DEPARTMENT OF THE INTERIOR

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GSMODS - A Personal Mineral Occurrence Database System
Reference Manual
Version 1.01

by

Bruce R. Johnson

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards. Any use of trade names is for descriptive purposes only and does not imply endorsement by the USGS.

1U.S. Geological Survey
Box 25046, MS-930
Denver Federal Center
Denver, CO 80225
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Chapter 1. INTRODUCTION

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
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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 (Fill 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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Chapter 2. DATABASES, RECORDS, FIELDS, AND VALUES

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.
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

3. GETTING STARTED

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Chapter 3. GETTING STARTED

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
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.
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 0, 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
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 displayed. 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, not
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:

<table>
<thead>
<tr>
<th>Key</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>left^2</td>
<td>All</td>
<td>Move cursor left one character</td>
</tr>
<tr>
<td>right^2</td>
<td>All</td>
<td>Move cursor right one character</td>
</tr>
<tr>
<td>^left^2</td>
<td>All</td>
<td>Move cursor left one word</td>
</tr>
<tr>
<td>^right^2</td>
<td>All</td>
<td>Move cursor right one word</td>
</tr>
<tr>
<td>up^2</td>
<td>Entry</td>
<td>Move cursor to previous field</td>
</tr>
<tr>
<td>down^2</td>
<td>Entry</td>
<td>Move cursor to next field (same as RETURN)</td>
</tr>
<tr>
<td>Home</td>
<td>All</td>
<td>Move cursor to beginning of line</td>
</tr>
<tr>
<td>End</td>
<td>All</td>
<td>Move cursor to end of line</td>
</tr>
<tr>
<td>Ins</td>
<td>All</td>
<td>Toggle between insert and replace modes</td>
</tr>
<tr>
<td>Del</td>
<td>All</td>
<td>Delete character at current cursor position</td>
</tr>
<tr>
<td>backsp^2</td>
<td>All</td>
<td>Delete character to the left of current cursor position</td>
</tr>
</tbody>
</table>

Function Keys:

<table>
<thead>
<tr>
<th>Key</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Entry</td>
<td>Display HELP screen for current field</td>
</tr>
<tr>
<td>F7</td>
<td>All</td>
<td>Clear from cursor to beginning of line</td>
</tr>
<tr>
<td>F8</td>
<td>All</td>
<td>Clear from cursor to end of line</td>
</tr>
</tbody>
</table>

Special Characters:

<table>
<thead>
<tr>
<th>Char.</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>GS-Entry</td>
<td>Go to top of next screen of entry set</td>
</tr>
<tr>
<td>&lt;</td>
<td>GS-Entry</td>
<td>Go to top of first screen of entry set</td>
</tr>
<tr>
<td>!</td>
<td>GS-Entry</td>
<td>File record</td>
</tr>
<tr>
<td>!</td>
<td>GS-Program</td>
<td>Re-start program from beginning</td>
</tr>
<tr>
<td>-</td>
<td>GS-Entry</td>
<td>Stop copying defaults from previous record to current field</td>
</tr>
<tr>
<td>Q</td>
<td>GS-Program</td>
<td>Stop program, return to menu</td>
</tr>
</tbody>
</table>

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

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

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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 displayed. 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:

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

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
<table>
<thead>
<tr>
<th>Record No.</th>
<th>GSMODS Entry Screen</th>
<th>1 of 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synonyms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2° Quad Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Quad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longitude</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loc. (Sec,T,R)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposit Type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4. GSMODS Locality entry screen 1 of 4.

<table>
<thead>
<tr>
<th>Record No.</th>
<th>GSMODS Entry Screen</th>
<th>2 of 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Description:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host Rock Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host Lithology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host Rock Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mineralization Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Igneous Rocks:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tectonic Setting:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5. GSMODS Locality entry screen 2 of 4.
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. 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. 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.
Figure 6. GSMODS Locality entry screen 3 of 4.

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.
| 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 Are you creating any new records (default = Y)? 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 Do you want a printed listing (default = Y)? 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

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW Corner</td>
<td>38 25 00 N</td>
</tr>
<tr>
<td>SW Corner</td>
<td>38 22 30 N</td>
</tr>
<tr>
<td>SE Corner</td>
<td>38 22 30 N</td>
</tr>
<tr>
<td>NE Corner</td>
<td>38 25 00 N</td>
</tr>
</tbody>
</table>

Actual Scale of Map

<table>
<thead>
<tr>
<th>N - S</th>
<th>E - W</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:24009</td>
<td>1:23945</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Record No.</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>38 24 .70 N</td>
<td>106 2 10.97 W</td>
</tr>
<tr>
<td>100</td>
<td>38 24 15.92 N</td>
<td>106 2 31.82 W</td>
</tr>
<tr>
<td>38 23 43.47 N</td>
<td>106 2 31.38 W</td>
<td></td>
</tr>
<tr>
<td>38 23 43.81 N</td>
<td>106 1 50.18 W</td>
<td></td>
</tr>
<tr>
<td>38 24 16.14 N</td>
<td>106 1 50.64 W</td>
<td></td>
</tr>
<tr>
<td>38 24 15.92 N</td>
<td>106 2 31.82 W</td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Record No.</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>37 17 27.04 N</td>
<td>88 17 25.91 W</td>
</tr>
</tbody>
</table>

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

5. CHANGING EXISTING INFORMATION

- Modifying information on the data entry screens
- Finding the record to change - Cross-Referencing
  - Primary cross-reference fields
  - Secondary cross-reference fields
  - The Cross-reference screen
- Building cross-reference indexes
- Record counters
- Special characters and terms
- Copying and deleting records
  - The COPY command
  - The DELETE command
- Changing location information
  - Modifying locations in the Area Outline database
Chapter 5. CHANGING EXISTING INFORMATION

