PHOENIX PROJECT

Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) Archive Volume Software Interface Specification (SIS)

Version 1.1

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December 10, 2008

Jet Propulsion Laboratory
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Archive Volume
Software Interface Specification (SIS)

VERSION 1.1

JPL D-33250
December 10, 2008

Jet Propulsion Laboratory
California Institute of Technology

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Appendix C – PHX CAMERA SCIENCE RDR ARCHIVE VOLUME CONTENTS

DOCUMENT CHANGE LOG

Change	Date	Affected Portions
Initial Release, Version 1.0	04-14-08	All
Updated versions of Applicable Documents	04-21-08	Section 1.3, Appendices A, B, C
Removed RMC dataset, Corrected SCI DS cat files, Removed BROWSE directories	10-27-08	Appendix A, B, C
Removed SOFTWARE.CAT file from structure	11-10-08	Appendix A
Removed reference to Archive Plan Document	12-10-08	Appendices A, B, C

TBD ITEMS

Section	Description

ACRONYMS AND ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
CODMAC	Committee On Data Management And Computation
DVD	Digital Video Disc
EDR	Experiment Data Record
HTML	HyperText Markup Language
IMG	Image
ISO	International Standards Organization
JPEG, JPG	Joint Photographic Experts Group
JPL	Jet Propulsion Laboratory
MECA	Microscopy, Electrochemistry, and Conductivity Analyser
MIPL	Multi-mission Image Processing Laboratory
NASA	National Aeronautics and Space Administration
NSSDC	National Space Science Data Center
OM	Optical Microscope
OPGS	Operations Product Generation Subsystem
PDF	Adobe® Portable Document Format
PDS	Planetary Data System
RAC	Robotic Arm Camera
RDR	Reduced Data Record
SIS	Software Interface Specification
SOC	Science Operations Center
SSI	Surface Stereoscopic Imager
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 DVD-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 – 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 Phoenix Camera Archives. Typically, these individuals would be software engineers, data analysts, or planetary scientists.

The specifications in this document apply to the OPGS Phoenix Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) standard product archive volumes , Phoenix Camera RDR Mosaics archive volumes, Phoenix Camera RDR Meshes archive volumes, and Phoenix Camera Science RDR archive volumes that are generated by the Phoenix Project.

The Phoenix Camera 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 such as DVDs for long-term preservation. The requirements for these physical copies are described in section 4.

1.2. Content Overview

The Phoenix Camera OPGS EDR and RDR Archive volume sets consist of the Phoenix Camera raw data products, acquired and used during ground operations, and the Phoenix Camera derived data products, respectively. All archives contain documentation and other ancillary material.

The Phoenix Camera raw data products are OPGS EDRs, produced from telemetry data from instruments onboard the Phoenix Project spacecraft. Telemetry data is processed into data records (CODMAC Level 2), with attached dual PDS/VICAR labels, by MIPL of the Jet Propulsion Laboratory. The Phoenix Camera OPGS RDR products are produced from OPGS EDRs for the RAC, SSI and MECA-OM instruments.

MIPL is the producer of all Phoenix Camera OPGS EDR and RDR data records. The instrument science teams are the producers of all Phoenix Camera Science RDR data records. The Phoenix Camera instrument science teams are responsible for assembling all archives, reviewing them in terms of science validity and integrity, and delivering them to the SOC. The SOC is responsible for distributing the assembled archives to the PDS Imaging node. The PDS node is responsible for validating the archives for compliancy of structure and format against PDS specifications.

This Software Interface Specification (SIS) describes the format, content, and generation of the Phoenix Camera 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-C, 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 and S. Slavney, Rev. 3, March 20, 2002.
2. Phoenix Project Archive Generation, Validation and Transfer Plan, R. E. Arvidson and S. Slavney, JPL D-29392, February 28, 2008.
3. Phoenix Project Software Interface Specification (SIS), Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) Data Products, D. Alexander, R. Deen and P. Zamani, JPL D-33231, Version 1.0, April 14, 2008.
4. *Planetary Data System Archive Preparation Guide (APG)*, August 29, 2006, Version 1.1, JPL D-31224.
5. *Planetary Data System Standards Reference*, March 20, 2006, Version 3.7, JPL D-7669, Part 2.
6. ISO 9660-1988, Information Processing - Volume and File Structure of CD-ROM for Information Exchange, April 15, 1988.
7. Universal Disk Format™ Specification, Revision 1.02, August 30, 1996, Optical Storage Technology Association (OSTA).

