Mars Global Surveyor
Thermal Emission Spectrometer

Time Sequential Data Record
Standard Product
Archive Volume
Software Interface Specification

(TES-TSDR Archive Volume SIS)

Version 2.3
June 25, 1999

J. D. Bowman
E. A. Guinness
S. Slavney
R. E. Arvidson
Washington University
St. Louis, Missouri 63130

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Approved:

Philip R. Christensen — Date
TES Principal Investigator

Greg L. Mehall — Date
TES Instrument Manager

Thomas Thorpe — Date
Mars Global Surveyor Science Office Manager

Yolanda Fletcher — Date
PDS / Mars Global Surveyor Interface Manager

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1. Preface

This document describes the format and content of the Thermal Emission Spectrometer Time Sequential Data Record (TSDR) Standard Product Archive Collection.

1.1. Acronyms and Abbreviations

ASCII	American Standard Code for Information Interchange
CD-ROM	Compact Disk - Read-Only Memory
CD-WO	Write-Once Compact Disk
DVD	Digital Versatile Disc
FFT	Fast Fourier Transform
ISO	International Standards Organization
JPL	Jet Propulsion Laboratory
MB	Megabytes
MGS	Mars Global Surveyor
NSSDC	National Space Science Data Center
PDB	Project Database
PDS	Planetary Data System
PSG	Project Science Group
SDVT	Science Data Validation Team
SFDU	Standard Formatted Data Unit
SIS	Software Interface Specification
TES	Thermal Emission Spectrometer
TSDR	Time Sequential Data Record

1.2. Glossary

Archive – An archive consists of one or more data sets along with all the documentation and ancillary information needed to understand and use the data. An archive is a logical construct independent of the medium on which it is stored.

Archive Volume, Archive Volume Set – A volume is a unit of media on which data products are stored; for example, one CD-ROM. An *archive volume* is a volume containing all or part of an archive; that is, data products plus documentation and ancillary files. When an archive spans multiple volumes, they are called an *archive volume set*. Usually the documentation and some ancillary files are repeated on each volume of the set, so that a single volume can be used alone.

Catalog Information – High-level descriptive information about a data set (e.g. mission description, spacecraft description, instrument description), expressed in Object Description Language (ODL) which is suitable for loading into a PDS catalog.

Data Product – A labeled grouping of data resulting from a scientific observation, usually stored in one file. A product label identifies, describes, and defines the structure of the data. An example of a data product is a planetary image, a spectrum table, or a time series table.

Data Set – An accumulation of data products. A data set together with supporting documentation and ancillary files is an archive.

Standard data product – A data product generated in a predefined way using well-understood procedures, processed in "pipeline" fashion. Data products that are generated in a non-standard way are sometimes called *special data products*.

2. Introduction

2.1. Content Overview

The Thermal Emission Spectrometer (TES) is an instrument on the Mars Global Surveyor (MGS) orbiter. TES generates two types of standard products. This Software Interface Specification (SIS) describes the format, content, and generation of the TES Time Sequential Data Record (TSDR) Standard Product Archive Volumes for all MGS mission phases. Each TES-TSDR Standard Product consists of up to ten product elements stored in separate files. The product elements are listed in Table 1. Each element is organized in a time-ordered fashion.

Table 1 – TES-TSDR Standard Product Elements

Product Element	Contents
BOL	Raw and calibrated bolometer data
CMP	Raw complex data
GEO	Derived positional and geometric values
IFG	Raw interferogram data
LMB	Derived atmospheric limb observations
OBS	Observation parameters
POS	Raw positional and geometric data
RAD	Raw and calibrated radiance data
SRF	Derived surface observations
TLM	Auxiliary observation parameters

2.2. Scope

The specifications in this document apply to all TES-TSDR Standard Product Archive Volumes that are produced during the Mars Global Surveyor mission.

2.3. Applicable Documents

ISO 9660-1988. April 1988 - CD-ROM format

Arvidson, R., E. Guinness, and S. Slavney, Mars Global Surveyor Project Archive Generation, Validation, and Transfer Plan, MGS Document #542-312, 1998.

