MARS SCIENCE LABORATORY (MSL) PROJECT

MSL Experiment Data Record (EDR) and Engineering Cameras Reduced Data Record (RDR) Archive Volume Software Interface Specification (SIS)

VERSION 1.12

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Jet Propulsion Laboratory
California Institute of Technology

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DOCUMENT CHANGE LOG

Change	Date	Affected Portions
Initial Release, Version 1.0	02-04-13	All
Revised catalog file names	02-12-13	All
Revised Chemcam and Ecam Volume Structure contents	02-20-13	Appendix C, H1 and H2
Updated sub-directory names under DATA directory for REMS	02-25-13	Appendix F
Defined DATA and EXTRAS directory structure for Ecams	03-04-13	Appendix H2
Defined DATA and CRUISE_DATA directory structure for RAD. Added LABEL directory.	03-05-13	Appendix E
Defined DATA and EXTRAS directory structure for Ecams RDRs	03-19-13	Appendix H2
Updated the Applicable Documents section	03-28-13	Section 1.3 and all Appendices
Consolidated Meshes Datasets Into a Single Dataset	04-25-13	Section 4.3 and Appendix H2
Removed TBDs	05-07-13	Appendices A - D
Updated Ecam RDR EXTRAS directory diagram	05-23-13	Section H2.2.4.2
Added EXTRAS directory to APXS directory structure	07-17-13	Appendix A
Edited Chemcam, Ecam, RAD volume structures	07-22-13	Appendices B, E, H1
Redrew DATA directory diagrams	07-23-13	Appendices E, H1

TBD ITEMS

Section	Description
1.3	Item 10, Applicable Document titles.
Appendix G, Section G.1, Applicable Documents	Applicable Document specifics.
Appendices, Sections E.2.3 - H2.2.3, Data Product Sizes	Science Teams need to submit figures for filling in this table.

ACRONYMS AND ABBREVIATIONS

APXS	Alpha Particle X-Ray Spectrometer
ASCII	American Standard Code for Information Interchange
ChemCam	Chemistry & Camera
CheMin	Chemistry & Mineralogy X-Ray Diffraction/X-Ray Fluorescence Instrument
CODMAC	Committee On Data Management And Computation
DAN	Dynamic Albedo of Neutrons
DVD	Digital Video Disc
EDR	Experiment Data Record
Hazcam	Hazard Avoidance Camera
HTML	HyperText Markup Language
IMG	Image
ISO	International Standards Organization
JPEG, JPG	Joint Photographic Experts Group
JPL	Jet Propulsion Laboratory
MIPL	Multi-mission Image Processing Laboratory
NASA	National Aeronautics and Space Administration
Navcam	Navigation Camera
NSSDC	National Space Science Data Center
OPGS	Operations Product Generation Subsystem
PDF	Adobe® Portable Document Format
PDS	Planetary Data System
RAD	Radiation Assessment Detector
RDR	Reduced Data Record
REMS	Rover Environmental Monitoring Station
SAM	Sample Analysis at Mars Instrument Suite
SA/SPaH	Sample Acquisition, Processing and Handling Experiment
SIS	Software Interface Specification
TBD	To Be Determined

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 or one physical or logical disk drive. 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 – 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.

1. Introduction

1.1. Purpose and Scope

This Software Interface Specification is intended to be used by those who wish to understand the format and content of the Mars Science Laboratory (MSL) Experiment Data Record (EDR) and Engineering Cameras Reduced Data Record (RDR) archives. Typically, these individuals would be software engineers, data analysts, or planetary scientists.

The specifications in this document apply to the Operations Product Generation Subsystem (OPGS) MSL EDR and Engineering Cameras RDR standard product archive volumes that are generated by the MSL Project. This document does not apply to products generated by MSL instrument teams outside of OPGS. In particular, EDRs for MAHLI, MARDI, and Mastcam are not documented here. For those EDRs see the MAHLI, MARDI, and MastCam Archive Volume SIS document (Applicable Document #6). Also, SAM EDRs are not documented here as they are not archived in the PDS; instead, the SAM RDR archive generated by the SAM instrument team will include a low level data set with raw instrument data values. See the SAM RDR Archive Volume SIS document (Applicable Document #9).

The MSL EDR archives are intended to be stored online for electronic distribution. The online version will conform to the structure described in this document. In addition, copies of the archives will be stored on physical media for long-term preservation.

1.2. Content Overview

The MSL OPGS EDR archive volume sets consist of the MSL first order data products, acquired and used during ground operations. All archives contain documentation and other ancillary material.

The MSL first order data products are MIPL OPGS EDRs, produced from telemetry data from instruments onboard the MSL Project spacecraft. Telemetry data is processed into data records (CODMAC Level 2). MSL camera image products (specifically, Hazcam, Navcam and ChemCam) undergo further processing to contain the following:

a.) attached, non-PDS compliant, Operations dual label consisting of “ODL/VICAR” and

b.) detached PDS compliant Archive label

The MSL Engineering Cameras RDR archive volume sets consist of higher level products derived from the MSL OPGS EDRs. These too will follow the labeling convention described for the EDRs, except for the the RDR mesh products which will be archived as non-PDS compliant value added extras within the archive volume.

MIPL is the producer of all MSL OPGS EDR and Engineering Cameras RDR data records and is also responsible for developing the archive-assembling tools that will run for subsequent delivery of all archives to the PDS. The PDS nodes are responsible for validating the archives for compliancy of structure and format against PDS specifications. The MSL instrument science teams are responsible for reviewing the archives in terms of science validity and integrity.

This Software Interface Specification (SIS) describes the format, content, and generation of the MSL archives. Section 2, Archive Volume Contents, describes the general structure of archive

volumes and the contents of each file. Section 3, Archive Volume Format, describes the file formats used on the archive volumes. Section 4, Archive Volume Generation, describes the procedure for transferring data products to archive media. Section 5, Support Staff and Cognizant Persons, lists the individuals and institutions responsible for generating the archive volumes. Finally, Appendices A-L, describe the specific identifiers, specifications, and structure of the archive volumes produced along with a listing of any relevant documentation such as the Data Product SISs and schedules for release of data products.

1.3. Applicable Documents and Constraints

This Archive Volume SIS is intended to be consistent with the following documents:

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Software Interface Specification APXS Experiment Data Record (EDR), H. Mortensen, JPL D-69261, MSL 576-3504, Version 1.3, March 19, 2013.
4. MSL Software Interface Specification CheMin Experiment Data Record (EDR), H. Mortensen, JPL D-69260, MSL 576-3503, Version 1.5, March 10, 2013.
5. MSL Software Interface Specification DAN Experiment Data Record (EDR), C. Radulescu, JPL D-38113, MSL 437-3678, Version 1.0, January 31, 2013.
6. MSL Project Software Interface Specification (SIS), Mastcam, MAHLI & MARDI EDR and RDR Data Products, M. Malin, JPL D-75410, SIS-SCI035-MSL, Version 1.00 Draft, March 26, 2013.
7. MSL RAD Experiment Data Record (EDR) Software Interface Specification (SIS), S. Rafkin, JPL D-75415, MSL-576-3502, Version 5.0, February 5, 2013.
8. MSL Software Interface Specification REMS Experiment Data Record (EDR), C. Radulescu, JPL D-38116, MSL 437-3681, Version 1.0, January 31, 2013.
9. MSL Software Interface Specification SAM Reduced Data Record (RDR), H. Franz, JPL D-38123, SIS-SCI020-MSL, Version 1.2, February 13, 2013.
10. MSL SA/SPaH EDR Software Interface Specification (SIS) – TBD
11. MSL Project Camera & LIBS EDR and RDR Data Products Software Interface Specification (SIS), D. Alexander, R. Deen, JPL D-38107, SIS-SCI006-MSL, Version 3.0, February 27, 2013.
12. *Planetary Data System Archive Preparation Guide (APG)*, April 1, 2010, Version 1.4, JPL D-31224.

13. *Planetary Data System Standards Reference*, February 27, 2009, Version 3.8, JPL D-7669, Part 2.

1.4. Relationships with Other Interfaces

This Archive Volume SIS could be affected by changes to the design of any of the MSL standard data products (Applicable Documents #3-11).

2. Archive Volume Contents

This section describes the general contents of the MSL archive volumes, including directory names, file names, file contents, file types, and organization responsible for providing the files. Volume set specific archive contents can be found in the appendices.