1.4. Relationships with Other Interfaces

This Archive Volume SIS could be affected by changes to the design of any of the Phoenix Camera standard data products (Applicable Document #3).

2. Archive Volume Contents

This section describes the general contents of the Phoenix Camera 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 Phoenix Camera Archives are organized with each volume set on a separate logical volume (Several small data sets may be stored together on one physical volume, and a particularly large data set may span more than one physical volume). 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	(e.g., PDS Node or Instrument Team)

AAREADME.HTM	Hypertext version of AAREADME.TXT (optional)	PDS Node
AAREADME.LBL	A PDS detached label that describes both AAREADME.TXT and AAREADME.HTM (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	Data provider or 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 Document #3].

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	PDS Node or Data Provider
CUMINDEX.LBL	A PDS detached label that describes CUMINDEX.TAB	PDS Node or Data Provider

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.ASC 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
ARCHSIS.ASC or .HTM	The Archive Volume SIS (this document) as text or hypertext	PDS Node or Data Provider

ARCHSIS.PDF	The Archive Volume SIS (this document) as a PDF file	PDS Node or Data Provider
ARCHSIS.LBL	A PDS detached label that describes both ARCHSIS.TXT(HTM) and ARCHSIS.PDF.	PDS Node
[*.ASC 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	PHX Project
INST.CAT	Instrument information for the PDS catalog	Data Provider
MISSION.CAT	Mission information for the PDS catalog	PHX 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	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. Browse Directory Contents (optional)

The Browse Directory contains reduced-size, easily viewed versions of data products to be used to help identify products of interest. The following files are contained in the Browse Directory.

File Name	File Contents	File Provided By
BROWINFO.TXT	A description of the contents of this directory	PDS Node
browse_image.JPG	Thumbnail size versions of the full resolution image files	Data Provider
browse_image.LBL	A PDS detached label that describes browse_image.JPG	Data Provider

2.11. 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 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 Phoenix Camera Archive Volumes. Data that comprise the Archive will be formatted in accordance with Planetary Data System specifications [Applicable Documents #4 and #5].

3.1. Volume Format

Archive Volumes will be made electronically available via online storage. The volume format is in accordance with ISO 9660 level 1 Interchange Standard or level 2, if any file names are longer than 8.3. [Applicable Documents #6 and #7].

3.2. File Formats

This section describes file formats for the kinds of files contained on Archive Volumes.

3.2.1. 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 Netscape Navigator 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 a proprietary format of Adobe Systems Incorporated that is frequently used for distributing documents. Adobe offers free software, Acrobat Reader, for viewing PDF files.

3.2.2. 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.

3.2.3. PDS Label Format

All data files in the archive have PDS labels as detached files or embedded at the beginning of the file. For examples of PDS labels for each type of data product, see the Data Product SISs [Applicable Document #3].

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).

3.2.4. 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.

3.2.5. 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.

3.2.6. 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 Phoenix Camera science teams will meet the specifications detailed in the Data Product SIS [Applicable Document #3].

The Phoenix Camera OPGS EDRs and RDRs will be generated by MIPL of the Jet Propulsion Laboratory. The Phoenix Camera Science RDRs will be generated by the Phoenix Camera instrument teams. MIPL and the Phoenix Camera instrument teams are responsible for the production and delivery of PDS formatted data, as well as documentation and ancillary files, for archive volume assembly by the instrument teams. The instrument teams will deliver complete, PDS-compliant archive volumes to the SOC which, in turn, will electronically transfer a copy of them to the PDS Imaging Node.

