with parallel interface

3. GTCO Digi-Pad 5 digitizer (any size) with 16-button cursor

    -or-

    Calcomp 9000 or 9100 digitizer (any size) with 16-button cursor and Universal Formatter Option

4. Hewlett-Packard plotter (models 7470, 7475, 7550A, 7570A, 7585/7586, 7595/7596) or equivalent plotter capable of recognizing Hewlett-Packard Graphics Language commands

The system outlined above is the minimum necessary to run GSMODS. Additional hardware which will enhance the utility of the system includes the following:

1.   Additional system memory. 512-640K RAM total is recommended

2.   Numeric co-processor. Installation of an 8087, 80287, or 80387 (whichever is appropriate for the processor in the computer) speeds up the sorting process

3.   A second serial port. Allows alternation between digitizer and plotter without having to switch the cables on the serial port

4.   Graphics display. A graphics display (CGA or EGA compatible) allows complete maps to be generated using the combination of GSMODS and GSMAP/GSDRAW (see Chapter 6, Combining GSMODS with GSMAP and GSDRAW)

5.   Hewlett-Packard 75xx plotter. Although the 74xx model plotters will work with GSMODS, they are not capable of generating filled symbols, are limited to small paper sizes, and must be run at slower communication speeds due to their limited buffer space

6.   Removable-cartridge disk drive. Allows creation of large databases and makes backing-up the databases easier and faster

Software Requirements

In addition to the GSMODS distribution disks, the following software is required to run the complete GSMODS system:

1.   MSDOS or PCDOS version 2.0 or later

2.   Revelation, release G; either the complete package or the Run-Time system. Revelation is a commercial database management system available from Cosmos, Inc., 3633 136th Place S.E., Bellevue, Washington, 98006. The Run-Time version of Revelation is only capable of running existing applications such as GSMODS. It does not include the tools to build or modify applications programs. Nor does it include documentation describing Revelation commands

Plotted output can be enhanced by the use of GSMAP/GSDRAW (Selner, Taylor, and Johnson, 1986) in addition to GSMODS.

Updating a Previous Version of GSMODS

The installation procedure for updating a pre-release version of GSMODS is similar to the procedure for installing the system for the first time. The differences are noted in the installation and configuration instructions, Appendices I and II. The installation procedure will not erase existing data records.

There are new features and changes to this release of GSMODS which enhance the efficiency of the system and which correct problems with some of the pre-release versions. One of the changes to the system requires modification of older data files. This modification only affects plot parameter records which create filled symbols. In the old system, a filled symbol was created by adding 200 to the symbol number of the unfilled version of the same symbol. In the old system, selecting symbol number 5 would create an open symbol; selecting symbol number 205 would create the filled version of symbol number 5. In the current version, filled symbols are selected by preceding the symbol number with an **F**. The filled equivalent of symbol number 5 is selected by specifying symbol number **F5**. Therefore, all plot parameter records with symbol numbers greater than 200 must be changed to the new system by subtracting 200 from the symbol number and adding an **F** (**F**ill designator) before the number.

Another new feature of the current release is the addition of cross-referencing to the databases. Cross-referencing is used to index certain fields in each database so that records can be retrieved to the screen on the basis of their contents as well as by the record key. See Chapter 5 for more information on using cross-referencing. To make full use of the cross-referencing feature, existing data records must be indexed. After installing the new version of GSMODS, follow the instructions in Chapter 5 for building cross-reference indexes.

The Fast Start

Are you in a hurry to begin using GSMODS? If so, here is a list of the minimum steps necessary to get the system running:

1. Read and follow the installation instructions in Appendix I. Both Revelation and GSMODS must be installed on your system.

2. Read and follow the configuration instructions in Appendix II. GSMODS must be configured to match your computer hardware setup.

3. Start GSMODS by entering the following command at the DOS
    prompt:

REV {accountname}

> This command is explained in the installation
> instructions. You can browse through the system by
> making choices from the Main Menu. Help is available
> from any entry screen field by pressing the **F1** function
> key.

There is an index at the end of this documentation for those
who prefer to read about portions of the system as they need
them.

The Slower Start

For a more traditional approach to learning to use GSMODS,
read Chapter 2 if you are unfamiliar with the terminology of
computer databases, and then read Chapter 3 for a more specific
description of the GSMODS system. Chapters 4 through 6 can be
read as the need arises. They are arranged in the order in which
the data are normally processed: Chapter 4 describes the process
of getting data into the system, Chapter 5 describes making
changes to existing data, and Chapter 6 describes the process of
producing reports and plots. These three chapters, along with
the appendices, contain most of the reference material for the
GSMODS system. Chapter 7 contains a description of the back-up
and restore facilities. Understanding and using these facilities
is a must once the volume of data in the system exceeds about 2
records. Re-entering information because of a failed disk is not
very efficient. Finally, Chapter 8 contains most of the tabular
material in this document in one place for quick reference.

Acknowledgments

The author has benefited from many discussions with R. B.
Taylor and G. I. Selner concerning the mineral resource
assessment process and the design of microcomputer-based
application programs. A preliminary mineral resource assessment
database system, GS MRDS (Taylor, Selner, and Johnson, 1986),
formed the basis for the initial design of GSMODS. Thanks are
also due to Taylor for providing the Deposit Type coding scheme
used in GSMODS. The map projection routine used in the
digitizing and plotting programs was modified from code
originally written by M. E. Gettings (USGS). The clipping
algorithm used in the GSMODS plotting program was modified from
an example in Foley and Van Dam (1983). Finally, many examples
of RBASIC code published in Revelation Hotline (formerly RevTech)
by Analyst Research Co., Longview, WA have been useful in the
development of GSMODS.

Chapter 2. DATABASES, RECORDS, FIELDS, AND VALUES

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General Principles

A database system is nothing more than a collection of related pieces of information. The structure of the database system reflects the relationships between the pieces of information contained in the database. A database manager is a software tool which allows the user to define the structure of the database and which provides the user access to the database. A database system can be regarded as the electronic equivalent of a standard office file cabinet. Individual databases within the system can be thought of as electronic equivalents of the drawers in the file cabinet. The database manager performs the functions of a file clerk. The database manager chosen to implement the GSMODS system, REVELATION, is a commercial product of Cosmos, Inc., Bellevue, Washington. A copy of REVELATION, release G, is required to run GSMODS.

The GSMODS system consists of 8 interconnected databases. Each database has two names, an english name used throughout most of this documentation such as Locality database, and a system name such as MD.DATA. The 4 major databases are: Locality database, MD.DATA (contains all information that is specific to a particular site or area of interest); Reference database, MD.REF (contains bibliographic references which may contain information concerning several locations); Reporter database, MD.USER (contains data which are specific to the user of the system and data which rarely change from record to record); and Area Outline database, MD.AREA (contains the location data defining the outlines of district-type records). In addition, there are 4 secondary databases: System Setup database, MD.SYS (contains system configuration information); Report Parameter database, MD.REPORT (contains user-defined parameters for tabular report generation); Plot Parameter database, MD.PLOT (contains user-defined parameters for map overlay generation); and User-defined Symbol database, MD.SYM (contains user-defined plot symbol definitions).

Within each database in the system, the information is divided into records. A record is the electronic equivalent of a file within a file cabinet. Each record in the Locality database, MD.DATA, contains all the information that applies to a specific site or area of interest. Thus, each mine, deposit, occurrence, mining district, or mineralized area. which is considered as a distinct location by the user will be represented in the Locality database by a single record. Similarly, all of the information concerning a single bibliographic reference will be contained in one record in the Reference database, MD.REF; all of the information concerning a single reporter and the current project will be contained in one record in the Reporter database, MD.USER; and all of the geographic location information obtained from the digitizer for a district or area record in the Locality database will be contained in one record in the Area Outline

database, MD.AREA.

Each record is subdivided into fields. A field may contain a single character, such as a Y or N to indicate whether there has been production from a deposit, it may contain a word or several words such as a description of a tectonic setting, or it may contain several paragraphs of description of some aspect of the deposit. The information that is entered into a field, whether it is a single character or an entire page, is called a value. Most fields in the GSMODS system may only contain a single value. Whether the value is a character or a page, a single-valued field contains one value which can only be accessed by the database manager as a complete unit. Other fields, however, are intended to contain lists. These are called multi-valued fields. Within a multi-valued field, each item in the list is a separate value and is separately accessible by the database manager. The definitions of the fields, their lengths, their acceptable data types, and their relationships to each other make up the structure of the database. The complete structure of each of the databases in the GSMODS system is detailed in Appendices V through XII. A brief summary of the information in each database follows:

Summary of Databases Contained in the GSMODS System

Database: MD.DATA, Locality database
Purpose: Each record contains the descriptive information pertaining to one mine, prospect, occurrence, district, or mineralized area. Contains header information about the reporter, the name of the occurrence, the location, and the date of the most recent information update. Also contains information about the type of deposit, the mineralization, the host rocks and associated igneous rocks, and a list of references.

Database: MD.REF, Reference database
Purpose: Each record contains a single bibliographic reference including authors, date, and complete citation.

Database: MD.USER, Reporter database
Purpose: Each record contains the descriptive information pertaining to one reporter or one project locality. Contains the reporter's name and affiliation as well as the default state and country to be inserted in each data record.

Database: MD.AREA, Area Outline database
Purpose: Each record contains the locality information (in the form of linked lists of latitude/longitude pairs) pertaining to one district or mineralized area.

Database: MD.SYS, System Setup database
Purpose: Each record contains one complete system configuration
            including information on the type of display,
            printer, plotter, and digitizer in use.

Database: MD.REPORT, Report Parameter database
Purpose: Each record contains a complete description of a
            tabular report to be sent to the printer or an
            output file. There are fields which allow setting
            titles, headers, and footers at each level of the
            report as well as extensive formatting controls.
            Selection of data records for output as well as
            sorting of the data records are controlled by
            fields in this database.

Database: MD.PLOT, Plot Parameter database
Purpose: Each record contains a complete description of a map
            to be drawn on the plotter. Header information in
            each record sets the boundary of the plot, scale,
            tick marks, and location on the paper. Additional
            fields control the plotting of data symbols,
            location labels, and area outlines.

Database: MD.SYM, User-defined Symbol database
Purpose: Each record contains a description of a single, user-
            defined plot symbol. Facilities are included for
            defining both simple line figures and polygons
            which can be filled with a solid color.

Chapter 3. GETTING STARTED

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Conventions

Standard type styles and terminology are used throughout this documentation to indicate prompts which are displayed by the computer and information which is typed in by the user from the computer keyboard. Commands which are to be typed are shown on a separate line. Keywords which have special meaning to Revelation or GSMODS are shown in capitals. Other words which are user-defined are shown in lowercase. All words which are shown in uppercase must be typed in uppercase; all other words may contain any mix of upper- and lowercase. Words enclosed in braces ({ }) are optional. Words or symbols that are printed on the screen by the system are underlined in the example commands. For example, the command

:LIST MD.DATA WITH COUNTY EQ "name"

contains three Revelation keywords (LIST, WITH, and EQ) which must be typed in uppercase, two GSMODS keywords (MD.DATA and COUNTY) which must be typed in uppercase, and one user-defined word (name) which can be mixed upper- and lowercase. Each command is "entered" or sent to the system by typing the command in the proper sequence on the computer keyboard and then pressing the **RETURN** key once. This key is in the same position on the computer keyboard as the Return key on a typewriter and may be marked with the word "Enter", the word "Return", or by a broken arrow to the left. When this documentation refers to one of the keys of the computer keyboard, the name of the key is printed in **bold** print. In the command above, the ":" is a prompt character which is printed on the screen by Revelation to tell the user that the system is finished with its last task and is waiting for further instructions.

There are several prompt characters which are used by Revelation and by the operating system (DOS is used here to refer to either PCDOS or MSDOS). In this document, C> is used to indicate a general DOS prompt. The actual DOS prompt which appears on the screen is a function of which disk drive is the current default and how the prompt string is defined. Revelation uses a : or a > prompt. The : prompt is used by Revelation to indicate that it is waiting for any command. The > prompt is used to indicate that Revelation has made a selection from a database (by searching and/or sorting) and is waiting for a command to tell it what to do with the list of selected records. It is most commonly seen after a SELECT command. For more details about Revelation commands, see Chapters 5 and 6. Within GSMODS, prompts consist of either a phrase which describes the information which is needed, or a question. Information requests are terminated with a colon and space for the user to type the information. When the information is complete, it is sent to the system by pressing the **RETURN** key. Questions are usually terminated with a query and can be answered by a single

character followed by pressing the **RETURN** key: **Y** or **y** for a Yes
answer, **N** or **n** for a No answer. Many prompts also contain a
built-in default. For example, the prompt:

Creating New Records (Default = Y) ?

has a default of **Y**. If the user presses the **RETURN** key without
typing an answer to the question first, the system will assume
that the default is what the user wanted and, in this case,
proceed as if a **Y** had been entered.

Data Organization

To most efficiently use any database system, the user must
have a clear picture of the desired end product before attempting
to organize the information to be entered into the system.
Ideally, the user should be thoroughly familiar with the
reporting and plotting capabilities of the GSMODS system before
creating any data records. For beginning users, this is not
possible. An alternative which works well for beginning users is
to create a small number of complete data records including
digitized locations, then generate the desired types of reports
and plots before entering additional data records. Working with
the report and plot generating programs early will assure that
the necessary information is correctly entered in each record.
For example, if a tabular report with text in mixed upper- and
lowercase (figure 17, for example) is desired, it would be a
mistake to enter text into the data records all in uppercase.

The **Site Type** field in the Locality database is important to
the organization of mineral occurrence data (see Chapter 6,
Creating GSMODS reports, and Creating maps and overlays, for
examples of how the contents of the **Site Type** field affects the
products). Organizing mineral occurrence data into districts or
areas with each single-locality record "belonging to" a summary
(district or area) record provides the maximum flexibility in the
end-product reports and plots.

Starting GSMODS

The GSMODS system consists of four main sections and several
secondary sections. There are two main sections for getting data
into the system (from the keyboard and from the digitizer), and
two for getting data out of the system (to the printer and to the
plotter). Before the system can be used, both Revelation and
GSMODS must be correctly installed on the user's computer. See
Appendix I (Installation of Revelation and GSMODS) if this has
not been done. After Revelation and GSMODS have been installed,
GSMODS must be configured for the computer hardware in use. See
Appendix II (Configuring GSMODS) if this has not been done.

This section contains brief descriptions of how to
accomplish each of the functions of GSMODS. For more complete

descriptions of the procedures and possible variations, see
Chapters 4, 5, 6, and 7. Once the system has been installed and
correctly configured, Revelation can be started by entering:

C>REV

or by entering:

C>REV accountname

where accountname is an account name that was defined during
installation. Revelation is case-sensitive; the account name
must be entered exactly as it was entered during installation.
If REV is entered without an account name, the system will ask
for the account name after Revelation has started. If a password
has been specified during installation, the system will prompt
for the password before starting GSMODS.

GSMODS Menu System

GSMODS Main Menu

     When the account has been selected, the system will bring up
the GSMODS Main Menu (figure 1). The heading on the menu
contains the name of the current application (GSMODS 1.01), the
current account (bottom of the box), and the time and date. The
footer for the menu contains information on how to get around in
the system. When the menu first appears, choice number 1 is
highlighted and the first line of the footer gives more
information on the action caused by choice number 1. The
highlight bar can be moved up and down the menu list by the
cursor-up and **cursor-down** keys or by typing the number of any
choice. To make a selection from the menu, highlight the desired
choice and press the **RETURN** key. There are two function keys
which are occasionally used from one of the menus. The **Control-
F5** key (hold down the **Ctrl** key and press the **F5** function key)
will always cause the system to exit GSMODS and return to the
Revelation **:** prompt (called TCL or Terminal Command Level). The
F5 key by itself has no effect within the GSMODS menu system.
The **F9** function key will return to the previous menu if there is
one, or return to Terminal Command Level (TCL) if it is entered
from the Main Menu. To return to GSMODS from Command Level,
enter:

:MODS   -or- :mods

     Choice number 1 on the Main Menu (Edit Locality Data) starts
the data entry or editing process. If number 1 is selected, the
first of four Locality entry screens will appear and the system
will be ready to enter information for the first data record.
Before starting to enter information into the data records,
defaults for the fields which are common to nearly all of the
records should be set. This is accomplished by selecting choice

```
┌─────────────────────────────────────────────────────────────┐
│        GSMODS 1.01 - USGS Mineral Occurrence Database System  │
│                 15:10:19  05 MAY 1987                         │
│                                                               │
│                                                               │
│                1. Edit Locality Data                          │
│                2. Login New Reporter                          │
│                3. Edit References                             │
│                4. Digitize Locations                          │
│                5. Setup Plot                                  │
│                6. Plot a Map                                  │
│                7. Setup Report                               │
│                8. Produce a Report                           │
│                9. Utilities                                  │
│                10. Exit Revelation                           │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
└──────────────────ACCOUNT──────────────────────────────────┘
```

F5=Toggle MAIN/LAST menu   Ctl-F5=TCL   F9=END menu   Retrn=Run menu option
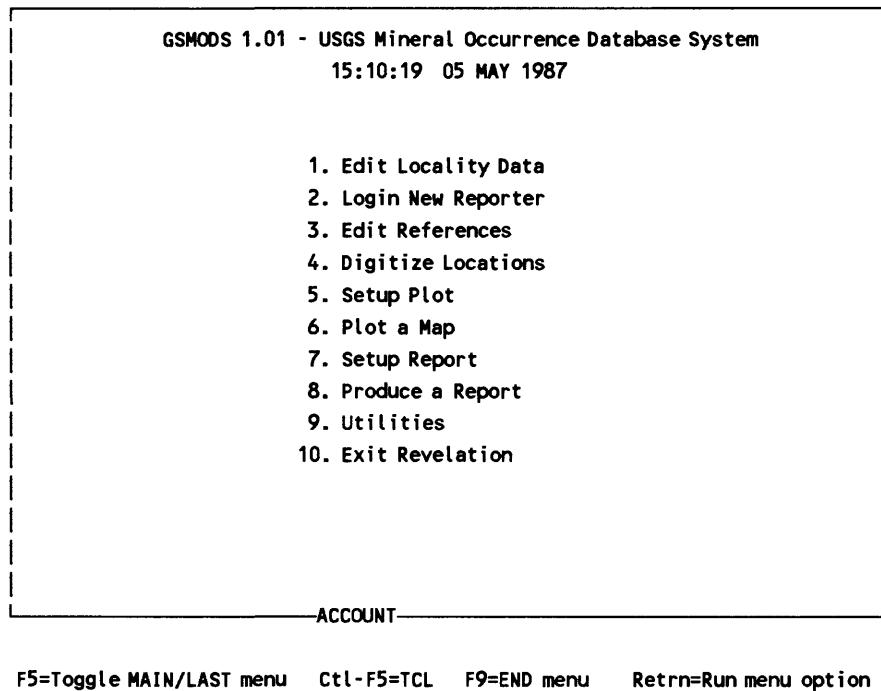
Menu Choice 1: Enter new data records, or edit existing records.

Menu Choice 2: Create or edit default items for new reporter.

Menu Choice 3: Enter new references, or edit existing references.

Menu Choice 4: Enter locations of areas or sites from digitizer.

Menu Choice 5: Setup or modify plot parameters.

Menu Choice 6: Create map on plotter; map must have been setup
               using choice #5.

Menu Choice 7: Setup or modify report parameters.

Menu Choice 8: Create a Report on the Screen, Printer, or to a
               File; must have been setup using choice #7.

Menu Choice 9: Utilities Menu: System variables, Accounts, Back-up,
               Data Transfers

Menu Choice 10: Return to DOS from GSMODS.

Figure 1.   GSMODS Main Menu.

number 2 from the Main Menu (Login New Reporter). To return to
the Main Menu from the Locality data area, enter the word **END** in
the **Record No.** field of the first data entry screen. To get back
to the **Record No.** field if data has been entered in some of the
fields, enter a **!** at any data entry prompt. For more information
on the individual fields in the four entry screens, see Chapter
4, Getting Information In.

Choice number 2 on the Main Menu (Login New Reporter) brings
up the Reporter entry screen. Before information is entered into
the Locality data area, there should be a reporter defined to the
system. Therefore, the first choice that is normally made on the
Main Menu is to Login New Reporter. This entry screen is used to
record information which is needed for each Locality data record,
and which rarely changes. The information entered on this screen
is copied into each Locality data record as the record is
created. The user does not have to re-type this information for
each record. To return to the Main Menu from this screen, enter
the word **END** at any prompt. For more information on the
individual fields in this entry screen, see the section, GSMODS
Entry Screens, p. 20.

Choice number 3 on the Main Menu (Edit References) brings up
the entry screen for the Reference database. This screen is used
to enter each reference citation into a separate record. The
references are then related to the Locality data records by a
reference number. This entry screen is also available at the
References prompt on the Locality entry screen so that references
can be entered as they occur within the resource data. To return
to the Main Menu from the Reference entry area, enter the word
END in the **Reference No.** field. For more information on the
individual fields in the Reference entry screen, see Chapter 4,
Getting Information In.

Choice number 4 on the Main Menu (Digitize Locations) starts
the digitizing program. It is used to enter location information
directly from a map into the database system. To use the
program, a digitizer must be connected to the system and GSMODS
must be configured for the digitizer in use and for the correct
communications parameters (see Appendix II, Configuring GSMODS
and Appendix III, Hardware Installation and Configuration).
Location information can be entered for individual sites (spot
localities) or for lines of any type (area or district outlines,
geologic contacts, faults, political boundaries, etc.). To
return to the Main Menu from the digitizing program before
control has been turned over to the digitizer, enter a **Q** at any
prompt. To return after control has been turned over to the
digitizer, enter a record number of **O**, and then a **Q** or **No** at the
next prompt. For more information on running the digitizing
program, see Chapter 4, Getting Information In.

Choices 5 and 6 on the Main Menu are used to generate maps
on the plotter. Choice number 5 (Setup Plot) brings up the Plot
Parameter entry screen. This screen is used to define each plot
before it is created. The settings and selections made on this

entry screen are stored in the Plot Parameter database so that
the plot can be repeated at any time without having to re-enter
any of the information. Because the information is stored, a
series of similar plots can be quickly generated by copying the
plot record, making the changes that are required for the next
plot in the series, and then running the plot program. To return
to the Main Menu from the Plot Parameter entry screen, enter the
word **END** at the **Plot Name** prompt, or enter a **!** at any other
prompt. After a plot has been defined on the Plot Parameter
entry screen, the plot can be created by selecting choice number
6 (Plot a Map) on the Main Menu. This selection runs the
plotting program which then displays a list of the plots which
have been defined. When a plot is selected from the list, the
program generates the plot without any further action from the
user. To use the program, a plotter must be connected to the
system and GSMODS must be configured for the plotter in use and
for the correct communications parameters (see Appendix II,
Configuring GSMODS and Appendix III, Hardware Installation and
Configuration). To return to the Main Menu from the plot program
before starting a plot, enter a **Q** at any prompt. For more
information on creating plots, see Chapter 6, Getting Information
Out.

Choices 7 and 8 on the Main Menu are primarily used to
generate tabular reports on the printer. The reports can also be
directed to the display screen or to a disk file. Choice number
7 (Setup Report) brings up the Report Parameter entry screen.
This screen is used to define each report format before it is
created. The settings and selections made on this entry screen
are stored in the Report Parameter database so that the report
can be repeated at any time without having to re-enter any of the
information. Because the information is stored, a series of
similar reports can be quickly generated by copying the report
record, making the changes that are required for the next report
in the series, and then running the report program. To return to
the Main Menu from the Report Parameter entry screen, enter the
word **END** at the **Report Name** prompt, or enter a **!** at any other
prompt. After a report has been defined on the Report Parameter
entry screen, the report can be created by selecting choice
number 8 (Produce a Report) on the Main Menu. This selection
runs the reporting program which then displays a list of the
reports which have been defined. When a report is selected from
the list, the program generates the report and passes it to the
selected output device. To return to the Main Menu from the
report program before starting a report, enter a **Q** at any prompt.
For more information on generating reports, see Chapter 6,
Getting Information Out.

Selecting choice number 9 (Utilities) from the Main Menu
brings up a second menu which has five entries (figure 2). The
choices on the Utilities Menu are described in the section GSMODS
Utilities Menu, p. 18. The use of the function keys is the same
as was described for the Main Menu, p. 14. To return to the Main
Menu from the Utilities Menu, press the **F9** function key.

Selecting choice number 10 (Exit Revelation) from the Main Menu terminates the current session of GSMODS and returns control to the operating system.

GSMODS Utilities Menu

The first choice on the Utilities Menu (figure 2), Change System Variables, brings up an entry screen which is used to define the hardware configuration for the system. This information should be filled in when the system is first installed. Subsequent changes will only be needed if the system hardware is changed. Detailed information on configuring the system for specific hardware is contained in Appendix II (Configuring GSMODS). To return to the Utilities Menu from the System Setup entry screen, enter the word **END** at the **Record No.** prompt.

Choice number 2 (User-defined Symbols) on the Utilities Menu brings up the entry screen which is used to create or edit user-defined symbols. User-defined symbols can be created so that the user is not confined to the symbols which are pre-defined by the system. The definition of plot symbols is rather complicated and requires an understanding of the Hewlett-Packard Graphics Language. Detailed information on the symbol definition procedure is contained in Chapter 6, Getting Information Out. To return to the Utilities Menu from the User-defined Symbols entry screen, enter the word **END** at the **Symbol No.** prompt.

Choices 3 and 4 (Back-up Data Files and Restore Data Files) on the Utilities Menu are used to make a copy of the user's data files on a separate disk from the primary data files, and to restore the primary data from the back-up copy if necessary. Data files should be backed up regularly and often. Computer disks do fail! The back-up copy (or copies if you really want to be safe) should be stored in a separate location from the primary data files. Choice number 3 runs the back-up program which copies the current account data files to the disk(s) selected by the user. Choice number 4 runs the restore program which copies one or more files from the back-up disk(s) to the current account data files. Both programs delete existing data files by writing over them; use them carefully. Because the two programs have no knowledge of the account in use, they can also be used to transfer data from one account to another. For more information on using the back-up and restore facilities, see Chapter 7, Archiving and Restoring Information. To return to the Utilities Menu from either program, enter a Q at the first prompt.

Choice number 5 on the Utilities Menu (Build Cross-References) is used to index each of the cross-reference fields for each of the databases. Normally, cross-reference fields are indexed automatically as each record is added to the database. However, if data are imported to a database without being entered from a data entry screen or if a cross-reference index file is damaged, the index file will have to be re-built. This choice

```
+---------------------------------------------------------------+
|                   GSMODS 1.01 - Utilities Menu                |
|                     15:10:40  05 MAY 1987                      |
|                                                               |
|                                                               |
|                1. Change System Variables                     |
|                2. User-defined Symbols                        |
|                3. Back-up Data Files                          |
|                4. Restore Data Files                          |
|                5. Build Cross-References                       |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
+---------------------------------------------------------------+
```

F5=Toggle MAIN/LAST menu   Ctl-F5=TCL   F9=END menu   Retrn=Run menu option
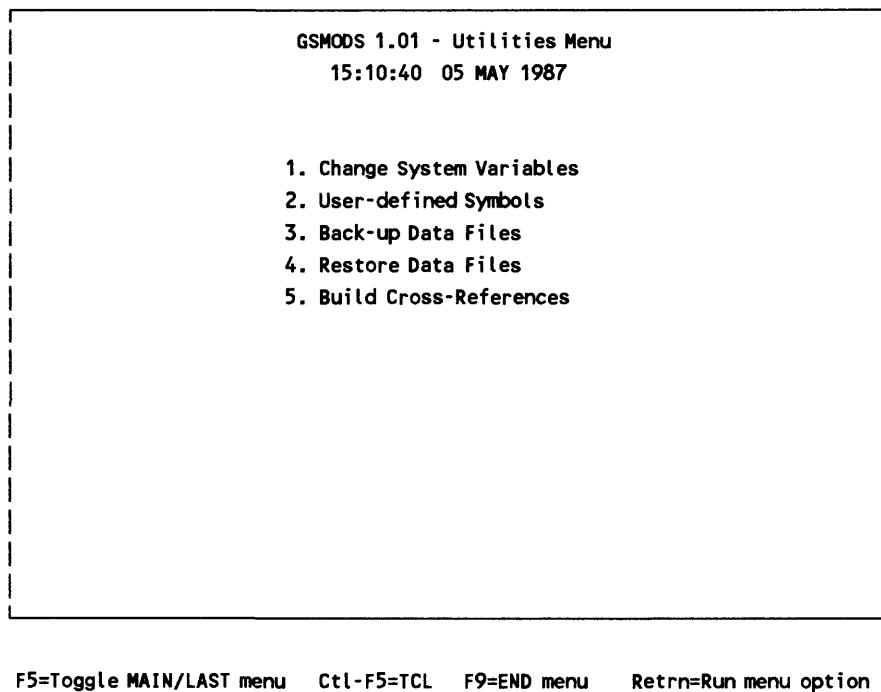
Menu Choice 1: Change Display Colors; Setup Printer, Plotter,
               and Digitizer

Menu Choice 2: Create or Edit User-defined Plot Symbols

Menu Choice 3: Back-up Current Account to another disk or
               directory

Menu Choice 4: Restore Back-up Files to Current Account

Menu Choice 5: Build or Re-build Cross-Reference Indexes for
               each Database

Figure 2.   GSMODS Utilities Menu.

from the Utilities Menu runs the cross-reference building program
which can re-build an index for each of the databases. For more
information on building and using cross-referencing, see the
section in Chapter 5 on Cross-Referencing. To return to the
Utilities Menu from the cross-referencing program, enter a Q at
the first prompt.

GSMODS Entry Screens

     The Reporter entry screen is the one most users encounter
first in the GSMODS system. For this reason, and because it is a
relatively simple screen, the Reporter entry screen will be used
as an example for entering information into any entry screen
within the GSMODS system. Entry screen nuances which are not
applicable to the Reporter entry screen will be covered in detail
as they arise. The Reporter entry screen is reached by selecting
choice number 2 from the Main Menu. The screen appears on the
monitor as an empty form with the cursor in the **Reporter's
Initials** field (figure 3). The information requested on this
form will be stored in a single record in the Reporter database
and will remain unchanged until the user returns to this entry
screen and makes changes.

The Reporter Entry Screen

     What is the purpose of this data entry screen? The
information entered onto this screen does not change very often,
but is useful for every record. To prevent the user from having
to type this information into every record that is entered, it is
entered once on this screen and automatically copied to every
Locality data record as the data record is created. Of course,
this information can be changed at any time and data records
created after the change will automatically contain the new
information. This technique of propagating information that does
not change from record to record is used throughout the GSMODS
system to enhance data entry efficiency. The reporter referred
to here is the person responsible for the contents of the data
records, not necessarily the person doing the actual data entry.
Also, the location requested here is the default location for
data records, not the location of the reporter.

     The first item requested is the reporter's initials. The
reporter's initials form the key to this record. The key is the
name of the record used by the database manager to find the
record quickly whenever it is needed. The reporter's initials
are used as the key so that the user can recall the record easily
without having to type his entire name each time he wants to make
a change to the record. Notice that there is room for 25
characters in the space provided for initials. What happens if
the reporter has more than 25 initials that he wants to use?
Probably a ridiculous idea, but it illustrates an important
point. No problem, just type them all in. Try it! This is an
important feature of this database system. The 25 spaces only

```
 _____
|                                                        |
|                  GSMODS - Reporter entry screen        |
|                                                        |
| 1 Reporter's Initials     _____          |
| 2 Given Names             _____             |
| 3 Last Name               _____             |
|                                                        |
| 4 Affiliation             _____|
|                                                        |
| 5 State                   __                            |
| 6 Country                 _____       |
|                                                        |
|                                                        |
|                                                        |
|                                                        |
|                                                        |
|                                                        |
|                                                        |
|                                                        |
|_____|
```

Figure 3. GSMODS Reporter entry screen.

define the amount of the field that is <u>displayed</u>. They do not
define the maximum size of the field. In fact, the maximum size
of every field in the database system is the same, 65,535
characters. So, have no fear of typing data beyond the displayed
length of any field on any entry screen, just keep typing and the
display will act as an electronic tickertape, always keeping the
part of the field that you are currently working on in view.
Terminate entry of the reporter's initials by pressing the **RETURN**
key.

The next field is for the reporter's given names. Enter all
parts of the reporter's name in their proper sequence, except the
last name. Again, terminate with the **RETURN** key. The next field
requests the reporter's last name; however, suppose a mistake has
been made in spelling the first name. The **cursor-up** key may be
used to go back to a previous field. The **cursor-left** and **cursor-right** keys may be used to position the cursor within the field.
Used alone, the cursor keys move the cursor one character left or
right; used with the **control** key, the cursor keys move the cursor
one word left or right. In addition, the **home** key takes the
cursor to the beginning of the line, and the **end** key takes the
cursor to the end of the line. The **delete** key deletes one
character at a time. Typed characters will replace the existing
characters in the default (replace) mode. The **insert** key will
toggle between replace and insert mode. When in insert mode,
typed characters will be inserted between the character indicated
by the cursor and the character to the left of the cursor. When
the corrections are complete, pressing the **RETURN** key or the
cursor-down key from anywhere within the field will enter the
entire corrected field; it is not necessary to place the cursor
at the end of the entry before pressing the **RETURN** key. Enter
the reporter's last name and affiliation. The use of an
abbreviation for the affiliation is not recommended. Most
abbreviations are not as widely recognized as most reporters
would like to think.

The first four fields of this entry screen make no
restrictions on the data that can be entered. Any mix of upper-
and lowercase characters and any length of input are allowed.
The **State** field is a little different. Although it will allow
entry of either upper- or lowercase, it will convert all
lowercase letters to uppercase. In addition, it will only accept
valid U.S. Postal Service (USPS) abbreviations for states (see
Appendix I, the States database, for information about changing
the list of acceptable state codes for localities outside the
United States). Try a non-existent abbreviation such as WZ.
Data checking on entry is another feature of GSMODS that is used
wherever possible. Many typographical errors are caught at the
entry stage while the information is still easily available. The
state and country information requested in the next two fields is
the default location of the data records that are to be entered,
<u>not</u> the location of the reporter.

After entering the default country, the prompt "No. of Entry to Change (RETURN to File Record)?" will appear at the bottom of the screen. This is called the Change prompt throughout this documentation. There is one more chance to check the entries before storing them. If any of the numbers 1-6 are entered at this point, the system will allow corrections to be made to the field with that number before storing the record. When the information is correct, press the **RETURN** key at the Change prompt to store the data record just created and clear the Reporter entry screen. To return to the Main Menu, enter the word **END** at the **Reporter's Initials** prompt. The information just entered in the Reporter entry screen becomes the default information for all subsequent data records which are created with the Locality data entry system (choice number 1 on the Main Menu). To change the default information at any time, return to the Reporter entry screen and either create a new record by entering a different set of initials and filling in the screen again, or enter the same initials and modify the information in the current record. In either case, the most recently accessed record will become the new default. Other options which are available at the Change prompt include: **END** (or **Ctrl-E**) to return to the Main Menu without filing the current record, **TOP** (or **Ctrl-T**) to clear the screen and start over from the top without filing the current record, and **DELETE** (or **Ctrl-D**) to delete the current record.

Map Projections

This version of GSMODS contains transformation routines for only one map projection, Universal Transverse Mercator (UTM). Maps published by the U. S. Geological Survey (USGS) and most other publishers are labeled with the projection used to produce the map. Maps in the 1:250,000 series of the Army Map Service use UTM projections, as do the 1:63,360 (15') maps of Alaska published by the USGS. Overlays produced by GSMODS will match these base maps to the accuracy of the plotting device. The 1:62,500 (15') and 1:24,000 (7 1/2') maps of the lower 48 states published by the USGS use a Lambert Conformal Conic or Polyconic projection. GSMODS overlays will not match these base maps exactly. However, because the plotting system includes a capability for independently adjusting the north-south and east-west scales, the UTM projection can be used to match these maps closely enough for most purposes, particularly when plotting at large scales.

Special Characters and Terms

There are a number of characters and terms which have special meanings within Revelation and/or within GSMODS. The following table contains a list of the most commonly used special functions as well as a description of what they do and where they are used. A complete list of special functions is included in the Quick Reference section (Chapter 8).