The MSL archives are organized with each volume set on a separate logical volume (The typical MSL archive is organized with each data set on a separate logical volume. A very large data set may span multiple volumes.). Each logical volume includes the required directories listed below, and may or may not include some or all of the optional directories.

2.1. Root Directory Contents (required)

Files in the Root Directory include an overview of the archive, a description of the volume for the PDS Catalog, and a list of errata or comments about the archive. The following files are contained in the Root Directory.

File Name	File Contents	File Provided By
AAREADME.TXT	Volume content and format information	PDS Node
AAREADME.LBL	A PDS detached label that describes AAREADME.TXT (optional, could be attached to AAREADME.TXT).	PDS Node
ERRATA.TXT	A cumulative listing of comments and updates concerning all archive volumes published to date	OPGS and PDS Node
VOLDESC.CAT	A description of the contents of this volume in a PDS format readable by both humans and computers	PDS Node

2.2. Data Directory Contents and Naming (required)

Contents and naming scheme of the data sub-directories for specific instruments is described in the appendices. Data file naming format and nomenclature is described in the Data Product SIS [Applicable Documents #3-11].

2.3. Index Directory Contents (required)

Files in the Index Directory are provided to help the user locate products on this archive volume and on previously released volumes in the archive. The following files are contained in the Index Directory.

File Name	File Contents	File Provided By
INDXINFO.TXT	A description of the contents of this directory	PDS Node
INDEX.TAB	A table listing all data products on this volume	PDS Node or Data Provider
INDEX.LBL	A PDS detached label that describes INDEX.TAB	PDS Node or Data Provider
CUMINDEX.TAB	A cumulative listing of all data products on this volume and on previous volumes in this set (required only if the data set spans multiple volumes).	PDS Node or Data Provider
CUMINDEX.LBL	A PDS detached label that describes CUMINDEX.TAB	PDS Node or Data Provider

The format of the file INDEX.TAB is described by INDEX.LBL and includes the following fields:

1. VOLUME_ID – A unique identifier that gives the volume.
2. PATH_NAME – The subdirectory path in which the data files are found.
3. FILE_NAME – The name of the PDS label file that describes the data file.
4. PRODUCT_ID – The name of the data table file.
5. PRODUCT_VERSION_ID – The version of the data file.
6. PRODUCT_TYPE – The type or category of a data file.
7. PRODUCT_CREATION_TIME – When it was created.
8. START_TIME – The time of the first observation in the data file.
9. STOP_TIME – The time of the last observation in the data file.
10. SPACECRAFT_CLOCK_START_COUNT – The value of the spacecraft clock in the first observation in the data file.
11. SPACECRAFT_CLOCK_STOP_COUNT – The value of the spacecraft clock in the last observation in the data file.
12. PLANET_DAY_NUMBER – The number of days elapsed since a reference day.
13. RELEASE_ID – A unique identifier associated with a specific release.
14. SOURCE_PRODUCT_ID – The product used as input to create the data file. (This keyword is recommended for RDR index tables only.)

2.4. Document Directory Contents (required)

The Document Directory contains documentation to help the user understand and use the archive data. The following files are contained in the Document Directory.

File Name	File Contents	File Provided By
DOCINFO.TXT	A description of the contents of this directory	PDS Node
DPSIS.TXT or .HTM	The Data Product SIS as text or hypertext	Data Provider
DPSIS.PDF	The Data Product SIS as a PDF file	Data Provider
DPSIS.LBL	A PDS detached label that describes both DPSIS.TXT(HTM) and DPSIS.PDF	PDS Node
VOLSIS.TXT or .HTM	The Archive Volume SIS (this document) as text or hypertext	PDS Node or Data Provider
VOLSIS.PDF	The Archive Volume SIS (this document) as a PDF file	PDS Node or Data Provider
VOLSIS.LBL	A PDS detached label that describes both ARCHSIS.TXT(HTM) and ARCHSIS.PDF.	PDS Node
[*.TXT files]	Other Documents	Data Provider

2.5. Catalog Directory Contents (required)

The files in the Catalog Directory provide a top-level understanding of the mission, spacecraft, instruments, and data sets. The files in this directory are coordinated with the PDS data engineer, who is responsible for loading them into the PDS catalog. The following files are found in the Catalog Directory.

File Name	File Contents	File Provided By
CATINFO.TXT	A description of the contents of this directory	PDS Node
DATASET.CAT	Data set information for the PDS catalog	Data Provider
INSTHOST.CAT	Instrument host (i.e., spacecraft) information for the PDS catalog	MSL Project
INST.CAT	Instrument information for the PDS catalog	Data Provider
MISSION.CAT	Mission information for the PDS catalog	MSL Project
PERSON.CAT	Personnel information for the PDS catalog (Team and PDS personnel responsible for generating the archive)	Data Provider
REF.CAT	References mentioned in other *.CAT files	Data Provider

SOFTWARE.CAT (optional)	Software information for the PDS catalog	Data Provider

2.6. Label Directory Contents (optional)

The Label Directory contains files that describe data format and organization. These files are referred to in the PDS labels that accompany the data products. They are "include" files that are intended to be parsed as if they were part of the PDS labels that refer to them. The following files are contained in the Label Directory.

File Name	File Contents	File Provided By
LABINFO.TXT	A description of the contents of this directory	PDS Node
[*.FMT files]	Format files	Data Provider

2.7. Software Directory Contents (optional)

The Software Directory contains utilities or application programs to aid the user in viewing or extracting data from the data product files. The following files are contained in the Software Directory.

File Name	File Contents	File Provided By
SOFTINFO.TXT	A description of the contents of this directory	PDS Node
Software files	Software files, applications, source code, etc.	Data Provider

2.8. Calib Directory Contents (optional)

The Calib Directory contains calibration files used to process the data products, or calibration data needed to use the data products. The following files are contained in the Calib Directory.

File Name	File Contents	File Provided By
CALINFO.TXT	A description of the contents of this directory	PDS Node
Calibration files	Image Calibration Files	Data Provider

2.9. Geometry Directory Contents (optional)

The Geometry Directory contains files needed to understand observation geometry. The following files are contained in the Geometry Directory.

File Name	File Contents	File Provided By
GEOMINFO.TXT	A description of the contents of this directory	PDS Node
Geometry files	Spacecraft Geometry files	Data Provider

2.10. Extras Directory Contents (optional)

The Extras Directory contains documentation, utility programs, or other materials that the user may find helpful, but that are beyond the scope of the required elements of the archive. The contents of this directory are exempt from PDS requirements for labeling, etc. The Extras Directory is intended for "value-added" material, handy to have but not crucial for understanding the data. An example would be browse images or a set of web pages for displaying the browse data. Since the directory is nonstandard, a thorough explanation of its purpose should be included. The following files are contained in the Extras Directory.

File Name	File Contents	File Provided By
EXTRINFO.TXT	A description of the contents of this directory	PDS Node
[other files]		Data Provider

3. Archive Volume Format

This section describes the format of the MSL archive volumes. Data that comprise the archive will be formatted in accordance with Planetary Data System specifications [Applicable Documents #12 and #13].

3.1. File Formats

This section describes file formats for the kinds of files contained on archive volumes.

3.1.1. Document File Format

Document files with the .TXT suffix exist in the Root, Index, Software, Catalog, Document, and Label directories. They are ASCII files which may have embedded PDS labels. Lines in a .TXT file end with a carriage return character, <CR> (ASCII 13) and a line feed character, <LF> (ASCII 10). PDS recommends plain text files have line length restricted to 80 characters or fewer, including the <CR><LF>. This allows the files to be readable under various operating systems.

Documents in the Document directory may contain formatting and figures that cannot be rendered as ASCII text. Therefore each document is given in two formats, hypertext and PDF. The hypertext file contains ASCII text plus hypertext markup language (HTML) commands that enable it to be viewed in a Web browser such as Firefox, Safari or Microsoft Internet Explorer. The hypertext file may be accompanied by ancillary files such as images and style sheets that are incorporated into the document by the Web browser. The second format, PDF (Portable Document Format), is an open standard, as well as an ISO standard since 2008, for document exchange. This file format can be represented in a manner independent of application software, hardware and operating systems. Each PDF file encapsulates a complete description of a fixed-layout flat document, including the text, fonts, graphics, and other information needed to display it. Adobe Systems offers free software, Acrobat Reader, for viewing PDF files.

3.1.2. Tabular File Format

Tabular files (.TAB suffix) exist in the Index directory and in any data directory where the data consists of ASCII tables. Tabular files are ASCII files 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 padded with spaces to keep quotation marks in the same columns of successive records.) Character fields are left justified, and 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.