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:

<table>
<thead>
<tr>
<th>Entry</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETURN</td>
<td>Pressing the <strong>RETURN</strong> key (NEW-LINE on screen option list) returns to the data entry screen without selecting a record</td>
</tr>
<tr>
<td>#</td>
<td>Entering a number from the selection list returns to the data entry screen and displays the selected record</td>
</tr>
<tr>
<td>PG#</td>
<td>Entering <strong>PG</strong> followed by a page number displays another page of the selection list. There is no space between the command, <strong>PG</strong>, and the page number</td>
</tr>
<tr>
<td>new word</td>
<td>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 <strong>key=n</strong>, where <strong>n</strong> is the desired number</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Key</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>left 2</td>
<td>All</td>
<td>Move cursor left one character</td>
</tr>
<tr>
<td>right 2</td>
<td>All</td>
<td>Move cursor right one character</td>
</tr>
<tr>
<td>^left 2</td>
<td>All</td>
<td>Move cursor left one word</td>
</tr>
<tr>
<td>^right 2</td>
<td>All</td>
<td>Move cursor right one word</td>
</tr>
<tr>
<td>up 2</td>
<td>Entry</td>
<td>Move cursor to previous field</td>
</tr>
<tr>
<td>down 2</td>
<td>Entry</td>
<td>Move cursor to next field (same as RETURN)</td>
</tr>
<tr>
<td>Home</td>
<td>All</td>
<td>Move cursor to beginning of line</td>
</tr>
<tr>
<td>End</td>
<td>All</td>
<td>Move cursor to end of line</td>
</tr>
<tr>
<td>Ins</td>
<td>All</td>
<td>Toggle between insert and replace modes</td>
</tr>
<tr>
<td>Del</td>
<td>All</td>
<td>Delete character at current cursor position</td>
</tr>
<tr>
<td>backsp 2</td>
<td>All</td>
<td>Delete character to the left of current cursor position</td>
</tr>
</tbody>
</table>

### Function Keys:

<table>
<thead>
<tr>
<th>Key</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Entry</td>
<td>Display HELP screen for current field</td>
</tr>
<tr>
<td>F7</td>
<td>All</td>
<td>Clear from cursor to beginning of line</td>
</tr>
<tr>
<td>F8</td>
<td>All</td>
<td>Clear from cursor to end of line</td>
</tr>
</tbody>
</table>

### Special Characters:

<table>
<thead>
<tr>
<th>Char.</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>GS-Entry</td>
<td>Go to top of next screen of entry set</td>
</tr>
<tr>
<td>&lt;</td>
<td>GS-Entry</td>
<td>Go to top of first screen of entry set</td>
</tr>
<tr>
<td>!</td>
<td>GS-Entry</td>
<td>File record</td>
</tr>
<tr>
<td>-</td>
<td>GS-Entry</td>
<td>Stop copying defaults from previous record to current field</td>
</tr>
<tr>
<td>\</td>
<td>Key</td>
<td>Denotes beginning of cross-reference search parameter</td>
</tr>
<tr>
<td>=</td>
<td>Key</td>
<td>Reset default record number</td>
</tr>
</tbody>
</table>
Special Terms for use with Which Value? prompt:

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

1Notes:

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

2Keys

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:

\texttt{COPY MD.PLOT quad1 TO: quad2}

will duplicate the record with a key of \texttt{quad1} in the Plot Parameter database and give the new record a key of \texttt{quad2}. After this command, there will be two identical records in the Plot Parameter database with keys of \texttt{quad1} and \texttt{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 \texttt{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:

\texttt{DELETE MD.DATA 25}

will erase record number 25 from the Locality database.

\texttt{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:

\texttt{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

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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 contains value as a sub-string
- [] Same as CONTAINS
- ] Selects record if string begins with value
- [ Selects record if string ends with 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'

55
Selection is case sensitive; the first example above will only find records with *Pueblo* in the COUNTY field. Records with *pueblo* or *PUEBLO* 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.

|field name| Replaced by the contents of the specified field from the current record. If |field name| 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 |field name| 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.

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

|@field name| Similar to |field name| 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: |+field name| and |@field name| can be combined as long as the + precedes the @. |+@field name| is acceptable, |@+field name| 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
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

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Report Name: Sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Comments: Sample report for documentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Max. Records: 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
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<td></td>
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</tr>
<tr>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
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<td>7</td>
<td>Line per Page: 87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Printer Init: 15,27,65,9,27,50</td>
<td></td>
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<td></td>
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</tr>
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<td></td>
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<tr>
<td>11</td>
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<tr>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<tr>
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<td></td>
</tr>
<tr>
<td>22</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Col. Head Sep: _b</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Selection Criteria: WITH STATE = 'MT'</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Major Sort Field: DISTRICT</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### GSMODS - Report Parameter Screen 1 of 3