Control Keys:

Key	Active[1]	Description
left[2]	All	Move cursor left one character
right[2]	All	Move cursor right one character
^left[2]	All	Move cursor left one word
^right[2]	All	Move cursor right one word
up[2]	Entry	Move cursor to previous field
down[2]	Entry	Move cursor to next field (same as RETURN)
Home	All	Move cursor to beginning of line
End	All	Move cursor to end of line
Ins	All	Toggle between insert and replace modes
Del	All	Delete character at current cursor position
backsp[2]	All	Delete character to the left of current cursor position

Function Keys:

Key	Active	Description
F1	Entry	Display HELP screen for current field
F7	All	Clear from cursor to beginning of line
F8	All	Clear from cursor to end of line

Special Characters:

Char.	Active	Description
>	GS-Entry	Go to top of next screen of entry set
<	GS-Entry	Go to top of first screen of entry set
!	GS-Entry	File record
!	GS-Program	Re-start program from beginning
-	GS-Entry	Stop copying defaults from previous record to current field
Q	GS-Program	Stop program, return to menu

[1]Notes:

All	Usable at any prompt
Entry	Usable at any prompt on any entry screen in the Revelation system unless otherwise noted
GS-Entry	Usable at any prompt on GSMODS entry screens only
GS-Program	Usable at most prompts in GSMODS programs

[2]Keys

    Left, right, up, down, and backspace are commonly
        represented by arrows on the computer keyboard
^   Hold down control key while pressing the next key

Chapter 4. GETTING INFORMATION IN

4. GETTING INFORMATION IN

Chapter 4. GETTING INFORMATION IN

The previous chapter (Getting Started) described the entry of data into the Reporter entry screen. The rest of the data entry screens in the system operate much the same as those on the Reporter entry screen. This chapter summarizes the rules for data entry and describes the Locality entry screens, the Reference entry screen, and the use of the digitizing program.

On-screen data entry and editing

The relationship between the space allotted to each field on the entry screen and the stored field length was described in the previous chapter. The line which is displayed on the entry screen for each field only defines the amount of the field that is <u>displayed</u>. It does not define the maximum size of the field. The maximum size of every field in the database system is the same, 65,535 characters.

Cursor Control Keys

The cursor control keys work in the same manner for all entry screens. The **cursor-up** key (up arrow on some keyboards) may be used to return to a previous field. The **cursor-left** and **cursor-right** keys (left and right arrows) may be used to position within the field. Used alone, the cursor keys move the cursor one character left or right; used with the **control** key, the cursor keys move the cursor one word left or right. In addition, the **home** key takes the cursor to the beginning of the line, and the **end** key takes the cursor to the end of the line. The **delete** key deletes one character at a time. Typed characters will replace the existing characters in the default (replace) mode. The **insert** key will toggle between replace and insert mode. When in insert mode, typed characters will be inserted between the character indicated by the cursor and the character to the left of the cursor. Pressing the **RETURN** key or the **cursor-down** key (down arrow) from anywhere within the field will enter the entire field; it is not necessary to place the cursor at the end of the entry before pressing the **RETURN** key.

Detailed descriptions of the type of information which is entered in each field are given in Appendices V through XII (Database Definitions) and are available interactively by entering a ? or by pressing the **F1** key at any field prompt.

Data Entry Defaults

Many fields on the data entry screens do not have defined defaults for the first record; however, when the entry screen for the next record comes up, the value entered in the first record becomes the default for the next record. If the data records are arranged carefully, default values for many fields can be copied

from record to record, reducing the number of data entry keystrokes required.

Data Validation

Most data entry fields make no restrictions on the data that can be entered. Any mix of upper- and lowercase characters and any length of input are allowed. Where the choices of entry into a field are limited or where the format of the entry is fixed, input data are verified as they are entered (the **State** field on the Reporter information screen is an example of a verified field). Many typographical errors are caught at the entry stage while the information is still easily available. The help screens for each field and Appendices V through XII specify the valid entries for fields which are verified at entry.

Multi-valued fields

Fields which have **01>** at the end of the prompt (such as **Commodities** on the first Localities entry screen) are multi-valued (list) fields. These fields can hold a list containing any number of values. As each value is entered, it is terminated by pressing the **RETURN** key. The system will continue to prompt for another value as long as values are entered. When an empty value is entered (**RETURN** key only), the system will proceed to the next field. The default system also works with multi-valued fields. If the previous record has 5 values in a multi-valued field, all 5 can be copied to the current record by repeatedly pressing the **RETURN** key. If only the first two values are desired in the current record, copy them with two **RETURNS**, then instead of pressing **RETURN** for the third, enter a **hyphen (-)**. This will terminate the default system for the current field. Any time that a blank field is desired and a **RETURN** alone would enter a default value, enter a hyphen instead.

Text Fields

There are several "text" fields (for example, the **Production Description** field on the second Locality entry screen) throughout the GSMODS system. These fields are identified by having more than one line of display space on the entry screen. Any amount of information may be entered in a text field; if typing continues beyond the end of any line of the display space, the display tickertapes to the left to show the current portion of the entry. To start typing on the next line, press the **RETURN** key. The field will continue to accept data until either a blank line is entered, or a **RETURN** is entered on the last display line. The system will then display as much as possible of the text by filling the display area completely using automatic word-wrap. Text that does not fit in the display area is retained in the record and is available for printed reports and for editing via the Change prompt.

Special Characters

Entering **END** (or **Ctrl-E**) at any prompt on any entry screen will terminate data entry without storing the current record and return to the GSMODS menu. Similarly, entering **TOP** (or **Ctrl-T**) will clear the screen and return to the top of the first screen of the data entry screen set without storing the current record and entering **DELETE** (or **Ctrl-D**) will delete the current record from the database.

Several special characters can be entered into data fields on all data entry screens in the system. The hyphen which terminates automatic defaulting, and the **?** or **F1** key which call up the appropriate help screen have already been mentioned. To copy the contents of a field from the previous record if the field does not have automatic defaulting, enter a **"** or press the **F2** function key. To skip the rest of a data entry screen and go on to the next screen without having to press the **RETURN** key for each field, enter a > at any prompt. Similarly, to return to a previous screen of the same record, enter a < at any prompt. Finally, if there is no more information to enter for the current record, entering a **!** in any field will store the information which has been entered in the current record, and return to the first screen for entry or editing of a new record.

Change Prompt

After entering information into the last field on an entry screen, the prompt "No. of Entry to Change ?" will appear at the bottom of the screen. This is called the Change prompt throughout this documentation. Entering a number corresponding to one of the fields on the screen will allow changes to be made to that field. If the field is single-valued, the cursor will move to the first character position in the field specified. The cursor keys may be used to position within the field as described on p. 26. When editing is complete, press the **RETURN** key from anywhere within the field to enter the entire corrected field; it is not necessary to place the cursor at the end of the entry before pressing **RETURN**. When the correction has been entered, the system will return to the Change prompt awaiting the number of another field to change.

If the number of a multi-valued field is entered at the
Change prompt, the system prompts for the number of the value to
be changed.   The following options are available:

Entry	Description
n	Edit value **n** in the multi-valued field list
ADD	Add another value to the multi-valued field
CLEAR	Delete all of the values in the multi-valued field
F	Display the next multi-valued window in a Forward direction
B	Display the next multi-valued window in a Backward direction
Dn	Delete a single value from the multi-valued field where **n** is the number of the value to delete
In	Insert a value between existing values in the multi-valued field where the new value is inserted before value **n**

When editing of the value is complete, press the **RETURN** key to
enter the corrected value; it is not necessary to place the
cursor at the end of the value before pressing **RETURN**.   When the
correction has been entered, the system will return to the "Which
Value" prompt awaiting the number of another value to edit in the
same field.   To return to the Change prompt, press the **RETURN** key
again.

To go on to the next screen (if one exists) from the Change
prompt, enter a > or press the **RETURN** key.   To return to a
previous screen (if one exists) of the same record from the
Change prompt, enter a <.   If there are no more changes to be
made to the current record, enter a ! at the Change prompt to
store the current record (complete with all modifications) and
return to the first screen for entry or editing of another
record.   If the current screen is the last screen for the record
(or the only screen), pressing the **RETURN** key at the Change
prompt has the same effect as entering a !.

The Locality Entry Screens

Most mineral occurrence data are entered into the system on
the Locality entry screens.   There are four screens for each data
record.   Selecting choice number 1 from the Main Menu brings up
the first screen (figure 4) after a few seconds delay.

Locality Screen #1

The cursor starts at the **Record No.** field and a prompt at
the bottom of the screen gives the default number of the next
record.   Records are numbered sequentially as they are entered
into the system.   If a new record is to be entered, pressing the
RETURN key will insert the default number into the **Record No.**
field.   If an existing record is to be edited, the number of the

```
 ┌──────────────────────────────────────────────────────────────────┐
 │                                                                    │
 │   1 Record No.    _____    GSMODS Entry Screen    1 of 4 │
 │                                       2 Entry Date _____          │
 │     Reporter      _____              │
 │                                                                    │
 │   6 Site Name     _____              │
 │   7 Synonyms 01>  _____                      │
 │   8 Record Type   __        9 Site Type _     10 Information Source _│
 │                                                                    │
 │  11 District 01>  _____                      │
 │  12 County   01>  _____                      │
 │  13 State      __           14 Country  _____│
 │                                                                    │
 │  15 2° Quad Name   01> _____                         │
 │  16 Primary Quad   01> _____ 17 Scale _____  │
 │                                                                    │
 │  18 Latitude      _____     19 Longitude    _____      │
 │  20 Loc. (Sec,T,R) _____       │
 │                                                                    │
 │  21 Commodities 01> _____                              │
 │                                                                    │
 │  22 Deposit Type 01> _____ 23 Deposit Code _____│
 │                                                                    │
 └──────────────────────────────────────────────────────────────────┘
```

Figure 4. GSMODS Locality entry screen 1 of 4.

```
 ┌──────────────────────────────────────────────────────────────────┐
 │                                                                    │
 │     Record No.   _____          GSMODS Entry Screen      2 of 4    │
 │                                                                    │
 │     _____                               │
 │                                                                    │
 │   3 Production Code  _                                             │
 │   4 Production Description:                                        │
 │                                                                    │
 │     _____    │
 │                                                                    │
 │   5 Host Rock Name  01>  _____         │
 │   6 Host Lithology       _____         │
 │   7 Host Rock Age        _____   8 Mineralization Age _____│
 │                                                                    │
 │     Associated Igneous Rocks:            10 Age  _____      │
 │   9 Description 01>  _____          │
 │                                                                    │
 │  11 Tectonic Setting:                                             │
 │                                                                    │
 │     _____    │
 │                                                                    │
 │                                                                    │
 │                                                                    │
 └──────────────────────────────────────────────────────────────────┘
```

Figure 5. GSMODS Locality entry screen 2 of 4.

record to be edited can be entered at this time.

The next field is the **Entry Date**. The default date is given at the bottom of the screen. In this case, the default is the current date from the system clock (You <u>do</u> set the system clock when you start-up the computer, don't you?). After the date is entered, the system reads the most recently accessed reporter information record from the Reporter database and adds the reporter's name and affiliation to the data record.

The system then prompts for the name(s) for the site being described. Enter the most common or most recent name for the site in the **Site Name** field and all other important names in the **Synonyms** field. If information is being entered for a district or area, enter the district or area name in the **Site Name** field.

The next three fields (**Record Type, Site Type**, and **Information Source**) contain coded information and are required fields which are necessary to provide search and sort capabilities. Acceptable codes for these fields can be found in Appendix V or on the on-line help screens for each field (press the **F1** function key at the appropriate field). These fields are followed by two fields (**District** and **County**) for storing the name(s) of the mining district (if one exists) and the county where the site is located. Records which describe a single site will normally only have one district name and one county name. Records which describe an extensive area may include several districts and may be located in several counties. After the last county name is entered, the system will fill in the **State** and **Country** fields from the information in the most recently accessed reporter information record.

There are several fields which can conveniently be skipped at this stage if the locations are to be entered later from the digitizer (a procedure which is strongly recommended). The **2° Quad Name, Primary Quad, Latitude**, and **Longitude** fields of each record will be automatically filled as the locations are digitized; there is no need to enter them at this time.

The location field (**Loc. (Sec,T,R)** on the screen) is a free-form field for entering cadastral location information. The information may be entered in any format which is useful to the user. The location field is followed by the **Commodities** field which is used to store a list of the commodities which have been produced or which are important at the location. Commodities are usually entered as chemical symbols unless a mineral or industrial material is the actual final product (mica or clay, for example). The list is usually entered with the most important commodity first and the least important last.

The last two fields on the screen, **Deposit Type** and **Deposit Code** are linked. For each entry in the **Deposit Type** field there should be a corresponding entry in the **Deposit Code** field. The information which is entered in the two fields is the same, the first is entered as a text description of the type of deposit

being described and the second is entered as a code for that type
of deposit. The text description can be in any form which makes
sense to the user; the codes come from a list included with this
document (see Chapter 8, Quick Reference, or Appendix V, Locality
Database). The deposit coding scheme is included as a suggestion
only. However, if all users use this coding scheme, then
searches for deposit types over large databases will be possible.
This type of search is not possible over the text fields because
each reporter uses different words to describe the same types of
deposits.

Locality Screen #2

     Pressing the **RETURN** key at the screen 1 Change prompt brings
up the second of the four screens (figure 5). The record number
and name of the site are displayed at the top of this and all
subsequent screens. Information for the second screen is entered
in the same fashion as the first screen. The **Production Code**
field accepts a single character (Y, N, or U) which indicates
whether there has been any production from the site. It is used
to sort the records which have recorded production from those
which don't. The **Production Description** field is the first of
several "text" fields on the Locality entry screens. It is a
free-form field in which information about the production at the
site or area may be formatted in any way which is useful to the
user.

     The next three fields form a linked set which are used to
describe any host rocks which are known at the site. For each
entry in the **Host Rock Name** field, the system will prompt for a
lithologic description and an age for the host rock. Use the
formal name for the host rock if there is one, otherwise use a
complete informal name (Ksgw is not meaningful to those who work
in other areas). A list of suggested abbreviations for ages to
be used in all three of the age fields on this screen is
available on the help screens (press the **F1** key at the
appropriate field). A range of ages is indicated by entering the
upper and lower limits (for example, Camb-Dev). Multiple ages
which are discontinuous may be separated by commas (for example,
Camb, Miss).

     After entering the last host rock description, the system
will prompt for the age of mineralization and then prompt for a
description and age for any associated igneous rocks which are
known from the area. The igneous rock description and age also
form a linked set. Any number of igneous rocks may be described.
The final field on the second screen, **Tectonic Setting**, is a text
field which is used to describe the tectonic setting of the
surrounding area when it was mineralized or when the deposit was
formed.

Locality Screen #3

Pressing the **RETURN** key at the screen 2 Change prompt brings up the third screen (figure 6) which operates in the same manner as the second screen. The third screen includes a multi-valued field for listing the ore minerals which are important at the site being described and three text fields. Full mineral names should be entered in the **Ore Minerals** field with the most important mineral listed first and the least important last. **Non-ore mineralogy** typically includes descriptions of gangue minerals and alteration. **Ore controls** may be structural, chemical, or other means of probable control of ore deposition. The **Deposit Description** field contains a general description of the deposit and all other important information which does not fit in any other field of the record.

Locality Screen #4

Pressing the **RETURN** key at the screen 3 Change prompt will bring up the fourth and final screen (figure 7). **Search Keys** is a free field to be used for any keywords on which the user would like to be able to easily search or sort the database. The **Miscellaneous Comments** field is generally used for information which does not seem to fit anywhere else in the record. This is a good field to use for speculations on deposit origin, similarity to other known deposits, etc. The **Personal or Proprietary Notes** field is included for the reporter's private use. When data records are copied into master regional files, this field is not included.

The only new type of field on this screen is the **References** field. The **References** field is a multi-valued field which stores the reference number of each of the applicable references for the current record. When a number is entered, the system goes to the Reference database, checks that a reference by that number exists, and displays the first line of the reference so that the user can check that it is the correct reference.

It is also possible to add references to the Reference database at this point. Entering an a in the **References** field instead of a reference number will bring up the Reference entry screen (figure 8). The Reference entry screen is similar to the other data entry screens in the system. More information about the Reference entry screen can be found in the section, Reference Entry Screen, p. 35. If the **RETURN** key is pressed at the Reference entry screen Change prompt, the system prompts for another reference number. Entering **END**, instead of a reference number, returns the system to the fourth screen of the data record and inserts the number of the reference just added to the Reference database into the list of references for the current data record.

```
+---------------------------------------------------------------+
|                                                               |
|    Record No.    ____          GSMODS Entry Screen    3 of 4  |
|    _____                            |
|                                                               |
|   3 Ore Minerals  01> _____                    |
|                                                               |
|   4 Non-Ore Mineralogy:                                       |
|        _____      |
|                                                               |
|                                                               |
|                                                               |
|   5 Ore Controls:                                             |
|        _____      |
|                                                               |
|                                                               |
|                                                               |
|   6 Deposit Description:                                      |
|        _____      |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
+---------------------------------------------------------------+
```

Figure 6. GSMODS Locality entry screen 3 of 4.

```
+---------------------------------------------------------------+
|                                                               |
|    Record No.    ____          GSMODS Entry Screen    4 of 4  |
|                                                               |
|    _____                            |
|                                                               |
|   3 Search Keys  01> _____                           |
|                                                               |
|   4 Miscellaneous Comments:                                   |
|        _____      |
|                                                               |
|                                                               |
|   5 Personal or Proprietary Notes:                            |
|        _____      |
|                                                               |
|                                                               |
|   6 References                                                |
|   01> ____  _____      |
|                                                               |
|                                                               |
|                                                               |
|                                                               |
+---------------------------------------------------------------+
```

Figure 7. GSMODS Locality entry screen 4 of 4.

Finally, at the Change prompt for the fourth data entry screen, pressing the **RETURN** key will file the complete record and return the user to the first screen ready to enter another record. To return to the Main Menu, enter **END** instead of a record number.

The Reference Entry Screen

Selecting choice 3 (Edit References) from the Main Menu brings up the Reference entry screen directly (figure 8). This is the technique of choice if several references are to be entered at one time. The Reference entry screen can also be accessed from the fourth Locality entry screen (see description on p. 33). Creating a formatted reference list from the Reference database is discussed in Chapter 6, under the section on the FORM command. The previous chapter (Getting Started) described the entry of data into the Reporter entry screen in detail. The Reference entry screen fields are similar to those on the Reporter entry screen.

When choice number 3 is selected from the Main Menu, or when an **a** is entered in the Locality screen **References** field, the Reference entry screen appears with the cursor at the **Reference No.** field and a prompt at the bottom of the screen showing the next default reference number. Pressing the **RETURN** key will enter the default reference number and move the cursor to the **Authors** field. To make changes to an existing reference, enter the number of the reference to change in the **Reference No.** field. The authors of the reference are entered in the exact format that would be used for a formal citation. No terminal punctuation should be entered into this or the following field.

After the names of the author(s) are entered, the year in which the reference was published is entered in the **Reference Year** field followed by the remainder of the formal citation: title, publisher, volume, pages, etc. in the **Citation** field. If a **RETURN** is entered from the Change prompt, the system prompts for another reference number. Entering **END** instead of a reference number, returns control to the Main Menu. More detailed information about the Reference entry screen fields is available in Appendix VI, Reference Database, and by entering a **?** or pressing the **F1** function key at the field in question.

```
+------------------------------------------------------------+
|                                                            |
|                 GSMODS - Reference Entry Screen            |
|                                                            |
| 1 Reference No.       _____                  |
|                                                            |
| 2 Authors :                                                |
| _____ |
|                                                            |
|                                                            |
| 3 Reference Year:  ____                                    |
|                                                            |
| 4 Citation:                                                |
| _____ |
|                                                            |
|                                                            |
|                                                            |
|                                                            |
|                                                            |
|                                                            |
+------------------------------------------------------------+
```

Figure 8.   GSMODS Reference entry screen.

Entering Location Information from the Digitizer

The easiest and most accurate way to get location information into the database is by using the digitizer. Selecting choice number 4 from the Main Menu starts the digitizing program. To make use of this program, a GTCO Digi-Pad 5 or a Calcomp 9000 or 9100 digitizer must be attached to a serial port. See Appendix III (Hardware Installation and Configuration) for instructions on setting up the digitizer and connecting it to the system. See Appendix II (Configuration) for instructions on configuring the system for the digitizer in use.

The first prompt from the Digitizing program is <u>Are you creating any new records (default = Y)?</u>. If you have previously entered information about the locations to be digitized into the database, answer NO (**n** or **N**). If you answer NO, the system will check to see that each record exists as you enter the record number. If it doesn't exist, an error message will be generated. This facility helps to catch inadvertent errors in keying in the record numbers. If you answer the question YES (**y** or **Y**, the default), this check is omitted. At this prompt, or at any subsequent keyboard prompt, entering an **!** will re-start the digitizing program at the beginning; entering QUIT (**q** or **Q**) will terminate the digitizing program and return control to the Main Menu.

The next prompt is <u>Do you want a printed listing (default = Y)?</u> It is a good idea to keep a printed record of what you have done, particularly as you are getting used to the system (see example, figure 9). The default answer is YES. If you choose to have a printed listing, be sure the printer is connected and turned on. If the printer is not available, the program will wait patiently for you to turn it on, but will not warn you that it is waiting. It can be quite frustrating trying to figure out why it is not working. The program then requests the name of the primary quadrangle, which is the quadrangle that you are going to digitize from. Enter the name exactly as you would like it to appear in the Locality data records; it will be automatically inserted into the data record for each location that you digitize. Then the program prompts for the Scale of the primary quadrangle. Enter the denominator of the fractional scale without punctuation. For example, enter **24000**, not **1:24,000** or **1/24000** or **24,000**. The scale is used for several tasks. First, the scale is automatically entered into the Locality data record for each location digitized. Second, the scale of the map being digitized is checked to see that it corresponds to the scale entered here. If not, an error message is generated. The north-south scale and the east-west scale of the map are also checked to see if they are reasonably close to the same. These checks catch many errors in the entry of map corners. The program then prompts for the name of the 2° quadrangle containing the locations to be digitized. This entry is also automatically inserted in each Locality data record as the locations are being digitized.

GSMODS Digitizing Program

Entering New Records

Primary Quadrangle = Poncha Pass
Scale   = 1:24000
2° Quadrangle   = Montrose

	Latitude	Longitude
NW Corner	38 25 00 N	106 02 30 W
SW Corner	38 22 30 N	106 02 30 W
SE Corner	38 22 30 N	106 00 00 W
NE Corner	38 25 00 N	106 00 00 W

Actual Scale of Map

N - S	1:24009
E - W	1:23945

Record No.	Latitude	Longitude
100	38 24 .70 N	106 2 10.97 W
100	38 24 15.92 N	106 2 31.82 W
	38 23 43.47 N	106 2 31.38 W
	38 23 43.81 N	106 1 50.18 W
	38 24 16.14 N	106 1 50.64 W
	38 24 15.92 N	106 2 31.82 W

Area = .39 sq. mi.

Figure 9. Sample output from GSMODS digitizing program.

The program next prompts for the latitude and longitude of the corner points of the area to be digitized. It first requests the latitude and longitude of the northwest corner. All latitudes must be entered in the following format: **dd mm ss N** or **dd mm ss S**; all longitudes must be entered in the following format: **ddd mm ss E** or **ddd mm ss W**. The map may be oriented in any direction on the digitizer as long as the corners are always entered in the correct order, northwest, southwest, southeast, northeast. The program defaults assume that the area to be digitized is rectangular; once the latitude and longitude of the northwest corner have been entered, it offers those values as defaults for the latitude of the northeast corner and the longitude of the southwest corner, etc. These defaults can be overridden if the area is not rectangular by entering the correct values for each corner. The program then asks if the corner values are correct. The user has one last chance to check that the data has been entered correctly.

A message is then printed on the bottom of the screen to be sure that the digitizer is connected and turned on. After being sure that the digitizer is on, press **RETURN** and the system will check and clear the communications line. This takes about 15 seconds. If a message to enter the northwest corner on the digitizer does not appear within about 15 seconds, there is something wrong with the communications between the computer and the digitizer. Sometimes it can be fixed by re-starting the system (press the **Ctrl**, **Alt**, and **Del** keys simultaneously to re-boot the computer) and re-entering the digitization program by re-starting Revelation and GSMODS and then selecting choice number 4 from the Main Menu. Do not turn off the digitizer during the process. If it still does not work, check the settings of the digitizer and the system configuration settings (see Appendices II and III, p. 118, 122) one more time. Often the problem is in having different baud rates on the digitizer and in the system configuration file.

When the message to enter the corner on the digitizer comes up, be sure that the map is attached to the digitizer so that it cannot move and so that the corners to be used for registration are within the active area of the digitizer. From this point until all the data has been entered for this section of map, the program is run entirely from the digitizer.

Place the digitizer cursor over each corner of the map, in the correct sequence, and press the **0** key on the cursor keypad. The system will beep at each entry, and after the fourth corner, the location entry instructions will appear on the screen (figure 10).

Digitizer Keypad Use

For each location, first enter the record number from the cursor keypad, terminating the number with the **A** key. On the digitizer, the **A** key acts as a **RETURN** key. A site (single point)

```
 _____
|                    GSMODS Digitizing Program                   |
|  Instructions:                                                 |
|                                                                |
|  Enter data on digitizer as follows:                          |
|                                                                |
|  1.  At long beep enter record number, max. 5 digits.         |
|          Terminate record no. with "A" key.  (Record No. = 0 to exit) |
|                                                                |
|  2.  At double beep enter data using keys as follows:         |
|              0 key - Point on line or area                     |
|              1 key - Single point, center point of area, or last point on line |
|              2 key - Last point, close area                    |
|              C key - Continue previous line with same record number |
|              D key - Delete most recent line or area from this record |
|                                                                |
|  Center point of an area and its outline are entered          |
|     separately with the same record number.  Please be        |
|     sure to enter both.                                        |
|                                                                |
|  Record No.            Latitude              Longitude         |
|        100          37 17 27.04 N         88 17 25.91 W        |
|  Area = 49.86 sq. mi.                                          |
|                                                                |
|  Enter Record No.                                              |
|                                                                |
|_____|
```

Figure 10.   GSMODS digitizing entry instructions.

location is then entered by placing the cursor over the point on
the map and pressing the **1** key. The system automatically
calculates the latitude and longitude of the point and stores
that information in the data record. Area records (mining
districts, mineralized areas, etc.) should be entered into the
system twice. Enter first as if it was a site location by
entering the record number and then digitizing a central locality
in the area with the **1** key. This places a latitude/longitude
pair and the quadrangle information into the Locality data
record. Then enter the record number again and digitize the
outline of the area. This is done using the **0**, **1**, and **2** keys.
Move the cursor along the outline of the area pressing the **0** key
as often as you'd like a point to appear on the outline,
terminating with either the **1** key or the **2** key.

The **1** key terminates the outline at the point where the key
is pressed. It is used when digitizing a line which does not
close upon itself within the current map segment. It is possible
to continue the line on another map segment at a later time.
Just be sure that the segments of the line are digitized in the
order and in the direction in which the line is to be drawn. The
2 key terminates and closes the outline by adding the first point
digitized to the end of the line. Thus, the **2** key should be
pressed at the last point just before returning to the starting
point.

The **C** key on the cursor keypad is used to continue a line or
area outline from one map to another. A portion of the line or
area outline is digitized from the first map and the line is
terminated with the **1** key at the map boundary. When the adjacent
map is being digitized, the record number is entered again and
then the **C** key is entered to tell the system to continue
digitizing a previously entered line. The line is then continued
using the **0** key and terminated again with the **1** key. The line
can be followed through as many maps as necessary, so long as the
maps are digitized sequentially along the line. If the line
terminates on a map other than the original map, or if the line
does not form a closed area, terminate the final line segment
with the **1** key. If the line returns to the original map sheet
and forms a closed area, terminate the line with the **2** key just
as if the entire area had been included on a single map.

If an area outline continues on more than one map, the
system does not add subsequent map names, beyond the first, to
the data record. To assure a correct data record, the user must
add the subsequent map names and scales to the data record in the
Locality database.

If a record number is entered more than once without the **C**
key being used, the system will assume that you want to add
another line or area to an existing record. This technique can
be used to enter a series of unconnected area outlines which are
all described by the same Locality data record, a series of
placer deposit areas, for example. It can also be used to
digitize a series of lines (e.g. county outlines) by creating a

dummy record in the Locality database and then digitizing all of the lines using the same record number.

When the outline of an area is digitized, the system checks the record number in the Locality database to be sure it is an area record (first character of the **Record Type** field equals 'A'). If it finds that the record is a site record, the system beeps four times to indicate that an error has been made and then asks if you really meant to digitize a line for a site record. As the points and areas are digitized, the latitude/longitude pairs are displayed on the screen and listed on the printer. At the termination of a closed area outline, the system also displays the area that has been enclosed in square miles. To terminate entry from the current map segment, enter a record number of **0**. The system will then ask if you'd like to digitize locations from another map. A YES answer will re-start the program at the beginning; a NO answer will return control to the Main Menu.

Error Recovery

There are several methods of error recovery from the digitizer. Single site locations can always be corrected by simply re-digitizing the record. The new information will overwrite any previous information. If a record number is entered and then the **D** (Delete) key on the digitizer keypad is pressed, the most recently entered line or area outline for that record will be deleted. To delete all of the lines or areas from a record, continue to enter the record number and the **D** key until the system informs you that all of the line segments have been deleted for that record. Thus, you can delete and re-digitize area outline information.

Chapter 5. CHANGING EXISTING INFORMATION

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Modifying Information on the Data Entry Screens

To make changes to the information which is stored in any of the databases in the GSMODS system, the record which is to be changed must be displayed on the data entry screen. The data entry screen is displayed by making the same choice from the Main Menu that would be made to enter information into a new record. If a Locality record is to be changed, select choice number 1 from the Main Menu; if a reference is to be changed, select choice number 3, etc. When the correct data entry screen is displayed, the system will prompt for the key to the record to be changed (**Record No.**, **Reference No.**, etc.). Instead of pressing the **RETURN** key to create a new record, enter the key of the record to be changed. The key will be a number for records in the Locality database, Reference database, User-defined Symbol database, and System Setup database; a record name for records in the Report Parameter database and the Plot Parameter database; or the reporter's initials for records in the Reporter database.

If the key to an existing record is entered, the system will retrieve the record and display the first screen of information as it currently exists in the database. The system will then prompt for the number of a field to change (the Change prompt). Entering a number corresponding to one of the fields on the screen will allow changes to be made to that field. If the field is single-valued, the cursor will move to the first character position in the field specified. If the number of a multi-valued field is entered, the system prompts for the number of the value to be changed. Any of the cursor control keys, special characters, or functions described in Chapter 4, On-screen data entry and editing, may be used while editing an existing record.

Finding the Record to Change - Cross-Referencing

If the key to the desired record is not known, in most cases the database can be searched for the record on the basis of information which is stored in the record. The search can be based on any information which is stored in a cross-referenced (indexed) field. The Area Outline and System Setup databases have no cross-referenced fields. The following fields are cross-referenced in the remaining databases:

Locality database:

                    SITE   *
                    SYNONYMS   *
                    DISTRICT
                    COUNTY
                    2DEG.QUAD
                    PRIME.QUAD
                    COMMODITIES
                    DEP.CODE
                    ORE.MINERAL
                    KEY
                    REF.NO

Reference database:

                    AUTH.NAME   *
                    REF.CIT   *

Reporter database:

                    USER.LNAME   *

Plot Parameter database:

                    NSCALE   *
                    NOTES   *

User-defined Symbol database:

                    NAME   *
                    NOTES   *

Report Parameter database:

                    COMMENT   *
                    TITLE   *

*   Indicates a primary cross-reference field (see next section)

     Retrieving an existing record on the basis of cross-
referenced information is accomplished by entering a search
parameter at the record key prompt. All search parameters begin
with a \ (backslash) character.

Primary Cross-Reference Fields

     Primary cross-reference fields are indicated in the list
above by an * after the field name. These are the fields which
are most often used to retrieve records. The only database which
has fields which are secondary cross-reference fields is the
Locality database. Retrieving records on the basis of the
contents of secondary cross-reference fields is described in the

following section. To retrieve a record by all or part of the
contents of a primary cross-referenced field, enter a \ followed
by the word or words to be used for the search into the key field
instead of a record key. For example, the following search
parameter may be entered into the **Record No.** field of the
Locality database.

\Amethyst

This entry in the **Record No.** field will cause the system to
search for all records in the database which have the word
Amethyst in either the **Site Name** field or the **Synonyms** field.
The system ignores case for this search, so the entry may be made
in either upper- or lowercase. There is no space between the \
and the search word(s). If only one record is found, the system
will display the first page of the record for editing. If more
than one record is found, the system will display a list of the
records which match the search parameter on the Cross-reference
screen, so that the correct record can be selected.

More than one word can be specified for the search by
separating the words by a space. For example,

\amethyst mine

This entry in the **Record No.** field of the Locality database will
cause the system to search for all records with both the word
amethyst and the word mine in the **Site Name** or the **Synonyms**
field. Retrieving by cross-referenced information works
similarly for the other databases which have primary cross-
reference fields. Entering a \ followed by the word or words to
search for will cause the system to search for records which have
all the words specified in any of the primary cross-reference
field(s). If more than one word is specified, all records which
contain the search words in any combination of the primary cross-
reference fields will be selected; the words do not all have to
be in the same field.

Secondary Cross-Reference Fields

Fields other than the **Site Name** and **Synonyms** fields can also
be searched to find a specific record in the Locality database.
These secondary cross-reference fields are shown in the list
on p. 45 without an * following the field name. To use a
secondary cross-reference field for the search, the system ID for
the field must be specified in addition to the search word(s).
System IDs for each cross-referenced field are given in the list
on p. 45 as well as on the Locality database help screens. For
example, to find a record which has Au entered in the **Commodities**
field, enter

\commodities=Au

at the **Record No.** prompt. There are no spaces in this entry. If

only one record is found, the system will display the first page
of the record for editing. If more than one record is found, the
system will display a list of the records which match the search
parameter on the Cross-reference screen, so that the correct
record can be selected. More than one word can be specified for
the search by separating the words by a space. For example,

\commodities=Au Ag

will cause the system to find all records with both Au and Ag in
the **Commodities** field.

The Cross-Reference Screen

     If more than one record in the database meets the criteria
specified in the cross-reference search parameter, the system
will display a Cross-reference screen to allow the user to select
the desired record or to further refine the search. The Cross-
reference screen lists one line of information for each record
which meets the criteria. At this point, the user has the choice
of selecting one of the records on the list to edit, paging
further through the list if it is continued on further pages,
refining or changing the search, or returning to the data entry
screen without making a selection. The Cross-reference screen
can also be reached by entering a \ without a search word. This
technique is useful if the user needs to use one of the search
options other than searching for whole words. The following
options are available from the Cross-reference screen:

Entry	Action
RETURN	Pressing the **RETURN** key (NEW-LINE on screen option list) returns to the data entry screen without selecting a record
#	Entering a number from the selection list returns to the data entry screen and displays the selected record
PG#	Entering **PG** followed by a page number displays another page of the selection list. There is no space between the command, PG, and the page number
new word	If a new word is entered, the system searches for the new word in the current cross-reference field(s). This is not a subset function; the entire database is searched for the new word. If the item being searched for is a number (such as a reference number), entering a new number at this prompt will cause the system to try to select that number record from the selection list (see #, above). To force the system to accept the number as a new search parameter, enter **key=n**, where n is the desired number

R   Refine the search. The system prompts for a new
                     word and searches for the new word within the
                     previously selected set of records. This is a
                     true subset function
S   Sub-string search. The system will search for any
                     cross-referenced word which contains the
                     specified sub-string and display a list of
                     records which contain the word
(.)   Continue the sub-string search. Entering a period
                     after a sub-string search list is displayed
                     will continue the search to the next cross-
                     referenced word which contains the specified
                     sub-string and display a list of records which
                     contain the word

     As an example of the use of sub-string searching, suppose
the user wants to find a record with a site name of "Cotopaxi
Mine", but is not sure of the correct spelling. From the Cross-
reference screen, the user can enter an **S** and then when the
system prompts for the search string, enter **cot**. The system will
search the index file for the first index word which contains the
string **cot**. If the first index word it finds is "scotch", it
will list all of the records which have the word "scotch" in the
Site Name or **Synonyms** fields. The user can then enter a period
and the system will search for the next index word which contains
the string **cot** and display a list of those records. The user
continues to enter a period at each list until the list of
records with "Cotopaxi" in their name appears.