Before final delivery of the archive volumes to NSSDC for deep archive, the PDS Imaging Node will conduct both peer review and validation. Peer review 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 to verify that it adheres to PDS standards and to this Archive Volume SIS.

4.2. Interface Media Characteristics

All volumes in the Phoenix Camera Standard Product Archive conform to ISO 9660 standards [ISO 9660, 1988] and UDF standards [OSTA UDF Specification, Rev. 1.02, 1996].

4.3. Backup and Duplicates

Volume contents shall be stored and made electronically available via online by the Imaging Node. A copy of the archive will be delivered to NSSDC for deep storage.

4.4. Labeling and Identification

Please refer to appendices for instrument specific labeling scheme of archive volumes.

5. Support Staff and Cognizant Persons

5.1. Data Providers

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Max Planck Institute for Solar System Research

Michael Hecht
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Appendix A.

PHX CAMERA EDR AND RDR ARCHIVE VOLUME CONTENTS

A.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson and S. Slavney, Rev. 3, March 20, 2002.
2. Phoenix Project Archive Generation, Validation and Transfer Plan, R. E. Arvidson, S. Slavney, JPL D-29392, February 28, 2008.
3. Phoenix Project Software Interface Specification (SIS) Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) Data Products, D. Alexander, R. Deen and P. Zamani, JPL D-33231, Version 1.0, April 14, 2008.

A.2 Volume Sets

The Phoenix Camera EDR and RDR Archive is composed of five volume sets, described in this appendix. Each volume set consists of data pertaining to one of the SSI, RAC or MECA-OM instruments onboard the Phoenix spacecraft.

A.2.1 Identifiers

DATA SET ID	VOLUME ID	VOLUME SET NAME
PHX-M-SSI-2-EDR-V1.0	PHXSSI_0XXX	PHX SSI EDR
PHX-M-SSI-3-RADIOMETRIC-OPS-V1.0 PHX-M-SSI-4-LINEARIZED-OPS-V1.0 PHX-M-SSI-5-DISPARITY-OPS-V1.0 PHX-M-SSI-5-XYZ-OPS-V1.0 PHX-M-SSI-5-NORMAL-OPS-V1.0 PHX-M-SSI-5-RANGE-OPS-V1.0 PHX-M-SSI-5-ROUGHNESS-OPS-V1.0 PHX-M-SSI-5-REACHABILITY-OPS-V1.0 PHX-M-SSI-5-ANAGLYPH-OPS-V1.0	PHXSSI_1XXX	PHX SSI RDR
PHX-M-RAC-2-EDR-V1.0	PHXRAC_0XXX	PHX RAC EDR
PHX-M-RAC-3-RADIOMETRIC-OPS-V1.0 PHX-M-RAC-4-LINEARIZED-OPS-V1.0 PHX-M-RAC-5-DISPARITY-OPS-V1.0 PHX-M-RAC-5-XYZ-OPS-V1.0 PHX-M-RAC-5-NORMAL-OPS-V1.0 PHX-M-RAC-5-RANGE-OPS-V1.0 PHX-M-RAC-5-ROUGHNESS-OPS-V1.0 PHX-M-RAC-5-REACHABILITY-OPS-V1.0 PHX-M-RAC-5-ANAGLYPH-OPS-V1.0	PHXRAC_1XXX	PHX RAC RDR
PHX-M-OM-2-EDR-V1.0	PHXOM_0XXX	PHX MECA-OM