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.

3.1.3. PDS Label Format

All data files in the archive have PDS detached labels. For examples of PDS labels for each type of data product, see the Data Product SISs [Applicable Documents #3-11].

A PDS label 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 to (e.g. IMAGE, TABLE, etc.) 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. The location is an integer representing the starting record number of the object (the first record in the file is record 1). Below is the format for the ^object definition.

^object = n

where **n** is the starting record or byte number of the object, counting from the beginning of the file (record 1, byte 1).

3.1.4. Software File Format

Software is provided in a Zip-compressed file with a detached PDS label as specified in the PDS Standards Reference, chapter 20, Zip Compression. The Zip file includes all files required to use the software, including user manuals.

3.1.5. Catalog File Format

Catalog files (suffix .CAT) exist in the Root and Catalog directories. They are text files formatted in an object-oriented structure consisting of sets of 'keyword=value' declarations.

Each line in a catalog file must be terminated by the two-character carriage-return/linefeed, <CR><LF>, sequence (ASCII decimal character codes 13 and 10, respectively). PDS requires

catalog files have line length restricted to 72 characters or fewer including the <CR><LF>, to accommodate PDS' internal database requirements.

3.1.6. Science Data File Formats

See the Data Product SIS for descriptions of the data file formats.

4. Archive Volume Generation

4.1. Data Transfer, Validation Methods, and Peer Review

Data provided to the MSL science teams will meet the specifications detailed in the Data Product SIS [Applicable Documents #3-11].

The MSL OPGS EDRs will be generated by MIPL of the Jet Propulsion Laboratory. MIPL and the MSL instrument teams are responsible for the production of PDS formatted data according to the release schedule specified in the MSL Archive Plan. MIPL is responsible for assembly and delivery of complete, PDS-compliant, OPGS archive volumes (via electronic transfer or physical media), as well as documentation and ancillary files pertaining to their data, to the appropriate PDS Node. PDS personnel will work closely with science team members and OPGS to ensure a smooth transfer.

The PDS Nodes will conduct both peer review and validation. Peer review, conducted prior to the first data delivery, will be performed on sample data, actual or simulated, to confirm that the archive will be useable by members of the science community, both present and future, who are not familiar with the mission and/or instrument. Reviewers include members of the PDS, a distributed representation of the project science teams, and members of the science community not associated with the mission. Validation will be performed on every individual volume delivery to verify that it adheres to PDS standards and to this Archive Volume SIS.

4.2. Backup and Duplicates

Copies of MSL archives will be maintained at the curating PDS Node and at the NSSDC.

4.3. Labeling and Identification

Instrument	Data Set ID	Volume ID
APXS	MSL-M-APXS-2-EDR-V1.0	MSLAPX_0XXX
ChemCam	MSL-M-CHEMCAM-RMI-2-EDR-V1.0 MSL-M-CHEMCAM-LIBS-2-EDR-V1.0 MSL-M-CHEMCAM-SOH-2-EDR-V1.0	MSLCCM_0XXX
ChemMin	MSL-M-CMIN-2-EDR-V1.0	MSLCMN_0XXX
DAN	MSL-M-DAN-2-EDR-V1.0	MSLDAN_0XXX
RAD	MSL-M-RAD-2-EDR-V1.0	MSLRAD_0XXX
REMS	MSL-M-REMS-2-EDR-V1.0	MSLREM_0XXX
SA/SPaH	MSL-M-SAPH-2-EDR-V1.0	MSLSPH_0XXX

Engineering Cameras	MSL-M-HAZCAM-2-EDR-V1.0	MSLHAZ_0XXX
	MSL-M-NAVCAM-2-EDR-V1.0	MSLNAV_0XXX
	MSL-M-HAZCAM-5-RDR-V1.0	MSLHAZ_1XXX
	MSL-M-NAVCAM-5-RDR-V1.0	MSLNAV_1XXX
	MSL-M-ECAM-5-RDR-MESH-V1.0 MSL-M-NAVCAM-5-RDR-MOSAIC-V1.0	MSLMNM_1XXX
	MSL-M-ROVER-6-RDR-RMC-V1.0	MSLRMC_1XXX

Please refer to the appendices for more labeling scheme information of archive volumes.

4.4. Data Release Dates

In accordance with the MSL Archive Plan document (Applicable Document #2), the Project shall archive copies of all data acquired by the mission to the Planetary Data System within six months after its receipt on Earth. The MSL Project plans to make eight "batch" deliveries to the PDS, in 90 sol increments every 90 sols, starting with the first delivery 6 months after landing. In the event of an extended mission, subsequent data releases will continue at the same pace, with the final delivery occurring no later than six months after the last data have been received on Earth. See Table 5 of the MSL Archive Plan document for archive data acquisition and release dates for the primary mission.

5. Support Staff and Cognizant Persons

5.1. Instrument Team Representatives

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Appendix A.

MSL APXS EDR ARCHIVE VOLUME CONTENTS

A.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Software Interface Specification APXS Experiment Data Record (EDR), H. Mortensen, JPL D-69261, MSL 576-3504, Version 1.3, March 19, 2013.
4. MSL APXS Science Team and PDS Geosciences Node Interface Control Document (ICD), R. Gellert, Version 2.0, May 15, 2007.

A.2 Contents, Organization and Naming

The MSL APXS EDR Archive is composed of 1 data set: the Alpha Particle X-ray Spectrometer (APXS) raw data products.

A.2.1 Identifiers

The following identifiers have been assigned to the APXS EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-APXS-2-EDR-V1.0	"MSL MARS ALPHA PARTICLE X-RAY SPECTROMETER 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
APXS	"ALPHA PARTICLE X-RAY SPECTROMETER"
VOLUME ID	**VOLUME SET NAME**
MSLAPX_0XXX	"MSL APXS EXPERIMENT DATA RECORD"

A.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

A.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
EDR	29818 bytes	Maximum 1 per sol	Maximum 669	Maximum 19 MB

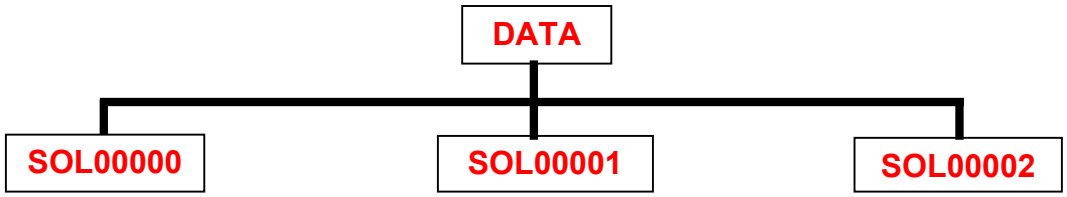
A.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	APXS_EDRDS.CAT	Data set catalog objects for the MSL APXS EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	APXS_INST.CAT	Instrument catalog objects for the MSL APXS instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.

	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	APXS_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	APXS_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see "Data Directory Structure" section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	APXS_EDR_SIS.{LBL,PDF}	Data Product Software Interface Specification for the APXS instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS	**EXTRINFO.TXT**	A description of the contents of the EXTRAS directory
	MSL_APXS_ACTIVITIES_SOLnnnn_mmmm.CSV	Excel tables listing target information and comments associated with APXS EDR products
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.

A.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix B.

MSL ChemCam EDR ARCHIVE VOLUME CONTENTS

B.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Project Camera & LIBS EDR and RDR Data Products Software Interface Specification (SIS), D. Alexander, R. Deen, JPL D-38107, SIS-SCI006-MSL, Version 3.0, February 27, 2013.
4. MSL ChemCam Science Team and PDS Geosciences Node Interface Control Document (ICD), S. Slavney and D. DeLapp, Version 2.0, May 14, 2007.

B.2 Contents, Organization and Naming

The MSL ChemCam EDR Archive is composed of 3 data sets: the Remote Micro-Image Camera (RMI) raw image data products, the Laser-Induced Breakdown Spectrometer (LIBS) raw spectra, and the State of Health (SOH) housekeeping data products.