Christensen, P. R., et al., Thermal Emission Spectrometer Experiment: Mars Observer Mission, J. Geophys. Res., 97, 7719-7734, 1992.

(TSDR) Software Interface Specification (TES-TSDR SIS), August 24, 1998.

Planetary Science Data Dictionary Document, July 15, 1996, Planetary Data System, JPL D-7116, Rev. D.

Planetary Data System Data Preparation Workbook, February 1995, Version 3.1, JPL D-7669, Part 1.

Planetary Data System Standards Reference, July, 1995, Version 3.2. JPL D-7669, Part 2.

3. Archive Volume Contents

This section describes the contents of the TES Standard Product Archive Volumes, including the file names, file contents, file types, and organization responsible for providing the files. The complete directory structure is shown in Appendix A.

3.1. ROOT Directory Contents

The following files are contained in the ROOT Directory.

File Name	File Contents
AAREADME.HTM	Volume contexts and format information in html format.
AAREADME.LBL	pds label for aareadme html and ASCII documents.
AAREADME.TXT	Volume contents and format information in ASCII text.
ERRATA.TXT	Cumulative listing of comments and updates concerning all TES-TSDR Standard Products on all volumes published so far.
VOLDESC.CAT	Description of the contents of this volume in a PDS format readable by both humans and computers.

3.2. CATALOG Directory Contents

The files in the CATALOG directory provide a top-level understanding of the Mars Global Surveyor Mission, spacecraft, instruments, and data sets in the form of completed PDS catalog objects. The files in this directory are coordinated with the PDS data engineer.

File Name	File Contents
CATINFO.TXT	Description of the contents of this directory.
DATASET.CAT	PDS high-level data set catalog information for the TES-TSDR data set.
DEITGT.CAT	PDS high-level target information for the moon Deimos.
INST.CAT	PDS high-level instrument and personnel description.
INSTHOST.CAT	PDS high-level spacecraft description.
MARTGT.CAT	PDS high-level target information for the planet Mars.
MISSION.CAT	PDS high-level mission description.
PERSON.CAT	Cognizant persons and support staff for the TES instrument and archive.
PHOTGT.CAT	PDS high-level target information for the moon Phobos.
REF.CAT	Documents referenced by the catalog objects.

3.3. DATA Directory Contents

The following files are contained in the DATA Directory.

File Name	File Contents
DATAINFO.TXT	Description of contents of this directory.
ENB.TXT	TES team experimenter's notebook.
GEOMETRY.TXT	A list of the SPICE files used to calculate geometry records in this volume.
WAVNUMDS.LBL	PDS label for wavnumds.tab.
WAVNUMDS.TAB	Table of values for center wavenumber for each of the six detectors when TES is operated in double scan mode.
WAVNUMSS.LBL	PDS label for wavnumss.tab.
WAVNUMSS.TAB	Table of values for center wavenumber for each of the six detectors when TES is operated in single scan mode.

All TES-TSDR data products are split into ten elements based on the type of information they contain. Every element consists of a fixed width data field tabular file. Several elements also include additional variable width data field files. The element files are listed below. The "xxxxx" in the file names indicates the volume and product identification. The first three digits are equivalent to the final three digits of the volume id; the final two digits are a sequential product number.

The attached PDS labels for TES data files include the fields START_ORBIT_NUMBER and STOP_ORBIT_NUMBER. These fields refer to the beginning and ending orbits during which the data were acquired, using the TES Team orbit number system, also known as the Orbit Counter Keeper (ock). During the Orbit Insertion Phase, TES ock numbers and MGS Project orbit numbers were identical, except that the Product counted orbits from one periapsis to the next, while TES considered an orbit to begin at the spacecraft maneuver preceding periapsis, usually a difference of no more than twenty minutes. However, the MGS Project reset its orbit count to 1 at the beginning of the Mapping Phase. TES ock numbers were not reset, in order to preserve a unique orbit identifier. For TES data products acquired during mapping, the MGS PRoject mapping orbit number can be determined by subtracting 1683 from the TES ock number. During mapping, both TES and the MGS Project consider the beginning of an orbit to occur at the descending equator crossing.