Building Cross-Reference Indexes

     Normally, cross-reference indexes are built and maintained
automatically by GSMODS. Each time a record is entered into the
system, GSMODS adds the record to each of the appropriate
indexes. If a record is deleted from the data entry screen or if
the record is modified so that cross-reference fields are
changed, the system will update the appropriate indexes so that
cross-referencing will select the correct record(s). There are,
however, several ways in which the cross-reference indexes can
become corrupted relative to the databases. If data records are
modified or deleted from Revelation Command Level (TCL), the
cross-reference indexes will not be updated. If information is
added to a database by any method other than entry from a GSMODS
entry screen, the indexes will not be updated. Finally, if this
version is being installed as an update to a previous version of
GSMODS, data records which were entered prior to the update will
not be indexed.

     To re-build a cross-reference index which is incorrect for
any reason, select choice number 5 from the Utilities Menu (the
Utilities Menu is accessed by selecting choice number 9 from the
Main Menu). This will start the cross-reference building
program. The program will list the databases which can be cross-
referenced in GSMODS and prompt for a selection. If one or more

database indexes are known to be incorrect, but not all of them, select one of the databases to re-build from the list. The program will then delete the current cross-reference index list for the selected database and re-build it from the data records. The process can be quite time-consuming if there are many records in the database. The program keeps a running list on the screen of its progress. When it finishes with the first database, it will prompt for another selection. Continue until all the known incorrect database indexes have been re-built. Return to the Utilities Menu by entering a q or Q at the database selection prompt.

To re-build all of the database indexes, press the **RETURN** key at the database selection prompt. The program will cycle through all of the databases on the list and then return to the Utilities Menu.

Record Counters

Several databases within the GSMODS system automatically provide a default record number for the next record to be added to the database (the Locality database, the Reference database, and the User-defined Symbol database). Occasionally, the default sequence number is not the number of the next available empty record. The numbers can become different either by the user creating a record and not entering any data into it, or by the user deleting one or more of the most recent records from the system (see p. 52). No difficulty is caused to the system by having unused record numbers; extra storage space is not consumed and extra time is not required to search or sort the database. However, the default record number can be easily reset to any value. To increase the default record number, intentionally leaving unused record numbers, enter the desired number in the record key field and proceed with the entry of the rest of the information for that record. To decrease the default record number, enter an = followed by the desired number in the record key field. For example, entering

=100

in the **Record No.** field of the Locality database will reset the default record number to 100. A space is not allowed between the = and the number.

Special Characters and Terms

There are a number of characters and terms which have special meanings within Revelation and/or within GSMODS. The following table contains a list of the special functions which are useful for modifying data within the system as well as a description of what they do and where they are used. For a more complete list of special functions, see Chapter 8, Quick Reference.

Control Keys:

Key	Active[1]	Description
left[2]	All	Move cursor left one character
right[2]	All	Move cursor right one character
^left[2]	All	Move cursor left one word
^right[2]	All	Move cursor right one word
up[2]	Entry	Move cursor to previous field
down[2]	Entry	Move cursor to next field (same as RETURN)
Home	All	Move cursor to beginning of line
End	All	Move cursor to end of line
Ins	All	Toggle between insert and replace modes
Del	All	Delete character at current cursor position
backsp[2]	All	Delete character to the left of current cursor position

Function Keys:

Key	Active	Description
F1	Entry	Display HELP screen for current field
F7	All	Clear from cursor to beginning of line
F8	All	Clear from cursor to end of line

Special Characters:

Char.	Active	Description
>	GS-Entry	Go to top of next screen of entry set
<	GS-Entry	Go to top of first screen of entry set
!	GS-Entry	File record
-	GS-Entry	Stop copying defaults from previous record to current field
\	Key	Denotes beginning of cross-reference search parameter
=	Key	Reset default record number

Special Terms for use with Which Value? prompt:

Term	Alternate	Description
B	PgUp	Display previous multi-valued window
F	PgDn	Display next multi-valued window
ADD	^A	Add values to end of multi-valued list
CLEAR	^C	Delete all values from multi-valued window
Dn	^D	Delete value no. n from multi-valued window
In	^I	Insert new value before value no. n in multi-valued list

[1]Notes:

All	Usable at any prompt
Entry	Usable at any prompt on any entry screen unless otherwise marked
GS-Entry	Usable at any prompt on GSMODS entry screens only
Key	Usable at record key prompt only

[2]Keys

    Left, right, up, down, and backspace are commonly represented by arrows on the computer keyboard

^   Hold down control key while pressing the next key

Copying and Deleting Records

There are two Revelation commands, COPY and DELETE, which are useful for making changes to GSMODS databases. Revelation commands are used from Revelation Command Level (TCL). To get to TCL from the GSMODS system, first return to the Main Menu. Pressing the **F9** function key from the Main Menu will place the system at Command level. The Revelation TCL prompt is a colon. Any Revelation command can be entered from the colon prompt (see Appendix IV, Revelation Command Summaries). Cross-reference indexes will not be correct if database records are changed with Revelation commands such as COPY or DELETE. See Building cross-reference indexes, p. 48, for instructions on how to re-build the indexes.

The COPY Command

The COPY command is used to duplicate a record within a database. It is entered from the Revelation Command Level colon prompt. The COPY command consists of the word COPY followed by the name of the database containing the record to copy, followed by the key of the record to copy, followed by the word TO:,

followed by the key to use for the new copy of the record. Each item or word in the command line must be separated from the previous item by a space. For example, the following command:

:COPY MD.PLOT quad1 TO: quad2

will duplicate the record with a key of quad1 in the Plot Parameter database and give the new record a key of quad2. After this command, there will be two identical records in the Plot Parameter database with keys of quad1 and quad2. This technique is useful for making a series of plot parameter records or report parameter records which only differ in a small number of fields. For example, if a series of plots is desired from a number of adjacent quadrangles using the same parameters for each plot, a series of plot parameter records could be created by entering all of the information for each plot from the keyboard at the Plot Parameter entry screen. The procedure could be improved by using the GSMODS default system so that the contents of each field in records after the first would not need to be re-typed; however, the user would still have to press the **RETURN** key for each field of each record. A faster method would be to create the first record on the data entry screen and then use the COPY command to make as many copies as desired. The user can then go back to the data entry screen and make the required changes to each new record, perhaps only changing the latitude and/or longitude limits and the notes for each record.

The DELETE Command

The DELETE command is used to erase records completely from the system. To delete a record, enter the word DELETE followed by the system name of the database which contains the record, followed by the key(s) of the record(s) to delete. Each item or word in the command line must be separated from the next item by a space. For example, the command:

:DELETE MD.DATA 25

will erase record number 25 from the Locality database.

CAUTION - Be sure that you want to permanently eliminate the record before deleting it; there is no un-delete facility in the Revelation system.

To delete more than one record in the same database, list all of the record keys on the same command line separated by spaces. The command:

:DELETE MD.PLOT quad1 quad2 quad3 quad4

will erase four records from the Plot Parameter database. The DELETE command is most useful for erasing area outline records which have been incorrectly digitized. There is no entry screen for the Area Outline database (MD.AREA); information is entered

directly from the digitizing program. There are facilities in the digitizing program to correct errors, but at times it is easier to delete a record and start over. The records in the Area Outline database have the same key (**Record No.**) as the corresponding record in the Locality database. For more information about the DELETE command, refer to the Revelation User's Guide.

Changing Location Information

     There are several methods of making changes to information which is entered from the digitizer. Individual records can be deleted from the Area Outline database (the drastic solution, see DELETE command, above). Single site locations can be corrected by re-digitizing the record. The new information will overwrite any older information in the Locality database. If a record number is entered while running the digitizing program and then the **D** (Delete) key on the digitizer keypad is pressed, the most recently entered line or area outline for that record will be deleted. To delete all of the lines or areas from a record, continue to enter the record number and the **D** key until the system informs you that there is no more data for that record. This allows you to re-digitize area outline information if an error has been made. See Chapter 4 for more information on running the digitizing program.

Modifying Locations in the Area Outline Database

     CAUTION - The following technique is intended for experienced Revelation users only! Proceed at your own risk.

     The Area Outline database is not intended to be accessed directly by the user; there is no data entry screen for MD.AREA. Access should be limited to the facilities provided in the digitizing system and to deleting records from Revelation Command Level. However, if the user is familiar with either of the Revelation editors, EDIT or TEXT, minor changes can be made directly to records in the Area Outline database. Each record contains three fields, the record key (which is identical to the record key for the corresponding Locality database record), a multi-valued **Latitude** field, and a multi-valued **Longitude** field. Latitudes and longitudes are stored in decimal degrees. Each value in the **Latitude** field is paired with the same value number in the **Longitude** field to create a location pair. Do not add or delete a value from one field without also adding or deleting the corresponding value in the other field. Multiple lines in the same record are separated by a location with a latitude of 100° and a longitude of 0° which serves as a flag to the plotting program to mark the end of each line.

Chapter 6. GETTING INFORMATION OUT

6. GETTING INFORMATION OUT

Chapter 6. GETTING INFORMATION OUT

Selection Criteria (Searching and Sorting)

The concept of selecting a certain records from a database and sorting them into a user-defined order before they are displayed or printed is used with most methods of getting information out of the GSMODS system. Several Revelation commands and the GSMODS reporting and plotting systems use selection criteria for searching and sorting. The general syntax of selection criteria will be discussed in this section, details which are specific to each command or field will be discussed in the appropriate section.

In general, selection criteria consist of WITH clauses and/or BY clauses. Any number of either type of clause may be included.

The WITH Clause

A WITH clause is used to select records to be printed or displayed. WITH clause syntax is:

WITH fieldname operator value

Each clause must begin with the word WITH and must contain one of the following operators:

EQ   Equal
NE   Not equal
GT   Greater than
GE   Greater than or equal
LT   Less than
LE   Less than or equal
NOT   Not (precedes other operators as a modifier)
CONTAINS   Selects record if string <u>contains</u> value as a sub-string
[]   Same as CONTAINS
]   Selects record if string <u>begins with</u> value
[Selects record if string <u>ends with</u> value

Fieldname is the name of one of the fields in the database being searched (see Appendices V through XII for complete lists of field names), and value is what the field is being compared with. If the value is not a number, it must be enclosed in single or double quotation marks. Field names and operators must be entered in uppercase. Clauses must be separated by the word AND or the word OR. For example, the following are all valid WITH clauses which could be used with the Locality database:

WITH COUNTY EQ 'Pueblo'
WITH RECORD LT 10
WITH REC.TYPE EQ "SM" AND WITH COUNTY EQ "Hillside"
WITH REC.TYPE ['M'

Selection is case sensitive; the first example above will only find records with <u>Pueblo</u> in the COUNTY field. Records with <u>pueblo</u> or <u>PUEBLO</u> in the COUNTY field would not be selected.

The BY Clause

The BY clause is used to sort the records before they are printed or displayed. The syntax of the BY clause is:

BY fieldname
BY-DSND fieldname

where fieldname is a valid name of one of the fields of the database being searched (see Appendices V through XII for complete lists of field names). Field names must be entered in uppercase. The default sort is in ascending ASCII order. If a descending order sort is desired, BY-DSND can be substituted for BY. If more than one BY clause is included in the selection criteria, the first BY clause becomes the major sort definition. Each succeeding BY clause defines a successively more minor sort.

Creating GSMODS Reports

The GSMODS system provides considerable flexibility in the final appearance of tabular reports. This flexibility requires the user to make many choices for each type of report that is to be produced. To avoid the tedium of having to answer the same questions repeatedly each time another version or another copy of the same report is to be produced, the choices are all entered into a data entry screen. Each set of selections is named and saved so that the report can be reproduced at any time by re-running the report program. In addition, similar reports can be easily generated by copying the selections from one report parameter record to another and then making whatever changes are necessary. Selection number 7 on the Main Menu brings up the first screen of the Report Parameter entry system (figure 11). The report generating program is run by entering selection 8 at the Main Menu.

Entering Report Parameters

There are several concepts which are used throughout the Report Parameter entry screen to allow maximum flexibility in the choice of style or type of report to be generated. These general concepts will be discussed before getting into the descriptions of fields within the Report Parameter entry system.

|key| Syntax

There are several special character strings which can be included in any major or minor title, header, or footer description. These special strings are used to insert data from the system, data from the data file, or to insert long strings of identical characters (such as spaces or periods). All of these options are set off from the regular text by vertical bars, using the | character. The vertical bars and the included special character string are replaced by the information specified under each description below.

|fieldname| Replaced by the contents of the specified field from the current record. If |fieldname| occurs in the major section title, header, or footer, the current record is the record selected by the **Major Title/Header Sel Criteria** field or the **Major Footer Selection Criteria** field. If |fieldname| occurs in the minor section title, header, or footer, the current record is the current data record. Fieldname must be a defined dictionary field name in the Locality database (MD.DATA), and must be in uppercase letters.

|+fieldname| Similar to |fieldname| except that the entire contents of the selected field is converted to uppercase.

|@fieldname| Similar to |fieldname| except that fieldname must be a symbolic field defined in the dictionary of MD.DATA. See the Revelation Documentation for a description of symbolic fields (symbolic fields are not available to users of Run-Time versions of Revelation).

Note: |+fieldname| and |@fieldname| can be combined as long as the + precedes the @. |+@fieldname| is acceptable, |@+fieldname| is not.

|PN| Replaced by the current page number.
|DT| Replaced by the current system date in a mm/dd/yy format.
|Rn,x| Replaced by the character **x** repeated **n** times.

Example: |R20, | (would be replaced by 20 spaces)

Page Repeating

Repeat fields are used to determine on which pages to print each line of the titles, headers, and footers of the report. Entry of an **A** or **a** in these fields causes the line to be printed on all pages of the report. Entry of an **F** or **f** in these fields causes the line to be printed on the first page of the report only. Entry of an **L** or **l** causes the line to be printed on the last page of the report only. If these fields are left blank, the line will be printed on all pages of the report.

Line Formatting

     Format fields are used to format individual lines or groups
of lines of the report. If these fields are left blank, the line
or lines will be left-justified in column 1.

Formatting Options are:

C   Center the line or lines on the output page
Ln   Left-justify the line or lines starting in column n
Rn   Right-justify the line or lines n columns from the
              right edge of the output page
ALn   Alternately justify the line or lines n columns from
              the left on odd numbered pages and n columns from
              the right on even numbered pages
ARn   Alternately justify the line or lines n columns from
              the right on odd numbered pages and n columns from
              the left on even numbered pages
Wn,m,i   Word-wrap the line or lines between columns n and m.
              Line breaks only occur at spaces between words. It
              is possible to concatenate values from multi-valued
              fields such that no spaces are included. The system
              sees the result as a single word. If a word is
              longer than the space allotted for a word-wrap
              column, the system will break the word at the right
              edge of the column. i specifies the number of
              spaces to indent the first line. i may be positive
              or negative. A positive i generates a normal
              paragraph indent. A negative i with an equal, but
              positive n generates a hanging indent paragraph (see
              Description column, figure 17, for an example with
              hanging indent paragraphs).

Examples: L5
           AR
           W5,80,-5
              (Creates an 80 character per line paragraph with a
                 5 character hanging indent)

Separators

     Separator fields contain a string which is used to control
what is output after each report item. For example, the **Title
Separator** controls what is output after the title and before the
next portion of the report. Each character of the string is used
to create a single output line. Each output line is the full
width of the report output (see **Char. per Line** field). Each
string character is repeated for an entire line. Thus, a string
which consists of a single hyphen (-) will give a single line
separator which consists of an entire line of - characters.   Any
character may be repeated for the entire line except a **B** or **b**. **B**
and **b** are special characters which are used to generate a blank
line. If this field is left blank, the system will output the
next portion of the report on the line immediately following the

last line of the current item.

Examples: b   (single blank line)
            b_b   (blank line, solid line [underscore], blank
                       line)
            *   (single line of *'s)

The Report Parameter Entry Screens

There are three data entry screens for Report Parameters
(see figures 11, 13, and 15). Figures 12, 14, and 16 show
completed Report Parameter entry screens which were used to
produce a sample report (figure 17). Instructions for entering
data into other system entry screens also apply to the report
system (see Chapters 3 and 4). The special characters -, >, <,
and ! all have the same meanings as in the Locality entry system.
Help screens are available for each field by entering a ? or by
pressing the **F1** function key.

Report Parameter Screen #1

The first field on the first screen of the Report Parameter
entry system is the **Report Name** field (figure 11). Entering an
existing name displays the existing parameter information which
can then be modified and stored again. Entering a new name
creates a new Report Parameter record. The next field, **Comments**,
is generally used for a more detailed description of the report
being defined. This field has no effect on the creation of the
report, but is useful for documenting the type of report and its
use. The next seven fields on screen 1 of the Report Parameter
entry system control the overall aspect of the report. Entering
a number in the **Max. Records** field limits the output to the
number of records given. This is useful for testing purposes.
Once the report definition is satisfactory, clear this field so
that the system will process all of the records in the Locality
database. The **Page Break w/i Record** field controls whether the
system will split a record between consecutive pages or force
each record to be complete on a page. The **Output Device** field
controls the destination of the completed report and the **Char.
per Line** and **Line per Page** fields control the size of the output
page. The **Printer Init** and **Printer Reset** fields are used to
setup and reset the printer so that the appropriate font or type
size is used for the report.

Most of the rest of the fields on the Report Parameter entry
screens are used to enter various titles, head notes, and footers
which are to appear on the report. Each entity (title, head
note, etc.) has a field which describes the contents of the
entity, a field which controls where it is repeated on the
report, a field which controls the formatting of the entity, and
a field which defines the separator which is to follow the entity
in the report. The entities which are defined on the first
screen can be repeated on each page of the report. The first of

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│     GSMODS - Report Parameter                    Screen 1 of 3        │
│                         1  Report Name:  _____ │
│   2  Comments:         _____│
│   3  Max. Records:  _____          4  Page Break w/i Record:  _      │
│                                                                       │
│   5  Output Device: _     6  Char. per Line:  ___     7  Line per Page:  ___ │
│   8  Printer Init:  _____9  Printer Reset:  _____ │
│   10  Title Of Report:                                                │
│       01> _____    │
│   11  Title Repeat:  _   12  Title Format:  _____    13  Title Sep:  _____ │
│   14  Head Note:                                                      │
│       _____│
│   15  Head Repeat:   _   16  Head Format:  _____   17  Head Sep:  _____ │
│   18  Page Footer:                                                    │
│       01> _____    │
│   19  Foot Repeat:   _   20  Foot Format:  _____                  │
│   21  Column Header:                                                  │
│       01> _____    │
│   22  Col. Head Rep: _   23  Col. Head Sep:  _____                 │
│   24  Selection Criteria:  _____  │
│   25  Major Sort Field:    _____                         │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 11.   GSMODS Report Parameter entry screen 1 of 3.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│     GSMODS - Report Parameter                    Screen 1 of 3        │
│                         1  Report Name:  Sample                       │
│   2  Comments:        Sample report for documentation                 │
│   3  Max. Records:     10            4  Page Break w/i Record:  N      │
│                                                                       │
│   5  Output Device: P     6  Char. per Line:  119    7  Line per Page:   87 │
│   8  Printer Init:  15,27,65,9,27,50     9  Printer Reset: 18,27,65,12,27,50 │
│   10  Title Of Report:                                                │
│       01> Mines and Prospects, Butte 1° x 2° quadrangle, Montana      │
│   11  Title Repeat:  F   12  Title Format:  C        13  Title Sep:  b │
│   14  Head Note:                                                      │
│       [Note:  Sites are plotted by site numbers on plates 1 and 2.  Commodities │
│   15  Head Repeat:   F   16  Head Format:  W1,119     17  Head Sep:   _b │
│   18  Page Footer:                                                    │
│       01>   |PN|                                                      │
│   19  Foot Repeat:       20  Foot Format:  C                          │
│   21  Column Header:                                                  │
│       01> Site       Site Name|R8, |Latitude/   Commodities|R25, |Description|R23, │
│   22  Col. Head Rep: F   23  Col. Head Sep:  _b                       │
│   24  Selection Criteria:  WITH STATE = 'MT'                          │
│   25  Major Sort Field:    DISTRICT                                   │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 12.   GSMODS Report Parameter entry screen 1 of 3 for
             sample report (figure 17).

these sets of linked multi-valued fields defines the title of the
report. Each entry in the **Title of Report** field defines one line
of the report title. As many lines of report title as desired
may be entered. For each line entered, the system will prompt
for which pages to print the title line on (**Title Repeat** field)
and how to format the title line (**Title Format** field). When the
report title is completed by leaving the **Title of Report** field
blank, the system will prompt for the separator to use between
the end of the title and the remainder of the report (**Title Sep**
field). The system then prompts for similar information for the
Head Note, Page Footer, and Column Header. The head note is
slightly different from the title in that it is not a multi-
valued field. The entire head note is entered into the **Head Note**
field at one time and the system formats it into a paragraph
based on the contents of the **Head Format** field. The page footer
section consists of linked multi-valued fields like the report
title. The column header also consists of linked multi-valued
fields, but does not include a format field. Each line of the
column header should be formatted exactly as it should appear on
the final report as it is entered into the **Column Header** field.

The last two fields on the first screen of the Report
Parameter entry system are used to select and sort the records
which are to be used to create the report. The **Selection
Criteria** field selects the records to be used for the report.
All of the options discussed in the section on Selection
Criteria, p. 55, can be used in this field. However, use of a BY
clause in this field is redundant and will only slow the
processing of the report. Leaving this field blank will select
all records in the Locality database.

The report can be divided into sections such as mining
districts or counties. These sections are called "Major
Sections" in this documentation to distinguish them from the
individual records which are called "Minor Sections". In order
to divide the data records into major sections, the selected
records must be sorted by the field which is used to distinguish
the major sections. The name of the field used to sort the
Locality database records into major sections is entered into the
Major Sort Field. After the sort field has been entered, the
first screen Change prompt will appear. At this point,
modifications can be made to the first screen, the record can be
filed or deleted, or the user can proceed to the second screen by
pressing the **RETURN** key.

Report Parameter Screen #2

When the second screen of the Report Parameter entry system
appears, the report name from the first screen is automatically
displayed as a reminder (figure 13). The next eleven fields on
the second screen are used to define the title, header, and
footer to be used for each major section of the report. These
fields are similar to the equivalent fields from the first
screen. There are no Repeat fields on this screen. The **Major**

```
+------------------------------------------------------------------+
|                                                                  |
|    GSMODS - Report Parameter                    Screen 2 of 3    |
|                          Report Name:  _____  |
|  2 Major Section Title:                                          |
|   _____|
|  3 Major Title Format:  _____    4  Major Title Sep:  _____ |
|  5 Major Section Header:                                         |
|    01> _____   |
|  6 Major Header Format: _____    7  Major Header Sep: _____ |
|  8 Major Title/Header Sel Criteria: _____    |
|  9 Major Section Footer:                                         |
|    01> _____   |
| 10 Major Footer Selection Criteria: _____   |
| 11 Major Footer Format: _____   12  Major Footer Sep: _____ |
| 13 Minor Sort Field:      _____                  |
| 14 Minor Title:                                                  |
|    01> _____   |
| 15 Minor Title Format:  _____   16  Minor Title Sep:  _____ |
| 17 Minor Header:                                                 |
|    01> _____   |
| 18 Minor Header Format: _____   19  Minor Header Sep: _____ |
|                                                                  |
|                                                                  |
+------------------------------------------------------------------+
```

Figure 13. GSMODS Report Parameter entry screen 2 of 3.

```
+------------------------------------------------------------------+
|                                                                  |
|    GSMODS - Report Parameter                    Screen 2 of 3    |
|                          Report Name:  Sample                    |
|  2 Major Section Title:                                          |
|     |SITE|                                                       |
|  3 Major Title Format:   C           4  Major Title Sep:  _B     |
|  5 Major Section Header:                                         |
|    01>  |DESCRIPTION|                                            |
|  6 Major Header Format: W1,119,5     7  Major Header Sep: _B     |
|  8 Major Title/Header Sel Criteria: WITH REC.TYPE CONTAINS "A"   |
|  9 Major Section Footer:                                         |
|                                                                  |
| 10 Major Footer Selection Criteria:                             |
| 11 Major Footer Format:             12  Major Footer Sep: _B     |
| 13 Minor Sort Field:      SITE                                   |
| 14 Minor Title:                                                  |
|                                                                  |
| 15 Minor Title Format:              16  Minor Title Sep:         |
| 17 Minor Header:                                                 |
|                                                                  |
| 18 Minor Header Format:             19  Minor Header Sep:        |
|                                                                  |
|                                                                  |
+------------------------------------------------------------------+
```

Figure 14. GSMODS Report Parameter entry screen 2 of 3 for
            sample report (figure 17).

Section Title and **Major Section Header** are repeated at the
beginning of each major section of the report and the **Major
Section Footer** is repeated at the end of each major section of
the report. There are two fields which are used to enter
selection criteria, **Major Title/Header Sel Criteria** and **Major
Footer Selection Criteria**. These two fields are only used if the
|fieldname| syntax (see |key| syntax, p. 57) is used with the
major section title, header, or footer. If the |fieldname|
syntax is used, the selection criteria fields are used to
determine which record in each major section is to be used to
extract the information which is to go into the title, header, or
footer.

The next field on the second screen, **Minor Sort Field**, is
used to define the sequence of records within each major section.
Typically, records will be sorted by record number or site name,
but any field in the Locality database may be used as a sort
field. The rest of the fields on screen 2 are used to define the
title and header to be used with each minor section (individual
record). The **Minor Title** and **Minor Header** are repeated before
each data record throughout the report. After the minor header
separator field has been entered, the second screen Change prompt
will appear. At this point, modifications can be made to the
second screen, the record can be filed or deleted, the user can
return to the first screen, or the user can proceed to the third
screen by pressing the **RETURN** key.

Report Parameter Screen #3

When the third screen of the Report Parameter entry system
appears, the report name from the first screen is automatically
displayed as a reminder (figure 15). The next five fields form a
linked multi-valued field set which are used to define the output
of information from the individual data records. The **Column
Fieldnames** field is used to list the fields from the data record
which are to be used to create each column of the report.
Normally, only one field name is used for each output column.
However, fields can be combined in one column (LATITUDE and
LONGITUDE, for example). For more information on combining
fields in one column, see the description of **Column Fieldnames** in
Appendix X or see the help screen at the **Column Fieldnames**
prompt. The **Start Char. No** and **Column Width** fields are used to
position each output column on the page and the **Column Format**
field is used to format each column individually. The **Multi-
value Sel** field is only used if the field being output is a
multi-valued field. It is used to determine which values to
output from the field and how to combine the values within the
output column. These fields are followed by the linked multi-
valued fields which are used to define the footer which follows
each data record on the report.

The final field, **Print District Records**, is used to
determine whether summary (district or area) records (those with
an **A** in the REC.TYPE field) are output as individual records.

```
|-----------------------------------------------------------|
|                                                           |
|    GSMODS - Report Parameter            Screen 3 of 3     |
|                   Report Name: _____   |
| 2  Column Fieldnames:  01> _____   |
| 3  Start Char. No:      __      4  Column Width:      __   |
| 5  Column Format:      _____  6  Multi-value Sel: _____|
| 7  Record Sep:         _____                           |
|                                                           |
| 8  Minor Footer:                                          |
|    01> _____   |
| 9  Minor Footer Format: _____ 10 Minor Footer Sep: ____|
|                                                           |
| 11 Print District Records:  __                            |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|-----------------------------------------------------------|
```

Figure 15.   GSMODS Report Parameter entry screen 3 of 3.

```
|-----------------------------------------------------------|
|                                                           |
|    GSMODS - Report Parameter              Screen 3 of 3   |
|                   Report Name: Sample                     |
| 2  Column Fieldnames:  01> RECORD                         |
| 3  Start Char. No:       1      4  Column Width:      2    |
| 5  Column Format:        R      6  Multi-value Sel:       |
| 7  Record Sep:           B                                |
|                                                           |
| 8  Minor Footer:                                          |
|                                                           |
| 9  Minor Footer Format:        10 Minor Footer Sep:       |
|                                                           |
| 11 Print District Records:  N                             |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|                                                           |
|-----------------------------------------------------------|
```

Figure 16.   GSMODS Report Parameter entry screen 3 of 3 for
              sample report (figure 17).

Often, these records are used (as shown in the example discussed
below) to provide the information for the major section title or
header. Repeating the information as an individual record may
not be desirable.

Report Example

        As an example of one type of report which can be created
with the reporting system, figure 17 shows a page from a table
which lists several features of mines and prospects in the Butte
1° by 2° quadrangle, Montana. Data for this example are from a
list of all the mines and prospects in the quadrangle by Elliott
and others (1986). Figures 12, 14, and 16 show the Report
Parameters which were used to create the sample report. Where
multi-valued fields are used for the sample report parameters,
only as many values as can be shown on the screen at one time are
shown in the figures. For example, **Column Fieldnames** contains
six values to produce the sample report (1 for each column) even
though only the first value is shown on figure 16. There are
many other styles of report which can be created using the
reporting system and a little imagination.

Mines and prospects, Butte 1° x 2° quadrangle, Montana

[Note: Sites are plotted by site numbers on plates 1 and 2. Commodities present are listed in approximate decreasing order of importance. Codes for commodities present, host rock(s), and associated igneous rocks and explained sources of data are listed following this table. References cited in district and area descriptions and numerical codes for sources of data are listed in Sources of Data at end of table]

Site No.	Site Name (Alternate names)	Latitude/ Longitude	Commodities Present	Description	Sources of Data

Clinton District

The Wallace Creek granodiorite stock of Cretaceous age intrudes Cambrian and Middle Proterozoic age sedimentary rocks that have been thrust faulted and cut by northwest-trending normal faults. Veins occupy shear zones in sedimentary rocks and in granodiorite near the granodiorite contact. The district was a medium producer of copper, silver, lead, zinc, and gold.

Site No.	Site Name (Alternate names)	Latitude/ Longitude	Commodities Present	Description	Sources of Data
25	Adaline Mine	46 49 05 N 113 35 37 W	Pb, Ag, Cu, Au	Underground workings along veins in shear zones in shale (Csh) near granodiorite (Kgd) contact. Small producer of lead-silver ore.	91
26	Aladdin Mine	46 47 28 N 113 39 12 W	Cu, Ag, Au	Surface and underground workings in veins in granodiorite (Kgd). Small producer of copper ore.	91, 124
27	Belleview Mine	46 47 52 N 113 38 47 W	Cu, Ag, Au	Underground workings in veins in granodiorite (Kgd). Small producer of copper, silver, and gold.	76, 91
28	Cape Nome Mine Bullion Moose	46 47 22 N 113 39 11 W	Cu, Ag, Au, Pb, Zn, Ba, As, Sb, Bi	Several layers of underground workings totaling 5,000 ft in veins in schist (Ymi) and granodiorite (Kgd). Small producer of copper, silver, and gold.	39, 62, 65, 91, 124

Copper Cliff District

Thrust-faulted sedimentary rocks of Middle Proterozoic and Cambrian age host base and precious metals in veins and breccia zones. The district was a small producer of copper, gold, and silver.

Site No.	Site Name (Alternate names)	Latitude/ Longitude	Commodities Present	Description	Sources of Data
30	Blue Bell Mine Leonard Mine	46 48 16 N 113 27 12 W	Cu, Au, Ag, As, Sn, Sb	Vertical and inclined shafts along 10 ft-wide brecciated zone in quartzite (Ygr) and limestone (Csh). Small producer of copper ore.	39, 91, 124, 132
31	Copper Cliff Mine	46 48 32 N 113 27 14 W	Cu, Au, Ag, Sb, As, Bi, Pb, Sn, Zn	About 1500 ft of underground workings in breccia zones in quartzite (Ygr). Small producer of copper, gold, and silver.	35, 39, 91, 124

Figure 17.   Sample output from REPORT program.   Data from Elliott and others, 1986.

The Report Program

Once the parameter record has been created, it is quite easy to create the report. To send the output to the printer, the printer must be attached to the computer and the System Setup database must be correctly configured for the printer in use (see Appendix II, Configuring GSMODS). Selecting choice number 8 from the Main Menu will bring up the program which generates the report. The program will display a menu of existing parameter records and prompt for a selection from the list. The selection may be made either by entering the number of the desired report from the list, or by entering the name of the parameter record directly. If an **F** or an **f** was entered into the **Output Device** field of the selected parameter record, the program will prompt for the name of the output file. Enter a standard DOS file name or path name and be sure the disk is available and has enough empty space to contain the output file. The program displays the page number and major section number that is being processed as it proceeds. Because the system must sort all of the selected records by the major sort field and the minor sort field, there are delays in the data output. This is a normal part of the procedure. When the report is finished, the system returns to the Main Menu.

Entering an **!** at any prompt during the reporting program will restart the program from the beginning. Entering a **q** or **Q** at any prompt will terminate the program and return control to the Main Menu.

Creating Terminal Command Level (TCL) reports

At the bottom of the GSMODS Main Menu screen, there is a note that F9 will end the menu. In order to search the database or output special types of tabular information, you must exit the GSMODS menu system. Pressing the **F9** function key from the Main Menu takes the user to Revelation Terminal Command Level (TCL). The TCL prompt is a **:**. From the **:** prompt any Revelation command may be entered. To return to the GSMODS Main Menu, enter **mods** or **MODS** at the **:** prompt. There are four commands that are of particular interest in the output of special types of tabular information: LIST, FORM, SELECT, and PDISK. These commands will be briefly explained in the following sections. More information about these and other Revelation commands can be found in the Revelation documentation if you have purchased the full system. If you have purchased the Run-time system, you will not have Revelation documentation other than what is given here and in Appendix IV, Revelation Command Summaries.

The LIST Command

The LIST command is used to produce simple columnar listings either on the display screen or on the printer (figure 18). The syntax of the command is:

:LIST {n} filename {selection criteria} fieldlist {options}

n in the command above is an optional limit to the number of records to list. It must be an integer and is most useful for testing the LIST command with a small number of records before creating a large output listing.

Acceptable file names in the GSMODS system are:

MD.DATA	Locality information
MD.REF	Reference information
MD.USER	Reporter information
MD.PLOT	Plot parameter information
MD.SYM	User-defined symbol information
MD.REPORT	Report parameter information
MD.AREA	Location outline information
MD.SYS	System configuration information

Selection criteria consist of an optional phrase or phrases which define the search and sort operations to be performed on the data records before they are listed. They are described in the section on Selection Criteria, p. 55. Any valid selection criteria may be used with the LIST command.

Fieldlist is a list of field names to be included in the output list. These must be valid field names for the database being searched (see Appendices V through XII for complete lists of field names), and must be entered in the order in which they are to be output. Field names used in the selection criteria do not need to be output, and will not be unless they are also included in the list of field names.

There are several useful options which can be appended to the end of the LIST command. The first is the **(N)** option. Normally, when the output goes to the display the system stops at the end of each page. The **(N)** option causes the output to scroll continuously without stopping. Second is the **(P)** option. Normally, the output of a LIST command is sent to the display. The **(P)** option sends the output of the LIST command to the printer. See the section on the PDISK command (p. 76) for a technique used to send output to a disk file. The Revelation system has an unusual method of handling form feeds on the printer. At the end of each output to the printer, the paper is left near the bottom of the last page. When the next list is sent to the printer, it is preceded by a form feed to place the paper at the top of the next page. If the printer has been placed at the top of a page in the beginning, the initial form feed wastes a sheet of paper before starting to print. To avoid this paper eject at the beginning of the listing, use the **(E)**

Site Name........... County............. Commodities. Ore Minerals..