B.2.1 Identifiers

The following identifiers have been assigned to the ChemCam EDR archive by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-CHEMCAM-RMI-2-EDR-V1.0	"MSL MARS CHEMCAM REMOTE MICRO-IMAGER CAMERA 2 EDR V1.0"
MSL-M-CHEMCAM-LIBS-2-EDR-V1.0	"MSL MARS CHEMCAM LASER-INDUCED BREAKDOWN SPECTRA 2 EDR V1.0"
MSL-M-CHEMCAM-SOH-2-EDR-V1.0	"MSL MARS CHEMCAM STATE OF HEALTH 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
CHEMCAM_RMI	"CHEMISTRY CAMERA REMOTE MICRO-IMAGER"
CHEMCAM_LIBS	"CHEMISTRY CAMERA LASER INDUCED BREAKDOWN SPECTROMETER"
CHEMCAM_SOH	"CHEMISTRY CAMERA STATE OF HEALTH"
VOLUME ID	**VOLUME SET NAME**
MSLCCM_0XXX	"MARS SCIENCE LABORATORY CHEMCAM EXPERIMENT DATA RECORD"

B.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

B.2.3 Data Product Sizes and Delivery Rates

A typical ChemCam RMI EDR product is about 2 MB. A typical LIBS EDR product is about 260 KB. ChemCam data products are acquired as opportunities arise, so it is not possible to predict the total number of products or rate of delivery.

B.2.4 Volume Structure

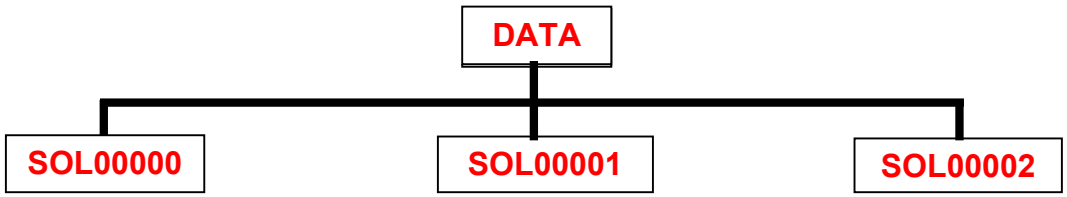
DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	High level description of the volume content and format.
	ERRATA.TXT	Information about errors, anomalies, and release notes for this archive.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB	**CALINFO.TXT**	Description of the contents of the CALIB directory, including reference(s) to relevant published papers.
	CLEANROOM directory **THERMALVAC** directory	Calibration data from preflight laboratory calibrations.
CATALOG	**CATINFO.TXT**	Description of the contents of the CATALOG directory.
	CCAM_RMI_EDR_DS.CAT **CCAM_LIBS_EDR_DS.CAT** **CCAM_SOH_EDR_DS.CAT**	Data set catalog files describing the MSL ChemCam EDRs, so called because they are searchable through the PDS Catalog. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, and an analysis of the quality and limitations of the

		data.
	CCAM_RMI_INST.CAT **CCAM_LIBS_INST.CAT** **CCAM_SOH_INST.CAT**	Instrument catalog file for the MSL ChemCam instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	An overview of the MSL rover.
	MSL_MISSION.CAT	An overview of the MSL mission, including descriptions and dates of the mission phases.
	CCAM_PERSON.CAT	Contact information for people responsible for producing the science data and archive volume and its component data sets.
	CCAM_REF.CAT **MSL_REF.CAT**	Complete citations of references mentioned in the other catalog files in this directory. May also include citations of papers providing further information about the data sets and instrumentation on this volume. MSL_REF.CAT has references from MISSION.CAT and INSTHOST.CAT. CCAM_REF.CAT has references specific to ChemCam.
DATA		Please see “Data Directory Structure” section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	Description of the contents of the DOCUMENT directory.
	MSL_CAMERA_SIS.{PDF,LBL}	Data Product Software Interface Specification for the ChemCam instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	GEOMETRIC_CM.TXT **ODL.TXT** **VICAR2.TXT**	Descriptive files for the Geometric Camera Model and ODL header & VICAR portions of the PDS labels.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS	**EXTRINFO.TXT**	Description of the contents of the EXTRAS directory.
	FULL/SOLxxxxx/	Various resolutions of the browse images. File names are identical to full resolution

	BROWSE/SOLxxxxx/ **THUMBNAIL/SOLxxxxx/**	file names, except that they end in .JPG extension.
INDEX	**INDXINFO.TXT**	Description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	Tabular summary of the data files on this volume.
LABEL	**LABINFO.TXT**	Description of the contents of the LABEL directory.
	CCAM_{}_V#.FMT	Format files are files referenced by a pointer in a PDS label. Typically they contain additional metadata or descriptive information; for example, the description of columns in a data table may be stored in a format file to avoid repeating the same lengthy definitions in every label.

B.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix C.

MSL CheMin EDR ARCHIVE VOLUME CONTENTS

C.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Software Interface Specification CheMin Experiment Data Record (EDR), H. Mortensen, JPL D-69260, MSL 576-3503, Version 1.5, March 10, 2013.
4. MSL CheMin Science Team and PDS Geosciences Node Interface Control Document (ICD), S. Slavney and D. Vaniman, Version 2.0, May 14, 2007.

C.2 Contents, Organization and Naming

The MSL CheMin EDR Archive is composed of 1 data set: the Chemistry & Mineralogy X-Ray Diffraction/X-Ray Fluorescence Instrument (CheMin) raw data products.

C.2.1 Identifiers

The following identifiers have been assigned to the CheMin EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-CHEMIN-2-EDR-V1.0	"MSL MARS CHEMISTRY & MINERALOGY X-RAY INSTRUMENT 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
CHEMIN	"CHEMISTRY AND MINERALOGY"
VOLUME ID	**VOLUME SET NAME**
MSLCMN_0XXX	"MSL CHEMIN EXPERIMENT DATA RECORD"

C.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

C.2.3 Data Product Sizes and Delivery Rates

The sizes of CheMin EDR data products vary. CheMin products are acquired as opportunities arise, so it is not possible to predict the total number of products or rate of delivery.

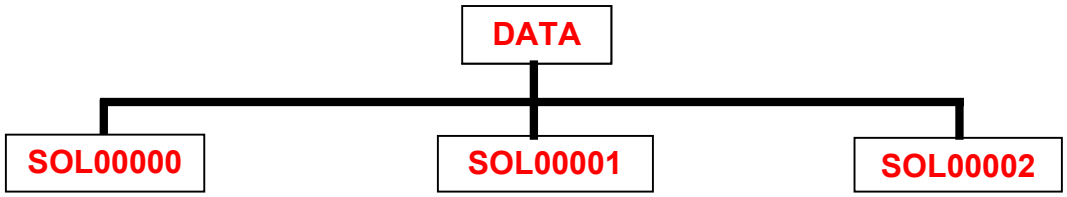
C.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB	**CALINFO.TXT**	A description of the contents of the CALIB directory.
	CALREPORT.{PDF,TXT,LBL}	The CheMin Calibration Report.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	CHEMIN_EDRDS.CAT	Data set catalog objects for the MSL CheMin EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	CHEMIN_INST.CAT	Instrument catalog objects for the MSL CheMin instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.

	PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	CHEMIN_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see "Data Directory Structure" section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	CHEMIN_BASICS.{LBL,PDF}	CheMin User's Guide
	CHEMIN_EDR_SIS.{LBL,PDF}	Data Product Software Interface Specification for the CheMin instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
LABEL	**LABINFO.TXT**	Description of the contents of the LABEL directory.
	CHMN_EDR_{}.FMT	Format files are files referenced by a pointer in a PDS label. Typically they contain additional metadata or descriptive information; for example, the description of columns in a data table may be stored in a format file to avoid repeating the same lengthy definitions in every label.
SOFTWARE	**SOFTINFO.TXT**	Description of the contents of the SOFTWARE directory
	XRDINFO.{PDF,LBL}	List of commercial software that can read CheMin products

C.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix D.

MSL DAN EDR ARCHIVE VOLUME CONTENTS

D.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Software Interface Specification DAN Experiment Data Record (EDR), C. Radulescu, JPL D-38113, MSL 437-3678, Version 1.0, January 31, 2013.
4. MSL DAN Science Team and PDS Geosciences Node Interface Control Document (ICD), S. Slavney and A. Behar, Version 3.0, July 26, 2010.

D.2 Contents, Organization and Naming

The MSL DAN EDR Archive is composed of 1 data set: the Dynamic Albedo of Neutrons (DAN) Instrument raw data products.