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
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</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>Max. Records: 10</td>
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<td>Page Break w/i Record: N</td>
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</tr>
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<td>7</td>
<td>Line per Page: 87</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Printer Init: 15,27,65,9,27,50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Printer Reset: 18,27,65,12,27,50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Title Of Report: Mines and Prospects, Butte 1&quot; x 2&quot; quadrangle, Montana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Title Repeat: F</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>Title Format: C</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Title Sep: b</td>
<td></td>
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<tr>
<td>14</td>
<td>Head Note:</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>Head Repeat: F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Head Format: W1,119</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Head Sep: _b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>18</td>
<td>Page Footer:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Foot Repeat:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Foot Format: C</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>21</td>
<td>Column Header:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Col. Head Rep: F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Col. Head Sep: _b</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Selection Criteria: WITH STATE = 'MT'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Major Sort Field: DISTRICT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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
<table>
<thead>
<tr>
<th>Major Section Title:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SITE</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Title Format:</th>
<th>Major Title Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Section Header:</th>
<th>Major Header Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION</td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Header Format:</th>
<th>Major Header Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W1,119,5</td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor Sort Field:</th>
<th>Minor Sort Field Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor Title Format:</th>
<th>Minor Title Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor Header Format:</th>
<th>Minor Header Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 13. GSMODS Report Parameter entry screen 2 of 3.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Major Section Title:</th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SITE</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Title Format:</th>
<th>Major Title Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Section Header:</th>
<th>Major Header Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION</td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Header Format:</th>
<th>Major Header Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>W1,119,5</td>
<td>_B</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor Sort Field:</th>
<th>Minor Sort Field Sep:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SITE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 14. GSMODS Report Parameter entry screen 2 of 3 for sample report (figure 17).</th>
</tr>
</thead>
</table>
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.
Figure 15. GSMODS Report Parameter entry screen 3 of 3.

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.]

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

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.

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

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)
Boundary Red Mountain | Whatcom | Au | gold
| | | Ag | pyrite
| | | Cu | chalcopyrite
| | | Pb | pyrrhotite

Bronze Monarch | Skamania | Cu | chalcopyrite
| | | Au | pyrite
| | | Ag | native copper

Chicago | Skamania | Cu | chalcopyrite
| | | Au | sphalerite
| | | Ag | arsenopyrite

Commonwealth | Skamania | Cu | chalcopyrite
| | | Zn | sphalerite
| | | Pb | galena

Cotopaxi Mine | Fremont | Cu | chalcopyrite
| | | Zn | sphalerite
| | | Pb | gahnite

Gargett | Whatcom | Cu | native silver
| | | Ag | pyrite
| | | Au | chalcopyrite

Great Excelsior | Whatcom | Cu | chalcopyrite
| | | Ag | pyrite
| | | Au | chalcopyrite
| | | Pb | galena

Hidden Treasure | Pend Oreille | Pb | sphalerite
| | | Zn | galena

Peerless tunnel | Custer | Cu | chalcopyrite
| | | Zn | chalcocite
| | | Pb | azurite

Sedalia mine | Chaffee | Cu | chalcopyrite
| | | Zn | azurite

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:

\[ \text{LIST MD.DATA WITH COUNTY EQ 'Adams' BY SITE SITE DEP.TYPE ID-SUPP (PE)} \]

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:

\[ \text{FORM FORMS format filename} \]

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:

\[ \text{FORM FORMS REFNUM MD.REF} \]
References Cited


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


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


Figure 21. Sample output from FORM command: Reference list with reference numbers in reference number order.
### Listing of Data Fields for Record 1

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>Verde Creek area</td>
</tr>
<tr>
<td>Entry Date</td>
<td>08/12/85</td>
</tr>
<tr>
<td>Synonyms</td>
<td></td>
</tr>
<tr>
<td>Record Type</td>
<td>AM</td>
</tr>
<tr>
<td>Site Type</td>
<td>A</td>
</tr>
<tr>
<td>Source</td>
<td>1</td>
</tr>
<tr>
<td>District</td>
<td>Verde Creek area</td>
</tr>
<tr>
<td>County</td>
<td>Custer</td>
</tr>
<tr>
<td>State</td>
<td>CO</td>
</tr>
<tr>
<td>2° Quad</td>
<td>Pueblo</td>
</tr>
<tr>
<td>Primary Quad</td>
<td>Beckwith Mountain</td>
</tr>
<tr>
<td>Scale</td>
<td>24000</td>
</tr>
<tr>
<td>Latitude</td>
<td>38 7 53.11 W</td>
</tr>
<tr>
<td>Longitude</td>
<td>105 35 59.17 W</td>
</tr>
<tr>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>Deposit Type</td>
<td>vein</td>
</tr>
<tr>
<td>Deposit Code</td>
<td>55.1</td>
</tr>
<tr>
<td>Commodities</td>
<td>Ag</td>
</tr>
<tr>
<td></td>
<td>Cu</td>
</tr>
<tr>
<td>Prod. Code</td>
<td>Y</td>
</tr>
<tr>
<td>Production</td>
<td>Known production prior to 1901; no data on amount, either tonnage or grade. Size of dumps suggests small production; area primarily known for silver.</td>
</tr>
<tr>
<td>Host Rock</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>no formal name</td>
</tr>
<tr>
<td>Lithology</td>
<td>granitic gneiss</td>
</tr>
<tr>
<td>Age</td>
<td>E PROT</td>
</tr>
<tr>
<td>Mineralization</td>
<td>Oligo ?</td>
</tr>
<tr>
<td>Assoc. Igneous</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Tectonic</td>
<td></td>
</tr>
<tr>
<td>Setting</td>
<td>Rocky Mountain Cordillera</td>
</tr>
<tr>
<td>Ore Minerals</td>
<td>chalcopyrite</td>
</tr>
<tr>
<td></td>
<td>galena</td>
</tr>
<tr>
<td>Non-ore</td>
<td></td>
</tr>
<tr>
<td>Mineralogy</td>
<td>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.</td>
</tr>
<tr>
<td>Ore Controls</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

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.

A few ounces of gold may(?) have been produced in 1931.

