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GEOLOGICAL SURVEY

MRDS-DTR
A Mineral Occurrence Database for VAX DATATRIEVE
Based on the USGS Mineral Resource Data System

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CONTENTS

	Page
Introduction.....	1
Getting started with MRDS-DTR.....	1
MRDS-DTR data file.....	1
MRDS-DTR dictionary objects.....	2
Procedure for creating a DATATRIEVE file.....	2
Data retrieval.....	3
LIST_RECORD_NUMBERS.....	3
LISTMRDS.....	4
LISTING.....	4
GSMAP_FILES.....	4
Plotting MRDS-DTR data.....	4
References cited.....	4

ILLUSTRATIONS

Figure 1. Key to plots from MRDS-DTR.....	5
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APPENDICES

Appendix A. Domain definitions.....	6
B. Record definition: "ORIGINAL_MRDS_RECORD".....	7
C. Record definition: "MRDS_RECORD".....	11
D. Relational tables.....	19
E. FORTRAN code for Program BUILDMRDS.....	20
F. FDL file for converting original data to an indexed file..	22
G. Prodecure LIST_RECORD_NUMBERS.....	23
H. Procedure LISTMRDS.....	25
I. Procedure LISTING.....	30
J. Procedure GSMAP_FILES.....	34

INTRODUCTION

MRDS-DTR is a database management system for mineral deposits that utilizes VAX DATATRIEVE¹ and data obtained from the U.S. Geological Survey Mineral Resource Data System (MRDS; formerly known as the Computerized Resource Information Bank (CRIB)). MRDS is administered by the Branch of Resource Analysis of the Office of Mineral Resources, Geologic Division, USGS, Reston, Virginia, and Menlo Park, California. Although MRDS includes mineral occurrence and deposit data for the entire world, more than 90 percent of the information is for the United States. The MRDS-DTR system was written with VAX DATATRIEVE version 3.4 and VAX CDD¹ (Common Data Dictionary) version 3.3. A FORTRAN program and the Convert utility of VAX RMS¹ (Record Management Services), version 4.5, facilitate conversion of the computer file into an indexed DATATRIEVE file.

MRDS-DTR was originally written for the Delta, Utah, CUSMAP (Conterminous United States Mineral Assessment Program) project. We wanted to retrieve data from MRDS for specific regions within the study area and print data listings and plot map overlays of mineral occurrences so that project members could check the occurrences in the field. The system can be easily adapted to accommodate other users of MRDS data subsets.

Two types of files were retrieved from MRDS for the entire Delta 2⁰ quadrangle--a hard copy version and a computer tape version. The printed copy of the Delta data set includes all fields into which information has been entered. The data file on computer tape is in tabular format; this version was loaded on to the VAX and converted into a DATATRIEVE file.

DATATRIEVE procedures written to retrieve information from the MRDS-DTR database also output data files formatted to suit the needs of Delta CUSMAP. These files include an index to the printed copy of the entire data set, a listing of data for records requested by a retrieval from the data set, and files formatted for use in plotting locations of mineral occurrences.

GETTING STARTED WITH MRDS-DTR

MRDS-DTR Data File

Obtain an initial data file for MRDS-DTR by requesting a retrieval from the MRDS project at the USGS in Reston, Virginia, or Menlo Park, California. The MRDS output should be in two formats--a file on computer tape, for use in the database system, and a hard copy version of the entire retrieval, to be used for reference. Ask for a standard ASCII nonlabel tape with the correct density (bpi, or bits per inch) for the VAX onto which the tape will be loaded.

To be used in MRDS-DTR, the data file on computer tape must be a tabular file arranged in the MRDS project standard tape format, which has two logical records per physical record and 2000 characters per logical record. This format was designed by MRDS project personnel. The original MRDS data set comprises over 200 possible information fields; however, the standard tape format includes only the 96 most important and most commonly requested MRDS fields. Because some of the information fields have a variable length or a very long fixed length, they are truncated in order to fit the data into this tabular standard tape format.

¹VAX, DATATRIEVE, CDD, and RMS are trademarks of Digital Equipment Corporation.

The printed copy of the data subset contains all information in MRDS for the requested records, including complete information for fields that have been truncated in the computer tape version. Only those data fields that contain information are listed, and they are printed in their entirety. Format of the hard copy file therefore varies, depending on the information available for each occurrence. Records are in the same order as records in the data file on the computer tape.

MRDS-DTR Dictionary Objects

To set up the database, copy two DATATRIEVE domain definitions (ORIGINAL_MRDS and MRDS) and two DATATRIEVE record definitions (ORIGINAL_MRDS_RECORD and MRDS_RECORD) into the common data dictionary (see Appendices A through C). Modify domain definitions to specify the correct complete path names to the dictionary in which the record definitions will reside and to the VMS¹ directory in which the data files will be located (see Appendix A). For information on each field of the record definition, refer to the MRDS Instructions for Reporters manual, available from the MRDS project.

The initial domain and record definitions must fit the format of the original computer data file when it is converted to an indexed DATATRIEVE file (see Procedure for Creating a DATATRIEVE File below). ORIGINAL_MRDS (Appendix A) and ORIGINAL_MRDS_RECORD (Appendix B) satisfy this requirement.

Use the domain definition MRDS (Appendix A) and record definition MRDS_RECORD (Appendix C) to restructure the database file (see Procedure for Creating a DATATRIEVE File). In MRDS_RECORD, the field QUAD is computed by selecting the correct 7.5' quadrangle name based on latitude and longitude coordinates. The code for making this choice shown in Appendix C is specific for the Delta, Utah, 2⁰ sheet and must be modified to suit each application of the database.

Four relational tables (Appendix D) are also required in the common data dictionary. The tables use one-digit codes in the MRDS data to define line code (LINE_CODE_TBL), raster size (RASTER_SIZE_TBL), and symbol number (SYMBOL_TBL) in plot files and exploration status (EXPLORATION_STATUS_TBL) in data listings.

PROCEDURE FOR CREATING A DATATRIEVE FILE

After domain and record definitions have been installed in the common data dictionary, reformat the original tape data file retrieved from MRDS into single-line records, convert it to an indexed file, and restructure the file:

- 1) Load the computer data file retrieved from MRDS onto the VAX. Run Program BUILDMRDS (Appendix E) to reformat the data into physical records of 4004 characters each. BUILDMRDS generates a retrieval number that is added to the data file when it rewritten. The output file will be called MRDS.DTR.
- 2) Use the editor to create a file definition language (FDL) file, MRDS.FDL (Appendix F). If you prefer, the FDL file can be created using the RMS Edit/FDL utility, which will ensure the correct format and syntax. To use this utility, type "edit/fdl MRDS.FDL" at the system level (\$ prompt). Select "invoke" from the FDL editor

¹VMS is a trademark of Digital Equipment Corporation.

utility's main menu, and choose "indexed" from the script title selection. In response to prompts, specify "0" for number of records initially loaded, "1" for records to be added, "fixed" for record format, "4004" for record size, "10" for key 0 length, and "8" for key 0 position; accept default values for all other items.

- 3) At the system level, use the RMS Convert utility to convert the .DTR-type file to an indexed file:

```
$ convert/fdl=MRDS.FDL MRDS.DTR ORIGINAL_MRDS.DAT
```

Records in the newly-created "converted" file, ORIGINAL_MRDS.DAT, will be ordered by RECORD_NUMBER.

- 4) In DATATRIEVE, restructure ORIGINAL_MRDS to MRDS:

```
DTR> READY ORIGINAL_MRDS AS OLD READ DTR> SHOW FIELDS FOR OLD
```

```
DTR> DEFINE FILE FOR MRDS KEY=RECORD_NUMBER (NO CHANGE, NO DUP);
```

```
DTR> READY MRDS AS NEW WRITE
```

```
DTR> SHOW FIELDS FOR NEW
```

```
DTR> NEW = OLD (this will take a long time and you will see many
error messages, 'Illegal ASCII numeric "
"...error during STORE or MODIFY'--this is not a
problem; the messages result from storing zeros
where there were blanks in the data for numeric
fields LATMIN, LATSEC, LONMIN, LONSEC, UTM_
NORTHING, and UTM_EASTING.)
```

```
DTR> FINISH
```

Restructuring provides the final tuning for the MRDS-DTR data file. Unneeded items, such as logical record identifiers and hyphens in latitude-longitude data, are eliminated from the data. Computed fields for decimal latitude and longitude and for 7.5' quad designation are added in the new record definition. Most importantly, during the restructuring process zeros are stored where the original data file contains blanks in the numeric fields LATMIN, LATSEC, LONMIN, LONSEC, UTM_NORTHING, and UTM_EASTING. If the data file is not restructured, retrieval time is noticeably slowed by error messages that appear every time a record is found with blanks instead of zeros in numeric fields.

After restructuring you will have five VMS files: the original MRDS data file, MRDS.DTR, MRDS.FDL, ORIGINAL_MRDS.DAT, and MRDS.DAT.

DATA RETRIEVAL

Data can be retrieved from MRDS-DTR in many ways. You can interactively read the data file, retrieve records using any desired selection criteria, and print all or part of the data in any required format. In addition, several DATATRIEVE procedures written to retrieve and format data for the Delta project can be adapted for use with other MRDS data subsets. To do so, copy the procedures into the common data dictionary, inserting the correct path names to access the domain definition MRDS and all relational tables (see Appendices G through J).

LIST_RECORD_NUMBERS

Procedure LIST_RECORD_NUMBERS (Appendix G) creates an indexed list of retrieval number vs. CRIB/MRDS record number for all records in MRDS-DTR. The retrieval number is the order in which the records were retrieved from the national MRDS database and are listed in the printed copy of the data

subset. Use this list to find complete data in the hard copy for mineral occurrences retrieved from MRDS-DTR that may have truncated information.

LISTMRDS

Procedure LISTMRDS (Appendix H) retrieves data from MRDS-DTR using latitude and longitude as area boundaries. LISTMRDS then outputs four data files from the retrieved records with the filename extensions .ASC, .RU, .LATLON, and .LIST. The .ASC file contains latitude and longitude coordinates for mineral occurrence data points; the .RU file contains the labelling information for each occurrence. Mineral occurrence data points can be plotted on map overlays using the .RU and .ASC files (see PLOTTING MRDS-DTR DATA section below). The .LATLON file lists record number and latitude-longitude coordinates in degree-minute-second format; sort this file and use it to spot data locations with duplicate entries. The .LIST file is a printout of all information in the database for each occurrence located within the specified area.

LISTING

Use Procedure LISTING (Appendix I) to retrieve records from MRDS-DTR by any database field. At the DTR> prompt enter "READY MRDS", specify the records needed by using the FIND command, and then "EXECUTE LISTING". The procedure creates a .LIST file in the same format as the one output by LISTMRDS.