Site Name	County	Commodities	Ore Minerals
Boundary Red Mountain	Whatcom	Au	gold
		Ag	pyrite
			chalcopyrite
			pyrrhotite
Bronze Monarch	Skamania	Cu	chalcopyrite
		Au	pyrite
		Ag	
Chicago	Skamania	Cu	chalcopyrite
		Au	sphalerite
		Ag	native copper
		Zn	arsenopyrite
			pyrite
Commonwealth	Skamania	Cu	chalcopyrite
		Zn	sphalerite
		Pb	galena
			arsenopyrite
			pyrite
Cotopaxi Mine	Fremont	Cu	chalcopyrite
		Zn	sphalerite
		Pb	gahnite
			galena
			scheelite
Gargett	Whatcom	Au	sphalerite
		Ag	galena
		Cu	chalcopyrite
			pyrite
			malachite
			chalcocite
			azurite
			massicot
			pyrrhotite
Great Excelsior	Whatcom	Au	pyrite
		Ag	chalcopyrite
		Cu	arsenopyrite
			galena
			sphalerite
			tellurides
			native silver
			pyrrhotite
Hidden Treasure	Pend Oreille	Pb	sphalerite
		Zn	galena
Peerless tunnel	Custer	Cu	chalcopyrite ?
Sedalia mine	Chaffee	Cu	chalcopyrite
		Zn	chalcanthite
		Pb	sphalerite
		Ag	goslarite
		Au	gahnite

Figure 18.   Sample output from LIST command.

option which suppresses page ejection. The preceding options are
always enclosed in parentheses. More than one option can be
included. There are two other useful options which are not
enclosed in parentheses. The LIST command default is to single
space the output. If double spaced output is desired, add the
DBL-SPC option to the command. Finally, by default the system
will output the record number as the first column. If the record
number is not desired in the first column, then append **ID-SUPP** to
the end of the command. A complete LIST command might look
something like the following:

:LIST MD.DATA WITH COUNTY EQ 'Adams' BY SITE SITE DEP.TYPE ID-SUPP (PE)

The entire command must be in capital letters except for values
within quotes which must be exactly as they are in the data
record. Many more options for the LIST command can be found in
the Revelation documentation including creation of special
headers and footers and various types of totals and sub-totals.

The FORM Command

     The FORM command can be used to define simple output formats
that are to be used repeatedly. The FORM command is simpler than
the reporting facility that is included with GSMODS, but does not
have as much flexibility and does not always work correctly with
multi-valued fields. There are three pre-defined formats which
have been included with GSMODS. The three formats, called REF,
REFNUM, and DUMP, are stored in the FORMS database. The REF
format prints a reference list in standard USGS format from the
Reference database (figure 19). The REFNUM format prints the
same reference list with the addition of the reference number
(figs. 20 and 21). This allows the user to produce a cross-
reference list of references and reference numbers that have been
entered into the system. The DUMP format is used with the
Locality database to produce a list of everything that is in the
database for the selected records (figure 22). To create other
form definitions, see the Revelation documentation on the FORM
command. Normally, a SELECT command is given before each FORM
command (see following section). The syntax of the FORM command
is:

:FORM FORMS format filename

where FORMS is the name of the database where the formats are
stored, format is one of the format names, such as REFNUM, and
filename is either MD.DATA or MD.REF depending on which format is
being used. Be sure the printer is turned on before running the
FORM command. The following is an example of a complete FORM
command:

:FORM FORMS REFNUM MD.REF

References Cited

Ellis, C. L., Hannigan, B. J., and Thompson, J. R., 1983, Mineral investigation of Sangre de Cristo Wilderness Study Area, Alamosa, Custer, Fremont, Huerfano, and Saguache Counties, Colorado: U.S. Bureau of Mines, Open-File Report, MLA 65-83, 190 p.

Heinrich, E. W., 1981, Precambrian tungsten and copper-zinc deposits of south-central Colorado: Colorado Geological Survey Resource Series 21, 115 p.

Hodges, L. K., 1897, Mining in the Pacific Northwest: Seattle Post-Intelligencer, 116 p.

Huntting, M. T., 1956, Inventory of Washington Minerals, Part II. Metallic Minerals, Vol. I., Text, Vol. II. Maps: Washington Division of Mines and Geology, Bulletin 37, 428 p.

Landes, Henry, Thyng, W. S., Lyon D. A., and Roberts, Milnor, 1902, The metalliferous resources of Washington, except iron: Washington Geological Survey Annual Report for 1901, part 2, 123p.

Lovering, T. S., and Goddard, E. N., 1950, Geology and ore deposits of the Front Range, Colorado: U.S. Geological Survey Professional Paper 223, 319 p.

Raymond, W. H., Leiggi, P. A., and Sheridan, D. M., 1980, Sapphirine in Precambrian rocks associated with stratabound sulfide deposits, Custer County, Colorado: U.S. Geological Survey Bulletin 1513, 22 p.

Salotti, C. A., 1965, Mineralogy and paragenesis of the Cotopaxi Cu-Zn skarn deposit: American Mineralogist, v. 50, p. 1179-1212.

Sheridan, D. M., and Raymond, W. H., 1984, Preliminary report on the geology of the Sedalia mine area and its Proterozoic deposits of base-metal sulfides and gahnite, Chaffee County, Colorado: U.S. Geological Survey Open-File Report 84-0800, 27 p.

Sheridan, D. M., and Raymond, W. H., 1984, Precambrian deposits of zinc-copper-lead sulfides and zinc spinel (gahnite) in Colorado: U.S. Geological Survey Bulletin 1550, 31 p.

Figure 19.   Sample output from FORM command: Reference list sorted by author.

1   Ellis, C. L., Hannigan, B. J., and Thompson, J. R., 1983,
          Mineral investigation of Sangre de Cristo Wilderness Study
          Area, Alamosa, Custer, Fremont, Huerfano, and Saguache
          Counties, Colorado: U.S. Bureau of Mines, Open-File Report,
          MLA 65-83, 190 p.

3   Heinrich, E. W., 1981, Precambrian tungsten and copper-zinc
          deposits of south-central Colorado: Colorado Geological
          Survey Resource Series 21, 115 p.

11   Hodges, L. K., 1897, Mining in the Pacific Northwest: Seattle
          Post-Intelligencer, 116 p.

10   Huntting, M. T., 1956, Inventory of Washington Minerals, Part II.
          Metallic Minerals, Vol. I., Text, Vol. II. Maps: Washington
          Division of Mines and Geology, Bulletin 37, 428 p.

12   Landes, Henry, Thyng, W. S., Lyon D. A., and Roberts, Milnor,
          1902, The metalliferous resources of Washington, except
          iron: Washington Geological Survey Annual Report for 1901,
          part 2, 123p.

8   Lovering, T. S., and Goddard, E. N., 1950, Geology and ore
          deposits of the Front Range, Colorado: U.S. Geological
          Survey Professional Paper 223, 319 p.

4   Raymond, W. H., Leiggi, P. A., and Sheridan, D. M., 1980,
          Sapphirine in Precambrian rocks associated with stratabound
          sulfide deposits, Custer County, Colorado: U.S. Geological
          Survey Bulletin 1513, 22 p.

9   Salotti, C. A., 1965, Mineralogy and paragenesis of the Cotopaxi
          Cu-Zn skarn deposit: American Mineralogist, v. 50, p.
          1179-1212.

5   Sheridan, D. M., and Raymond, W. H., 1984, Preliminary report on
          the geology of the Sedalia mine area and its Proterozoic
          deposits of base-metal sulfides and gahnite, Chaffee County,
          Colorado: U.S. Geological Survey Open-File Report 84-0800,
          27 p.

6   Sheridan, D. M., and Raymond, W. H., 1984, Precambrian deposits
          of zinc-copper-lead sulfides and zinc spinel (gahnite) in
          Colorado: U.S. Geological Survey Bulletin 1550, 31 p.

Figure 20.   Sample output from FORM command: Reference list with
          reference numbers sorted by author.

1   Ellis, C. L., Hannigan, B. J., and Thompson, J. R., 1983,
           Mineral investigation of Sangre de Cristo Wilderness Study
           Area, Alamosa, Custer, Fremont, Huerfano, and Saguache
           Counties, Colorado: U.S. Bureau of Mines, Open-File Report,
           MLA 65-83, 190 p.

2   Worchester, P. G., 1919, Molybdenum deposits of Colorado; with
           general notes on the molybdenum industry: Colorado
           Geological Survey Bulletin 14, 131 p.

3   Heinrich, E. W., 1981, Precambrian tungsten and copper-zinc
           deposits of south-central Colorado: Colorado Geological
           Survey Resource Series 21, 115 p.

4   Raymond, W. H., Leiggi, P. A., and Sheridan, D. M., 1980,
           Sapphirine in Precambrian rocks associated with stratabound
           sulfide deposits, Custer County, Colorado: U.S. Geological
           Survey Bulletin 1513, 22 p.

5   Sheridan, D. M., and Raymond, W. H., 1984, Preliminary report on
           the geology of the Sedalia mine area and its Proterozoic
           deposits of base-metal sulfides and gahnite, Chaffee County,
           Colorado: U.S. Geological Survey Open-File Report 84-0800,
           27 p.

6   Sheridan, D. M., and Raymond, W. H., 1984, Precambrian deposits
           of zinc-copper-lead sulfides and zinc spinel (gahnite) in
           Colorado: U.S. Geological Survey Bulletin 1550, 31 p.

7   Van Alstine, 1974, Geology and mineral deposits of the Poncha
           Springs SE quadrangle, Chaffee County, Colorado: U.S.
           Geological Survey Professional Paper 829, 19 p.

8   Lovering, T. S., and Goddard, E. N., 1950, Geology and ore
           deposits of the Front Range, Colorado: U.S. Geological
           Survey Professional Paper 223, 319 p.

9   Salotti, C. A., 1965, Mineralogy and paragenesis of the Cotopaxi
           Cu-Zn skarn deposit: American Mineralogist, v. 50, p.
           1179-1212.

10   Huntting, M. T., 1956, Inventory of Washington Minerals, Part II.
           Metallic Minerals, Vol. I., Text, Vol. II. Maps: Washington
           Division of Mines and Geology, Bulletin 37, 428 p.

11   Hodges, L. K., 1897, Mining in the Pacific Northwest: Seattle
           Post-Intelligencer, 116 p.

Figure 21.   Sample output from FORM command: Reference list with
            reference numbers in reference number order.

Listing of Data Fields for Record   1

Site   :Verde Creek area
Entry Date   :08/12/85
Reporter   :Richard B. Taylor, U.S. Geological Survey
Synonyms   :
Record Type   :AM
Site Type   :A
Source   :1
District   :Verde Creek area
County   :Custer
State   :CO
2° Quad   :Pueblo
Primary Quad   :Beckwith Mountain
Scale   : 24000
Latitude   : 38 7 53.11 N
Longitude   :105 35 59.17 W
Location   :
Deposit Type   :vein
Deposit Code   : 55.1
Commodities   :Ag
                   Cu
Prod. Code   :Y
Production   :Known production prior to 1901; no data on amount, either
                   tonnage or grade. Size of dumps suggests small production;
                   area primarily known for silver.
Host Rock
    Name   :no formal name
    Lithology   :granitic gneiss
    Age   :E PROT
Mineralization
    Age   :OLIGO ?
Assoc. Igneous
    Description   :
    Age   :
Tectonic
    Setting   :Rocky Mountain Cordillera
Ore Minerals   :chalcopyrite
                   galena
Non-ore
    Mineralogy   :Quartz veins contain minor barite and sulfide minerals; no
                   data on alteration minerals; the host gneiss is sheared and
                   chloritized, but the chlorite may not be related to the vein
                   system.
Ore Controls   :Veins follow fractures and shears in Precambrian gneiss and
                   adjacent Pennsylvanian-Permian rocks near the range-front
                   fault separating the Sangre de Cristo Range from the Wet
                   Mountain Valley graben to the east.

Figure 22.   Sample output from FORM command using DUMP (data from
             R. B. Taylor, written communication, 1986).

Deposit
   Description   :Quartz veins of unspecified size are chiefly in fractured
                  Precambrian gneiss; mineralization extended into adjacent
                  sedimentary rocks but veins there are lower in grade. Assays
                  show silver in about half the veins sampled (grab samples,
                  .x-61 oz Ag/ton); a few samples contained gold (.05 oz
                  Au/ton). No information on continuity of veins; most less
                  than a foot thick.
   Comments   :Mineralized area bounded by faults on west side, covered by
                  Quaternary rocks to north and south and by Miocene valley-fill
                  to east; mineralization perhaps related to hydrothermal system
                  set up by the Oligocene Rita Alta stock, with permeability
                  related to fractures near the Sangre de Cristo fault.
   Notes   :A few ounces of gold may(?) have been produced in 1931.
   Key Words   :vein
   Reference Nos. :   1
   References   :Ellis, C. L., Hannigan, B. J., and Thompson, J. R., 1983,
                  Mineral investigation of Sangre de Cristo Wilderness Study
                  Area, Alamosa, Custer, Fremont, Huerfano, and Saguache
                  Counties, Colorado: U.S. Bureau of Mines, Open-File Report,
                  MLA 65-83, 190 p.

Figure 22 (continued).

The SELECT Command

Because the FORM command does not provide a method of
sorting or selecting the records before printing, the SELECT
command must be used. If the FORM command is run as shown above,
all the records in the Reference database will be printed in the
order in which they are stored in the database. This is not the
order in which the records were entered; nor is it record number
order. Generally, this order is not of any use to the user.
Therefore, the normal procedure is to run a SELECT command
immediately preceding the FORM command. The syntax of the SELECT
command is:

:SELECT filename {selection criteria}

where the file name is the same as the file name to be used in
the FORM command, and the selection criteria are formatted as
described in the Selection Criteria section, p. 55. Any valid
selection criteria may be used with the SELECT command. To
produce a list of references in alphabetic order by author
(figure 20), the following sequence would be used:

:SELECT MD.REF BY AUTH.NAME
>FORM FORMS REF MD.REF

When the SELECT command is finished, Revelation will prompt for
the next command with a ≥ prompt. The ≥ prompt indicates that
Revelation has created a selection list from the database and is
waiting for a command which uses the selection list. The FORM
command must immediately follow the SELECT command. To produce a
list of references with reference numbers in reference number
order for cross-reference use while entering data records (figure
21), the following sequence would be used:

:SELECT MD.REF BY REC.NO
>FORM FORMS REFNUM MD.REF

The PDISK Command

PDISK is a Revelation facility which can be used to send any
report to a disk file (in ASCII format) instead of to the
printer. It is a simple data re-direction command. Invoking
PDISK changes the destination of all information that would
normally be sent to the printer. The syntax of the PDISK command
is:

:PDISK pathname

Where pathname is any path name which is acceptable to DOS. For
example,

:PDISK A:TEMP.OUT

would send all subsequent printer files to a file named TEMP.OUT

on the A: disk. Redirection remains in effect until another
PDISK command is issued or the user logs off the Revelation
system. To re-direct printer files back to the printer, the
following command is used:

:PDISK PRN

Creating Maps and Overlays

        GSMODS includes a plotting facility for the production of
mineral occurrence maps and overlays. Output from this facility
is directed to a pen plotter (Hewlett-Packard or equivalent)
attached to one of the computer's serial communications ports.
There is currently no facility for plotting localities on the
computer screen or on a printer. A variety of symbols and line
types are available for plotting individual site localities and
lines which have been digitized (see Chapter 4, Entering location
information from the digitizer).

The Plot Parameter Entry Screen

        The GSMODS system provides considerable flexibility in the
final appearance of the plot. This flexibility requires the user
to make many choices for each plot that is to be produced. To
avoid the tedium of having to answer the same questions
repeatedly each time another version or another copy of the same
plot is to be produced, the choices are all entered into a data
entry screen. Each set of selections is named and saved so that
the plot can be reproduced at any time just by re-running the
plot program. In addition, similar plots can be easily generated
by copying the selections from one Plot Parameter entry screen to
another and then making whatever changes are necessary.
Selection number **5** on the Main Menu brings up the Plot Parameter
entry screen (figure 23). Figure 24 shows a completed Plot
Parameter entry screen which was used to produce the sample plots
described in the Plot Program section, p. 81.

        Plot Name is the first field on the Plot Parameter entry
screen. Entering an existing name displays the existing
parameter information which can then be modified and stored
again. Entering a new name creates a new plot parameter record.
The next four fields define the boundaries of the area to be
plotted. Enter latitudes in the following format: **dd mm ss N** or
dd mm ss S, and longitudes in the following format: **ddd mm ss E**
or **ddd mm ss W**. The next two fields determine the scale of the
plot. The N-S and E-W scales do not need to be the same. This
is helpful when trying to match a plot to a base map. Base maps,
even scale-stable maps, are rarely exactly to scale in both
directions. The next field determines which direction will be
north on the paper. If no rotation is selected, by entering an
N, the X-axis (east-west) will lie along the length of the paper.
If the plot is rotated, by entering a **Y**, the X-axis will lie
along the width of the paper.

```
+------------------------------------------------------------------+
|                                                                  |
|  GSMODS Plot Parameter        1 Plot Name _____     |
|                                                                  |
|  Plot Limits:      2 N Latitude _____      4 E Longitude _____  |
|                    3 S Latitude _____      5 W Longitude _____  |
|     6 N-S Scale _____    7 E-W Scale _____    8 Rotate X & Y axes? _  |
|  Tick Interval: 9 N-S 01> _____   10 E-W _____  11 T. Size _____ 12 Pen _ |
|                              13 X-Offset _____   14 Y-Offset _____  |
|  Symbols:  15 Code 01> _____   16 Pen # _      17 Height _____     |
|     18 Sel. Criteria _____   |
|                                                                  |
|                                                                  |
|  Labels:  19 Post Field 01> _____                  |
|     20 Pen # _         21 Char. Height _____    22 Char. Width _____  |
|     23 Sel. Criteria _____   |
|                                                                  |
|                                                                  |
|  Lines:  24 Line Type Code 01> __     25 Pen # _                 |
|     26 Sel. Criteria _____   |
|                                                                  |
|  27 Notes  _____         |
|                                                                  |
|                                                                  |
|                                                                  |
+------------------------------------------------------------------+
```

Figure 23.   GSMODS Plot Parameter entry screen.

```
+------------------------------------------------------------------+
|                                                                  |
|  GSMODS Plot Parameter        1 Plot Name  Sample                |
|                                                                  |
|  Plot Limits:      2 N Latitude  46 50 00 N      4 E Longitude  113 35 00 W  |
|                    3 S Latitude  46 46 00 N      5 W Longitude  113 40 00 W  |
|     6 N-S Scale   50000   7 E-W Scale    50000    8 Rotate X & Y axes? Y  |
|  Tick Interval: 9 N-S 01> 00 01 00  10 E-W 00 01 00  11 T. Size  -0.2  12 Pen 1 |
|                              13 X-Offset  2.0   14 Y-Offset   3.8  |
|  Symbols:  15 Code 01>    1     16 Pen # 1      17 Height  0.15    |
|     18 Sel. Criteria WITH COMMODITIES EQ "Cu"                    |
|                                                                  |
|  Labels:  19 Post Field 01> RECORD                               |
|     20 Pen # 1         21 Char. Height  0.12    22 Char. Width  0.08  |
|     23 Sel. Criteria                                             |
|                                                                  |
|  Lines:  24 Line Type Code 01>  1     25 Pen # 2                |
|     26 Sel. Criteria WITH STATE EQ "MT"                          |
|                                                                  |
|  27 Notes  Parameters for sample plot                            |
|                                                                  |
|                                                                  |
|                                                                  |
|                                                                  |
+------------------------------------------------------------------+
```

Figure 24.   GSMODS Plot Parameter entry screen for sample plot
              (figure 25).

Fields 9 through 12 determine the spacing and size of tick
marks to plot. If no tick marks are desired, leave field 9
blank; the system will then skip the remaining tick mark fields.
If tick marks are desired, enter the intervals desired in fields
9 and 10. Tick intervals are entered with the following format:
dd mm ss. The intervals do not need to be the same. Tick marks
will always be plotted at even intervals calculated from 0°
latitude and longitude, regardless of whether the border of the
map lies at an even interval. For example, if the N-S borders of
the map are at 38° 15' and 39° 15', and if a N-S tick interval of
30' is specified, tick marks will be plotted at 38° 30' and 39°
00' only. Field 11 specifies the size of the tick marks in
inches. If a positive number is entered (0.1 for example) tick
marks will be plotted throughout the map; if a negative number is
entered (-0.1 for example) tick marks will only be plotted along
the borders of the map. Finally, field 12 specifies the number
of the pen to be used to plot the tick marks. The pen number is
the number of the pen stall on the plotter. If a **1** is entered,
the pen in stall #1 on the plotter will be used. After the pen
number is entered, the system will return to field 9 to ask for a
second set of tick marks. As many sets of ticks marks as desired
may be entered. Tick mark entry may be terminated by pressing
the **RETURN** key at field 9.

The next two fields specify the amount to offset the plot on
the paper in the X and Y directions. Enter the distance, in
inches, that the boundary of the plot should be from the left
edge (X) and bottom (Y) of the plot paper. Most plotters will
not allow plotting closer than about 0.4-0.8 inches from the edge
of the paper. If a number is entered that is smaller than the
minimum for the plotter (or the field is left blank), the program
will substitute the minimum for the plotter in use.

The remainder of the entry screen is divided into three
sections, labeled **Symbols**, **Labels**, and **Lines**. Each section is
used to define sets of similar items. Each section is composed
of linked multi-valued fields. That is, the system will store
definitions for as many symbols or labels or lines as the user
would like to enter. Each time an entry is made in field 15
(**Symbol Code**), for example, the system cycles through the rest of
the Symbol fields, 16-18, and back to 15. Only when field 15 is
left blank will the system go on to the section on Labels. Other
similarities in the three sections include a field in each
section for selecting the pen number to use to plot the item
being defined, and a field called **Sel. Criteria**. The **Selection
Criteria** field is used to select which records from the database
are to be used to create the symbol or label or line being
defined. For example, if a plot is desired which displays each
mine in the map area using a symbol which depends on the
commodity being mined, the selection criteria for the first
symbol might be:

WITH SITE.TYPE EQ "M" AND WITH COMMODITIES EQ "Pb"

The terms SITE.TYPE and COMMODITIES are field names in the
Locality (MD.DATA) database. A list of all the field names in
the Locality database is included in Appendix V, Locality
Database. Selection criteria are described in the Selection
Criteria section, p. 55. Any valid selection criteria may be
entered in these fields, although entering a BY clause will only
slow the plot program; it will have no effect on the final plot.

Plot Symbols

     Each entry in the Symbol section of the Plot Parameter entry
screen is used to plot a single symbol at the location specified
by the latitude/longitude pair in each of the selected Locality
records. In addition to selection criteria and pen number, the
Symbol section has fields to select the **Symbol Code** and the
Symbol Height. To see the current list of symbols, enter a **?** or
press the **F1** key in the **Symbol Code** field. In addition to the
symbols which are included with the system, a facility has been
included for User-defined symbols. If you don't like the symbols
included with the system, you can design your own! The
techniques for creating User-defined symbols are described in the
User-Defined Symbols section (p. 86). The symbol height is
entered in inches. Because a separate symbol height is entered
for each symbol defined, it is possible to define an entire set
of symbols which differ only in size. Also, don't overlook the
possibility of combining symbols to form new symbols. If more
than one symbol code or size is entered using the same selection
criteria, the symbols will overprint one another.

Plot Labels

     The Labels section of the data entry screen is used to add
labels to data locations that have been selected within the
Symbols section. The records need not have been selected in the
Symbol section, but because labels are always offset from the
location of the symbol, the label alone will not represent the
true location of the data record. The Labels section includes
several unique fields. Field 19 (**Post Field**) selects the
Locality record field from which the label information is
obtained. The name of the field must be entered as it is shown
on the list of field names for the Locality database (see
Appendix V, Locality Database). The field name may be followed
by two parameters in parentheses. For example, **KEY(2,5)**. The
first parameter is only included if the field to be posted is a
multi-valued field. It is used to select which value of a multi-
valued field is to be posted. If the first parameter is omitted,
the first value will be posted for a multi-valued field. The
second parameter indicates the maximum number of characters to
post for each record. All selected values will be truncated at
this length. If the second parameter is omitted, the system will
post up to six characters. For each record that is selected by
the selection criteria field, the system will extract the
appropriate number of characters from the selected value of the

Post Field and plot those characters to the right of the site
location. For each set of Labels, the user must also specify the
Character Height and **Character Width**, in inches.

Plot Lines

        The final section of the entry screen, the Lines section, is
used to plot lines from the data set. The lines may be area
outlines, map boundaries, or any other lines which have been
digitized into the Area Outline database. Dummy records can be
created just for the purpose of entering line data to appear on
the plot. This is the technique used to plot geologic contacts,
faults, etc. See the section on Digitizing, Chapter 4. The only
special field in the Line section is field 24, **Line Type Code**.
This code is used to specify the type of line to plot, solid,
dashed, dotted, etc. Enter a **?** or press the **F1** key in field 24
to see the current list of acceptable codes. There is a special
case for the **Selection Criteria** field of the Lines section.
Entry of the keyword BOUNDARY in the **Selection Criteria** field
will draw a line of the type defined in field 24 around the
boundary of the map as defined by the latitude/longitude limits.

        Finally, there is a text field at the bottom of the screen
that can be used for notes. This field has no effect on the
plot, but is a useful place to enter a description of the plot so
that subsequent users will not have to puzzle out the plot
definition.

        As in the rest of the data entry system, there are special
characters which can be entered into any field of the Plot
Parameter entry screen. Entering a hyphen (-) will terminate
automatic defaulting in any field. Entering an **!** at any field
will terminate the data entry for that parameter screen, store
the record, and return with an empty screen for another plot.

The Plot Program

        Once the plot parameter record has been created, the plot is
generated by running the plot program. The plotter must be
attached to a serial port. The plotter configuration must be
consistent with the selections in the configuration file (see
Appendix III, Hardware Installation and Configuration, and
Appendix II, Configuring GSMODS). Selecting choice number 6 from
the Main Menu will start the plot program. The program will
display a menu of the existing Plot Parameter records and prompt
for a selection from the list. The selection may be made by
either entering the number of the desired plot from the list, or
by entering the name of the parameter record directly. The
program will then ask if the plotter is turned on. Check that
the plotter is on, that there are pens in the stalls that are to
be used, and that the paper is loaded before responding with a
RETURN. There will be a short delay (approximately 15 sec.)
while the system checks and clears the communications line, and

then the plot will begin. The program displays the portion of
the plot that is being processed as it proceeds. Because the
system must search every record in the database for each
selection that is included in the parameter record, there are
often delays in the plotting while the program is searching and
collecting information for the next series of symbols or lines.
This is a normal part of the procedure. When the plot is
finished, the program asks if another plot is desired. If the
prompt is answered with a "Y" or "y" the list of choices is re-
displayed; otherwise, the system returns to the Main Menu.

Entering an ! at any prompt during the plot program will
restart the program from the beginning. Entering a q or Q at any
prompt will terminate the program and return control to the Main
Menu.

Combining GSMODS with GSMAP and GSDRAW

The plotting program provides a complete system for plotting
the locations of data records using a variety of symbols, for
labeling those locations using information from each data record,
and for plotting various types of lines which have been digitized
into the database system. It does not provide facilities for
adding titles, geologic symbols, text which is not associated
with a data location, or explanatory information. All of these
capabilities and more are available in GSMAP and GSDRAW (Selner,
Taylor, and Johnson, 1986), a set of graphics programs which use
the same hardware as GSMODS. Figures 25 and 26 show some of the
capabilities of the combination of GSMODS and GSDRAW. Figure 25
was created by plotting information from a small test file using
the set of parameters shown in figure 24. The plot demonstrates
a few of the system-defined symbols, labeling of the locations
with the record number, drawing a mining district outline, and
drawing a latitude/longitude boundary with tick marks. Figure 26
shows the same plot with the addition of labels and title from a
GSDRAW file (GSMAP could also have been used). The technique for
matching the overlay to the original plot involves four steps:

1.   Enter data record information into GSMODS in the normal
         manner. Digitize all of the information necessary for
         the original plot using the GSMODS digitizing facility.
         Create the GSMODS portion of the plot in its final form
         using the plot program.
2.   Use the plot from GSMODS as a base for digitizing the rest
         of the information using either GSMAP or GSDRAW. If a
         small illustration (one that will fit on the digitizer in
         one piece) which will not contain information from other
         base maps is being created, GSDRAW is easier to use. If
         the illustration must be digitized in several pieces, or
         if information must be added from other base maps, GSMAP
         is the better choice.

3.   Plot the two illustrations on the same piece of paper by
      running the two programs (GSMODS and either GSMAP or
      GSDRAW) successively without unloading the paper from the
      plotter.
4.   Adjust the X and Y offsets in either program to match the
      overlay exactly to the base. As long as the paper is not
      unloaded from the plotter between the two plots, the
      registration will remain the same for every plot.
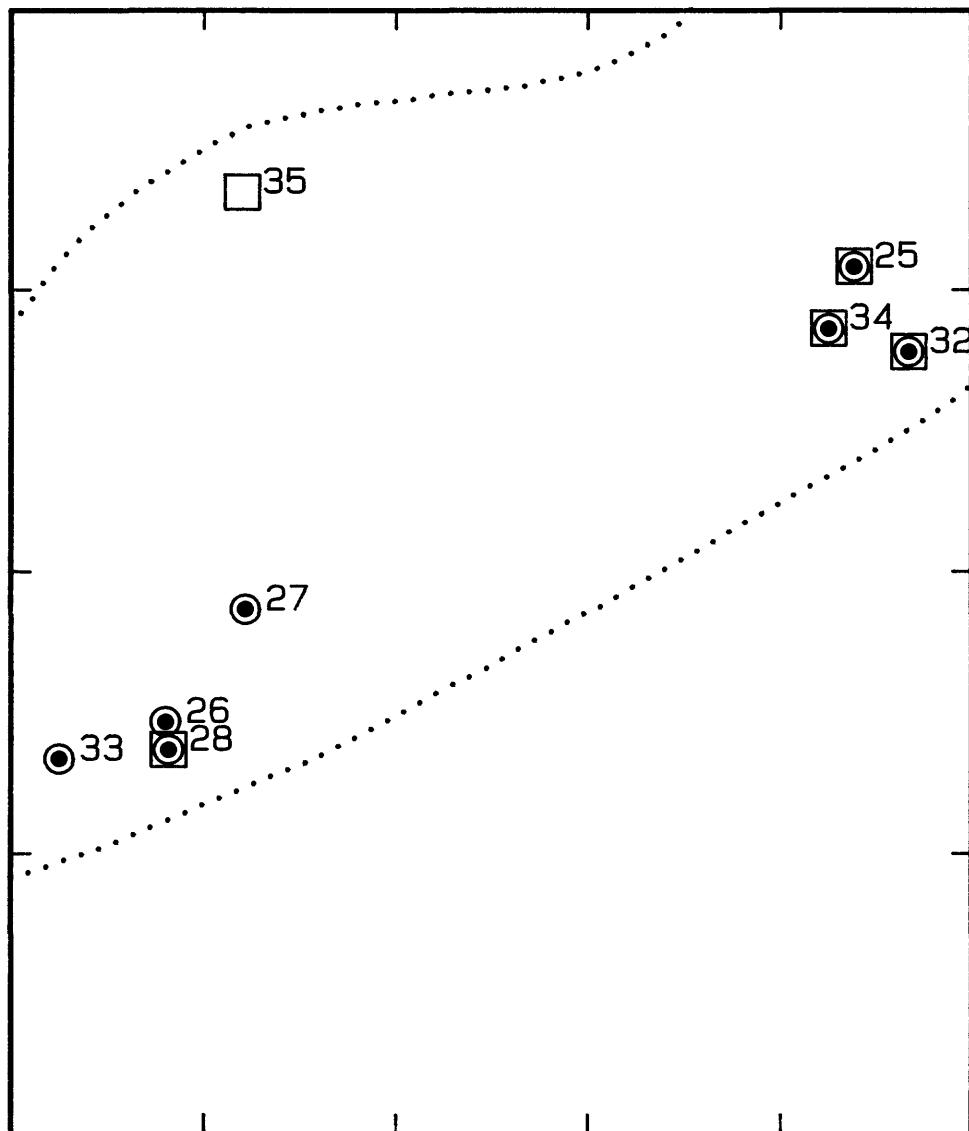
Figure 25. Sample plot drawn with GSMODS plot program.
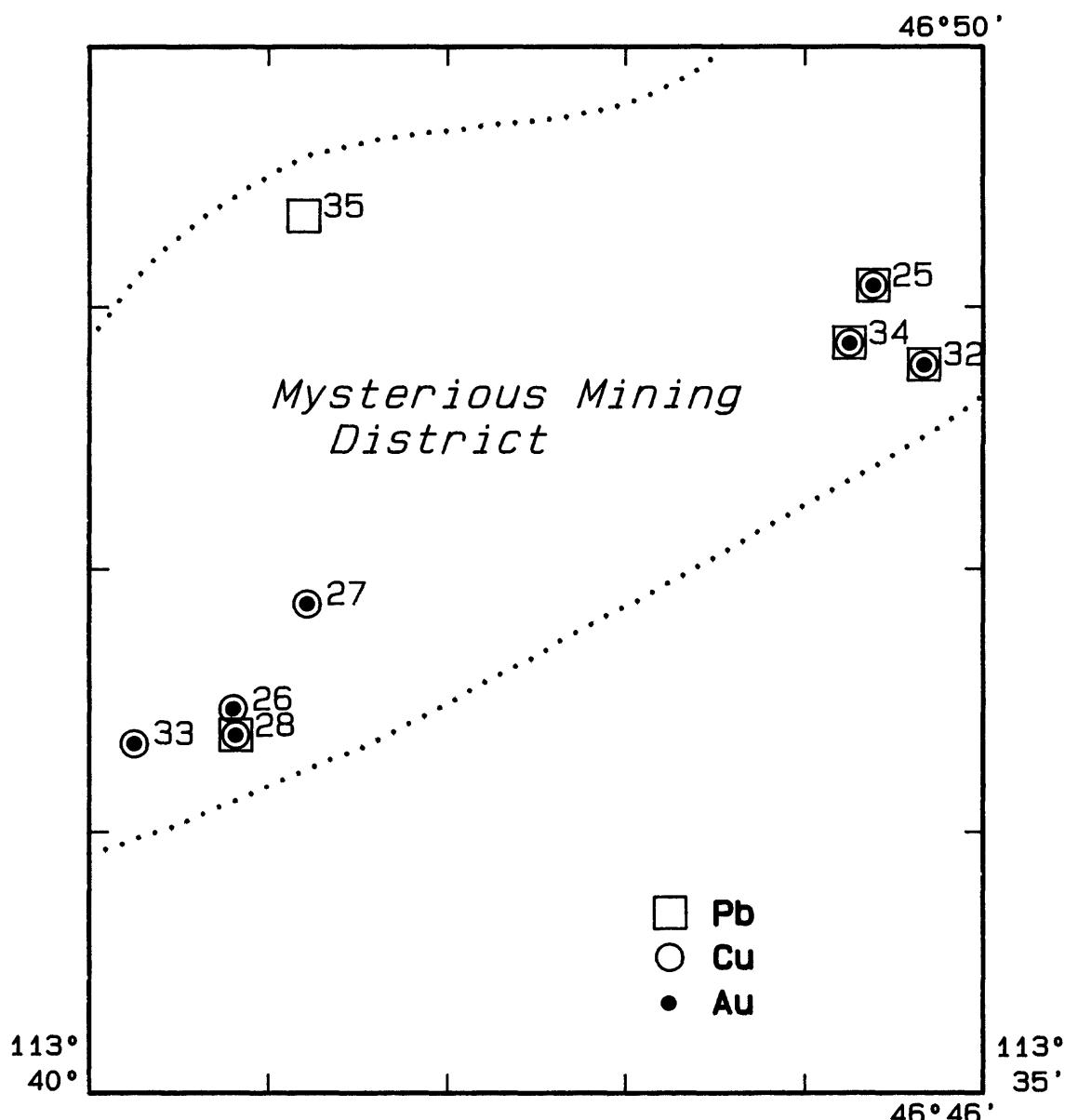
**Major commodities produced in
Mysterious Mining District**

Figure 26. Sample plot drawn with GSMODS plot program and
          enhanced with GSDRAW (Selner, Taylor, and
          Johnson, 1986)

User-Defined Symbols

     To provide increased flexibility for the plotting facility
within GSMODS, a system for creating user-defined symbols has
been included. The user should become familiar with the plotting
system using the symbols included with GSMODS before attempting
to define new symbols. Also, the user should become familiar
with the Hewlett-Packard Graphics Language (HPGL) before
proceeding. No attempt is made here to explain the syntax and
parameters of HPGL commands; the commands are fully explained in
the "Interfacing and Programming Manual" which comes with the
Hewlett-Packard plotter. The following HPGL commands can be used
with the user-defined symbol facility:

AR - Arc
CI - Circle
ER - Edge Rectangle
EW - Edge Wedge
PD - Pen-down
PU - Pen-up
PM - Polygon mode
SP - Select Pen

     A symbol definition begins by assuming that the plotter pen
is at the location of the center of the symbol and that the pen
is up. The general procedure is to move to the beginning of a
line segment with a pen-up command and then to draw a line
segment or figure with one of the other commands listed above. A
pen-up command is not necessary at the end of the symbol
definition. Pen-up and pen-down commands are followed by X and Y
coordinates. Other commands are followed by other parameters
such as circle radius, etc. All coordinates and distances are
entered as a factor to be multiplied by the height of the symbol
as defined in the Plot Parameter record. Therefore, all user-
defined symbols can be plotted at any size.