		EDR

A.2.2 Responsibilities

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

A.2.3 Data Release Dates

EVENT	DATE
Data release schedule:	Please see Applicable Document #2

A.2.4 Volume Structure

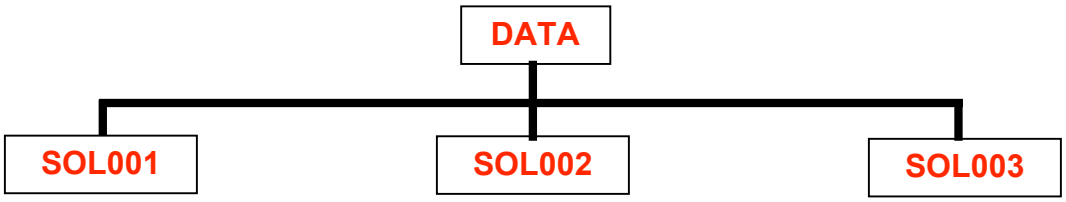
DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Textual information describing the volume content and format.
	ERRATA.TXT	Textual information describing errors and/or anomalies found on the current or previous volumes.
	VOLDESC.CAT	A description of the contents of the archive volume in a human and machine readable format.
CALIB	**CALINFO.TXT**	A textual description of the contents of the CALIB directory.
	calibration data and/or files	Image calibration files.
CATALOG	**CATINFO.TXT**	A textual description of the contents of the CATALOG directory.
	For the SSI OPGS EDR volume set: **SSI_DS.CAT** **For the SSI OPGS RDR volume set:**	Data set catalog objects for the Phoenix Camera EDRs and RDRs. These are detailed textual descriptions including: an overview of the data; descriptions of the primary measured parameters, the processing history, and the data format, ancillary information necessary to

	SSI_RAD_DS.CAT **SSI_LIN_DS.CAT** **SSI_DISP_DS.CAT** **SSI_XYZ_DS.CAT** **SSI_NORM_DS.CAT** **SSI_RANGE_DS.CAT** **SSI_ROUGH_DS.CAT** **SSI_REACH_DS.CAT** **SSI_ANA_DS.CAT** **For the RAC OPGS EDR volume set:** **RAC_DS.CAT** **For the RAC OPGS RDR volume set:** **RAC_RAD_DS.CAT** **RAC_LIN_DS.CAT** **RAC_DISP_DS.CAT** **RAC_XYZ_DS.CAT** **RAC_NORM_DS.CAT** **RAC_RANGE_DS.CAT** **RAC_ROUGH_DS.CAT** **RAC_REACH_DS.CAT** **RAC_ANA_DS.CAT** **For the MECA-OM OPGS EDR volume set:** **OM_DS.CAT**	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.
	One of the following instrument catalog files: **SSI_INST.CAT** **RAC_INST.CAT** **OM_INST.CAT**	Instrument catalog objects for the Phoenix Camera instruments. This is a detailed textual description of the instruments 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.
	INSTHOST.CAT	A textual description providing an overview of the Phoenix spacecraft.
	MISSION.CAT	A detailed description of the Phoenix mission.
	PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.

	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 textual description of the contents of the DOCUMENT directory.
	CAM_EDR_RDR_SIS.{ASC,LBL,PDF}	Data Product Software Interface Specification for the camera instruments (SSI, RAC, MECA-OM).
	VOLSIS.{ASC,LBL,PDF}	Volume Organization Software Interface Specification for the Phoenix Camera data archive.
	GEOMETRIC_CM.TXT	Geometric Camera Model description document pointed to from the PDS labels.
	VICAR2.TXT	VICAR2 description document pointed to from the PDS labels.
	***INST*_CALIB_PLAN.{ASC,LBL,PDF}**	Image calibration plan document for instrument, *INST.*
	***INST*_CALIB_REPORT.{ASC,LBL,PDF}**	Image calibration report document for instrument, *INST.*
INDEX	**INDXINFO.TXT**	A textual description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB}	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.

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 three digit sol number. The following diagram shows the DATA directory structure:



Appendix B.

PHX CAMERA RDR MOSAICS ARCHIVE VOLUME CONTENTS

B.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson and S. Slavney, Rev. 3, March 20, 2002.
2. Phoenix Project Archive Generation, Validation and Transfer Plan, R. E. Arvidson, S. Slavney, JPL D-29392, February 28, 2008.
3. Phoenix Project Software Interface Specification (SIS) Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) Data Products, D. Alexander, R. Deen and P. Zamani, JPL D-33231, Version 1.0, April 14, 2008.