GSMAP_FILES

Procedure GSMAP_FILES (Appendix J) retrieves data from MRDS-DTR by area and creates .RU and .ASC files for GSMAP as described for Procedure LISTMRDS.

PLOTTING MRDS-DTR DATA

MRDS-DTR data locations may be plotted using GSMAP, the U.S. Geological Survey's IBM PC program for publication drafting of geologic maps (Selner and Taylor, 1987). Create the initial files for GSMAP, the .RU and .ASC files, by running Procedure LISTMRDS or GSMAP_FILES. Transfer these files from the VAX to a PC and use Program ASCGSM.BAS, written by Gary Selner (Selner and Taylor, 1987), to convert the .ASC file into .LSF and .NDX data files for GSMAP. The key to plots from MRDS-DTR data is shown in Figure 1.

REFERENCES CITED

Selner, G.I., and Taylor, R.B., 1987, GSDRAW and GSMAP version 4.0: Prototype programs for the IBM PC or compatible microcomputers to assist compilation and publication of geologic maps and illustrations: U.S. Geological Survey Open-File Reports Documentation 87-496A; executable program disk 87-496B; source code disk 87-496C; utility program disks 87-496D; Tutorial: About GSDRAW and GSMAP, 87-496E.

Figure 1.

KEY TO PLOTS FROM MRDS DATA

- + Occurrence (inactive)
- ◇ Prospect (inactive)
- ◆ Prospect (active)
- △ Little-developed producer (inactive)
- ▲ Little-developed producer (active)
- Developed producer (inactive)
- Developed producer (active)
- Intermittent producer

APPENDIX A. DOMAIN DEFINITIONS

The two domain definitions listed below must be installed in the common data dictionary to set up MRDS-DTR. Pathnames to record definitions and data files in the definitions shown here are for the system set up for Delta CUSMAP. Modify the pathnames to reflect the correct DATATRIEVE dictionary and VMS file in which the record definitions and data files will be located.

For example, the complete pathname to the record definition is "CDD\$TOP.DTR\$USERS.dictionary.record-definition", where "dictionary" is the name of the DATATRIEVE dictionary (or list of dictionary and subdictionary names, separated by periods) in which the record definition is located, and "record-definition" is ORIGINAL_MRDS_RECORD or MRDS_RECORD. In the domain definitions shown here, the "dictionary" is user dictionary name "SYSCNG", subdictionary name "DELTA", and sub-subdictionary name "MRDS".

The complete file specification is "device:[directory]filename", where "device" is the name of the disk and "directory" is the name of the directory (or list of directory and subdirectory names) in which the file, ORIGINAL_MRDS.DAT or MRDS.DAT, is located. In the domain definitions below "SYS\$USER" is the disk name, and "SYSCNG.DELTA.MRDS" are the names of directory and subdirectories where the data files are located.

Domain Definition for ORIGINAL_MRDS:

```
DOMAIN ORIGINAL_MRDS USING
CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.ORIGINAL_MRDS_RECORD ON
SYS$USER:[SYSCNG.DELTA.MRDS]ORIGINAL_MRDS.DAT;
```

Domain Definition for MRDS:

```
DOMAIN MRDS USING CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.MRDS_RECORD ON
SYS$USER:[SYSCNG.DELTA.MRDS]MRDS.DAT;
```


APPENDIX B. RECORD DEFINITION: ORIGINAL_MRDS_RECORD

RECORD	ORIGINAL_MRDS_RECORD	
01	MRDS_REC.	
05	RETRIEVAL_NUMBER	PIC 9(4).
05	LR1	PIC 9(4)
		QUERY_NAME IS ID1.
05	RECORD_NUMBER	PIC X(10)
		QUERY_NAME IS B10.
05	REPORT_DATE	PIC X(5)
		QUERY_NAME IS G1.
05	REPORTER	PIC X(20)
		QUERY_NAME IS G2.
05	SITE_NAME	PIC X(50)
		QUERY_NAME IS A10.
05	SYNONYMS	PIC X(70)
		QUERY_NAME IS A11.
05	DISTRICT	PIC X(30)
		QUERY_NAME IS A30.
05	COUNTY	PIC X(25)
		QUERY_NAME IS A60.
05	STATE	PIC X(2)
		QUERY_NAME IS A50.
05	COUNTRY	PIC X(2)
		QUERY_NAME IS A40.
05	QUAD_SCALE	PIC X(6)
		QUERY_NAME IS A100.
05	QUAD_NAME	PIC X(15)
		QUERY_NAME IS A90.
05	LATDEG	PIC 9(2).
05	SPACE1	PIC X(1).
05	LATMIN	PIC 9(2).
05	SPACE2	PIC X(1).
05	LATSEC	PIC 9(2).
05	SPACE3	PIC X(1).
05	LONDEG	PIC 9(3).
05	SPACE4	PIC X(1).
05	LONMIN	PIC 9(2).
05	SPACE5	PIC X(1).
05	LONSEC	PIC 9(2).
05	SPACE6	PIC X(1).
05	UTM_NORTHING	PIC 9(7)
		QUERY_NAME IS A120.
05	UTM_EASTING	PIC 9(6)
		QUERY_NAME IS A130.
05	UTM_ZONE	PIC X(3)
		QUERY_NAME IS A110.
05	TOWNSHIPS	PIC X(20)
		QUERY_NAME IS A77.
05	RANGES	PIC X(20)
		QUERY_NAME IS A78.
05	SECTIONS	PIC X(10)
		QUERY_NAME IS A79.

05	NEAR_LOC	PIC X(75)
		QUERY_NAME IS A82.
05	LOCATION_COMMENTS	PIC X(75)
		QUERY_NAME IS A83.
05	COMMODITIES	PIC X(50)
		QUERY_NAME IS C10.
05	ORE_MINERALS	PIC X(50)
		QUERY_NAME IS C30.
05	ANALYTIC_COMMENTS	PIC X(64)
		QUERY_NAME IS C43.
05	MAJOR_PRODUCTS	PIC X(25)
		QUERY_NAME IS MAJOR.
05	MAIN_COMMODITIES	PIC X(25)
		QUERY_NAME IS C11.
05	YES_PRODUCTION	PIC X(3)
		QUERY_NAME IS YES.
05	EXPLORATION_STATUS	PIC X(2)
		QUERY_NAME IS A20.
05	OWNER	PIC X(50)
		QUERY_NAME IS A12.
05	DEPOSIT_TYPE	PIC X(30)
		QUERY_NAME IS C40.
05	DEPOSIT_FORM	PIC X(20)
		QUERY_NAME IS M10.
05	DEPOSIT_SIZE	PIC X(7)
		QUERY_NAME IS M15.
05	STRIKE	PIC X(10)
		QUERY_NAME IS M70.
05	DIP	PIC X(8)
		QUERY_NAME IS M80.
05	DEPOSIT_COMMENTS	PIC X(130)
		QUERY_NAME IS M110.
05	SURFACE_WORKINGS	PIC X(7)
		QUERY_NAME IS M120.
05	UNDERGROUND_WORKINGS	PIC X(7)
		QUERY_NAME IS M130.
05	BOTH	!(WORKINGS)
		PIC X(4)
		QUERY_NAME IS M140.
05	WORKINGS_COMMENTS	PIC X(80)
		QUERY_NAME IS M220.
05	HOST_ROCKS	PIC X(90)
		QUERY_NAME IS K1A.
05	HOST_ROCK_AGE	PIC X(10)
		QUERY_NAME IS K1.
05	IGNEOUS_ROCK_AGE	PIC X(10)
		QUERY_NAME IS K2.
05	ASSOC_IGNEOUS_ROCKS	PIC X(90)
		QUERY_NAME IS K2A.
05	MINERALIZATION_AGE	PIC X(10)
		QUERY_NAME IS K3.
05	PERTINENT_MINERALS	PIC X(75)
		QUERY_NAME IS K4.

05	ORE_CONTROL	PIC X(61)	
		QUERY_NAME IS K5.	
05	REGIONAL_TRENDS	PIC X(50)	
		QUERY_NAME IS N5.	
05	LOCAL_STRUCTURES	PIC X(50)	
		QUERY_NAME IS N70.	
05	ALTERATION	PIC X(50)	
		QUERY_NAME IS N75.	
05	ENRICHMENT_PROCESS	PIC X(50)	
		QUERY_NAME IS N80.	
05	FORMATION_NAME1	PIC X(90)	
		QUERY_NAME IS N30A.	
05	FORMATION_AGE1	PIC X(10)	
		QUERY_NAME IS N30.	
05	FORMATION_NAME2	PIC X(90)	
		QUERY_NAME IS N35A.	
05	FORMATION_AGE2	PIC X(10)	
		QUERY_NAME IS N35.	
05	IGNEOUS_UNIT_AGE	PIC X(10)	
		QUERY_NAME IS N50.	
05	ITEM_PRODUCED1	PIC X(13)	
		QUERY_NAME IS G7.	
05	AMOUNT_PRODUCED1	PIC X(8)	
		QUERY_NAME IS G7A.	
05	UNITS1	PIC X(8)	
		QUERY_NAME IS G7B.	
05	YEARS_OF_PRODUCTION1	PIC X(12)	
		QUERY_NAME IS G7C.	
05	GRADE1	PIC X(25)	
		QUERY_NAME IS G7D.	
05	ITEM_PRODUCED2	PIC X(13)	
		QUERY_NAME IS G8.	
05	AMOUNT_PRODUCED2	PIC X(8)	
		QUERY_NAME IS G8A.	
05	UNITS2	PIC X(8)	
		QUERY_NAME IS G8B.	
05	YEARS_OF_PRODUCTION2	PIC X(12)	
		QUERY_NAME IS G8C.	
05	GRADE2	PIC X(25)	
		QUERY_NAME IS G8D.	
05	ITEM_PRODUCED3	PIC X(13)	
		QUERY_NAME IS G9.	
05	AMOUNT_PRODUCED3	PIC X(8)	
		QUERY_NAME IS G9A.	
05	UNITS3	PIC X(8)	
		QUERY_NAME IS G9B.	
05	YEARS_OF_PRODUCTION3	PIC X(12)	
		QUERY_NAME IS G9C.	
05	GRADE3	PIC X(25)	
		QUERY_NAME IS G9D.	
05	LR2	PIC 9(5)	
		QUERY_NAME IS ID2.	
05	ITEM_PRODUCED4	PIC X(13)	
		QUERY_NAME IS D1.	

```

05      AMOUNT_PRODUCED4 PIC X(8)
                                QUERY_NAME IS D1A.
05      UNITS4              PIC X(8)
                                QUERY_NAME IS D1B.
05      YEARS_OF_PRODUCTION4 PIC X(12)
                                QUERY_NAME IS D1C.
05      GRADE4              PIC X(25)
                                QUERY_NAME IS D1D.
05      ITEM_PRODUCED5      PIC X(13)
                                QUERY_NAME IS D2.
05      AMOUNT_PRODUCED5 PIC X(8)
                                QUERY_NAME IS D2A.
05      UNITS5              PIC X(8)
                                QUERY_NAME IS D2B.
05      YEARS_OF_PRODUCTION5 PIC X(12)
                                QUERY_NAME IS D2C.
05      GRADE5              PIC X(25)
                                QUERY_NAME IS D2D.
05      ITEM_PRODUCED6      PIC X(13)
                                QUERY_NAME IS D3.
05      AMOUNT_PRODUCED6 PIC X(8)
                                QUERY_NAME IS D3A.
05      UNITS6              PIC X(8)
                                QUERY_NAME IS D3B.
05      YEARS_OF_PRODUCTION6 PIC X(12)
                                QUERY_NAME IS D3C.
05      GRADE6              PIC X(25)
                                QUERY_NAME IS D3D.
05      SOURCE_PRODUCTION INFO PIC X(30)
                                QUERY_NAME IS D9.
05      PRODUCTION_COMMENTS PIC X(125)
                                QUERY_NAME IS D10.
05      COMMODITY_COMMENTS PIC X(125)
                                QUERY_NAME IS C50.
05      EXPLORATION_COMMENTS PIC X(250)
                                QUERY_NAME IS L110.
05      IGNEOUS_UNIT_NAME PIC X(50)
                                QUERY_NAME IS N50A.
05      REFERENCE1          PIC X(190)
                                QUERY_NAME IS F1.
05      REFERENCE2          PIC X(190)
                                QUERY_NAME IS F2.
05      REFERENCE3          PIC X(190)
                                QUERY_NAME IS F3.
05      REFERENCE4          PIC X(190)
                                QUERY_NAME IS F4.
05      GEOLOGY_COMMENTS PIC X(300)
                                QUERY_NAME IS N85.
05      GENERAL_COMMENTS PIC X(157)
                                QUERY_NAME IS GEN.