     There are two types of lines which can be used to make up
each symbol, simple lines and polygonal lines. Simple lines are
used to draw all parts of the symbol which are never to be filled
with a solid shading. All of the HPGL commands listed above
except the PM command can be used to construct simple lines.
Polygonal lines are used for parts of the symbol which should be
shaded if a filled symbol is selected on the Plot Parameter entry
screen. The ER, EW, and SP commands are ignored within polygonal
lines if a filled symbol is being drawn. If a filled symbol is
not selected, then the polygonal lines portion of the symbol will
be drawn as simple lines.

Example

     A brief example may be of use in understanding the concept.
In order to define, or edit the definition of, a user-defined
symbol, select item number 9 (Utilities) from the GSMODS Main
Menu. From the Utilities Menu, select item number 2 (User-

defined Symbols) to bring up the User-defined Symbol entry
screen. The screen will appear as in figure 27. The cursor will
be in the **Symbol No.** field. Symbol numbers 1 through 99 are
reserved for system defined symbols (No, the system does not
include 99 symbols at this time; but the hope is that some of the
users will send symbol definitions to the author which could be
included in the next release). Symbol numbers 100 through 999
are reserved for user-defined symbols. Selecting any symbol
number from 1 to 999 on the plot parameter record will plot the
unfilled version of that symbol if the symbol has been defined.
Adding an **F** to the beginning of any symbol number will plot the
filled equivalent of the symbol. Thus, symbol number F1 is the
filled equivalent of symbol number 1, symbol number F100 is the
filled equivalent of symbol number 100, etc.

    The example has been stored in symbol number 100. Enter **100**
in the **Symbol No.** field and the example symbol definition will
appear on the screen as in figure 28. This definition plots a
circle with one quadrant filled. The **Symbol Name** field and the
Notes field are for the user's convenience. Neither of them have
any effect on the plotting of the symbol. All of the action
occurs in the two fields, **Simple Lines** and **Poly. Lines.** This is
where the simple lines and polygonal lines are defined for each
symbol.

    In this example, there is only one command in the **Simple
Lines** field. This entry is used to draw the outer circle with a
radius of 0.5 times the symbol height and a chord tolerance of 20
degrees. Commands are separated by semi-colons; parameters
within commands are separated by commas. Because the definition
of the circle is made in the **Simple Lines** field, the circle will
not be filled even if a filled symbol is selected.

    There are three commands in the **Poly. Lines** field. Commands
are separated by semi-colons; parameters within commands are
separated by commas. The first command (PD) draws a straight
line from the center of the circle (circles always leave the pen
where it started) to the edge (0.5 units in Y) at 0 degrees. The
second command (AR) draws an arc 90 degrees clockwise along the
circle; and the third command (PD) draws a straight line from the
edge of the circle at 90 degrees back to the center (-0.5 units
in X). The three commands taken together form a complete
polygon. This is a requirement for all entries into the **Poly.
Lines** field! The set of commands entered in the **Poly. Lines**
field must form one or more closed polygons. If symbol number
100 is selected in a Plot Parameter record, a circle with the
first quadrant outlined will be plotted. If symbol number F100
is selected, a circle with the first quadrant filled will be
plotted. Change any of the fields by entering the number of the
field to change at the Change prompt. Store the symbol by
pressing the **RETURN** key at the Change prompt.

```
┌──────────────────────────────────────────────────────────────┐
│                                                                │
│              GSMODS - User-defined Symbol Entry Screen         │
│                                                                │
│   1  Symbol No.      _____                          │
│   2  Symbol Name   _____    │
│                                                                │
│   3  Simple Lines  _____    │
│                                                                │
│                                                                │
│                                                                │
│   4  Poly. Lines   _____    │
│                                                                │
│                                                                │
│                                                                │
│   5  Notes         _____    │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```

Figure 27.   GSMODS User-defined Symbol entry screen.

```
┌──────────────────────────────────────────────────────────────┐
│                                                                │
│              GSMODS - User-defined Symbol Entry Screen         │
│                                                                │
│   1  Symbol No.                    100                         │
│   2  Symbol Name   Circle with first quadrant filled           │
│                                                                │
│   3  Simple Lines  CI,0.5,20                                   │
│                                                                │
│                                                                │
│                                                                │
│   4  Poly. Lines   PD,0,0.5;AR,0,-0.5,-90.0;PD,-0.5,0          │
│                                                                │
│                                                                │
│                                                                │
│   5  Notes         Plots a circle with the quadrant from 0 to 90 degrees │
│                    filled                                       │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
│                                                                │
└──────────────────────────────────────────────────────────────┘
```

Figure 28.   GSMODS User-defined Symbol entry screen with example
             definition.

Sub-polygons

The PM command can be used to form sub-polygons within each
of the polygons constructed in the **Poly. Lines** field. The PM
command has three forms: PM,0 is used to start collecting points
for a polygon, PM,1 is used to break between sub-polygons, and
PM,2 is used to terminate the polygon. An initial PM,0 and a
terminating PM,2 are automatically added to the commands in the
Poly. Lines field. If one or more sub-polygons are desired, the
PM,1 command must be included by the user. For example, the
following command string will form a filled square with a square
hole in the center:

Simple Line: PU,0.5,0.5
Poly. Line:

PD,0,-1,-1,0,0,1,1,0;PM,1;PU,-0.2,-0.2;PD,0,-0.6,-0.6,0,0,0.6,0.6,0

The simple line is used to move the pen to the edge of the
polygon before the polygon definition is started. If this is not
done, the plotter will draw a line from the center of the square
to the beginning corner. The PM command is used to separate the
definition of the exterior polygon from the interior sub-polygon.
Additional sub-polygons can be constructed by separating each
with the PM command. The plotter fills alternate sub-polygons
starting with the exterior polygon.

As a test of your understanding of the system, define the
symbols equivalent to number 100 with the other 3 quadrants
filled. Then try a square or diamond with filled quadrants.
When you think you've got it down, try a hexagon with filled
sectors. And finally, the author would certainly appreciate it
if some ambitious soul would define a "pick and hammer" prospect
symbol and donate it to the system.

When you tire of the game, entering **END** in the **Symbol No.**
field will return control to the Utilities Menu. Press the **F9**
function key at the Utilities Menu to return to the Main Menu.

Chapter 7. ARCHIVING AND RESTORING INFORMATION

7. ARCHIVING AND RESTORING INFORMATION

Chapter 7. ARCHIVING AND RESTORING INFORMATION

Because collecting and entering data into the database system is often the most time-consuming and expensive part of a resource assessment project, every effort should be made to protect the information once it is in digital form. GSMODS includes several forms of protection which should be adequate to avoid accidental destruction of information. No attempt has been made to provide system security against intentional destruction of, or un-authorized access to, the databases. The final line of defense against accidental destruction of information consists of multiple copies of the databases. Databases should be backed up (archival copies made) regularly and often. The back-up copy (or copies if you really want to be safe) should be stored in a separate location from the primary data. Choices 3 and 4 on the Utilities Menu (Back-up Data Files and Restore Data Files) are used to make a copy of the user's databases on a separate disk from the primary databases, and to restore the primary data from the back-up copy if necessary.

Creating a Back-up Copy of the Databases

Choice number 3 from the Utilities Menu runs the back-up program which copies the current account databases to the disk(s) selected by the user. This program deletes existing databases on the back-up disk before copying the data from the current account to the back-up disk. Be sure there are no files on the back-up disk that should be saved before starting the program. The following databases and utility files are copied from the current account to the back-up disk:

MD.DATA	MD.PLOT	MD.REF.XR
MD.REF	MD.SYM	MD.USER.XR
MD.AREA	MD.REPORT	MD.PLOT.XR
MD.USER	MD.SYS	MD.SYM.XR
FORMS	MD.DATA.XR	MD.REPORT.XR

When the back-up program is started, the screen clears and the program prompts for the location of the Revelation system. Enter the complete DOS path name to the Revelation system currently in use. This path name is used by the program to search for the files to copy. If an incorrect path name is given, the program will print an error message when it attempts to copy the files. The default for the Revelation system location is

C:\REV

indicating that the system resides on the C: drive in a sub-directory named REV. The program next prompts for the location of the back-up disk. Enter the complete DOS path name to the location where the back-up is to be created. The default is

A:

indicating that the **A:** drive is to be used for the back-up
disk(s). If the back-up is to be made to a high-capacity device
such as a removable-cartridge hard disk, a path name to a sub-
directory may be entered. If a sub-directory is used, make
certain there is enough unused space on the disk to complete the
back-up procedure. If a complete disk is used, such as **A:**, the
program will prompt for a new disk if the first disk fills.

After the locations are entered, the program will wait for
the user to insert a formatted back-up disk into the selected
drive and press the **RETURN** key. If no errors occur, the program
will inform the user that it is deleting old back-up files (if
there were any on the back-up disk) and then notify the user that
it is copying databases from the current account to the back-up
disk. If the back-up disk becomes full, the program will pause
and request another disk in the back-up disk drive. Insert
another formatted disk and press the **RETURN** key to continue. If
the back-up program finds an empty database it will display a
warning message. This is a normal occurrence when backing up a
new account. If this message appears after the account has been
in use long enough that none of the databases should be empty,
quit the back-up program (enter a Q or q) and find the problem
before proceeding. This is a remote possibility, but illustrates
the reason for maintaining more than one back-up data set.
Running the restore program will be easier if a note is made of
empty databases when the back-up is made. Errors which may occur
are generally related to the program being unable to find the
files at the location given by the user. If the program stops
with an error message, the safest procedure is to quit the
program by entering a q or Q and check that the path names being
used are correct before trying again.

After the program has copied all of the databases, it
returns to the current account and checks each database for an
overflow condition. If it finds an overflow, it will notify the
user and ask if the database should be restructured. Overflow is
a normal occurrence when information is being added to the
databases. Each database is initially created to hold 65,535
characters (64K bytes) of information. When the information in a
database exceeds 64K bytes, an overflow file is created for the
remaining data. Having to search for data in an overflow file
slows the system slightly. Therefore, the user should answer YES
to the restructure query to allow the back-up program to
restructure the file. Restructuring causes Revelation to
allocate another 64K bytes of storage space for the database and
clears the overflow condition.

Restoring Databases from the Back-up Copy

Choice number 4 from the Utilities Menu runs the restore
program which copies one or more databases from the back-up
disk(s) to the current account.

CAUTION - This program deletes the databases on the current account after copying the equivalent databases from the back-up disk; so, be sure the current account file(s) are not needed before starting the program.

The procedure that the restore program uses for each database is to rename the existing database by adding a ".TEMP" extension to the database name (e.g. MD.DATA.TEMP), then to copy the back-up database to the current account, and finally to delete the old database. If the program is interrupted before the process is complete, the original database can be restored by renaming the ".TEMP" database back to the original name. The following databases and utility files may be copied from the back-up disk to the current account:

MD.DATA	MD.PLOT	MD.REF.XR
MD.REF	MD.SYM	MD.USER.XR
MD.AREA	MD.REPORT	MD.PLOT.XR
MD.USER	MD.SYS	MD.SYM.XR
FORMS	MD.DATA.XR	MD.REPORT.XR

When the Restore program is started, the screen clears and the program issues a warning concerning the destruction of current databases. Enter a "Y" or "y" to continue. The program then prompts for the location of the Revelation system. Enter the complete DOS path name to the Revelation system currently in use. This path name is used by the program to search for the current account. If an incorrect path name is given, the program will print an error message when it attempts to copy the files. The default for the Revelation system location is

C:\REV

indicating that the system resides on the **C:** drive in a sub-directory named **REV**. The program next prompts for the location of the back-up disk. Enter the complete DOS path name to the back-up disk location. The default is

A:

indicating that the **A:** drive is to be used for the back-up disk(s). A complete DOS path name to a sub-directory may be entered. If the back-up is contained on more than one disk, the program will prompt for a new disk after it has copied the required files from the first disk.

After the paths are entered, the program will inquire if the user wants to restore all of the files from the back-up disk(s). If the answer is YES (**y** or **Y**), the program will proceed to restore all the files that are on each of the back-up disks. If the answer is NO (**n** or **N**), the program will pause before restoring each file and ask if the file should be restored. This allows the user to restore selected files, if desired. The user can quit the program at any time by entering a **q** or **Q** at the file restore prompt. The program waits for the user to insert the

first back-up disk into the drive and press the **RETURN** key. If
no errors occur, the program will inform the user as it copies
each database from the back-up disk to the current account. If
another back-up disk is required, the program will pause and
request another disk in the back-up disk drive. Insert the next
back-up disk and press the **RETURN** key to continue. Errors which
may occur are generally related to the program being unable to
find the files at the location given by the user. If an error
message occurs, the safest procedure is to quit the program by
entering a q or Q and check that the path names being used are
correct before trying again.

If the restore program is unable to find a database on the
current back-up disk, it will ask the user whether to search for
it on the next back-up disk or to skip the database. This is
where it is helpful to have a list of databases which were empty
when the back-up was created. The normal response is to press
the **RETURN** key so that the program will search the next disk.
However, if the database does not exist on any of the back-up
disks, the user must tell the program to skip (enter an "S") the
database. If not told to skip the database, the program will
continue to prompt for another disk to search. Be sure that the
back-up disks are inserted in the back-up drive in the same order
that they were created by the back-up program. If back-up disk
#2 is inserted before disk #1, the program will halt with a
"Database MD.DATA NOT found on disk 1" error message. Quit the
program (enter a Q or a q), place the correct disk in the back-up
drive, and restart the program to continue.

Transferring Data Between Accounts

Because the two programs, back-up and restore, have no
knowledge of the account in use, they can also be used to
transfer data from one account to another. For example, to
create a new account with information which is a subset of a
current account:

1.   Create the new account with empty databases using the
        installation procedure. See Appendix I, Installation of
        GSMODS.
2.   LOGTO the old account which contains the information and run
        the back-up program. This will create a disk or set of
        disks which contain all of the information in the old
        account databases.
3.   LOGTO the new account and run the restore program. From the
        restore program, the desired databases can be copied to
        the new account.
4.   From the new account Main Menu, press the **F9** function key to
        access Revelation Command Level (TCL). From TCL, the
        Revelation SELECT and DELETE commands can be used to
        erase records in each database which are not needed in
        the new account.
5.   Build a set of cross-reference indexes for the new account
        (see Chapter5, Building cross-reference indexes).

As an example, the following sequence of commands could be used to create a county (Elbert) subset of a database containing records for an entire state (Colorado). The sequence starts from the DOS prompt assuming the new account has been created with a name of ELBERT; comments are shown in square brackets.

>REV COLORADO
                              [Old account is named COLORADO]
9   [Select Utilities Menu]
3   [Select Back-up data files]

[Insert blank disk(s) and create complete back-up]

F9   [Return to Main Menu]
10   [Exit Revelation]
>REV ELBERT
9   [Select Utilities Menu]
4   [Select Restore data files]

[insert back-up disk(s) and restore all files]

F9   [Return to Main Menu]
F9   [Access TCL]
:SELECT MD.DATA WITH COUNTY NE "Elbert"
                              [Select records to delete]
>DELETE MD.DATA
                              [Delete all selected records from MD.DATA]

[Repeat similar selection and deletion for each database, as necessary]

:MODS
                              [Return to the Main Menu]

Chapter 8. QUICK REFERENCE

8. QUICK REFERENCE

Chapter 8. QUICK REFERENCE

Special Words, Symbols, and Control Keys

Control Keys:

Key	Active[1]	Description
left[2]	All	Move cursor left one character
right[2]	All	Move cursor right one character
^left[2]	All	Move cursor left one word
^right[2]	All	Move cursor right one word
up[2]	Entry	Move cursor to previous field
down[2]	Entry	Move cursor to next field (same as RETURN)
Home	All	Move cursor to beginning of line
End	All	Move cursor to end of line
Ins	All	Toggle between insert and replace modes
Del	All	Delete character at current cursor position
backsp[2]	All	Delete character to the left of current cursor position
Esc	TCL	Prompts for video attribute sequence – good for testing color combinations
^D	Entry	Delete current record (from Change prompt only)
^E	Entry	Quit without filing current record
^T	Entry	Clear current entry screen and go to top
^X	Entry & TCL	Delete current line

Function Keys:

Key	Active	Description
F1	Entry	Display HELP screen for current field
F2	Entry	Copy information from previous record (single-valued field only)
F3	TCL	Display last command entered
F7	All	Clear from cursor to beginning of line
F8	All	Clear from cursor to end of line
F9	Menu	Return to previous menu
^F5	Menu	Return to TCL from any menu

Special Characters and Words:

Word	Active	Description
?	Entry	Display HELP screen for current field
"	Entry	Copy information from previous record
>	GS-Entry	Go to top of next screen of entry set
<	GS-Entry	Go to top of first screen of entry set
!	GS-Entry	File record
!	GS-Program	Re-start program from beginning
-	GS-Entry	Stop copying defaults from previous record to current field
\	Key	Denotes beginning of cross-reference search parameter
=	Key	Reset default record counter
TOP	Entry	Clear current entry screen and go to top
END	Entry	Quit without filing current record
DELETE	Entry	Delete current record (from Change prompt only)
Q	GS-Program	Stop program, return to menu

Special Terms for use with Which Value? prompt:

Term	Alternate	Description
B	PgUp	Display previous multi-valued window
F	PgDn	Display next multi-valued window
ADD	^A	Add values to end of multi-valued list
CLEAR	^C	Delete all values from multi-valued window
Dn	^D	Delete value no. n from multi-valued window
In	^I	Insert new value before value no. n in multi-valued list

[1]Notes:

All	Usable at any prompt
Entry	Usable at any prompt on any entry screen in the Revelation system unless otherwise noted
GS-Entry	Usable at any prompt on GSMODS entry screens only
GS-Program	Usable at most prompts in GSMODS programs
Key	Usable at record key prompt only
Menu	Usable at any menu
TCL	Usable at Revelation Command Level

[2]Keys

     Left, right, up, down, and backspace are commonly represented by arrows on the computer keyboard

^   Hold down control key while pressing the next key

U. S. Postal Service State Abbreviations

AL	Alabama	MT	Montana
AK	Alaska	NE	Nebraska
AZ	Arizona	NV	Nevada
AR	Arkansas	NH	New Hampshire
AS	American Samoa	NJ	New Jersey
CA	California	NM	New Mexico
CZ	Canal Zone	NY	New York
CO	Colorado	NC	North Carolina
CT	Connecticut	ND	North Dakota
DE	Delaware	OH	Ohio
DC	District of Columbia	OK	Oklahoma
FL	Florida	OR	Oregon
GA	Georgia	PA	Pennsylvania
GU	Guam	PR	Puerto Rico
HI	Hawaii	RI	Rhode Island
ID	Idaho	SC	South Carolina
IL	Illinois	SD	South Dakota
IN	Indiana	TN	Tennessee
IA	Iowa	TT	Trust Territories
KS	Kansas	TX	Texas
KY	Kentucky	UT	Utah
LA	Louisiana	VT	Vermont
ME	Maine	VA	Virginia
MD	Maryland	VI	Virgin Islands
MA	Massachusetts	WA	Washington
MI	Michigan	WV	West Virginia
MN	Minnesota	WI	Wisconsin
MS	Mississippi	WY	Wyoming
MO	Missouri		

Deposit type codes:
(after Taylor, Selner, and Johnson, 1986)

10. Placer deposits
     10.2 Modern
           10.21 Alluvial
           10.22 Marine, including beach, strand line
     10.4 Fossil
           10.41 Alluvial
           10.42 Marine, including beach, strand line
           10.47 Quartz-pebble conglomerate (Au, U, Th, Rand)

12. Residual deposits
     12.2 Resistate (mechanical)
           12.22 barite (Missouri)
     12.4 Chemical (concentrations, alteration minerals)
           12.42 clays
           12.44 bauxite
           12.46 iron (including "bog iron, manganese")
           12.48 vermiculite
           12.49 nickel (Riddle, OR)

14. Supergene base and precious metals

20. Organic-rich sedimentary deposits
     20.2 peat
     20.6 shale (metal-rich)
           20.62 metal-rich black shale

22. Syngenetic sedimentary deposits
     22.2 clays
           22.25 lithium clays
     22.3 shales (bloating, light-weight aggregate)
     22.4 carbonate rocks
           22.42 limestone
           22.44 dolomite
           22.46 nahcolite
     22.6 phosphorite
     22.8 evaporite
           22.82 gypsum-anhydrite-sulfur
           22.84 saline minerals
           22.86 saline brines

24. Iron formation

26. Sedimentary manganese
     26.2 bedded (Kalahari field)
     26.4 nodules

28. Sedimentary (bedded) barite

30.   Syngenetic massive (and disseminated) sulfides
       30.2 Sedimentary (Rammelsberg)
       30.4 Iron formation, sulfide bearing
       30.6 Volcanic-hosted
              30.61 Ophiolite assemblage (Cyprus)
              30.63 Felsic to intermediate (Kuroko)
       30.8 Metamorphosed syngenetic sulfide deposits

36.   Diagenetic sedimentary deposits
       36.2 clays
       36.4 zeolites
              36.42 saline lake (closed system)
              36.44 altered tuffs (open system)
       36.6 fluorite (Rome, OR)
       36.8 metals in sedimentary rocks

40.   Epigenetic sedimentary rock-hosted deposits
       40.2 sandstone-hosted metals
              40.22 sandstone uranium, vanadium, silver
              40.24 sandstone-hosted "Mississippi Valley" (Laisvall,
                     Sweden)
       40.4 sandstone, shale-hosted metals
              40.42 copper (Kupferschiefer)
              40.44 molybdenum (SD Badlands)
       40.6 carbonate-hosted metals
              40.62 "Mississippi Valley" base metals, cobalt
              40.64 Dolomitic Cu-Co (Zaire Cu)

50.   Geothermal energy
       50.2 Steam
       50.4 Hot water (only)

52.   Hot spring deposits
       52.1 carbonates (travertine)
       52.2 clays
       52.3 metals
              52.33 sedimentary rock-hosted
              52.35 volcanic rock-hosted

55.   Hydrothermal (volcanic-subvolcanic)
       55.1 veins
       55.2 stockworks
       55.3 breccia pipes
       55.4 mantos
       55.5 disseminated
              55.55 volcanic Cu (Keeweenaw, MI)
       55.6 unconformity-vein (uranium)

57.   Contact metamorphic
       57.1 Cu (Pb-Zn-Au-Ag-Mo, Carr Fork, UT)
       57.2 Zn-Pb (Ag-Cu-W, Ban Ban, Australia)
       57.5 W (Mo-Zn-Cu, Pine Creek, CA)
       57.6 Sn (W-F-Be, Lost River, AK)
       57.7 Fe (Cu-Co-Au, Daiquiri, Cuba)
       57.8 Nonmetallics
            57.81 magnesite (magnesite, brucite, Gabbs, NV)
            57.83 marble

58.   Porphyry
       58.1 Cu
       58.3 Cu-Mo (Au)
       58.4 Au
       58.5 Mo (W)
       58.7 Sn

59.   Greisen
       59.1 disseminated
       59.3 veins
       59.5 pegmatite-greisen veins

60.   Volcanic-plutonic rocks
       60.1 pumice and perlite

66.   Magmatic segregations, granitic plutons
       66.1 pegmatites

67.   Magmatic segregations, mafic-ultramafic plutons
       67.1 sulfide (immiscible melts)
            67.11 podlike (Sudbury)
            67.13 layered, interstitial (Bushfeldt Pt)
       67.3 cumulates
            67.31 stratiform chromitite
            67.32 disseminated chromite
            67.34 podiform
       67.6 intrusive
            67.61 magnetite, chromite, ilmenite
       67.7 extrusive
            67.71 magnetite (lava)

68.   Magmatic differentiates, undersaturated plutons (syenite-
            ultramafic complexes)
       68.5 intrusive
            68.51 carbonatite
       68.7 extrusive
            68.71 carbonate (lava)

69.   Kimberlite pipes (diamond pipes)
       69.1 alnoite (diamond-bearing, Kimberly, Australia)

70.   Meta-ultramafic
      70.1 asbestos
      70.3 serpentine

75.   Regional metamorphic
      75.2 aluminosilicate minerals
      75.3 marble
      75.7 graphite
      75.8 talc

Geologic Age Abbreviations

Cen	Cenozoic	Pal	Paleozoic
Quat	Quaternary	Perm	Permian
Holo	Holocene	Penn	Pennsylvanian
Pleis	Pleistocene	Carb	Carboniferous
Tert	Tertiary	Miss	Mississippian
Neo	Neogene	Dev	Devonian
Paleog	Paleogene	Sil	Silurian
Plio	Pliocene	Ord	Ordovician
Mio	Miocene	Camb	Cambrian
Oligo	Oligocene	Prec	Precambrian
Eo	Eocene	Prot	Proterozoic
Paleo	Paleocene	Arch	Archean
Mes	Mesozoic	E	Early
Cret	Cretaceous	M	Middle
Jur	Jurassic	L	Late
Tri	Triassic		
		?	inferred
		–	through
		,	and

Report Parameter Syntax

|key| Syntax

The vertical bars and the included special character string are replaced by the information specified under each description below.

|fieldname|	Replaced by the contents of the specified field from the current record. If |fieldname| occurs in the major section title, header, or footer, the current record is the record selected by the **Major Title/Header Sel Criteria** field or the **Major Footer Selection Criteria** field. If |fieldname| occurs in the minor section title, header, or footer, the current record is the current data record. Fieldname must be a defined dictionary field name in the Locality database (MD.DATA), and must be in uppercase letters.
|+fieldname|	Similar to |fieldname| except that the entire contents of the selected field is converted to uppercase.
|@fieldname|	Similar to |fieldname| except that fieldname must be a symbolic field defined in the dictionary of MD.DATA. See the Revelation Documentation for a description of symbolic fields (symbolic fields are not available to users of Run-Time versions of Revelation).
Note:	|+fieldname| and |@fieldname| can be combined as long as the + precedes the @. |+@fieldname| is acceptable, |@+fieldname| is not.
|PN|	Replaced by the current page number.
|DT|	Replaced by the current system date in a mm/dd/yy format.
|Rn,x|	Replaced by the character **x** repeated **n** times.

Page Repeating

Repeat fields are used to determine on which pages to print each line of the titles, headers, and footers of the report.

A	Print line on all pages of the report
F	Print line on the first page of the report only
L	Print line on the last page of the report only

Line Formatting

The following are valid entries for all formatting fields:

C
: Center the line or lines on the output page

Ln
: Left-justify the line or lines starting in column **n**

Rn
: Right-justify the line or lines **n** columns from the right edge of the output page

ALn
: Alternately justify the line or lines **n** columns from the left on odd numbered pages and **n** columns from the right on even numbered pages

ARn
: Alternately justify the line or lines **n** columns from the right on odd numbered pages and **n** columns from the left on even numbered pages

Wn,m,i
: Word-wrap the line or lines between columns **n** and **m**. Line breaks only occur at spaces between words. It is possible to concatenate values from multi-valued fields such that no spaces are included. The system sees the result as a single word. If a word is longer than the space allotted for a word-wrap column, the system will break the word at the right edge of the column. **i** specifies the number of spaces to indent the first line. **i** may be positive or negative. A positive **i** generates a normal paragraph indent. A negative **i** with an equal, but positive **n** generates a hanging indent paragraph.

Examples: L5
             AR
             W5,80,-5
                 (Creates an 80 character per line paragraph with a
                 5 character hanging indent)

Column Format Codes

C
: Center the data within the column

Ln
: Left-justify the data within the column starting in position **n**

Rn
: Right-justify the data within the column **n** positions from the right edge of the data column

Wn,m,i
: Word-wrap the data between positions **n** and **m** within the column. Word breaks only occur at spaces between words. **i** specifies the number of spaces to indent the first line. **i** may be positive or negative. A positive **i** generates a normal paragraph indent. A negative **i** with an equal, but positive **n** generates a hanging indent paragraph.

Examples: L5
             W5,20,-5
                 (Creates an 20 character per line paragraph with a
                 5 character hanging indent)

Multi-value Selection Codes

Concatenate, the most general option, is entered as follows:

Cn,m,x

The **C** is required to specify the concatenation option. The **n** is an integer which specifies the starting value to select for output from the multi-valued field. The **m** is an integer which specifies the last value to be output from the multi-valued field. The **x** is a character string which is to be inserted between each value.

The **N** option is a special case of concatenation. It is used when each value is to be output on a separate line. The format is:

Nn,m

The **N** tells the system to use a new line for each value. The **n** is an integer which specifies the starting value to select for output from the multi-valued field. The **m** is an integer which specifies the last value to be output from the multi-valued field.

Cross-Reference Field List

The following fields are cross-referenced in each databases:

MD.DATA: SITE   *
                SYNONYMS   *
                DISTRICT
                COUNTY
                2DEG.QUAD
                PRIME.QUAD
                COMMODITIES
                DEP.CODE
                ORE.MINERAL
                KEY
                REF.NO

MD.REF: AUTH.NAME   *
                REF.CIT   *

MD.USER: USER.LNAME   *

MD.PLOT: NSCALE   *
                NOTES   *

MD.SYM: NAME   *
                NOTES   *

MD.REPORT: COMMENT   *
                TITLE   *

Fields marked with an asterisk are primary cross-reference fields.

Cross-Reference Screen Options

The following options are available from the Cross-reference screen:

Entry	Action
RETURN	Pressing the **RETURN** key returns to the data entry screen without selecting a record
#	Entering a number from the selection list returns to the data entry screen and displays the selected record
PG#	Entering **PG** followed by a page number displays another page of the selection list. There is no space between the command, PG, and the page number
new word	If a new word is entered, the system searches for the new word in the current cross-reference field(s). This is not a subset function; the entire database is searched for the new word. If the item being searched for is a number (such as a reference number), entering a new number at this prompt will cause the system to try to select that number record from the selection list (see #, above). To force the system to accept the number as a new search parameter, enter **key=n**, where n is the desired number
R	Refine the search. The system prompts for a new word and searches for the new word within the previously selected set of records. This is a true subset function
S	Sub-string search. The system will search for any cross-referenced word which contains the specified sub-string and display a list of records which contain the word
(.)	Continue the sub-string search. Entering a period after a sub-string search list is displayed will continue the search to the next cross-referenced word which contains the specified sub-string and display a list of records which contain the word

System-Defined Plot Symbol Codes

The current list of symbol codes is as follows:

1 = circle	F1 = filled circle
2 = square	F2 = filled square
3 = triangle	F3 = filled triangle
4 = diamond	F4 = filled diamond
5 = hexagon	F5 = filled hexagon
6 = plus	
7 = X	
8 = asterisk	

Plot Line Codes

Currently defined line codes are:

0 = Solid
1 = Dotted
2 = Short Dash
3 = Long Dash
4 = Dash - Dot
5 = Long Dash - Short Dash
6 = Long Dash - 2 Short Dashes

Boolean Operators

The following are valid boolean operators for all selection criteria:

EQ	Equal
NE	Not equal
GT	Greater than
GE	Greater than or equal
LT	Less than
LE	Less than or equal
NOT	Not (precedes other operators as a modifier)
CONTAINS	Selects record if field contains value as a sub-string
[]	Same as CONTAINS
]	Selects record if field begins with value
[	Selects record if field ends with value
AND	Each phrase must be true
OR	Either phrase may be true

Display Colors

Acceptable Monochrome Codes:

    Acceptable monochrome codes consist of a single character which specifies a foreground/background combination. White in the following descriptions refers to the bright color of the monitor whether it is green, amber, blue, white, or whatever.