One or more of the following directories: DEIMOS, MARS, or PHOBOS is/are located in the DATA Directory. These directories exist only if the specific object indicated by the name of the directory was targeted during an orbit archived on the volume. Each directory contains applicable TES-TSDR Standard Product element files.

TES-TSDR Standard Products are organized in time order by orbit. The number of orbits per Standard Product may vary so that an individual product contains the fewest number of integral orbits to yield a product size above 100 Mb. As many TES-TSDR Standard Products are archived in a single volume as storage space allows.

File Name	File Contents
BOL.FMT	The BOL format file contains the names of all fields stored in the BOL table.

BOLxxxxx.TAB	The BOL table contains raw and calibrated visual and thermal bolometer measurements, and several properties derived from these measurements. Six BOL table records are generated for each instrument scan; one for each detector. When spectrometer data are temporally averaged, there can be up to 4 scans of bolometer data.
CMP.FMT	The CMP format file contains the names of all fields stored in the CMP table.
CMPxxxxx.TAB	The CMP table contains real and complex data from the FFT. The complex data is only down-linked when requested, and can only be requested for a single detector per observation. The CMP array contains 286 points (143 real, 143 complex) for a short scan, and 572 points (286 real, 286 complex) for a long scan. The complex array data is stored in a variable length record. The position of this record is stored in the "complex" column.
CMPxxxxx.VAR	Variable length record containing complex array data.
DATASET.LBL	PDS label for dataset.lst.
DATASET.LST	ASCII list of TES-TSDR file types found in the directory. This file is required for the TES vanilla software.
GEO.FMT	The GEO format file contains the names of all the fields stored in the GEO table.
GEOxxxxx.TAB	The GEO table contains information about the sun/spacecraft/planet geometry in a format that is easily searchable. These values are computed for every scan other than those that could not have targeted the planet (i.e., not for reference looks). If the observation failed to hit the planet, some values can still be computed, and others are set to impossible fill values.
IFG.FMT	The IFG format file contains the names of all fields stored in the IFG table.
IFGxxxxx.TAB	The IFG table contains raw interferogram data. The interferogram data is only down-linked when requested, and can only be requested for a single detector per observation. The IFG array contains 1600 points for a short scan, and 3200 points for a long scan. The interferogram data array is stored in a variable length record. The position of this record is stored in the "ifgm" column.
IFGxxxxx.VAR	Variable length record containing interferogram data array.
LMB.FMT	The LMB format file contains the names of all fields stored in the LMB table.
LMBxxxxx.TAB	The LMB table contains values derived from spectra that look at the limb of Mars. It contains one record for each limb set (sequential observations that view the limb at different altitudes). See the lmb_quality word for information on the validity of calculated variables. The aerosol information may include data from surface observations taken of the same geographic region at other times.
OBS.FMT	The OBS format file contains the names of all fields stored in the OBS table.
OBSxxxxx.TAB	The OBS table stores the state of the instrument at the start of each observation. One OBS record is generated for each observation.
POS.FMT	The POS format file contains the names of all fields stored in the POS table.
POSxxxxx.TAB	The POS table stores the positions of the spacecraft and sun relative to the planet, the spacecraft's orientation quaternion, and the Mars body quaternion, all relative to the J2000 system. This data is initially derived from the project SPICE kernels, but may be corrected from various other sources. This table may also include interpolated values where SPICE data was unavailable.
RAD.FMT	The RAD format file contains the names of all fields stored in the RAD table.
RADxxxxx.TAB	The RAD table contains the raw and calibrated observed radiances. For each observation there can be up to 6 RAD records, one for each active spectrometer detector.
RADxxxxx.VAR	Variable length record containing raw and calibrated radiance spectra.
SRF.FMT	The SRF format file contains the names of all fields stored in the SRF table.
SRFxxxxx.TAB	The SRF table contains values derived from spectra that include Mars in the field of view. It contains one record for each valid calibrated radiance which includes the planet and for which

	any valid quantities could be derived.
SRFxxxxx.VAR	Variable length record containing surface spectra.
TLM.FMT	The TLM format file contains the names of all fields stored in the TLM table.
TLMxxxxx.TAB	The TLM table stores auxiliary observation parameters. Records in the TLM table occur at a frequency less than or equal to the frequency of OBS records; that is, one (or none) per observation.