```

;

APPENDIX C. RECORD DEFINITION: MRDS_RECORD

The record definition listed below for MRDS_RECORD includes a computed field, QUAD. In this example, the code for selecting the correct 7.5⁰ quadrangle name for the data point is specific for the Delta, Utah, 2⁰ sheet. Modify this section of code by inserting quad names, latitudes, and longitudes applicable to your area.

RECORD MRDS_RECORD

01 MRDS_REC.

05 RETRIEVAL_NUMBER PIC 9(4).

05 RECORD_NUMBER PIC X(10)
QUERY_NAME IS B10.

05 REPORT_DATE PIC X(5)
QUERY_NAME IS G1.

05 REPORTER PIC X(20)
QUERY_NAME IS G2.

05 SITE_NAME PIC X(50)
QUERY_NAME IS A10.

05 SYNONYMS PIC X(70)
QUERY_NAME IS A11.

05 DISTRICT PIC X(30)
QUERY_NAME IS A30.

05 COUNTY PIC X(25)
QUERY_NAME IS A60.

05 STATE PIC X(2)
QUERY_NAME IS A50.

05 COUNTRY PIC X(2)
QUERY_NAME IS A40.

05 QUAD_SCALE PIC X(6)
QUERY_NAME IS A100.

05 QUAD_NAME PIC X(15)
QUERY_NAME IS A90.

05 QUAD COMPUTED BY CHOICE

(LATITUDE GT 39.875 AND LATITUDE LE 40.00) THEN CHOICE

(LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Eureka'

(LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Tintic Junction'

(LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Sabie Mountain'

(LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Dutch Peak'

(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Erickson Knoll'

(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Indian Springs'

(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Coyote Springs'

(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Table Mountain'

(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Dugway Range NE'

(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN 'Dugway RangeNW'

(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Fish Springs NE'

(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Fish Springs NW'

(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN 'Callao NE'

(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN 'Callao'

(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN 'Goshute Canyon'

(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN 'Goshute'

ELSE 'outside Delta 2-degree sheet'

END_CHOICE

```

(LATITUDE GT 39.75 AND LATITUDE LE 39.875) THEN CHOICE
  (LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Tintic Mountain'
  (LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'McIntyre'
  (LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Maple Peak'
  (LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Cherry Creek'
  (LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN
    'Desert Mountain Pass'
  (LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Erickson Wash SW'
  (LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Keg Mountain Ranch'
  (LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Keg Pass'
  (LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Dugway Pass'
  (LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN
    'Dugway Range 15''-SW 1/4'
  (LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Fish Springs SE'
  (LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Fish Springs SW'
  (LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN 'Boyd Station'
  (LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN 'Mud Lake Reservoir'
  (LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN 'Indian Farm Creek'
  (LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN 'Ibapah Peak'
ELSE 'outside Delta 2-degree sheet'
END CHOICE

(LATITUDE GT 39.625 AND LATITUDE LE 39.75) THEN CHOICE
  (LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Furner Ridge'
  (LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Jericho'
  (LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN
    'Tanner Creek Narrows'
  (LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Lynndyl NW'
  (LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN
    'Desert Mountain Reservoir'
  (LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN
    'Crater Bench Reservoir'
  (LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'The Hogback'
  (LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Picture Rock Hills'
  (LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN
    'Topaz Mountain 15''-NE 1/4'
  (LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN
    'Topaz Mountain 15''-NW 1/4'
  (LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Sand Pass NE'
  (LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Sand Pass NW'
  (LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN
    'Granite Mountain 15''-NE 1/4'
  (LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN
    'Granite Mountain 15''-NW 1/4'
  (LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN
    'Trout Creek 15''-NE 1/4'
  (LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN
    'Trout Creek 15''-NW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE

(LATITUDE GT 39.50 AND LATITUDE LE 39.625) THEN CHOICE
  (LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Sage Valley'
  (LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Champlin Peak'
  (LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Lynndyl East'
  (LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Lynndyl West'

```

```

(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Rain Lake'
(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Baker Hot Springs'
(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Fumarole Butte'
(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN
    'Drum Mountains Well'
(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN
    'Topaz Mountain 15''-SE 1/4'
(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN
    'Topaz Mountain 15''-SW 1/4'
(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Sand Pass SE'
(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Sand Pass'
(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN
    'Granite Mountain 15''-SE 1/4'
(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN
    'Granite Mountain 15''-SW 1/4'
(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN
    'Trout Creek 15''-SE 1/4'
(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN
    'Trout Creek 15''-SW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE
(LATITUDE GT 39.375 AND LATITUDE LE 39.50) THEN CHOICE
(LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Mills'
(LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Fool Creek Peak'
(LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Oak City North'
(LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Strong'
(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Delta NE'
(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Sutherland'
(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Smelter Knolls East'
(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Smelter Knolls West'
(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Little Drum Pass'
(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN 'Whirlwind Valley NW'
(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Swasey Peak'
(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Swasey Peak NW'
(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN
    'Cowboy Pass 15''-NE 1/4'
(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN
    'Cowboy Pass 15''-NW 1/4'
(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN 'Gandy 15''-NE 1/4'
(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN 'Gandy 15''-NW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE
(LATITUDE GT 39.25 AND LATITUDE LE 39.375) THEN CHOICE
(LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Scipio North'
(LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Williams Peak'
(LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Oak City South'
(LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'Harding'
(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Delta'
(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Hinckley'
(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Crafts Lake'
(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Clay Knoll'
(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Red Knolls'
(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN 'Whirlwind Valley SW'
(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Marjum Pass'

```

```

(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Swasey Peak SW'
(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN 'Cowboy Pass 15'-SE 1/4'
(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN 'Cowboy Pass 15'-SW 1/4'
(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN 'Gandy 15'-SE 1/4'
(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN 'Gandy 15'-SW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE
(LATITUDE GT 39.125 AND LATITUDE LE 39.25) THEN CHOICE
(LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Scipio South'
(LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Scipio Pass'
(LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Duggins Creek'
(LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'McCormick'
(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Pavant Butte North'
(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Sunstone Knoll'
(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Pot Mountain'
(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Rocky Knoll'
(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Long Ridge'
(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN 'Long Ridge Reservoir'
(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Notch Peak 15'-NE 1/4'
(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Notch Peak 15'-NW 1/4'
(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN
    'Conger Mountain 15'-NE 1/4'
(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN
    'Conger Mountain 15'-NW 1/4'
(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN
    'Conger Range 15'-NE 1/4'
(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN
    'Conger Range 15'-NW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE
(LATITUDE GE 39.00 AND LATITUDE LE 39.125) THEN CHOICE
(LONGITUDE GE 112.00 AND LONGITUDE LE 112.125) THEN 'Scipio Lake'
(LONGITUDE GT 112.125 AND LONGITUDE LE 112.25) THEN 'Coffee Peak'
(LONGITUDE GT 112.25 AND LONGITUDE LE 112.375) THEN 'Holden'
(LONGITUDE GT 112.375 AND LONGITUDE LE 112.50) THEN 'The Sink'
(LONGITUDE GT 112.50 AND LONGITUDE LE 112.625) THEN 'Pavant Butte South'
(LONGITUDE GT 112.625 AND LONGITUDE LE 112.75) THEN 'Clear Lake'
(LONGITUDE GT 112.75 AND LONGITUDE LE 112.875) THEN 'Neels'
(LONGITUDE GT 112.875 AND LONGITUDE LE 113.00) THEN 'Red Pass'
(LONGITUDE GT 113.00 AND LONGITUDE LE 113.125) THEN 'Long Ridge SE'
(LONGITUDE GT 113.125 AND LONGITUDE LE 113.25) THEN 'Long Ridge SW'
(LONGITUDE GT 113.25 AND LONGITUDE LE 113.375) THEN 'Notch Peak 15'-SE 1/4'
(LONGITUDE GT 113.375 AND LONGITUDE LE 113.50) THEN 'Notch Peak 15'-SW 1/4'
(LONGITUDE GT 113.50 AND LONGITUDE LE 113.625) THEN
    'Conger Mountain 15'-SE 1/4'
(LONGITUDE GT 113.625 AND LONGITUDE LE 113.75) THEN
    'Conger Mountain 15'-SW 1/4'
(LONGITUDE GT 113.75 AND LONGITUDE LE 113.875) THEN
    'Conger Range 15'-SE 1/4'
(LONGITUDE GT 113.875 AND LONGITUDE LE 114.00) THEN
    'Conger Range 15'-SW 1/4'
ELSE 'outside Delta 2-degree sheet'
END CHOICE
(LATITUDE LT 39.00 OR LATITUDE GT 40.00 OR