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
Getting Information 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.
Figure 23. GSMODS Plot Parameter entry screen.

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: \texttt{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 \texttt{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 \texttt{Symbols}, \texttt{Labels}, and \texttt{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:

\texttt{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.
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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Symbol No.</td>
</tr>
<tr>
<td>2</td>
<td>Symbol Name</td>
</tr>
<tr>
<td>3</td>
<td>Simple Lines</td>
</tr>
<tr>
<td>4</td>
<td>Poly. Lines</td>
</tr>
<tr>
<td>5</td>
<td>Notes</td>
</tr>
</tbody>
</table>

**Figure 27.** GSMODS User-defined Symbol entry screen.

### GSMODS - User-defined Symbol Entry Screen

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Symbol No.</td>
</tr>
<tr>
<td>2</td>
<td>Symbol Name</td>
</tr>
<tr>
<td>3</td>
<td>Simple Lines</td>
</tr>
<tr>
<td>4</td>
<td>Poly. Lines</td>
</tr>
<tr>
<td>5</td>
<td>Notes</td>
</tr>
</tbody>
</table>

**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

- Creating a back-up copy of the databases
- Restoring databases from the back-up copy
- Transferring data between accounts

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92
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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
- MD.REF.XR
- MD.REPORT
- MD.USER
- MD.USER.XR
- FORMS
- MD.AREA
- MD.SYM
- MD.SYM.XR
- 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:

<table>
<thead>
<tr>
<th>MD.DATA</th>
<th>MD.PLOT</th>
<th>MD.REF.XR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD.REF</td>
<td>MD.SYM</td>
<td>MD.USER.XR</td>
</tr>
<tr>
<td>MD.AREA</td>
<td>MD.REPORT</td>
<td>MD.PLOT.XR</td>
</tr>
<tr>
<td>MD.USER</td>
<td>MD.SYS</td>
<td>MD.SYM.XR</td>
</tr>
<tr>
<td>FORMS</td>
<td>MD.DATA.XR</td>
<td>MD.REPORT.XR</td>
</tr>
</tbody>
</table>

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 Chapter 5, 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

[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

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## Chapter 8. QUICK REFERENCE

### Special Words, Symbols, and Control Keys

**Control Keys:**

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

**Function Keys:**

<table>
<thead>
<tr>
<th>Key</th>
<th>Active</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Entry</td>
<td>Display HELP screen for current field</td>
</tr>
<tr>
<td>F2</td>
<td>Entry</td>
<td>Copy information from previous record (single-valued field only)</td>
</tr>
<tr>
<td>F3</td>
<td>TCL</td>
<td>Display last command entered</td>
</tr>
<tr>
<td>F7</td>
<td>All</td>
<td>Clear from cursor to beginning of line</td>
</tr>
<tr>
<td>F8</td>
<td>All</td>
<td>Clear from cursor to end of line</td>
</tr>
<tr>
<td>F9</td>
<td>Menu</td>
<td>Return to previous menu</td>
</tr>
<tr>
<td>^F5</td>
<td>Menu</td>
<td>Return to TCL from any menu</td>
</tr>
</tbody>
</table>
Special Characters and Words:

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

Special Terms for use with Which Value? prompt:

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

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

<table>
<thead>
<tr>
<th>State Abbreviation</th>
<th>State Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>Alabama</td>
</tr>
<tr>
<td>AK</td>
<td>Alaska</td>
</tr>
<tr>
<td>AZ</td>
<td>Arizona</td>
</tr>
<tr>
<td>AR</td>
<td>Arkansas</td>
</tr>
<tr>
<td>AS</td>
<td>American Samoa</td>
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<td>CZ</td>
<td>Canal Zone</td>
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</tr>
<tr>
<td>DC</td>
<td>District of Columbia</td>
</tr>
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<td>FL</td>
<td>Florida</td>
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<td>Georgia</td>
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<td>Guam</td>
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<td>New Jersey</td>
</tr>
<tr>
<td>NM</td>
<td>New Mexico</td>
</tr>
<tr>
<td>NY</td>
<td>New York</td>
</tr>
<tr>
<td>NC</td>
<td>North Carolina</td>
</tr>
<tr>
<td>ND</td>
<td>North Dakota</td>
</tr>
<tr>
<td>OH</td>
<td>Ohio</td>
</tr>
<tr>
<td>OK</td>
<td>Oklahoma</td>
</tr>
<tr>
<td>OR</td>
<td>Oregon</td>
</tr>
<tr>
<td>PA</td>
<td>Pennsylvania</td>
</tr>
<tr>
<td>PR</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>RI</td>
<td>Rhode Island</td>
</tr>
<tr>
<td>SC</td>
<td>South Carolina</td>
</tr>
<tr>
<td>SD</td>
<td>South Dakota</td>
</tr>
<tr>
<td>TN</td>
<td>Tennessee</td>
</tr>
<tr>
<td>TT</td>
<td>Trust Territories</td>
</tr>
<tr>
<td>TX</td>
<td>Texas</td>
</tr>
<tr>
<td>UT</td>
<td>Utah</td>
</tr>
<tr>
<td>VT</td>
<td>Vermont</td>
</tr>
<tr>
<td>VA</td>
<td>Virginia</td>
</tr>
<tr>
<td>VI</td>
<td>Virgin Islands</td>
</tr>
<tr>
<td>WA</td>
<td>Washington</td>
</tr>
<tr>
<td>WV</td>
<td>West Virginia</td>
</tr>
<tr>
<td>WI</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>WY</td>
<td>Wyoming</td>
</tr>
</tbody>
</table>
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             |