3.4. DOCUMENT Directory Contents

The following files are contained in the DOCUMENT Directory.

File Name	File Contents
ARCHSIS.ASC	The Archive Volume SIS (this document) in ASCII text.
ARCHSIS.LBL	PDS label for the Archive Volume SIS ASCII and PDF documents.
ARCHSIS.PDF	The Archive Volume SIS (this document) in PDF format.
DOCINFO.TXT	A description of the contents of this directory.
PROCESS.ASC	The TES Data Processing User Guide in ASCII text.
PROCESS.LBL	PDS label for the TES Data Processing User Guide ASCII and PDF documents.
PROCESS.PDF	The TES Data Processing User Guide in PDF format.
SDPSIS.ASC	The TES-TSDR Standard Data Products SIS (TES-TSDR) in ASCII text.
SDPSIS.LBL	PDS label for the TES-TSDR Standard Data Products SIS ASCII and PDF documents.
SDPSIS.PDF	The TES-TSDR Standard Data Products SIS (TES-TSDR) in PDF format.

3.5. INDEX Directory Contents

The following files are contained in the INDEX Directory.

File Name	File Contents
CLASS.TXT	A list of data classifications.
CUMINDEX.LBL	A PDS detached label that describes CUMINDEX.TAB.
CUMINDEX.TAB	A table listing all TES products published so far in this volume set, including the data on this volume.
DETMASK.TXT	A file containing information on spatial editing using detector masks.
INDEX.LBL	A PDS detached label that describes INDEX.TAB.
INDEX.TAB	A table listing all TES products on this volume.
INDXINFO.TXT	A description of the contents of this directory.
SPECMASK.TAB	A table listing of TES spectral masks.
SPECMASK.TXT	A file contianing information on spectral editing masks.

3.6. SOFTWARE Directory Contents

The following files are contained in the SOFTWARE Directory. They are subject to change during the course of the mission. The latest versions available will be put on the archive volumes.

File Name	File Contents
SOFTINFO.TXT	A description of the contents of this directory.
BIN	A directory containing the binary executables for UNIX and PC platforms.
DOC	A directory containing user documentation for the provided software.
SRC	A directory containing the source code necessary for UNIX and PC platforms.

4. Archive Volume Format

This section describes the format of TES-TSDR Standard Product Archive Volumes. Data that comprise the TES Standard Product Archives will be formatted in accordance with Planetary Data System specifications [Planetary Science Data Dictionary, 1996; PDS Data Preparation Workbook, 1995; PDS Standards Reference, 1995].

4.1. Disk Format

Archive Volumes will have a CD-ROM or DVD format that is in accordance with ISO 9660 level 1 Interchange Standard [ISO 9660, 1988]. They will be compatible with Macintosh OS, OS2, Unix, VMS, and Windows/MS-DOS computer operating systems.

4.2. File Formats

The following section describes file formats for the kinds of files contained on Archive Volumes. For more information, see the PDS Data Preparation Workbook [1995] and the PDS Standards Reference [1995].

4.2.1. Catalog File Format

Catalog files (.CAT suffix) exist in the ROOT and CATALOG directories. They are formatted in an object-oriented structure consisting of sets of 'keyword = value' declarations. All catalog files have records that terminate with a carriage return character (ASCII 13) and a line feed character (ASCII 10). This allows the files to be read by Macintosh OS, OS2, Unix, VMS, and Windows/MS-DOS computer operating systems.

4.2.2. Document File Format

Document files (.TXT and .ASC suffixes) exist in the ROOT, CATALOG, DATA, DOCUMENT, INDEX, and SOFTWARE directories. They are ASCII files with embedded PDS labels. All document files have records that terminate with a carriage return character (ASCII 13) and a line feed character (ASCII 10). This allows the files to be read by Macintosh OS, OS2, Unix, VMS, and Windows/MS-DOS computer operating systems.