D.2.1 Identifiers

The following identifiers have been assigned to the DAN EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-DAN-2-EDR-V1.0	"MSL MARS DYNAMIC ALBEDO OF NEUTRONS 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
DAN	"DYNAMIC ALBEDO OF NEUTRONS"
VOLUME ID	**VOLUME SET NAME**
MSLDAN_0XXX	"MSL DAN EXPERIMENT DATA RECORD"

D.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

D.2.3 Data Product Sizes and Delivery Rates

The sizes of DAN EDR data products vary. DAN products are acquired as opportunities arise, so it is not possible to predict the total number of products or rate of delivery.

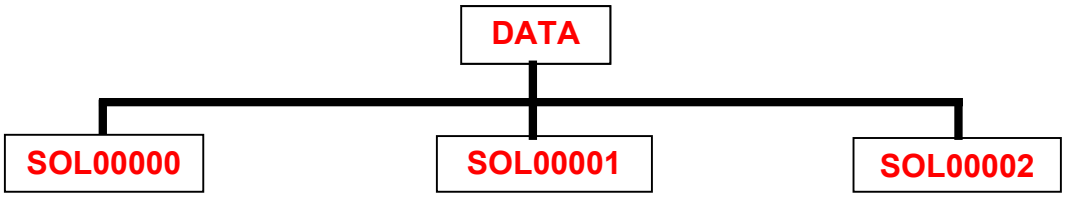
D.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	DAN_EDRDS.CAT	Data set catalog objects for the MSL DAN EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	DAN_INST.CAT	Instrument catalog objects for the MSL DAN instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	DAN_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive

		volume and its component data sets.
	DAN_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see “Data Directory Structure” section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	DAN_EDR_SIS.{LBL,PDF}	Data Product Software Interface Specification for the DAN instrument.
	DAN_UG.{HTM,LBL,PDF}	DAN User's Guide.
	DAN_CALIB_REPORT.{HTM,LBL,PDF}	Calibration report.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
LABEL	**LABINFO.TXT**	A description of the contents of the LABEL directory.
	DAN_EDR_ACTIV.FMT **DAN_EDR_PASSIV.FMT** **DAN_EDR_STDBY.FMT**	Descriptions of table columns in DAN EDR products, referenced by the products' PDS labels

D.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix E.

MSL RAD EDR ARCHIVE VOLUME CONTENTS

E.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL RAD Experiment Data Record (EDR) Software Interface Specification (SIS), S. Rafkin, JPL D-75415, MSL-576-3502, Version 5.0, February 5, 2013.
4. MSL Radiation Assessment Detector (RAD) Science Team and PDS Planetary Plasma Interactions Node Interface Control Document (ICD), PDS PPI Node, Version 1.0, February 3, 2006.

E.2 Contents, Organization and Naming

The MSL RAD EDR Archive is composed of 1 data set, described in this appendix.

E.2.1 Identifiers

The following identifiers have been assigned to the RAD EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-RAD-2-EDR-V1.0	"MSL MARS RADIATION ASSESSMENT DETECTOR 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
RAD	"RADIATION ASSESSMENT DETECTOR"
VOLUME ID	**VOLUME SET NAME**
MSLRAD_0XXX	"MSL RAD EXPERIMENT DATA RECORD"

E.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

E.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
EDR				

E.2.4 Volume Structure

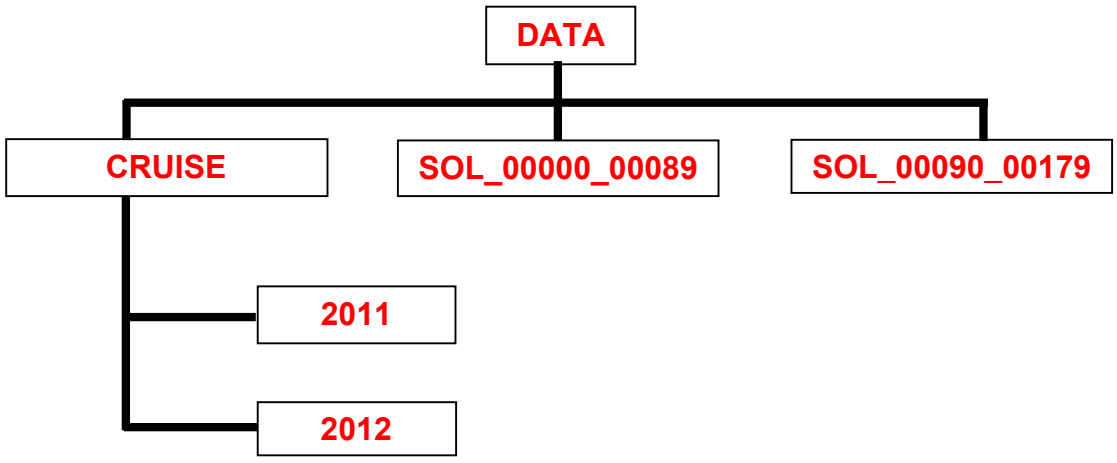
DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB TBD	**CALINFO.TXT**	A description of the contents of the CALIB directory.
	calibration data and/or files	Image calibration files and/or documentation.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	RAD_EDRDS.CAT	Data set catalog objects for the MSL RAD EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	RAD_INST.CAT	Instrument catalog objects for the MSL RAD instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics

		(and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	RAD_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	RAD_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see "Data Directory Structure" section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	RAD_EDR_SIS.{TXT,LBL,PDF}	Data Product Software Interface Specification for the RAD instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	TBD RAD_UG.{TXT,LBL,PDF}	RAD User's Guide.
	TBD **RAD_CALIB_REPORT.{TXT,LBL,PDF} (optional)**	Calibration report document for RAD instrument.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS TBD	**EXTRINFO.TXT**	A description of the contents of the EXTRAS directory.
	browse_files.{JPG,LBL}	The BROWSE sub-directory structure is identical to that of the DATA sub-directory. File names are identical to full resolution file names, except that they end in .JPG extension.
GEOMETRY TBD	**GEOMINFO.TXT**	A description of the contents of the GEOMETRY directory.
	geometry data and/or files	Geometry files and/or documentation.

INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB} (optional)	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.
LABEL	**LABINFO.TXT**	Description of the contents of the LABEL directory.
	<filename>.FMT	Format files are files referenced by a pointer in a PDS label. Typically they contain additional metadata or descriptive information; for example, the description of columns in a data table may be stored in a format file to avoid repeating the same lengthy definitions in every label.
SOFTWARE **TBD**	**SOFTINFO.TXT**	A description of the contents of the SOFTWARE directory.

E.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol range. Each sol range sub-directory name represents ninety Martian sols and begins with the word ("SOL"), followed by a five-digit beginning and five-digit ending sol number. There is also a CRUISE sub-directory which contains sub-directories differentiated on the basis of year. Each "year" sub-directory contains RAD data acquired during the CRUISE phase of the mission for each named year. The following diagram shows a sample portion of the DATA directory structure:



Appendix F.

MSL REMS EDR ARCHIVE VOLUME CONTENTS

F.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Software Interface Specification REMS Experiment Data Record (EDR), C. Radulescu, JPL D-38116, MSL 437-3681, Version 1.0, January 31, 2013.
4. MSL REMS Science Team and PDS Planetary Atmospheres Node Interface Control Document (ICD), L. Mora, Version 1.1, May 23, 2007.

F.2 Contents, Organization and Naming

The MSL REMS EDR Archive is composed of 1 data set, described in this appendix.

F.2.1 Identifiers

The following identifiers have been assigned to the REMS EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-REMS-2-EDR-V1.0	"MSL MARS ROVER ENVIRONMENTAL MONITORING STATION 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
REMS	"ROVER ENVIRONMENTAL MONITORING STATION"
VOLUME ID	**VOLUME SET NAME**
MSLREM_0001	"MSL REMS EXPERIMENT DATA RECORD"

F.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

F.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
EDR				

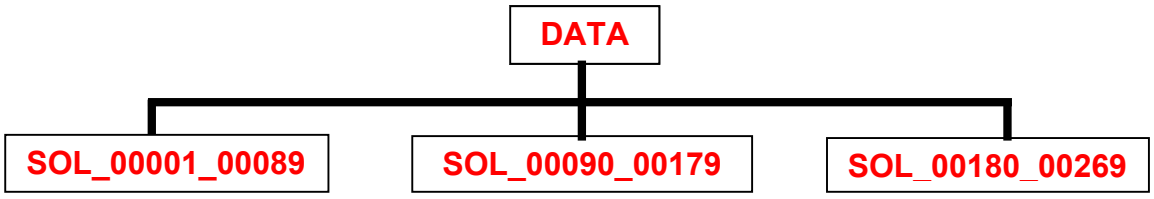
F.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	REMS_EDRDS.CAT	Data set catalog objects for the MSL REMS EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	REMS_INST.CAT	Instrument catalog objects for the MSL REMS instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.