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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:

\( C_{n,m,x} \)

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:

\( N_{n,m} \)

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:

<table>
<thead>
<tr>
<th>Entry</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETURN</td>
<td>Pressing the RETURN key returns to the data entry screen without selecting a record</td>
</tr>
<tr>
<td>#</td>
<td>Entering a number from the selection list returns to the data entry screen and displays the selected record</td>
</tr>
<tr>
<td>PG#</td>
<td>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</td>
</tr>
<tr>
<td>new word</td>
<td>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</td>
</tr>
<tr>
<td>R</td>
<td>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</td>
</tr>
<tr>
<td>S</td>
<td>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</td>
</tr>
<tr>
<td>.</td>
<td>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</td>
</tr>
</tbody>
</table>
System-Defined Plot Symbol Codes

The current list of symbol codes is as follows:

1 = circle
2 = square
3 = triangle
4 = diamond
5 = hexagon
6 = plus
7 = X
8 = asterisk

F1 = filled circle
F2 = filled square
F3 = filled triangle
F4 = filled diamond
F5 = filled hexagon

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

APPENDICES

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   Distribution Disks
   The States database
   Multiple accounts
   The LOGTO command

II. CONFIGURING GSMODS
   The System Setup entry screen

III. HARDWARE INSTALLATION AND CONFIGURATION
   Digitizers
      GTCO digitizer
      Calcomp digitizer
   Plotters
      Hewlett-Packard 75xx series plotters
      Hewlett-Packard 7475 plotter

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VI. REFERENCE DATABASE
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   MD.PLOT field descriptions

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   MD.SYM field descriptions

REFERENCES CITED

INDEX
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. **Back-up** 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 (C: if Revelation is installed on the C: drive) and then the Change Directory command (cd \rev if REV is the name of the Revelation sub-directory). There must be at least 500K bytes of space available on the disk after 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 must be entered in uppercase.

4. Start Revelation by entering:

   **C:**> REV SYSPROG
5. At the colon prompt enter:

:ATTACH A:

6. At the colon prompt enter:

:RUN $BP.U INSTALL-GSMODS

If the error message "$BP.U" is not a file name 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 must 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:

C:>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.
## GSMODS 1.01

### Distribution Disks

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

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

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

<table>
<thead>
<tr>
<th>Revelation file name</th>
<th>DOS file name</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDES</td>
<td>ROS10000.*</td>
<td>GSMODS entry screens and menus</td>
</tr>
<tr>
<td>MD.DATA</td>
<td>ROS10001.*</td>
<td>Locality database</td>
</tr>
<tr>
<td>MD.DATA.XR</td>
<td>ROS10002.*</td>
<td>Locality indexes</td>
</tr>
<tr>
<td>MD.AREA</td>
<td>ROS10003.*</td>
<td>Area Outline database</td>
</tr>
<tr>
<td>MD.REF</td>
<td>ROS10004.*</td>
<td>Reference database</td>
</tr>
<tr>
<td>MD.REF.XR</td>
<td>ROS10005.*</td>
<td>Reference indexes</td>
</tr>
<tr>
<td>MD.USER</td>
<td>ROS10006.*</td>
<td>Reporter database</td>
</tr>
<tr>
<td>MD.USER.XR</td>
<td>ROS10007.*</td>
<td>Reporter indexes</td>
</tr>
<tr>
<td>MD.PLOT</td>
<td>ROS10008.*</td>
<td>Plot Parameter database</td>
</tr>
<tr>
<td>MD.PLOT.XR</td>
<td>ROS10009.*</td>
<td>Plot Parameter indexes</td>
</tr>
<tr>
<td>MD.SYM</td>
<td>ROS10010.*</td>
<td>User-defined Symbol database</td>
</tr>
<tr>
<td>MD.SYM.XR</td>
<td>ROS10011.*</td>
<td>User-defined Symbol indexes</td>
</tr>
<tr>
<td>MD.REPORT</td>
<td>ROS10012.*</td>
<td>Report Parameter database</td>
</tr>
<tr>
<td>MD.REPORT.XR</td>
<td>ROS10013.*</td>
<td>Report Parameter indexes</td>
</tr>
<tr>
<td>$PDISK</td>
<td></td>
<td>PDISK command</td>
</tr>
<tr>
<td>$SETPTR</td>
<td></td>
<td>PDISK command</td>
</tr>
<tr>
<td>C9000.BAS</td>
<td></td>
<td>Calcomp digitizer initialization program</td>
</tr>
<tr>
<td></td>
<td>C9100.BAS</td>
<td>Calcomp digitizer initialization program</td>
</tr>
<tr>
<td>ROSMEDIA.MAP</td>
<td></td>
<td>Revelation directory</td>
</tr>
<tr>
<td>README</td>
<td></td>
<td>Program description</td>
</tr>
</tbody>
</table>
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 P9 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

<table>
<thead>
<tr>
<th>Record No.</th>
<th>1</th>
</tr>
</thead>
</table>

#### Display Type

<table>
<thead>
<tr>
<th>Display Colors</th>
<th>3 Normal</th>
<th>4 Reverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Highlight</td>
<td>6 Highlight Rev.</td>
<td></td>
</tr>
</tbody>
</table>

#### Printer

<table>
<thead>
<tr>
<th>Port</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

#### Comm. Parameters

<table>
<thead>
<tr>
<th>Type</th>
<th>Port</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Digitizer

<table>
<thead>
<tr>
<th>Type</th>
<th>Port</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Comments

This is the normal setup using all defaults - MDA.