B.2 Volume Sets

The Phoenix Camera RDR Mosaics Archive is composed of one volume set, described in this appendix. The volume set consists of data sets containing the Phoenix Camera RDR Mosaics for the SSI and RAC instruments onboard the Phoenix spacecraft.

B.2.1 Identifiers

DATA SET ID	VOLUME ID	VOLUME SET NAME
PHX-M-SSI-5-MOSAIC-OPS-V1.0 PHX-M-RAC-5-MOSAIC-OPS-V1.0	PHXMOS_0XXX	PHX CAMERA RDR MOSAICS

B.2.2 Responsibilities

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

B.2.3 Data Release Dates

EVENT	DATE
Data release schedule:	Please see Applicable Document #2

B.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Textual information describing the volume content and format.
	ERRATA.TXT	Textual 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 textual description of the contents of the CATALOG directory.
	SSI_MOS_DS.CAT **RAC_MOS_DS.CAT**	Data set catalog objects for the Phoenix Camera RDR mosaics. These are detailed textual descriptions including: an overview of the data, 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.
	SSI_INST.CAT **RAC_INST.CAT**	Instrument catalog objects for the Phoenix Camera instruments. This is a detailed textual description of the instruments 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.
	INSTHOST.CAT	A textual description providing an overview of the Phoenix spacecraft.
	MISSION.CAT	A detailed description of the Phoenix mission.
	PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.
	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 textual description of the contents of the DOCUMENT directory.
	CAM_EDR_RDR_SIS.{ASC,LBL,PDF}	Data Product Software Interface Specification for the camera instruments (SSI, RAC).
	VOLSIS.{ASC,LBL,PDF}	Volume Organization Software Interface Specification for the Phoenix Camera data archive.
	GEOMETRIC_CM.TXT	Geometric Camera Model description document pointed to from the PDS labels.
	VICAR2.TXT	VICAR2 description document pointed to from the PDS labels.
	***INST*_CALIB_PLAN.{ASC,LBL,PDF}**	Image calibration plan document for instrument, *INST.*
	***INST*_CALIB_REPORT.{ASC,LBL,PDF}**	Image calibration report document for instrument, *INST.*
INDEX	**INDXINFO.TXT**	A textual description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB}	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.

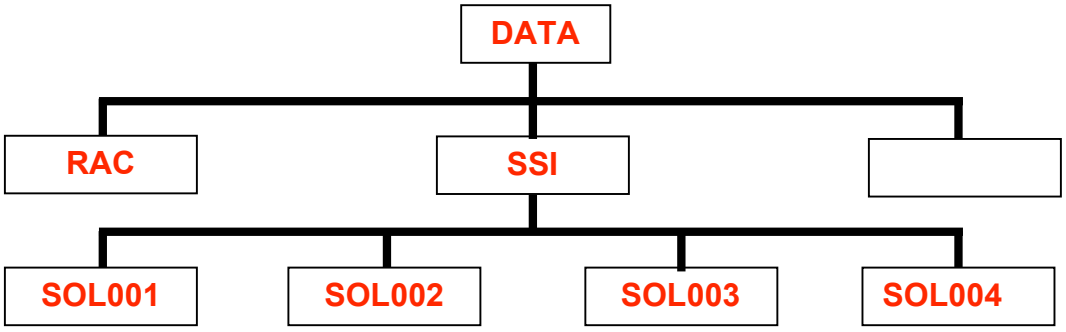
B.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories distinguished on the basis of instrument. The sub-directory names are as follows:

SUB-DIRECTORY NAME	CONTENTS
SSI	The mosaic data files from the SSI Camera.
RAC	The mosaic data files from the RAC Camera.

Immediately beneath the DATA directory are sub-directories differentiated on the basis of instrument. Beneath these instrument sub-directories, the data is further divided by sol. Each sol sub-directory name represents one Martian sol and begins with the word

("SOL"), followed by a three digit sol number. The following diagram shows a sample portion of the DATA directory structure:



Appendix C.