```



```

LONGITUDE LT 112.00 OR LONGITUDE GT 114.00) THEN
                                ^outside Delta 2-degree sheet^
ELSE ^no coordinates given^
END_CHOICE.
05     LATDEG          PIC 9(2).
05     LATMIN          PIC 9(2).
05     LATSEC          PIC 9(2).
05     LONDEG          PIC 9(3).
05     LONMIN          PIC 9(2).
05     LONSEC          PIC 9(2).
05     LATITUDE        COMPUTED BY LATDEG + LATMIN/60 + LATSEC/3600
                        QUERY_NAME IS LAT
                        EDIT_STRING IS 99.99 999.
05     LONGITUDE        COMPUTED BY LONDEG + LONMIN/60 + LONSEC/3600
                        QUERY_NAME IS LON
                        EDIT_STRING IS 999.999999.
05     UTM_NORTHING    PIC 9(7)
                        QUERY_NAME IS A120.
05     UTM_EASTING     PIC 9(6)
                        QUERY_NAME IS A130.
05     UTM_ZONE        PIC X(3)
                        QUERY_NAME IS A110.
05     TOWNSHIPS       PIC X(20)
                        QUERY_NAME IS A77.
05     RANGES          PIC X(20)
                        QUERY_NAME IS A78.
05     SECTIONS        PIC X(10)
                        QUERY_NAME IS A79.
05     NEAR_LOC        PIC X(75)
                        QUERY_NAME IS A82.
05     LOCATION_COMMENTS PIC X(75)
                        QUERY_NAME IS A83.
05     COMMODITIES     PIC X(50)
                        QUERY_NAME IS C10.
05     ORE_MINERALS    PIC X(50)
                        QUERY_NAME IS C30.
05     ANALYTIC_COMMENTS PIC X(64)
                        QUERY_NAME IS C43.
05     MAJOR_PRODUCTS  PIC X(25)
                        QUERY_NAME IS MAJOR.
05     MAIN_COMMODITIES PIC X(25)
                        QUERY_NAME IS C11.
05     YES_PRODUCTION  PIC X(3)
                        QUERY_NAME IS YES.
05     EXPLORATION_STATUS PIC X(2)
                        QUERY_NAME IS A20.
05     OWNER           PIC X(50)
                        QUERY_NAME IS A12.
05     DEPOSIT_TYPE    PIC X(30)
                        QUERY_NAME IS C40.
05     DEPOSIT_FORM    PIC X(20)
                        QUERY_NAME IS M10.
05     DEPOSIT_SIZE    PIC X(7)
                        QUERY_NAME IS M15.

```

05	STRIKE	PIC X(10)
		QUERY_NAME IS M70.
05	DIP	PIC X(8)
		QUERY_NAME IS M80.
05	DEPOSIT_COMMENTS	PIC X(130)
		QUERY_NAME IS M110.
05	SURFACE_WORKINGS	PIC X(7)
		QUERY_NAME IS M120.
05	UNDERGROUND_WORKINGS	PIC X(7)
		QUERY_NAME IS M130.
05	BOTH !(WORKINGS)	PIC X(4)
		QUERY_NAME IS M140.
05	WORKINGS_COMMENTS	PIC X(80)
		QUERY_NAME IS M220.
05	HOST_ROCKS	PIC X(90)
		QUERY_NAME IS K1A.
05	HOST_ROCK_AGE	PIC X(10)
		QUERY_NAME IS K1.
05	IGNEOUS_ROCK_AGE	PIC X(10)
		QUERY_NAME IS K2.
05	ASSOC_IGNEOUS_ROCKS	PIC X(90)
		QUERY_NAME IS K2A.
05	MINERALIZATION_AGE	PIC X(10)
		QUERY_NAME IS K3.
05	PERTINENT_MINERALS	PIC X(75)
		QUERY_NAME IS K4.
05	ORE_CONTROL	PIC X(61)
		QUERY_NAME IS K5.
05	REGIONAL_TRENDS	PIC X(50)
		QUERY_NAME IS N5.
05	LOCAL_STRUCTURES	PIC X(50)
		QUERY_NAME IS N70.
05	ALTERATION	PIC X(50)
		QUERY_NAME IS N75.
05	ENRICHMENT_PROCESS	PIC X(50)
		QUERY_NAME IS N80.
05	FORMATION_NAME1	PIC X(90)
		QUERY_NAME IS N30A.
05	FORMATION_AGE1	PIC X(10)
		QUERY_NAME IS N30.
05	FORMATION_NAME2	PIC X(90)
		QUERY_NAME IS N35A.
05	FORMATION_AGE2	PIC X(10)
		QUERY_NAME IS N35.
05	IGNEOUS_UNIT_AGE	PIC X(10)
		QUERY_NAME IS N50.
05	ITEM_PRODUCED1	PIC X(13)
		QUERY_NAME IS G7.
05	AMOUNT_PRODUCED1	PIC X(8)
		QUERY_NAME IS G7A.
05	UNITS1	PIC X(8)
		QUERY_NAME IS G7B.
05	YEARS_OF_PRODUCTION1	PIC X(12)
		QUERY_NAME IS G7C.

05	GRADE1	PIC X(25)
		QUERY_NAME IS G7D.
05	ITEM_PRODUCED2	PIC X(13)
		QUERY_NAME IS G8.
05	AMOUNT_PRODUCED2	PIC X(8)
		QUERY_NAME IS G8A.
05	UNITS2	PIC X(8)
		QUERY_NAME IS G8B.
05	YEARS_OF_PRODUCTION2	PIC X(12)
		QUERY_NAME IS G8C.
05	GRADE2	PIC X(25)
		QUERY_NAME IS G8D.
05	ITEM_PRODUCED3	PIC X(13)
		QUERY_NAME IS G9.
05	AMOUNT_PRODUCED3	PIC X(8)
		QUERY_NAME IS G9A.
05	UNITS3	PIC X(8)
		QUERY_NAME IS G9B.
05	YEARS_OF_PRODUCTION3	PIC X(12)
		QUERY_NAME IS G9C.
05	GRADE3	PIC X(25)
		QUERY_NAME IS G9D.
05	ITEM_PRODUCED4	PIC X(13)
		QUERY_NAME IS D1.
05	AMOUNT_PRODUCED4	PIC X(8)
		QUERY_NAME IS D1A.
05	UNITS4	PIC X(8)
		QUERY_NAME IS D1B.
05	YEARS_OF_PRODUCTION4	PIC X(12)
		QUERY_NAME IS D1C.
05	GRADE4	PIC X(25)
		QUERY_NAME IS D1D.
05	ITEM_PRODUCED5	PIC X(13)
		QUERY_NAME IS D2.
05	AMOUNT_PRODUCED5	PIC X(8)
		QUERY_NAME IS D2A.
05	UNITS5	PIC X(8)
		QUERY_NAME IS D2B.
05	YEARS_OF_PRODUCTION5	PIC X(12)
		QUERY_NAME IS D2C.
05	GRADE5	PIC X(25)
		QUERY_NAME IS D2D.
05	ITEM_PRODUCED6	PIC X(13)
		QUERY_NAME IS D3.
05	AMOUNT_PRODUCED6	PIC X(8)
		QUERY_NAME IS D3A.
05	UNITS6	PIC X(8)
		QUERY_NAME IS D3B.
05	YEARS_OF_PRODUCTION6	PIC X(12)
		QUERY_NAME IS D3C.
05	GRADE6	PIC X(25)
		QUERY_NAME IS D3D.

05	SOURCE_PRODUCTION_INFO	PIC X(30)	
			QUERY_NAME IS D9.
05	PRODUCTION_COMMENTS	PIC X(125)	
			QUERY_NAME IS D10.
05	COMMODITY_COMMENTS	PIC X(125)	
			QUERY_NAME IS C50.
05	EXPLORATION_COMMENTS	PIC X(250)	
			QUERY_NAME IS L110.
05	IGNEOUS_UNIT_NAME	PIC X(50)	
			QUERY_NAME IS N50A.
05	REFERENCE1	PIC X(190)	
			QUERY_NAME IS F1.
05	REFERENCE2	PIC X(190)	
			QUERY_NAME IS F2.
05	REFERENCE3	PIC X(190)	
			QUERY_NAME IS F3.
05	REFERENCE4	PIC X(190)	
			QUERY_NAME IS F4.
05	GEOLOGY_COMMENTS	PIC X(300)	
			QUERY_NAME IS N85.
05	GENERAL_COMMENTS	PIC X(157)	
			QUERY_NAME IS GEN.

;

APPENDIX D. RELATIONAL TABLES

TABLE EXPLORATION_STATUS_TBL

```

1 : `OCCURRENCE (INACTIVE)`
2 : `PROSPECT (INACTIVE)`
3 : `PROSPECT (ACTIVE)`
4 : `LITTLE-DEVELOPED PRODUCER (INACTIVE)`
5 : `LITTLE-DEVELOPED PRODUCER (ACTIVE)`
6 : `DEVELOPED PRODUCER (INACTIVE)`
7 : `DEVELOPED PRODUCER (ACTIVE)`
8 : `INTERMITTENT PRODUCER`
END_TABLE