---

**Figure 29.** GSMODS System Setup entry screen.

---

**Figure 30.** GSMODS System Setup entry screen with monochrome default settings.
<table>
<thead>
<tr>
<th>Record No.</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display Type</strong></td>
<td>CGA</td>
</tr>
<tr>
<td><strong>Display Colors:</strong></td>
<td>3 Normal 17</td>
</tr>
<tr>
<td></td>
<td>5 Highlight 1W</td>
</tr>
<tr>
<td><strong>Printer:</strong></td>
<td>7 Port 1</td>
</tr>
<tr>
<td></td>
<td>8 Comm. Parameters</td>
</tr>
<tr>
<td><strong>Digitizer:</strong></td>
<td>10 Type 1</td>
</tr>
<tr>
<td></td>
<td>12 Comm. Speed 1200</td>
</tr>
<tr>
<td><strong>Plotter:</strong></td>
<td>13 Type 1</td>
</tr>
<tr>
<td></td>
<td>15 Comm. Speed 4800</td>
</tr>
</tbody>
</table>

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:

jPC 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.
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:

<table>
<thead>
<tr>
<th>Switch</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>S2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>D-Y</td>
<td>D</td>
<td>Direct connection to computer</td>
</tr>
<tr>
<td>MET-US</td>
<td>US</td>
<td>English paper sizes</td>
</tr>
<tr>
<td>A3-A4</td>
<td>A4</td>
<td>Default to 11&quot; by 17&quot; paper</td>
</tr>
<tr>
<td>B4</td>
<td>0</td>
<td>1200 baud, 1 stop bit</td>
</tr>
<tr>
<td>B3</td>
<td>1</td>
<td>&quot;</td>
</tr>
<tr>
<td>B2</td>
<td>1</td>
<td>&quot;</td>
</tr>
<tr>
<td>B1</td>
<td>1</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANGE-PASSWORD</td>
<td>Change password on current account</td>
</tr>
<tr>
<td>CLEAR</td>
<td>Clears the current select list and returns to the colon prompt (see SELECT command, Chapter 6)</td>
</tr>
<tr>
<td>CLEAR-FILE filename</td>
<td>Delete all records from the data section of the file (database) given in filename</td>
</tr>
<tr>
<td>CLS</td>
<td>Clear display screen</td>
</tr>
<tr>
<td>COPY file1 rec1 TO: rec2</td>
<td>Copy a record named rec1 in a file named file1 to a new record named rec2 (see COPY command, Chapter 5)</td>
</tr>
<tr>
<td>Options:</td>
<td>(P) Copy record to printer</td>
</tr>
<tr>
<td></td>
<td>(PS) Copy to printer and suppress line numbers</td>
</tr>
<tr>
<td>COUNT filename</td>
<td>Count number of records in file and display on screen</td>
</tr>
<tr>
<td>DELETE filename rec</td>
<td>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)</td>
</tr>
<tr>
<td>DELETE-ACCOUNT accountname</td>
<td>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</td>
</tr>
<tr>
<td>EXIT</td>
<td>Entered from the DOS prompt to return to Revelation after a PC command</td>
</tr>
</tbody>
</table>
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:

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

<table>
<thead>
<tr>
<th>System ID</th>
<th>REPORTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>Symbolic</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>Reporter's name and affiliation from most recently accessed record in Reporter database</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>7</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>SITE.TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>10</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>11</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>2-letter code</th>
<th>State Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL</td>
<td>Alabama</td>
</tr>
<tr>
<td>AK</td>
<td>Alaska</td>
</tr>
<tr>
<td>AZ</td>
<td>Arizona</td>
</tr>
<tr>
<td>AR</td>
<td>Arkansas</td>
</tr>
<tr>
<td>AS</td>
<td>American Samoa</td>
</tr>
<tr>
<td>CA</td>
<td>California</td>
</tr>
<tr>
<td>CZ</td>
<td>Canal Zone</td>
</tr>
<tr>
<td>CO</td>
<td>Colorado</td>
</tr>
<tr>
<td>CT</td>
<td>Connecticut</td>
</tr>
<tr>
<td>DE</td>
<td>Delaware</td>
</tr>
<tr>
<td>DC</td>
<td>District of Columbia</td>
</tr>
<tr>
<td>FL</td>
<td>Florida</td>
</tr>
<tr>
<td>GA</td>
<td>Georgia</td>
</tr>
<tr>
<td>GU</td>
<td>Guam</td>
</tr>
<tr>
<td>HI</td>
<td>Hawaii</td>
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<tr>
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<td>Idaho</td>
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<td>Kansas</td>
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<td>Kentucky</td>
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<td>Louisiana</td>
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<td>Minnesota</td>
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<td>Montana</td>
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<td>Nebraska</td>
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<td>NV</td>
<td>Nevada</td>
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<td>NH</td>
<td>New Hampshire</td>
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<tr>
<td>NJ</td>
<td>New Jersey</td>
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<tr>
<td>NM</td>
<td>New Mexico</td>
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<td>NY</td>
<td>New York</td>
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<tr>
<td>NC</td>
<td>North Carolina</td>
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<td>ND</td>
<td>North Dakota</td>
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<td>OH</td>
<td>Ohio</td>
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<td>OK</td>
<td>Oklahoma</td>
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<td>OR</td>
<td>Oregon</td>
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<tr>
<td>PA</td>
<td>Pennsylvania</td>
</tr>
<tr>
<td>PR</td>
<td>Puerto Rico</td>
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<tr>
<td>RI</td>
<td>Rhode Island</td>
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<tr>
<td>SC</td>
<td>South Carolina</td>
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<tr>
<td>SD</td>
<td>South Dakota</td>
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<tr>
<td>TN</td>
<td>Tennessee</td>
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<tr>
<td>TT</td>
<td>Trust Territories</td>
</tr>
<tr>
<td>TX</td>
<td>Texas</td>
</tr>
<tr>
<td>UT</td>
<td>Utah</td>
</tr>
<tr>
<td>VT</td>
<td>Vermont</td>
</tr>
<tr>
<td>VA</td>
<td>Virginia</td>
</tr>
<tr>
<td>VI</td>
<td>Virgin Islands</td>
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<tr>
<td>WA</td>
<td>Washington</td>
</tr>
<tr>
<td>WV</td>
<td>West Virginia</td>
</tr>
<tr>
<td>WI</td>
<td>Wisconsin</td>
</tr>
<tr>
<td>WY</td>
<td>Wyoming</td>
</tr>
</tbody>
</table>