```
1 = Black letters on white background
2 = Blinking light gray letters on white background
3 = Blinking black letters on bright white background
4 = Bright white letters on white background
8 = Light gray letters on white background
D = Dark gray letters on black background
H = Bright white letters on black background
I = White letters on black background
O = Blinking black letters on light gray background
```

Acceptable Color Codes:

    Acceptable color codes consist of two characters, the first character specifies the background color and the second character specifies the foreground color. Any of the following characters can be entered for either background or foreground color:

```
1 = Dark Blue            I = Light Blue
2 = Dark Green           J = Light Green
3 = Dark Cyan            K = Light Cyan
4 = Dark Red             L = Light Red
5 = Dark Magenta         M = Light Magenta
6 = Brown                N = Yellow
7 = Light Gray           8 = Dark Gray
P = Black                / = White
```

APPENDICES

Appendix I. INSTALLATION OF REVELATION AND GSMODS

Before the GSMODS system can be installed, the Revelation database management system installation must be completed. If a complete Revelation system is being installed, follow the instructions which come with the Revelation documentation. If a Revelation Run-time system is being installed, there will be little or no documentation with the system. The Run-time system can be installed by simply copying all of the files on the Revelation distribution disk to a sub-directory on the hard disk. Although Revelation can be run on a computer with two 360K byte floppy disk drives, the combination of Revelation and GSMODS is too large and must be run from a high-capacity disk such as a hard disk or removable-cartridge disk system.

If a previous version of GSMODS has been in use and the information in the system is to be transferred to the new version, first make a back-up copy of the entire old system in case an error is made in the installation procedure, then follow the procedure below just as if it was a first-time installation. Be sure to use the same account name that was used with the earlier version. The installation program will update the GSMODS system to the new version, but will not destroy any of the existing data.

Once the Revelation system is installed and operating correctly (try some of the Revelation tutorials both to test the system installation and to become familiar with the Revelation environment), GSMODS can be installed by the following sequence:

1.   <u>Back-up</u> the GSMODS distribution disks. This is important because the distribution disks are used each time a new account is created (see the section on multiple accounts, p. 116). Floppy disks do fail. Don't rely on a single copy any longer than necessary.
2.   Put the GSMODS distribution disk #1 in the A: drive
3.   Make the drive with the installed Revelation system the default drive and change directory to the Revelation sub-directory. On most systems this would be accomplished by entering the drive identifier at the DOS prompt (<u>c:</u> if Revelation is installed on the C: drive) and then the Change Directory command (<u>cd \rev</u> if REV is the name of the Revelation sub-directory). There must be at least 500K bytes of space available on the disk <u>after</u> the Revelation system is installed. GSMODS takes about 400K bytes, and the installation program needs about 100K bytes of working space.
      Note: Entries shown in uppercase <u>must</u> be entered in uppercase.
4.   Start Revelation by entering:

   <u>**C:>REV SYSPROG**</u>

5.   At the colon prompt enter:

:ATTACH A:

6.   At the colon prompt enter:

:RUN $BP.U INSTALL-GSMODS

       If the error message <u>"$BP.U" is not a file name</u> appears
       on the screen, the wrong disk is in the A: drive. Exit
       Revelation by entering **OFF**, place the correct disk in the
       A: drive, and start again at step #3.

7.   The system will begin running the automatic installation
       program which will prompt for three items of information.
       First it will prompt for the path name to the Revelation
       system which is being used. Enter the DOS path name to
       the Revelation system as it is installed on the computer
       in use. A typical path name would be **C:\REV**, where the
       Revelation system is installed on the **C:** drive under a
       sub-directory named **REV**. Then the installation program
       will prompt for the account name to be used for the
       account to be created. Enter any name for the account as
       long as it is one word (no spaces or punctuation,
       please). The account name <u>must</u> be entered in uppercase
       letters! Typically the name of the State or County which
       contains the data to be entered is used as the account
       name. Finally, the program will prompt for a password.
       If a password is entered, it will be required for any
       subsequent access to the account. If a password is not
       desired, just press the **RETURN** key. Several system
       messages will appear and disappear as files are copied to
       the new system. These can be safely ignored until the
       system prompts for the next disk. Periods of three to
       five minutes may pass with no apparent action. Be
       patient. It takes awhile to digest all the new features
       that are being added to the Revelation system.

8.   When the installation program has finished copying the
       information from the first GSMODS distribution disk, it
       will ask you to replace disk #1 with disk #2 in the A:
       drive. Press the **RETURN** key when disk #2 is ready.

9.   At the colon prompt the installation is complete. Remove
       the GSMODS distribution disk from the **A:** drive and exit
       Revelation by entering:

:OFF

       The system can be started at any time by entering:

<u>**C:>**</u>**REV accountname**

       where accountname is the name which was used during
       installation. After a few moments, the GSMODS Main Menu
       will appear. See your DOS documentation for information
       about setting up a batch file to enter the system with a
       shorter command, if desired.

10. The first time this version of the system is run on a new
     account, GSMODS should be configured for your hardware.
     See the configuration instructions in Appendix II.

Distribution Disks

Distribution disk #1 for GSMODS, version 1.01, should contain the following files:

Revelation file name	DOS file name	Contents
VOC	ROS10000.*	Revelation command directory
STATES	ROS10001.*	U. S. Postal Service abbreviations
$BP	ROS10002.*	GSMODS programs
FORMS	ROS10003.*	FORMS formats
DATA.FNAMES	ROS10004.*	List of Locality database field names
MD.SYS	ROS10005.*	System Setup database
	ROSMEDIA.MAP	Revelation directory
	README	Program description

Distribution disk #2 for GSMODS, version 1.01, should contain the following files:

Revelation file name	DOS file name	Contents
RDES	ROS10000.*	GSMODS entry screens and menus
MD.DATA	ROS10001.*	Locality database
MD.DATA.XR	ROS10002.*	Locality indexes
MD.AREA	ROS10003.*	Area Outline database
MD.REF	ROS10004.*	Reference database
MD.REF.XR	ROS10005.*	Reference indexes
MD.USER	ROS10006.*	Reporter database
MD.USER.XR	ROS10007.*	Reporter indexes
MD.PLOT	ROS10008.*	Plot Parameter database
MD.PLOT.XR	ROS10009.*	Plot Parameter indexes
MD.SYM	ROS10010.*	User-defined Symbol database
MD.SYM.XR	ROS10011.*	User-defined Symbol indexes
MD.REPORT	ROS10012.*	Report Parameter database
MD.REPORT.XR	ROS10013.*	Report Parameter indexes
	$PDISK	PDISK command
	$SETPTR	PDISK command
	C9000.BAS	Calcomp digitizer initialization program
	C9100.BAS	Calcomp digitizer initialization program
	ROSMEDIA.MAP	Revelation directory
	README	Program description

DOS file names which are shown with an asterisk extension in the tables on p. 115 may consist of several DOS files with numeric extensions such as .000, .010, etc. To see a directory of Revelation file names (databases), start GSMODS and from the Main Menu press the **F9** function key. From the colon prompt (Revelation Command Level, TCL) enter the following command:

:LISTFILES

The States database

NOTE: The following section is only important if you work outside the United States and need to change the valid codes for states (or other political subdivisions).

Each time an entry is made in the **State** field of either the Locality database or the Reporter information database, the entry is checked to see if it is a valid USPS State abbreviation. The input validation is accomplished by comparing the entry with all of the records in the States database. There is one record in the States database for each valid code; the code (for example, CA) is also the record ID. If GSMODS is to be used for localities outside of the United States, additional codes (for States or other national subdivisions) can be added to the States database by the use of a utility entry screen. To access the States entry screen, start GSMODS and from the Main Menu press the **F9** function key. From the colon prompt (Revelation Command Level, TCL) enter the following command:

:ENTER ST.ENTRY

An entry screen will appear with two fields. See Chapter 4 for a discussion of entering and editing information on entry screens. The first field on this screen, **State Code**, is where the desired new state code is entered exactly as it will be entered in the **State** fields of the Reporter information and Locality databases. State codes are converted to uppercase as they are entered. The second field, **State Name**, is used to enter the full name of the state being coded. Records can be added, deleted, or edited from this entry screen.

Multiple Accounts

The installation procedure described above (p. 112) creates an initial account on the Revelation/GSMODS system. This may be the only account which is needed if the information in the system belongs to a single project and is not too voluminous. However, if the amount of information begins to make the system unacceptably slow and the information can be easily divided by region or subject, or if information from several projects is being stored on the system, the user may want to create several accounts. Each separate account has its own account name, password, and databases. The remainder of the system, Revelation

commands and GSMODS menu structure, is shared between all
accounts.
        The procedure for creating a new account is exactly the same
as the procedure for creating the initial account as described
on p. 112. Follow the same procedure starting at step 2, p. 112,
using a new account name, and the system will create the new
account with empty databases. To move some of the information
records from the original account to the new account, see the
section on transferring data between accounts in Chapter 7. To
move from one account to another, select item 10, Exit
Revelation, from the Main Menu. At the DOS prompt, enter **REV
accountname** with the name of the new account. The system will
re-start at the Main Menu of the new account.

The LOGTO Command

        A quicker way to transfer between accounts is to use the
LOGTO command. LOGTO is a Revelation command which allows the
user to move between accounts without having to exit and re-start
Revelation. It is entered from the Revelation Command Level
(TCL) colon prompt. To move from one account to another using
the LOGTO command, Return to the GSMODS Main Menu and then exit
to TCL by pressing the **F9** function key. The colon prompt will
appear. Enter:

:LOGTO accountname

where accountname is the name of the new account. Both the
command name (LOGTO) and the account name must be entered in
uppercase letters. If a password has been created for the new
account, Revelation will prompt for the password. If not, the
system will go directly to the Main Menu for the new account.

Appendix II. CONFIGURING GSMODS

To configure GSMODS for the hardware in use, you must run
the system setup program. This should be done when GSMODS is
first installed on the system, and any time the hardware
configuration of the system is changed. When GSMODS is started,
the Main Menu will be on the screen. From the Main Menu select
item number 9, Utilities. This will bring the Utilities Menu
onto the screen. From the Utilities Menu select item number 1,
Change System Variables. This choice will bring up the System
Setup entry screen (figure 29).

The System Setup Entry Screen

When the System Setup entry screen is first displayed, the
cursor will be in the **Record No.** field. This data entry screen
operates like the other data entry screens within the GSMODS
system. It may be helpful to read the detailed sections
concerning data entry screens in Chapters 3 and 4 before
proceeding with this entry screen. Any number of sets of system
variables can be stored in this file; however, only one set is
active at a time. The default active set of variables is the set
stored in record number 1. Enter a **1** in the **Record No.** field (or
press the **RETURN** key) to display the current values of the system
variables. The system will display the default settings for a
system with a monochrome display adapter and typical printer,
plotter, and digitizer (figure 30).

Your hardware configuration is likely to be somewhat
different than the default settings. At this point, the cursor
will be at the Change prompt at the bottom of the screen. Any of
the configuration settings can be changed by entering the number
of the field (as shown on the screen) at the Change prompt. The
screen is divided into four sections. The first set of fields is
used to define the type of video display connected to your
computer and the colors to use for various types of screen text.
Tables of available colors are included in each of the help
screens for these fields. The second section is used to define
the printer interface and maximum line width at the printer's
normal settings. The third and fourth sections are similar and
are used to define the interface between the computer and the
digitizer and plotter, respectively. To see the help screen with
the available options for any field, enter the number of the
field at the Change prompt and then enter a ? in the field (or
press the **F1** function key). To return to the Change prompt
without changing the field entry, press the **RETURN** key. When
there are no more changes to be made to the system variables,
press the **RETURN** key at the Change prompt. The system will then
use the current screen to reset the system and return with an
empty System Setup entry screen. At this point if you enter END
in the **Record No.** field, the system will return to the Utilities
Menu.

Each time the GSMODS system is started, it resets the system variables to the settings in the last record accessed from the System Setup entry screen. There are two records supplied with the system; record number 1 contains default settings for a monochrome display system, and record number 2 (figure 31) contains default settings for a color display system. You can switch between the two records simply by entering the record number at the **Record No.** prompt and filing the record by entering a return at the Change prompt and then END at the next **Record No.** prompt to exit from System Setup. To create other combinations without changing the default settings, either enter all the data in a new record by entering a new record number in the **Record No.** field, or copy one of the default records to a new record number and then edit the desired fields (See Chapter 5 for information on the Revelation COPY command). When the system variables are set to correspond to the computer hardware, exit by entering END at the **Record No.** field which will return control to the Utilities Menu. To return to the Main Menu from the Utilities Menu, press the **F9** function key. Changing the display colors does not affect the GSMODS menu system until you exit the system and return.

```
 _____
|  _____ |
| | GSMODS - System Setup Screen           1  Record No. ___   ||
| |                                                            ||
| | 2  Display Type    ___                                     ||
| |     Display Colors:    3  Normal    _     4  Reverse     _ ||
| |                        5  Highlight _     6  Highlight Rev. _||
| |                                                            ||
| |     Printer:           7  Port      _     9  Width      ___ ||
| |                        8  Comm. Parameters _____       ||
| |                                                            ||
| |     Digitizer:        10  Type      _    11  Port       _  ||
| |                       12  Comm. Speed ___                  ||
| |                                                            ||
| |     Plotter:          13  Type      _    14  Port       _  ||
| |                       15  Comm. Speed ___                  ||
| |                                                            ||
| | 16  Comments  _____||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |_____||
|_____|
```

Figure 29.   GSMODS System Setup entry screen.

```
 _____
|  _____ |
| | GSMODS - System Setup Screen           1  Record No.   1   ||
| |                                                            ||
| | 2  Display Type    MDA                                     ||
| |     Display Colors:    3  Normal    I     4  Reverse     1 ||
| |                        5  Highlight H     6  Highlight Rev. 4||
| |                                                            ||
| |     Printer:           7  Port      1     9  Width      80 ||
| |                        8  Comm. Parameters                 ||
| |                                                            ||
| |     Digitizer:        10  Type      1    11  Port       2  ||
| |                       12  Comm. Speed 1200                 ||
| |                                                            ||
| |     Plotter:          13  Type      1    14  Port       1  ||
| |                       15  Comm. Speed 4800                 ||
| |                                                            ||
| | 16  Comments  This is the normal setup using all defaults - MDA.||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |                                                            ||
| |_____||
|_____|
```

Figure 30.   GSMODS System Setup entry screen with monochrome
             default settings.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│  GSMODS - System Setup Screen              1  Record No.    2         │
│                                                                       │
│   2  Display Type      CGA                                            │
│        Display Colors:    3  Normal     17      4  Reverse       3N   │
│                           5  Highlight  1N      6  Highlight Rev. 4M   │
│                                                                       │
│        Printer:           7  Port    1          9  Width     80       │
│                           8  Comm. Parameters                         │
│                                                                       │
│        Digitizer:        10  Type    1         11  Port     2        │
│                          12  Comm. Speed  1200                        │
│                                                                       │
│        Plotter:          13  Type    1         14  Port     1        │
│                          15  Comm. Speed  4800                        │
│                                                                       │
│  16  Comments  Normal setup for CGA system                           │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 31.   GSMODS System Setup entry screen with color default
             settings.

Appendix III. HARDWARE INSTALLATION AND CONFIGURATION

Digitizers

GTCO Digitizer

The switches on a GTCO digitizer must be set to the following options:

    parity disabled
    parity odd
    1 stop bit
    8 data bits
    include push-button code
    include space
    include carriage return
    no line feed
    5 digit ASCII
    serial ports A and B
    alarm disabled
    RS-232 interface
    incremental output
    point/line mode
    16-button cursor
    inch data
    ASCII data
    control line activity not monitored

There are two options for cables to connect between the GTCO digitizer and the computer serial port. A straight-through, 4-wire modem cable can be attached from port B (J6) on the digitizer to the computer serial port. For this cable, pins 1, 2, 3, and 7 are connected straight through and pins 5, 6, 8, and 20 are tied together on the computer end of the cable. Alternatively, a 4-wire, null-modem cable can be attached from port A (J5) on the digitizer to the computer serial port. For this cable, pins 1 and 7 are connected straight through and pins 2 and 3 are swapped. Pin 2 on one end of the cable is attached to pin 3 on the other end and vice versa. Also, pins 4 and 5 are tied together at each end of the cable and pins 6, 7, 8, and 20 are tied together at each end of the cable.

Calcomp Digitizer

Calcomp models 9000 and 9100 digitizers with the "Universal Formatter Option" can be used by programming the digitizer to emulate a GTCO digitizer. There are two utility programs on distribution disk #2, **C9000.BAS** and **C9100.BAS**, which will automatically do the re-programming. Copy the program which corresponds to the model number of your digitizer to the disk and directory which contains your Revelation system before proceeding with the following instructions. These are BASIC programs which

require either IBM BASIC/BASICA or GWBASIC to run. Before the
programs can be run, the OPEN statement in the program must be
correct for your installation. The OPEN statement is currently
set for serial port #2 and 4800 baud. To change the settings,
run your BASIC interpreter, LOAD the correct program for your
digitizer, and LIST the program. You will find a statement
number 10 which looks like this:

10 OPEN COM2:4800,N,8,1,RS,CS,DS,CD" AS #1

     If your digitizer is attached to serial port #1, change COM2
to COM1 on line 10. If your digitizer is setup to run at a speed
other than 4800 baud, change the 4800 to the correct speed on
line 10. Do not change anything else in the program. When you
are finished changing line 10, press the **RETURN** key until the
cursor is at the bottom of the screen on a blank line. Then SAVE
the program to its original name and exit BASIC by entering the
word SYSTEM. To run the Calcomp program, enter one of the
following commands (depending on your digitizer model and BASIC
version) from the DOS prompt:

BASICA C9000
BASICA C9100
GWBASIC C9000
GWBASIC C9100

     The program only needs to be run once each time the
digitizer is turned on or reset. The program can be run from a
batch file which starts your GSMODS system as long as you turn
the digitizer on before running the batch program. The program
can also be run from Revelation Command Level (colon prompt) by
entering a command such as:

:PC BASICA C9000

This command assumes the program is copied onto your Revelation
sub-directory and BASICA (or GWBASIC) has a defined path name. A
full path name can be substituted for either BASICA or C9000 in
the command.

     The GTCO 16-button cursor has keys labeled 0 through 9 and A
through F. The Calcomp 16-button cursor has keys labeled 0
through 9, A through D, #, and *. Because GSMODS only uses keys
0 through 9 and A through D, the only difference between using
the two brands of digitizer with GSMODS is the necessity of
running the utility program for the Calcomp. See the Calcomp
documentation for instructions on switch settings on the
digitizer and on the correct cable to use to connect the
digitizer to the computer serial port.

Plotters

Hewlett-Packard 75xx Series Plotters

These plotters must be set to run in the following modes: remote, standalone, hardwire handshake, direct, full duplex, 8 data bits, 1 stop bit, and parity off. The plotter may be set to any speed which is consistent with the selection in the configuration file (see Appendix II, Configuration), but the maximum reliable speed at this time seems to be 4800 baud. The HP 7550A plotter is set by a complex series of soft switches on the front panel; the HP 7570A, 758x, and 759x plotters are set by switches on the rear of the machine. Refer to the plotter documentation for help in locating and setting the switches.

Information on connecting the plotter to the computer serial port is contained in the "Operation and Interconnection Manual" which comes with each Hewlett-Packard plotter.

Hewlett-Packard 7475 Plotter

This plotter is set by switches on the rear of the machine. Switch S1 must be off (0) and switch S2 must be on (1). The switch marked D-Y must be in the D position, the switch marked US should be in the US position for using 8 1/2" by 11" or 11" by 17" paper, and the switch marked A3-A4 may be in either position depending on which size paper is most commonly used. Switches B4 through B1 set the communication speed and number of stop bits. The plotter may be set to any speed which is consistent with the selection in the configuration file (see Appendix II, Configuration); but, due to the small memory buffer in this model, the maximum reliable speed at this time seems to be 1200 baud. Communications must be set to 1 stop bit. Refer to the plotter documentation for help in locating and setting the switches. A common configuration to start with is as follows:

Switch	Setting	Description
S1	0	
S2	1	
D-Y	D	Direct connection to computer
MET-US	US	English paper sizes
A3-A4	A4	Default to 11" by 17" paper
B4	0	1200 baud, 1 stop bit
B3	1	" "
B2	1	" "
B1	1	" "

Information on connecting the plotter to the computer serial port is contained in the "Operation and Interconnection Manual" which comes with each Hewlett-Packard plotter.

Appendix IV. REVELATION COMMAND SUMMARIES

The following Revelation commands can be entered from the
Revelation Command Level (TCL) colon prompt. This list is a
small subset of the commands available and is provided here for
users who do not have access to Revelation documentation. For
more information on other options for these commands and for use
of other Revelation commands, see the Revelation documentation.
Partial documentation for most commands is available on-line from
the HELP command. Command names are given in uppercase; user
supplied parameters are given in lowercase.

Command   Description

CHANGE-PASSWORD   Change password on current account

CLEAR   Clears the current select list and returns to
                             the colon prompt (see SELECT command,
                             Chapter 6)

CLEAR-FILE filename
                         Delete all records from the data section of
                             the file (database) given in filename

CLS   Clear display screen

COPY file1 rec1 TO: rec2
                         Copy a record named rec1 in a file named
                             file1 to a new record named rec2 (see COPY
                             command, Chapter 5)
                         Options:
                             (P)   Copy record to printer
                             (PS)   Copy to printer and suppress line
                             numbers

COUNT filename   Count number of records in file and display
                             on screen

DELETE filename rec
                         Delete record named rec from file named
                             filename. Additional records may be
                             listed separating each record name with a
                             space (see DELETE command, Chapter 5)

DELETE-ACCOUNT accountname
                         Delete an entire account and all its files
                             from the system. CAUTION - there is no
                             facility for retrieving any information
                             from the account once it has been deleted

EXIT   Entered from the DOS prompt to return to
                             Revelation after a PC command

FORM   Command to produce simple customized reports
                             (see FORM command, Chapter 6)

HELP   Lists TCL commands and examples

LIST filename criteria options
                             List all or part of a file (see LIST command,
                                Chapter 6)
                             Options:
                                 (E)   Suppress page eject before
                                         printing
                                 (N)   Nopage - continuous scroll on
                                         display screen
                                 (P)   Printer output

LISTFILES   List currently attached files (databases)
LISTFILES (P)   List currently attached files to printer

LOGTO account   Change to a different account without leaving
                                Revelation (see LOGTO command, Appendix I)

OFF   Exit Revelation

PC command   Execute DOS command and return to Revelation
                                when command is finished
PC   Call DOS and remain at DOS level until an
                                EXIT command is entered at the DOS prompt
PDISK pathname   Re-direct printer output to DOS file named in
                                pathname (see PDISK command, Chapter 6)
PDISK PRN   Direct printer output back to printer

RENAME-FILE oldname
                             Change the name of a database or file

SELECT filename criteria
                             Create list of records from the database
                                named filename which match the selection
                                criteria (see SELECT command, Chapter 6)

TIME   Display current system date and time

WHO   Displays current account and terminal number

Appendix V. LOCALITY DATABASE

MD.DATA field names:

RECORD	Record number
DATE	Date of record entry
FNAME	Reporter given names
LNAME	Reporter last name
AFFIL	Reporter affiliation
REPORTER	Reporter full name and affiliation
SITE	Site name
SYNONYMS	Other names for site
REC.TYPE	Type of record
SITE.TYPE	Type of site
SOURCE	Source of information in record
DISTRICT	Mining district or area
COUNTY	County of site location
STATE	State of site location
COUNTRY	Country of site location
2DEG.QUAD	2 degree quadrangle
PRIME.QUAD	Primary quadrangle
SCALE	Scale of primary quadrangle
LATITUDE	Latitude of location
LONGITUDE	Longitude of location
SECTION	Location of site (section, township, range, etc.)
COMMODITIES	Commodities list
DEP.TYPE	Type of deposit
DEP.CODE	Code for type of deposit
PROD.CODE	Production code
PRODUCTION	Description of production
HR.NAME	Name of host rock
HR.LITH	Description of host rock
HR.AGE	Age of host rock
MINERAL.AGE	Age of mineralization
ASSOC.ROCK	Associated igneous rock description
ASSOC.AGE	Age of associated igneous rock
TECTONICS	Tectonic setting
ORE.MINERAL	Ore minerals list
NONORE.MINERAL	Description of non-ore mineralogy
ORE.CONTROL	Description of ore controls
DESCRIPTION	General deposit description
KEY	Search key list
COMMENT	Comments
NOTES	Private notes
REF.NO	Reference number list
MRDS.NO	MRDS record number
CMR.NO	CMR branch file number

MD.DATA Field Descriptions
(prompt name is followed by screen number and prompt number)

Record Number (1,1)

System ID	RECORD
Field Number	0
Field Type	Key
Input Checking	Integer between 1 and 99999
Entry Required?	Yes
Default	Next available empty record number
Cross-reference?	No

Description:

This field contains a five digit, sequential, working file number which is assigned by the system each time a new record is created. The record number must be an integer between 1 and 99999. To enter a new record, press the **RETURN** key. To edit an existing record, enter the record number. To reset the default record number counter, enter an "=" followed by the desired value.

Existing records may also be retrieved (and edited) by entering a search parameter instead of a record number. For more information on cross-referencing techniques, see the discussion in Chapter 5.

Fields which can be cross-referenced:

Field Prompt	System ID
Site Name	SITE
Synonyms	SYNONYMS
District	DISTRICT
County	COUNTY
2° Quad Name	2DEG.QUAD
Primary Quad	PRIME.QUAD
Commodities	COMMODITIES
Deposit Code	DEP.CODE
Ore Minerals	ORE.MINERAL
Search Keys	KEY
References	REF.NO

Entry Date (1,2)

System ID	DATE
Field Number	3
Field Type	Single-valued
Input Checking	Valid date
Entry Required?	Yes
Default	Current system date
Cross-reference?	No

Description:

Date that the record was entered or significantly altered.
Enter date as MM/DD/YY.

Reporter

System ID   REPORTER
Field Number
Field Type   Symbolic
Input Checking
Entry Required?
Default   Reporter's name and affiliation from most
                         recently accessed record in Reporter
                         database
Cross-reference?   No
Description:

     This field has no prompt because the information is
automatically copied directly from the Reporter database. It
contains the name (preferably first name, middle initial, and
last name) of the person responsible for the contents of the
record and that person's affiliation. The purpose of this field
is to provide users with a contact for further information about
this particular record. This information should be updated if
substantial change is made to the record.
     The information displayed by this field is stored in three
fields which are not separately displayed on the data entry
screen, FNAME, LNAME, and AFFIL. This information can be changed
by entering 3, 4, or 5 as the field to change at the Change
prompt. The current value for the field appears at the bottom of
the screen for editing. After the value has been changed,
pressing the **RETURN** key stores the value in the record.

Site Name (1,6)

System ID   SITE
Field Number   7
Field Type   Single-valued
Input Checking
Entry Required?   Yes
Default
Cross-reference?   Yes
Description:

     The most well known or the most recent name of the site,
occurrence, district, or area that is being described by this
record.

Synonyms (1,7)

System ID   SYNONYMS
Field Number   8
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    Any other names (not already entered in the **Site Name** field) by which the site or area has been known. This is a multi-valued field; any number of names can be entered.

Record Type (1,8)

System ID   REC.TYPE
Field Number   9
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   Yes
Default
Cross-reference?   No
Description:

    The type of record being entered. A two-character required field. Entry may be either upper- or lowercase.

First Character:

S for Site records (data from a single locality)
A for Area records (summary of mining district or mineralized
                area)

Second Character:

M for Metallic commodities
N for Non-metallic commodities
B for Both metallic and non-metallic commodities

Example: SM

Site Type (1,9)

System ID	SITE.TYPE
Field Number	10
Field Type	Single-valued
Input Checking	Must match codes given below
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

Type of site or area being described by this record. A one-character required field. Entry may be either upper- or lowercase.

A = Mineralized area
D = Mining District
M = Mine
P = Prospect
C = Claim
O = Occurrence
H = Drill Hole

Information Source (1,10)

System ID	SOURCE
Field Number	11
Field Type	Single-valued
Input Checking	Must match codes given below
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

Describes the primary type of information used to create the record. A one-character required field.

1 = Published literature
2 = Unpublished report
3 = Field observation
4 = MRDS
5 = Personal communication

District (1,11)

System ID	DISTRICT
Field Number	12
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

Name(s) of the mining district(s) or mineralized area(s) which contain the site being described. Multi-valued field; any number of names may be entered.

County (1,12)

System ID	COUNTY
Field Number	13
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

Enter the full name of the county or counties in which the deposit is located. Do not enter the word "County". This is a multi-valued field; any number of county names may be entered.

State (1,13)

System ID   STATE
Field Number   14
Field Type   Single-valued
Input Checking   Must match valid postal code
Entry Required?   No
Default   State field of most recently accessed
                        reporter information record
Cross-reference?   No
Description:

    The 2-character U.S. Postal Service abbreviation for the
name of the state in which the deposit or area is located. If an
area is in multiple states, enter duplicate records with a
different state code in each record. Records are stored in the
Branch of Central Mineral Resources master file by state;
entering duplicate records ensures that each state file contains
a copy of the record.

U.S. Postal Service State Abbreviations

AL	Alabama	MT	Montana
AK	Alaska	NE	Nebraska
AZ	Arizona	NV	Nevada
AR	Arkansas	NH	New Hampshire
AS	American Samoa	NJ	New Jersey
CA	California	NM	New Mexico
CZ	Canal Zone	NY	New York
CO	Colorado	NC	North Carolina
CT	Connecticut	ND	North Dakota
DE	Delaware	OH	Ohio
DC	District of Columbia	OK	Oklahoma
FL	Florida	OR	Oregon
GA	Georgia	PA	Pennsylvania
GU	Guam	PR	Puerto Rico
HI	Hawaii	RI	Rhode Island
ID	Idaho	SC	South Carolina
IL	Illinois	SD	South Dakota
IN	Indiana	TN	Tennessee
IA	Iowa	TT	Trust Territories
KS	Kansas	TX	Texas
KY	Kentucky	UT	Utah
LA	Louisiana	VT	Vermont
ME	Maine	VA	Virginia
MD	Maryland	VI	Virgin Islands
MA	Massachusetts	WA	Washington
MI	Michigan	WV	West Virginia
MN	Minnesota	WI	Wisconsin
MS	Mississippi	WY	Wyoming
MO	Missouri		

Country (1,14)

System ID	COUNTRY
Field Number	15
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	Country field of most recently accessed reporter information record
Cross-reference?	No
Description:	

Enter the name of the country in which the deposit or area is located.

2° Degree Quad Name (1,15)

System ID	2DEG.QUAD
Field Number	16
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

The name(s) of the 1:250,000 scale quadrangle(s) in which the site or area is located. Do not enter the word "Quadrangle" as part of the name. This is a multi-valued field; as many quadrangle names as necessary may be entered.

Note: This field is normally entered during the process of digitizing the location and need not be entered into the data record from the keyboard.

Primary Quad (1,16)

System ID	PRIME.QUAD
Field Number	17
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

The name(s) of the quadrangle(s) used to determine the accurate location of the site or area boundary. Normally a 1:24,000 or 1:62,500 scale quadrangle. Do not enter the word "Quadrangle" as part of the name. This is a multi-valued field; as many quadrangle names as necessary may be entered.

Note: This field is normally entered during the process of
digitizing the locations and need not be entered into the data
record from the keyboard.

Scale (1,17)

System ID   SCALE
Field Number   18
Field Type   Multi-valued
Input Checking   Must be an integer between 200 and 250000
Entry Required?   No
Default
Cross-reference?   No
Description:

    The scale of the primary quadrangle(s) used to digitize the
location of the record. Enter the denominator of the fractional
scale of the primary quadrangle without punctuation. (24000, not
1:24,000; acceptable values are 200 to 250000). One value should
be entered into this field for each value which is entered into
the **Primary Quad** field.

Note: This information is normally entered during the process of
digitizing the location and need not be entered into the data
record from the keyboard.

Latitude (1,18)

System ID   LATITUDE
Field Number   19
Field Type   Single-valued
Input Checking   Must match format given below
Entry Required?   No
Default
Cross-reference?   No
Description:

    Latitude of the site (or the center of the area) being
described, to the nearest tenth of a second. Normally obtained
by digitizing from the primary quadrangle. If the location must
be entered manually, be sure the location information is accurate
and enter as:

dd mm ss n

where dd = degrees
      mm = minutes
      ss = seconds
      n = N or S

Notes: dd and mm must be entered as integers. All four parts of
the latitude must be entered, separated by spaces. A note should
be placed in the **Comments** field describing the accuracy of the

location if it is not digitized from the primary quadrangle.

Longitude (1,19)

System ID   LONGITUDE
Field Number   20
Field Type   Single-valued
Input Checking   Must match format given below
Entry Required?   No
Default
Cross-reference?   No
Description:

     Longitude of the site (or center of the area) being
described, to the nearest tenth of a second. Normally obtained
by digitizing from the primary quadrangle. If the location must
be entered manually, be sure the location is as accurate as
possible, and enter as:

ddd mm ss e

where: ddd = degrees
        mm = minutes
        ss = seconds
         e = E or W

Notes: ddd and mm must be integers. All four parts of the
longitude must be present and separated by spaces. If the
location is not digitized from the primary quadrangle, a note
should be added to the **Comments** field describing the accuracy of
the location information.

Loc. (Sec,T,R) (1,20)

System ID   SECTION
Field Number   21
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

     The location of the site or area in terms of township,
section, and range, including quarter-section descriptions, etc.
This is an unstructured text field in which the user can arrange
the data in any manner desired.

Commodities (1,21)

System ID	COMMODITIES
Field Number	22
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

    Known commodities from the site or area being described.
Use correct chemical symbols for elements (Au, Ag, etc.) and
names of minerals if the mineral is the commodity, not the
element. List in decreasing order of importance. This is a
multi-valued field; as many commodities as desired may be
entered.

Deposit Type (1,22)

System ID	DEP.TYPE
Field Number	23
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

    A label(s) that you would attach to the type of deposit
being described (epithermal vein, massive sulfide, placer, etc.).
This is a multi-valued field; as many deposit types as needed may
be entered. The system will request a corresponding **Deposit Code**
for each deposit type before returning to the **Deposit Type** field
for the next value.

Deposit Code (1,23)

System ID	DEP.CODE
Field Number	24
Field Type	Multi-valued
Input Checking	Must be a decimal number between 10 and 99.999
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

    A numeric code that most closely fits the deposit described
by the corresponding entry in the **Deposit Type** field. This field
is used for searching and sorting the records by deposit type
even though reporters have used different short descriptive terms
for the same type of deposit. The following codes are
recommended:

Deposit type codes:
(after Taylor, Selner, and Johnson, 1986)

10. Placer deposits
     10.2 Modern
           10.21 Alluvial
           10.22 Marine, including beach, strand line
     10.4 Fossil
           10.41 Alluvial
           10.42 Marine, including beach, strand line
           10.47 Quartz-pebble conglomerate (Au, U, Th, Rand)

12. Residual deposits
     12.2 Resistate (mechanical)
           12.22 barite (Missouri)
     12.4 Chemical (concentrations, alteration minerals)
           12.42 clays
           12.44 bauxite
           12.46 iron (including "bog iron, manganese")
           12.48 vermiculite
           12.49 nickel (Riddle, OR)

14. Supergene base and precious metals

20. Organic-rich sedimentary deposits
     20.2 peat
     20.6 shale (metal-rich)
           20.62 metal-rich black shale

22. Syngenetic sedimentary deposits
     22.2 clays
           22.25 lithium clays
     22.3 shales (bloating, light-weight aggregate)
     22.4 carbonate rocks
           22.42 limestone
           22.44 dolomite
           22.46 nahcolite
     22.6 phosphorite
     22.8 evaporite
           22.82 gypsum-anhydrite-sulfur
           22.84 saline minerals
           22.86 saline brines

24. Iron formation

26. Sedimentary manganese
     26.2 bedded (Kalahari field)
     26.4 nodules

28. Sedimentary (bedded) barite

30.   Syngenetic massive (and disseminated) sulfides
      30.2 Sedimentary (Rammelsberg)
      30.4 Iron formation, sulfide bearing
      30.6 Volcanic-hosted
            30.61 Ophiolite assemblage (Cyprus)
            30.63 Felsic to intermediate (Kuroko)
      30.8 Metamorphosed syngenetic sulfide deposits

36.   Diagenetic sedimentary deposits
      36.2 clays
      36.4 zeolites
            36.42 saline lake (closed system)
            36.44 altered tuffs (open system)
      36.6 fluorite (Rome, OR)
      36.8 metals in sedimentary rocks

40.   Epigenetic sedimentary rock-hosted deposits
      40.2 sandstone-hosted metals
            40.22 sandstone uranium, vanadium, silver
            40.24 sandstone-hosted "Mississippi Valley" (Laisvall,
                  Sweden)
      40.4 sandstone, shale-hosted metals
            40.42 copper (Kupferschiefer)
            40.44 molybdenum (SD Badlands)
      40.6 carbonate-hosted metals
            40.62 "Mississippi Valley" base metals, cobalt
            40.64 Dolomitic Cu-Co (Zaire Cu)

50.   Geothermal energy
      50.2 Steam
      50.4 Hot water (only)

52.   Hot spring deposits
      52.1 carbonates (travertine)
      52.2 clays
      52.3 metals
            52.33 sedimentary rock-hosted
            52.35 volcanic rock-hosted

55.   Hydrothermal (volcanic-subvolcanic)
      55.1 veins
      55.2 stockworks
      55.3 breccia pipes
      55.4 mantos
      55.5 disseminated
            55.55 volcanic Cu (Keeweenaw, MI)
      55.6 unconformity-vein (uranium)

57.   Contact metamorphic
      57.1 Cu (Pb-Zn-Au-Ag-Mo, Carr Fork, UT)
      57.2 Zn-Pb (Ag-Cu-W, Ban Ban, Australia)
      57.5 W (Mo-Zn-Cu, Pine Creek, CA)
      57.6 Sn (W-F-Be, Lost River, AK)
      57.7 Fe (Cu-Co-Au, Daiquiri, Cuba)
      57.8 Nonmetallics
           57.81 magnesite (magnesite, brucite, Gabbs, NV)
           57.83 marble

58.   Porphyry
      58.1 Cu
      58.3 Cu-Mo (Au)
      58.4 Au
      58.5 Mo (W)
      58.7 Sn

59.   Greisen
      59.1 disseminated
      59.3 veins
      59.5 pegmatite-greisen veins

60.   Volcanic-plutonic rocks
      60.1 pumice and perlite

66.   Magmatic segregations, granitic plutons
      66.1 pegmatites

67.   Magmatic segregations, mafic-ultramafic plutons
      67.1 sulfide (immiscible melts)
           67.11 podlike (Sudbury)
           67.13 layered, interstitial (Bushfeldt Pt)
      67.3 cumulates
           67.31 stratiform chromitite
           67.32 disseminated chromite
           67.34 podiform
      67.6 intrusive
           67.61 magnetite, chromite, ilmenite
      67.7 extrusive
           67.71 magnetite (lava)

68.   Magmatic differentiates, undersaturated plutons (syenite-
          ultramafic complexes)
      68.5 intrusive
           68.51 carbonatite
      68.7 extrusive
           68.71 carbonate (lava)

69. Kimberlite pipes (diamond pipes)
      69.1 alnoite (diamond-bearing, Kimberly, Australia)

70.   Meta-ultramafic
      70.1 asbestos
      70.3 serpentine

75. Regional metamorphic
     75.2 aluminosilicate minerals
     75.3 marble
     75.7 graphite
     75.8 talc

Production Code (2,3)

System ID   PROD.CODE
Field Number   25
Field Type   Single-valued
Input Checking   Accepts Y, N, or U
Entry Required?   No
Default
Cross-reference?   No
Description:

     A one character code describing the production history of
the site or area:

Y = known production
N = known to have not produced
U = production history unknown.

Production Description (2,4)

System ID   PRODUCTION
Field Number   26
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

     Enter all known information about the production history of
the deposit or area. As much information as needed may be
entered. Three lines are provided on the display screen;
however, more information may be entered by continuing to type
beyond the edge of the screen on each line. Although only three
lines of information will be displayed on the screen, all of the
information will be stored in the record and will be printed on
output tables. Move to the next field by entering a blank line
or by pressing the **RETURN** key on the third line.

Host Rock Name (2,5)

System ID	HR.NAME
Field Number	27
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Enter the formal name(s) of the rock unit(s) which forms the principal host(s) for the deposit. Do not enter abbreviations such as Kmj! This is a multi-valued field; as many host rock names as are needed may be entered in this field. The system requests the corresponding lithology and age for each host rock named before returning to the **Host Rock Name** field. Use informal unit names only if formal names do not exist.

Examples: Leadville Limestone
Sangre de Cristo Formation
quartz diorite of Crystal Bay
unnamed granite

Host Lithology (2,6)

System ID	HR.LITH
Field Number	28
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

A lithologic description of the rock unit which was named in the corresponding **Host Rock Name** field.

Examples: limestone
two-mica granite
hornblende-biotite-quartz-plagioclase gneiss

Host Rock Age (2,7)

System ID	HR.AGE
Field Number	29
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Abbreviation(s) for the most specific geologic age(s) of the rock unit described in the corresponding **Host Rock Name** and **Host Lithology** fields. Either a single age or a range of ages may be entered. Please use the following abbreviations if possible:

Geologic Age Abbreviations

Cen	Cenozoic	Pal	Paleozoic
Quat	Quaternary	Perm	Permian
Holo	Holocene	Penn	Pennsylvanian
Pleis	Pleistocene	Carb	Carboniferous
Tert	Tertiary	Miss	Mississippian
Neo	Neogene	Dev	Devonian
Paleog	Paleogene	Sil	Silurian
Plio	Pliocene	Ord	Ordovician
Mio	Miocene	Camb	Cambrian
Oligo	Oligocene	Prec	Precambrian
Eo	Eocene	Prot	Proterozoic
Paleo	Paleocene	Arch	Archean
Mes	Mesozoic	E	Early
Cret	Cretaceous	M	Middle
Jur	Jurassic	L	Late
Tri	Triassic	?	inferred
		-	through
		,	and

Examples:	Cret	Cret?
	E Cret	Miss, Perm
	E - M Cret	
	Penn - Perm	
	L Penn - M Perm	

Mineralization Age (2,8)

System ID	MINERAL.AGE
Field Number	30
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Abbreviation(s) for the most specific geologic age(s) of the mineralization of the deposit or area being described. A single age or a range of ages may be entered. Please use the abbreviations given under **Host Rock Age**, p. 143.

Examples: Cret   Cret?
           E Cret   Miss, Perm
           E - M Cret
           Penn - Perm
           L Penn - M Perm

Associated Igneous Rock Description (2,9)

System ID   ASSOC.ROCK
Field Number   31
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

A brief description of any igneous rock(s) genetically associated with the mineralization. Include formal name, if any, and lithology. This is a multi-valued field; any number of igneous rock descriptions may be entered. The system will prompt for the age of each rock described before returning to prompt for the next rock description.

Associated Igneous Rock Age (2,10)

System ID   ASSOC.AGE
Field Number   32
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

Enter abbreviation(s) for the most specific geologic age(s) of the associated igneous rock described in the previous field. A single age or a range of ages may be entered. Please use the abbreviations given under **Host Rock Age**, p. 143.

Examples: Cret   Cret?
           E Cret
           E - M Cret
           Penn - Perm
           L Penn - M Perm

Tectonic Setting (2,11)

System ID   TECTONICS
Field Number   33
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    Enter a brief description of the tectonic setting of the
site or area at the time the deposit was formed. As much
information as needed may be entered. Four lines are provided on
the display screen; however, more information may be entered by
continuing to type beyond the edge of the screen on each line.
Although only four lines of information will be displayed on the
screen, all of the information will be stored in the record and
will be printed on output tables. Move to the next field by
entering a blank line or by pressing the **RETURN** key on the fourth
line.

Examples: Island arc
           Stable North American continent

Ore Minerals (3,3)

System ID   ORE.MINERAL
Field Number   34
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    Enter the complete name of all ore minerals known to occur
at the site or area being described. This is a multi-valued
field, enter as many mineral names as needed, one per space. If
possible, list minerals in decreasing order of importance.

Examples: tetrahedrite
            chalcopyrite
            native silver

Non-Ore Mineralogy (3,4)

System ID	NONORE.MINERAL
Field Number	35
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Enter a brief, but as complete as possible, description of the alteration, gangue, and other non-ore minerals associated with the mineralization at the location being described. As much information as needed may be entered. Four lines are provided on the display screen; however, more information may be entered by continuing to type beyond the edge of the screen on each line. Although only four lines of information will be displayed on the screen, all of the information will be stored in the record and will be printed on output tables. Move to the next field by entering a blank line or by pressing the **RETURN** key on the fourth line.

Ore Controls (3,5)

System ID	ORE.CONTROL
Field Number	36
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Enter a brief description of the factors controlling mineralization, including structural, stratigraphic, chemical, or any other type of control. As much information as needed may be entered. Four lines are provided on the display screen; however, more information may be entered by continuing to type beyond the edge of the screen on each line. Although only four lines of information will be displayed on the screen, all of the information will be stored in the record and will be printed on output tables. Move to the next field by entering a blank line or by pressing the **RETURN** key from the fourth line.

Deposit Description (3,6)

System ID   DESCRIPTION
Field Number   37
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    Enter a general description of the deposit. Include any
information concerning this deposit or area that does not seem to
fit in any other field. As much information as needed may be
entered. Four lines are provided on the display screen; however,
more information may be entered by continuing to type beyond the
edge of the screen on each line. Although only four lines of
information will be displayed on the screen, all of the
information will be stored in the record and will be printed on
output tables. Move to the next field by entering a blank line
or by pressing the **RETURN** key from the fourth line.

Search Keys (4,3)

System ID   KEY
Field Number   38
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    This is a keyword field available for free use. It is
intended to be a storage location for search and/or sort words or
codes which are specific to an individual project or agency.
This is a multi-valued field; as many items as necessary may be
entered.

Miscellaneous Comments (4,4)

System ID   COMMENT
Field Number   39
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This is a general purpose text field for any information
that does not fit in any other field. A good place for
speculations (as opposed to facts entered in other fields)

concerning deposit origin, etc. As much information as needed
may be entered. Three lines are provided on the display screen;
however, more information may be entered by continuing to type
beyond the edge of the screen on each line. Although only three
lines of information will be displayed on the screen, all of the
information will be stored in the record and will be printed on
output records. Move to the next field by entering a blank line
or by pressing the **RETURN** key on the third line.

Personal or Proprietary Notes (4,5)

System ID   NOTES
Field Number   40
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

     This is a memo field available for notes, comments,
proprietary information, etc. that are not to be transferred out
of the reporter's system. The information in this field is not
transferred to any other system when files are moved. As much
information as needed may be entered. Three lines are provided
on the display screen; however, more information may be entered
by continuing to type beyond the edge of the screen on each line.
Although only three lines of information will be displayed on the
screen, all of the information will be stored in the record and
can be printed on output tables. Move to the next field by
entering a blank line or by pressing the **RETURN** key from the
third line.

References (4,6)

System ID   REF.NO
Field Number   41
Field Type   Multi-valued
Input Checking   Entry must exist as a reference number in the
                        Reference database
Entry Required?   No
Default
Cross-reference?   Yes
Description:

     Enter into this field the reference number(s) of the
reference(s) used to compile the data in the current record. If
the reference has not been previously added to the Reference
database, entering an **a** instead of a number will bring up the
Reference entry screen so that the complete reference can be
added. References should be entered in standard format and must
be complete. Each reference will be assigned a number and need
be entered into the system only once.

This is a multi-valued field; as many references as necessary may be entered. Only integers corresponding to existing references in the reference file or the letter a will be accepted in this field. As each number is entered, the system displays the first line of the corresponding reference so that the user can check to see that it is the correct entry.

MRDS Number

System ID   MRDS.NO
Field Number   1
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

This is the number assigned to the data record by the USGS National MRDS system. The field only contains a number if the record has been downloaded from the MRDS system. The number is carried with the record so that the MRDS record can be easily updated from GSMODS. This field is not accessible from the entry screen by the user and should not be modified by the user in any way.

CMR Number

System ID   CMR.NO
Field Number   2
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

This is the number assigned to the data record by the USGS Branch of Central Mineral Resources (CMR) system. The field only contains a number if the record has been downloaded from the CMR system. The number is carried with the record so that the CMR record can be easily updated from GSMODS. This field is not accessible from the entry screen by the user and should not be modified by the user in any way.

Appendix VI. REFERENCE DATABASE

MD.REF field names:

REC.NO	Record number of reference
AUTH.NAME	Author names list
REF.DATE	Date of reference
REF.CIT	Remainder of citation

MD.REF Field Descriptions
      (prompt name is followed by prompt number)

Reference No. (1)

System ID	REC.NO
Field Number	0
Field Type	Key
Input Checking	Must be an integer between 1 and 9999
Entry Required?	Yes
Default	Next available empty record number
Cross-reference?	No
Description:	

      This field contains a four digit, sequential reference
number that is assigned by the system each time a new reference
is added to the database. The reference number is stored in each
Locality data record in the place of the complete reference. The
reference number must be an integer between 1 and 9999. To enter
a new reference, press the **RETURN** key. To edit an existing
reference, enter the reference number.
      Existing records may also be retrieved (and edited) by
entering a search parameter instead of a record number. For more
information on cross-referencing techniques, see the discussion
in Chapter 5.

Fields which can be cross-referenced:

Field Prompt	System ID
Authors	AUTH.NAME
Citation	REF.CIT

Authors (2)

System ID	AUTH.NAME
Field Number	2
Field Type	Single-valued
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	Yes
Description:	

This field contains the names of the authors in standard citation format. Do not enter a comma following the last author name. As many authors as needed may be entered. Three lines are provided on the display screen; however, more information may be entered by continuing to type beyond the edge of the screen on each line. Although only three lines of information will be displayed on the screen, all of the information will be stored in the record and will be printed on output tables. Move to the next field by entering a blank line or by pressing the **RETURN** key from the third line.

Example:

Broadhead, G. C., Meek, F. B., and Shumard, B. F.

Reference Year (3)

System ID	REF.DATE
Field Number	3
Field Type	Single-valued
Input Checking	Must be integer between 1000 and 2050 plus optional suffix
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

This field contains the year in which the reference was published. A suffix is allowed, but should be used with caution. Acceptable values are 1000 through 2050. Do not enter any punctuation other than square braces. Standard Survey format for publications with a cover date which differs from the actual year of publication is: 1943[1944].

Examples: 1896
            1986a
            1983[1985]

Citation (4)

System ID   REF.CIT
Field Number   4
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    This field contains the remainder of the citation (title, publication information, pages, scale, etc.) in standard format. As much information as needed may be entered. Four lines are provided on the display screen; however, more information may be entered by continuing to type beyond the edge of the screen on each line. Although only four lines of information will be displayed on the screen, all of the information will be stored in the record and will be printed on output tables. Move to the Change prompt by entering a blank line or by pressing the **RETURN** key from the fourth line.

Example:

The iron ores of Missouri: Missouri Bureau of Geology and Mines, 2nd series, v. 10, 434 p.

Appendix VII.   REPORTER DATABASE

MD.USER field names:

USER.INIT	Reporter's initials
USER.FNAME	Reporter's given names
USER.LNAME	Reporter's last name
USER.AFFIL	Reporter's affiliation
USER.STATE	Default state for data records
USER.COUNTRY	Default country for data records

MD.USER Field Descriptions
(prompt name is followed by prompt number)

Reporter's Initials (1)

System ID	USER.INIT
Field Number	0
Field Type	Key
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

The reporter's initials are used as the record key to the file containing the fixed information for each reporter. Initials may be entered in either upper- or lowercase. Initials are used as a convenient way of retrieving the information on this screen for editing.

Existing records may also be retrieved (and edited) by entering a search parameter instead of the reporter's initials. For more information on cross-referencing techniques, see the discussion in Chapter 5. The only field which can be cross-referenced in this database is the **Last Name** field.

Given Names (2)

System ID	USER.FNAME
Field Number	1
Field Type	Single-valued
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

Enter all given names and initials for the reporter in their proper order. Enter the name exactly as it should appear on the data record with the last name left off. The system will concatenate the reporter's given names, last name, and affiliation and enter that information in each data record as it is created.

Example: Jerry H.

Last Name (3)

System ID	USER.LNAME
Field Number	2
Field Type	Single-valued
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	Yes
Description:	

Enter into this field the reporter's last name only. Do not enter any other names or initials. If the last name is hyphenated or multi-part, enter the entire last name. The reporter's last name is added to each data record as it is created.

Examples: Miller
          Giovanni-Ivanovitch
          von Neumann

Affiliation (4)

System ID	USER.AFFIL
Field Number	3
Field Type	Single-valued
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

Enter the affiliation of the reporter into this field. The use of abbreviations is not recommended. The reporter's affiliation is added to each data record as it is created.

State (5)

System ID	USER.STATE
Field Number	4
Field Type	Single-valued
Input Checking	Must be valid USPS state code
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Enter the U.S. Postal Service abbreviation for the state in which the reporter normally works. The state code is copied to each Locality record as it is created. A list of valid state codes is given in description of the **State** field for the Locality database and in Chapter 8, Quick Reference. Changing valid state codes is discussed in Appendix I, The States database.

Country (6)

System ID	USER.COUNTRY
Field Number	5
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

Enter the name of the country in which the reporter normally works. The information in this field is copied to each Locality data record as it is created. Abbreviations should only be entered if they will be obvious to any subsequent user.

Examples: U.S.A.
          Canada
          New Zealand

Appendix VIII.   AREA   OUTLINE   DATABASE

MD.AREA field names:

RECORD   Record number
LATITUDE   List of latitudes
LONGITUDE   List of longitudes

MD.AREA Field Descriptions

Record Number

System ID   RECORD
Field Number   0
Field Type   Key
Input Checking
Entry Required?   Yes
Default
Cross-reference?   No
Description:

   This field contains a five digit number which corresponds to
the record number of the Locality database record that contains
the rest of the information about the locality. The record
number must be an integer between 1 and 99999.

Latitude

System ID   LATITUDE
Field Number   1
Field Type   Multi-valued
Input Checking
Entry Required?   Yes
Default
Cross-reference?   No
Description:

   This is a multi-valued field containing a list of latitude
values which make up the outline of the locality. Latitude
values are stored as decimal degrees with a resolution of 0.0001
degrees. Values are stored in the order in which the outline
will be plotted. For closed outlines, the first latitude is
repeated at the end of the outline to be sure the outline closes
exactly. To create multiple outlines in the same record, a dummy
latitude of 100° is entered by the digitizing program as a flag
to the plot program to start a new line. The dummy latitude
causes the plotter to raise the pen before moving to the next
point.

Longitude

System ID   LONGITUDE
Field Number   2
Field Type   Multi-valued
Input Checking
Entry Required?   Yes
Default
Cross-reference?   No
Description:

    This is a multi-valued field containing a list of longitude
values which make up the outline of the locality. Longitude
values are stored as decimal degrees with a resolution of 0.0001
degrees. Values are stored in the order in which the outline
will be plotted. For closed outlines, the first longitude is
repeated at the end of the outline to be sure the outline closes
exactly. To create multiple outlines in the same record, a dummy
longitude of 0° is entered by the digitizing program as a flag to
the plot program to start a new line.

Appendix IX. SYSTEM SETUP DATABASE

MD.SYS field names:

```
SYS.REC.NO              Record number in configuration file
SYS.DISP.TYPE           Type of display in use
SYS.COL.NORM            Code for display color of normal type
SYS.COL.REV             Code for display color of reversed type
SYS.COL.HI              Code for display color of highlighted type
SYS.COL.HIREV           Code for display color of reverse highlight
SYS.PRINT.PORT          Printer port number
SYS.PRINT.WIDTH         Printer width, in characters
SYS.PRINT.COMM          Printer communications parameters
SYS.DIGIT.TYPE          Type of digitizer in use
SYS.DIGIT.PORT          Communications port to use for digitizing
SYS.DIGIT.SPEED         Communications speed for digitizer
SYS.PLOT.TYPE           Type of plotter in use
SYS.PLOT.PORT           Communications port to use for plotting
SYS.PLOT.SPEED          Communications speed for plotter
SYS.COMMENTS            Configuration description
```

Color Choices

There are four fields in the following descriptions which allow the user to select a color for a particular type of information display. The set of acceptable choices is the same for each of the fields and depends on whether the display adapter is monochrome (MDA - no graphics) or color (including color emulation modes). Users with non-IBM systems will have to experiment to see which set of codes works best.

Acceptable Monochrome Codes:

Acceptable monochrome codes consist of a single character which specifies a foreground/background combination. White in the following descriptions refers to the bright color of the monitor whether it is green, amber, blue, white, or whatever.

```
1 = Black letters on white background
2 = Blinking light gray letters on white background
3 = Blinking black letters on bright white background
4 = Bright white letters on white background
8 = Light gray letters on white background
D = Dark gray letters on black background
H = Bright white letters on black background
I = White letters on black background
O = Blinking black letters on light gray background
```

Acceptable Color Codes:

Acceptable color codes consist of two characters, the first character specifies the background color and the second character specifies the foreground color. Any of the following characters can be entered for either background or foreground color:

1 = Dark Blue	I = Light Blue
2 = Dark Green	J = Light Green
3 = Dark Cyan	K = Light Cyan
4 = Dark Red	L = Light Red
5 = Dark Magenta	M = Light Magenta
6 = Brown	N = Yellow
7 = Light Gray	8 = Dark Gray
P = Black	/ = White

MD.SYS Field Descriptions
(prompt name is followed by prompt number)

Record No. (1)

System ID	SYS.REC.NO
Field Number	0
Field Type	Key
Input Checking	Must be an integer between 1 and 99
Entry Required?	Yes
Default	1
Cross-reference?	No
Description:	

This field contains a one or two digit, sequential, record number. The record number must be an integer between 1 and 99. To enter a new record, enter a new record number. To edit an existing record, enter the record number.

Record number 1 is the record the system will use for initialization the first time it is started. Provision is made for additional records so that the system may be re-initialized to different settings without having to re-enter the information each time the configuration is changed. Calling up a record by entering its number at this prompt and then exiting by pressing the **RETURN** key at the Change prompt and entering END at the **Record No.** prompt will reset the system variables to the values of the last record accessed. Each time it is started, the system will use the most recently accessed record for initialization.

Display Type (2)

System ID   SYS.DISP.TYPE
Field Number   7
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   MDA
Cross-reference?   No
Description:

       This field contains a code corresponding to the type of
display controller which is used by the system. At the present
time, EGA and PGC controllers operate in CGA emulation mode, so
there is no difference between the three color controller
choices. Acceptable entries into this field are:

MDA = Monochrome Display Adapter
CGA = Color Graphics Adapter
EGA = Enhanced Graphics Adapter
PGC = Professional Graphics Controller

Normal Text Color (3)

System ID   SYS.COL.NORM
Field Number   8
Field Type   Single-valued
Input Checking   See Color Choice section, p. 158
Entry Required?   No
Default   I for MDA, 17 for color display
Cross-reference?   No
Description:

       This field contains a code for the color to display normal
text on the screen. This is the code that is used to display
prompts on all entry screens. See section on Color Choices,
p. 158.

Default Monochrome Code = I   (White letters on black background)
Default Color Code = 17   (Light gray letters on dark blue
                                  background)

Reverse Text Color (4)

```
System ID           SYS.COL.REV
Field Number        9
Field Type          Single-valued
Input Checking      See Color Choice, p. 158
Entry Required?     No
Default             1 for MDA, 3N for color display
Cross-reference?    No
Description:
```

        This field contains a code for the color to display reverse video text on the screen. This is the code that is used by some of the system programs to display a status line at the bottom of the screen. See section on Color Choices, p. 158.

```
Default Monochrome Code = 1     (Black letters on white background)
Default Color Code = 3N         (Yellow letters on dark cyan
                                    background)
```

Highlight Text Color (5)

```
System ID           SYS.COL.HI
Field Number        10
Field Type          Single-valued
Input Checking      See Color Choice, p. 158
Entry Required?     No
Default             H for MDA, 1N for color display
Cross-reference?    No
Description:
```

        This field contains a code for the color to display highlighted text on the screen. This is the code that is used to display data on all entry screens. See section on Color Choices, p. 158.

```
Default Monochrome Code = H     (Bright white letters on black
                                    background)
Default Color Code = 1N         (Yellow letters on dark blue
                                    background)
```

Reverse Highlighted Text Color (6)

System ID   SYS.COL.HIREV
Field Number   11
Field Type   Single-valued
Input Checking   See Color Choice, p. 158
Entry Required?   No
Default   4 for MDA, 4M for color display
Cross-reference?   No
Description:

    This field contains a code for the color to display reverse,
highlighted text on the screen. See section on Color Choices,
p. 158.

Default Monochrome Code = 4   (Bright white letters on white
                                  background)

Default Color Code = 4M   (Light magenta letters on dark red
                                  background)

Printer Port (7)

System ID   SYS.PRINT.PORT
Field Number   13
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   1
Cross-reference?   No
Description:

    This field contains an integer which specifies which port is
used to attach the printer. Valid printer port codes are:

1 = LPT1:   11 = COM1:
2 = LPT2:   12 = COM2:
3 = LPT3:
4 = LPT4:

Printer Comm. Parameters (8)

System ID   SYS.PRINT.COMM
Field Number   15
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains the codes necessary to setup the
communications port if the printer is attached to a serial port.
Information required includes the baud rate, parity, number of

data bits, and number of stop bits, in that order. Each part of
the specification must be separated by commas. Defaults for each
part of the specification except the baud rate can be used by
just entering the comma. The minimum entry contains a baud rate
followed by three commas. This information is ignored if the
printer is attached to a parallel port.

Examples: 1200,N,8,1
             9600,N,,
             300,,,1

Acceptable Values for Baud Rate:

110   150   300   600   1200   2400   4800   9600

Parity: N (none), O (odd), or E (even)   Default = E

Data bits: 7 or 8   Default = 7

Stop bits: 1 or 2   Default = 2 if Baud = 110
                                               1 if Baud > 110

Printer Width (9)

System ID   SYS.PRINT.WIDTH
Field Number   12
Field Type   Single-valued
Input Checking   Must be an integer between 10 and 300
Entry Required?   No
Default   80
Cross-reference?   No
Description:

     This field contains an integer specifying the number of
characters which can be printed on each line with the printer set
in its default mode. This field is included to prevent the
system from attempting to print beyond the edge of the paper when
normal listings are sent to the printer. Normal settings are 80
for 8 1/2 inch wide paper and 132 for 14 inch wide paper.

Digitizer Type (10)

System ID   SYS.DIGIT.TYPE
Field Number   4
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   1
Cross-reference?   No
Description:

     This field contains an integer which identifies the type of
digitizer which is connected to the system. At present, the

system supports GTCO digitizers and other brands which can
emulate the GTCO data format.

Acceptable entries:

1 = GTCO Digi-Pad-5, any size
2 = Digitizers which can emulate the GTCO, including:
            Calcomp 9000 or 9100 with "Universal Formatter Option"

Digitizer Comm. Port (11)

System ID   SYS.DIGIT.PORT
Field Number   6
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   2
Cross-reference?   No
Description:

        This field contains an integer corresponding to the
communications port which is connected to the digitizer. Valid
entries in this field are:

1 = COM1:
2 = COM2:

Digitizer Comm. Speed (12)

System ID   SYS.DIGIT.SPEED
Field Number   5
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   1200
Cross-reference?   No
Description:

        Enter the baud rate at which the computer and digitizer
communicate. All digitizer communications use 8 data bits, 1
stop bit, and no parity. Valid entries into this field are:

300   600   1200   1800   2400   3600   4800   7200   9600

Plotter Type (13)

System ID   SYS.PLOT.TYPE
Field Number   1
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   1
Cross-reference?   No
Description:

     This field contains an integer which defines the type of
plotter being used with the system. Plotters which are currently
supported by the system are:

1 = Hewlett-Packard 74xx series, 75xx series

Plotter Comm. Port (14)

System ID   SYS.PLOT.PORT
Field Number   3
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   1
Cross-reference?   No
Description:

     This field contains an integer corresponding to the system
communications port which is connected to the plotter.
Acceptable port codes are:

1 = COM1:
2 = COM2:

Plotter Comm. Speed (15)

System ID   SYS.PLOT.SPEED
Field Number   2
Field Type   Single-valued
Input Checking   Must match codes given below
Entry Required?   No
Default   4800
Cross-reference?   No
Description:

     Enter the baud rate at which the computer and plotter
communicate. All plotter communications use 8 data bits, 1 stop
bit, and no parity. Acceptable baud rates are:

300   600   1200   1800   2400   3600   4800   7200   9600

NOTE: Communications may be unreliable at speeds greater than
4800 baud with this software and some plotters.

Comments (16)

System ID   SYS.COMMENTS
Field Number   16
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field is used for miscellaneous comments that the user
desires to include with the System Setup entry screen. Normally
it is used for reminders of the use of this particular setup
screen. As much information as desired may be entered in this
field. Although only one line of information is displayed on the
screen, more information can be entered by continuing to type
beyond the edge of the screen. All of the information is stored
in the record and is available for output.

Appendix X.   REPORT PARAMETER DATABASE

MD.REPORT field names:

REPORT	Name of the report being defined
COMMENT	User comments
MAX	Maximum number of records to output
PAGE	Controls page breaks within records
OUT	Controls where output is sent
NCOL	Number of characters per line
NLINE	Number of lines per page
PRINT.IN	Printer initialization string
PRINT.OUT	Printer reset string
TITLE	Title of report
TITLE.REP	Controls pages where title is output
TITLE.FOR	Controls title format
SP1	Controls separator following title
HEAD	Head note
HEAD.REP	Controls pages where head note is output
HEAD.FOR	Controls head note format
SP2	Controls separator following head note
FOOT	Report footer
FOOT.REP	Controls pages where footer is output
FOOT.FOR	Controls footer format
CHEAD	Column header text
CHEAD.REP	Controls pages where column header is output
SP3	Controls separator following column header
MAJ.SEL	Selects records for output from MD.DATA
MAJ	Field name for major section sort
MAJ.TITLE	Title for major section
MAJ.TITLE.FOR	Controls major section title format
SP4	Controls separator following major title
MAJ.HEAD	Head note for major section
MAJ.HEAD.FOR	Controls major section head note format
SP5	Controls separator following major head note
MAJ.HEAD.SEL	Record for major title and head note inserts
MAJ.FOOT	Foot note for major section
MAJ.FOOT.SEL	Selects records for major footer inserts
MAJ.FOOT.FOR	Controls major section footer format
SP10	Controls separator following major footer
MIN	Field name for sort within major section
MIN.TITLE	Title for individual record
MIN.TITLE.FOR	Controls format of record title
SP6	Controls separator following record title
MIN.HEAD	Head note for individual record
MIN.HEAD.FOR	Controls format of record head note
SP7	Controls separator following record header
DET.FN	Field name(s) to include in record column
DET.COL	Starting position for record column
DET.WIDTH	Width of record column
DET.FOR	Controls format of record column
DET.MV	Controls selection of multi-values for column
SP8	Controls separator following record
MIN.FOOT	Foot note for individual record
MIN.FOOT.FOR	Controls format of record foot note

SP9   Controls separator following record footer
DET.SEL   Controls printing of district records

MD.REPORT Field Descriptions
    (prompt name is followed by screen number and prompt number)

Report Name (1,1)

System ID   REPORT
Field Number   0
Field Type   Key
Input Checking
Entry Required?   Yes
Default
Cross-reference?   No
Description:

    This field contains the name of the report which is being
defined by the current record. To create a new report
definition, enter a new name. To edit an existing report
definition, enter the existing report name. Names may be any mix
of upper- and lowercase alphanumeric characters. The name is
case sensitive, so that _test_ and _TEST_ are two different names.
Do not include spaces or punctuation marks in the report name.
If a two word name is required, separate words with a hyphen or
underscore.

Examples: Paducah
            REP1
            test_plot

    Existing records may also be retrieved (and edited) by
entering a search parameter instead of a report name. For more
information on cross-referencing techniques, see the discussion
in Chapter 5.

Fields which can be cross-referenced:

Field Prompt   System ID

Comments   COMMENT
Title of Report   TITLE

Comments (1,2)

System ID   COMMENT
Field Number   1
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    This field contains a description of the report which is
defined by this record. The description is strictly a
convenience for the user and is not used by the system in
generating the report. Use it as a reminder of the format or
purpose of this report. This is a text field which may contain a
description of any length.

Max. Records (1,3)

System ID   MAX
Field Number   48
Field Type   Single-valued
Input Checking   Must be an integer
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains an integer which specifies the maximum
number of records to output. It is used primarily for testing
the Report Parameters. Leave this field blank to select all of
the records in the data file which meet the selection criteria.

Example: 10

Page Break w/i Record (1,4)

System ID   PAGE
Field Number   51
Field Type   Single-valued
Input Checking   Must be "Y" or "N"
Entry Required?   No
Default   Y
Cross-reference?   No
Description:

This field contains a single character which determines whether page breaks will occur within a record (Y) or only at record breaks (N). Acceptable entries for this field are **y** or **Y** if breaks within records are desired, or **n** or **N** if breaks within records are not desired. The default is to allow page breaks within records (Y).

Examples: Y
            N

Output Device (1,5)

System ID   OUT
Field Number   45
Field Type   Single-valued
Input Checking   Must be "P", "S", or "F"
Entry Required?   No
Default
Cross-reference?   No
Description:

        This field contains a single character which determines which output device is to be used for the report. Enter a **P** or **p** if the output is to be sent to the default printer (as defined in the System Setup database). Enter an **8** or **s** if the output is to be sent to the computer terminal screen. Enter an **F** or **f** if the output is to be sent to a disk file. If file output is selected, the report generation program will request a file name at the time the report is generated.

Example: F

Char. per Line (1,6)

System ID   NCOL
Field Number   46
Field Type   Single-valued
Input Checking   Must be an integer between 1 and 500
Entry Required?   No
Default
Cross-reference?   No
Description:

        This field contains an integer which specifies the maximum number of characters of text which can be put on a single line of the output device. If this field is left blank, the system defaults to 80 characters per line.

Examples: 80
            132

Line per Page (1,7)

System ID	NLINE
Field Number	47
Field Type	Single-valued
Input Checking	Must be an integer between 1 and 300
Entry Required?	No
Default	
Cross-reference?	No
Description:	

      This field contains an integer which specifies the number of text lines to be output per page on the output device. If this field is left blank, the system defaults to 66 lines per page.

Example: 88

Printer Init (1,8)

System ID	PRINT.IN
Field Number	49
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

      This field contains a string which is used to initialize the output device; it is usually used to set a printer to smaller type or a different font. Each character to be sent to the output device is specified by its decimal ASCII equivalent. Each ASCII character number is separated by a comma. The string can be as long as necessary; multiple commands can be sent to the output device in a single string. Control code sequences are found in the user manual for each output device.

Examples: 27,65,9

                (ASCII 27 is the ESC character, ASCII 65 is an <u>A</u>. On some printers, the string: ESC A 9 will set the line spacing to 9/72" or 8 lines per inch)

          27,65,9,15,27,88,1

                (On some printers, this string will set the line spacing to 8 lines per inch, set the pitch to 17 characters per inch, and turn correspondence quality printing on)

Printer Reset (1,9)

System ID   PRINT.OUT
Field Number   50
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

This field contains a string which is used to reset the output device; it is usually used to set a printer back to the default type size or font. Each character to be sent to the output device is specified by its decimal ASCII equivalent. Each ASCII character number is separated by a comma. The string can be as long as necessary; multiple commands can be sent to the output device in a single string. Control code sequences are found in the user manual for each output device.

Examples: 27,65,12

            (ASCII 27 is the ESC character, ASCII 65 is an A.
            On some printers, the string: ESC A 12 will set the
            line spacing to 12/72" or 6 lines per inch)

            27,65,12,18,27,88,0

            (On some printers, this string will set the line
            spacing to 6 lines per inch, set the pitch to 10
            characters per inch, and turn correspondence
            quality printing off)

Title of Report (1,10)

System ID   TITLE
Field Number   2
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

This is a multi-valued field which contains the title of the report. Each value in this field describes a line of the title. Each line of the title can be printed at the top of each page of the report or only at the top of the first page or of the last page of the report (see **Title Repeat** field). The date and/or page number can be included in any line of the title by using the |key| syntax (see Chapter 6). Each line of the title can be formatted individually (see **Title Format** field).

Examples:

This is the first title example

> (A simple title containing a text string to be printed at
> the top of the page)

Title with a page number and date: page |PN| date |DT|

> (|PN| causes the current page number to be inserted in the
> title; |DT| causes the current system date to be inserted)

Title Repeat (1,11)

```
System ID            TITLE.REP
Field Number         3
Field Type           Multi-valued
Input Checking       Must match codes in Chapter 6
Entry Required?      No
Default              All pages
Cross-reference?     No
Description:
```

> This field is used to determine on which pages to print each
line of the title of the report. See Page Repeating, Chapter 6.

Title Format (1,12)