PHX CAMERA SCIENCE RDR ARCHIVE VOLUME CONTENTS

C.1 Applicable Documents

1. Mars Exploration Program Data Management Plan, R. E. Arvidson and S. Slavney, Rev. 3, March 20, 2002.
2. Phoenix Project Archive Generation, Validation and Transfer Plan, R. E. Arvidson, S. Slavney, JPL D-29392, February 28, 2008.
3. Phoenix Project Software Interface Specification (SIS) Camera Experiment Data Record (EDR) and Reduced Data Record (RDR) Data Products, D. Alexander, R. Deen and P. Zamani, JPL D-33231, Version 1.0, April 14, 2008.

C.2 Volume Sets

The MER Camera Science RDR Archive is composed of one volume set, described in this appendix. The volume set consists of data sets containing the Phoenix Camera Science RDRs for the SSI, RAC, and MECA-OM instruments onboard the Phoenix spacecraft.

C.2.1 Identifiers

DATA SET ID	VOLUME ID	VOLUME SET NAME
PHX-M-SSI-3-RADIOMETRIC-SCI-V1.0 PHX-M-SSI-5-IOF-SCI-V1.0 PHX-M-RAC-3-RADIOMETRIC-SCI-V1.0 PHX-M-OM-3-RADIOMETRIC-SCI-V1.0	PHXSCI_0XXX	PHX CAMERA SCIENCE RDRs

C.2.2 Responsibilities

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

C.2.3 Data Release Dates

EVENT	DATE
Data release schedule:	Please see Applicable Document #2

C.2.4 Volume Structure

DIRECTORY	FILE	DESCRIPTION
ROOT	**AAREADME.TXT**	Textual information describing the volume content and format.
	ERRATA.TXT	Textual 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 textual description of the contents of the CATALOG directory.
	SSI_RAD_SCI_DS.CAT **SSI_IOF_SCI_DS.CAT** **RAC_RAD_SCI_DS.CAT** **OM_RAD_SCI_DS.CAT**	Data set catalog objects for the Phoenix Camera "Science" RDRs. These are detailed textual 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.
	SSI_INST.CAT **RAC_INST.CAT** **OM_INST.CAT**	Instrument catalog objects for the Phoenix Camera instruments. This is a detailed textual description of the instruments 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.
	INSTHOST.CAT	A textual description providing an overview of the Phoenix spacecraft.
	MISSION.CAT	A detailed description of the Phoenix mission.
	PERSON.CAT	Personnel catalog object. Contact information for people responsible for producing the science data and archive volume and its component data sets.

	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 textual description of the contents of the DOCUMENT directory.
	CAM_EDR_RDR_SIS.{ASC,LBL,PDF}	Data Product Software Interface Specification for the camera instruments (SSI, RAC).
	VOLSIS.{ASC,LBL,PDF}	Volume Organization Software Interface Specification for the Phoenix Camera data archive.
	GEOMETRIC_CM.TXT	Geometric Camera Model description document pointed to from the PDS labels.
	VICAR2.TXT	VICAR2 description document pointed to from the PDS labels.
	***INST*_CALIB_PLAN.{ASC,LBL,PDF}**	Image calibration plan document for instrument, *INST.*
	***INST*_CALIB_REPORT.{ASC,LBL,PDF}**	Image calibration report document for instrument, *INST.*
INDEX	**INDXINFO.TXT**	A textual description of the contents of the INDEX directory.
	INDEX.{LBL,TAB}	A tabular summary of the data files on this volume.
	CUMINDEX.{LBL,TAB}	A cumulative tabular summary of the data files on all (previous) volumes in this volume set.

C.2.4.1 Data Directory Structure

Immediately beneath the DATA directory are sub-directories distinguished on the basis of instrument. The sub-directory names are as follows:

SUB-DIRECTORY NAME	CONTENTS
SSI	The "Science" data files from the SSI Camera.
RAC	The "Science" data files from the RAC Camera.
OM	The "Science" data files from the MECA-OM Camera.

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