	MSL_MISSION.CAT	A high-level description of the MSL mission.
	REMS_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	REMS_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see "Data Directory Structure" section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	REMS_EDR_SIS.{TXT,LBL,PDF}	Data Product Software Interface Specification for the REMS instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	REMS_CALIB_PLAN.{TXT,LBL,PDF} (optional)	Image calibration plan document for REMS instrument.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB} (optional)	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.
LABEL	**LABINFO.TXT**	A description of the contents of the LABEL directory.
	Include Files (.FMT files)	Files referenced by a pointer in the PDS labels. Typically they contain additional metadata or descriptive information.

F.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol range. Each sol range sub-directory name represents ninety Martian sols and begins with the word ("SOL"), followed by a five-digit beginning and five-digit ending sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix G.

MSL SA/SPaH EDR ARCHIVE VOLUME CONTENTS

G.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL SA/SPaH EDR Software Interface Specification (SIS) – TBD
4. MSL Sample Acquisition, Processing and Handling Experiment (SA/SPaH) Science Team and PDS Geosciences Node Interface Control Document (ICD) – TBD

G.2 Contents, Organization and Naming

The MSL SA/SPaH EDR Archive is composed of 1 data set, described in this appendix.

G.2.1 Identifiers

The following identifiers have been assigned to the SA/SPaH EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-SAPH-2-EDR-V1.0	"MSL MARS SAMPLE ACQUISITION/SAMPLE PaH EXPERIMENT 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
SASPAH	"SAMPLE ACQUISITION SAMPLE PROCESSING AND HANDLING"
VOLUME ID	**VOLUME SET NAME**
MSLSPH_0XXX	"MSL SA/SPaH EXPERIMENT DATA RECORD"

G.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

G.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
EDR				

G.2.4 Volume Structure

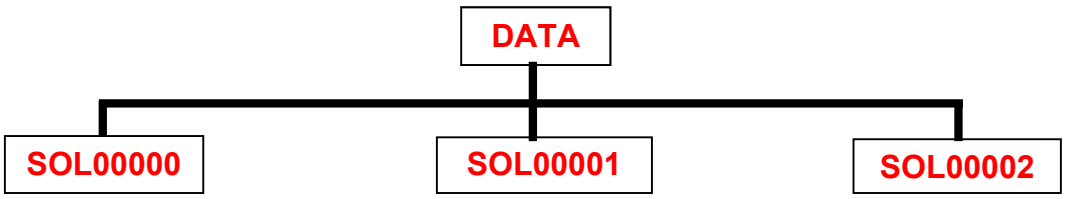
DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB TBD	**CALINFO.TXT**	A description of the contents of the CALIB directory.
	calibration data and/or files	Image calibration files and/or documentation.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	SAPH_DS.CAT	Data set catalog objects for the MSL SA/SPaH EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	SAPH_INST.CAT	Instrument catalog objects for the MSL SA/SPaH instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics

		(and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	SAPH_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	SAPH_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see "Data Directory Structure" section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	SAPH_EDR_SIS.{TXT,LBL,PDF}	Data Product Software Interface Specification for the SA/SPaH instrument.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	TBD SAPH_UG.{TXT,LBL,PDF}	SA/SPaH User's Guide.
	TBD **SAPH_CALIB_PLAN.{TXT,LBL,PDF} (optional)**	Image calibration plan document for SA/SPaH instrument.
	TBD **SAPH_CALIB_REPORT.{TXT,LBL,PDF} (optional)**	Image calibration report document for SA/SPaH instrument.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS TBD	**EXTRINFO.TXT**	A description of the contents of the EXTRAS directory.
	browse_files.{JPG,LBL}	The BROWSE sub-directory structure is identical to that of the DATA sub-directory. File names are identical to full resolution file names, except that they end in .JPG extension.
GEOMETRY TBD	**GEOMINFO.TXT**	A description of the contents of the GEOMETRY directory.
	geometry data and/or files	Geometry files and/or documentation.

INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB} (optional)	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.
SOFTWARE **TBD**	**SOFTINFO.TXT**	A description of the contents of the SOFTWARE directory.

G.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix H1.

MSL ENGINEERING CAMERAS EDR ARCHIVE VOLUME CONTENTS

H1.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Project Camera & LIBS EDR and RDR Data Products Software Interface Specification (SIS), D. Alexander, R. Deen, JPL D-38107, SIS-SCI006-MSL, Version 3.0, February 27, 2013.

H1.2 Contents, Organization and Naming

The MSL Engineering Cameras EDR Archive is composed of 2 data sets: the Hazard Avoidance Camera (HAZCAM) raw image data products and the Navigation Camera (NAVCAM) raw image data products.

H1.2.1 Identifiers

The following identifiers have been assigned to the HAZCAM and NAVCAM EDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-HAZCAM-2-EDR-V1.0	"MSL MARS HAZARD AVOIDANCE CAMERA 2 EDR V1.0"
MSL-M-NAVCAM-2-EDR-V1.0	"MSL MARS NAVIGATION CAMERA 2 EDR V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
FHAZ_LEFT_<A|B>	"FRONT HAZARD AVOIDANCE CAMERA LEFT STRING <A|B>"
FHAZ_RIGHT_<A|B>	"FRONT HAZARD AVOIDANCE CAMERA RIGHT STRING <A|B>"
RHAZ_LEFT_<A|B>	"REAR HAZARD AVOIDANCE CAMERA LEFT STRING <A|B>"
RHAZ_RIGHT_<A|B>	"REAR HAZARD AVOIDANCE CAMERA RIGHT STRING <A|B>"
NAV_LEFT_<A|B>	"NAVIGATION CAMERA LEFT STRING <A|B>"
NAV_RIGHT_<A|B>	"NAVIGATION CAMERA RIGHT STRING <A|B>"
VOLUME ID	**VOLUME SET NAME**
MSLHAZ_0XXX MSLNAV_0XXX	"MSL ENGINEERING CAMERAS EXPERIMENT DATA RECORD"

H1.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

H1.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
HAZCAM EDR NAVCAM EDR	TBD	TBD	TBD	TBD

H1.2.4 Volume Structure

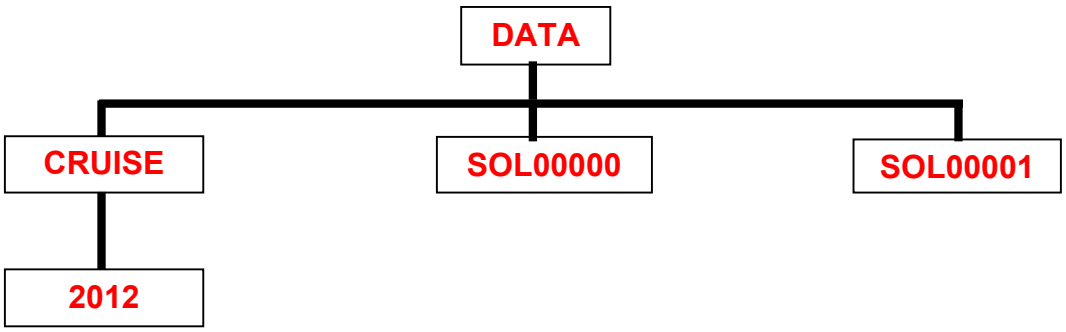
DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	HAZ_VOLDESC.CAT or NAV_VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB	**CALINFO.TXT**	A description of the contents of the CALIB directory.
	calibration data and/or files	Image calibration files and/or documentation.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	MSL_HAZCAM_EDR_DS.CAT or MSL_NAVCAM_EDR_DS.CAT	Data set catalog objects for the MSL Engineering Camera EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format,

		ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	MSL_HAZCAM_INST.CAT or MSL_NAVCAM_INST.CAT	Instrument catalog objects for the MSL Engineering Camera instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	ECAM_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	ECAM_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA		Please see “Data Directory Structure” section below for a description of the DATA directory structure.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	MSL_CAMERA_SIS.{PDF,LBL}	Data Product Software Interface Specification for the Engineering Camera instruments.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	GEOMETRIC_CM.TXT **ODL.TXT** **VICAR2.TXT**	Descriptive files for the Geometric Camera Model and ODL header & VICAR portions of the PDS labels.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS	**EXTRINFO.TXT**	A description of the contents of the EXTRAS directory.