```

TABLE LINE_CODE_TBL

```

1 : `301`
2 : `302`
3 : `303`
4 : `304`
5 : `305`
6 : `306`
7 : `307`
8 : `308`
END_TABLE

```

TABLE RASTER_SIZE_TBL

```

1 : `100`
2 : `100`
3 : `100`
4 : `100`
5 : `100`
6 : `100`
7 : `100`
8 : `100`
END_TABLE

```

TABLE SYMBOL_TBL

```

1 : ` 9`
2 : ` 7`
3 : ` 8`
4 : ` 5`
5 : ` 6`
6 : ` 1`
7 : ` 2`
8 : ` 3`
END_TABLE

```

APPENDIX E. FORTRAN CODE FOR PROGRAM BUILDMRDS

```

C PROGRAM BUILDMRDS - written by Carol N. Gerlitz May 1987.
C This program reads a Delta MRDS retrieval file one logical record (2000
C characters) at a time and writes the two logical records out on one
C continuous line so that it can be converted to an indexed DATATRIEVE
C file.
C=====
C          VARIABLE DEFINITION                                FORMAT
C          =====
C COUNTER  counts the number of records read and written; becomes
C          Retrievalnumber in DATATRIEVE database
C LINE1    reads logical record 1 of physical record          A2000
C LINE2    reads logical record 2 of physical record          A2000
C=====
      CHARACTER LINE1*2000,LINE2*2000
      INTEGER COUNTER,IN,INPUT,OUT,OUTPUT
      COUNTER=0
      CALL OPENFILES(IN,INPUT,OUT,OUTPUT)
20 CALL READMRDS(INPUT,LINE1,LINE2,*200,*50)
50 COUNTER=COUNTER+1
      CALL WRITEMRDS(COUNTER,OUTPUT,LINE1,LINE2,*200,*100)
100 GOTO 20
200 CALL CLOSEFILES(INPUT,OUTPUT)
      STOP 'MRDS.DTR IS READY FOR CONVERSION TO AN INDEXED FILE'
      END

      SUBROUTINE OPENFILES(IN,INPUT,OUT,OUTPUT)
C=====open data files=====
      CHARACTER INFILE*25
      IN=5          !read from terminal
      OUT=6         !write to terminal
10 WRITE(OUT,19)
19 FORMAT(///' NAME OF INPUT FILE? ',)$)
      READ(IN,29,ERR=10) INFILE
29 FORMAT(A25)
      WRITE(OUT,49)
49 FORMAT(//10X,'==> YOUR REFORMATTED FILE WILL BE CALLED
+ 'MRDS.DTR'//)
      OPEN(1,FILE=INFILE,STATUS='OLD',CARRIAGECONTROL='LIST')
      OPEN(2,FILE='MRDS.DTR',STATUS='NEW',RECL=4004,
+ CARRIAGECONTROL='LIST')
      INPUT=1
      OUTPUT=2
      RETURN
      END

      SUBROUTINE READMRDS(INPUT,LINE1,LINE2,*,*)
C=====read MRDS data file 1 LINE at a time for 2 lines per record=====
      CHARACTER LINE1*2000,LINE2*2000
      READ(INPUT,99,ERR=100,END=150) LINE1
99 FORMAT(A2000)
      READ(INPUT,99,ERR=110) LINE2
      GOTO 200

```

```

100 PRINT *, ' ==> MRDS DATA FILE CANNOT BE READ, 1ST LINE'
    GOTO 150
110 PRINT *, ' ==> MRDS DATA FILE CANNOT BE READ, 2ND LINE'
150 RETURN1
200 RETURN2 !NORMAL
    END

```

```

        SUBROUTINE WRITEMRDS(COUNTER,OUTPUT,LINE1,LINE2,*,*)
C=====write MRDS data file 1 line at a time , 1 line per record=====
        CHARACTER LINE1*2000,LINE2*2000
        INTEGER COUNTER
        IF(COUNTER.LT.10) THEN
            WRITE(OUTPUT,69,ERR=100) COUNTER,LINE1,LINE2
69      FORMAT('000',I1,2A2000)
        ELSE IF(COUNTER.GE.10.AND.COUNTER.LT.100) THEN
            WRITE(OUTPUT,79,ERR=100) COUNTER,LINE1,LINE2
79      FORMAT('00',I2,2A2000)
        ELSE IF(COUNTER.GE.100.AND.COUNTER.LT.1000) THEN
            WRITE(OUTPUT,89,ERR=100) COUNTER,LINE1,LINE2
89      FORMAT('0',I3,2A2000)
        ELSE IF(COUNTER.GE.1000) THEN
            WRITE(OUTPUT,99,ERR=100) COUNTER,LINE1,LINE2
99      FORMAT(I4,2A2000)
        ENDIF
        GOTO 200
100 PRINT *, ' ==> MRDS DATA FILE CANNOT BE WRITTEN'
150 RETURN1
200 RETURN2 !NORMAL
    END

```

```

        SUBROUTINE CLOSEFILES(INPUT,OUTPUT)
C=====close data files=====
        CLOSE(INPUT)
        CLOSE(OUTPUT)
        RETURN
    END

```

APPENDIX F. FDL FILE FOR CONVERTING ORIGINAL DATA TO AN INDEXED FILE

TITLE "FDL TO CONVERT BUILD MRDS OUTPUT TO KEYED DATA RETRIEVE FILE"

IDENT "10-JUL-1987 15:05:11 VAX-11 FDL Editor"

SYSTEM

SOURCE VAX/VMS

FILE

ORGANIZATION indexed

RECORD

CARRIAGE_CONTROL carriage_return
FORMAT fixed
SIZE 4004

AREA 0

ALLOCATION 21
BEST_TRY_CONTIGUOUS yes
BUCKET_SIZE 9
EXTENSION 9

AREA 1

ALLOCATION 18
BEST_TRY_CONTIGUOUS yes
BUCKET_SIZE 9
EXTENSION 9

KEY 0

CHANGES no
DATA_AREA 0
DATA_FILL 100
DATA_KEY_COMPRESSION yes
DATA_RECORD_COMPRESSION yes
DUPLICATES no
INDEX_AREA 1
INDEX_COMPRESSION yes
INDEX_FILL 100
LEVEL1_INDEX_AREA 1
NAME "RECORD_NUMBER"
PROLOG 3
SEGO_LENGTH 10
SEGO_POSITION 8
TYPE string

APPENDIX G. PROCEDURE LIST_RECORD_NUMBERS

Modify the READY command in Procedure LIST_RECORD_NUMBERS, below, to include the complete pathname to the DATATRIEVE domain MRDS. The complete pathname is "CDD\$TOP.DTR\$USERS.dictionary.MRDS", where "dictionary" is the name of the DATATRIEVE dictionary (or list of dictionary and subdictionary names, separated by periods) in which the domain is located. In the example here, the "dictionary" is user-dictionary name "SYSCNG", subdictionary name "DELTA", and sub-subdictionary name "MRDS".

PROCEDURE LIST_RECORD_NUMBERS

! Written by Carol N. Gerlitz, May 1987

READY CDD\$TOP.DTR\$USERS.SYSCNG.DELTA.MRDS.MRDS SHARED READ

FIND MRDS

PRINT SKIP,

^This program will print all CRIB/MRDS record numbers vs.^, SKIP,

^ retrieval numbers in the file RECNUM.LIST^, SKIP 3,

^Please be patient....it will take quite awhile....^, SKIP

ON RECNUM.LIST

REPORT

SET NO NUMBER

SET NO DATE

SET NO COLUMN HEADER

SET COLUMNS_PAGE = 132

AT TOP OF REPORT PRINT SKIP 15,

COL 19, ^* * * * * ^, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^*, COL 22, ^DELTA, UTAH, 2-DEGREE QUADRANGLE^,

COL 57, ^*, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^*, COL 21, ^MINERAL OCCURRENCES FROM MRDS DATA^,

COL 57, ^*, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^*, COL 22, ^LIST OF RETRIEVAL RECORD NUMBER^,

COL 57, ^*, SKIP,

COL 19, ^*, COL 30, ^VS. CRIB NUMBER^,

COL 57, ^*, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^*, COL 57, ^*, SKIP,

COL 19, ^* * * * * ^, SKIP,

NEW_PAGE

SET LINES_PAGE = 60

AT TOP OF PAGE PRINT !column headings

COL 39, ^LIST OF RETRIEVAL RECORD NUMBER VS. CRIB NUMBER^, SKIP 2,

COL 3, ^RECORD^, COL 12, ^CRIB^, SKIP,

COL 3, ^NUMBER^, COL 12, ^NUMBER^, COL 23, ^OCCURRENCE NAME^,

COL 74, ^DISTRICT NAME^, COL 105, ^7.5^ QUADRANGLE^,

COL 3, ^-----^, COL 10, ^-----^,

COL 21, ^-----^,

COL 72, ^-----^,

COL 103, ^-----^

PRINT !data

```
COL 3, RETRIEVAL NUMBER(-) USING ZZZ9,  
COL 10, RECORD NUMBER,  
COL 21, SITE NAME,  
COL 72, DISTRICT,  
COL 103, QUAD  
END REPORT  
END-PROCEDURE
```

APPENDIX H. PROCEDURE LISTMRDS

Modify the READY command in Procedure LISTMRDS, below, to include the complete pathname to the DATATRIEVE domain MRDS. Also modify pathnames to relational tables. The complete pathname to these DATATRIEVE dictionary objects is "CDD\$TOP.DTR\$USERS.dictionary.object", where "dictionary" is the name of the DATATRIEVE dictionary (or list of dictionary and subdictionary names, separated by periods) in which the domain is located, and "object" is the name of the domain or table. In the example here, the "dictionary" is user-dictionary name "SYSCNG", subdictionary name "DELTA", and sub-subdictionary name "MRDS"; "object" is MRDS, LINE_CODE_TBL, SYMBOL_TBL, RASTER_SIZE_TBL, or EXPLORATION_STATUS_TBL.

PROCEDURE LISTMRDS

!Written by Carol N. Gerlitz, May 1987

```

DECLARE ANSWER          PIC X
                        VALID IF ANSWER CONT ^A^ OR ANSWER CONT ^B^ OR
                        ANSWER CONT ^C^ OR ANSWER CONT ^D^.

DECLARE AREA            PIC X(20).
DECLARE CALENDAR_DATE   USAGE IS DATE
                        DEFAULT ^TODAY^
                        EDIT_STRING IS DDBMMMBYYYY.

DECLARE MINLAT          USAGE IS DOUBLE
                        EDIT_STRING IS Z99.999999.

DECLARE MAXLAT          USAGE IS DOUBLE
                        EDIT_STRING IS Z99.999999.

DECLARE MINLON          USAGE IS DOUBLE
                        EDIT_STRING IS Z999.999999.

DECLARE MAXLON          USAGE IS DOUBLE
                        EDIT_STRING IS Z999.999999.

DECLARE NAME            PIC X(16).

READY CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.MRDS SHARED READ
PRINT SKIP 2,
^This program will print out everything in the MRDS data that is in^,
^DATATRIEVE for the lat-lon bounds you set. (Note that some of the^,
^fields are truncated--complete info is in printouts received with^,
^original MRDS retrieval.)^, SKIP
AREA = *.^name of retrieval district/area (20 characters max)^
PRINT SKIP 2,
^This program will also create files from MRDS data for plotting with GSMAP^,
SKIP 2,
^NAME YOUR GSMAP DATABASE (use exactly 16 characters--fill with blank spaces):^
NAME = *.^name of GSMAP database^
PRINT SKIP,
^TO RETRIEVE DATA FROM MRDS FOR A SPECIFIC AREA, YOU MUST ENTER^, SKIP,
^LATITUDES AND LONGITUDES WHICH BOUND THE AREA--^, SKIP,
^  you will be prompted to enter degrees, minutes and seconds for^, SKIP,
^  minimum and maximum latitude and for minimum and maximum longitude.^,
SKIP 2,
^INIMUM LATITUDE:^
MINLAT = (*.^degrees^ + *.^minutes^/60 + *.^seconds^/3600)
PRINT SKIP, ^MAXIMUM LATITUDE:^
MAXLAT = (*.^degrees^ + *.^minutes^/60 + *.^seconds^/3600)
PRINT SKIP, ^MINIMUM LONGITUDE:^