4.2.3. PDS Label Format

All data product files in the TES-TSDR Standard Product Archive Volumes have PDS labels [Planetary Science Data Dictionary, 1996; PDS Standards Reference, 1995]. These labels are embedded at the beginning of the data files. For examples of PDS labels for each type of data product, see the TES-TSDR Standard Data Product SIS [TES-TSDR SIS, 1998].

Detached PDS label files (.LBL suffix), are located in the INDEX ,DATA, DOCUMENT, and ROOT directories.

A PDS label, whether embedded or detached from its associated file, provides descriptive

information about the associated file. The PDS label is an object-oriented structure consisting of sets of 'keyword = value' declarations; the object to which the label refers is denoted by a statement of the form:

^object = location

in which the carat character (^, also called a pointer in this context) indicates where to find the object. In an embedded label, the location is an integer representing the starting record number of the object (the first record in the file is record 1). In a detached label, the location denotes the name of the file containing the object, along with the starting record or byte number, if there is more than one object in the file. For example:

^HEADER = ("F01.IMG",1)
^IMAGE = ("F01.IMG",1025 <BYTES>)

indicates that the IMAGE object begins at byte 1025 of the file F01.IMG, in the same directory as the detached label file. Below is a list of the possible formats for the ^object definition.

^object = n
^object = n<BYTES>
^object = "filename.ext"
^object = ("filename.ext",n)
^object = ("[dirlist]filename.ext",n)
^object = ("filename.ext",n<BYTES>)
^object = ("[dirlist]filename.ext",n<BYTES>)

where **n** is the starting record or byte number of the object, counting from the beginning of the file (record 1, byte 1), **<BYTES>** indicates that the number given is in units of bytes, **filename** is the up to 8 character, alphanumeric upper-case file name, **ext** is the 3 character upper-case file extension, and **dirlist** is a period-delimited path-list of parent directories, in upper case, that specifies the object file directory (used only when the object is not in the same directory as the label file). The list begins at the directory level below the root directory. '[dirlist]' may be omitted when the object being described is located either in the same directory as the detached label or in a subdirectory named LABEL that is located in a higher level of the directory tree (typically root itself).

All detached labels have records that end with a carriage return character and a line feed character. This allows the files to be read by Macintosh OS, OS2, Unix, VMS, and Windows/MS-DOS computer operating systems.

4.2.4. Software File Format

Software files are C source code. Executable binaries will be precompiled for UNIX and PC operating systems.

4.2.5. Tabular File Format

Tabular files (.TAB and .VAR suffixes) exist in the INDEX and DATA directories. Tabular files are either ASCII or binary files. The TES-TSDR Standard Product element files in the DATA directory are all binary tabular files.

ASCII tabular files are formatted for direct reading into many database management systems on various computers. All fields are separated by commas, and character fields are enclosed in double quotation marks (“). Character fields are left justified and padded with spaces to keep quotation marks in the same columns of successive records. Numeric fields are right justified. The “start byte” and “bytes” values listed in the labels do not include the commas between fields or the quotation marks surrounding character fields. The records are of fixed length, and the last two bytes of each record contain the ASCII carriage return and line feed characters. This allows a table to be treated as a fixed length record file on computers that support this file type and as a text file with embedded line delimiters on those that don’t.

Two types of binary tabular files are present in the TES-TSDR Standard Product Archive Volumes: fixed length data field files (.TAB suffix) and variable length data field files (.VAR suffix). Fixed length data field files always accompany variable length data field files and contain a column with a pointer to data in the variable length data field file. There are no column delimiters for binary tabular files. For more information about the variable length data field files in TES-TSDR Standard Product Archive Volumes, see the TES-TSDR Standard Product SIS.

All tabular files are described by PDS labels that are either embedded at the beginning of the file or detached. If detached, the PDS label file has the same name as the data file it describes, with the extension .LBL; for example, the file INDEX.TAB is accompanied by the detached label file INDEX.LBL in the same directory.