	FULL/SOLxxxxx/ **BROWSE/SOLxxxxx/** **THUMBNAIL/SOLxxxxx/**	Various resolutions of the browse images. File names are identical to full resolution file names, except that they end in .JPG extension.
GEOMETRY	**GEOMINFO.TXT**	A description of the contents of the GEOMETRY directory.
	geometry data and/or files	Geometry files and/or documentation.
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.

H1.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five-digit sol number. There is also a CRUISE sub-directory which contains a sub-directory for a given year. The “year” sub-directory contains ECAM data acquired during the CRUISE phase of the mission for the named year. The following diagram shows a sample portion of the DATA directory structure:



Appendix H2.

MSL ENGINEERING CAMERAS RDR ARCHIVE VOLUME CONTENTS

H2.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson et al., Rev. 4.0, June 15, 2011.
2. Mars Science Laboratory Archive Generation, Validation, and Transfer Plan, J. Crisp and P. Theisinger, JPL D-35281, MSL-214-1333, May 28, 2010.
3. MSL Project Camera & LIBS EDR and RDR Data Products Software Interface Specification (SIS), D. Alexander, R. Deen, JPL D-38107, SIS-SCI006-MSL, Version 3.0, February 27, 2013.

H2.2 Contents, Organization and Naming

The MSL Engineering Cameras RDR Archive is composed of 5 data sets: the Hazard Avoidance Camera (HAZCAM) and Navigation Camera (NAVCAM) reduced image data products, the ECAM terrain mesh image data products, the NAVCAM mosaic image products and the Rover Motion Counter (RMC).

H2.2.1 Identifiers

The following identifiers have been assigned to the HAZCAM and NAVCAM RDR archives by the PDS.

DATA SET ID	DATA SET NAME
MSL-M-HAZCAM-5-RDR-V1.0	"MSL MARS HAZARD AVOIDANCE CAMERA 5 RDR V1.0"
MSL-M-NAVCAM-5-RDR-V1.0	"MSL MARS NAVIGATION CAMERA 5 RDR V1.0"
MSL-M-ECAM-5-RDR-MESH-V1.0	"MSL MARS ENGINEERING CAMERA 5 RDR TERRAIN MESH V1.0"
MSL-M-NAVCAM-5-RDR-MOSAIC-V1.0	"MSL MARS NAVIGATION CAMERA 5 RDR MOSAIC V1.0"
MSL-M-ROVER-6-RDR-RMC-V1.0	"MSL MARS ROVER 6 RDR ROVER MOTION COUNTER V1.0"
INSTRUMENT ID	**INSTRUMENT NAME**
FHAZ_LEFT_<A|B>	"FRONT HAZARD AVOIDANCE CAMERA LEFT STRING <A|B>"
FHAZ_RIGHT_<A|B>	"FRONT HAZARD AVOIDANCE CAMERA RIGHT STRING <A|B>"
RHAZ_LEFT_<A|B>	"REAR HAZARD AVOIDANCE CAMERA LEFT STRING <A|B>"
RHAZ_RIGHT_<A|B>	"REAR HAZARD AVOIDANCE CAMERA RIGHT STRING <A|B>"

NAV_LEFT_<A|B> NAV_RIGHT_<A|B>	"NAVIGATION CAMERA LEFT STRING <A|B>" "NAVIGATION CAMERA RIGHT STRING <A|B>"

VOLUME ID	VOLUME SET NAME
MSLHAZ_1XXX MSLNAV_1XXX	"MSL ENGINEERING CAMERAS REDUCED DATA RECORD"
MSLMNM_1XXX	"MSL ENGINEERING CAMERAS MOSAICS AND TERRAIN MESHES RDR"
MSLRMC_1XXX	"MSL ENGINEERING CAMERAS ROVER MOTION COUNTER REDUCED DATA RECORD"

H2.2.2 Responsibilities

TASK	RESPONSIBLE PARTY
Data products produced by:	JPL/MIPL
Ancillary files and documentation produced by:	MSL Project, Instrument Teams, and PDS
Archive volume assembled by:	JPL/MIPL and PDS
Data and volume validated by:	PDS
Data distributed by:	PDS

H2.2.3 Data Product Sizes and Delivery Rates

PRODUCT	PRODUCT SIZE	PRODUCTION RATE	EXPECTED NUMBER OF PRODUCTS FOR PRIMARY MISSION	EXPECTED TOTAL DATA VOLUME FOR PRIMARY MISSION
HAZCAM RDR NAVCAM RDR ECAM MESH NAVCAM MOSAIC ROVER RMC	TBD	TBD	TBD	TBD

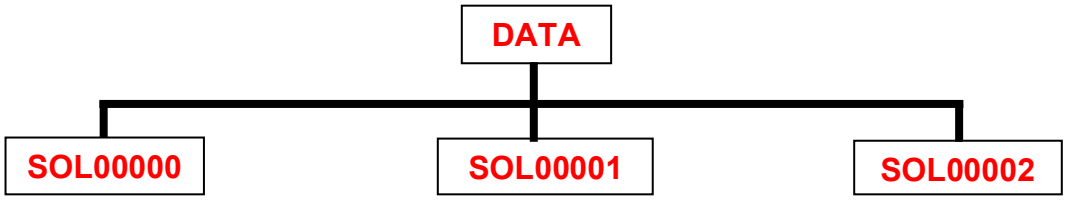
H2.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Information describing the volume content and format.
	ERRATA.TXT	Information describing errors and/or anomalies found on the current or previous volumes.
	HAZ_VOLDESC.CAT or NAV_VOLDESC.CAT or MNM_VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB	**CALINFO.TXT**	A description of the contents of the CALIB directory.
	calibration data and/or files	Image calibration files and/or documentation.
CATALOG	**CATINFO.TXT**	A description of the contents of the CATALOG directory.
	MSL_HAZCAM_RDR_DS.CAT MSL_NAVCAM_RDR_DS.CAT MSL_ECAM_MESH_DS.CAT MSL_NAVCAM_MOSAIC_DS.CAT	Data set catalog objects for the MSL Engineering Camera EDRs. These are high-level descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to understand the data; any applicable coordinate systems, software necessary for the use of the data, and an analysis of the quality and limitations of the data.
	MSL_HAZCAM_INST.CAT or MSL_NAVCAM_INST.CAT	Instrument catalog objects for the MSL Engineering Camera instrument. This is a high-level description of the instrument including scientific objectives, calibration information, operational considerations, a description of the detectors and electronics (and filters and optics, if appropriate), the operational modes, subsystems, and measured parameters.
	MSL_INSTHOST.CAT	A description providing an overview of the MSL rover/spacecraft.
	MSL_MISSION.CAT	A high-level description of the MSL mission.
	ECAM_PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive

		volume and its component data sets.
	ECAM_REF.CAT **MSL_REF.CAT**	Reference catalog object. This is a complete list of references of papers providing further information about the data sets and instrumentation on this volume.
DATA	**DATAINFO.TXT** (This file found only in MSLMNM_1XXX)	A description of the contents of the DATA directory in the Mosaics & Meshes Archive Volume
		Please see "Data Directory Structure" sections below for a description of the DATA directory structures.
DOCUMENT	**DOCINFO.TXT**	A description of the contents of the DOCUMENT directory.
	MSL_CAMERA_SIS.{PDF,LBL}	Data Product Software Interface Specification for the Engineering Camera instruments.
	MSL_EDR_VOLSIS.{PDF,LBL}	Volume Organization Software Interface Specification for the MSL data archive.
	GEOMETRIC_CM.TXT **ODL.TXT** **VICAR2.TXT**	Descriptive files for the Geometric Camera Model and ODL header & VICAR portions of the PDS labels.
	PDSDD.{FUL,LBL} **MSL_LDD.{FUL,LBL}**	PDS Data Dictionary including MSL-specific keyword definitions
EXTRAS	**EXTRINFO.TXT**	A description of the contents of the EXTRAS directory.
	FULL/SOLxxxxx/ **BROWSE/SOLxxxxx/** **THUMBNAIL/SOLxxxxx/** **MASK_DESC_FILES/SOLxxxx/** **ANCILLARY/SOLxxxxx/** **MESHES/SOLxxxxx/PER_XYZ/**	Various resolutions of the browse images. File names are identical to full resolution file names, except that they end in .JPG extension. Also, supplementary files to the main data products.
GEOMETRY	**GEOMINFO.TXT**	A description of the contents of the GEOMETRY directory.
	geometry data and/or files	Geometry files and/or documentation.
INDEX	**INDXINFO.TXT**	A description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.