133 Appendix V
**Country (1,14)**

- **System ID**: COUNTRY
- **Field Number**: 15
- **Field Type**: Single-valued
- **Input Checking**: No
- **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**: No
- **Entry Required?**: No
- **Default**: Yes
- **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**: No
- **Entry Required?**: No
- **Default**: Yes
- **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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>LONGITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>20</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match format given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>No</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>21</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
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<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>No</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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: No
Entry Required? Yes
Default: No
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: No
Entry Required? No
Default: No
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: No
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 Dolomite 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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>PROD.CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>25</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Accepts Y, N, or U</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>26</td>
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<tr>
<td>Field Type</td>
<td>Single-valued</td>
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<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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
E Cret
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
            E Cret
            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
            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: No
Entry Required?: No
Default: No
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: No
Entry Required?: No
Default: Yes
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: No
Entry Required?: No
Default: No
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: No
Entry Required?: No
Default: No
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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>40</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>REF.NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>41</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Entry must exist as a reference number in the Reference database</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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:

Appendix VII. REPORTER DATABASE

MD.USER field names:

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER.INIT</td>
<td>Reporter's initials</td>
</tr>
<tr>
<td>USER.FNAME</td>
<td>Reporter's given names</td>
</tr>
<tr>
<td>USER.LNAME</td>
<td>Reporter's last name</td>
</tr>
<tr>
<td>USER.AFFIL</td>
<td>Reporter's affiliation</td>
</tr>
<tr>
<td>USER.STATE</td>
<td>Default state for data records</td>
</tr>
<tr>
<td>USER.COUNTRY</td>
<td>Default country for data records</td>
</tr>
</tbody>
</table>

MD.USER Field Descriptions

(prompt name is followed by prompt number)

**Reporter's Initials (1)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>USER.INIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>0</td>
</tr>
<tr>
<td>Field Type</td>
<td>Key</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Yes</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>No</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Field ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER.FNAME</td>
<td>Enter all given names and initials for the reporter in their 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.</td>
</tr>
</tbody>
</table>

### Last Name (3)

<table>
<thead>
<tr>
<th>Field ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER.LNAME</td>
<td>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</td>
</tr>
</tbody>
</table>
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:**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECORD</td>
<td>Record number</td>
</tr>
<tr>
<td>LATITUDE</td>
<td>List of latitudes</td>
</tr>
<tr>
<td>LONGITUDE</td>
<td>List of longitudes</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>SYS.COL.REV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>9</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>See Color Choice, p. 158</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>1 for MDA, 3N for color display</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>SYS.COL.HI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>10</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>See Color Choice, p. 158</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>H for MDA, 1N for color display</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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

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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SYS.DIGIT.PORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>6</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>2</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td>This field contains an integer corresponding to the communications port which is connected to the digitizer. Valid entries in this field are:</td>
</tr>
<tr>
<td></td>
<td>1 = COM1:</td>
</tr>
<tr>
<td></td>
<td>2 = COM2:</td>
</tr>
</tbody>
</table>

**Digitizer Comm. Speed (12)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SYS.DIGIT.SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>5</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>1200</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>300  600  1200  1800  2400  3600  4800  7200  9600</td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>SYS.COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>16</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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:

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

**Report Name (1,1)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>REPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>0</td>
</tr>
<tr>
<td>Field Type</td>
<td>Key</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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
REPI
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:**

<table>
<thead>
<tr>
<th>Field Prompt</th>
<th>System ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments</td>
<td>COMMENT</td>
</tr>
<tr>
<td>Title of Report</td>
<td>TITLE</td>
</tr>
</tbody>
</table>
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 S 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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>NLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>47</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer between 1 and 300</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>PRINT.IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>49</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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 A. 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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>PRINT.OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>50</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>2</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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**: No
- **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**: Must match codes in Chapter 6
- **Entry Required?**: No
- **Default**: No
- **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 \texttt{|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: \texttt{page |PN| date |DT|}