5. Archive Volume Generation

5.1. Data Transfer, Validation Methods, and Production

The TES Team will produce complete TES-TSDR Standard Product Archive Volumes at Arizona State University. Archive volumes will be written to write-once CD-ROMs (CD-WOs) for distribution to Co-Investigators and the Science Data Validation Team (SDVT). The PDS Geosciences Node will also receive a CD-WO copy of each archive volume to verify that it conforms to the TES-TSDR SIS and to PDS standards for archive volumes. Copies of archive volumes may also be placed on the Internet.

Upon approval of a volume by the SDVT, the TES Team will deliver it to a vendor for replication as CD-ROMs and/or DVDs. The Team will provide the vendor with a mailing list for distribution of copies. The list will include MGS personnel who express interest in receiving the data, the Planetary Data System, and the National Space Science Data Center (NSSDC). The PDS will request enough copies to serve its anticipated user needs, and will fund those copies. The PDS will be responsible for making additional future copies as needed.

5.2. Data Product Sizes

The amount of data returned from TES is extremely variable. Each Archive Volume will contain as many TES-TSDR Standard Products as fit on the storage media. Anticipated data return for a typical mapping orbit (2-hour period) is shown in Table 2.

Table 2 – TES-TSDR Standard Product Element Nominal Sizes

Product Element	2 Hour Orbit (MB)	Mission (MB)
BOL	0.604	4,961
CMP	0.020	168
GEO	0.961	7,689
IFG	0.115	924
LMB	0.172	1,376
OBS	0.140	1,120
POS	1.51	2,096
RAD	12.873	102,984
SRF	8.105	64,840
TLM	0.040	332
TOTAL	**24.545**	**201,345**

5.3. Labeling and Identification

Each TES-TSDR CD-WO to be sent to an institution for evaluation will bear a volume ID using the last two components of the volume set ID [PDS Standards Reference, 1995]. The volume set ID will be USA_NASA_JPL_MGST_xxxx. Where xxxx indicates both version and mission phase. The first digit indicates data version, with 0 = original release, 1 = first revision, 2 = second revision and so on. The last three digits indicate mission phase using the following convention:

001 - 020 Aerobrake Phase One
021 - 040 Science Phasing Orbits One
041 - 060 Science Phasing Orbits Two
061 - 080 Aerobrake Phase Two
100 - 999 Mapping

Hence the first volume will have the volume ID MGST_0001.

6. Cognizant Persons and Support Staff

Table 3 – TES-TSDR Archive Volumes Support Staff

TES Team

Kelly C. Bender
Data Producer
Arizona State University
Department of Geology
Box 871404
Tempe, Arizona 85287-1404 480-965-4183 kcbender@asu.edu

Philip R. Christensen
TES Principal Investigator
Arizona State University
Department of Geology
Box 871404
Tempe, Arizona 85287-1404 480-965-7105 phil@east.la.asu.edu

Kimberly C. Feely
Data Producer
Arizona State University
Department of Geology
Box 871404
Tempe, Arizona 85287-1404
480-965-5686
feely@asu.edu

Noel S. Gorelick
Data Producer
Arizona State University
Department of Geology
Box 871404
Tempe, Arizona 85287-1404
480-965-7829
gorelick@east.la.asu.edu

Greg L. Mehall
Tes Instrument Manager
Arizona State University
Department of Geology
Box 871404
Tempe, Arizona 85287-1404
480-965-3063
mehall@asu.edu

Washington University

Raymond E. Arvidson
MGS Interdisciplinary Scientist
Washington University
Campus Box 1169
One Brookings Drive
St. Louis, MO 63130
314-935-5679
arvidson@wunder.wustl.edu

Ed Guinness
WU TES Archive Manager
Washington University
Campus Box 1169
One Brookings Drive
St. Louis, MO 63130
314-935-5744
guinness@wunder.wustl.edu