```

```

MINLON = (*.degrees + *.minutes/60 + *.seconds/3600)
PRINT SKIP, 'MAXIMUM LONGITUDE:'
MAXLON = (*.degrees + *.minutes/60 + *.seconds/3600)
PRINT SKIP 2,
  'Please be patient.....', SKIP,
  'it will take awhile to search the database for '|NAME, SKIP
FIND PASS1 IN MRDS WITH LATITUDE GE MINLAT AND LATITUDE LE MAXLAT AND
  LONGITUDE GE MINLON AND LONGITUDE LE MAXLON
PRINT SKIP, 'WHAT SCALE WILL YOU USE TO PLOT THIS DATA?', SKIP,
  'A. 1:24,000', SKIP,
  'B. 1:62,500', SKIP,
  'C. other large-scale (larger than 1:50,000; e.g., 1:31,250)', SKIP,
  'D. other small-scale (1:50,000 or smaller; e.g., 1:100,000)', SKIP
ANSWER = *.A, B, C, or D'
PRINT SKIP
IF ANSWER CONT 'A' OR ANSWER CONT 'C'
THEN ON *.name of data file for GSMAP (use "database.ASC")
  PRINT NAME(-) THEN
  PRINT MAXLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MINLON(-) THEN
  PRINT MAXLAT(-), MINLON(-) THEN
  PRINT '999 1 |EXPLORATION STATUS VIA
  CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.LINE_CODE_TBL|'|
  EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.SYMBOL_TBL|'|
  EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.RASTER_SIZE_TBL,
  SKIP, ', LATITUDE(-), ', LONGITUDE(-) OF PASS1 THEN
  PRINT '999 1 501', RUNNING COUNT(-), '60', SKIP,
    ', LATITUDE - 0.0002(-) USING 99.999999, ',
    LONGITUDE - 0.0007(-) USING 99.999999 OF PASS1
  ! subtracting .0002 of a degree from latitude and .0007 of a degree from
  ! longitude, above, places a label point to the right of the point for a
  ! 1:62500 or other small scale quad.
IF ANSWER CONT 'B' OR ANSWER CONT 'D'
THEN ON *.name of data file for GSMAP (use "database.ASC")
  PRINT NAME(-) THEN
  PRINT MAXLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MINLON(-) THEN
  PRINT MAXLAT(-), MINLON(-) THEN
  PRINT '999 1 |EXPLORATION STATUS VIA
  CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.LINE_CODE_TBL|'|
  EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.SYMBOL_TBL|'|
  EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.RASTER_SIZE_TBL,
  SKIP, ', LATITUDE(-), ', LONGITUDE(-) OF PASS1 THEN
  PRINT '999 1 501', RUNNING COUNT(-), '60', SKIP,
    ', LATITUDE - 0.0005(-) USING 99.999999, ',
    LONGITUDE - 0.0019(-) USING 99.999999 OF PASS1
  ! subtracting .0005 of a degree from latitude and .0019 of a degree from
  ! longitude, above, places a label point to the right of the point for a
  ! 1:62500 or other small scale quad.
PRINT SKIP, '==> N.B.--THE .ASC FILE MUST BE DOWNLOADED FROM VAX TO PC AND'
  'RUN THROUGH ASCGSM.BAS TO CREATE .LSF AND .NDX FILES FOR GSMAP.'
PRINT SKIP

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ON *.name of label file for GSMAP (use "database.RU")
PRINT RUNNING COUNT|'|RECORD_NUMBER|'|'|SKIP, "EOT" OF PASS1
PRINT SKIP
ON *.name of lat-lon file (use "database.LATLON")
PRINT RECORD_NUMBER, LATDEG, LATMIN, LATSEC, LONDEG, LONMIN, LONSEC OF PASS1
PRINT SKIP
ON *.name of file for data list (use "database.LIST")
REPORT
SET NO COLUMN_HEADER
SET NO NUMBER
SET NO DATE
SET COLUMNS_PAGE = 96
SET LINES_PAGE = 60
AT TOP OF REPORT PRINT SKIP 15,
COL 19, '*****', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*', COL 22, 'DELTA, UTAH, 2-DEGREE QUADRANGLE',
COL 57, '*', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*', COL 21, 'MINERAL OCCURRENCES FROM MRDS DATA',
COL 57, '*', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*', COL 21, AREA, COL 45, CALENDAR_DATE, COL 57, '*', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*', COL 57, '*', SKIP,
COL 19, '*****', SKIP,
NEW PAGE
PRINT COL 8, 'CRIB/MRDS RECORD NUMBER: ', COL 34, RECORD_NUMBER,
COL 74, 'RETRIEVAL NUMBER: ', COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,
COL 13, 'DESCRIPTION', COL 46, 'VALUE', SKIP,
COL 8, '-----', COL 41,
'-----',
SKIP, COL 8,
'SITE NAME.....', COL 41, SITE_NAME, SKIP, COL 8,
'SYNONYM(S).....', COL 41, SYNONYMS USING T(56),
SKIP, COL 8,
'PRESENT/LAST OWNER.....', COL 41, OWNER, SKIP, COL 8,
'STATUS OF EXPLOR. OR DEV.....|EXPLORATION STATUS VIA
CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.EXPLORATION_STATUS_TBL, SKIP, COL 8,
'MINING DISTRICT/AREA/SUBDIST....', COL 41, DISTRICT, SKIP, COL 8,
'COUNTY AND STATE.....', COL 41, COUNTY|'|('|STATE|'|)',
SKIP, COL 8,
'ORIGINAL MAP NAME AND SCALE.....|QUAD_NAME, ' 1:'|QUAD_SCALE,
SKIP, COL 8,
'7.5' QUADRANGLE.....|QUAD, SKIP, COL 8,
'LATITUDE.....', COL 41,
LATDEG|'|LATMIN|'|LATSEC|'|N', SKIP, COL 8,
'LONGITUDE.....', COL 41,
LONDEG|'|LONMIN|'|LONSEC|'|W', SKIP, COL 8,
'UTM NORTHING.....', COL 41, UTM_NORTHING, SKIP, COL 8,
'UTM EASTING.....', COL 41, UTM_EASTING, SKIP, COL 8,
'UTM ZONE NUMBER.....', COL 41, UTM_ZONE, SKIP, COL 8,
'TOWNSHIP(S).....', COL 41, TOWNSHIPS, SKIP, COL 8,

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^RANGE(S).....^, COL 41, RANGES, SKIP, COL 8,
^SECTION(S).....^, COL 41, SECTIONS, SKIP, COL 8,
^POS.FROM NEAREST PROMINENT LOC..^, COL 41, NEAR_LOC USING T(56),
    SKIP, COL 8,
^COMMENTS (location).....^, COL 41, LOCATION_COMMENTS USING T(56),
    SKIP, COL 8,
^COMMODITIES PRESENT.....^, COL 41, COMMODITIES, SKIP, COL 8,
^MAIN COMMODITIES.....^, COL 41, MAIN_COMMODITIES, SKIP, COL 8,
^MAJOR PRODUCTS.....^, COL 41, MAJOR_PRODUCTS, SKIP, COL 8,
^COMMENTS (commodities).....^, COL 41, COMMODITY_COMMENTS USING T(56),
    SKIP, COL 8,
^ORE MATERIALS(eg.minerals,rocks)^, COL 41, ORE_MINERALS, SKIP, COL 8,
^DEPOSIT TYPES.....^, COL 41, DEPOSIT_TYPE, SKIP, COL 8,
^ANALYTICAL DATA (general).....^, COL 41, C43 USING T(56),
    SKIP, COL 8,
^PROCESS OF ENRICHMENT.....^, COL 41, N80, SKIP, COL 8,
^EXPLOR. AND DEVELOP. COMMENTS...^, COL 41, L110 USING T(56), SKIP, COL 8,
^FORM/SHAPE OF DEPOSIT.....^, COL 41, DEPOSIT_FORM, SKIP, COL 8,
^SIZE OF DEPOSIT.....^, COL 41, DEPOSIT_SIZE, SKIP, COL 8,
^STRIKE OF ORE BODY.....^, COL 41, STRIKE, SKIP, COL 8,
^DIP OF ORE BODY.....^, COL 41, DIP, SKIP, COL 8,
^DESCRIPTION OF DEPOSIT.....^, COL 41, DEPOSIT_COMMENTS USING T(56),
    SKIP, COL 8,
^WORKINGS(surface or underground) ^|
    SURFACE_WORKINGS||^ ^|UNDERGROUND WORKINGS, SKIP, COL 8,
^DESCRIPTION OF WORKINGS.....^, COL 41, WORKINGS_COMMENTS USING T(56),
    SKIP, COL 8,
^PRODUCTION? (blank if none)..... ^|YES_PRODUCTION, SKIP 2, COL 8,
    (continued on next page)^,
NEW_PAGE,
COL 8, ^CRIB/MRDS RECORD NUMBER: ^, COL 34, RECORD_NUMBER,
COL 74, ^RETRIEVAL NUMBER: ^, COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,
COL 13, ^DESCRIPTION^, COL 46, ^VALUE^, SKIP,
COL 8, ^-----^, COL 41,
^-----^,
    SKIP, COL 8,
^CUMULATIVE PRODUCTION: ^, SKIP, COL 8,
^    ITEM PRODUCED.....^, COL 41, G7, SKIP, COL 8,
^    AMOUNT PRODUCED AND UNITS...^, COL 41, G7A||^ ^|G7B, SKIP, COL 8,
^    YEARS OF PRODUCTION.....^, COL 41, G7C, SKIP, COL 8,
^    GRADE.....^, COL 41, G7D, SKIP, COL 8,
^    ITEM PRODUCED.....^, COL 41, G8, SKIP, COL 8,
^    AMOUNT PRODUCED AND UNITS...^, COL 41, G8A||^ ^|G8B, SKIP, COL 8,
^    YEARS OF PRODUCTION.....^, COL 41, G8C, SKIP, COL 8,
^    GRADE.....^, COL 41, G8D, SKIP, COL 8,
^    ITEM PRODUCED.....^, COL 41, G9, SKIP, COL 8,
^    AMOUNT PRODUCED AND UNITS...^, COL 41, G9A||^ ^|G9B, SKIP, COL 8,
^    YEARS OF PRODUCTION.....^, COL 41, G9C, SKIP, COL 8,
^    GRADE.....^, COL 41, G9D, SKIP, COL 8,
^ANNUAL PRODUCTION: ^, SKIP, COL 8,
^    ITEM PRODUCED.....^, COL 41, D1, SKIP, COL 8,
^    AMOUNT PRODUCED AND UNITS...^, COL 41, D1A||^ ^|D1B, SKIP, COL 8,
^    YEARS OF PRODUCTION.....^, COL 41, D1C, SKIP, COL 8,
^    GRADE.....^, COL 41, D1D, SKIP, COL 8,

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ITEM PRODUCED....., COL 41, D2, SKIP, COL 8,
  AMOUNT PRODUCED AND UNITS... , COL 41, D2A| |D2B, SKIP, COL 8,
  YEARS OF PRODUCTION....., COL 41, D2C, SKIP, COL 8,
  GRADE....., COL 41, D2D, SKIP, COL 8,
ITEM PRODUCED....., COL 41, D3, SKIP, COL 8,
  AMOUNT PRODUCED AND UNITS... , COL 41, D3A| |D3B, SKIP, COL 8,
  YEARS OF PRODUCTION....., COL 41, D3C, SKIP, COL 8,
  GRADE....., COL 41, D3D, SKIP, COL 8,
SOURCE OF PRODUCTION INFO....., COL 41, D9, SKIP, COL 8,
COMMENTS (production)....., COL 41, PRODUCTION_COMMENTS USING T(56),
  SKIP, COL 8,
AGE OF HOST ROCKS....., COL 41, K1, SKIP, COL 8,
HOST ROCK TYPES....., COL 41, K1A USING T(56), SKIP, COL 8,
AGE OF ASSOCIATED IGNEOUS ROCKS. , COL 41, K2, SKIP, COL 8,
ASSOCIATED IGNEOUS ROCK TYPES... , COL 41, K2A USING T(56), SKIP, COL 8,
IGNEOUS UNIT AGE....., COL 41, N50, SKIP, COL 8,
IGNEOUS UNIT NAME....., COL 41, N50A, SKIP, COL 8,
AGE OF MINERALIZATION.....|K3, SKIP, COL 8,
PERTINENT MINERALOGY....., COL 41, PERTINENT_MINERALS USING T(56),
  SKIP, COL 8,
IMPORTANT ORE CONTROL/LOCUS....., COL 41, K5 USING T(56), SKIP, COL 8,
MAJOR REGIONAL STRUCTURES....., COL 41, N5, SKIP, COL 8,
FORMATION 1: NAME....., COL 41, N30A USING T(56), SKIP, COL 8,
  AGE....., COL 41, N30, SKIP, COL 8,
FORMATION 2: NAME....., COL 41, N35A USING T(56), SKIP, COL 8,
  AGE....., COL 41, N35, SKIP, COL 8,
SIGNIFICANT LOCAL STRUCTURES...., COL 41, LOCAL_STRUCTURES, SKIP, COL 8,
SIGNIFICANT ALTERATION....., COL 41, ALTERATION, SKIP 2, COL 8,
  (continued on next page)~,
NEW_PAGE,
COL 8, CRIB/MRDS RECORD NUMBER: ~, COL 34, RECORD_NUMBER,
COL 74, RETRIEVAL NUMBER: ~, COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,
COL 13, DESCRIPTION~, COL 46, VALUE~, SKIP,
COL 8, ~~~~~~, COL 41,
~~~~~
SKIP, COL 8,
COMMENTS (geology & mineralogy).~, COL 41, N85 USING T(56), SKIP, COL 8,
GENERAL COMMENTS....., COL 41, GENERAL_COMMENTS USING T(56),
  SKIP, COL 8,
REPORTED BY....., COL 41, REPORTER, SKIP, COL 8,
REPORT DATE....., COL 41, REPORT_DATE, SKIP, COL 8,
REFERENCES: ~, SKIP, COL 12, REFERENCE1 USING T(84), SKIP 2,
  COL 12, REFERENCE2 USING T(84), SKIP 2,
  COL 12, REFERENCE3 USING T(84), SKIP 2,
  COL 12, REFERENCE4 USING T(84),

NEW_PAGE
END_REPORT
PRINT SKIP,
  ==> N.B.--THE .LIST FILE SHOULD BE PRINTED on a 12-PITCH printer~,
  to fit on 8-1/2 by 11 paper~, SKIP 2
END-PROCEDURE

```

APPENDIX I. PROCEDURE LISTING

Modify Procedure LISTING, below, to include the complete pathname to the relational table EXPLORATION_STATUS_TBL. The complete pathname is "CDD\$TOP.DTR\$USERS.dictionary.EXPLORATION_STATUS_TBL", where "dictionary" is the name of the DATATRIEVE dictionary (or list of dictionary and subdictionary names, separated by periods) in which the domain is located. In the example here, the "dictionary" is user-dictionary name "SYSCNG", subdictionary name "DELTA", and sub-subdictionary name "MRDS".

PROCEDURE LISTING

!Written by Carol N. Gerlitz, May 1987

DECLARE CONTENT PIC X(20).

DECLARE CALENDAR_DATE USAGE IS DATE
 DEFAULT 'TODAY'
 EDIT_STRING IS DDBMMMBYYYY.

PRINT SKIP 2,

'This program will print out everything in the MRDS data that is in',
 'DATATRIEVE for the record(s) that you requested. (Note that some of the',
 'fields are truncated--complete info is in printouts received with the',
 'original MRDS retrieval.)',

SKIP 3, 'GIVE A BRIEF DESCRIPTION OF DATA RETRIEVED--'

CONTENT = *.20 characters max'

PRINT SKIP 3, 'Please be patient.....', SKIP,

' it will take awhile to file the data', SKIP 2

ON *.name of file for data list (use "filename.LIST")'

REPORT

SET NO COLUMN_HEADER

SET NO NUMBER

SET NO DATE

SET COLUMNS_PAGE = 96

SET LINES_PAGE = 60

AT TOP OF REPORT PRINT SKIP 15,

COL 19, '*****', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*', COL 22, 'DELTA, UTAH, 2-DEGREE QUADRANGLE',

COL 57, '*', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*', COL 21, 'MINERAL OCCURRENCES FROM MRDS DATA',

COL 57, '*', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*', COL 21, CONTENT, COL 45, CALENDAR_DATE, COL 57, '*', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*', COL 57, '*', SKIP,

COL 19, '*****', SKIP,

NEW PAGE

PRINT COL 8, 'CRIB/MRDS RECORD NUMBER: ', COL 34, RECORD_NUMBER,

COL 74, 'RETRIEVAL NUMBER: ', COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,

COL 13, 'DESCRIPTION', COL 46, 'VALUE', SKIP,

COL 8, '-----', COL 41,

'-----',

SKIP, COL 8,


```

^SITE NAME.....^, COL 41, SITE_NAME, SKIP, COL 8,
^SYNONYM(S).....^, COL 41, SYNONYMS USING T(56),
    SKIP, COL 8,
^PRESENT/LAST OWNER.....^, COL 41, OWNER, SKIP, COL 8,
^STATUS OF EXPLOR. OR DEV.....^|EXPLORATION STATUS VIA
    CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.EXPLORATION STATUS_TBL, SKIP, COL 8,
^MINING DISTRICT/AREA/SUBDIST.....^, COL 41, DISTRICT, SKIP, COL 8,
^COUNTY AND STATE.....^, COL 41, COUNTY||^ (^|STATE||^)^,
    SKIP, COL 8,
^ORIGINAL MAP NAME AND SCALE.....^|QUAD_NAME, ^ 1:^|QUAD_SCALE, SKIP, COL 8,
^7.5 QUADRANGLE.....^|QUAD, SKIP, COL 8,
^LATITUDE.....^, COL 41,
    LATDEG||^-|LATMIN||^-|LATSEC||^N^, SKIP, COL 8,
^LONGITUDE.....^, COL 41,
    LONDEG||^-|LONMIN||^-|LONSEC||^W^, SKIP, COL 8,
^UTM NORTHING.....^, COL 41, UTM_NORTHING, SKIP, COL 8,
^UTM EASTING.....^, COL 41, UTM_EASTING, SKIP, COL 8,
^UTM ZONE NUMBER.....^, COL 41, UTM_ZONE, SKIP, COL 8,
^TOWNSHIP(S).....^, COL 41, TOWNSHIPS, SKIP, COL 8,
^RANGE(S).....^, COL 41, RANGES, SKIP, COL 8,
^SECTION(S).....^, COL 41, SECTIONS, SKIP, COL 8,
^POS.FROM NEAREST PROMINENT LOC..^, COL 41, NEAR_LOC USING T(56),
    SKIP, COL 8,
^COMMENTS (location).....^, COL 41, LOCATION_COMMENTS USING T(56),
    SKIP, COL 8,
^COMMODITIES PRESENT.....^, COL 41, COMMODITIES, SKIP, COL 8,
^MAIN COMMODITIES.....^, COL 41, MAIN_COMMODITIES, SKIP, COL 8,
^MAJOR PRODUCTS.....^, COL 41, MAJOR_PRODUCTS, SKIP, COL 8,
^COMMENTS (commodities).....^, COL 41, COMMODITY_COMMENTS USING T(56),
    SKIP, COL 8,
^ORE MATERIALS(eg.minerals,rocks)^, COL 41, ORE_MINERALS, SKIP, COL 8,
^DEPOSIT TYPES.....^, COL 41, DEPOSIT_TYPE, SKIP, COL 8,
^ANALYTICAL DATA (general).....^, COL 41, C43 USING T(56),
    SKIP, COL 8,
^PROCESS OF ENRICHMENT.....^, COL 41, N80, SKIP, COL 8,
^EXPLOR. AND DEVELOP. COMMENTS...^, COL 41, L110 USING T(56), SKIP, COL 8,
^FORM/SHAPE OF DEPOSIT.....^, COL 41, DEPOSIT_FORM, SKIP, COL 8,
^SIZE OF DEPOSIT.....^, COL 41, DEPOSIT_SIZE, SKIP, COL 8,
^STRIKE OF ORE BODY.....^, COL 41, STRIKE, SKIP, COL 8,
^DIP OF ORE BODY.....^, COL 41, DIP, SKIP, COL 8,
^DESCRIPTION OF DEPOSIT.....^, COL 41, DEPOSIT_COMMENTS USING T(56),
    SKIP, COL 8,
^WORKINGS(surface or underground) ^|
    SURFACE_WORKINGS||^ ^|UNDERGROUND_WORKINGS, SKIP, COL 8,
^DESCRIPTION OF WORKINGS.....^, COL 41, WORKINGS_COMMENTS USING T(56),
    SKIP, COL 8,
^PRODUCTION? (blank if none).....^|YES_PRODUCTION, SKIP 2, COL 8,
    (continued on next page)^,
NEW_PAGE,
COL 8, ^CRIB/MRDS RECORD NUMBER: ^, COL 34, RECORD_NUMBER,
COL 74, ^RETRIEVAL NUMBER: ^, COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,
COL 13, ^DESCRIPTION^, COL 46, ^VALUE^, SKIP,
COL 8, ^-----^, COL 41,
^-----^,

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        SKIP, COL 8,
^CUMULATIVE PRODUCTION: ^, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, G7, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, G7A| ^ ^ |G7B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, G7C, SKIP, COL 8,
^  GRADE..... ^, COL 41, G7D, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, G8, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, G8A| ^ ^ |G8B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, G8C, SKIP, COL 8,
^  GRADE..... ^, COL 41, G8D, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, G9, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, G9A| ^ ^ |G9B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, G9C, SKIP, COL 8,
^  GRADE..... ^, COL 41, G9D, SKIP, COL 8,
^ANNUAL PRODUCTION: ^, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, D1, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, D1A| ^ ^ |D1B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, D1C, SKIP, COL 8,
^  GRADE..... ^, COL 41, D1D, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, D2, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, D2A| ^ ^ |D2B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, D2C, SKIP, COL 8,
^  GRADE..... ^, COL 41, D2D, SKIP, COL 8,
^  ITEM PRODUCED..... ^, COL 41, D3, SKIP, COL 8,
^  AMOUNT PRODUCED AND UNITS... ^, COL 41, D3A| ^ ^ |D3B, SKIP, COL 8,
^  YEARS OF PRODUCTION..... ^, COL 41, D3C, SKIP, COL 8,
^  GRADE..... ^, COL 41, D3D, SKIP, COL 8,
^SOURCE OF PRODUCTION INFO..... ^, COL 41, D9, SKIP, COL 8,
^COMMENTS (production)..... ^, COL 41, PRODUCTION_COMMENTS USING T(56),
        SKIP, COL 8,
^AGE OF HOST ROCKS..... ^, COL 41, K1, SKIP, COL 8,
^HOST ROCK TYPES..... ^, COL 41, K1A USING T(56), SKIP, COL 8,
^AGE OF ASSOCIATED IGNEOUS ROCKS. ^, COL 41, K2, SKIP, COL 8,
^IGNEOUS ROCK TYPES..... ^, COL 41, K2A USING T(56), SKIP, COL 8,
^IGNEOUS UNIT AGE..... ^, COL 41, N50, SKIP, COL 8,
^IGNEOUS UNIT NAME..... ^, COL 41, N50A, SKIP, COL 8,
^AGE OF MINERALIZATION..... ^|K3, SKIP, COL 8,
^PERTINENT MINERALOGY..... ^, COL 41, PERTINENT_MINERALS USING T(56),
        SKIP, COL 8,
^IMPORTANT ORE CONTROL/LOCUS..... ^, COL 41, K5 USING T(56), SKIP, COL 8,
^MAJOR REGIONAL STRUCTURES..... ^, COL 41, N5, SKIP, COL 8,
^FORMATION 1:  NAME..... ^, COL 41, N30A USING T(56), SKIP, COL 8,
^              AGE..... ^, COL 41, N30, SKIP, COL 8,
^FORMATION 2:  NAME..... ^, COL 41, N35A USING T(56), SKIP, COL 8,
^              AGE..... ^, COL 41, N35, SKIP, COL 8,
^SIGNIFICANT LOCAL STRUCTURES..... ^, COL 41, LOCAL_STRUCTURES, SKIP, COL 8,
^SIGNIFICANT ALTERATION..... ^, COL 41, ALTERATION, SKIP 2, COL 8,
        (continued on next page) ^,
NEW_PAGE,
COL 8, ^CRIB/MRDS RECORD NUMBER: ^, COL 34, RECORD_NUMBER,
COL 74, ^RETRIEVAL NUMBER: ^, COL 92, RETRIEVAL_NUMBER(-) USING ZZZ9, SKIP 2,
COL 13, ^DESCRIPTION ^, COL 46, ^VALUE ^, SKIP,
COL 8, ^----- ^, COL 41,
^----- ^,

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        SKIP, COL 8,
^COMMENTS (geology & mineralogy).^, COL 41, N85 USING T(56), SKIP, COL 8,
^GENERAL COMMENTS.....^, COL 41, GENERAL_COMMENTS USING T(56),
        SKIP, COL 8,
^REPORTED BY.....^, COL 41, REPORTER, SKIP, COL 8,
^REPORT DATE.....^, COL 41, REPORT_DATE, SKIP, COL 8,
^REFERENCES: ^, SKIP, COL 12, REFERENCE1 USING T(84), SKIP 2,
                COL 12, REFERENCE2 USING T(84), SKIP 2,
                COL 12, REFERENCE3 USING T(84), SKIP 2,
                COL 12, REFERENCE4 USING T(84),

NEW_PAGE
END_REPORT
PRINT SKIP,
^    ==> N.B.--THE .LIST FILE SHOULD BE PRINTED on a 12-PITCH printer^,
^    to fit on 8-1/2 by 11 paper^, SKIP 2
END-PROCEDURE

```

APPENDIX J. PROCEDURE GSMAP_FILES

Modify the READY command in Procedure GSMAP, below, to include the complete pathname to the DATATRIEVE domain MRDS. Also modify pathnames to relational tables. The complete pathname to these DATATRIEVE dictionary objects is "CDD\$TOP.DTR\$USERS.dictionary.object", where "dictionary" is the name of the DATATRIEVE dictionary (or list of dictionary and subdictionary names, separated by periods) in which the domain is located, and "object" is the name of the domain or table. In the example here, the "dictionary" is user-dictionary name "SYSCNG", subdictionary name "DELTA", and sub-subdictionary name "MRDS"; "object" is MRDS, LINE_CODE_TBL, SYMBOL_TBL, or RASTER_SIZE_TBL.

PROCEDURE GSMAP_FILES

!Written by Carol N. Gerlitz, May 1987

```

DECLARE ANSWER          PIC X
                        VALID IF ANSWER CONT 'A' OR ANSWER CONT 'B' OR
                        ANSWER CONT 'C' OR ANSWER CONT 'D'.

DECLARE MINLAT          USAGE IS DOUBLE
                        EDIT STRING IS Z99.999999.

DECLARE MAXLAT          USAGE IS DOUBLE
                        EDIT STRING IS Z99.999999.

DECLARE MINLON          USAGE IS DOUBLE
                        EDIT STRING IS Z999.999999.

DECLARE MAXLON          USAGE IS DOUBLE
                        EDIT STRING IS Z999.999999.

DECLARE NAME            PIC X(16).

READY CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.MRDS SHARED READ
PRINT SKIP 2,
'This program will create files from MRDS data for plotting with GSMAP', SKIP 2,
'NAME YOUR GSMAP DATABASE (use exactly 16 characters--fill with blank spaces):'
NAME = *. name of GSMAP database'
PRINT SKIP,
'TO RETRIEVE DATA FROM MRDS FOR A SPECIFIC AREA, YOU MUST ENTER', SKIP,
'LATITUDES AND LONGITUDES WHICH BOUND THE AREA--', SKIP,
'  you will be prompted to enter degrees, minutes and seconds for', SKIP,
'  minimum and maximum latitude and for minimum and maximum longitude.',
SKIP 2,
'MINIMUM LATITUDE:'
MINLAT = (*.degrees' + *.minutes'/60 + *.seconds'/3600)
PRINT SKIP, 'MAXIMUM LATITUDE:'
MAXLAT = (*.degrees' + *.minutes'/60 + *.seconds'/3600)
PRINT SKIP, 'MINIMUM LONGITUDE:'
MINLON = (*.degrees' + *.minutes'/60 + *.seconds'/3600)
PRINT SKIP, 'MAXIMUM LONGITUDE:'
MAXLON = (*.degrees' + *.minutes'/60 + *.seconds'/3600)
PRINT SKIP 2,
'Please be patient.....', SKIP,
'  it will take awhile to search the database for '|NAME, SKIP 2
FIND PASS1 IN MRDS WITH LATITUDE GE MINLAT AND LATITUDE LE MAXLAT AND
LONGITUDE GE MINLON AND LONGITUDE LE MAXLON
PRINT 'WHAT SCALE WILL YOU USE TO PLOT THIS DATA?', SKIP,
'  A. 1:24,000', SKIP,
'  B. 1:62,500', SKIP,

```

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      C. other large-scale (larger than 1:50,000; e.g., 1:31,250), SKIP,
      D. other small-scale (1:50,000 or smaller; e.g., 1:100,000), SKIP
ANSWER = *.A, B, C, or D
PRINT SKIP
IF ANSWER CONT 'A' OR ANSWER CONT 'C'
THEN ON *.name of data file for GSMAP (use "database.ASC")
  PRINT NAME(-) THEN
  PRINT MAXLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MINLON(-) THEN
  PRINT MAXLAT(-), MINLON(-) THEN
  PRINT ' 999 1 |EXPLORATION STATUS VIA
    CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.LINE_CODE_TBL||'
    EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.SYMBOL_TBL||'
    EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.RASTER_SIZE_TBL,
    SKIP, ', LATITUDE(-), ', LONGITUDE(-) OF PASS1 THEN
  PRINT ' 999 1 501', RUNNING COUNT(-), ' 60', SKIP,
    ', LATITUDE - 0.0002(-) USING 99.999999, ',
    LONGITUDE - 0.0007(-) USING 99.999999 OF PASS1
! subtracting .0002 of a degree from latitude and .0007 of a degree from
! longitude, above, places a label point to the right of the point for a
! 1:62500 or other small scale quad.
IF ANSWER CONT 'B' OR ANSWER CONT 'D'
THEN ON *.name of data file for GSMAP (use "database.ASC")
  PRINT NAME(-) THEN
  PRINT MAXLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MAXLON(-) THEN
  PRINT MINLAT(-), MINLON(-) THEN
  PRINT MAXLAT(-), MINLON(-) THEN
  PRINT ' 999 1 |EXPLORATION STATUS VIA
    CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.LINE_CODE_TBL||'
    EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.SYMBOL_TBL||'
    EXPLORATION STATUS VIA CDD$TOP.DTR$USERS.SYSCNG.DELTA.MRDS.RASTER_SIZE_TBL,
    SKIP, ', LATITUDE(-), ', LONGITUDE(-) OF PASS1 THEN
  PRINT ' 999 1 501', RUNNING COUNT(-), ' 60', SKIP,
    ', LATITUDE - 0.0005(-) USING 99.999999, ',
    LONGITUDE - 0.0019(-) USING 99.999999 OF PASS1
! subtracting .0005 of a degree from latitude and .0019 of a degree from
! longitude, above, places a label point to the right of the point for a
! 1:62500 or other small scale quad.
PRINT SKIP
ON *.name of label file for GSMAP (use "database.RU")
  PRINT RUNNING COUNT|', "|RECORD_NUMBER|'|', SKIP, '"EOT"' OF PASS1
PRINT SKIP 2
END-PROCEDURE

```