(\texttt{|PN|} causes the current page number to be inserted in the head note; \texttt{|DT|} causes the current system date to be inserted)
**Head Repeat (1,15)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>HEAD.REP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>7</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>All pages</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>HEAD.FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>8</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>9</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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      No
Entry Required?     No
Default             No
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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>FOOT.FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>44</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>CHEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>10</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID</td>
<td>MAJ.HEAD.FOR</td>
</tr>
<tr>
<td>Field Number</td>
<td>20</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID</td>
<td>SP5</td>
</tr>
<tr>
<td>Field Number</td>
<td>21</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>MAJ.HEAD.SEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>19</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>MAJ.FOOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>38</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)
```
(fieldname) causes the contents of the specified field to be inserted in the major section footer.

**Major Footer Selection Criteria** (2,10)

<table>
<thead>
<tr>
<th>Field Number</th>
<th>System ID</th>
<th>Field Type</th>
<th>Input Checking</th>
<th>Entry Required?</th>
<th>Default</th>
<th>Cross-reference?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>MAJ.FOOT.SEL</td>
<td>Multi-valued</td>
<td></td>
<td>No</td>
<td></td>
<td>No</td>
<td>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 &quot;WITH&quot; clauses such as: WITH REC.TYPE EQ &quot;AM&quot;, or more complicated boolean expressions (see Chapter 6, section on Selection Criteria). Do not include &quot;BY&quot; 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 &quot;AM&quot; WITH REC.TYPE EQ &quot;AM&quot; AND WITH COUNTY EQ &quot;Hillside&quot;</td>
</tr>
</tbody>
</table>

**Major Footer Format** (2,11)

<table>
<thead>
<tr>
<th>Field Number</th>
<th>System ID</th>
<th>Field Type</th>
<th>Input Checking</th>
<th>Entry Required?</th>
<th>Default</th>
<th>Cross-reference?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>MAJ.FOOT.FOR</td>
<td>Multi-valued</td>
<td>Must match codes in Chapter 6</td>
<td>No</td>
<td></td>
<td>No</td>
<td>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.</td>
</tr>
</tbody>
</table>
**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>MIN.TITLE.FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>24</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SP6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>25</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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

|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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>DET.WIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>31</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer between 1 and 500</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>DET.FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>32</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes listed below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>DET.MV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>33</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes listed below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>No</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>
| 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: $C_{n,m,x}$

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:

$N_{n,m}$

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.

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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SP8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>34</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match codes in Chapter 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>MIN.FOOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>35</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>NLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>1</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match format given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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
            35 10 S
            0 0 1 N

**S Latitude (3)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>SLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>2</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match format given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>ELONG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>3</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match format given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td>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.</td>
</tr>
</tbody>
</table>

Examples:  178 35 23 E
           45 0 31 W
           0 0 5 E

**W Longitude (5)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>WLONG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>4</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must match format given below</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td>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.</td>
</tr>
</tbody>
</table>

Examples:  178 35 23 E
           45 0 31 W
           0 0 5 E
**N-S Scale (6)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID</td>
<td>NSCALE</td>
</tr>
<tr>
<td>Field Number</td>
<td>5</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td>Yes</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID</td>
<td>ESCALE</td>
</tr>
<tr>
<td>Field Number</td>
<td>6</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td>N-S scale</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID</td>
<td>ROTATE</td>
</tr>
<tr>
<td>Field Number</td>
<td>7</td>
</tr>
<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be a &quot;Y&quot; or &quot;N&quot;</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td>N</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

**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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>Field Number</th>
<th>Field Type</th>
<th>Input Checking</th>
<th>Entry Required?</th>
<th>Default</th>
<th>Cross-reference?</th>
<th>Description</th>
</tr>
</thead>
</table>
|           | NTICK        | Multi-valued   | Must match format given below | No              |         | No               | 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.
|           | 8            |                |                              |                 |         |                  | 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)**

<table>
<thead>
<tr>
<th>System ID</th>
<th>Field Number</th>
<th>Field Type</th>
<th>Input Checking</th>
<th>Entry Required?</th>
<th>Default</th>
<th>Cross-reference?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ETICK</td>
<td>Multi-valued</td>
<td>Must match format given below</td>
<td>No</td>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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.
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
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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>POST.CRIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>19</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>System ID</th>
<th>LINE.CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Number</td>
<td>20</td>
</tr>
<tr>
<td>Field Type</td>
<td>Multi-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer between 0 and 6</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
</tbody>
</table>

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)

| Field Number | 23 |
| Field Type   | Single-valued |
| 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:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYM.NO</td>
<td>Symbol number</td>
</tr>
<tr>
<td>NAME</td>
<td>Name of symbol</td>
</tr>
<tr>
<td>S.LINES</td>
<td>Simple line graphic commands</td>
</tr>
<tr>
<td>P.LINES</td>
<td>Polygon line graphic commands</td>
</tr>
<tr>
<td>NOTES</td>
<td>Description of Symbol</td>
</tr>
</tbody>
</table>

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

Symbol No. (1)

<table>
<thead>
<tr>
<th>Field Prompt</th>
<th>System ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYM.NO</td>
<td>SYM.NO</td>
</tr>
<tr>
<td>Field Number</td>
<td>0</td>
</tr>
<tr>
<td>Field Type</td>
<td>Key</td>
</tr>
<tr>
<td>Input Checking</td>
<td>Must be an integer between 1 and 999</td>
</tr>
<tr>
<td>Entry Required?</td>
<td>Yes</td>
</tr>
<tr>
<td>Default</td>
<td>Next available empty record number</td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>No</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Field Prompt</th>
<th>System ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbol Name</td>
<td>NAME</td>
</tr>
<tr>
<td>Notes</td>
<td>NOTES</td>
</tr>
</tbody>
</table>
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:
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)

<table>
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<th>NOTES</th>
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<td>4</td>
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<tr>
<td>Field Type</td>
<td>Single-valued</td>
</tr>
<tr>
<td>Input Checking</td>
<td></td>
</tr>
<tr>
<td>Entry Required?</td>
<td>No</td>
</tr>
<tr>
<td>Default</td>
<td></td>
</tr>
<tr>
<td>Cross-reference?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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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