APPENDIX A: Volume Directory Structure

Below is a representation of the directory structures of a TES Archive Volume. Names without extensions are directory names (e.g. CATALOG), while names with extensions are file names (e.g. CATINFO.TXT).

```
ROOT
 | ---------   AAREADME.HTM
 | ---------   AAREADME.LBL
 | ————————   AAREADME.TXT
 | ————————   ERRATA.TXT
 | ————————   VOLDESC.CAT
 | ————————   CATALOG
 |        | ———    CATINFO.TXT
 |        | ———-   DATASET.CAT
 |        | ———-   DEITGT.CAT
 |        | ———-   INST.CAT
 |        | ———-   INSTHOST.CAT
 |        | ———-   MARTGT.CAT
 |        | ———-   MISSION.CAT
 |        | ———-   PERSON.CAT
```

```
|       | ———-      PHOTGT.CAT
|       | ———-      REF.CAT
| ———————    DATA
|       | ———-      DATAINFO.TXT
|       | ———-      ENB.TXT
|       | ———-      GEOMETRY.TXT
|       | -------   WAVNUMDS.LBL
|       | -------   WAVNUMDS.TAB
|       | -------   WAVNUMSS.LBL
|       | -------   WAVNUMSS.TAB
|       | ———-      DEIMOS
|       |       | -------       BOL.FMT
|       |       | ———-          BOLxxxxx.TAB
|       |       | -------       CMP.FMT
|       |       | ———-          CMPxxxxx.TAB
|       |       | ———-          CMPxxxxx.VAR
|       |       | -------       DATASET.LBL
|       |       | -------       DATASET.LST
|       |       | -------       GEO.FMT
|       |       | ———-          GEOxxxxx.TAB
|       |       | -------       IFG.FMT
|       |       | ———-          IFGxxxxx.TAB
|       |       | ———-          IFGxxxxx.VAR
|       |       | -------       LMB.FMT
|       |       | ———-          LMBxxxxx.TAB
|       |       | -------       OBS.FMT
|       |       | -------       OBSxxxxx.TAB
|       |       | -------       POS.FMT
|       |       | ———-          POSxxxxx.TAB
|       |       | -------       RAD.FMT
|       |       | ———-          RADxxxxx.TAB
|       |       | ———-          RADxxxxa.VAR
|       |       | -------       SRF.FMT
|       |       | ———-          SRFxxxxx.TAB
|       |       | ———-          SRFxxxxx.VAR
|       |       | -------       TLM.FMT
|       |       | ———-          TLMxxxxx.TAB
|       |       | -------       VAR.LBL
|       | ———-      MARS
|       |       | -------       BOL.FMT
|       |       | ———-          BOLxxxxx.TAB
|       |       | -------       CMP.FMT
|       |       | ———-          CMPxxxxx.TAB
|       |       | ———-          CMPxxxxx.VAR
|       |       | -------       DATASET.LBL
|       |       | -------       DATASET.LST
|       |       | -------       GEO.FMT
```

```
|       |       |------   GEOxxxxx.TAB
|       |       |-------  IFG.FMT
|       |       |------   IFGxxxxx.TAB
|       |       |------   IFGxxxxx.VAR
|       |       |-------  LMB.FMT
|       |       |------   LMBxxxxx.TAB
|       |       |-------  OBS.FMT
|       |       |------   OBSxxxxx.TAB
|       |       |-------  POS.FMT
|       |       |------   POSxxxxx.TAB
|       |       |-------  RAD.FMT
|       |       |------   RADxxxxX.TAB
|       |       |------   RADxxxxx.VAR
|       |       |-------  SRF.FMT
|       |       |------   SRFxxxxx.TAB
|       |       |------   SRFxxxxx.VAR
|       |       |-------  TLM.FMT
|       |       |------   TLMxxxxx.TAB
|       |       |-------  VAR.LBL
|       |------   PHOBOS
|       |       |-------  BOL.FMT
|       |       |------   BOLxxxxx.TAB
|       |       |-------  CMP.FMT
|       |       |------   CMPxxxxx.TAB
|       |       |------   CMPxxxxx.VAR
|       |       |-------  DATASET.LBL
|       |       |-------  DATASET.LST
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