```
System ID            TITLE.FOR
Field Number         4
Field Type           Multi-valued
Input Checking       Must match codes in Chapter 6
Entry Required?      No
Default
Cross-reference?     No
Description:
```

> This field is used to format the associated title line. If
this field is left blank, the title line will be left-justified
in column 1. See Line Formatting, Chapter 6.

Title Sep (1,13)

System ID   SP1
Field Number   5
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

        This field contains a string which is used to control what
is output after the title. See Separators, Chapter 6.

Head Note (1,14)

System ID   HEAD
Field Number   6
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

        This field contains a head note to be printed below the
title (if any) on each page of the report or only on the first or
last page of the report (see **Head Repeat** field). The date and/or
page number can be included in the head note by using the |key|
syntax (see Chapter 6).

Examples:

This is the first head note example

        (A simple head note containing a text string to be printed
        at the top of the page)

Head note with a page number and date: page |PN| date |DT|

        (|PN| causes the current page number to be inserted in the
        head note; |DT| causes the current system date to be
        inserted)

Head Repeat (1,15)

System ID   HEAD.REP
Field Number   7
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default   All pages
Cross-reference?   No
Description:

     This field is used to determine on which pages to print the head note of the report. See Page Repeating, Chapter 6.

Head Format (1,16)

System ID   HEAD.FOR
Field Number   8
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field is used to format the head note. If this field is left blank, the head note will be left-justified in column 1. See Line Formatting, Chapter 6.

Head Sep (1,17)

System ID   SP2
Field Number   9
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains a string which is used to control what is output after the head note. See Separators, Chapter 6.

Page Footer (1,18)

System ID   FOOT
Field Number   42
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This is a multi-valued field which contains the footer of
the report. Each value in this field describes a line of the
footer. Each line of the footer can be printed at the bottom of
each page of the report, only at the bottom of the first page of
the report, or only at the bottom of the last page of the report
(see **Foot Repeat** field). The date and/or page number can be
included in any line of the footer by using the |key| syntax (see
Chapter 6). Each line of the footer can be formatted
individually (see **Foot Format** field).

Examples:

This is the first footer example

    (A simple footer containing a text string to be printed at
the bottom of the page)

Footer with a page number and date: page |PN| date |DT|

    (|PN| causes the current page number to be inserted in the
footer; |DT| causes the current system date to be inserted)

Foot Repeat (1,19)

System ID   FOOT.REP
Field Number   43
Field Type   Multi-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default   All pages
Cross-reference?   No
Description:

    This field is used to determine on which pages to print each
line of the footer of the report. See Page Repeating, Chapter 6.

Foot Format (1,20)

System ID   FOOT.FOR
Field Number   44
Field Type   Multi-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

      This field is used to format a footer line. If this field
is left blank, the footer line will be left-justified in column
1. See Line Formatting, Chapter 6.

Column Header (1,21)

System ID   CHEAD
Field Number   10
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

      This is a multi-valued field which contains the column
header of the report. Each value in this field describes a line
of the column header. Each line of the column header can be
printed below the title and header (if any) on each page of the
report or only on the first page of the report (see **Column Head
Repeat** field). The date and/or page number can be included in any
line of the column header by using the |key| syntax (see Chapter
6).

Examples:

This is the first column header example

     (A simple column header containing only a text string)

Site   State|R10, |County|R20, |Commodities

    (|R10, | causes 10 spaces to be inserted in the column
       header);

Col. Head Repeat (1,22)

System ID	CHEAD.REP
Field Number	11
Field Type	Multi-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	All pages
Cross-reference?	No

Description:

      This field is used to determine on which pages to print each line of the column header of the report. See Page Repeating, Chapter 6.

Col. Head Sep. (1,23)

System ID	SP3
Field Number	12
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No

Description:

      This field contains a string which is used to control what is output after the column header. See Separators, Chapter 6.

Selection Criteria (1,24)

System ID	MAJ.SEL
Field Number	13
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No

Description:

      This field contains criteria for selecting the set of records to be used to create the report. Criteria may be composed of single "WITH" clauses such as: **WITH COUNTY EQ "Pueblo"**, or more complicated boolean expressions (see Chapter 6, section on Selection Criteria). Do not include "BY" clauses in the selection criteria. See **Major Sort Field** and **Minor Sort Field**, p. 179 and 184, for descriptions of sorting the database. Field names (System ID) can be found on the individual help screens as well as in these descriptions. Leaving this field blank will select all records.

Examples: WITH STATE EQ "CO"
           WITH REC.TYPE EQ "SM" AND WITH COUNTY EQ "Hillside"

Major Sort Field (1,25)

System ID	MAJ
Field Number	14
Field Type	Single-valued
Input Checking	Must be valid MD.DATA field name
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains the name of the field in the data file to be used for the primary sort of the data records. Entry must be a valid MD.DATA dictionary field name. Field names (System ID) can be found on the individual help screens as well as in the field descriptions in Appendix V. Changes in the value of this field cause a major section change in the report. The selected records (see **Selection Criteria** field) are first sorted by the **Major Sort** field. Then within each major section, the records are sorted by the **Minor Sort** field. Each set of records with the same value in the **Major Sort** field is output with an accompanying major title, header, and footer, if requested, before the next set is output.

Examples: COUNTY
            2DEG.QUAD
            DISTRICT

Major Section Title (2,2)

System ID	MAJ.TITLE
Field Number	15
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains a major section title to be printed at the beginning of each major section of the report. Major sections are determined by changes in the value of the **Major Section Sort** field. Information from any field or combination of fields from a data record can be included in the major section title by using the |key| syntax (see Chapter 6).

Examples:

This is the first major section title example

    (A simple major section title containing a text string to be
    output at the beginning of each major section)

|DESCRIPTION| |PRODUCTION|

    (|fieldname| causes the contents of the specified field to
    be inserted in the major section title)

Major Title Format (2,3)

System ID	MAJ.TITLE.FOR
Field Number	16
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No

Description:

    This field is used to format the major title. If this field
is left blank, the major title will be left-justified in column
1. See Line Formatting, Chapter 6.

Major Title Sep (2,4)

System ID	SP4
Field Number	17
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No

Description:

    This field contains a string which is used to control what
is output after the major title. See Separators, Chapter 6.

Major Section Header (2,5)

System ID	MAJ.HEAD
Field Number	18
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No

Description:

    This field contains a major section header to be output
after the major section title (if any) for each major section of
the report. Major sections are determined by changes in the
value of the **Major Section Sort** field. Information from any
field or combination of fields from a data record can be included
in the major section header by using the |key| syntax (see
Chapter 6). This is a multi-valued field. Each value is
formatted separately and output to the line immediately following

the last line of the previous value.

Examples:

This is the first major section header example

     (A simple major section header containing a text string)

|DESCRIPTION| |PRODUCTION|

     (|fieldname| causes the contents of the specified field to
be inserted in the major section header)

Major Header Format (2,6)

System ID	MAJ.HEAD.FOR
Field Number	20
Field Type	Multi-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

     This field is used to format the major section header. If
this field is left blank, the major section header will be left-
justified in column 1. See Line Formatting, Chapter 6.

Major Header Sep (2,7)

System ID	SP5
Field Number	21
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

     This field contains a string which is used to control what
is output after the major section header. See Separators,
Chapter 6.

Major Title/Header Sel Criteria (2,8)

System ID   MAJ.HEAD.SEL
Field Number   19
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains criteria for selecting a record to be used to retrieve data to insert in the major section title and header if the |key| syntax is used in those fields. Criteria may be composed of single "WITH" clauses such as: WITH REC.TYPE EQ "AM", or more complicated boolean expressions (see Chapter 6, section on Selection Criteria). Do not include "BY" clauses in the selection criteria. Field names (System ID) can be found on the individual help screens as well as in Appendix V. The record selected will be the first record in the sorted major section which meets the selection criteria. Thus, leaving this field blank will select the first record in the major section.

Examples: WITH REC.TYPE EQ "AM"
            WITH REC.TYPE EQ "AM" AND WITH COUNTY EQ "Hillside"

Major Section Footer (2,9)

System ID   MAJ.FOOT
Field Number   38
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains a major section footer to be printed at the end of each major section of the report. Major sections are determined by changes in the value of the **Major Section Sort** field. Information from any field or combination of fields from a data record can be included in the major section footer by using the |key| syntax (see Chapter 6). This is a multi-valued field. Each entry in this field is formatted separately and is output on the line immediately following the previous entry.

Examples:

This is the first major section footer example

    (A simple major section footer containing a text string)

|DESCRIPTION| |PRODUCTION|

(|fieldname| causes the contents of the specified field to
be inserted in the major section footer)

Major Footer Selection Criteria (2,10)

System ID   MAJ.FOOT.SEL
Field Number   40
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains criteria for selecting a record to be
used to retrieve data to insert in the major footer if the |key|
syntax is used in the footer field. Criteria may be composed of
"WITH" clauses such as: WITH REC.TYPE EQ "AM", or more
complicated boolean expressions (see Chapter 6, section on
Selection Criteria). Do not include "BY" clauses in the
selection criteria. Field names (System ID) can be found on the
individual help screens as well as in Appendix V. The record
selected will be the first record in the sorted major section
which meets the selection criteria. Thus, leaving this field
blank will select the first record in the major section.

Examples: WITH REC.TYPE EQ "AM"
            WITH REC.TYPE EQ "AM" AND WITH COUNTY EQ "Hillside"

Major Footer Format (2,11)

System ID   MAJ.FOOT.FOR
Field Number   39
Field Type   Multi-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field is used to format the major section footer. If
this field is left blank, the major section footer will be left-
justified in column 1. See Line Formatting, Chapter 6.

Major Footer Sep (2,12)

System ID	SP10
Field Number	41
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

     This field contains a string which is used to control what is output after the major section footer. See Separators, Chapter 6.

Minor Sort Field (2,13)

System ID	MIN
Field Number	22
Field Type	Single-valued
Input Checking	Must be valid MD.DATA field name
Entry Required?	No
Default	
Cross-reference?	No
Description:	

     This field contains the name of the field in the Locality data record to be used for sorting the records within each major section. Entry must be a valid MD.DATA dictionary field name. Field names (System ID) can be found on the individual help screens as well as in the field descriptions in Appendix V. The selected records (see **Selection Criteria** field) are first sorted by the **Major Sort** field. Then within each major section, the records are sorted by the **Minor Sort** field. Each record is output with an accompanying minor title, header, and footer (if requested).

Examples: SITE
           RECORD

Minor Title (2,14)

System ID	MIN.TITLE
Field Number	23
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

     This field contains a multi-valued record title to be printed at the beginning of each new record of the report.

Information from any field or combination of fields from the data
record can be included in the record title by using the |key|
syntax (see Chapter 6).

Examples:

This is the first record title example

      (A simple record title containing a text string to be output
      at the beginning of each record)

|SITE|, |COUNTY| County, |STATE|

      (|fieldname| causes the contents of the specified field to
      be inserted in the record title)

Minor Title Format (2,15)

System ID	MIN.TITLE.FOR
Field Number	24
Field Type	Multi-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

      This field is used to format the record title. If this
field is left blank, the record title will be left-justified in
column 1. See Line Formatting, Chapter 6.

Minor Title Sep (2,16)

System ID	SP6
Field Number	25
Field Type	Single-valued
Input Checking	Must match codes in Chapter 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

      This field contains a string which is used to control what
is output after the record title. See Separators, Chapter 6.

Minor Header (2,17)

System ID   MIN.HEAD
Field Number   26
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

      This field contains a record header to be printed below the
record title, if any, and before each record. Information from
any field or combination of fields from the data record can be
included in the record header by using the |key| syntax (see
Chapter 6).

Examples:

This is the first record header example

      (A simple record header containing a text string to be
output at the beginning of each major section)

|DESCRIPTION| |PRODUCTION|

      (|fieldname| causes the contents of the specified field to
be inserted in the record header)

Minor Header Format (2,18)

System ID   MIN.HEAD.FOR
Field Number   27
Field Type   Multi-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

      This field is used to format the record header. If this
field is left blank, the record header will be left-justified in
column 1. See Line Formatting, Chapter 6.

Minor Header Sep (2,19)

System ID   SP7
Field Number   28
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains a string which is used to control what is output after the record header. See Separators, Chapter 6.

Column Fieldnames (3,2)

System ID   DET.FN
Field Number   29
Field Type   Multi-valued
Input Checking   Must be valid MD.DATA field names
Entry Required?   No
Default
Cross-reference?   No
Description:

    This is a multi-valued field which contains the name(s) of the field(s) in the Locality data records to be used for creating each column of the data record. Each entry in this field controls the contents of one column of the data record. Entries must be valid MD.DATA dictionary field names. Field names (System ID) can be found on the individual help screens as well as in the field descriptions in Appendix V. More than one field may be included in each column by separating the field names by commas. Each field in a single column is separately formatted (see **Column Format** field), and each starts on a new line within the column.

Examples: SITE
            LATITUDE,LONGITUDE
            COMMODITIES

Start Character No. (3,3)

System ID   DET.COL
Field Number   30
Field Type   Multi-valued
Input Checking   Must be an integer between 1 and 500
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains an integer specifying the starting

character position on the output line for this column of the data
record. This entry must be an integer.

Example: 25

Column Width (3,4)

System ID	DET.WIDTH
Field Number	31
Field Type	Multi-valued
Input Checking	Must be an integer between 1 and 500
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains an integer which specifies the number of
character positions to be used for this column of the data
record.

Examples: 20

Column Format (3,5)

System ID	DET.FOR
Field Number	32
Field Type	Multi-valued
Input Checking	Must match codes listed below
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field is used to format a data column. If this field
is left blank, the data column will be left-justified in the
first character position for the column (see **Start Character No.**
field). All formatting for data columns is done within the
defined column. Therefore, all positions for justifications and
word-wrap are measured from the defined boundaries of the column,
not from the beginning of the output line! Options are:

C	Center the data within the column
Ln	Left-justify the data within the column starting in position n
Rn	Right-justify the data within the column n positions from the right edge of the data column
Wn,m,i	Word-wrap the data between positions n and m within the column. Word breaks only occur at spaces between words. i specifies the number of spaces to indent the first line. i may be positive or negative. A positive i generates a normal paragraph indent. A negative i with an equal, but positive n generates a hanging indent paragraph.

Examples: L5
            W5,20,-5
                 (Creates an 20 character per line paragraph with a
                 5 character hanging indent)

Multi-value Select (3,6)

System ID   DET.MV
Field Number   33
Field Type   Multi-valued
Input Checking   Must match codes listed below
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains a string which is used to control the
output of multi-valued fields within each column. This option
both selects which values to output, and specifies how to connect
the values. Concatenate, the most general option, is entered as
follows:

Cn,m,x

The **C** is required to specify the concatenation option. The **n** is
an integer which specifies the starting value to select for
output from the multi-valued field. The **m** is an integer which
specifies the last value to be output from the multi-valued
field. The **x** is a character string which is to be inserted
between each value.

Examples: C1,1   (Output first value only)
            C1,5,-   (Output first 5 values and separate values
                             with a -.
                          Output: Cu-Zn-Pb)
            C1,99,   (Output all values separated with a space.
                             There must be a space following the last
                             comma.
                          Output: Cu Zn Pb)
            C5,10,,   (Output values 5 through 10 separated with
                             a comma and a space. There must be a
                             space following the last comma.
                          Output: Cu, Zn, Pb)

     The **N** option is a special case of concatenation. It is used
when each value is to be output on a separate line. The format
is:

Nn,m

The **N** tells the system to use a **N**ew line for each value. The **n**
is an integer which specifies the starting value to select for
output from the multi-valued field. The **m** is an integer which

specifies the last value to be output from the multi-valued field.

With either option, **99** may be used for **m** to specify the output of all values from the multi-valued field. After the values have been read and concatenated to form a character string, the column format is applied to the entire string.

Record Sep (3,7)

System ID   SP8
Field Number   34
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

This field contains a string which is used to control what is output after the data record. See Separators, Chapter 6.

Minor Footer (3,8)

System ID   MIN.FOOT
Field Number   35
Field Type   Multi-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

This field contains a multi-valued record footer to be printed at the end of each record of the report. Information from any field or combination of fields from the data record can be included in the record footer by using the |key| syntax (see Chapter 6).

Examples:

This is the first record footer example

    (A simple record footer containing a text string to be
    output at the end of each record)

|SITE|, |COUNTY| County, |STATE|

    (|fieldname| causes the contents of the specified field to
    be inserted in the record footer)

Minor Footer Format (3,9)

System ID   MIN.FOOT.FOR
Field Number   36
Field Type   Multi-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field is used to format the record footer. If this
field is left blank, the record footer will be left-justified in
column 1. See Line Formatting, Chapter 6.

Minor Footer Sep (3,10)

System ID   SP9
Field Number   37
Field Type   Single-valued
Input Checking   Must match codes in Chapter 6
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains a string which is used to control what
is output after the record footer. See Separators, Chapter 6.

Print District Records (3,11)

System ID   DET.SEL
Field Number   52
Field Type   Single-valued
Input Checking   Must be "Y" or "N"
Entry Required?   No
Default   N
Cross-reference?   No
Description:

     This field is used as a flag to cause output or suppression
of output of summary (district or area) records. Entering **Y** or **y**
in this field causes all data records with REC.TYPE containing
"A" (summary records) to be output along with the site records.
Entering **N** or **n** causes suppression of the output of records with
REC.TYPE containing "A". If this field is left blank, area
records will not be output.

Appendix XI. PLOT PARAMETER DATABASE

MD.PLOT field names:

PNAME	Name of plot setup record
NLAT	Northern latitude limit of plot
SLAT	Southern latitude limit of plot
ELONG	Eastern longitude limit of plot
WLONG	Western longitude limit of plot
NSCALE	North-south scale
ESCALE	East-west scale
ROTATE	Rotation of plot on paper
NTICK	North-south tick mark interval
ETICK	East-west tick mark interval
TICK.SIZE	Size of tick mark
TICK.PEN	Pen number for tick mark
XOFF	X-axis offset, in inches
YOFF	Y-axis offset, in inches
SYM.CODE	Code number of symbol
SYM.PEN	Pen number for symbol plot
SYM.HT	Height of symbol, in inches
SYM.CRIT	Selection criteria for plot symbol
POST.FIELD	Field name to extract label information from
POST.PEN	Pen number for label plot
POST.HT	Height of label character
POST.WIDTH	Width of label character
POST.CRIT	Selection criteria for labeling
LINE.CODE	Code number for type of line to plot
LINE.PEN	Pen number for line plot
LINE.CRIT	Selection criteria for line plot
NOTES	Description of plot to be created

MD.PLOT Field Descriptions
(prompt name is followed by prompt number)

Plot Name (1)

System ID	PNAME
Field Number	0
Field Type	Key
Input Checking	
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

This field contains a unique, one-word name for the plot being described. It is the key field for this file and is used to retrieve the plot information for modification or plotting. To enter a new set of plot parameters, enter a unique plot name. To edit an existing set of parameters, enter an existing plot name.

Existing records may also be retrieved (and edited) by entering a search parameter instead of a record name. For more information on cross-referencing techniques, see the discussion in Chapter 5.

Fields which can be cross-referenced:

Field Prompt   System ID

N-S Scale   NSCALE
Notes   NOTES

N Latitude (2)

System ID   NLAT
Field Number   1
Field Type   Single-valued
Input Checking   Must match format given below
Entry Required?   Yes
Default
Cross-reference?   No
Description:

    This field contains the latitude of the northern boundary of the desired plot area. Acceptable formats are: **dd mm ss N** or **dd mm ss S**. All four parts of the latitude must be present and separated by spaces. Degrees, minutes, and seconds must be integers of one or two digits. The latitude of the northern limit must be north of the latitude of the southern limit.

Examples: 39 33 21 N
            3 5 10 S
            0 0 1 N

S Latitude (3)

System ID   SLAT
Field Number   2
Field Type   Single-valued
Input Checking   Must match format given below
Entry Required?   Yes
Default
Cross-reference?   No
Description:

    This field contains the latitude of the southern boundary of the desired plot area. Acceptable formats are: **dd mm ss N** or **dd mm ss S**. All four parts of the latitude must be present and separated by spaces. Degrees, minutes, and seconds must be integers of one or two digits. The latitude of the southern limit must be south of the latitude of the northern limit.

Examples: 39 33 21 N
            3 5 10 S
            0 0 1 N

E Longitude (4)

System ID	ELONG
Field Number	3
Field Type	Single-valued
Input Checking	Must match format given below
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

     This field contains the longitude of the eastern boundary of
the desired plot area. Acceptable formats are: **ddd mm ss E** or
ddd mm ss W. Degrees must be an integer of one, two, or three
digits. Minutes and seconds must be integers of one or two
digits. The longitude of the eastern boundary must be east of
the longitude of the western boundary.

Examples: 178 35 23 E
            45 0 31 W
             0 0 5 E

W Longitude (5)

System ID	WLONG
Field Number	4
Field Type	Single-valued
Input Checking	Must match format given below
Entry Required?	Yes
Default	
Cross-reference?	No
Description:	

     This field contains the longitude of the western boundary of
the desired plot area. Acceptable formats are: **ddd mm ss E** or
ddd mm ss W. Degrees must be an integer of one, two, or three
digits. Minutes and seconds must be integers of one or two
digits. The longitude of the western boundary must be west of
the longitude of the eastern boundary.

Examples: 178 35 23 E
            45 0 31 W
             0 0 5 E

N-S Scale (6)

System ID	NSCALE
Field Number	5
Field Type	Single-valued
Input Checking	Must be an integer
Entry Required?	Yes
Default	
Cross-reference?	Yes

Description:

    This field contains the desired scale of the plot in the north-south direction. Only the denominator of the scale is entered, without commas. The north-south scale may be different from the east-west scale to provide adjustment for less-than-perfect base maps.

Example: enter 250000 to plot a 1:250,000 map.

E-W Scale (7)

System ID	ESCALE
Field Number	6
Field Type	Single-valued
Input Checking	Must be an integer
Entry Required?	Yes
Default	N-S scale
Cross-reference?	No

Description:

    This field contains the desired scale of the plot in the east-west direction. Only the denominator of the scale is entered, without commas. The north-south scale and the east-west scale may be different to provide for less-than-perfect base maps.

Example: enter 24000 to plot a 1:24,000 map.

Rotate X & Y axes? (8)

System ID	ROTATE
Field Number	7
Field Type	Single-valued
Input Checking	Must be a "Y" or "N"
Entry Required?	No
Default	N
Cross-reference?	No

Description:

    This field contains a flag (**Y** or **N**) to tell the plot routine whether to rotate the X & Y axes on the paper when the plot is produced.

The default (**N**) produces a plot with the E-W axis parallel
to the long edge of the paper.

Tick Interval N-S (9)

System ID	NTICK
Field Number	8
Field Type	Multi-valued
Input Checking	Must match format given below
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains the interval between tick marks in the
north-south direction. Acceptable format is **dd mm ss**. All three
parts of the interval must be present. Degrees, minutes, and
seconds must be integers of one or two digits. If this field is
left blank, no tick marks will be plotted.

This is a multi-valued field. Any number of sets of tick
marks may be added to the plot. The system will prompt for the
E-W interval, size, and pen number for each set of tick marks
before it returns to prompt for the N-S interval for the next set
of ticks. Move to the next field by pressing the **RETURN** key at
the N-S Tick Interval prompt.

Examples: 10 0 0
             0 15 0
             0 0 30

Tick Interval E-W (10)

System ID	ETICK
Field Number	9
Field Type	Multi-valued
Input Checking	Must match format given below
Entry Required?	No
Default	Tick Interval N-S
Cross-reference?	No
Description:	

This field contains the interval between tick marks in the
east-west direction. Acceptable format is **dd mm ss**. All three
parts of the interval must be present. Degrees, minutes, and
seconds must be entered as an integer of one or two digits. If
this field is left blank, no tick marks will be plotted.

Examples: 10 0 0
             0 15 0
             0 0 30

T. Size (11)

System ID	TICK.SIZE
Field Number	10
Field Type	Multi-valued
Input Checking	Must be numeric between -1.1 and 1.1
Entry Required?	No
Default	0.1
Cross-reference?	No

Description:

   This field contains the size of the tick marks in inches.
Acceptable range is 0.001 to 1.10 in. A leading zero must be
included for values less than 1.0. There are two formats for
tick marks available. If the tick size is entered as a positive
number, tick marks will be created throughout the plot. If the
tick size is entered as a negative number, the tick marks will
only be created along the boundaries of the plot.

Tick Pen (12)

System ID	TICK.PEN
Field Number	27
Field Type	Multi-valued
Input Checking	Must be an integer between 1 and 8
Entry Required?	No
Default	1
Cross-reference?	No

Description:

   This field contains the pen number to be used to plot the
tick marks. Acceptable values are the single integers, 1-8.

X-Offset (13)

System ID	XOFF
Field Number	28
Field Type	Single-valued
Input Checking	Must be a number
Entry Required?	No
Default	
Cross-reference?	No

Description:

   This field contains the distance to offset the plot on the
paper in the X-direction (east), measured in inches. The
distance is measured from the left edge of the plot paper to the
southwest corner of the plot. Most plotters will not allow
plotting closer than about 0.4-0.8 inches from the edge of the
paper. If a number is entered that is smaller than the minimum
for the plotter (or the field is left blank), the plot program
will substitute the minimum for the plotter in use. A leading
zero must be entered for values less than 1.

Y-Offset (14)

System ID   YOFF
Field Number   29
Field Type   Single-valued
Input Checking   Must be a number
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains the distance to offset the plot on the paper in the Y-direction (north), in inches. The offset is measured from the bottom of the paper to the southwest corner of the plot. Most plotters will not allow plotting closer than about 0.4-0.8 inches from the edge of the paper. If a number is entered that is smaller than the minimum for the plotter (or the field is left blank), the plot program will substitute the minimum for the plotter in use. A leading zero must be entered for values less than 1.

Symbol Code (15)

System ID   SYM.CODE
Field Number   11
Field Type   Multi-valued
Input Checking   Must be an integer between 1 and 999 with an
                         optional "F" prefix
Entry Required?   No
Default
Cross-reference?   No
Description:

     This field contains the code number for the symbol to be drawn at the location of the records selected in the **Selection Criteria** field. The current list of symbol codes is as follows:

1 = circle   F1 = filled circle
2 = square   F2 = filled square
3 = triangle   F3 = filled triangle
4 = diamond   F4 = filled diamond
5 = hexagon   F5 = filled hexagon
6 = plus
7 = X
8 = asterisk

     This is a multi-valued field. Any number of sets of plot symbols can be included on each plot. The system will prompt for the pen number, height of symbol, and selection criteria before returning to prompt for the code of the next set of symbols to plot. Move to the next set of fields by entering a blank at this prompt.

     Symbol numbers 1 through 99 are reserved for system-defined symbols. Numbers 100 through 999 are reserved for user-defined

symbols. Directions for defining symbols are available in
Chapter 6, section on User-Defined Symbols. Selecting a symbol
number from 1 through 999 always plots an open symbol. If a
filled symbol is desired, add an **F** to the beginning of the symbol
number. Thus, symbol F1 is the filled equivalent of symbol 1
(circle); symbol F101 is the filled equivalent of symbol 101.

Symbol Pen # (16)

System ID	SYM.PEN
Field Number	12
Field Type	Multi-valued
Input Checking	Must be an integer between 1 and 8
Entry Required?	No
Default	1
Cross-reference?	No
Description:	

This field contains the number of the pen in the plotter
carousel with which the symbol is to be plotted. Acceptable
values are 1 through 8.

Symbol Height (17)

System ID	SYM.HT
Field Number	13
Field Type	Multi-valued
Input Checking	Must be a number between 0.001 and 1.1
Entry Required?	No
Default	0.1
Cross-reference?	No
Description:	

This field contains the height of the desired symbol in
inches. Acceptable values are between 0.001 and 1.1. Leading
zeroes are required for values less than 1.

Symbol Sel. Criteria (18)

System ID	SYM.CRIT
Field Number	14
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains criteria for the selection of records
from the Locality database to be plotted with the selected
symbol. Criteria may be composed of a single "WITH" clause such
as: WITH COMMODITIES EQ "Cu", or more complicated boolean

expressions (see Chapter 6, section on Selection Criteria). Do
not include "BY" clauses in the selection criteria. Field names
(System ID) can be found on the individual help screens as well
as in Appendix V. Leaving this field blank will select all
records.

Examples: WITH STATE EQ "WA"
            WITH COMMODITIES EQ "Au" OR WITH COMMODITIES EQ "Ag"
            WITH DEP.CODE GE 40 AND WITH DEP.CODE LT 50

Label Post Field (19)

System ID   POST.FIELD
Field Number   15
Field Type   Multi-valued
Input Checking   Must be a valid MD.DATA field name
Entry Required?   No
Default
Cross-reference?   No
Description:

        This field contains the name of the field in the Locality
database that contains the value to be posted next to the
indicated point. The names of the fields (system ID) in the
MD.DATA file can be found on each individual help screen as well
as in the field descriptions in Appendix V. If the field
containing the post value is multi-valued, the value within the
field to be posted may be indicated by adding **(n,m)** to the field
name, where **n** = the number of the value desired and **m** = the
maximum number of characters to post. Note that either **n** or **m**
may be given alone. The default for **n** is 1; the default for **m** is
6.

Examples: SITE   Posts the first 6 characters of the
                                Site Name
            COMMODITIES(3)   Posts the first 6 characters of the
                                third value in the Commodities
                                field.
            ORE.MINERAL(2,8)   Posts the first 8 characters of the
                                second value from the Ore Minerals
                                field.
            ORE.MINERAL(,8)   Posts the first 8 characters of the
                                first value from the Ore Minerals
                                field.

This field is multi-valued. As many sets of posting parameters
as desired may be entered. The system will prompt for the rest
of the parameters for this set before returning to prompt for the
next posting field.

Label Pen # (20)

System ID	POST.PEN
Field Number	16
Field Type	Multi-valued
Input Checking	Must be an integer between 1 and 8
Entry Required?	No
Default	1
Cross-reference?	No

Description:

This field contains the number of the pen in the plotter carousel to be used to label the selected points. Acceptable values are 1 through 8.

Label Char. Height (21)

System ID	POST.HT
Field Number	17
Field Type	Multi-valued
Input Checking	Must be a number between 0.001 and 1.1
Entry Required?	No
Default	0.15
Cross-reference?	No

Description:

This field contains the height of the label characters in inches. Acceptable values lie between 0.001 and 1.1. A leading zero must be entered for values less then 1.0.

Label Char. Width (22)

System ID	POST.WIDTH
Field Number	18
Field Type	Multi-valued
Input Checking	Must be a number between 0.001 and 1.1
Entry Required?	No
Default	2/3 of label height
Cross-reference?	No

Description:

This field contains the width of the label characters in inches. Acceptable values lie between 0.001 and 1.1. A leading zero must be entered for values less then 1.0.

Label Selection Criteria (23)

System ID	POST.CRIT
Field Number	19
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

        This field contains criteria for the selection of records
from the Locality database to have labels posted next to them.
The actual value posted is obtained from the field, **Post Field**.
Selection criteria may be composed of a single "WITH" clause such
as: WITH COMMODITIES EQ "Mo", or may be more complicated boolean
expressions (see Chapter 6, section on Selection Criteria). Do
not include "BY" clauses in the selection criteria. Field names
(System ID) can be found on the individual help screens as well
as in Appendix V. Leaving this field blank will select all
records.

Examples: WITH STATE EQ "WA"
            WITH COMMODITIES EQ "Au" OR WITH COMMODITIES EQ "Ag"
            WITH DEP.CODE GE 40 AND WITH DEP.CODE LT 50

Line Type Code (24)

System ID	LINE.CODE
Field Number	20
Field Type	Multi-valued
Input Checking	Must be an integer between 0 and 6
Entry Required?	No
Default	
Cross-reference?	No
Description:	

        This field contains the code number for the type of line to
be plotted. Currently defined line codes are:

0 = Solid
1 = Dotted
2 = Short Dash
3 = Long Dash
4 = Dash - Dot
5 = Long Dash - Short Dash
6 = Long Dash - 2 Short Dashes

This is a multi-valued field. As many sets of line parameters as
desired may be entered. The system will prompt for the pen
number and selection criteria for this line type before returning
to prompt for the next line type code. Move to the next set of
fields by pressing the **RETURN** key at the **Line Type Code** prompt.

Line Pen # (25)

System ID	LINE.PEN
Field Number	21
Field Type	Multi-valued
Input Checking	Must be an integer between 1 and 8
Entry Required?	No
Default	1
Cross-reference?	No

Description:

This field contains the number of the pen in the plotter carousel to be used to plot the selected lines. Acceptable values are 1 through 8.

Line Sel. Criteria (26)

System ID	LINE.CRIT
Field Number	22
Field Type	Multi-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No

Description:

This field contains criteria for the selection of records from the Locality and Area Outline databases for plotting as areas or lines. Criteria may be composed of a single "WITH" clause such as: WITH REC.TYPE EQ "AM", or more complicated boolean expressions (see Chapter 6, section on Selection Criteria). Do not include "BY" clauses in the selection criteria. Field names (System ID) can be found on the individual help screens as well as in Appendix V. Leaving this field blank will select all records.

There is a special case for this Selection Criteria field. Entry of the keyword **BOUNDARY** in the Selection Criteria will draw a line of the type defined in the **Line Type Code** field around the boundary of the map as defined by the latitude/longitude limits.

Examples: WITH STATE = "WA"
             WITH REC.TYPE EQ "AM" OR WITH REC.TYPE EQ "AN"
             WITH REC.TYPE EQ "AM" AND WITH DISTRICT EQ "Leadville"
             BOUNDARY

Notes (27)

System ID   NOTES
Field Number   23
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   Yes
Description:

    This field may contain any notes that the user desires to
keep with the plot definition. It has no effect on the actual
plot. If key words which describe the plot are entered in this
field, it is easy to recall the Plot Parameter entry screen by
cross-referencing on this field.
    As much information as needed may be entered in this field.
Only one line is provided on the display screen; however, more
information may be entered by continuing to type beyond the edge
of the screen. Although only one line of information will be
displayed on the screen, all of the information will be stored in
the record and will be available for output.

Appendix XII. USER-DEFINED SYMBOL DATABASE

MD.SYM field names:

SYM.NO	Symbol number
NAME	Name of symbol
S.LINES	Simple line graphic commands
P.LINES	Polygon line graphic commands
NOTES	Description of Symbol

MD.SYM Field Descriptions
(prompt name is followed by prompt number)

Symbol No. (1)

System ID	SYM.NO
Field Number	0
Field Type	Key
Input Checking	Must be an integer between 1 and 999
Entry Required?	Yes
Default	Next available empty record number
Cross-reference?	No

Description:

This field contains the symbol number which is used by the plotting program to call up the symbol definition. The symbol number must be a 1 to 3 digit integer. User-defined symbols should use the numbers 100 through 999 to avoid conflict with system-defined symbols which use numbers less than 100. To edit an existing symbol, enter the symbol number. To enter a new symbol, press the **RETURN** key.

Entering the symbol number in the Plot Parameter entry screen causes the symbol to be plotted in a skeletal form. Entering the symbol number with an "F" prefix causes the symbol to be plotted with a filled polygon if the plotter supports automatic polygon fills (PM command in HPGL).

Example: 101   User-defined symbol. To plot in skeletal
                     form, enter 101 in the Plot Parameter
                     entry screen; to plot in filled form,
                     enter F101 in the entry screen.

Existing records may also be retrieved (and edited) by entering a search parameter instead of a record number. For more information on cross-referencing techniques, see the discussion in Chapter 5.

Fields which can be cross-referenced:

Field Prompt	System ID
Symbol Name	NAME
Notes	NOTES

Symbol Name (2)

System ID	NAME
Field Number	1
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

This field contains the name of the user-defined symbol.
This is strictly for the user's convenience; entry into this
field has no effect on the drawing of the symbol. The major use
of this field is for finding a symbol to edit by cross-
referencing on the name. See the **Symbol No.** field
description, p. 205.

Example: Circle with included square box.

Simple Lines (3)

System ID	S.LINES
Field Number	2
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	No
Description:	

This field contains the string which describes the parts of
the symbol which are not part of a fillable polygon. The string
is entered in pseudo-HPGL. Start by assuming that the pen is at
the location of the center of the symbol and that the pen is up.
The general procedure is to move to the beginning of a line
segment with a pen-up command and then to draw a line segment
with a pen-down command. Pen-up and pen-down commands are
followed by X and Y coordinates. All coordinates are factors to
be multiplied by the height of the symbol. For example, the
following string would draw a plus symbol to the height and width
defined by the symbol height in the Plot Parameter entry screen:

PU,0.5,0;PD,-1.0,0;PU,0.5,0.5;PD,0,-1.0

All X,Y coordinates are relative to the last position.
Command names and coordinates are separated by commas. Commands
are separated by semi-colons. All coordinate factors (except 0)
should be given with a decimal point and leading or trailing
zero, as appropriate.
The pen-down command can be followed by several sets of
coordinate factors. For example, the following string will plot
a square box the size of the symbol height:

PU,0.5,0.5;PD,-1.0,0,0,-1.0,1.0,0,0,1.0

Plotter commands which can be included in the string are limited
to the following:

AR - Arc
CI - Circle
ER - Rectangle
EW - Wedge
PD - Pen-down
PU - Pen-up
SP - Select Pen

For more information on the use of these commands, see the
appropriate plotter programming manual.

Poly. Lines (4)

System ID   P.LINES
Field Number   3
Field Type   Single-valued
Input Checking
Entry Required?   No
Default
Cross-reference?   No
Description:

    This field contains the string which describes the parts of
the symbol which make up the outline of a fillable polygon.
Start by assuming that the pen is at the location of the center
of the symbol and that the pen is up. The general procedure is
to move to the beginning of the polygon outline with a pen-up
command (PU) and then to draw the outline with a pen-down command
(PD). Pen-up and pen-down commands are followed by X and Y
coordinates. All coordinates are factors to be multiplied by the
height of the symbol. For example, the following string would
define the outline of a diamond the full symbol height and half
as wide:

PU,0.25,0;PD,-0.25,0.5,-0.25,-0.5,0.25,-0.5,0.25,0.5

    All X,Y coordinates are relative to the last position.
Command names and coordinates are separated by commas. Commands
are separated by semi-colons. All coordinate factors (except 0)
should be given with a decimal point and leading or trailing
zero, as appropriate. A pen-down command may be followed by
several coordinates.

Plotter commands which can be included in the string are limited to the following:

AR - Arc
CI - Circle
PD - Pen-down
PU - Pen-up
PM - Polygon mode

For more information on the use of these commands, see the appropriate plotter programming manual and the section on User-defined Symbols, Chapter 6.

Notes (5)

System ID	NOTES
Field Number	4
Field Type	Single-valued
Input Checking	
Entry Required?	No
Default	
Cross-reference?	Yes
Description:	

This field contains notes describing the symbol being defined. It is included for the convenience of the user and has no effect on the plotting of the symbol. It is usually used for a more detailed description of the symbol and/or for a description of how the symbol is typically used.

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