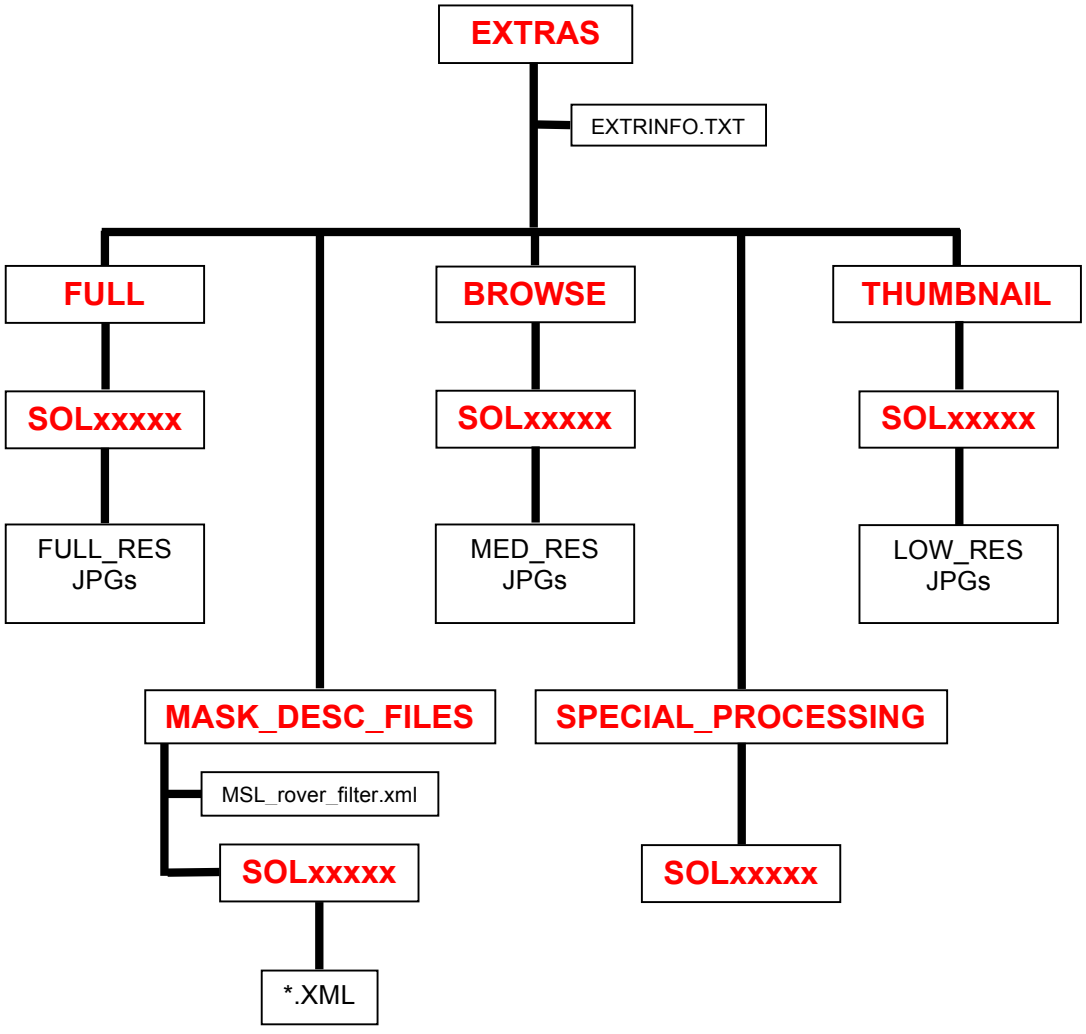
H2.2.4.1 Data Directory Structure, Single Frame RDRs Volume

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five digit sol number. The following diagram shows a sample portion of the DATA directory structure:



H2.2.4.2 Extras Directory Structure, Single Frame RDRs Volume

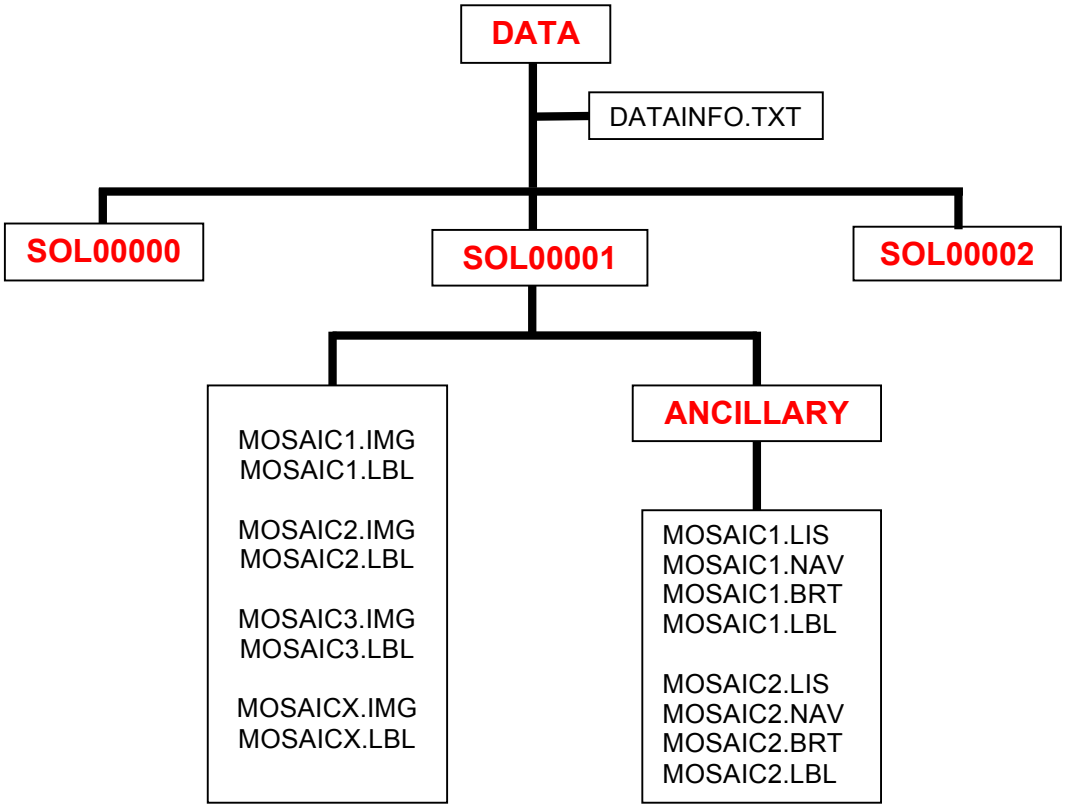
Immediately beneath the EXTRAS directory are sub-directories pertaining to various resolution JPG versions of the main data products as well as MASK_DESC_FILES and SPECIAL_PROCESSING sub-directories containing additional supplementary files. Beneath these are third level sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five digit sol number. The following diagram shows a sample portion of the EXTRAS directory structure:



H2.2.4.3 Data Directory Structure, Mosaics and Meshes Volume

Immediately beneath the DATA directory are sub-directories differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five digit sol number. The data products, consisting of mosaic images and detached PDS labels, are located under these sol sub-directories. Each sol-subdirectory also contains an ANCILLARY sub-directory. The ANCILLARY sub-directory holds additional supplementary files used during mosaic production (See Section 5.2.1.13.3 of the MSL_CAMERA_SIS.PDF for more detail on these files) such as:

- list files (.LIS), which list the names of the component images used to construct the mosaic
- nav files (.NAV), xml formatted files describing the pointing corrections applied to the images, as well as the surface model
- brightness correction files (.BRT), xml formatted files containing information used to correct the brightness and contrast of images in a mosaic relative to one another



H2.2.4.4 Extras Directory Structure, Mosaics and Meshes Volume

Immediately beneath the EXTRAS directory are sub-directories pertaining to various resolution JPG versions of the main data products as well as an ANCILLARY sub-directory, containing additional mosaic supplementary files, and a MESHES sub-directory, containing Terrain Mesh files. Beneath these are third level sub-directories, differentiated on the basis of sol. Each sol sub-directory name represents one Martian sol and begins with the word ("SOL"), followed by a five digit sol number. Beneath the MESHES/SOLxxxxx directory path lie the Unified Mesh files, alongside a PER_XYZ sub-directory which contains additional supplementary Terrain Mesh files. The following diagram shows a sample portion of the EXTRAS directory structure: