Planetary Science
Data Dictionary Document

A Cooperative Publication of the Planetary Data System project and the Advanced Multimission Operations System

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Jet Propulsion Laboratory
California Institute of Technology

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(Corresponds to Database Build pdscat1r71)

Contents

CHANGE LOG

(Note: All changes have been made relative to Revision D of the document, published July 15, 1996. Revision E was published in August 28, 2002, but was never widely disseminated and is now only extant in a single paper copy. Portions of that document appear less up-to-date than revision D, so the decision was made to make the updates in the current revision relative to the 1996 version.)

Revision	**Section**	**Change**
F	Change Log	Added this Change Log.
	Preface to Revision F	Added.
	Preface	Changed ”modelling” to ”modeling” in the second paragraph.
		Changed ”directed to read” to ”encouraged to read” in the fourth paragraph.
	1.3	Updated PDS URL and PDS Operator contact information.
	1.4	Updated reference to PDS Standards Reference from v3.2 to v3.7.
	1.7	Deleted figure. This was due to a LaTeX formatting issue; we intend to include the figure in future versions of the document.
	2.2.2	Changed the list of reasons for using class words into a bulleted list and moved in from all upper case to mixed case.
		In the CLASS WORD table, added the quaternion class word.
	2.2.3	Added “of“ between “many” and “the” in the first paragraph.
	2.2.5	In the list of Prohibited Words, changed “divissor” to “divisor”.
		In the list of Alternatives to Prohibited Words, changed “wwords” to “words”.
	2.3.3	In the table of numeric data types, under “REAL”, changed “buut” to “but”.
		In the table of numeric data types, under “REAL”, changed “sysstem-specific” to “system-specific”.
	2.3.4	In the first paragraph, last sentence, changed “Foor” to “For”.
	2.3.5	In the first paragraph, dropped the dash “-” after time-of-day.

Revision	Section	Change
	2.6	Changed “coulomb per cubic metter” to “coulomb per cubic meter”.
		Changed “joulee” to “joule”.
		Under “pixel”, changed “TBD” to “picture element”.
	3	Added numerous new keywords.
	A	Under the definition of the “TEXT” standard value type, changed “of.free” to “of free”.
		Numerous new keywords and standard values have been added.
	C	In the ELEMENT DEFINITION OBJECT, for STANDARD_VALUE_TYPE, changed the angle brackets to curly braces.
	H	Corrected the “defining” descriptor from “efining”.

PREFACE TO REVISION F

It has been over ten years since Revision D, the last widely disseminated hard copy version of this document, was published. In the intervening years, the online version of the Planetary Science Data Dictionary (PSDD) has provided the planetary science community with an up-to-date list of the keywords and objects currently used in Planetary Data System (PDS) products. However, in recent years the need for a portable version of the Dictionary has been recognized. In addition, several portions of this document provide useful information not readily available through the online interface.

In an effort to make this portable version of the PSDD available as quickly as possible, a decision was made to publish this document with updates to chapter 3 (“Element Definitions”) and appendices A (“Standard Values”), D (“PDS Structure Objects”), E (“Element Aliases”), F (“Data Element Classified Listings”), and G (“System-Specific Classified Listings”). It is fully recognized that the remaining “static” portions of this document, (chapters 1 and 2, and appendices B, C, and H) are desparately in need of updating, but we decided to make those changes at a later date. This document is hereby presented, with these acknowledged flaws, in the hope of providing added utility and convenience for our user community in employing PDS standards in their data archiving efforts.

PREFACE

This document was originally written as a cooperative publication of the Planetary Data System (PDS) project and the Advanced Multimission Operations System (AMMOS - formerly the Space Flight Operations Center, or SFOC) project and reflects a set of standards for the cataloging of mission science and operations data. The standards were derived initially from PDS documentation. Most of the data element names and definitions were compiled since the mid-1980s by scientists and engineers affiliated with the PDS. These were originally published in the PDS Data Dictionary. Other entries were adopted from the AMMOS Data Dictionary. The effort to compose a Planetary Science Data Dictionary reflects the growing cooperation within the science and mission operations communities.

This master data dictionary database is maintained by the PDS Engineering Node. The current version of the document was created by Elizabeth Rye. However, the heart of this PSDD lies in the data modeling and mission interface work done in the PDS Object Review Committee at the Jet Propulsion Laboratory, with significant guidance provided by the staff at PDS Discipline Nodes. Core ORC members who contributed to the Version 3 PSDD include:

Rosana Borgen
Margaret Cribbs
Marti DeMore
Sue Hess
Steve Hughes
Ron Joyner
Pete Kahn
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Mike Martin
Ruth Monarrez
Betty Sword
Gail Woodward

The document's contents are for the most part automatically-formatted and typeset database reports from a master data dictionary database. This database is used to maintain configuration management over the data dictionary elements.

It is the sincere hope of the producers that the index and the cross-referencing Data Element Classified Listings (Appendix F) will make this document an easily-referenced manual, despite its size and diverse content. Users are encouraged to read the section entitled *Document Format* (Section 1.5) so that they may use only parts of the document that are appropriate, as well as *How to Use This Document* (Section 1.7) for instruction on how to read the entries.

Chapter 1

INTRODUCTION

1.1 PURPOSE

The primary purpose of the Planetary Science Data Dictionary (PSDD) is to allow members of the planetary science community to benefit from standards work done in the area of data product description. The work that supports it is done at the Jet Propulsion Laboratory by individuals who participate in U.S. and international standards efforts. As a result the PSDD may serve as a guide to other data systems still in development, or to data systems that will eventually be connected with either PDS or AMMOS.

The secondary purpose of the PSDD is to serve as an interface agreement between the Planetary Data System (PDS) and the Multimission Ground Data System (MGDS) development effort of AMMOS. It is designed to reflect points of agreement between the two projects, as well as to chronicle applications or decisions on which project representatives agree to a limited set of standards.

1.2 SCOPE

This document will serve as standard reference for data product descriptions contained in the Planetary Data System and Multimission Ground Data System data catalogs. By extension, this means that it will be used in planetary mission operations and in science processing in support of all JPL-managed planetary missions. It also means that it will serve the data systems that exist at PDS Discipline Node sites.

In this edition of the PSDD, data elements describing scientific experiments reflect PDS' extensive experience with imaging and plasma data sets. Over time, as more diverse data sets are handled by the PDS and AMMOS catalogs, data elements germane to other scientific investigations will be incorporated into the dictionary.

1.3 PSDD ONLINE AVAILABILITY

In order to get the most recent entries in the PSDD, users may access our web interface. Our URL is http://pds.nasa.gov/. Please contact the PDS Operator at (818) 393-7165, or via the Internet at pds_operator@jpl.nasa.gov for further information.

1.4 APPLICABLE DOCUMENTS

The following documents define standards or requirements affecting the content of this document:

1. Planetary Data System Standards Reference, JPL D-7669, Part 2, Version 3.7 (March 20, 2006). Available at url http://pds.nasa.gov/.

The following documents provide additional information related to the contents of this document:

2. Space Flight Operations Center Software Interface Specification, module SFOC-1-CDB-Any-Catalog2 (February, 1992).

1.5 DOCUMENT FORMAT

The Planetary Science Data Dictionary is composed of three main sections: standards for naming and describing data elements, an annotated list of data elements, and a set of appendices to show how the elements are used. The core of the dictionary, data elements definitions, are arranged in a single list in alphabetical order. After some debate, the editors opted to show only valid data elements in this main section. Aliases are listed in a separate appendix. However, aliases, data element names, and object names are all listed in the index.

Most of the valid data elements that appear in the document are appropriate for common use – that is, they have been defined in terms that allow them to be used in many systems or disciplines. Others are more appropriate to specific computing environments, data systems, or flight projects. These data elements are identified as such on the status line by a bracketed expression as follows:

CORE_UNIT [ISIS]

The bracketed expressions provide a qualification (or caveat for the user) to indicate that the data element's definition may be applicable only within a certain system's context. Any of the [PDS ...] elements can be used for other applications; prospective users need only work with the PDS to improve or broaden the definition to embrace the new use.

However, the [JPL-AMMOS-SPECIFIC] keywords are exceptions. The AMMOS data elements must not be used in PDS labels because of one or more of the following situations: 1) they are specific to the AMMOS data processing environment, 2) they are still pending approval for inclusion in the common list, or 3) they do not meet PDS nomenclature standards. AMMOS-SPECIFIC DATA ELEMENT NAMES MAY BE USED ONLY ON DATA PRODUCTS THAT ARE NOT BOUND FOR THE PDS. Only in the rarest of cases will PDS aliases be set up to accommodate these terms.

> Note: Although these "qualified" data elements may continue to appear in the PSDD, it is the goal of the dictionary's designers in PDS and AMMOS to have new data elements submitted with definitions general enough to be applicable to any system or mission.

Appendix G contains a listing of data elements classified according to the system in which it finds primary use.

1.6 CHANGE CONTROL PROCEDURE

This document is being published separately by AMMOS and PDS under the same JPL document number. This allows for each project's configuration management and documentation systems to control the document independently. By agreement between AMMOS and PDS updates to this document will be generated on a regular schedule, produced jointly, and submitted separately to their respective documentation systems for publication and distribution.

The common elements (those that do not pertain to a particular data system) are currently defined by agreement between AMMOS and PDS and managed by the PSDD data administrator in the master data dictionary database. Elements that are defined by any other data system may be proposed for inclusion in the dictionary. Those that are acceptable to both systems will be included in the common list. Changes or additions may be submitted to either system.

1.7 HOW TO USE THIS DOCUMENT

This document is intended to serve several purposes. First, it serves as a reference manual to users of the PDS and AMMOS data systems to define the data attributes used to describe data and meta-data. Second, it serves as a reference to producers of data products that are to be included in these systems to aid in the design of data descriptions.

The fifth type of users will be primarily interested in the definitions of data elements. These are presented in a single alphabetical list. This document also provides a general index for terms, and a classified listing where data elements are grouped under headings such as ”Mission/Spacecraft Data Element”, or ”Geometric/Navigation Data Elements.”

The second type – the product producers – are expected to use the document differently. A producer generally knows how to describe a data product, but needs to find the appropriate keywords to represent those attributes in data descriptions. Here too the classified cross-reference may be used to help locate existing keywords. Also provided in this document are standards for defining new keywords. Producers should note that keywords defined on the status line as AMMOS-SPECIFIC may only be used by products unique to AMMOS. More specifically, data products that will exist in both systems are restricted to using common or [PDS...] elements only.

The element definitions sections are presented in a compact listing format that provides a number of descriptive characteristics of the elements and keys to additional information. The following example illustrates the presentation format.

The general data type is one of the standard general data types defined in section 2.3. The standard units symbols are defined in section 2.6 .

Chapter 2

DATA DICTIONARY CONVENTIONS

2.1 GENERAL

The standards included in this section refer specifically to the formation of data element names. Please refer to the PDS Standards Reference for information on the formation of names for Data Sets, Data Set Collections, volume names, file names, etc.

2.2 DATA NOMENCLATURE

The PDS data nomenclature standards define the rules for constructing Data Element and Data Object names. The purpose of establishing a standard syntax for such names is to facilitate user access to data. It is particularly important to use common nomenclature in database management systems, where searches are made covering a variety of disciplines, techniques, and flight projects.

Several organizations have succeeded in developing procedures for assigning standardized names to data elements. The method adopted by the PDS is a derivative of the ”OF language” developed by IBM. It also follows closely the publication *Guide on Data Entity Naming Conventions*, NBS Special Publication 500-149.

The objective of this naming convention is to create an environment wherein any number of individuals, working independently, will select the identical name for the same data item. If achieved, this objective eliminates multiple names for the same item (synonyms), and duplicate names for different elements homonyms). The task of browsing data dictionaries by those who are unfamiliar with its contents would be greatly simplified. There would be greater consistency within the system, thus correlative analyses would be better supported.

The construction rules must yield data names that are easily grasped, are as consistent as possible with the common usage within the science community, and are also logically and methodically constructed, ideally from a predefined dictionary of component terms.

2.2.1 DATA ELEMENT NOMENCLATURE STANDARDS

2.2.1.1 Construction of Data Element Names

Data element name are composed of descriptor words (which describe what is being measured or presented in the value field) and class words (which can identify the data type of the object). BData element names are constructed using these components from left to right, from most specific (the leftmost component) to most generic (the rightmost component).

This document contains the standard data element names used to describe data products. An understanding of the syntax is necessary for two purposes: 1) as an aid in finding an already existing data element and 2) creating a new data element for inclusion in the data dictionary.

All data element names are constructed from standard ASCII alphanumeric characters and the underscore character. No special characters (e.g., "&" "*", etc.) are permitted. The first character of the first component of a data element name must be alphabetic.

The naming syntax is not case-sensitive.[1] For example, the following constructs represent the same data element name:

data_set_parameter_name

DATA_SET_PARAMETER_NAME

Data_Set_Parameter_Name

2.2.1.2 Order of Terms in Element Names

The structure of a data element name is as follows; the most specific component is placed first, the next most specific, etc., terminating with the least specific or most general.

For example, consider a phrase such as "the name of a parameter in a data set'O'. Removing the articles and prepositions yields "name parameter data set". The most general component here is "name", and therefore is placed last in the hierarchy. Next, ask the question "name of what?". The answer is "name of a parameter", which indicates that "parameter" is more specific than "name". The question "what kind of parameter?" is answered by "data set", the most specific component. Therefore, the data object name is data_set_parameter_name.

Other examples include:

"Unit of the data set parameter" translates into
data_set_parameter_unit

"Type of the host of an instrument" translates into
instrument_host_type

Components used in the nomenclature syntax are also categorized in two groups as DESCRIPTORS or CLASS WORDS. The format of a data element name is as follows:

data object name := [DESCRIPTOR(S) connector]* CLASS WORD

where connector is the underscore (_).

The components in the data element name are connected by an underscore (_) unless it is not supported by hardware or software, in which case the connecter is a hyphen (-).

A list of many components in current use can be found in Appendix H of this document.

2.2.1.3 Guidelines for addition of new data element names

Questions frequently arise as to whether to form a new data element, or to find an existing one that works and amplify the definition. Since a data dictionary is a controlled vocabulary, the general rule for administrators is to avoid proliferation of new terms. As a result, the PSDD makes broad use of the Note: convention, whereby system- or

[1] For a discussion of the relevant issues and specific restrictions regarding case sensitivity within AMMOS, p,lease refer to applicable document 2, CDB-Any-Catalog2.

mission-specific qualifications to the general definition are acknowledged. In other cases the base definition itself is expanded to include alternate meanings.

However, addition of a new data element is called for if the domain for the new data element differs from the existing one and/or if that domain is used for validation of the values associated with the data element. For example: data_type has an exhaustive list of machinespecific standard values. However, bit_data_type has only a subset of these. If it matters to the system that the values for the qualified term be restricted (bit_data_types only), then the more specific term should be added. On the other hand, if the values comprise a proper subset of the more general term, and if the online validation for that element is not crucial, the guideline is to continue with the broader term and, if necessary, add a note.

2.2.2 CLASS WORDS

Class words comprise the right most component in a data element name. The class word identifies the basic ”information type” of the data object, where information type includes both the data type (numeric, character, logical) and a size constraint.

The use of a limited set of class words will:

- Reduce the need for users and data processing software to access a data dictionary to parse, interpret, query or display values.
- Add a greater level of structure and consistency to the nomenclature.
- Constrain the selection and use of data values.
- Promote automated operations such as validity checking.
- Promote the development of intelligent software.

If no class word is used as the rightmost component in a data element name the class word ”value” is assumed to be the last component term in a data object name. For example, one would construct MAXIMUM_EMISSION_ANGLE or SOLAR_CONSTANT, as opposed to MAXIMUM_EMISSION_ANGLE_VALUE and SOLAR_CONSTANT_VALUE. When the class word ”count” would be appropriate, the data element name can be abbreviated by making the descriptor word a plural. The plural form implies ”the number of something”, for example, ”the number of bytes in a record”.

For example:

Data Element	**PDS Data Element Name**
number of bytes in record	record_bytes
number of records in file	file_records
number of label records in file	label_records
number of samples in line	line_samples
number of suffix bytes in line	line_suffix_bytes

The following list enumerates the Class Words used at present, along with brief definitions.

CLASS WORD	**CLASS WORD DEFINITION**
count	A numeric value indicating a current total or tally. The class word count is implied by the use of plural descriptor words such as lines, bytes or bits. For examples, LINES = 800 is interpreted as LINE_COUNT = 800.
date	A representation of time in which the smallest unit of measure is a day. The value is expressed in one of the standard forms. Example: PUBLICATION_DATE = 1959-05-30

description	A free-form, unlimited-length character string that provides a description of the item identified. Example: MISSION_DESC provides the description of a mission, as in The Magellan spacecraft was launched from the Kennedy Space Center on May 5, 1989. The spacecraft was deployed from the Shuttle cargo bay.... See also: the class word TEXT. Note: In the PDS, this term is abbreviated to DESC in every instance except when the word is unqualified. Hence, the data element name DESCRIPTION is spelled out, but INSTRUMENT_DESC contains the abbreviation.
direction	TBD
flag	A boolean condition indicator, limited to two states. Example: PLANETARY_OCCULTATION_FLAG = Y
format	A specified or predetermined arrangement of data within a file or on a storage medium.
group	Names a collection or aggregation of elements. Example: ALT_FLAG_GROUP
id	A shorthand alphanumeric identifier. In some cases, a notation representing a shortened name of a NAME. See abbreviation standard. See also: 'name'. Example: SPACECRAFT_ID = VG1
mask	An unsigned numeric value representing the bit positions within a value. Example: SAMPLE_BIT_MASK = 2#00011111#
name	A literal value representing the common term used to identify an element. See also: 'id'. Example: SPACECRAFT_NAME = MAGELLAN
note	A textual expression of opinion, an observation, or a criticism; a remark.
number	A quantity associated with a NAME. Example: START_SAMPLE_NUMBER = 5
quaternion	TBD
range	Numeric values which identify the starting and stopping points of an interval. Note: the use of the word 'distance' supersedes the use of the word 'range' as a measure of linear separation. See: 'distance'. Example: IRAS_CLOCK_ANGLE_RANGE
ratio	The relation between two quantities with respect to the numberof times the first contains the second. Example: DETECTOR_ASPECT_RATIO
sequence	1) an arrangement of items in accordance with some criterion that defines their spacewise or timewise succession; 2) an orderly progression of items or operations in accordance with some rule, such as alphabetical or numerical order.
set	A collection of items having some feature in common or which bear a certain relation to one another, e.g. all even numbers.
summary	An abridged description. Example: SCIENTIFIC_OBJECTIVES_SUMMARY
text	A free-form, unlimited length character string that represents the value of a data element. Example: ADDRESS_TEXT provides the value of a data element. Example: ADDRESS_TEXT provides the value of an address, such as 4800 Oak Grove Dr.\nPasadena, CA 91109. In contrast, ADDRESS_DESC would describe an address such as 'an address consists of a street, city, state, and zip code'. See also: the class word DESCRIPTION.

time	A value that measures the point of occurrence of an event expressed in date and time in a standard form. Example: START_TIME = 1987-06-21T17:30:30.000
type	A literal that indicates membership in a predefined class. See: standard values for data elements. Example: TARGET_TYPE = PLANET
unit	A determinate quantity adopted as a standard of measurement.
value	The default class word for data element names not terminated with a class word. It represents the amount or quantity of a data element. For example, SURFACE_TEMPERATURE = 98.6 would be interpreted as SURFACE_TEMPERATURE_VALUE = 98.6
vector	A quantity that has both length and direction which are independent of both the units and of the coordinate system in which each are measured. The vector direction is uniquely defined in terms of an ordered set of components with respect to the particular coordinate system for which those components have been defined.

2.2.3 DESCRIPTOR WORDS

There are two sources from which to select a descriptor word: the descriptor word list in this section, which contains definitions for a limited number of words, and the component list (Appendix H), which enumerates many of the Descriptor and Class words that are in current use.

If no term in either of the two lists is deemed appropriate for a new data element, the data producer shall construct a new data name and submit it to the PDS for review.

Examples of descriptor words include angle, altitude, location, radius and wavelength.

For descriptor words of a scientific nature (as opposed to the computer systems-oriented words such as "bits"), the definitions are intended to convey the meaning of each word within the context of planetary science, and thus to facilitate the standardization of nomenclature within the planetary science community.

Certain descriptor words may have more than one meaning, depending upon the context in which they are used. It is believed that it is appropriate to include these words and their (multiple) definitions in the list, and that the context will suggest which definition is applicable in a given case.

In some cases (such as "elevation"), the example given for the descriptor word may contain just the word itself. In general, however, the descriptor word is one of several components of a data element's name.

Plural Descriptor Words

Plural descriptor words are used to indicate "count of" or "number of" in data object names (e.g., "sample_bits" rather than "number_of_bits_in_sample").

DESCRIPTOR WORD	DESCRIPTOR WORD DEFINITION
albedo	Reflectivity of a surface or particle. Example: BOND_ALBEDO
altitude	The distance above a reference surface measured normal to that surface. Altitudes are not normally measured along extended body radii, but along the direction normal to the geoid; these are the same only if the body is spherical. See also: 'elevation', 'height.' Example: SPACECRAFT_ALTITUDE

angle	A measure of the geometric figure formed by the intersection of two lines or planes. Definitions for data element names containing the word 'angle' should include origin and relevant sign conventions where applicable. Example: MAXIMUM_EMISSION_ANGLE
axis	A straight line with respect to which a body or figure is symmetrical. Example: ORBITAL_SEMIMAJOR_AXIS
azimuth	One of two angular measures in a spherical coordinate system. Azimuth is measured in a plane which is normal to the principal axis, with increasing azimuth following the right hand rule convention relative to the positive direction of the principal axis. PDS adopts the convention that an azimuth angle is never signed negative. The point of zero azimuth must be defined in each case. Example: SUB_SOLAR_AZIMUTH
bandwidth	The range within a band of wavelengths, frequencies or energies.
base	A quantity to be added to a value.
bits	A count of the number of bits within an elementary data item. Examples: SAMPLE_BITS
bytes	A count of the number of bytes within a record, or within a subcomponent of a record. Example: RECORD_BYTES
channel	A band of frequencies or wavelengths.
circumference	The length of any great circle on a sphere.
coefficient	A numeric measure of some property or characteristic.
columns	A count of the number of distinct data elements within a row in a table.
component	1) The part of a vector associated with one coordinate. 2) A constituent part. Example: VECTOR_COMPONENT_1
constant	A value that does not change significantly with time.
consumption	The usage of a consumable. Example: INSTRUMENT_POWER_CONSUMPspaTION
contrast	The degree of difference between things having a comparable nature. Example: MAXIMUM_SPECTRAL_CONTRAST
declination	An angular measure in a spherical coordinate system, declination is the arc between the Earth's equatorial plane and a point on a great circle perpendicular to the equator. Positive declination is measured towards the Earth's north pole, which is the positive spin axis per the right hand rule; declinations south of the equator are negative. The Earth mean equator and equinox shall be as defined by the International Astronomical Union (IAU) as the 'J2000' reference system unless noted as the 'B1950' reference system. See also: 'right_ascension'.
density	1) The mass of a given body per unit volume. 2) The amount of a quantity per unit of space. Example: MASS_DENSITY

detectors	A count of the number of detectors contained, for example, in a given instrument.
deviation	Degree of deviance.
diameter	The length of a line passing through the center of a circle or a circular NAME. Example: TELESCOPE_DIAMETER
distance	A measure of the linear separation of two points, lines, surfaces, or NAMEs. See also 'altitude', which refers to a specific type of distance. The use of the word 'distance' supersedes the use of the word 'range' as a measure of linear separation. See also: 'range'. Example: SLANT_DISTANCE
duration	A measure of the time during which a condition exists. Example: INSTRUMENT_EXPOSURE_DURATION
eccentricity	A measure of the extent to which the shape of an orbit deviates from circular. Example: ORBITAL_ECCENTRICITY
elevation	1) The distance above a reference surface measured normal to that surface. Elevation is the altitude of a point on the physical surface of a body measured above the reference surface; height is the distance between the top and bottom of a NAME. 2) An angular measure in a spherical coordinate system, measured positively and negatively on a great circle normal to the azimuthal reference plane, and positive elevation is measured towards the direction of the positive principal axis. See also: 'azimuth'.
epoch	A specific instance of time selected as a point of reference. Example: COORDINATE_SYSTEM_REFERENCE_EPOCH
error	The difference between an observed or calculated value and a true value. Example: TELESCOPE_T_NUMBER_ERROR
factor	A quantity by which another quantity is multiplied or divided. Example: SAMPLING_FACTOR
first	An indication of the initial element in a set or sequence. As with minimum and maximum, the values in the set may be out of order or discontinuous. For examples of the use of range-related terms, please see the following section.
flattening	A measure of the geometric oblateness of a solar system body, defined as the ratio of the difference between the body's equatorial and polar diameters to the equatorial diameter, or '(a-c)/a'.
fov	(field_of_view) The angular size of the field viewed by an instrument or detector. Note that a field may require multiple field_of_view measurements, depending upon its shape (e.g., height and width for a rectangular field). Example: HORIZONTAL_FOV
fovs	A count of the number of different fields of view characteristic of an instrument or detector.

fraction	The non-integral part of a real number. See also: 'base'.
frequency	The number of cycles completed by a periodic function in unit time.
gravity	The gravitational force of a body, nominally at its surface. Example: SURFACE_GRAVITY
height	The distance between the top and bottom of an NAME. Example: SCALED_IMAGE_HEIGHT
images	A count of the number of images contained, for example, in a given mosaic. Example: MOSAIC_IMAGES
inclination	The angle between two intersecting planes, one of which is deemed the reference plane and is normally a planet's equatorial plane as oriented at a specified reference epoch. Example: RING_INCLINATION
index	An indicator of position within an arrangement of items.
interval	1) The intervening time between events. 2) The distance between points along a coordinate axis. See also: 'duration'. Example: SAMPLING_INTERVAL
last	An indication of the final element in a set or sequence. As with minimum and maximum, the values in the set may be out of order or discontinuous. For examples of the use of range-related terms, please see the following section.
latitude	In a cylindrical coordinate system the angular distance from the plane orthogonal to the axis of symmetry. See also: 'longitude'. Example: MINIMUM_LATITUDE
length	A measured distance or dimension. See also: 'height', 'width'. Example: TELESCOPE_FOCAL_LENGTH
level	The magnitude of a continuously varying quantity. Example: NOISE_LEVEL
line	1) A row of data within a two-dimensional data set; 2) A narrow feature within a spectrum.
lines	1) A count of the number of data occurrences in an image array; 2) Any plural of 'line'.
location	The position or site of an NAME.
longitude	In a cylindrical coordinate system, the angular distance from a standard origin line, measured in the plane orthogonal to the axis of symmetry. (See also: 'latitude'.) Example: MAXIMUM_LONGITUDE
mass	A quantitative measure of a body's resistance to acceleration. Example: INSTRUMENT_MASS

maximum	An indicator of the element in a range that has the greatest value, regardless of the order in which the values are listed or stored. For example, in the set 4,5,2,7,9,3, the minimum is 2, the maximum is 9. The use of minimum and maximum, as with first and last, implies that the set may be out of order or discontinuous. For examples of the use of range-related terms, please see the following section.
minimum	An indicator of the element in a range that has the least value, regardless of the order in which the values are listed or stored. For example, in the set 4,5,2,7,9,3, the minimum is 2, the maximum is 9. The use of minimum and maximum, as with first and last, implies that the set may be out of order or discontinuous. For examples of the use of range-related terms, please see the following section.
moment	The product of a quantity (such as a force) and the distance to a particular point or axis. Example: MAGNETIC_MOMENT
obliquity	Angle between a body's equatorial plane and its orbital plane.
parameter	A variable. Example: MAXIMUM_SAMPLING_PARAMETER
parameters	A count of the number of parameters in a given application. Example: IMPORTANT_INSTRUMENT_PARAMETERS
password	An alphanumeric string which must be entered by a would-be user of a computer system in order to gain access to that system.
percentage	A part of a whole, expressed in hundredths. Example: DATA_COVERAGE_PERCENTAGE
period	The duration of a single repetition of a cyclic phenomenon or motion. Example: REVOLUTION_PERIOD
points	A count of the number of points (i.e., data samples) occurring, for example, within a given bin. Example: BIN_POINTS
pressure	Force per unit area. Example: MEAN_SURFACE_ATMOSPHERIC_PRESSURE
radiance	A measure of the energy radiated by a NAME. Example: SPECTRUM_INTEGRATED_RADIANCE
radius	The distance between the center of and a point on a circle, sphere, ellipse or ellipsoid. Example: MEAN_INNER_RADIUS
rate	The amount of change of a quantity per unit time. Example: NOMINAL_SPIN_RATE
records	A count of the number of physical or logical records within a file or a subcomponent of a file. Example: FILE_RECORDS
resolution	A quantitative measure of the ability to distinguish separate values. Example: SAMPLING_PARAMETER_RESOLUTION

right ascension	The arc of the celestial equator between the vernal equinox and the point where the hour circle through the given body intersects the Earth's mean equator reckoned eastward, in degrees. The Earth mean equator and equinox shall be as defined by the International Astronomical Union (IAU) as the 'J2000' reference system unless noted as the 'B1950' reference system. Note: In the PDS, this term is abbreviated to RA in most instances, except when the term is unqualified. Hence, the data element name RIGHT_ASCENSION is spelled out, but other terms referring to specific right ascensions contain the abbreviation.
rows	A count of the number of data occurrences in a table.
samples	A count of the number of data elements in a line of an image array or a set of data. Example: SEQUENCE_SAMPLES
scale	A proportion between two sets of dimensions. Example: MAP_SCALE
start	An indication of the beginning of an activity or observation. For examples of the use of range-related terms, please see the following section.
stop	An indication of the end of an activity or observation. For examples of the use of range-related terms, please see the following section.
temperature	The degree or intensity of heat or cold as measured on a thermometric scale. Example: MEAN_SURFACE_TEMPERATURE
title	A descriptive heading or caption. Example: SEQUENCE_TITLE
transmittance	The ratio of transmitted to incident energy. Example: TELESCOPE_TRANSMITTANCE
wavelength	The distance that a wave travels in one cycle. Example: MINIMUM_WAVELENGTH
width	The distance between two sides of a NAME. See also: 'height', 'length'. Example: SCALED_IMAGE_WIDTH

2.2.4 RANGE-RELATED DATA ELEMENT COMPONENTS – FIRST, LAST, START, STOP, MINIMUM, and MAXIMUM

The PDS recommends that users employ one of three pairs of descriptor words to indicate the bounds of a range. These three pairs are first/last, start/stop, and minimum/maximum.

The use of minimum and maximum is the easiest to distinguish from the others. These words should be used to indicate the least and greatest values in a numeric range, regardless of the order to the elements in a set. Hence, in the set {2,5,1,7,4}, the minimum would be 1, and the maximum 7.

Start and stop allow data suppliers to indicate the bounds of a phenomenon that has some kind of motion in time or space. This is the only pair of words that can imply a contiguous, increasing order to the values within a range.

At times data suppliers wish to indicate the first and last occurrence of a phenomenon, regardless of the primary ordering attribute. Consider the following table of image attributes:

1	2	3	4	(picno)

22	13	42	87	(latitude)
03:05	07:15	01:32	16:47	(time)

These image products are in picno order. Each has center latitude and a time associated with it. To indicate the picno range it would make sense to say start_picno, stop_picno. Latitude may be indicated in two ways:

minimum_latitude	=	13	and, if it matters,
first_latitude	=	22	

Time can be indicated likewise:

start_time	=	"1992-123T01:32"	and, if it matters,
first_time	=	"1992-123T03:05"	

In this scheme, the terms first and last end up serving to indicate placement of secondary attributes – ones that do not constitute the primary ordering attribute.

2.2.5 PROHIBITED WORDS

The words in the Prohibited Words list aare not to be used as descriptor words. For each word, the list explains why the word was not included in the Descriptor Words list and providees an alternative that is a recognized PDS descriptor word.

Formerly used (or proposed) descriptor words which have been superceded by other words are also enumerated in the Prohibited Words list.

PROHIBITED WORD	ALTERNATIVES
begin	See the descriptor words: start, first, or minimum.
code	Use 'id'.
comment	See the class words: note, description, or text.
date/time	Please use 'time' alone when naming fields that indicate either both date and time information, or time information alone. Use 'date' alone in data elements that only indicate date information.
definition	Use 'description'.
divisor	Use 'factor'.
end	See the descriptor words: 'stop', 'last', 'minimum'. See the descriptor words: 'stop', 'last', 'minimum'.
field of view	Use 'fov'.
identification	Use 'id'.
increment	Use 'interval'.
indicator	Use 'id' or 'state'.
information	Use 'description'.
multiplier	Use 'factor'.

periapsis	Use 'closest_approach'.
program	Please use this term only in reference to software, not in reference to missions or projects.
slant range	Use 'slant distance'.

2.2.6 ABBREVIATION RULES

The maximum length of a data element name is 30 characters. Names must be limited 30 characters because of the limitations of the software engineering tools used by PDS. There are instances, therefore, when it becomes necessary to abbreviate terms within a name in order to comply with this limit.

Construction of Terse Data Element Names

Terse names are sometimes required for use in processing environments where names are restricted in length to 7, 8, 10, or 12 characters. The terse name for a given data element is based upon the "formal" full name of the element. A standard list of twelve-character terse names for the data elements in the PDS Catalog is maintained in the online data dictionary along with the list of the elements' thirty-character full names. This terse name list is intended as a reference for use by database implementors at the PDS Nodes and by other PDS developers.

Rules

1. Abbreviate only if necessary to fit a name within the character limit.
2. There may be multiple allowable abbreviations for a number of terms. This is to support the construction of terse names of varying length (i.e., 12, 8, or even 6 characters), while maintaining maximum readability. Each abbreviation, however, will be unique and correspond to one and only one full word.
3. READABILITY is the primary goal.
4. Use the component list abbreviations in Appendix H. Some words are always abbreviated. If more than one form is available, the longest one which will fit should be used first, subject to rule 7, below.
5. Abbreviations are constructed only for root words.
6. Plural descriptor words are given the root words abbreviation followed by an s.
7. Other words with the same root (such as operations and operational) are given the same abbreviation.
8. When abbreviation is necessary, the most important word in the element name should be preserved in the longest state.
9. In elements with more than three words, a word can be left out of the terse name if clarity is preserved.
10. Connector words such as ”or” and ”from” can be dropped.
11. The first letter of the terse name must be the same as the first letter of the full element name. First letters of abbreviations do not have to follow this rule unless the abbreviation begins the terse name.
12. Words containing four letters are left as four letters unless it is necessary, due to length considerations, to further abbreviate them. Longer words may or may not be shortened in all cases, depending primarily on frequency of use and the availability of a clear abbreviation.
13. When the component term ”description” is used in the construction of terse names always use the abbreviation ”desc,” except when the term ”description” is used alone.

2.3 DATA TYPE STANDARDS

In order to enhance the compatibility of the PSDD with other projects and data systems, a method for specifying the general (non-implementation dependent) data type of each data element is needed, as well as a non-ambiguous method for representing data types in written documentation. This standard is intended to meet these needs.

The following list of general data types conforms with ISO and JPL standards and is available for use. Currently, only a subset of these terms is used, i.e., CHARACTER, INTEGER, REAL, TIIME, DATE, and CONTEXT DEPENDENT.

Data Types Available for Use

CHARACTER*
- ALPHABET
- ALPHANUMERIC

NUMERIC
- INTEGER*
- REAL*
- NON DECIMAL*

TIME*
- DATE*

CONTEXT DEPENDENT*

*Marked types are those in current use by PDS or AMMOS.

2.3.1 CHARACTER Data Type

The CHARACTER data type is provided to represent arbitrary ASCII character strings particularly values that cannot be represented as NUMERIC or TIME. CHARACTER data include both text strings and literal values. CHARACTER values may include any alphabetic (A-Z, a-z) or numeric (0-9) ASCII characters and the underscore character without being quoted. If other characters are to be used or if the value is to include whitespace (defined as any of: space character, horizontal or vertical tab character) the value shall be quoted, using the single or double quotation marks.

PDS and AAMMOS labeling conventions dictate that double quotation marks are always used in unlimited-length text fields. Quoted phrases within a text field are delimited with single quotation marks (apostrophes).

For example, the MISSION_DESC definition would read:

MISSION_DESC = "The Magellan spacecraft was launched from the Kennedy Space Center on May 5, 1989. The spacecraft was deployed from the Shuttle cargo bay after the Shuttle achieved parking orbit...."

2.3.2 INTEGER and REAL Data Types

The INTEGER and REAL data types encompass all values that can be represented as a single real number (imaginary numbers must currently be represented using two separate keyword statements where the imaginary nature of the number must be conveyed in the definition of the keywords). Detailed specifications for these are defined in ISO 6093 as NR1 and NR2, respectively. Note that these specifications are hierarchical such that NR2 includes all of NR1. Thus an attribute defined as a REAL data type may have values expressed as REAL or INTEGER with equal validity.

2.3.3 LENGTH AND RANGE SPECIFICATIONS

Since the unit of measurement and the maximum length or range associated with a data element are also critical to the correct usage of the element, a standard has been adopted for specifying these attributes. When defining a new data element or including a non-standard element in a data set, the following attributes shall be supplied.

GENERAL_DATA_TYPE
UNIT
VALID_MINIMUM
VALID_MAXIMUM
MINIMUM_LENGTH
MAXIMUM_LENGTH

If the general data type is INTEGER or REAL, VALID_MINIMUM and VALID_MAXIMUM refer to the minimum and maximum values valid for the field. Alternately, if the data type is CHARACTER or TIME, MINIMUM_LENGTH and MAXIMUM_LENGTH denotes the number of characters permissible for the value. The two fields that are not applicable to the data type shall be given values of ”N/A”.

Example:

GENERAL_DATA_TYPE	= CHARACTER
UNIT	= “N/A”
MINIMUM_LENGTH	= 23
MAXIMUM_LENGTH	= 23
VALID_MINIMUM	= “N/A”
VALID_MAXIMUM	= “N/A”

This example illustrates also that if the MINIMUM_ and MAXIMUM_LENGTH fields are identical, the value is the required length for the field, i.e., no more, and no foewer characters are permitted in values.

In documentation a shorthand shall be used:

CHARACTER(23, 23)	(23-character input is required)
CHARACTER(6, 10)	(input must have no fewer than 6, or more than 10 chars)
CHARACTER(60)	(60-character maximum length – no minimum length)
CHARACTER	(an unlimited-length, text field is indicated)

For numeric data types:

INTEGER(1, 100)	(minimum value = 1, maximum value = 100)
INTEGER(<=360)	(minimum value = 0, maximum value = 360)
INTEGER	(the minimum and maximum is not applicable as far as the data are concerned, but the numeric implementation of “not applicable” depends upon the system-specific data type assigned in the host database. In the PDS, the system maximum and minimum integer values are reserved to represent N/A and UNK for INTEGERs.)
REAL(-90, 180)	(minimum range of valid entries lies between -90 and 180)
REAL(<=1000)	(minimum = N/A, maximum = 1000)
REAL	(the minimum and maximum is not applicable as far as the data are concerned, but the numeric implementation of “not applicable” depends upon the system-specific data type assigned in the host database. In the PDS, the values $+-1.E32$ are reserved to represent N/A and UNK for REALs.)

2.3.4 NON DECIMAL Data Type

Non-decimal values shall be represented in either binary, octal or hexadecimal using the NON DECIMAL data type. This data type consists of a decimal integer radix (either 2, 8, or 16) followed by a number string expressed in appropriate ASCII characters and enclosed in # symbols. The negative value shall be represented using a minus sign before the number string and after the first #. Binary values shall be interpreted as positive and uncomplemented. Because it may be useful to embed spaces in long number strings, spaces are allowed anywhere within the representation and will be ignored. For example, the string, 2#1001# represents the decimal value 9.

Non-decimal values are intended to be used to represent bit masks and other bit patterns associated with a specific computing environment. As such, it is inadvisable for a cataloguing system to interpret and/orr store them according to a numeric scheme, since this may significantly change the pattern of bits, and may preclude the retrieval of the original string. It is recommended that catalog interpreters store non-decomal values as character strings. In some cases, users may wish to query a system according to the numeric value of a non-decimal entry. To allow this, systems may be configured to store the decimal value in addition to the string value.

In this light, although the non-decimal type is defined as a numeric subtype it should not be treated solely as a numeric, but rather as a special implementation rule for string values.

2.3.5 TIME Data Type

All event time attributes shall measure time in Universal Time Coordinated (UTC) unless specifically defined otherwise. Note that it is generally ambiguous to label data with a time-of-day without including a date, and so the TIME type shall always include both the date and UTC time.

Event times shall be represented in the ISO/CCSDS/JPL standard form as follows (brackets [] enclose optional fields):

YYYY-MM-DDThh:mm:ss[.fff] -or- YYYY-DDDThh:mm:ss[.fff]

where:

YYYY	Represents the year (0001 to 9999)
-	Is a required delimiter between date fields
MM	Represents the month (01 to 12)
DD	Represents the day of month (01 to 28, 29, 30 or 31)
DDD	Represents the day of year (001 to 365 or 366)
T	Is a required delimiter between date and time
hh	Represents the UTC hour (00 to 23)
:	Is a required delimiter between time fields
mm	Represents the UTC minute (00 to 59)
ss	Represents UTC whole seconds (00 to 60)
fff	Represents fractional seconds, from one to three decimal places.

The year-month-day and year-day-of-year formats are fully equivalent and interchangeable. For more information regarding date/times, refer to the Date/Time Format standard in the PDS Standards Reference. For event times that require only the date, the following subset is defined as the subtype DATE (where field definitions are the same as above):

YYYY-MM-DD -or- YYYY-DDD

Spacecraft clock (SCLK) values are not considered to be the same as time since they follow different formation rules and have a different semantic meaning. SCLK values shall be represented using a CHARACTER data type. For more information regarding dates, refer to the Date Format standard in the PDS Standards Reference.

2.3.6 CONTEXT DEPENDENT Data Type

The PDS has added CONTEXT DEPENDENT to the list of data types in order to accommodate situations in which data elements take on the data type of the data objects they help to describe. A classic example is the data element MISSING, used to indicate the value inserted into a data object to flag missing telemetry data. In an integer data field, the data type of MISSING needs to be INTEGER. In floating point data fields, the missing value must be REAL, and so on. Since this data element, and the others classified as context dependent, can be character as well as numeric values, the PSDD indicates that the data type can vary.

2.3.7 Data Types and Concerns Not Addressed by this Standard

Since the precision of a number is hard to codify, that specification shall be included in the list of formation rules for a data element, not in the GENERAL_DATA_TYPE. Data Set specific types such as BIT_STRING are not included in the GENERAL_DATA_TYPE domain. Such data types are better represented in the DATA_TYPE attribute that appears iin the actual data structure objects.

Imaginary numbers are left in the realm of local implementation. System managers might choose to represent imaginary numbers as two real expressions, or as aggregate, complex expressions.

2.4 STANDARD VALUES

A general description of the conventions used to categorize standard values may be found at the beginning of Appendix A. A brief, additional appendix lists standard values particular to the AMMOS data base.

2.5 SPECIAL VALUES

The Object Definition Language used to express keyword=value relationships requires that there always be some value on the right-hand side of an expression. However, cases frequently arise in which a value is not forthcoming either because none is applicable or known at the time the statement is expressed. The special token values“N/A”, and “UNK” are provided for situations. [At the time of this writing, formal definitions of these values, and the token NULL are still being established.]

2.6 UNITS OF MEASUREMENT

The following table defines the set of standard units and symbols based on the Systeme Internationale and amplified by the PDS.

For the standards governing this list of units of measurement, please refer to the PDS Standards Reference.

Unit Name	**Symbol**	**Measured Quantity**
TBD	localday/24	TBD
ampere	A	electric current, magnetomotive force
ampere per meter	A/m	magnetic field strength
ampere per square meter	A/m**2	current density
arcsecond	arcsecond	angular diameter
bar	bar	pressure
becquerel	Bq	activity (of a radionuclide)
bits per pixel	b/pixel	

bits per second	b/s	data rate
candela	cd	luminous intensity
candela per square meter	cd/m**2	luminance
coulomb	C	electric charge, quantity of electricity
coulomb per cubic meter	C/m**3	electric charge density
coulomb per kilogram	C/kg	exposure (x and y rays)
coulomb per square meter	C/m**2	electric flux density
cubic meter	m**3	volume
cubic meter per kilogram	m**3/kg	specific volume
day	d	time
decibel	dB	signal strength
degree	deg	plane angle
degree Celsius	degC	temperature
degree per second	deg/s	angular velociity
farad	F	capacitance
farad per meter	F/m	permittivity
gram per cubic centimeter	g/cm**3	mass density
gray	Gy	absorbed dose, specific energy imparted
gray per second	Gy/s	absorbed dose rate
henry	H	inductance
henry per meter	H/m	permeability
hertz	Hz	frequency
hour	h	time
joule	J	work, energy, quantity of heat
joule per cubic meter	J/m**3	energy density
joule per kelvin	J/K	heat capacity, entropy
joule per kilogram	J/kg	specific energy
joule per kilogram kelvin	J/(kg.K)	specific heat capacity, specific entropy
joule per mole	J/mol	molar energy
joule per mole kelvin	J/(mol.K)	molar entropy, molar heat capacity
joule per sq. meter per second	J/(m**2)/s	radiance
joule per tesla	J/T	magnetic moment
kelvin	K	thermodynamic temperature
kilogram	kg	mass
kilogram per cubic meter	kg/m**3	mass density (density)
kilometer	km	length
kilometer per pixel	km/pix	map scale
kilometers per second	km/s	speed
kilometers squared	km**2	area
lumen	lm	luminous flux
lux	lx	illuminance
meter	m	length
meter per second	m/s	speed, velocity
meter per second squared	m/s**2	acceleration
meters per pixel	m/pixel	
micrometer	micron	length
microwatts	uW	power, radiant flux
millimeter	mm	length
millisecond	ms	time
minute	min	time
mole	mol	amount of substance
mole per cubic meter	mol/m**3	concentration (of amount of substance)
nanometer	nm	length
nanotesla	nT	magnetic flux density

newton	N	force
newton meter	N.m	moment of force
newton per meter	N/m	surface tension
newton per square meter	N/m**2	pressure (mechanical stress)
no unit of measurement defined	none	NULL
ohm	ohm	electric resistance
pascal	Pa	pressure, stress
pascal second	Pa.s	dynamic viscosity
pixel	pixel	picture element
pixel per degree	pix/deg	map scale
pixels per line	p/line	
radian	rad	plane angle
radian per second squared	rad/s**2	angular acceleration
reciprocal meter	m**-1	wave number
second	s	time
siemens	S	electric conductance
sievert	Sv	dose equivalent, dose equivalent index
square meter	m**2	area
square meter per second	m**2/s	kinematic viscosity
steradian	sr	solid angle
tesla	T	magnetic flux density
united states dollars	us_dollar	money
volt	V	potential difference, electromotive force
volt per meter	V/m	electric field strength
watt	W	power, radiant flux
watt per meter kelvin	W/(m.K)	thermal conductivity
watt per square meter	W/m**2	heat flux density, irradiance
watt per square meter steradian	W.m**-2.sr**-1	radiance
watt per steradian	W/sr	radiant intensity
weber	Wb	magnetic flux

Chapter 3

ELEMENT DEFINITIONS

This section contains the definitions of individual data elements, or descriptive attributes.

A_AXIS_RADIUS **REAL <km>**

The a_axis_radius element provides the value of the semimajor axis of the ellipsoid that defines the approximate shape of a target body. 'A' is usually in the equitorial plane.

ABSTRACT_DESC **CHARACTER**

The ABSTRACT_DESC contains an abstract for the product or DATA_SET_INFORMATION object in which it appears. It provides a string that may be used to provide an abstract for the product (data set) in a publication.

ABSTRACT_TEXT **CHARACTER**

The abstract_text element provides a free-form, unlimited-length character string that gives a brief summary of a labeled document, differing from DESCRIPTION in that the text could be extracted for use in a bibliographic context.

ACCUMULATION_COUNT **[PDS_EN]** **INTEGER(>=0)**

The ACCUMULATION_COUNT element identifies the number of measurement (accumulation) intervals contributing to a final value.

Note: For Mars Pathfinder, this was the number of measurement intervals contributing to the Alpha Proton X-ray Spectrometer data.

ADDRESS_TEXT **CHARACTER**

The address_text data element provides an unlimited-length, formatted mailing address for an individual or institution.

AIRMASS **[PDS_SBN]** **REAL**

The AIRMASS element defines the astronomical ratio 'airmass', which is the number of times the quantity of air seen along the line of sight is greater than the quantity of air in the zenith direction. That is, it is the ratio of the amount of atmosphere lying along the line-of-sight of the observation to the minimum possible amount of atmosphere (which would occur for observations made in the zenith direction). Airmass increases as the line of sight moves away from the perpendicular. This value is used as part of a calculation to determine atmospheric extinction, which is the atmosphere's effect on stellar brightness from a single site.

ALGORITHM_DESC **CHARACTER**

The algorithm_desc element describes the data processing function performed by an algorithm and the data types to which the algorithm is applicable.

ALGORITHM_NAME **CHARACTER(30)**

The algorithm_name element provides (where applicable) the formal name which identifies an algorithm. Example value: RUNGE-KUTTA.

ALGORITHM_VERSION_ID **CHARACTER(4)**

The algorithm_version_id element identifies (where applicable) the version of an algorithm.

ALIAS_NAME **CHARACTER(30)**

The alias_name element provides an alternative term or identifier for a data element or object. Note: In the PDS, values for alias_name are accepted as input to the data system, but automatically changed into the approved term to which they relate.

ALT_ALONG_TRACK_FOOTPRINT_SIZE **[PDS_GEO_MGN]** **REAL <km>**

The alt_along_track_footprint_size element provides the value of along-track dimension of the Venus surface area whose mean radius, RMS slope, and reflectivity are reported in this data record. The along track dimension is chosen to be the smallest multiple of the doppler resolution of the altimeter (at this point in the spacecraft orbit) that is greater than 8 km.

ALT_COARSE_RESOLUTION **[PDS_GEO_MGN]** **INTEGER**

The alt_coarse_resolution element provides the value of the altimeter coarse time resolution factor taken from the radar burst header in which the raw_rad_antenna_power was reported.

ALT_CROSS_TRACK_FOOTPRINT_SIZE **[PDS_GEO_MGN]** **REAL <km>**

The alt_cross_track_footprint_size element provides the value of the cross-track footprint dimension determined solely by the radar baud length and the spacecraft altitude at this point in the orbit.

ALT_FLAG2_GROUP **[PDS_GEO_MGN]** **INTEGER**

Additional flag fields (unused).

ALT_FLAG_GROUP **[PDS_GEO_MGN]** **INTEGER**

The ALT_FLAG_GROUP element identifies the following flag fields. AR_FIT=0x0001 Record contains footprint values that have been fitted in the altimetry and radiometry mgmtac processing phase. AR_EPHC=0x0002 Geometry values have been corrected for ephemeris errors in the mgmorb phase. AR_RHOC=0x0004 Reflectivity values have been corrected from C-BIDR backscatter values in the mgmgen phase. AR_RS2=0x0008 Range-sharpened values have passed the 2nd-order template fitting criteria in the mgmtac phase. AR_NRS2=0x0010 Non-range-sharpened values have passed the 2nd-order template fitting criteria in the mgmtac phase. AR_BAD=0x0020 Ignore this record entirely. AR_RBAD=0x0040 Ignore the range-sharpened profile range_sharp_echo_profile[] and the associated derived_planetary_radius value. AR_CBAD=0x0080 Ignore the non_range_sharp_echo_prof[] and the associated derived_rms_surface_slope and derived_fresnel_reflectivity values. AR_TMARK=0x0100 Temporary derived_planetary_radius marker flag, used in the mgmdqe phase. AR_CMARK=0x0200 Temporary derived_rms_surface_slope marker flag, used in the mgmdqe phase. AR_FMARK=0x0400 Temporary derived_fresnel_reflect marker flag, used in the mgmdqe phase. AR_HAGFORS=0x0800 ar_slope and its errors and correlations are expressed as Hagfors' C parameter instead of degrees of RMS slope. This flag will not be set in any standard ARCDR products. It is solely used during some phases of internal MIT processing. AR_BADALTA=0x1000 The altimetry antenna was pointed more than 5 degrees from its expected location as given by the nominal look-angle profile. AR_SLOPEBAD=0x2000 The ar_slope parameter value is suspect, and ar_prof should also be disregarded. AR_RHOBAD=0x4000 The ar_rho value is suspect. AR_RAD2=0x8000 This record was created under software version 2 or higher, in which the data fields ar_rhofact, ar_radius2, ar_sqi, and ar_thresh are significant.

ALT_FOOTPRINT_LATITUDE [PDS_GEO_MGN] REAL <deg>

The alt_footprint_latitude (VBF85) element provides the value of the crust-fixed latitude of the center of the altimeter footprint, in the range of -90 (South Pole) to 90 (North Pole).

ALT_FOOTPRINT_LONGITUDE [PDS_GEO_MGN] REAL <deg>

The alt_footprint_longitude (VBF85) element provides the value of the crust-fixed longitude of the center of the altimeter footprint, in the range of 0 - 360 easterly longitude. Periapsis nadir increases in longitude by about 1.48 deg per day (about 0.2 deg per orbit).

ALT_FOOTPRINTS [PDS_GEO_MGN] INTEGER

The footprints element provides the value of the number of Standard Format Data Units in a specific orbit's altimetry data file.

ALT_GAIN_FACTOR [PDS_GEO_MGN] INTEGER

The alt_gain_factor elements provide the values of the altimeter gain factor taken from the radar burst header. alt_gain_factor[0] pertains to the measurement of raw_rad_antenna_power and alt_gain_factor[1] to raw_rad_load_power.

ALT_PARTIALS_GROUP [PDS_GEO_MGN] REAL

The alt_partials_group of the alt_footprint_longitude, alt_footprint_latitude, and the derived_planetary_radius with respect to the alt_spacecraft_position_vector and alt_spacecraft_velocity_vector elements provides the value of the partial derivatives of the footprint coordinates with respect to changes in the spacecraft position and velocity.

ALT_SKIP_FACTOR [PDS_GEO_MGN] INTEGER

The alt_skip_factor elements provide the values of the altimeter skip factor taken from the radar burst header. alt_skip_factor[0] pertains to the measurement of raw_rad_antenna_power and alt_skip_factor[1] to raw_rad_load_power.

ALT_SPACECRAFT_POSITION_VECTOR [PDS_GEO_MGN] REAL <km>

The alt_spacecraft_position_vector element provides the value of the spacecraft position at altimetry_footprint_tdb_time, relative to the Venus center of mass, expressed in inertial coordinates in the J2000 coordinate system.

ALT_SPACECRAFT_VELOCITY_VECTOR [PDS_GEO_MGN] REAL <km/s>

The alt_spacecraft_velocity_vector element provides the spacecraft velocity at altimetry_footprint_tdb_time, relative to the Venus center of mass, expressed in inertial coordinates in the J2000 coordinate system.

ALTERNATE_TELEPHONE_NUMBER CHARACTER

The alternate_telephone_number data element provides an alternate telephone number for an individual or node. (Includes the area code.)

ALTIMETRY_FOOTPRINT_TDB_TIME [PDS_GEO_MGN] REAL

The altimetry_footprint_tdb_time element provides the value of the ephemeris time at which the spacecraft passed directly over the center of the footprint. As each footprint is composed of data collected from several altimeter bursts, this epoch doesn't necessarily coincide with a particular burst.

AMBIENT_TEMPERATURE [PDS_EN] REAL(>=-273.13) <degC>

The AMBIENT_TEMPERATURE element provides a measurement of the temperature of the ambient environment around an instrument. Measured in either Kelvin or degrees celsius. Note: For MPF, this was the temperature of the APXS sensor head at the beginning and end of each accumulation cycle. This temperature was close to the ambient Mars temperature.

ANGULAR_DISTANCE [PDS_MER_OPS] REAL <rad>

The ANGULAR_DISTANCE element provides the value of an angle, in radians, subtended by a displacement at the point of interest.

Note: For MER, it is the ANGULAR_DISTANCE required for the grind wheel to revolve before the scan portion, or the grind portion, of the command completes (seek does not involve rotation). This angle is likely to be a full revolution.

ANGULAR_DISTANCE_NAME [PDS_MER_OPS] CHARACTER

The ANGULAR_DISTANCE_NAME element is an array that provides the formal names identifying each value in ANGULAR_DISTANCE.

ANGULAR_VELOCITY [PDS_MER_OPS] REAL <rad/s>

The ANGULAR_VELOCITY element provides the angular velocity of an instrument component.

Note: For MER, this is the angular velocity for the revolve axis.

ANTECEDENT_SOFTWARE_NAME CHARACTER(30)

The antecedent_software_name element identifies the processing software which is commonly applied to a science data set before processing by the subject software.

ANTIBLOOMING_STATE_FLAG [PDS_EN] CHARACTER(3)

The antiblooming_state_flag element indicates whether antiblooming was used for this image. Blooming occurs when photons from an individual cell in a CCD array overflow into surrounding cells. Antiblooming measures are used to either prevent or correct for this effect.

APERTURE_TYPE [PDS_SBN] IDENTIFIER

The APERTURE_TYPE element describes a short string of free-format text which provides a distinguishing name or abbreviation for one (or more) of a set of apertures used during data collection. Note: For the International Ultraviolet Explorer (IUE) spacecraft, the spectrographs have small and large apertures, and can operate with either or both open.

APPARENT_MAGNITUDE REAL <mag>

The APPARENT_MAGNITUDE element provides the apparent magnitude of the target at the time of the observation. The filter of the apparent magnitude is provided in the associated FILTER_NAME keyword.

APPLICABLE_START_SCLK [JPL_AMMOS_SPECIFIC] CHARACTER

The applicable_start_sclk element is an alias within AMMOS for spacecraft_clock_start_count.

APPLICABLE_START_TIME [JPL_AMMOS_SPECIFIC] TIME

The applicable_start_time element is an alias within AMMOS for start_time. Note: The current AMMOS recommendation is to use start_time instead.

APPLICABLE_STOP_SCLK [JPL_AMMOS_SPECIFIC] CHARACTER

The applicable_stop_sclk element is an alias within AMMOS for spacecraft_clock_stop_count.

APPLICABLE_STOP_TIME [JPL_AMMOS_SPECIFIC] TIME

The applicable_stop_time element is an alias within AMMOS for stop_time. Note: The current AMMOS recommendation is to use stop_time instead.

APPLICATION_PACKET_ID INTEGER(>=0)

The application_packet_id element identifies the telemetry packet queue to which the data were directed.

APPLICATION_PACKET_NAME CHARACTER(255)

The application_packet_name element provides the name associated with the telemetry packet queue to which data were directed. Note: For Mars Pathfinder, the queues were distinguished on the basis of type and priority of data.

APPLICATION_PROCESS_ID [PDS_MER_OPS] INTEGER(>=0)

The APPLICATION_PROCESS_ID identifies the process, or source, which created the data.

APPLICATION_PROCESS_NAME [PDS_MER_OPS] CHARACTER(256)

The APPLICATION_PROCESS_NAME element provides the name associated with the source or process which created the data.

APPLICATION_PROCESS_SUBTYPE_ID [PDS_MER_OPS] INTEGER

The APPLICATION_PROCESS_SUBTYPE_ID element identifies the source or subprocess that created the data.

APXS_COMMUNICATION_ERROR_COUNT [PDS_EN] INTEGER(>=0)

The APXS_COMMUNICATION_ERROR_COUNT element provides the number of communication errors recorded by an instrument host when trying to query the Alpha Proton X-ray Spectrometer.

Note: For Mars Pathfinder, the APXS_COMMUNICATION_ERROR_COUNT was returned in the Rover telemetry.

APXS_MECHANISM_ANGLE [PDS_EN] REAL(-180, 360) <deg>

The APXS_MECHANISM_ANGLE provides an angular measurement of the position of the deployment mechanism on which the alpha proton x-ray spectrometer is mounted. It is measured in degrees.

Note: For Mars Pathfinder, this value was measured at STOP_TIME. It was derived from the raw data value returned in the APXS Results as part of the spectrum data. The value was derived by subtracting 112.64 from the product of the raw value multiplied by 1.28.

ARCHIVE_FILE_NAME **CHARACTER(12)**

The archive_file_name element provides the file_name under which a discrete entity is stored on the archive medium. It is typically used when the project-supplied file name does not meet PDS standards and must be changed on the archive medium.

ARCHIVE_STATUS **[DIS]** **CHARACTER(30)**

The archive_status element provides the status of a data set that has been submitted for inclusion into the PDS archive. If a data set has been partially archived, the archive_status should be ACCUMULATING (e.g., this situation typically occurs when a data set is being produced over a period of time where portions of the data set may be archived, in lien resolution, in peer-review, and under construction).

The archive_status_note element is available to describe the archive_status value in finer detail.

STANDARD VALUES

IN QUEUE - Received at the curation node but no action has been taken by the curation node. Use with caution.

PRE PEER REVIEW - Being prepared for peer review under the direction of the curation node. Use with caution

IN PEER REVIEW - Under peer review at the curation node but evaluation is not complete. Use with caution

IN LIEN RESOLUTION - Peer review completed. Liens are in the process of being resolved.

LOCALLY ARCHIVED - Passed peer reviewed with all liens resolved. Considered archived by the curation node but awaiting completion of the standard archiving process. Possible TBD items include the arrival of the archive volume at NSSDC and ingestion of catalog information into the Data Set Catalog.

ARCHIVED - Passed peer review with all liens resolved. Available through the Data Set Catalog and at NSSDC.

SUPERSEDED - Superseded by a new version of the data set. This implies that the data set is not to be used unless the requester has specific reasons. When a data set has been superseded the CN will notify NSSDC that their databases need to be updated to advise users of the new status and the location of the replacement data set.

SAFED - Received by the PDS with no evaluation. Data will not be formally archived.

ACCUMULATING - Portions, but not all, of a data set are in one or more phases of completion (e.g., portions of a data set have been archived while portions remain in lien resolution).

Note: If a data set crosses multiple phases of completion, select the highest status level and use the modifier ACCUMULATING. The status is, for example, ARCHIVED-ACCUMULATING, meaning that part of the data set has been archived, but there remains portions of the data set in process.

The ARCHIVE_STATUS_NOTE keyword can be used to provide more information. ACCUMULATING value may be used as a modifier to any of the above valid values (e.g., 'ACCUMULATING ARCHIVED', 'ACCUMULATING IN PEER REIVEW').

ARCHIVE_STATUS_DATE **[DIS]** **DATE**

The archive_status_date element provides the date that the archive status will in the future or has in the past changed.

ARCHIVE_STATUS_NOTE **[DIS]** **CHARACTER**

The archive_status_note element provides a text description that further explains the value of the archive_status element. (e.g. The archive_status_note element could be used to strongly encourage an user to consult the errata files associated with an archived data set.)

ARTICULATION_DEV_INSTRUMENT_ID [PDS_MER_OPS] CHARACTER(12)

The ARTICULATION_DEV_INSTRUMENT_ID element provides an abbreviated name or acronym that identifies the instrument mounted on an articulation device.

ARTICULATION_DEV_POSITION [PDS_MER_OPS] INTEGER(>=0)

The ARTICULATION_DEV_POSITION element provides the set of indices for articulation devices that contain moving parts with discrete positions. The associated ARCTICULATION_DEV_POSITION_NAME names each moving device, and ARTICULATION_DEV_POSITION_ID provides a textual identifier that maps to the position indices.

For MER, this is used to contain the state of all the instrument filter actuators (pancam filter wheels and MI dust cover). Note that this is the state of all such actuators on the rover. In order to get the actual filter used for this specific image, the FILTER_NAME/FILTER_NUMBER keywords in the INSTRUMENT_DATA group should be used. See also ARTICULATION_DEV_POSITION_ID.

ARTICULATION_DEV_POSITION_ID [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEV_POSITION_ID element provides the set of identifiers corresponding to ARTICULATION_DEV_POSITION. These describe the position (e.g. filter), not the device (e.g., filter wheel). See ARTICULATION_DEV_POSITION.

ARTICULATION_DEV_POSITION_NAME [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEV_POSITION_NAME element is an array of values that provides the formal names for each entry in ARTICULATION_DEV_POSITION. This element names the actual device doing the moving, (e.g., a filter wheel), not the name of a position (e.g., the filter itself).

ARTICULATION_DEV_VECTOR [PDS_MER_OPS] REAL

The ARTICULATION_DEV_VECTOR element provides the direction and magnitude of an external force acting on the articulation device, in the rover's coordinate system, at the time the pose was computed.

ARTICULATION_DEV_VECTOR_NAME [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEV_VECTOR_NAME element provides the formal name of the vector type acting on the articulation device.

ARTICULATION_DEVICE_ANGLE [PDS_MER_OPS] REAL <deg>

The ARTICULATION_DEVICE_ANGLE element provides the value of an angle between two parts or segments of an articulated device.

ARTICULATION_DEVICE_ANGLE_NAME [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEVICE_ANGLE_NAME element provides the formal name which identifies each of the values used in ARTICULATION_DEVICE_ANGLE.

ARTICULATION_DEVICE_ID [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEVICE_ID element specifies the unique abbreviated identification of an articulation device. An articulation device is anything that can move independently of the spacecraft to which it is attached, (e.g., mast heads, wheel bogies, arms, etc.).

Note: For MER, the associated ARTICULATION_DEVICE_NAME element provides the full name of the articulated device.

ARTICULATION_DEVICE_MODE [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEVICE_MODE element indicates the deployment state (i.e., physical configuration) of an articulation device at the time of data acquisition.

ARTICULATION_DEVICE_NAME [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEVICE_NAME element specifies the common name of an articulation device. An articulation device is anything that can move independently of the spacecraft to which it is attached, (e.g. mast heads, wheel bogies, arms, etc.)

ARTICULATION_DEVICE_TEMP [PDS_MER_OPS] REAL <degC>

The ARTICULATION_DEVICE_TEMP element provides the temperature, in degrees Celsius, of an articulated device or some part of an articulated device.

ARTICULATION_DEVICE_TEMP_NAME [PDS_MER_OPS] CHARACTER

The ARTICULATION_DEVICE_TEMP_NAME element is an array of the formal names identifying each of the values used in ARTICULATION_DEVICE_TEMP.

ASCENDING_NODE_LONGITUDE REAL(0, 360) <deg>

The ascending_node_longitude element provides the value of the angle measured eastward along the ecliptic from the vernal equinox to the ascending node of the orbit. The ascending node is defined as the point where the body in its orbit rises north of the ecliptic.

ASSUMED_WARM_SKY_TEMPERATURE [PDS_GEO_MGN] REAL <K>

The assumed_warm_sky_temperature element provides the value of the temperature assumed for the dominant portion of 'sky' reflected by the radiometer footprint, including atmospheric absorption and emission.

ATMOS_CORRECTION_TO_DISTANCE [PDS_GEO_MGN] REAL <km>

The atmos_correction_to_distance element provides the value of the correction applied to derived_planetary_radius to allow for the delay of signals passing through the atmosphere, calculated by the MGMOUT phase of the altimetry and radiometry data reduction program.

AUTHOR_FULL_NAME CHARACTER(60)

The author_full_name element provides the full_name of an author of a document. See also: full_name.

AUTO_EXPOSURE_DATA_CUT INTEGER(>=0)

The auto_exposure_data_cut element provides the DN value which a specified fraction of pixels is permitted to exceed. The fraction is specified using the auto_exposure_pixel_fraction keyword.

AUTO_EXPOSURE_PERCENT **[PDS_MER_OPS]** **REAL(0, 100)**

The AUTO_EXPOSURE_PERCENT element provides the auto-exposure early-termination percent. If the calculated exposure time has written this value, then terminate auto exposure early.

AUTO_EXPOSURE_PIXEL_FRACTION **REAL(0, 100)**

The auto_exposure_pixel_fraction element provides the percentage of pixels whose value is higher than the auto_exposure_data_cut keyword. Note: For Mars Pathfinder, this field is only applicable if the exposure type is set to AUTO or INCREMENTAL.

AVAILABILITY_ID **CHARACTER(20)**

The availability_id element is a numeric key which identifies the availability of the subject program or algorithm (e.g., program permanently on line, user request necessary for operator to load program, program undergoing development and testing–use at own risk).

AVAILABLE_VALUE_TYPE **[PDS_EN]** **CHARACTER(1)**

The available_value_type element indicates whether the available values for a PDS data element consist of a set of literal values or represent example values (i.e. values which must conform to a formation rule). Example values: L (available values are literal values), or X (available values are example values).

AVERAGE_ASC_NODE_LONGITUDE **[PDS_GEO_MGN]** **REAL <deg>**

The average_asc_node_longitude element provides the value of the angle in the xy-plane of the J2000 coordinate system to the ascending node of the predicted orbit.

AVERAGE_ECCENTRICITY **[PDS_GEO_MGN]** **REAL**

The average_eccentricity element provides the value of the eccentricity of the predicted orbit.

AVERAGE_INCLINATION **[PDS_GEO_MGN]** **REAL <deg>**

The average_inclination element provides the value of the angle of inclination of the predicted orbit with respect to the xy-plane of the J2000 coordinate system.

AVERAGE_ORBIT_PERI_TDB_TIME **[PDS_GEO_MGN]** **REAL**

The average_orbit_peri_tdb_time element provides the value of the periapsis time of the predicted orbit. This orbit is based on the elements used to generate the uplink commands for the current mapping pass. It represents an average over the entire orbit, and is not the result of post-orbit navigation solutions. The elements should be used for comparison purposes only, since they may involve large errors. The predicted orbit elements are copied from the orbit header file of the ALT-EDR tape, or, if unavailable, from the orbit header file of the C-BIDR.

AVERAGE_PERIAPSIS_ARGUMENT **[PDS_GEO_MGN]** **REAL <deg>**

The average_periapsis_argument element provides the value of the angle in the plane of the predicted orbit from the ascending node in the xy-plane of the J2000 coordinate system to the periapsis.

AVERAGE_PLANETARY_RADIUS **[PDS_GEO_MGN]** **REAL <km>**

The average_planetary_radius element provides the value of the planetary radius of the radiometer footprint, used to compute rad_footprint_longitude and rad_footprint_latitude, and also surface_temperature and atmospheric corrections to surface_emissivity.

AVERAGE_SEMIMAJOR_AXIS [PDS_GEO_MGN] REAL <km>

The average_semimajor_axis element provides the value of the semi-major axis of the predicted orbit.

AXES INTEGER(1, 6)

The axes element identifies the number of axes or dimensions of an array or qube data object.

AXIS_INTERVAL CONTEXT DEPENDENT

The axis_interval element identifies the spacing of value(s) for an ordered sequence of regularly sampled data objects along a defined axis. For example, a spectrum measured in the 0.4 to 3.5 micrometer spectral region at 0.1 micrometer intervals, but whose values are stored in decending order in an ARRAY object would have an axis_interval = -0.1. For ARRAY objects with more than 1 axis, a sequence of values is used to identify the axis_interval associated with each axis_name.

AXIS_ITEMS INTEGER(>=1)

The axis_items element provides the dimension(s) of the axes of an array data object. For arrays with more than 1 dimension, this element provides a sequence of values corresponding to the number of axes specified. The rightmost item in the sequence corresponds to the most rapidly varying axis, by default.

AXIS_NAME CHARACTER(30)

The axis_name element provides the sequence of axis names of a qube or array data object, and identifies the order in which the axes are stored in the object. By default, the first axis name in the sequence identifies the array dimension that varies the slowest, followed by the next slowest, and continuing so the rightmost axis named varies the fastest. The number of names specified must be equal to the value of the axes element. Note: For ISIS qube data objects, the most frequently varying axis is listed first, or leftmost, in the sequence.

AXIS_ORDER_TYPE IDENTIFIER

The AXIS_ORDER_TYPE element is used to identify the storage order for elements of a multidimensional ARRAY object. The default storage order for an ARRAY object presumes the rightmost or last index of a sequence varies the fastest. This is the ordering used in the C programming language and is equivilant to ROW_MAJOR storage order for COLUMN elements within tables. Specifying an AXIS_ORDER_TYPE of FIRST_INDEX_FASTEST may be used for ARRAYs that must be labelled and referenced in the reverse, and is the ordering used in the Fortran programming language.

AXIS_START CONTEXT DEPENDENT

The axis_start element identifies the starting value(s) for an ordered sequence of regularly sampled data objects. For example, a spectrum that was measured in the 0.4 to 3.5 micrometer spectral region at 0.1 micrometer intervals, but whose values are stored in decending order would have axis_start = 3.5 and axis_interval = -0.1. For ARRAY objects with more than 1 axis, a sequence of values is used to identify the axis_start value for each dimension.

AXIS_STOP CONTEXT DEPENDENT

The axis_stop element identifies the ending value(s) for an ordered sequence of regularly sampled data objects. For example, a spectrum that was measured in the 0.4 to 3.5 micrometer spectral region at 0.1 micrometer intervals, but whose values are stored in decending order may have axis_stop = 0.4 and axis_interval = -0.1. For ARRAY objects with more than 1 axis, a sequence of values is used to identify the axis_stop value for each dimension.

AXIS_UNIT **CHARACTER(60)**

The axis_unit element provides the unit(s) of measure of associated axes identified by the axis_name element in an ARRAY data object. For arrays with more than 1 dimension, this element provides a sequence of values corresponding to the number of axes specified. The rightmost item in the sequence corresponds to the most rapidly varying axis, by default.

AZIMUTH **REAL(0, 360) <deg>**

The azimuth element provides the azimuth value of a point of interest (for example, the center point of an image of a solar system object taken from a lander or a rover). Azimuth is an angular distance from a fixed reference position. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system. See elevation.

AZIMUTH_FOV **REAL(0, 360) <deg>**

The azimuth_fov element provides the angular measure of the horizontal field of view of an imaged scene. Note: For MPF, 'horizontal' is measured in the x-y plane of the IMP coordinate system.

AZIMUTH_MOTOR_CLICKS **[PDS_IMG]** **INTEGER(>=0)**

The azimuth_motor_clicks element provides the number of motor step counts an instrument or other mechanism rotated in the horizontal direction from the low hard stop. Note: For MPF, each step count corresponded to 0.553 degrees. The valid range was 0 to 1023.

B1950_DECLINATION **[PDS_RINGS]** **REAL(-90, 90) <deg>**

The B1950_declination element provides the declination of a star or other object using the B1950 coordinate frame rather than the J2000 frame.

B1950_RIGHT_ASCENSION **[PDS_RINGS]** **REAL(0, 360) <deg>**

The B1950_right_ascension element provides the right ascension of a star or other object using the B1950 coordinate frame rather than the J2000 frame.

B1950_RING_LONGITUDE **[PDS_RINGS]** **REAL(0, 360) <deg>**

The B1950_ring_longitude element specifies the inertial longitude of a ring feature relative to the B1950 prime meridian, rather than to the J2000 prime meridian. The prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of B1950. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane.

B_AXIS_RADIUS **REAL <km>**

The b_axis_radius element provides the value of the intermediate axis of the ellipsoid that defines the approximate shape of a target body. 'B' is usually in the equatorial plane.

BACKGROUND_SAMPLING_FREQUENCY **[PDS_EN]** **INTEGER(1, 64) <pixel>**

The background_sampling_frequency element provides the number of lines between background samples. In a scanning type camera, background refers to the dark current measurement that is taken, with the camera shutter closed, while the scanner returns to the beginning of the next line. The value of the background may then be subtracted from the data to produce a more accurate measurement.

BACKGROUND_SAMPLING_MODE_ID [PDS_EN] CHARACTER(12)

The background_sampling_mode_id element identifies the background sampling mode. In a scanning type camera, background refers to the dark current measurement that is taken, with the camera shutter closed, while the scanner returns to the beginning of the next line. The value of the background may then be subtracted from the data to produce a more accurate measurement. Note: For Cassini, sampling modes allow up to four samples to be averaged for each background point.

BAD_PIXEL_REPLACEMENT_FLAG CHARACTER(5)

The bad_pixel_replacement_flag element indicates whether or not bad pixel replacement processing was completed. If set to TRUE, certain pixels in the image were replaced based on a bad pixel table.

BAD_PIXEL_REPLACEMENT_ID [PDS_MER_OPS] CHARACTER(5)

The BAD_PIXEL_REPLACEMENT_ID element uniquely identifies the bad pixel table used in the bad pixel replacement process. The BAD_PIXEL_REPLACEMENT_ID increments every time an update is made to the bad pixel table.

BAND_BIN_BAND_NUMBER INTEGER(1, 512)

The band_bin_band_number element of a SPECTRAL_QUBE provides a sequence of numbers corresponding to each band in the image qube. The band number is equivalent to the instrument band number.

BAND_BIN_BASE REAL

The band_bin_base element of a SPECTRAL_QUBE contains a sequence of real values corresponding to each band listed in the band_bin_band_number element. The band_bin_base value is added to the scaled data (see band_bin_-multiplier) to reproduce the true data.

'true_value' = base + (multiplier * stored_value)

Note: Base and multiplier correspond directly to the PDS standard data elements OFFSET and SCALING_FACTOR.

BAND_BIN_CENTER [ISIS] REAL(>=0) <micron>

The band_bin_center element of a Standard ISIS Qube provides the sequence of wavelengths describing the center of each 'bin' along the band axis of the qube. When describing data from a spectrometer, each wavelength corresponds to the peak of the response function for a particular detector and/or grating position.

BAND_BIN_DETECTOR [ISIS] INTEGER(>=1)

The band_bin_detector element of a Standard ISIS Qube provides the sequence of spectrometer detector numbers corresponding to the bands of the qube. Detector numbers are usually assigned consecutively from 1, in order of increasing wavelength.

BAND_BIN_FILTER_NUMBER INTEGER(>=1)

The band_bin_filter_number element of a SPECTRAL_QUBE provides a sequence of numbers corresponding to each band listed in the band_bin_band_number element. Each number describes the physical location of the band in the detector array. Filter 1 is on the leading edge of the array.

BAND_BIN_GRATING_POSITION [ISIS] INTEGER(>=0)

The band_bin_grating_position element of a Standard ISIS Qube provides the sequence of grating positions which correspond to the bands of the qube. Grating positions are usually assigned consecutively from 0, and increasing position causes increasing wavelength for each detector.

BAND_BIN_MULTIPLIER REAL

The band_bin_multiplier element of a SPECTRAL_QUBE contains a sequence of real values corresponding to each band listed in the band_bin_band_number element. The stored data value is multiplied by the band_bin_multiplier to produce a scaled data value; this scaled data value is then added to the band_bin_base value to reproduce the true data value.

'true_value' = base + (multiplier * stored_value)

Note: Base and multiplier correspond directly to the PDS standard data elements OFFSET and SCALING_FACTOR.

BAND_BIN_ORIGINAL_BAND [ISIS] INTEGER(1, 512)

The band_bin_original_band element of a Standard ISIS Qube provides the sequence of band numbers in the qube relative to some original qube. In the original qube, the values are just consecutive integers beginning with 1. In a qube which contains a subset of the bands in the original qube, the values are the original sequence numbers from that qube.

BAND_BIN_STANDARD_DEVIATION [ISIS] REAL(>=0) <micron>

The band_bin_standard_deviation element of a Standard ISIS Qube provides the sequence of standard deviations of spectrometer measurements at the wavelengths of the bands in the qube.

BAND_BIN_UNIT [ISIS] CHARACTER(30)

The band_bin_unit element of a Standard ISIS Qube identifies the scientific unit of the values of the band_bin_center element. Currently this must be MICROMETER, since band_bin_center must have wavelength values.

BAND_BIN_WIDTH [ISIS] REAL(>=0) <micron>

The band_bin_width element of a Standard ISIS Qube provides the sequence of widths (at half height) of the spectrometer response functions at the wavelengths of the bands in the qube.

BAND_CENTER REAL(>=0) <micron>

The BAND_CENTER element provides the value at the center of the range of values represented by an image band.

BAND_NAME CHARACTER(50)

BAND_NAME is the name given to a single band in a multi-band image or image qube. If the band is a spectral band, BAND_NAME refers to the associated spectral range; for example, RED, GREEN, BLUE, 415nm, 750nm, 900nm. Examples of names of non-spectral bands are 'Phase angle', 'Thermal inertia', 'Bolometric albedo', 'Latitude', 'Elevation in meters relative to MOLA'.

BAND_NUMBER INTEGER

The BAND_NUMBER element is used to specify a numerical name used to identify a specific spectral band of an multi-spectral imaging instrument.

Note: The value will be 1-5 for THEMIS VIS images or 1-10 for THEMIS IR images. Band numbers are defined in the THEMIS Standard Data Product SIS, Table 1.

BAND_SEQUENCE **CHARACTER(30)**

The band_sequence element identifies the order in which spectral bands are stored in an image or other object. Note: In the PDS, this data element is used to identify the primary colors composing a true color image. The standard values that appear in sets of three support color image display. They are not appropriate for describing multi-spectral bands. For these, it is advisable to use the sampling_parameter keywords defined elsewhere in the PSDD.

BAND_STORAGE_TYPE **IDENTIFIER**

The band_storage_type element indicates the storage sequence of lines, samples and bands in an image. The values describe, for example, how different samples are interleaved in image lines, or how samples from different bands are arranged sequentially. Example values: BAND SEQUENTIAL, SAMPLE INTERLEAVED, LINE INTERLEAVED.

BANDS **INTEGER(1, 4096)**

The BANDS element indicates the number of bands in an image or other object.

BANDWIDTH **REAL <Hz>**

The bandwidth element provides a measure of the spectral width of a filter or channel. For a root-mean-square detector this is the effective bandwidth of the filter i.e., the full width of an ideal square filter having a flat response over the bandwidth and zero response elsewhere.

BEST_NON_RANGE_SHARP_MODEL_TPT **[PDS_GEO_MGN]** **INTEGER**

The best_non_range_sharp_model_tpt provides the value of the theoretical echo profile, at half-baud (0.21 microsecond) intervals, that best approximates the peak of the non_range_sharp_echo_prof array. The optimal fit is made by matching best_non_range_sharp_model_tpt[i] with non_range_sharp_echo_prof[i+non_range_prof_corrs_index], where i is a value from 0 to 49.

BEST_RANGE_SHARP_MODEL_TMPLT **[PDS_GEO_MGN]** **INTEGER**

The best_range_sharp_model_tmplt element provides the value of the theoretical echo profile, at one-baud (0.21 microsecond) intervals, that best approximates the peak of the range_sharp_echo_profile array. The optimal fit is made by matching the best_range_sharp_model_tmplt[i] element with the range_sharp_echo_profile[i+range_sharp_prof_corrs_index] element, where i is a value from 0 to 49.

BIAS_STATE_ID **[PDS_EN]** **CHARACTER(4)**

The bias_state_id element identifies the bias state of a wavelength channel in an instrument. Note: For Cassini, this refers to the infrared channel of the VIMS instrument.

BIAS_STRIP_MEAN **[PDS_EN]** **REAL(>=0)**

The bias_strip_mean element provides the mean value of the bias strip (also known as overclocked pixels). The bias strip is an area of a CCD that provides a measure of the bias level of the electronics (ie., electronics noise). It is not affected by dark current. Note: For Cassini, this mean does not include the values from the first and last lines of the CCD.

BILLING_ADDRESS_LINE **[PDS_EN]** **CHARACTER(60)**

This column stores text for the billing address. The text may consist of several lines containing up to sixty (60) characters each.

BIN_NUMBER **INTEGER(>=0)**

The bin_number element provides the number of a bin. Bin_number values are dependent upon the associated binning scheme.

BIN_POINTS **INTEGER(>=0)**

The bin_points element identifies the number of data samples which fall in a given bin. Note: For radiometry applications, the bin_points value is the number of points from a given sequence that are located in the given bin.

BIT_DATA_TYPE **IDENTIFIER**

The bit_data_type element provides the data type for data values stored in the BIT_COLUMN or BIT_ELEMENT object. See also: data_type.

BIT_MASK **NON DECIMAL**

The bit_mask element is a series of binary digits identifying the active bits in a value. This is determined by applying a bitwise AND (&) operation between the value and the bit_mask. For example, specifiying a BIT_MASK = 2#11110000# within a 1 byte unsigned integer COLUMN or ELEMENT object would identif only the high-order 4 bits to be used for the value of the object. If other data elements are included in the object description that may be dependent on a bit_mask operation (e.g. DERIVED_MINIMUM, DERIVED_MAXIMUM, INVALID), the rule is to apply the bit_mask first, and then apply or interpret the data with the other values. Byte swapping, if required, should be performed prior to applying the bit_mask.

BITS **INTEGER(1, 32)**

The bits element identifies the count of bits, or units of binary information, in a data representation.

BL_NAME **[PDS_EN]** **CHARACTER(12)**

The bl_name element is a unique 12-character name for elements used in any PDS data base table. These are only elements used in the data base.

BL_SQL_FORMAT **[PDS_EN]** **CHARACTER(15)**

This is the format required to generate CREATE statements in IDM SQL.

BLEMISH_FILE_NAME **CHARACTER(20)**

The blemish_file_name element indicates the file that provides corrections for blemishes (reseaus, dust spots, etc.) that affect the response of the sensor at specific locations. The blemish file is selected based on camera, filter, gain-state, camera mode, and time.

BLEMISH_PROTECTION_FLAG **CHARACTER(3)**

The BLEMISH_PROTECTION_FLAG element indicates whether the blemish protection was on or off.

BLOCK_BYTES **INTEGER(>=1)**

The block_bytes element identifies the number of bytes per physical block used to record data files on magnetic tapes. Note: In the PDS, for portability the block_bytes element should be limited to a maximum value of 32767 for a tape volume.

BODY_POLE_CLOCK_ANGLE **REAL(0, 360) <deg>**

The body_pole_clock_angle element specifies the direction of the target body's rotation axis in an image. It is measured from the 'upward' direction, clockwise to the direction of the northern rotational pole as projected into the image plane, assuming the image is displayed as defined by the SAMPLE_DISPLAY_DIRECTION and LINE_DISPLAY_-DIRECTION elements. Note: In some cases, knowledge of the inertial orientation of the rotational axis improves with time. This keyword necessarily reflects the state of knowledge of the rotational axis at the time of preparing the data product as given by the POLE_DECLINATION and POLE_RIGHT_ASCENSION elements.

BOND_ALBEDO **REAL(0, 1)**

The bond_albedo element provides the value of the ratio of the total amount of energy reflected from a body to the total amount of energy (sunlight) incident on the body.

BRIGHTNESS_TEMPERATURE **[PDS_GEO_MGN]** **REAL <K>**

The brightness_temperature element provides the value of the planet brightness temperature, derived from the planet_-reading_system_temp after correcting for antenna efficiency and side-lobe gain.

BRIGHTNESS_TEMPERATURE_ID **CHARACTER(12)**

The brightness_temperature_id element provides the designation of the spectral band for which particular brightness temperature measurements were made. In the spectral_contrast_range group, the brightness_temperature_id designator may refer to a planetary temperature model.

BROWSE_FLAG **CHARACTER(1)**

The browse_flag element is a yes-or-no flag which indicates whether browse_format data are available for a given sample interval.

BROWSE_USAGE_TYPE **IDENTIFIER**

The BROWSE_USAGE_TYPE keyword defines whether a browse product is intended to be the primary browse product for an associated data product, or is a secondary browse product, for cases when there are multiple browse products per data product.

A value of PRIMARY indicates that the browse product is the main browse product for a given data product. A value of OVERVIEW indicates that a browse product is associated with, or constructed from, several data products (e.g. a mosaic or map produced from several image data products). A value of SECONDARY indicates that the browse product is a supplementary browse product for a data product. Choice of which of several browse products is selected as PRIMARY is at the discretion of the data provider (subject to peer review); rationale for the selection could be documented in the label DESCRIPTION of the browse product. SECONDARY browse products cannot exist without a PRIMARY product.

The keyword is an optional keyword that can be included in the label for a browse product along with the keyword SOURCE_PRODUCT_ID to identify the data product. The value of BROWSE_USAGE_TYPE along with the value of SOURCE_PRODUCT_ID could be used in user interfaces to display browse products resulting from a search or to help users understand the relationships between browse products when there is more than one browse product for a given source data product.

BUFFER_MODE_ID **[PDS_EN]** **IDENTIFIER**

The BUFFER_MODE_ID element identifies the buffer storage mode used by an instrument.

Note: For MARS EXPRESS the data from the Super Resolution Channel (SRC) are in 14-bit. A small buffer connected to this channel can store 4 images in 14-bit (BUFFER_14) or 8 images converted to 8-bit (BUFFER_8), which are then sent to the Data Processing Unit (DPU) at the end of imaging. The data can also be sent directly to the DPU (DIRECT), but this is only possible for 8-bit data.

BUILD_DATE **DATE**

The build_date element provides the date associated with the completion of the manufacture of an instrument. This date should reflect the level of technology used in the construction of the instrument. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

BYTES **INTEGER(>=1)**

The bytes element indicates the number of bytes allocated for a particular data representation. When BYTES describes an object with variable length (e.g., FIELD), BYTES gives the maximum number of bytes allowed.

C_AXIS_RADIUS **REAL <km>**

The c_axis_radius element provides the value of the semiminor axis of the ellipsoid that defines the approximate shape of a target body. 'C' is normal to the plane defined by 'A' and 'B'.

CALIBRATION_LAMP_STATE_FLAG **[PDS_EN]** **CHARACTER(3)**

The calibration_lamp_state_flag element indicates whether a lamp used for onboard camera calibration is turned on or off.

CALIBRATION_SOURCE_ID **[PDS_MER_OPS]** **CHARACTER(47)**

The CALIBRATION_SOURCE_ID element is a unique identifier (within a data set) indicating the source of the calibration data used in generating the entity described by the enclosing group (often, a camera model). The construction of this identifier is mission-specific, but should indicate which specific calibration data set was used (via date or other means) and may also indicate the calibration method.

CAMERA_LOCATION_ID **[PDS_MER_OPS]** **INTEGER**

The CAMERA_LOCATION_ID element indicates where the camera was during data acquisition.

Used in MER calibration data to denote the location of the camera on the mounted bracket.

CCSDS_SPACECRAFT_NUMBER **[JPL_AMMOS_SPECIFIC]** **INTEGER(>=0)**

The ccsds_spacecraft_number element provides the number assigned by the CCSDS to a given spacecraft. Note: Due to conflicting numbering schemes between the DSN and the CCSDS it is recommended that this element not be used in AMMOS catalog headers.

CELESTIAL_NORTH_CLOCK_ANGLE **REAL(0, 360) <deg>**

The celestial_north_clock_angle element specifies the direction of celestial north at the center of an image. It is measured from the 'upward' direction, clockwise to the direction toward celestial north (declination = +90 degrees), when the image is displayed as defined by the SAMPLE_DISPLAY_DIRECTION and LINE_DISPLAY_DIRECTION elements. The epoch of the celestial coordinate system is J2000 unless otherwise indicated. Note: This element bears a simple relationship to the value of TWIST_ANGLE:

When TWIST_ANGLE_TYPE = DEFAULT, CELESTIAL_NORTH_CLOCK_ANGLE = (180 - TWIST_ANGLE) mod 360; when TWIST_ANGLE_TYPE = GALILEO, CELESTIAL_NORTH_CLOCK_ANGLE = (270 - TWIST_ANGLE) mod 360.

Note: For images pointed near either pole, the value varies significantly across the image; in these cases, the element is very sensitive to the accuracy of the pointing information.

CENTER_ELEVATION **[PDS_GEO_VL]** **REAL(-90, 90) <deg>**

The CENTER_ELEVATION is the angular elevation from the azimuthal reference plane of the center point of an image or observation. Elevation is measured in a spherical coordinate system. The zero elevation point lies in the azimuthal reference plane and positive elevation is measured toward the positive direction of the principal axis of the spherical coordinate system.

CENTER_FILTER_WAVELENGTH **REAL <micron>**

The center_filter_wavelength element provides the mid_point wavelength value between the minimum and maximum instrument filter wavelength values.

CENTER_FREQUENCY **REAL <Hz>**

The center_frequency element provides the frequency of maximum transmittance of a filter or the frequency that corresponds to the geometric center of the passband of a filter or a channel.

CENTER_LATITUDE **REAL(-90, 90) <deg>**

The center_latitude element provides a reference latitude for certain map projections. For example, in an Orthographic projection, the center_latitude along with the center_longitude defines the point or tangency between the sphere of the planet and the plane of the projection. The map_scale (or map_resolution) is typically defined at the center_latitude and center_longitude. In unprojected images, center_latitude represents the latitude at the center of the image frame.

CENTER_LONGITUDE **REAL(-180, 360) <deg>**

The center_longitude element provides a reference longitude for certain map projections. For example, in an Orthographic projection, the center_longitude along with the center_latitude defines the point or tangency between the sphere of the planet and the plane of the projection. The map_scale (or map_resolution) is typically defined at the center_latitude and center_longitude. In unprojected images, center_longitude represents the longitude at the center of the image frame.

CENTER_RING_RADIUS **REAL(0, 1000000000) <km>**

The CENTER_RING_RADIUS element applies to images of planetary rings only. It is the radius of the ring element that passes through the center of the image. The ring plane is an imaginary plane that divides the planet in half at the equator and extends infinitely outward into space. The center of the image is a point on the ring plane, even though there may be no actual ring material there.

CENTRAL_BODY_DISTANCE **REAL <km>**

The CENTRAL_BODY_DISTANCE element provides the distance from the spacecraft to the center of a primary target.

CHANGE_DATE **DATE**

The change_date data element provides the date on which a record or object was altered. Note: In the PDS, the change_date element indicates the date when a record in the data dictionary was updated per a change request.

CHANNEL_GEOMETRIC_FACTOR **REAL**

The channel_geometric_factor element provides the value of G in the formula: j = R/((E2-E1)G), where (E2-E1) is the energy range accepted by the channel. This formula allows conversion of a particle detector channel count rate, R, into a differential intensity, j (counts/time.area.steradians.energy). G has dimensions of area.steradians, and here includes the efficiency of particle counting by the relevant detector.

CHANNEL_GROUP_NAME **CHARACTER(20)**

The channel_group_name element provides the name given to a group of particle detector channels that are activated or deactivated as a group in any instrument mode configuration. The grouping is not tied to the physical groupings of detectors, and more than one group can be activated during any one mode.

CHANNEL_ID **IDENTIFIER**

The channel_id element identifies the instrument channel through which data were obtained. This may refer to a spectral band or to a detector and filter combination.

CHANNEL_INTEGRATION_DURATION **REAL(0.24, 0.96) <s>**

The channel_integration_duration element provides the length of time during which charge from incoming particles is counted by the detectors for each channel in a given mode.

CHANNELS **INTEGER(>=0)**

The channels element provides the number of channels in a particular instrument, section of an instrument, or channel group.

CHECKSUM **INTEGER(0, 4294967295)**

The checksum element represents an unsigned 32-bit sum of all data values in a data object.

CHOPPER_MODE_ID **CHARACTER**

The Galileo NIMS optical chopper serves to modulate the detected radiation, allowing the dark current level of a detector to be subtracted on a pixel-by-pixel basis. It has four possible modes. The normal REFERENCE mode was used for all observations of Jupiter and its satellites, as well as Venus and Ida. The '63_HERTZ' mode was used for the Earth, the Moon, and Gaspra. FREE_RUN mode and OFF are reserved for use after possible instrument failures. See the NIMS instrument paper (R. W. Carlson et al, 'Near-Infrared Mapping Spectrometer Experiment on Galileo', Space Science Reviews 60, 457-502, 1992) for details.

CITATION_DESC **CHARACTER**

The CITATION_DESC contains a citation for the product or DATA_SET_INFORMATION object in which it appears. It provides a string that may be used to cite the product (data set) in a publication. It should follow the standard citation order as outlined in Appendix B, Section 31.5.5.3.1 of the PDS Standards reference, which in turn follows established practice for scientific journals that cite electronic publications (e.g., AGU Reference citation format).

The CITATION_DESC must contain sufficient information to locate the product or data set in the PDS archives. For example, the CITATION_DESC in a DATA_SET_INFORMATION object must contain the DATA_SET_ID; it will also likely contain VOLUME_ID information for the archive volumes, an author list, a release date, and so on as appropriate.

Note that if CITATION_DESC is used within any product label within a data set, all product labels within that data set must also have a CITATION_DESC, even if they are only filled with 'N/A'.

DATA_SET Example:

CITATION_DESC = 'Levin, G.V., P.A. Strat, E.A. Guinness, P.G. Valko, J.H. King, and D.R. Williams, VL1/VL2 MARS LCS EXPERIMENT DATA RECORD V1.0, VL1/VL2-M-LCS-2-EDR-V1.0, NASA Planetary Data System, 2000.'

Data Product Example:

CITATION_DESC = 'Cunningham, C., MINOR PLANET INDEX TO SCIENTIFIC PAPERS, EAR-A-5-DDR-BIBLIOGRAPHY-V1.0:REFS-REFS-199409, NASA Planetary Data System, 1994.'

CLASSIFICATION_ID [PDS_EN] CHARACTER(20)

The classification_id data element supplies an identifier that is used to link an abbreviated term to a full, spelled-out name that would be displayed in a data dictionary. In the PDS, classification_id is a general term that embraces both general_classification_type and system_classification_id.

CLEARANCE_DISTANCE [PDS_MER_OPS] REAL <mm>

The CLEARANCE_DISTANCE element indicates the z-axis backoff distance for dwell operation after grind to clear the rat hole of dust.

CLUSTERED_KEY [PDS_EN] CHARACTER(12)

The clustered_key element indicates whether a column in a table is part of a unique clustered index. This index determines uniqueness in the table and the sorting order of the data.

CMPRS_QUANTZ_TBL_ID [PDS_IMG_GLL] IDENTIFIER

The cmprs_quantz_tbl_id (compression quantization table identifier) element provides the Integer Cosine Transform 8X8 quantization matrix identifier. For Galileo the valid values are: UNIFORM, VG2, VG3, UNK.

COGNIZANT_FULL_NAME CHARACTER(60)

The cognizant_full_name element provides the full name of the individual who has either developed the processing software or has current knowledge of its use. See also: full_name.

COLUMN_DESCRIPTION [PDS_EN] CHARACTER

This is the description of an element in the data base. There should be a description for every element.

COLUMN_NAME [PDS_EN] CHARACTER(30)

This is the ¡ or = to 30 character dictionary name used in documentation and template objects. They are unique and are an alias to the BLNAMEs.

COLUMN_NUMBER INTEGER(>=1)

The column_number element identifies the location of a specific column within a larger data object, such as a table. For tables consisting of rows (i = 1, N) and columns (j = 1,M), the column_number is the j-th index of any row.

COLUMN_ORDER **[PDS_EN]** **INTEGER(>=0)**

The column_order element represents the sequence number of columns within a table. The sequence begins with 1 for the first column and is incremented by 1 for each subsequent column in the table.

COLUMN_VALUE **[PDS_EN]** **CHARACTER(80)**

The column value contains a standard ASCII value used in domain validation. An element may have many possible values that are valid.

COLUMN_VALUE_NODE_ID **[PDS_EN]** **CHARACTER(10)**

The column_value_node_id element indicates a list of one or more science nodes for which a standard value is available. The list of science nodes is represented as a concatenation of single-character identifiers in alphabetic order. Allowable identifiers include: F (Fields and Particles), I (Images), N (NAIF), U (unknown - valid only if the column_value_type element is 'P' for a possible value that was provided but the provider is unknown), A (Atmospheres), P (Planetary Rings), R (Radiometry), S (Spectroscopy).

COLUMN_VALUE_TYPE **[PDS_EN]** **CHARACTER(1)**

The column_value_type element indicates whether a standard value is considered to be an available value (the value currently exists in the PDS catalog) or a possible value (the value does not currently exist in the PDS catalog but may exist in the future). Example values: A (available value) or P (possible value).

COLUMNS **INTEGER(>=1)**

The columns element represents the number of columns in each row of a data object. Note: In the PDS, the term 'columns' is synonymous with 'fields'.

COMMAND_DESC **IDENTIFIER**

The command_desc element provides a textual description associated with a COMMAND_NAME.

COMMAND_FILE_NAME **[PDS_EN]** **CHARACTER**

The command_file_name element provides the name of the file containing the commanded observation description for this product. Note: For Cassini, this comes from the Instrument Operations Interface (IOI) file.

COMMAND_INSTRUMENT_ID **[PDS_MER_OPS]** **CHARACTER(20)**

The COMMAND_INSTRUMENT_ID element provides an abbreviated name or acronym that identifies an instrument that was commanded.

COMMAND_NAME **CHARACTER(30)**

The command_name element provides the name of an uplinked command sent to a spacecraft or instrument.

COMMAND_OPCODE **[PDS_MER_OPS]** **INTEGER**

The COMMAND_OPCODE element provides the operations code of the command used to generate an instrument data product. Opcodes are determined by the data processing software owner and are documented in the Data Product

SIS.

COMMAND_SEQUENCE_NUMBER **INTEGER(>=0)**

The command_sequence_number element provides a numeric identifier for a sequence of commands sent to a spacecraft or instrument.

COMMENT_DATE **[PDS_EN]** **DATE**

The comment_date element indicates the date when a user's comment information is inserted into the data base.

COMMENT_ID **[PDS_EN]** **INTEGER(0, 2147483648)**

The comment_id element is a unique key used to identify a particular set of user comments.

COMMENT_TEXT **[PDS_EN]** **CHARACTER**

The comment_text indicates a line of text in a user's comments.

COMMITTEE_MEMBER_FULL_NAME **[PDS_EN]** **CHARACTER(60)**

The committee_member_full_name element identifies a peer review committee member. The member does not necessarily have a PDS userid. See also: full_name.

COMPRESSION_TYPE **[PDS_IMG_GLL]** **IDENTIFIER**

The compression_type element indicates the type of compression/encoding used for data that was subsequently decompressed/unencoded before storage.

COMPRESSOR_ID **[PDS_EN]** **INTEGER**

The compressor_id element identifies the compressor through which the data was compressed.

COMPUTER_VENDOR_NAME **[PDS_EN]** **CHARACTER(30)**

The computer_vendor_name element identifies the manufacturer of the computer hardware on which the processing software operates.

CONE_ANGLE **REAL(0, 180) <deg>**

The cone_angle element provides the value of the angle between the primary spacecraft axis and the pointing direction of the instrument.

CONE_OFFSET_ANGLE **REAL(-90, 180) <deg>**

The cone_offset_angle element provides the elevation angle (in the cone direction) between the pointing direction along which an instrument is mounted and the cone axis of the spacecraft. See also cross_cone_offset_angle, twist_offset_angle, and cone_angle.

CONFIDENCE_LEVEL_NOTE **CHARACTER**

The confidence_level_note element is a text field which characterizes the reliability of data within a data set or the reliability of a particular programming algorithm or software component. Essentially, this note discusses the level of confidence in the accuracy of the data or in the ability of the software to produce accurate results.

CONFIGURATION_BAND_ID **[PDS_MER_OPS]** **CHARACTER(30)**

The CONFIGURATION_BAND_ID element specifies an array of stings identifying the configuration of the Instrument Deployment Device (IDD) arm represented by the corresponding band in the image. The first entry in the array indentifies the configuration for the first band, the second entry for the second band, etc. An example for the Mars Exploration Rover Microscopic Imager would be: 'ELBOW_UP_WRIST_UP'. Also see INSTRUMENT_BAND_ID.

CONTACT_SENSOR_STATE **[PDS_MER_OPS]** **CHARACTER**

The CONTACT_SENSOR_STATE element is an array of identifiers for the state of an instrument or an instrument host's contact sensors at a specified time.

Note: For MER, the values corresponding to APXS DOOR SWITCH (array position 7 only) are OPEN or CLOSED. Other array position values are CONTACT or NO CONTACT

CONTACT_SENSOR_STATE_NAME **[PDS_MER_OPS]** **CHARACTER(19)**

The CONTACT_SENSOR_STATE_NAME element indicates the possible value that can be contained in the CONTACT_SENSOR_STATE array.

CONTAMINATION_DESC **CHARACTER**

The contamination_desc element describes the type of data contamination which is associated with a particular contamination_id value. The various values of contamination_id and contamination_desc are instrument dependent.

CONTAMINATION_ID **IDENTIFIER**

The contamination_id element identifies a type of contamination which affected an instrument during a particular period of data acquisition. The associated contamination_desc element describes the type of contamination.

CONVERTER_CURRENT_COUNT **[PDS_EN]** **INTEGER(>=0) <deg>**

The CONVERTER_CURRENT_COUNT element provides the current of a power supply converter, measured in raw counts.

Note: For Mars Pathfinder, this referred specifically to the current of the APXS 9 volt converter at the end of the spectrum measurement.

CONVERTER_VOLTAGE_COUNT **[PDS_EN]** **INTEGER(>=0) <deg>**

The CONVERTER_VOLTAGE_COUNT element provides the voltage of a power supply converter, measured in raw counts.

Note: For Mars Pathfinder, this referred specifically to the current of the APXS 9 volt converter at the end of the spectrum measurement.

COORDINATE_SYSTEM_CENTER_NAME **CHARACTER(40)**

The coordinate_system_center_name element identifies a named target, such as the Sun, a planet, a satellite or a spacecraft, as being the location of the center of the reference coordinate system. The coordinate_system_center_name element can also be used to identify a barycenter used for a SPICE s_ or p_kernel.

COORDINATE_SYSTEM_DESC **CHARACTER**

The coordinate_system_desc element describes a named reference coordinate system in terms of the definitions of the axes and the 'handedness' of the system. It also provides other necessary descriptive information, such as the rotation period for rotating coordinate systems.

COORDINATE_SYSTEM_ID **IDENTIFIER**

The coordinate_system_id element provides an alphanumeric identifier for the referenced coordinate system.

COORDINATE_SYSTEM_INDEX **[PDS_MER_OPS]** **INTEGER**

The COORDINATE_SYSTEM_INDEX element describes an integer array. The array values are used to record and track the movement of a rover during surface operations. When in a COORDINATE_SYSTEM_STATE group, this keyword identifies which instance of the coordinate frame, named by COORDINATE_SYSTEM_NAME, is being defined by the group.

NOTE: For MER, the indices are based on the ROVER_MOTION_COUNTER. This counter is incremented each time the rover moves (or may potentially have moved, e.g., due to arm motion). The full counter may have up to 5 values (SITE, DRIVE, IDD, PMA, HGA), but normally only the first value (for SITE frames) or the first two values (for LOCAL_LEVEL or ROVER frames) are used for defining coordinate system instances. It is legal to use any number of indices to describe a coordinate system instance, however. Example: COORDINATE_SYSTEM_INDEX = (1,3,2,3,2).

COORDINATE_SYSTEM_INDEX_NAME **[PDS_MER_OPS]** **CHARACTER**

The COORDINATE_SYSTEM_INDEX_NAME element is an array of the formal names identifying each integer specified in COORDINATE_SYSTEM_INDEX.

COORDINATE_SYSTEM_NAME **CHARACTER(30)**

The coordinate_system_name element provides the full name of the coordinate system to which the state vectors are referenced. PDS has currently defined body-fixed rotating coordinate systems.

The Planetocentric system has an origin at the center of mass of the body. The planetocentric latitude is the angle between the equatorial plane and a vector connecting the point of interest and the origin of the coordinate system. Latitudes are defined to be positive in the northern hemisphere of the body, where north is in the direction of Earth's angular momentum vector, i.e., pointing toward the hemisphere north of the solar system invariant plane. Longitudes increase toward the east, making the Planetocentric system right-handed.

The Planetographic system has an origin at the center of mass of the body. The planetographic latitude is the angle between the equatorial plane and a vector through the point of interest, where the vector is normal to a biaxial ellipsoid reference surface. Planetographic longitude is defined to increase with time to an observer fixed in space above the object of interest. Thus, for prograde rotators (rotating counter clockwise as seen from a fixed observer located in the hemisphere to the north of the solar system invariant plane), planetographic longitude increases toward the west. For a retrograde rotator, planetographic longitude increases toward the east. Note: If this data element is not present in the PDS Image Map Projection Object (for pre-V3.1 PDS Standards), the default coordinate system is assumed to body-fixed rotating Planetographic.

COORDINATE_SYSTEM_REF_EPOCH **REAL(>=2415000) <d>**

The coordinate_system_reference_epoch element provides the Julian date selected as the reference time for a geometric quantity that changes over time. For example, the location of a prime meridian may have a fixed value at a reference epoch, with additional time_dependent terms added.

COORDINATE_SYSTEM_TYPE **CHARACTER(25)**

There are three basic types of coordinate systems: body-fixed rotating, body-fixed non-rotating and inertial. A body-fixed coordinate system is one associated with a body (e.g., planetary body or satellite). In contrast to inertial coordinate systems, a body-fixed coordinate system is centered on the body and rotates with the body (unless it is a non-rotating type). For the inertial coordinate system type, the coordinate system is fixed at some point in space. Note: If this data element is not present in the PDS Image Map Projection Object (for pre-V3.1 PDS Standards), the default coordinate system is assumed to be body-fixed rotating Planetographic.

COPIES **[PDS_EN]** **INTEGER(>=0)**

The copies element provides the inventory software with the number of copies of an order that a node is willing to ship using a particular order.

CORE_BASE **[ISIS]** **REAL**

The core_base element, together with the core_multiplier element, describes the scaling performed on a 'true' data value to compute the value stored in the data object. It also defines the method for recovering the 'true' value: 'true'_value = base + multiplier * stored_value In ISIS practice, the value of core_base is 0.0 for real core items, since scaling is not usually necessary for floating point data. Note: Base and multiplier correspond directly to the PDS standard data elements OFFSET and SCALING_FACTOR.

CORE_HIGH_INSTR_SATURATION **[ISIS]** **CONTEXT DEPENDENT**

The core_high_instr_saturation element identifies a special value whose presence indicates the measuring instrument was saturated at the high end. This value must be algebraically less than the value of the core_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFCFFFF# for a VAX.

CORE_HIGH_REPR_SATURATION **[ISIS]** **CONTEXT DEPENDENT**

The core_high_repr_saturation element identifies a special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being above the allowable range – which may happen during conversion from another data type. This value must be algebraically less than the value of the core_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFBFFFF# for a VAX.

CORE_ITEM_BYTES **[ISIS]** **INTEGER(1, 4)**

The core_item_bytes element identifies the size in bytes of a core data value. It is the unit of the dimensions specified by the core_items element.

CORE_ITEM_TYPE **[ISIS]** **IDENTIFIER**

The core_item_type element identifies the data type of a core data value. A hardware-specific prefix is used on this element for qubes whose core contains items of more than one byte. The current VAX/VMS implementation of ISIS allows three item types, additional types will be added for a forthcoming Sun/Unix implementation.

CORE_ITEMS **[ISIS]** **INTEGER(1, 5000)**

The core_items element provides the sequence of dimensions of the core of a qube data object. The size of the most frequently varying axis is given first. The number of items specified must be equal to the value of the axes element and the items must be listed in storage order. Each dimension is measured in units of the core_item_bytes element.

CORE_LOW_INSTR_SATURATION [ISIS] CONTEXT DEPENDENT

The core_low_instr_saturation element identifies a special value whose presence indicates the measuring instrument was saturated at the low end. This value must be algebraically less than the value of the core_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFDFFFF# for a VAX.

CORE_LOW_REPR_SATURATION [ISIS] CONTEXT DEPENDENT

The core_low_repr_saturation element identifies a special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being below the allowable range – which may happen during conversion from another data type. This value must be algebraically less than the value of the core_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFEFFFF# for a VAX.

CORE_MINIMUM_DN [PDS_EN] INTEGER(-8192, 4095)

The core_minimum_dn element provides the lowest digital number (DN) value in the core of a spectral cube (ignoring values of CORE_NULL).

CORE_MULTIPLIER [ISIS] REAL

The core_multiplier element, together with the core_base element, describes the scaling performed on a 'true' data value to compute the value stored in the data object. It also defines the method for recovering the 'true' value: 'true'_value = base + multiplier * stored_value In ISIS practice, the value of core_multiplier is 1.0 for real core items, since scaling is not usually necessary for floating point data. Note: In the PDS, base and multiplier correspond directly to the data elements OFFSET and SCALING_FACTOR.

CORE_NAME [ISIS] CHARACTER(30)

The core_name element identifies the scientific meaning of the values in the core of a qube data object; e.g. SPECTRAL_RADIANCE or RAW_DATA_NUMBER.

CORE_NULL [ISIS] CONTEXT DEPENDENT

The core_null element identifies a special value whose presence indicates missing data. This value must be algebraically less than the value of the core_valid_minimum element. For Standard ISIS Qubes, the null value is chosen to be the algebraically smallest value allowed by the core_item_type and core_item_bytes elements. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly at the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFFFFFF# for a VAX. Note: In the PDS, the CORE_NULL element corresponds directly to the data element MISSING.

CORE_UNIT **[ISIS]** **CHARACTER(30)**

The core_unit element identifies the scientific unit of the values in the core of a qube data object; e.g. 'WATT*M**-2*SR**-1*uM**-1' (for spectral radiance) or 'DIMENSIONLESS' (for raw data number).

CORE_VALID_MINIMUM **[ISIS]** **CONTEXT DEPENDENT**

The core_valid_minimum element identifies the minimum valid core value. Values algebraically less than this value are reserved for special values indicating missing data or various types of invalid data. The general data type of this element is determined by the core_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware-specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFEFFFFF# for a VAX.

CREATE_DATE **[PDS_EN]** **DATE**

This date is in YYYYMMDD format and is used for storing the create date of a table or query on the data base.

CRITICALITY **[PDS_EN]** **CHARACTER(1)**

This column stores the criticality code for an attribute. A criticality id is assigned to each table's attribute so the criticality can be dependent on the usage within a table. This criticality is used by the catalog bulk load software during a template object validation step.

CROSS_CONE_ANGLE **REAL(0, 360) <deg>**

The cross_cone_angle element provides the value of an azimuthal measurement orthogonal to cone_angle.

CROSS_CONE_OFFSET_ANGLE **REAL(-180, 360) <deg>**

The cross_cone_offset_angle element provides the azimuthal angle (in the cross-cone direction) between the pointing direction along which an instrument is mounted and the cross_cone axis of the spacecraft. See also cone_offset_angle, twist_offset_angle, and cross_cone_angle.

CROSSTRACK_SUMMING **[PDS_IMG]** **INTEGER(1, 127)**

The crosstrack_summing element provides the number of detector pixel values in the crosstrack direction that have been averaged to produce the final output pixel.

CRYOCOOLER_DURATION **INTEGER(>=0) <s>**

The cryocooler_duration element provides the length of time the cryocooler was on when an observation was made.

CRYOCOOLER_TEMPERATURE **REAL(>=0) <K>**

The cryocooler_temperature element provides the temperature of the cryocooler at the time an observation was made.

CURATING_NODE_ID **[DIS]** **CHARACTER(30)**

The curating_node_id element provides the id of the node currently maintaining the data set or volume and is responsible for maintaining catalog information.

CUT_OUT_WINDOW **[PDS_IMG_GLL]** **INTEGER**

Galileo Solid State Imaging-specific. Images can be edited so that only an image area or CUT OUT WINDOW is compressed using Integer Cosine Transform, BARC or Huffman compression and transmitted to Earth. The cut_out_-window element indicates the location and size of this image area as defined by four numbers: starting line, starting sample, number of lines, number of samples (the origin of the image coordinate system is at line, sample=1,1 for the upper-left corner with samples increasing to the right and lines increasing down).

CYCLE_ID **IDENTIFIER**

The cycle_id element identifies one of several cycles, each of which is a set of repeated activities.

DA_CONTACT_PDS_USER_ID **CHARACTER(60)**

The da_contact_pds_user_id element provides the pds_user_id of the data administration contact at a node.

DARK_CURRENT_CORRECTION_FLAG **CHARACTER(5)**

The dark_current_correction_flag element indicates whether or not a dark current correction was applied to an image. Note: For MPF, this correction was applied to the image on board the spacecraft, before the image was transmitted to Earth.

DARK_CURRENT_CORRECTION_TYPE **[PDS_EN]** **CHARACTER(15)**

The DARK_CURRENT_CORRECTION_TYPE element specifies the type of dark current correction applied to an image for purposes of radiometric calibration.

Note: For Mars Pathfinder, the valid values were: PRIME = vertical for the front rover cameras, horizontal for the back camera; BOTH = both horizontal and vertical.

DARK_CURRENT_DOWNLOAD_FLAG **CHARACTER(5)**

The dark_current_download_flag element indicates whether or not an image of the dark strip area of the CCD was downlinked along with the image data.

DARK_CURRENT_FILE_NAME **CHARACTER(50)**

The DARK_CURRENT_FILE_NAME element provides the dark current image file (an image taken without opening the camera shutter) which should be used to perform radiometric calibration of the image. The dark current image provides a reference label of the build-up of any charges on the sensor that need to be subtracted from a shuttered image during calibration. Selection of the appropriate dark current image may be based on time, camera, temperature, readout conditions, light flood, gain and offset.

DARK_LEVEL_CORRECTION **[PDS_EN]** **REAL(>=0) <deg>**

The DARK_LEVEL_CORRECTION element provides the DN value subtracted from every pixel in an image for purposes of radiometric calibration.

DARK_STRIP_MEAN **[PDS_EN]** **REAL(>=0)**

The dark_strip_mean element provides the mean value of the pixels in the dark strip area of a CCD. The dark strip is an area of the CCD which is covered in such a way as to receive no light. The dark strip provides a measure of the dark current in the CCD. Note: For Cassini, the dark strip pixels were referred to as extended pixels. Also, the mean was calculated without the values from the first and last lines of the CCD.

DATA_BUFFER_STATE_FLAG **[PDS_EN]** **CHARACTER(8)**

The data_buffer_state_flag element indicates whether the data buffer onboard the spacecraft was enabled to allow for the temporary storage of the data before being downloaded.

DATA_CONVERSION_TYPE [PDS_EN] CHARACTER(10)

The data_conversion_type element provides the method of conversion used to reduce an image from one bit depth to another. Note: For Cassini, this means conversion of a selected image from 12 to 8 bits.

DATA_COVERAGE_PERCENTAGE REAL(0, 100)

The data_coverage_percentage element gives the percentage of samples obtained compared to the maximum number that could have been obtained.

DATA_ENGINEER_FULL_NAME [DIS] CHARACTER(30)

The data_engineer_full_name element provides the id of the CN data engineer.

DATA_FORMAT IDENTIFIER

The data_format element supplies the name of the data format or language that was used to archive the science data that this software accesses.

DATA_LINES [PDS_PPI] INTEGER

The number of complete or partial lines with valid data within a frame of high rate data. Note: Voyager Specific: A frame of high rate waveform data can include up to 800 lines, however, some lines may be missing due to data outages or only a partial frame may have been recorded. This parameter provides some visibility on how complete a given frame is.

DATA_OBJECT_TYPE IDENTIFIER

The data_object_type element identifies the data object type of a given set of data. Example values: IMAGE, MAP, SPECTRUM Note: Within the PDS, data object types are assigned according to the standards outlined in the PDS Standards Reference. Note: within AMMOS and only for the Magellan catalog, this element is used as an alias for data_set_id. The use of data_object_type as such provides backward compatibility with earlier AMMOS conventions. The use of this element as an alias for data_set_id is not recommended for any new tables. See data_set_id.

DATA_PATH_TYPE IDENTIFIER

The data_path_type element identifies the type of data path for transmission between an instrument and the ground data storage system. Example values: REALTIME, RECORDED DATA PLAYBACK.

DATA_PROVIDER_NAME [PDS_EN] CHARACTER

The data_provider_name element provides the name of the individual responsible for providing the release object and data.

DATA_QUALITY_DESC CHARACTER

The data_quality_desc element describes the data quality which is associated with a particular data_quality_id value. The various values of data_quality_id and data_quality_desc are instrument dependent.

DATA_QUALITY_ID IDENTIFIER

The data_quality_id element provides a numeric key which identifies the quality of data available for a particular time period. The data_quality_id scheme is unique to a given instrument and is described by the associated data_quality_desc element.

DATA_RATE **REAL <b/s>**

The data_rate element provides the rate at which data were transmitted from a spacecraft to the ground (i.e., the telemetry rate).

DATA_RECORDS **[MARS_OBSERVER]** **INTEGER**

The data_records data element indicates the number of records that appear in a particular data file. Note: Within AMMOS, this element is used as a validation tool to ensure data integrity for stream files that have no end marker.

DATA_REGION **[PDS_EN]** **INTEGER(>=0)**

The data_region element provides the actual area of data collection (accounting for offsets, widths and lengths) referenced to the upper-left corner of the front band in a normal spectral cube. Note: For Cassini, the normal spectral cube dimensions are (64,64,352) where the upper-left corner of the front band is defined as (sample, band, line) = (1, 1, 1). The data_region element applies only to IMAGE mode data and should be ignored for non-IMAGE modes.

DATA_SET_CATALOG_FLAG **[PDS_EN]** **CHARACTER(1)**

The data_set_catalog_flag element indicates whether or not a data set collection or a data set exists in the PDS Data Set Catalog.

DATA_SET_COLL_OR_DATA_SET_ID **[PDS_EN]** **CHARACTER(40)**

The data_set_coll_or_data_set_id element provides the identifier for either a PDS data set collection or data set.

DATA_SET_COLLECTION_DESC **CHARACTER**

The data_set_collection_desc element describes the content and type of the related data sets contained in the collection.

DATA_SET_COLLECTION_ID **IDENTIFIER**

The data_set_collection_id element is a unique alphanumeric identifier for a collection of related data sets or data products. The data set collection is treated as a single unit, whose components are selected according to a specific scientific purpose. Components are related by observation type, discipline, target, time, or other classifications. Example value: PREMGN-E/L/H/M/V-4/5-RAD/GRAV-V1.0 Note: In the PDS, data set collection ids are constructed according to PDS nomenclature standards outlined in the in the Standards Reference.

DATA_SET_COLLECTION_MEMBER_FLG **CHARACTER(1)**

The data_set_collection_member_flg element indicates whether or not a data set is a member of a data set collection.

DATA_SET_COLLECTION_NAME **CHARACTER(60)**

The data_set_collection_name element provides the full name given to a collection of related data sets or data products. The data set collection is treated as a single unit, whose components are selected according to a specific scientific purpose. Components are related by observation type, discipline, target, time, or other classifications. Example value: PRE-MAGELLAN E/L/H/M/V 4/5 RADAR/GRAVITY DATA V1.0 Note: In the PDS, the data set collection name is constructed according to nomenclature standards outlined in the PDS Standards Reference.

DATA_SET_COLLECTION_RELEASE_DT **DATE**

The data_set_collection_release_dt element provides the date when the data set collection was released for use. Formation rule: YYYY-MM-DD

DATA_SET_COLLECTION_USAGE_DESC **CHARACTER**

The data_set_collection_usage_desc element provides information required to use the data.

DATA_SET_DESC **CHARACTER**

The data_set_desc element describes the content and type of a data set and provides information required to use the data (such as binning information).

DATA_SET_ID **IDENTIFIER**

The data_set_id element is a unique alphanumeric identifier for a data set or a data product. The data_set_id value for a given data set or product is constructed according to flight project naming conventions. In most cases the data_set_id is an abbreviation of the data_set_name. Example value: MR9/VO1/VO2-M-ISS/VIS-5-CLOUD-V1.0. Note: In the PDS, the values for both data_set_id and data_set_name are constructed according to standards outlined in the Standards Reference.

DATA_SET_LOCAL_ID **[PDS_SBN]** **CHARACTER(8)**

The DATA_SET_LOCAL_ID element provides a short (of order 3 characters) acronym used as the local ID of a data set (Example value: IGLC). It may also appear as the first element of file names from a particular DATA_SET (Example value:IGLCINDX.LBL).

DATA_SET_NAME **CHARACTER(60)**

The data_set_name element provides the full name given to a data set or a data product. The data_set_name typically identifies the instrument that acquired the data, the target of that instrument, and the processing level of the data. Example value: MR9/VO1/VO2 MARS IMAGING SCIENCE SUBSYSTEM/VIS 5 CLOUD V1.0. See also: data_set_id. Note: In PDS, the data_set_name is constructed according to standards outlined in the Standards Reference. Note: This element is defined in the AMMOS Magellan catalog as an alias for file_name to provide backward compatibility

DATA_SET_OR_INST_PARM_DESC **CHARACTER**

The data_set_or_inst_parm_desc element describes either a data set or instrument parameter.

DATA_SET_OR_INSTRUMENT_PARM_NM **CHARACTER(40)**

The data_set_or_instrument_parameter_name element provides either a data_set_parameter_name or an instrument_parameter_name. That is, this element may have values which are either the name of a parameter derived from measured data (the data_set_parameter_name) or the name of a parameter measured by an instrument (the instrument_parameter_name).

DATA_SET_PARAMETER_NAME **CHARACTER(40)**

The data_set_parameter_name element provides the name of the scientific parameter or physical quantity that was derived from measured data. A description of the dataset parameter is provided by the data_set_or_inst_parm_desc. See also instrument_parameter_name. Example value: MAGNETIC FIELD INTENSITY

DATA_SET_PARAMETER_UNIT **CHARACTER(60)**

The data_set_parameter_unit element specifies the unit of measure of associated data set parameters.

DATA_SET_RELEASE_DATE **DATE**

The data_set_release_date element provides the date when a data set is released by the data producer for archive or publication. In many systems this represents the end of a proprietary or validation period. Formation rule: YYYY-MM-DD Note: In AMMOS, the data_set_release_date element is used to identify the date at which a product may be released to the general public from proprietary access. AMMOS-related systems should apply this element only to proprietary data.

DATA_SET_TERSE_DESC **[PDS_EN]** **CHARACTER**

A brief description of the data set

DATA_SETS **INTEGER(>=0)**

The data_sets element identifies the number of data sets contained in a data set collection.

DATA_SOURCE_DESC **CHARACTER**

The data_source_desc element describes the source of a data value descriptive of a target body. The source may be a document, an individual, or an institution. See also data_source_id.

DATA_SOURCE_ID **IDENTIFIER**

The data_source_id element identifies the source of a data value descriptive of a target body. The source may be a document, an individual, or an institution, as described by the associated data_source_desc element.

DATA_STREAM_TYPE **[JPL_AMMOS_SPECIFIC]** **IDENTIFIER**

The data_stream_type element identifies a particular type of data stream to which the given data product is related. Note: In AMMOS this element is used to identify the particular type of data stream that a given decommutation map can process.

DATA_TYPE **IDENTIFIER**

The data_type element supplies the internal representation and/or mathematical properties of a value being stored. When DATA_TYPE is used within a FIELD object definition, its value applies only when the field is populated.

Note: In the PDS, users may find a bit-level description of each data type in the Standards Reference document.

DD_VERSION_ID **[PDS_EN]** **CHARACTER(11) <n/a>**

This element identifies the version of a PDS dictionary. Current PDS practice is to identify a data dictionary with the identifier used for the PDS Catalog build in which it resides, e.g., pdscat1r47, pdscat1r48, and so on. This keyword will use the upper case representation of the catalog identifier, e.g., PDSCAT1R47, PDSCAT1R48, etc.

DECAL_NAME **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The decal_name element describes the specific decalibration data file. This element is used only in AMMOS-Magellan mission operations.

DECLINATION **REAL(-90, 90) <deg>**

The DECLINATION element provides the value of an angle on the celestial sphere, measured north from the celestial equator to the point in question. (For points south of the celestial equator, negative values are used.) DECLINATION is used in conjunction with the RIGHT_ASCENSION keyword to specify a point on the sky.

To accurately specify a point on the sky, the following additional keywords are needed:

COORDINATE_SYSTEM_ID - Specifies the reference system as B1950 or J2000.

EQUINOX_EPOCH - Specifies the epoch of equinox in decimal years.

For a complete discussion of right ascension, declination, epoch, and reference systems, see [SEIDELMANN1992]:

Seidelmann, P.K., Ed., 'Explanatory Supplement to the Astronomical Almanac', University Science Books, Sausalito, California, 1992.

To relate the specified values of right ascension and declination to an image, the following keyword is needed:

RA_DEC_REF_PIXEL - A two-valued keyword to specify the reference pixel to which the RIGHT_ASCENSION and DECLINATION apply.

An additional useful keyword for specifying the relation of declination and right_ascension to an image is:

PIXEL_ANGULAR_SCALE - the angular scale of the image in arcseconds per pixel.

DEFINING_AUTHORITY_NAME **CHARACTER(60)**

The defining_authority_name element identifies the Control Authority Office (CAO) responsible for maintaining the definition of a particular SFDU format. CAOs are officially recognized by the Consultative Committee for Space Data Systems (CCSDS).

DELAYED_READOUT_FLAG **[PDS_EN]** **CHARACTER(3)**

The delayed_readout_flag element provides an indication of whether or not an image had to remain stored on a CCD while some some other instrument function was taking place. Note: for Cassini, the delay in the image readout is due to the readout of the alternate camera image from the CCD.

DELIMITING_PARAMETER_NAME **[PDS_EN]** **CHARACTER(30)**

The delimiting_parameter_name element provides the name of a parameter the values of which are used to establish the boundaries of a set of data. Example values: FRAME IDENTIFICATION, LOCAL TIME, MAXIMUM LATITUDE.

DERIVED_FRESNEL_REFLECT_CORR **[PDS_GEO_MGN]** **REAL**

The derived_fresnel_reflect_corr element provides the value of the derived_fresnel_reflectivity correction factor for diffuse scattering which is a factor by which the derived_fresnel_reflectivity be multiplied by (but only if the derived_-fresnel_reflectivity is set in alt_flag_group), to allow for the effect of small-scale surface roughness.

DERIVED_FRESNEL_REFLECTIVITY **[PDS_GEO_MGN]** **REAL**

The derived_fresnel_reflectivity element provides the value of the bulk reflectivity of the surface material, averaged over the radar footprint, obtained by fitting the altimeter echo to a suite of theoretical templates derived from the Hagfors scattering model, but ignoring the effect of small-scale surface roughness.

DERIVED_IMAGE_TYPE **[PDS_MER_OPS]** **CHARACTER**

The DERIVED_IMAGE_TYPE element indicates how to interpret the pixel values in a derived image RDR (or colloquially, the type of the derived image itself). Values are defined as: IMAGE - Standard image, where pixels represent intensity. Note: This implies nothing about radiometric, geometric, or other corrections that may have been applied. XYZ_MAP - Pixels represent XYZ values (3 bands). X_MAP - Pixels represent the X component of an XYZ image. Y_MAP - Pixels represent the Y component of an XYZ image. Z_MAP - Pixels represent the Z component of an XYZ image. RANGE_MAP - Pixels represent a distance from the camera center. DISPARITY_MAP - Pixels represent line and sample disparity with respect to another image (2 bands). DISPARITY_LINE_MAP - Pixels represent line disparity only. DISPARITY_SAMPLE_MAP - Pixels represent sample disparity only.

DERIVED_MAXIMUM **CONTEXT DEPENDENT**

The derived_maximum element indicates the largest value occurring in a given instance of the data object after the application of a scaling factor and/or offset.

DERIVED_MINIMUM **CONTEXT DEPENDENT**

The derived_minimum element indicates the smallest value occurring in a given instance of the data object after the application of a scaling factor and/or offset.

DERIVED_PLANETARY_RADIUS **[PDS_GEO_MGN]** **REAL <km>**

The derived_planetary_radius element provides the value of the mean Venus radius for this radar footprint, obtained by subtracting (uncorrected_range_to_nadir - atmospheric_correct_to_range) from the length of the alt_spacecraft_position_vector element.

DERIVED_PLANETARY_THRESH_RADI **[PDS_GEO_MGN]** **REAL <km>**

The derived_planetary_thresh_radi element provides the value of the threshold Venus radius for this radar footprint, obtained from the value of the derived_thresh_detector_index element, after correcting for atmospheric delay.

DERIVED_RMS_SURFACE_SLOPE **[PDS_GEO_MGN]** **REAL <deg>**

The derived_rms_surface_slope element provides the value of the root mean square meter-scale surface slope, averaged over the radar footprint, obtained by fitting the altimeter echo to a suite of theoretical templates derived from the Hagfors scattering model.

DERIVED_THRESH_DETECTOR_INDEX **[PDS_GEO_MGN]** **INTEGER**

The derived_thresh_detector_index element provides the value of the element in range_sharp_echo_profile that satisfies the altimeter threshold detection algorithm, representing the distance to the nearest object in this radar footprint in units of 33.2 meters, modulus a 10.02 kilometer altimeter range ambiguity.

DESCRIPTION **CHARACTER**

The description element provides a free-form, unlimited-length character string that represents or gives an account of something.

DETAILED_CATALOG_FLAG **CHARACTER(1)**

The detailed_catalog_flag element is a yes-or-no flag which indicates whether additional information is available for this data set in a detailed-level catalog.

DETECTOR_ASPECT_RATIO **REAL**

The detector_aspect_ratio element provides the ratio of the horizontal to the vertical field of view of a detector.

DETECTOR_DESC **CHARACTER**

The detector_desc element describes a detector utilized by an instrument.

DETECTOR_ERASE_COUNT **[PDS_MER_OPS]** **INTEGER(0, 15)**

The DETECTOR_ERASE_COUNT element provides the number of times a detector has been flushed of data in raw counts.

DETECTOR_FIRST_LINE **[PDS_MER_OPS]** **INTEGER(1, 1024)**

The DETECTOR_FIRST_LINE element indicates the starting row from the hardware, such as a charge-coupled device (CCD), that contains data.

DETECTOR_GROUPS **INTEGER**

Definition TBD.

DETECTOR_ID **IDENTIFIER**

The detector_id element identifies a particular instrument detector. The associated detector_desc element describes the detector.

DETECTOR_LINES **[PDS_MER_OPS]** **INTEGER(1, 1024)**

The DETECTOR_LINES element indicates the number of rows extracted from the hardware, such as a charge-coupled device (CCD), that contain data.

DETECTOR_PIXEL_HEIGHT **REAL(>=0) <micron>**

The detector_pixel_height element provides the height of a pixel in the CCD sensor measured in microns.

DETECTOR_PIXEL_WIDTH **REAL(>=0) <micron>**

The detector_pixel_width element provides the width of a pixel in the Charge-Coupled Device (CCD) sensor measured in microns.

DETECTOR_TEMPERATURE **[PDS_GEO_VL]** **REAL(0, -2147483648) <K>**

The DETECTOR_TEMPERATURE is the temperature that the instrument (detector) operated at while a measurement was made. The importance for Viking Lander is that the radiometric calibration is slightly dependent on detector temperature.

DETECTOR_TO_IMAGE_ROTATION **[PDS_MER_OPS]** **REAL <deg>**

The DETECTOR_TO_IMAGE_ROTATION element provides the clockwise rotation, in degrees, that was applied to an image along its optical path through an instrument, from detector to final image orientation.

DETECTOR_TYPE **IDENTIFIER**

The detector_type element identifies the type of an instrument's detector. Example values: SI CCD, INSB, GE, VIDICON, PHOTODIODE.

DETECTORS **INTEGER(>=0)**

The detectors element provides the number of detectors of a specified type contained in the subject instrument.

DIFFRACTION_CORRECTED_FLAG [PDS_RINGS] CHARACTER(1)

The diffraction_corrected_flag element is a yes-or-no flag that indicates whether a ring occultation data product has been corrected for diffraction. In general, it equals 'N' for stellar occultation but data may equal 'Y' or 'N' for radio occultation data, depending on the processing. If the data product has been corrected for diffraction, then the radres element specifies the processing resolution.

DISCIPLINE_DESC CHARACTER

The discipline_desc element describes the discipline identified by the discipline_name element.

DISCIPLINE_NAME CHARACTER(30)

The discipline_name element identifies the major academic or scientific domain or specialty of interest to an individual or to a PDS Node.

DISPERSION_MODE_ID [PDS_SBN] IDENTIFIER

The DISPERSION_MODE_ID element describes the dispersion mode selected for a spectrograph. Note: For the International Ultraviolet Explorer (IUE) spacecraft, the spectrographs can operate in a low (2.64 Angstrom/pix for Long-Wavelength Primary (LWP) and 1.67 A/pix for Short-Wavelength Primary (SWP)) or high (7.22 km/sec/pix for LWP and 7.70 km/sec/pix for SWP) dispersion mode.

DISPLAY_FORMAT [PDS_EN] CHARACTER(12)

The display_format element provides display format information to software that formats data to an output device. Valid format types include DATE(x) where X is the number of digits in a date. Usually DATE(6) (YYYY-MM) or DATE(8) (YYYY-MM-DD). TIME(X) where X is the number of digits in a time statement. This is usually represented as TIME(6) (HH:MM:SS) or TIME(4) (HH:MM)> DATETIME is used for UTC system format date-times (MM-DD-YYYYTHH:MM:SS.HHH). JUSTLEFT is used for left-justified character strings, and JUSTRIGHT is used for right justification. DIGIT(X) is used where X is the number of digits in an integer, so 897 would be DIGIT(3). SCI(X,Y) is used where X is the number of significant digits before the decimal in scientific notation, and Y is the number following the decimal, so 1.293E-2 would be SCI(1,3). FLOAT(X) is used where X is the total number of digits in a floating point number, so 33.018746 would be FLOAT(8). USDOLLAR is used for monetary amounts in the indicated currency, PHONE is used for telephone numbers, and FTSPHONE is used for seven-digit numbers in the Federal Telephone System.

DISTRIBUTION_TYPE [PDS_EN] CHARACTER

The DISTRIBUTION_TYPE element identifies the type or category of a data product within a data set release.

DOCUMENT_FORMAT CHARACTER(60)

The document_format element represents the manner in which documents are stored, such as TEX, POSTSCRIPT, TIFF, etc. Version numbers for these formats should be included when appropriate, such as 'WORDPERFECT 5.0'.

DOCUMENT_NAME CHARACTER(120)

The document_name element provides the name of a document.

DOCUMENT_TOPIC_TYPE CHARACTER(60)

The document_topic_type element is a keyword which identifies the major topic of a reference document.

DOWNLOAD_ID **CHARACTER(60)**

The download_id element is the unique mission identifier used to indicate a download of the spacecraft's onboard digital data storage unit.

DOWNLOAD_PRIORITY **[PDS_MER_OPS]** **INTEGER(0, 100)**

The DOWNLOAD_PRIORITY element specifies which data to download based on order of importance.

DOWNLOAD_TYPE **CHARACTER(10)**

The download_type element specifies which data to download. Note: For MPF, this specified any or all of: image data (IM), dark current strip (DS), and null pixel data (NS).

DOWNSAMPLE_METHOD **[PDS_MER_OPS]** **CHARACTER(30)**

The DOWNSAMPLE_METHOD element indicates whether or not hardware downsampling was applied to an image.

DOWNTRACK_SUMMING **[PDS_IMG]** **INTEGER(1, 127)**

The downtrack_summing element provides the number of detector pixel values in the downtrack direction that have been averaged to produce the final output pixel.

DSN_SPACECRAFT_NUM **[JPL_AMMOS_SPECIFIC]** **INTEGER(>=0)**

The dsn_spacecraft_num element identifies the unique Deep Space Network identification number for a spacecraft or other data source/sink from which a product came or to which the product is to be sent.

DSN_STATION_NUMBER **INTEGER(>=0)**

The dsn_station_num identifies the deep space network station number through which data were received or to which commands are to be sent.

DUST_FLAG **[PDS_GEO_VL]** **CHARACTER(1)**

The DUST_FLAG parameter indicates whether a dust sequence was executed in association with an image or observation.

EARLY_IMAGE_RETURN_FLAG **[PDS_MER_OPS]** **CHARACTER <n/a>**

The EARLY_IMAGE_RETURN_FLAG element indicates the deferral of on-board post processing of the image and the returns the image early to an onboard client.

EARLY_PIXEL_SCALE_FLAG **[PDS_MER_OPS]** **CHARACTER**

The EARLY_PIXEL_SCALE_FLAG element indicates the scaling of pixels. If TRUE, pixels are scaled early (from 12 to 8 bits).

EARTH_BASE_DESC **CHARACTER**

The earth_base_desc element describes the earth base from which particular instrument measurements where taken. An earth base can be a laboratory, observatory, etc., and is identified by the earth_base_id element.

EARTH_BASE_ID **IDENTIFIER**

The earth_base_id element provides a unique identifier for the laboratory, observatory, or other location of an earth-based instrument.

EARTH_BASE_INSTITUTION_NAME **CHARACTER(60)**

The earth_base_institution_name element identifies a university, research center, NASA center or other institution associated with a laboratory or observatory.

EARTH_BASE_NAME **CHARACTER(60)**

The earth_base_name element identifies the name of the laboratory, observatory, or other location of a earth-based instrument.

EARTH_RECEIVED_START_TIME **[PDS_RINGS]** **TIME**

The earth_received_start_time element provides the beginning time at which telemetry was received during a time period of interest. This should be represented in UTC system format. See also earth_received_time.

EARTH_RECEIVED_STOP_TIME **[PDS_RINGS]** **TIME**

The earth_received_stop_time element provides the ending time for receiving telemetry during a time period of interest. This should be represented in the UTC system format. See also earth_received_time.

EARTH_RECEIVED_TIME **TIME**

The earth_received_time element provides the time at which telemetry was received on earth. This should be represented in the UTC system format. For real time data, the difference between this time and the spacecraft_event_time is the signal travel time from the spacecraft to earth. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

EARTH_TARGET_POSITION_VECTOR **REAL <km>**

The EARTH_TARGET_POSITION_VECTOR element indicates the x-, y-, z- components of the position vector from the Earth to the target, expressed in J2000 coordinates, and corrected for light time, evaluated at the epoch at which the image was taken.

EARTH_TARGET_VELOCITY_VECTOR **REAL <km/s>**

The EARTH_TARGET_VELOCITY_VECTOR element indicates the x-, y-, z- components of the velocity vector of the Earth relative to the target, expressed in J2000 coordinates, and corrected for light time, evaluated at the epoch at which the image was taken.

EASTERNMOST_LONGITUDE **REAL(-180, 360) <deg>**

The following definitions describe easternmost longitude for the body-fixed, rotating coordinate systems:

For Planetocentric coordinates and for Planetographic coordinates in which longitude increases toward the east, the easternmost (rightmost) longitude of a spatial area (e.g.,a map, mosaic, bin,feature or region) is the maximum numercial value of longitude unless it crosses the Prime Meridian.

For Planetographic coordinates in which longitude increases toward the west, the easternmost (rightmost) longitude of a spatial area (e.g., a map,mosaic, bin, feature or region) is the minimum numerical value of longitude unless it crosses the Prime Meridian.

For the Earth, Moon and Sun, PDS also supports the traditional use of the range (-180,180) in which case the easternmost (rightmost) longitude is the maximum numerical value of longitude unless it crosses 180.

EDIT_MODE_ID **CHARACTER(20)**

The edit_mode_id element indicates the amount of data read from an imaging instrument's vidicon. '1:1' indicates the full-resolution of the vidicon. Example values: (Voyager) 3:4, 1:2, 1:3, 1:5, and 1:1.

EDIT_ROUTINE_NAME **[PDS_EN]** **CHARACTER(12)**

The edit_routine_name element provides the name of a edit routine name that the catalog bulk loading software should execute during any validation procedures.

EDR_FILE_NUMBER **INTEGER(1, 100)**

The EDR_FILE_NUMBER element provides the file position of the data file when it was originally recorded on an Experiment Data Record tape.

EDR_SOFTWARE_NAME **[CLEM]** **CHARACTER(30)**

The edr_software_name element identifies the name and version of the Clementine Mission software that generated the EDR products.

EDR_TAPE_ID **CHARACTER(7)**

The EDR_TAPE_ID element indicates the volume identifier of the Experiment Data Record tape on which the data file was originally recorded.

EFFECTIVE_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

The effective_time is an alias for start_time used by AMMOS- MGN ephemeris files to define the time at which the data takes effect.

ELECTRONIC_MAIL_ID **CHARACTER**

The electronic_mail_id element provides an individual's mailbox name on the electronic mail system identified by the electronic_mail_type element.

ELECTRONIC_MAIL_TYPE **CHARACTER(20)**

The electronic_mail_type element identifies an electronic mail system by name. Example values: TELEMAIL, NSI/DECNET.

ELECTRONICS_BIAS **[PDS_EN]** **INTEGER(0, 255)**

The electronics_bias element provides the commanded electronics bias value that is used to ensure that all digital number (DN) values in the data are greater than zero.

ELECTRONICS_DESC **CHARACTER**

The electronics_desc element describes the electronics associated with a given instrument.

ELECTRONICS_ID **IDENTIFIER**

The electronics_id element identifies the electronics associated with a given instrument.

ELEVATION **REAL(-90, 90) <deg>**

The elevation element provides the angular elevation of a point of interest (for example, the center point of an image of a solar system object taken from a lander or a rover) above the azimuthal reference plane. Elevation is measured in a spherical coordinate system. The zero elevation point lies in the azimuthal reference plane and positive elevation is measured toward the positive direction of the principal axis of the spherical coordinate system. See azimuth.

ELEVATION_FOV **REAL(0, 360) <deg>**

The elevation_fov element provides the angular measure of the vertical field of view of an imaged scene. Note: For MPF, 'vertical' is measured along the ZIMP axis of the IMP coordinate system.

ELEVATION_MOTOR_CLICKS **INTEGER(>=0)**

The elevation_motor_clicks element provides the number of motor step counts an instrument or other mechanism rotated in the vertical direction from the low hard stop. Note: For MPF, each step count corresponded to 0.553 degrees. The valid range was 0 to 1023.

EMECL_SC_QUATERNION **REAL(-1, 1)**

The EMECL_SC_QUATERNION element defines a normalized quaternion of rotation of the form:

Q = (cos(T/2), sin(T/2)*u[1], sin(T/2*u[2]), sin(T/2)*u[3])

where T is the angle of rotation from the Earth Mean Ecliptic J2000 coordinate system centered on the spacecraft to the nominal spacecraft pointing direction; and u is the unit vector in the spacecraft pointing direction.

A quaternion is a normalized four-component parameterization of a direction cosine matrix given in terms of Euler-symmetric parameters. There are always four, and only four components to a quaternion. One of the components is designated as the scalar (the first in this case), while the remaining three are vector components.

EMISSION_ANGLE **REAL(0, 180) <deg>**

The emission_angle element provides the value of the angle between the surface normal vector at the intercept point and a vector from the intercept point to the spacecraft. The emission_angle varies from 0 degrees when the spacecraft is viewing the subspacecraft point (nadir viewing) to 90 degrees when the intercept is tangent to the surface of the target body. Thus, higher values of emission_angle indicate more oblique viewing of the target. Values in the range of 90 to 180 degrees are possible for ring data.

ENCODING_COMPRESSION_RATIO **REAL(>=0)**

The encoding_compression_ratio element specifies the compression factor of the data.

ENCODING_MAX_COMPRESSION_RATIO [PDS_IMG_GLL] **REAL(0, 999)**

The encoding_max_compression_ratio element provides the maximum compression ratio applied to the data on board the spacecraft. For Galileo, this keyword is valid only for Integer Cosine Transform (ICT) or Huffman compression. If the image is compressed with ICT this value is the ICT Maximum Compression Ratio, otherwise it is the Huffman

Maximum Compression Ratio.

ENCODING_MIN_COMPRESSION_RATIO [PDS_IMG_GLL] REAL(0, 999)

The encoding_min_compression_ratio element provides the minimum compression ratio applied to the data on board the spacecraft. For Galileo, valid only for Integer Cosine Transform (ICT) or Huffman compression. If the image is compressed with ICT this value is the ICT Minimum Compression Ratio, otherwise it is the Huffman Minimum Compression Ratio.

ENCODING_TYPE CHARACTER(30)

The ENCODING_TYPE element indicates the type of compression or encryption used for data storage. cf. inst_cmprs_name.

ENCODING_TYPE_VERSION_NAME CHARACTER(60)

The ENCODING_TYPE_VERSION_NAME element indicates the version of a standard or specification with which a particular ENCODING_TYPE complies.

ENTROPY REAL(0, 8) <b/pixel>

The ENTROPY element identifies the average entropy level (bits/pixel). Entropy is a measure of scene activity and it applies to the entire image. Note: For the Galileo SSI flight images the entropy is defined as: H = - SUM (from j= -255 to j= +255) p(j) [log(2) p(j)] where p(j) is the probability that two horizontally adjacent pixels have a different j, where - 255 ¡j ¡ 255.

EPHEMERIS_LATITUDE_CORRECTION [PDS_GEO_MGN] REAL <deg>

The ephemeris_latitude_correction (VBF85) element provides the value of the correction applied to the footprint latitude value by the post-fitting MGMORB phase of the altimetry and radiometry reduction program.

EPHEMERIS_LONGITUDE_CORRECTION [PDS_GEO_MGN] REAL <deg>

The ephemeris_longitude_correction (VBF85) element provides the value of the correction applied to the footprint longitude value by the post-fitting MGMORB phase of the altimetry and radiometry reduction program.

EPHEMERIS_RADIUS_CORRECTION [PDS_GEO_MGN] REAL <km>

The ephemeris_radius_correction element provides the value of the correction applied to the length of the alt_spacecraft_position_vector element by the post-fitting MGMORB phase of the altimetry and radiometry reduction program.

EQUATORIAL_RADIUS REAL(0, 100000) <km>

The equatorial_radius element provides the average radius in the equatorial plane of the best fit spheroid which approximates the target body.

EQUINOX_EPOCH REAL

The EQUINOX_EPOCH keyword specifies the epoch of equinox in decimal years for the right ascension and declination, as given in the associated RIGHT_ASCENSION and DECLINATION keywords.

Use the COORDINATE_SYSTEM_ID keyword to specify the reference system (B1950 or J2000).

For a complete discussion of right ascension, declination, epoch, and reference system, see [SEIDELMANN1992]:

Seidelmann, P.K., Ed., 'Explanatory Supplement to the Astronomical Almanac', University Science Books, Sausalito, California, 1992.

ERROR_CONDITION **[PDS_MER_OPS]** **CHARACTER(8)**

The ERROR_CONDITION element identifies which fault protection conditions to ignore. Valid values for the MER RAT are NONE, CONTACT1, CONTACT2, and BOTH.

ERROR_MASK **[PDS_MER_OPS]** **CHARACTER**

The element ERROR_MASK indicates the fault protection conditions to ignore.

ERROR_PIXELS **INTEGER(>=0)**

The error_pixels element provides the number of pixels that are outside a valid DN range, after all decompression and post decompression processing has been completed.

ERROR_STATE **[PDS_MER_OPS]** **CHARACTER**

The element ERROR_STATE element indicates RAT error conditions that occurred.

EVENT_NAME **CHARACTER(40)**

The event_name element identifies an event. This may be a spacecraft event, a ground_based event or a system event.

EVENT_START_HOUR **CHARACTER(10)**

The event_start_hour element provides the date and hour of the beginning of an event (whether a spacecraft event, a ground based event or a system event) in the PDS standard (UTC system) format. The values associated with this element are derived from existing values of start_time and are used strictly for the PDS catalog performance enhancements.

EVENT_TYPE **CHARACTER(30)**

The event_type element identifies the classification of an event. Example values: MAGNETOPAUSE CROSSING, VOLCANIC ERUPTION, CLOSEST APPROACH.

EVENT_TYPE_DESC **CHARACTER**

The event_type_desc element describes the type of event identified by the event_type element.

EXPECTED_DATA_RECORDS **[PDS_EN]** **INTEGER(>=0)**

The EXPECTED_DATA_RECORDS element provides the total number of records a file should contain to constitute a complete data product, i.e., a data product without missing data.

EXPECTED_MAXIMUM **[PDS_EN]** **REAL(>=0)**

The expected_maximum element provides the expected value of the maximum data element expressed as a percentage of the VALID_MAXIMUM value. Note: For Cassini, a two valued array is used where the first element of the array corresponds to the first element of the VALID_MAXIMUM value array. This is the minimum full well saturation component. Therefore, this value represents the ratio of the expected maximum digital number (DN) in the image to to the minimum full well saturation value in VALID_MAXIMUM. The second element of the array corresponds to the maximum DN saturation level component. Therefore, this value represents the ratio of the expected maximum DN in the image to the maximum DN saturation value in VALID_MAXIMUM.

EXPECTED_PACKETS **INTEGER(>=0)**

The expected_packets element provides the total number of telemetry packets which constitute a complete data product, i.e., a data product without missing data.

EXPERTISE_AREA_DESC **CHARACTER**

The expertise_area_desc element describes a particular area of individual expertise.

EXPERTISE_AREA_TYPE **CHARACTER(20)**

The expertise_area_type element identifies an individual's area of expertise. The corresponding expertise_area_desc element describes the area of expertise.

EXPOSURE_COUNT **INTEGER(>=0)**

The exposure_count element provides the maximum number of exposures taken during a specified interval. The value is dependent on exposure type.

EXPOSURE_DURATION **REAL(>=0) <ms>**

The exposure_duration element provides the value of the time interval between the opening and closing of an instrument aperture (such as a camera shutter). Note: For MPF, the IMP camera does not have a shutter in the traditional sense, so this value is the integration time for manual and automatic exposures.

EXPOSURE_DURATION_COUNT **[PDS_MER_OPS]** **INTEGER(0, 65535)**

The EXPOSURE_DURATION_COUNT element provides the value, in raw counts, of the time interval between the opening and closing of an instrument aperture (such as a camera shutter). This is a raw value taken directly from telemetry, as opposed to EXPOSURE_DURATION, which has been converted to engineering units.

For MER, one count is equivalent to 5.1 ms.

EXPOSURE_OFFSET_FLAG **CHARACTER(3)**

The exposure_offset_flag element indicates the (instrument_dependent) mode of the offset state of a camera. Offset is a constant value which is added to an instrument's output signal to increase or decrease the level of that output.

EXPOSURE_OFFSET_NUMBER **REAL <ms>**

The exposure_offset_number element provides the value of a numerical constant which was added to the exposure duration for a given imaging instrument.

EXPOSURE_SCALE_FACTOR **[PDS_MER_OPS]** **DOUBLE**

The EXPOSURE_SCALE_FACTOR element is a multiplier to the exposure time.

EXPOSURE_TABLE_ID **[PDS_MER_OPS]** **CHARACTER**

The EXPOSURE_TABLE_INDEX element is used for setting the exposure count value.

EXPOSURE_TBL_UPDATE_FLAG **[PDS_MER_OPS]** **CHARACTER**

The EXPOSURE_TBL_UPDATE_FLAG element indicates whether or not an exposure table entry was updated.

EXPOSURE_TYPE **IDENTIFIER**

The EXPOSURE_TYPE element indicates the exposure setting on a camera. For MPF, the auto and incremental exposures iterate off a starting value to determine the exposure time. For auto exposures, the value is preset. Incremental exposures start with the exposure time of the previous exposure. Manual exposure is a single exposure with a set exposure time. Pre-timed exposure uses the very last exposure time used, regardless of the type of exposure that it was. No exposure indicates that the command moves only the camera and doesn't take an exposure.

FACILITY_NAME **CHARACTER(60)**

The facility_name element identifies a department, laboratory, or subsystem that exists within an institution.

FAST_HK_ITEM_NAME **[PDS_EN]** **CHARACTER(16)**

The fast_hk_item_name element provides the names of the houskeeping items which were collected. Fast housekeeping is a partial gathering of the available engineering data values, or items, that pertain to and describe the condition of the instrument itself. Note: For Cassini, up to four items can be collected, via fast housekeeping, and stored in the band suffix, or backplane, of the spectral cube. The fast housekeeping value will always supercede the slow housekeeping value, if present. If fast housekeeping is not used, this item will not be present in the label.

FAST_HK_PICKUP_RATE **[PDS_EN]** **INTEGER(0, 64)**

The fast_hk_pickup_rate element provides the rate at which fast housekeeping is collected. Fast housekeeping is a partial gathering of the available engineering data values, or items, that pertain to and describe the condition of the instrument itself. Note: For Cassini, this value (n) is stored in the band suffix, or backplane, of the spectral cube for the infrared channel. If (n) is set to zero, then housekeeping values will be collected at every pixel (i.e., every pixel of the backplane will have a value). If (n) is set from 1 to swath_length, then housekeeping values will be collected every nth line (i.e., only the first pixel of every nth line of the backplane will have a value). If no infrared housekeeping items were selected for the cube, then this keyword will not be present.

FAX_NUMBER **CHARACTER(30)**

The fax_number data element provides the area code and telephone number needed to transmit data to an individual or a node via facsimile machine.

FEATURE_NAME **CHARACTER(60)**

The FEATURE_NAME element provides the International Astronomical Union (IAU) approved name of a feature on a solar system body. A standard value list would be very large and could change frequently as new features are discovered, so the user of this keyword is refered to the USGS web site that maintains the IAU list:

http://planetarynames.wr.usgs.gov/index.html

Select the 'Alphabetical list of names' to find the approved names and the feature location.

FEATURE_TYPE **CHARACTER(60)**

The FEATURE_TYPE element identifies the type of a particular feature, defined according to International Astronomical Union (IAU) standards. A standard value list would be very large, and could change frequently as new features and types are discovered, so the user of this keyword is refered to the USGS web site that maintains the IAU list:

http://planetarynames.wr.usgs.gov/append5.html

FEATURE_TYPE_DESC **CHARACTER**

The FEATURE_TYPE_desc element provides the IAU standard definition for a particular FEATURE_TYPE. The definitions may be found at the following web link:

http://planetarynames.wr.usgs.gov/append5.html

FIELD_DELIMITER **CHARACTER**

The FIELD_DELIMITER indicates the single character used to separate variable-width FIELDs in a SPREADSHEET object. The field delimiter must be chosen from the set of standard values.

FIELD_NUMBER **INTEGER(>=1)**

The FIELD_NUMBER is the sequential number of the enclosing FIELD object within the current SPREADSHEET definition. FIELD objects should be numbered from the beginning of the record to the end.

FIELDS **INTEGER(>=1)**

The FIELDS element is the number of FIELD objects defined within the enclosing SPREADSHEET object.

FILE_NAME **CHARACTER(120)**

The file_name element provides the location independent name of a file. It excludes node or volume location, directory path names, and version specification. To promote portability across multiple platforms, PDS requires the file_name to be limited to an 27-character basename, a full stop (. period), and a 3-character extension. Valid characters include capital letters A - Z, numerals 0 - 9, and the underscore character (_).

FILE_RECORDS **INTEGER(>=0)**

The file_records element indicates the number of physical file records, including both label records and data records. Note: In the PDS the use of file_records along with other file-related data elements is fully described in the Standards Reference.

FILE_SPECIFICATION_NAME **CHARACTER(255)**

The file_specification_name element provides the full name of a file, including a path name, relative to a PDS volume. It excludes node or volume location. Path names are limited to eight (8) directory levels, and are separated by the forward slash (/) character. Each directory is limited to 8 characters chosen from the set A-Z, 0-9,_}. The path is followed by a valid file name. See also: file_name.

Example values: TG15NXXX/TG15N1XX/TG15N12X/TG15N120.DAT EDR/C100611/E1006110.00A

FILE_STATE **[PDS_EN]** **CHARACTER(5)**

The file_state element indicates whether a cube file possibly contains potentially corrupted data. Note: This keyword element is derived directly from the USGS' ISIS software keyword element of the same name. The following is a direct description of this keyword element from the ISIS software documentation. : 'The I/O for ISIS cube files and table files is buffered, i.e., part of the data for a file is held in memory and is not actually written to the file until the file is closed. This improves processing efficiency. However, when a new file is opened for creation or an existing file is opened for update (Read/Write) access, the file will not be properly closed if a system crash occurs or if the program is aborted (either due to a program malfunction or due to user action). This results in a possibility that the file contains corrupted data. When this happens, the FILE_STATE label keyword is set to 'DIRTY' and most ISIS applications normally refuse to process this potentially corrupted data.

ISIS includes a keyword called FILE_STATE in every ISIS cube (qube), table, and Instrument Spectral Library (ISL) data file. This keyword will be set to either CLEAN or DIRTY. Each time the cube is opened this keyword will be checked. If the FILE_STATE is equal to CLEAN, then the program will continue on normally. However, if the FILE_STATE is DIRTY, then the application will halt with the appropriate error message.

When a FILE_STATE becomes DIRTY, it indicates that something has gone wrong in a previously run application. ISIS will always set the FILE_STATE to DIRTY when the file is being opened for writing. If the application crashes and does not close the cube properly the FILE_STATE will remain DIRTY.

However, this does not always mean the file is corrupt. To help restore a file from DIRTY to CLEAN, ISIS has an application called 'cleanlab'. 'cleanlab' will modify the FILE_STATE keyword in the label to a CLEAN state. This program should be used with caution as the contents of the file may not be valid when an ISIS file is left in a DIRTY state.

FILES **INTEGER(>=1)**

The files element identifies the total number of files. Note: As an example in the PDS, the keyword files within the Directory Object indentifies the total number of files in the directory. Within the Volume Object the keyword files identifies the number of files within the volume.

FILTER_NAME **CHARACTER(32)**

The filter_name element provides the commonly-used name of the instrument filter through which an image or measurement was acquired or which is associated with a given instrument mode. Example values: RED, GREEN. See also filter_number.

FILTER_NUMBER **CHARACTER(4)**

The filter_number element provides the number of an instrument filter through which an image or measurement was acquired or which is associated with a given instrument mode. Note: that the filter_number is unique, while the filter_-name is not.

FILTER_TEMPERATURE **[PDS_EN]** **REAL(>=-999) <degC>**

The filter_temperature element provides the temperature, in degrees celsius (unless otherwise specified), of the instrument filter. Note: For Cassini, this provides the temperature of the filter wheel housing.

FILTER_TYPE **CHARACTER(30)**

The filter_type element identifies the type of a given instrument filter. Example values: INTERFERENCE, MESH, BANDPASS, BLOCKING.

FIRST_ALT_FOOTPRINT_TDB_TIME **[PDS_GEO_MGN]** **REAL**

The first_alt_footprint_tdb_time element provides the value of the spacecraft ephemeris time that represents the first altimeter footprint of this orbit. It is equal to the altimetry_footprint_tdb_time value in the first record of this orbit's altimetry data file.

FIRST_IMAGE_TIME **[MARS_OBSERVER]** **TIME**

The first_image_time element indicates the start_time (or image_time) that appears in the label of the first image on an archive medium.

FIRST_LINE **INTEGER(>=1)**

The first_line element indicates the line within a source image that corresponds to the first line in a sub-image. Note: For the MPF IMP EDRs, the source image was the complete 256x256 image area within the CCD.

FIRST_LINE_SAMPLE **INTEGER(>=1)**

The first_line_sample element indicates the sample within a source image that corresponds to the first sample in a sub-image. Note: For the MPF IMP EDRs, the source image was the complete 256x256 image area within the CCD.

FIRST_PRODUCT_ID **[MARS_OBSERVER]** **CHARACTER(40)**

The first_product_id data element indicates the product_id that appears in the label of the first data product on an archive medium.

FIRST_RAD_FOOTPRINT_TDB_TIME **[PDS_GEO_MGN]** **REAL**

The first_rad_footprint_tdb_time element provides the value of the spacecraft ephemeris time of the first radiometer measurement of this orbit. It is equal to the rad_spacecraft_epoch_tdb_time value in the first record of this orbit's radiometry data file.

FIRST_STANDARD_PARALLEL **REAL(-90, 90) <deg>**

The first_standard_parallel element is used in Conic projections. If a Conic projection has a single standard parallel, then the first_standard_parallel is the point of tangency between the sphere of the planet and the cone of the projection. If there are two standard parallels (first_standard_parallel, second_standard_parallel), these parallel are the intersection lines between the sphere of the planet and the cone of the projection. The map_scale is defined at the standard parallels.

FIXED_INSTRUMENT_AZIMUTH **REAL(0, 360) <deg>**

The FIXED_INSTRUMENT_AZIMUTH element provides one of two angular measurements for the pointing direction of an instrument, measured with respect to a coordinate frame co-linear with the surface fixed coordinate frame. The azimuth is measured positively in the clockwise direction (as viewed from above) with the meridian passing through the positive spin axis ('north pole') defining the zero reference. The angle is measured in the local gravity horizontal plane, i.e., a plane perpendicular to the local gravity vector. The FIXED_INSTRUMENT_AZIMUTH is derived from the instrument pointing and spacecraft orientation. It is co-linear with the surface fixed coordinate system, but the origin of the observation may not be coincident with the origin of the surface fixed frame.

Note that the FIXED_INSTRUMENT_AZIMUTH describes the pointing direction of the instrument rather than the angular coordinates of the target of the observation. If there has been any significant change over time in the position of the observing instrument (ie., the origin of the coordinate frame in which this value is measured), this data element can not be used to uniquely describe the vector to a viewed object. See also FIXED_INSTRUMENT_ELEVATION.

This keyword replaces the older SURFACE_BASED_INST_AZIMUTH element, which should no longer be used.

FIXED_INSTRUMENT_ELEVATION **REAL(-90, 90) <deg>**

The FIXED_INSTRUMENT_ELEVATION element provides one of two angular measurements of the pointing direction of an instrument, measured with respect to a coordinate frame co-linear with the surface fixed coordinate frame. The positive direction of the elevation is set by the POSITIVE_ELEVATION_DIRECTION data element. It is measured from the plane which is perpendicular to the local gravity vector and which intersects the elevation axis around which the instrument rotates. The FIXED_INSTRUMENT_ELEVATION is derived from the instrument pointing and spacecraft orientation. It is co-linear with the surface fixed coordinate system, but the origin of the observation may not be co- incident with the origin of the surface fixed frame.

Note that the FIXED_INSTRUMENT_ELEVATION describes the pointing direction of the instrument rather than the angular coordinates of the target of the observation. If there has been any change over time in the position of the observing instrument (i.e., the origin of the coordinate frame in which this value is measured), this data element can not be used to uniquely describe the vector to a viewed object. Assuming a flat surface, and combined with the INSTRUMENT_ALTITUDE data element, it can be used to determine the position of an object; however, given realistic non-flat surfaces, observations from another point of origin are required to determine an object's distance.

This keyword replaces the older SURFACE_BASED_INST_ELEVATION element which should no longer be used.

FLAT_FIELD_CORRECTION_FLAG CHARACTER(13)

The flat_field_correction_flag element indicates whether or not a flat field correction was applied to an image. Note: For MPF, this correction was applied to the image on board the spacecraft, before the image was transmitted to Earth.

FLAT_FIELD_CORRECTION_PARM [PDS_MER_OPS] REAL

The FLAT_FIELD_CORRECTION_PARM element defines the onboard flat-field coefficients/parameters used in the algorithm to remove the flat field signature. The FLAT_FIELD_CORRECTION_FLAG will indicate if the signature was removed.

Note: The algorithm used by MER is the following: new(x,y) = orig(x,y) * ff(x,y) where ff(x,y) = 1 + c*((x-a)2 + (y-b)2) + d*((x-a)2 + (y-b)2)2 + e*((x-a)2 + (y-b)2)3

FLAT_FIELD_FILE_NAME CHARACTER(30)

The flat_field_file_name element provides the flat field image file (an image taken in an optical laboratory of a white background or an image taken in the dawn with the intention to have an equally illuminated background for the whole image) which should be used to perform radiometric calibration of the image. The flat field image provides a reference label of the sensitivity of the used optics across the field-of-view. The shuttered image needs to be divided by the flat field image during calibration. Selection of the appropriate flat field image may be based on time, camera, temperature, readout conditions, light flood, gain and offset.

FLATTENING REAL(0, 1)

The flattening data element provides the value of the geometric oblateness of a target body, defined as the ratio of the difference between the body's equatorial and polar radii to the equatorial radius (in most cases, evaluated as: (a_axis_radius - c_axis_radius) / a_axis_radius).

FLIGHT_SOFTWARE_VERSION_ID [PDS_EN] CHARACTER(10)

The flight_software_version_id element identifies the version of the instrument flight software used to acquire the image.

FOCAL_PLANE_TEMPERATURE REAL <K>

The focal_plane_temperature element provides the temperature of the focal plane array in degrees kelvin at the time the observation was made.

FOOTPRINT_NUMBER [PDS_GEO_MGN] INTEGER

The footprint_number element provides a signed integer value. The altimetry and radiometry processing program assigns footprint 0 to that observed at nadir at periapsis. The remaining footprints are located along the spacecraft nadir track, with a separation that depends on the doppler resolution of the altimeter at the epoch at which that footprint is observed. Pre-periapsis footprints will be assigned negative numbers, post-periapsis footprints will be assigned positive ones. A loss of several consecutive burst records from the ALT-EDR will result in missing footprint numbers.

FOOTPRINT_POINT_LATITUDE **[PDS_EN]** **REAL(-90, 90) <deg>**

The FOOTPRINT_POINT_LATITUDE element provides an array of values that represent the latitudes of points along the edge of an image footprint on the planet's surface. Latitude values are planetocentric.

FOOTPRINT_POINT_LONGITUDE **[PDS_EN]** **REAL(0, 720) <deg>**

The FOOTPRINT_POINT_LONGITUDE element provides an array of values that represent the longitudes of points along the edge of an image footprint on the planet's surface. Longitude values are planetocentric.

FORMAL_CORRELATIONS_GROUP **[PDS_GEO_MGN]** **REAL**

The formal_correlations_group provides the formal correlations between the derived_planetary_radius and the derived_-rms_surface_fresnel_reflect elements, and between the derived_fresnel_reflectivity and the derived_planetary_radius elements, respectively. As the profile fitting algorithm is non-linear, the correlations may not be symmetric.

FORMAL_ERRORS_GROUP **[PDS_GEO_MGN]** **REAL**

The formal_errors_group element provides the value of the 1-sigma statistical errors expected in the determination of the derived_planetary_radius, the derived_rms_surface_slope, and the derived_fresnel_reflectivity elements, respectively.

FORMAT **CHARACTER(10)**

A specified or predetermined arrangement of data within a file or on a storage medium. Note: In the PDS, the format element indicates the display specification for a collection of data. It is equivalent to the FORTRAN language format specification. Example values: 'Ew.deEXP', A6, I5.

FORMAT_DESC **CHARACTER**

The format_desc element provides a textual description of the format of the subject data.

FORMATION_RULE_DESC **[PDS_EN]** **CHARACTER**

The formation_rule_desc element supplies a rule that is to be applied during the creation of a value for the data element. For example, the values supplied for reference_key_id must conform to the rules used by a specific professional journal for referencing citations.

FOV_SHAPE_NAME **CHARACTER(20)**

The field_of_view_shape_name element identifies the geometric shape of the field of view of an instrument.

FOVS **INTEGER(>=0)**

The fovs (fields-of-view) element indicates the number of fields of view associated with a single fov shape within a section of an instrument.

FRAME_DURATION **REAL(2, 96) <s>**

The frame_duration element provides the value of the length of time required to measure one frame of data. The frame_duration is constant within a given instrument cycle, which is identified by the cycle_id element.

FRAME_ID **IDENTIFIER**

The frame_id element provides an identification for a particular instrument measurement frame. A frame consists of a sequence of measurements made over a specified time interval, and may include measurements from different instrument modes. These sequences repeat from cycle to cycle and sometimes within a cycle. Note: For the Mars Pathfinder IMP camera, this described the operating mode of the camera. The IMP camera nominally operated in a mode where both the left and right images were exposed and transferred into the frame buffer simultaneously. Then either the RIGHT, LEFT, or BOTH frames were transmitted to Earth. For even shorter shutter times, the left image only was transferred into the frame buffer (HALFL). The presence of BOTH in this field indicated that the image should have been part of a stereo pair. Note that this usage of frame_id has been replaced on later missions by instrument_mode_id.

FRAME_PARAMETER [PDS_EN] REAL(>=0) <ms>

The FRAME_PARAMETER element defines the individual frame parameters of an instrument that transfers single frames to the mass memory of the spacecraft or the instrument. The single frame transferred to the mass memory is actually a digital summation of various elementary exposures performed by the instrument CPU. The individual exposure duration and number of frames must both be known in order to compute the signal-to-noise ratio of the data. The FRAME_PARAMETER element shall always be accompanied by the FRAME_PARAMETER_DESC element. A typical usage is (use quotes instead of apostrophies in the example below):

FRAME_PARAMETER = (1.2 ¡MSEC>, 677 ¡MSEC>) FRAME_PARAMETER_DESC = ('INTERNAL REPETITION TIME', 'EXTERNAL REPETITION TIME')

FRAME_PARAMETER_DESC [PDS_EN] IDENTIFIER <ms>

The FRAME_PARAMETER_DESC element describes the individual frame parameters listed in the element FRAME_PARAMETER. The frame parameter element defines the individual frame parameters of an instrument that transfers single frames to the mass memory of the spacecraft or the instrument. The single frame transferred to the mass memory is actually a digital summation of various elementary exposures performed by the instrument CPU. Individual exposure duration and number of frames must both be known in order to compute the signal-to-noise ratio of the data. A typical usage is (use quotes instead of apostrophes in the example below):

FRAME_PARAMETER = (1.2 ¡MSEC>, 677 ¡MSEC>) FRAME_PARAMETER_DESC = ('INTERNAL REPETITION TIME', 'EXTERNAL REPETITION TIME')

FRAME_SEQUENCE_NUMBER INTEGER(>=0)

The frame_sequence_number element indicates the location within a cycle at which a specific frame occurs. Frames are repeated in a specific order within each cycle.

FRAME_TYPE [PDS_MER_OPS] CHARACTER(10)

MER to supply at a later date.

FRAMES INTEGER(>=0)

The frames element provides the number of frames within a particular cycle, which is identified by the cycle_id element.

FTP_FILE_FORMAT IDENTIFIER

The ftp_file_format element describes the format of the file at the anonymous ftp site.

FTP_SITE_ID IDENTIFIER

The ftp_site_id element supplies name of an anonymous ftp site from which this software may be retrieved

FTS_NUMBER **CHARACTER(7)**

The fts_number element provides the Federal Telecommunications System (FTS) telephone number of an individual.

FULL_NAME **CHARACTER(60)**

The full_name element provides the complete name or identifier for a person or object. For an individual, full name includes the name as well as titles and suffixes. For an object, full name provides the spelled-out name that in some cases corresponds to an 'id'.

GAIN_MODE_ID **IDENTIFIER**

The gain_mode_id element identifies the gain state of an instrument. Gain is a constant value which is multiplied with an instrument's output signal to increase or decrease the level of that output.

GAIN_MODES **INTEGER(>=0)**

The gain_modes element provides the number of gain states of a particular instrument or section of an instrument.

GAIN_NUMBER **[PDS_GEO_VL]** **INTEGER(0, -2147483648)**

The GAIN_NUMBER indicates the gain value used in the analog to digital conversion. The gain value is a multiplicative factor used in the analog to digital conversion.

GENERAL_CATALOG_FLAG **CHARACTER(1)**

The general_catalog_flag element is a yes-or-no flag indicating whether a data set collection or data set exists in a PDS catalog. (invfastrack, invphotoprod)

GENERAL_CLASSIFICATION_TYPE **[PDS_EN]** **IDENTIFIER**

The general_classification_type data element serves to allow data systems to group data objects or elements according to common characteristics. Its purpose is akin to subject access in library systems, because it allows the user to find a data element according to its membership in a larger category. In this document the general_classification_type is an indexing mechanism for data element names, to allow them to be published in a classified list entitled 'DATA ELEMENT CLASSIFIED LISTINGS'. See also: system_classification_id.

GENERAL_DATA_TYPE **IDENTIFIER**

The general_data_type element classifies a data element according to a non-implementation-specific list of data types published in the ISO standards documentation. Examples: CHARACTER, INTEGER. Please refer to the section entitled 'DATA TYPE STANDARDS' in this document. See also: data_type. Note: In the PDS, data type standards for more system-specific applications are described in the Data Preparation Workbook.

GEOCENTRIC_DISTANCE **REAL(>=0)**

The GEOCENTRIC_DISTANCE keyword provides the distance between the center of the earth and the center of the target body at the time of the observation.

GEOMETRY_PROJECTION_TYPE **[PDS_MER_OPS]** **CHARACTER**

The GEOMETRY_PROJECTION_TYPE element describes the state of the pixels in an image before a re-projection has been applied. Describes if or how the pixels have been reprojected. RAW indicates reprojection has not been done; the pixels are as they came from the camera. For MER, this means the image uses a CAHVOR or one of the

CAHVORE camera models. LINEARIZED means that reprojection has been performed to linearize the camera model (thus removing things like lens distortion). For MER, this means the image uses a CAHV camera model.

GRATING_POSITION_INCREMENT **INTEGER(0, 30)**

The NIMS instrument has only 17 detectors but takes data in as many as 408 wavelengths by moving a grating across 31 possible physical positions. The grating position increment is determined by the instrument mode, typically 1 in the LONG MAP and LONG SPECTROMETER modes, 2 in the FULL modes, 4 in the SHORT modes and 0 in the FIXED modes. See the NIMS instrument paper (R. W. Carlson et al, 'Near-Infrared Mapping Spectrometer Experiment on Galileo', Space Science Reviews 60, 457-502, 1992) for details.

GRATING_POSITIONS **INTEGER(0, 30)**

The NIMS instrument has only 17 detectors but takes data in as many as 408 wavelengths by moving a grating across 31 possible physical positions. The number of grating positions is determined by the instrument mode, typically 24 in the LONG MAP and LONG SPECTROMETER modes, 12 in the FULL modes, 6 in the SHORT modes and 1 in the FIXED modes. See the NIMS instrument paper (R. W. Carlson et al, 'Near-Infrared Mapping Spectrometer Experiment on Galileo', Space Science Reviews 60, 457-502, 1992) for details.

GROUP_APPLICABILITY_FLAG **[PDS_MER_OPS]** **CHARACTER**

The GROUP_APPLICABILITY_FLAG element indicates that a group of keywords are valid values. Is present in a Group only when information is received from telemetry.

GROUP_ID **[PDS_MER_OPS]** **CHARACTER**

The GROUP_ID element is used to identify a group of keywords. It can be used to link groups together or it can be used to identify something about the group of keywords. In the case of multiple instances of the group (i.e., the group names are the same), it MUST serve to make the groups unique.

Note: MER, in some instances, uses the GROUP_ID to identify how the group of commanded keywords were generated (e.g., 'GROUND COMMANDED', 'NAV COMMANDED' or 'SAPP COMMANDED').

HARDWARE_MODEL_ID **IDENTIFIER**

The hardware_model_id element identifies the computer hardware on which a data product was produced. (e.g. VAX 11/780, MACINTOSH II).

HEADER_TYPE **IDENTIFIER**

The HEADER_TYPE element identifies a specific type of header data structure. For example: FITS, VICAR. Note: In the PDS, HEADER_TYPE is used to indicate non-PDS headers.

HELP_ID **[PDS_EN]** **INTEGER(>=0)**

The help_id element identifies a PDS topic for which help text is available.

HELP_NAME **[PDS_EN]** **CHARACTER(30)**

The help_name element provides the key to help text used in the Inspect Data function.

HELP_TEXT **[PDS_EN]** **CHARACTER**

The help_text element provides the ascii help text used for online help in the Inspect Data function.

HI_VOLTAGE_POWER_SUPPLY_STATE **CHARACTER(3)**

The state of the high voltage power power supply on an instrument.

HIGHEST_DETECTABLE_OPACITY **[PDS_RINGS]** **REAL(>=0)**

The highest_detectable_opacity element indicates the sensitivity of a ring occultation data set to nearly opaque rings. It specifies the normal ring opacity corresponding to a signal one standard deviation above the background (complete obstructed) signal. The value is computed assuming the data has been re-processed to the radial resolution specified by the reference_radial_resolution element.

HORIZONTAL_FOV **REAL(0, 360) <deg>**

The horizontal_field_of_view element provides the angular measure of the horizontal field of view of an instrument.

HORIZONTAL_FRAMELET_OFFSET **REAL(>=1)**

The horizontal_framelet_offset provides the row number of a framelet within a tiled image. In the PDS, offsets are counted from one.

HORIZONTAL_PIXEL_FOV **REAL(0, 360) <deg>**

The horizontal_pixel_field_of_view element provides the angular measure of the horizontal field of view of a single pixel.

HORIZONTAL_PIXEL_SCALE **REAL(0, 1000000000) <m/pixel>**

The HORIZONTAL_PIXEL_SCALE element indicates the horizontal picture scale.

HOST_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The host_id element provides the name or identification of the particular computer on which the product was generated.

HOUSEKEEPING_CLOCK_COUNT **[PDS_EN]** **CHARACTER(30)**

The housekeeping_clock_count element provides the spacecraft clock value at the time that slow housekeeping was collected. Slow housekeeping is the gathering of all available engineering data values, or items, that pertain to and describe the condition of the instrument itself. Typically this value is read from the last (most recent) housekeeping packet received before the end of the spectral cube downlink.

HUFFMAN_TABLE_TYPE **[PDS_IMG_GLL]** **CHARACTER(10)**

The The huffman_table_type element indicates the type of Huffman table used in compression. For Galileo the valid values are: SKEWED, UNIFORM, N/A.

ICT_DESPIKE_THRESHOLD **[PDS_IMG_GLL]** **INTEGER(1, 255)**

The ict_despike_threshold (integer cosine transform despike threshold) element indicates the threshold value at which despiking occurs. Despiking is used as a pre-processing step to the Integer Cosine Transform in order to minimize the effects of radiation-induced noise on compression efficiency. This element is Galileo Solid State Imaging-specific.

ICT_QUANTIZATION_STEP_SIZE **[PDS_IMG_GLL]** **INTEGER(1, 255)**

The ict_quantization_step_size (integer cosine transform quantization step size) element provides the integer value by which the ICT transform is divided. The greater the step-size/compression, the greater the data loss.

ICT_ZIGZAG_PATTERN **[PDS_IMG_GLL]** **IDENTIFIER**

The ict_zigzag_pattern element provides the name of the Integer Cosine Transform zigzag pattern used to rearrange the transform. For Galileo, the valid values are: ZIGZAG or ALT.

IMAGE_COUNT **INTEGER(>=1)**

The IMAGE_COUNT element provides the number of images or exposures which were co-added or combined to produce the data product. For a simple data product made up of a single exposure, image_count is 1.

IMAGE_DURATION **REAL(>=0) <s>**

The IMAGE_DURATION element provides the measurement of time required to collect all the frames of all the bands in an image.

For Odyssey THEMIS, the time between successive frames is stored in the INTERFRAME_DELAY keyword. When set at 1 second, a 3-frame, 1-band image would have an IMAGE_DURATION of (3 frames)*(1sec/frame)= 3 seconds. If more than one band is selected, the computation becomes more complex. The IMAGE_DURATION can be modified to change the amount of overlap between frames.

IMAGE_ID **CHARACTER(30)**

The image_id element is used to identify an image and typically consists of a sequence of characters representing 1) a routinely occurring measure, such as revolution number, 2) a letter identifying the spacecraft, target, or camera, and 3) a representation of a count within the measure, such as picture number within a given revolution. Example: Mariner 9 - Leventhal Identifier - (orbit, camera, pic #, total # of pics in orbit) Viking Orbiter - (orbit #, sc, pic # (FSC/16)), Viking Lander - (sc, camera, mars doy, diode (filter), pic # for that day), Voyager - (pic # for encounter, FDS for cruise) Note: For Mars Pathfinder, this uniquely identified the observation parameters of an image. The most significant four digits identified the command sequence that contained the imaging command. The middle two digits indicated the version of the command sequence, and the right four digits identified the image within a single imaging sequence.

If the image_id was even and non-zero, it was a left frame image. If the image_id was one greater than the left frame image_id (and therefore odd), it was the right frame of a stereo image. Note that during operations, a small number of image_ids were re-used with difference command parameters. This eliminated the uniqueness of the image_id for those images. The tlm_cmd_discrepancy_flag may be useful in identifying the images that had this problem.

IMAGE_KEY_ID **CHARACTER(30)**

The image_key_id element provides a shorthand identifier for an image which is unique for a given spacecraft. The image_key_id and spacecraft_id together provide a unique identifier for any image. The contents of image_key_id may be any common identifier of an image, but it is suggested that one of the following be used: 1) image_id (pic_no), 2) image_number (FSC), 3) spacecraft_clock_count (FDS). Note: Guaranteeing uniqueness may require modification of the selected common identifier and is the responsibility of the data supplier. For example, in the case where an image was retransmitted, an alphabetic character could be appended. When unique identifiers are not supplied, PDS will assign a simple numeric identifier as the image_key_id. This identifier will range from 1 to the number of images associated with the specified spacecraft.

IMAGE_MID_TIME **[PDS_EN]** **DATE**

The image_mid_time element provides the time at which the exposure of the image was half way through its duration. This value is calculated from the formula, SPACECRAFT_CLOCK_ STOP_COUNT - (EXPOSURE_DURATION/2), and then converted to UTC. Note: For Cassini, when the shutter is inhibited (i.e., SHUTTER_STATE_-ID='DISABLED'), the IMAGE_MID_TIME = START_TIME = STOP_TIME, and all three represent the start of the exposure window during the prepare cycle of the image. ASCII CCSDS format: YYYY-DDDThh:mm:ss.fffZ

IMAGE_NUMBER **CHARACTER(30)**

The image_number element is a value obtained from the spacecraft_clock_start_count. The image number is another commonly used identifier for an image. Example: Viking - Frame Start Count (FSC) Voyager - Flight Data Subsystem (FDS) clock count (integer 7 digit)

IMAGE_OBSERVATION_TYPE **IDENTIFIER**

The image_observation_type element identifies the type or purpose of an observation that may be associated with an image. Image observation types include limb, black sky, spacecraft calibration, or other image attribute that may be used for identification. Observation types should not include features, regions, or standard target names.

IMAGE_TIME **TIME**

The image_time element provides the spacecraft event time at the time of frame acquisition. This should be represented in UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

IMAGE_TYPE **[PDS_MER_OPS]** **CHARACTER(15)**

The IMAGE_TYPE element describes the type of image acquired. This may be used to describe characteristics that differentiate one group of images from another such as the nature of the data in the image file, the purpose for which the image was acquired, or the way in which it was acquired. This element is very similar to the older image_observation_type element, but is designed to resolve ambiguities in cases where missions utilize a naming convention for both specific images and more general observations, which consist of multiple images. In those cases, the latter may be described by the observation_type element.

IMPORTANT_INSTRUMENT_PARMS **INTEGER(>=0)**

The important_instrument_parameters element provides the number of instrument parameters which are required to derive a particular data set parameter. This value depends partly on the particular characteristics of the instruments providing the instrument parameters. For example, in the case of Voyager instruments, the data set parameter PLASMA BETA may be derived from the following set of instrument parameters: ELECTRON RATE, ION RATE, MAGNETIC FIELD COMPONENT. In that case, the value of the important_instrument_parameters element is 3.

INCIDENCE_ANGLE **REAL(0, 180) <deg>**

The incidence_angle element provides a measure of the lighting condition at the intercept point. Incidence angle is the angle between the local vertical at the intercept point (surface) and a vector from the intercept point to the sun. The incidence_angle varies from 0 degrees when the intercept point coincides with the sub_solar point to 90 degrees when the intercept point is at the terminator (i.e., in the shadowed or dark portion of the target body). Thus, higher values of incidence_angle indicate the existence of a greater number of surface shadows. Note: In PDS labels for Magellan's altimetry and radiometry products, incidence_angle is defined as the value of the angle between the local vertical and the spacecraft direction, measured at the center of the radiometer footprint at rad_spacecraft_epoch_time.

INDEX_TYPE **[PDS_EN]** **IDENTIFIER**

The INDEX_TYPE element identifies the type of an index table that describes an archive volume. It is used in the label for a volume index table. In general, the two allowable index types are SINGLE, meaning that every row in the index table describes a file on the current volume; CUMULATIVE, meaning that every row in the index table describes a file residing on the current volume or a previous volume in the volume set.

INDEXED_FILE_NAME [PDS_EN] CHARACTER

The INDEXED_FILE_NAME element is a string (or set of strings) identifying the files included in an index table on an archive volume. The element is used in the label for a volume index table. The value may include a directory path. The usage of INDEXED_FILE_NAME may vary based on the value of the INDEX_TYPE element in the index label. Note: For Mars Observer, some volume indicies have INDEX_TYPE = SINGLE, and the value of INDEXED_FILE_-NAME is a set of wildcard strings matching the product file names on the volume being indexed. Other indicies may have INDEX_TYPE = CUMULATIVE, and the value of INDEXED_FILE_NAME is a list of file names identifying the SINGLE index files which were appended together to create the CUMULATIVE index.

INST_AZ_ROTATION_DIRECTION CHARACTER(8)

The INST_AZ_ROTATION_DIRECTION element provides an indication of the direction in which an instrument or instrument mounting platform is moving. The keyword may be used to describe movement before, after, or during an observation.

Note: For the M98 mission, this refers to the motion the azimuth camera motor went through to get to the position from which it acquired an image (i.e., the motion prior to image acquisition). This is necessary to fully understand the backlash properties of the camera.

INST_CMD_CAL_CO_ADD [PDS_MER_OPS] INTEGER(1, 255)

The INST_CMD_CAL_CO_ADD element gives the commanded value of the number of calibration observations to be averaged together for a calibration product.

INST_CMD_CAL_DWELL [PDS_MER_OPS] INTEGER(1, 255)

The INST_CMD_CAL_DWELL element gives the commanded value of the number of scans to collect during a calibration observation.

INST_CMD_CAL_FREQUENCY [PDS_MER_OPS] INTEGER(1, 65535)

The INST_CMD_CAL_FREQUENCY element gives the commanded value of the minimum number of scans that have to expire from the end of the last internal calibration look before a new set of calibration looks are taken.

INST_CMD_CENTER_AZIMUTH [PDS_MER_OPS] REAL <rad>

The INST_CMD_CENTER_AZIMUTH element gives the commanded value of the center azimuth of the data product.

INST_CMD_CENTER_ELEVATION [PDS_MER_OPS] REAL <rad>

The INST_CMD_CENTER_ELEVATION element gives the commanded value of the center elevation of the data product.

INST_CMD_CO_ADD [PDS_MER_OPS] INTEGER(1, 255)

The INST_CMD_CO_ADD element gives the commanded value of the number of scene spectra to average together for the data product.

INST_CMD_COLUMNS [PDS_MER_OPS] INTEGER(1, 65535)

The INST_CMD_COLUMNS element gives the commanded value of the number of columns to acquire for the data product.

INST_CMD_DWELL **[PDS_MER_OPS]** **INTEGER(1, 255)**

The INST_CMD_DWELL element gives the commanded value of the number of scans to acquire at one azimuth and elevation for the data product.

INST_CMD_HIGH_CHANNEL **[PDS_MER_OPS]** **INTEGER(>=0)**

The INST_CMD_HIGH_CHANNEL element gives the commanded value of the end channel number to acquire, minus one.

INST_CMD_HORIZONTAL_SPACE **[PDS_MER_OPS]** **REAL(>=0) <rad>**

The INST_CMD_HORIZONTAL_SPACE element gives the commanded value of the horizontal space, in radians, between columns of the data product.

INST_CMD_LOW_CHANNEL **[PDS_MER_OPS]** **INTEGER(>=0)**

The INST_CMD_LOW_CHANNEL element gives the commanded value of the start channel number to acquire, starting at zero.

INST_CMD_PHASE_ALGORITHM_NAME **[PDS_MER_OPS]** **CHARACTER(5)**

The INST_CMD_PHASE_ALGORITHM_NAME element gives the commanded value of the phase correction algorithm to use when acquiring a data product. Valid values are NONE, MERTZ, and RSS.

INST_CMD_ROWS **[PDS_MER_OPS]** **INTEGER(1, 255)**

The INST_CMD_ROWS element gives the commanded value of the number of rows to acquire for the data product.

INST_CMD_VERTICAL_SPACE **[PDS_MER_OPS]** **REAL(>=0) <rad>**

The INST_CMD_VERTICAL_SPACE element gives the commanded value of the vertical space, in radians, between consecutive rows of the data product.

INST_CMPRS_BLK_SIZE **INTEGER**

The inst_cmprs_blk_size element provides the dimensions of a pixel block for on-board compression. This value may be a two dimensional array, where the first value is the line dimension of the block, and the second value is the sample dimension of the block. Otherwise, the block is assumed to be square.

INST_CMPRS_BLOCKS **INTEGER(>=0)**

The inst_cmprs_blocks element provides the number of blocks used to spatially segment a data product prior to compression.

INST_CMPRS_DESC **[PDS_MER_OPS]** **CHARACTER**

The INST_CMPRS_DESC element provides a textual description of the type of data compression used by an instrument onboard a spacecraft before the data was transmitted to Earth. This should include a description of the compression algorithm or a reference to a published paper where the algorithm is described.

INST_CMPRS_FILTER [PDS_MER_OPS] CHARACTER

The INST_CMPRS_FILTER element identifies the wavelet filter used in the ICER compression and decompression algorithm.

INST_CMPRS_MODE INTEGER(>=0)

The inst_cmprs_mode element identifies the method used for on-board compression of data. Note: The inst_cmprs_-name element provides the full name of an inst_cmprs_mode.

Note: For MPF, the modes were assigned to the corresponding inst_cmprs_names as follows:

1 JPEG DISCRETE COSINE TRANSFORM (DCT); HUFFMAN/QUALITY 2 JPEG DISCRETE COSINE TRANSFORM (DCT); HUFFMAN/RATIO 3 JPEG DISCRETE COSINE TRANSFORM (DCT); ARITHMETIC/QUALITY 4 JPEG DISCRETE COSINE TRANSFORM (DCT); ARITHMETIC/RATIO 5 JPEG DISCRETE COSINE TRANSFORM (DCT); HUFFMAN/QUALITY/LCT 6 JPEG DISCRETE COSINE TRANSFORM (DCT); HUFFMAN/RATIO/LCT 7 JPEG DISCRETE COSINE TRANSFORM (DCT); ARITHMETIC/QUALITY/LCT 8 JPEG DISCRETE COSINE TRANSFORM (DCT); ARITHMETIC/RATIO/LCT 9 RICE ADAPTIVE VARIABLE-LENGTH CODING (RICE)

INST_CMPRS_NAME CHARACTER

The inst_cmprs_name element identifies the type of on-board compression used for data storage and transmission. Note: The inst_cmprs_mode element provides an abbreviated identifier for the inst_cmprs_name.

INST_CMPRS_PARAM INTEGER

The inst_cmprs_param element is a JPEG specific variable which specifies on-board compression determination by image quality or by compression factor, based on a selected on-board compression mode.

INST_CMPRS_QUALITY INTEGER(>=0)

The inst_cmprs_quality element is a JPEG specific variable which identifies the resultant or targeted image quality index for on-board data compression.

Note: For MPF, if an odd IMP inst_cmprs_mode was used for on-board compression, the inst_cmprs_quality indicated the desired image quality index. If an odd inst_cmprs_mode was used, this indicates the resultant image quality used to reach the desired on-board compression factor.

INST_CMPRS_QUANTZ_TBL_ID CHARACTER

The inst_cmprs_quantz_tbl_id element identifies the reference table used for quantization in the frequency domain for on-board transform compression. This name or code should be specific enough to allow the user of the data to have sufficient information to reference the quantization table used to compress the data.

INST_CMPRS_QUANTZ_TYPE CHARACTER(30)

The inst_cmprs_quantz_type element indicates the method of quantization used for the output of transform coders.

INST_CMPRS_RATE REAL(>=0)

The inst_cmprs_rate element provides the average number of bits needed to represent a pixel for an on-board compressed image.

INST_CMPRS_RATIO REAL(>=0)

The inst_cmprs_ratio element provides the ratio of the size, in bytes, of the original uncompressed data file to its compressed form.

INST_CMPRS_SEG_FIRST_LINE **[PDS_MER_OPS]** **INTEGER(-1, 1024)**

The INST_CMPRS_SEG_FIRST_LINE element is an array of values which each nth element identifies the line within a source image that corresponds to the first line the nth compression segment applies.

INST_CMPRS_SEG_FIRST_LINE_SAMP **[PDS_MER_OPS]** **INTEGER(-1, 1024)**

The INST_CMPRS_SEG_FIRST_LINE_SAMP element is an array of values which each nth element identifies the line sample within a source image that corresponds to the first line sample the nth compression segment applies.

INST_CMPRS_SEG_LINES **[PDS_MER_OPS]** **INTEGER(-1, 1024)**

The INST_CMPRS_SEG_LINES element is an array of elements in which the nth element identifies the total number of data instances along the vertical axis the nth compression segment defines.

INST_CMPRS_SEG_MISSING_PIXELS **[PDS_MER_OPS]** **INTEGER**

The INST_CMPRS_SEG_MISSING_PIXELS element identifies an array of elements in which the nth element identifies the total number of missing pixels defined by the nth compression segment.

INST_CMPRS_SEG_SAMPLES **[PDS_MER_OPS]** **REAL(-1, 1024)**

The INST_CMPRS_SEG_SAMPLES element is an array of elements in which the nth element identifies the total number of data instances along the horzontal axis the nth compression segment defines.

INST_CMPRS_SEGMENT_QUALITY **[PDS_MER_OPS]** **REAL**

The INST_CMPRS_SEGMENT_QUALITY element identifies the quality level for each segment in an image partitioned for ICER compression.

INST_CMPRS_SEGMENT_STATUS **[PDS_MER_OPS]** **CHARACTER**

The INST_CMPRS_SEGMENT_STATUS element provides a bit mask which provides the status of decoding the nth segment.

INST_CMPRS_SEGMENTS **[PDS_MER_OPS]** **INTEGER(1, 32)**

The INST_CMPRS_SEGMENTS element identifies the number of segments into which the image was partitioned for the error containment purposes. For ICER compression, the data within each segment is compressed independently, so that data loss across segments is compartmentalized or contained across segments.

INST_CMPRS_STAGES **[PDS_MER_OPS]** **REAL(1, 6)**

The INST_CMPRS_STAGES element identifies the number of stages of wavelet decompositions.

INST_CMPRS_SYNC_BLKS **INTEGER(>=1)**

The inst_cmprs_sync_blks element is a RICE specific variable providing the number of compressed blocks between synchronization counters.

INST_CMPRS_TYPE **[PDS_EN]** **CHARACTER(8)**

The inst_cmprs_type element identifies the type of on-board compression used for data storage and transmission. Note that inst_cmprs_name provides the full name of a compression algorithm (ex. Rice Adaptive Variable-Length Coding), whereas the inst_cmprs_type gives a simple indicator of the type of compression (ex. LOSSLESS). Note: For Cassini, the LOSSY compression scheme was Discrete Cosine Transform, the LOSSLESS compression scheme was RICE, and NOTCOMP meant no compression scheme was used.

INST_DECOMP_STAGES **[PDS_MER_OPS]** **INTEGER(1, 6)**

The INST_DECOMP_STAGES element identifies the number of stages of wavelet decompositions.

INST_FIELD_OF_VIEW **[PDS_MER_OPS]** **REAL <mrad>**

The INST_FIELD_OF_VIEW element gives the instantaneous field of view (IFOV) of the instrument used while acquiring a data product.

INST_GAIN_STATE **[PDS_MER_OPS]** **CHARACTER(4)**

The INST_GAIN_STATE element indicates the gain state of the Mini-TES analog signal amplifier. Valid values are LOW and HIGH.

INST_LASER_1_STATUS_FLAG **[PDS_MER_OPS]** **CHARACTER(3)**

The INST_LASER_1_STATUS_FLAG element provides the status of the primary Mini-TES 980 nm monochromatic laser. Valid values are ON and OFF.

INST_LASER_2_STATUS_FLAG **[PDS_MER_OPS]** **CHARACTER(3)**

The INST_LASER_2_STATUS_FLAG element provides the status of the backup Mini-TES 980nm monochromatic laser. Valid values are ON and OFF.

INST_LASER_HEATER_STATUS_FLAG **[PDS_MER_OPS]** **CHARACTER(3)**

The INST_LASER_HEATER_STATUS_FLAG element provides the status of the Mini-TES Laser Heater. Valid values are ON and OFF.

INST_LINEAR_MOTOR_STATUS_FLAG **[PDS_MER_OPS]** **CHARACTER(3)**

The INST_LINEAR_MOTOR_STATUS_FLAG element provides the status of the Mini-TES Michelson Motor. Valid values are ON and OFF.

INST_OPTICAL_SWITCH_STATE **[PDS_MER_OPS]** **CHARACTER(9)**

The INST_OPTICAL_SWITCH_STATE element indicates whether the optical switch moving mirror is at the start of the scan. Valid values are PRIMARY and REDUNDANT.

INST_SPARE_BIT_FLAG **[PDS_MER_OPS]** **CHARACTER(3)**

The INST_SPARE_BIT_FLAG element indicates whether the spare bit in the Mini-TES IDPH command word was used. Valid values are ON and OFF.

INSTITUTION_NAME **CHARACTER(60)**

The institution_name element identifies a university, research center, or NASA center.

INSTRUMENT_AZIMUTH **[PDS_MER_OPS]** **REAL <deg>**

The INSTRUMENT_AZIMUTH element provides the value for an instrument's rotation in the horizontal direction. It is usually measured from some kind of low hard stop. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. When in a DERIVED_GEOMETRY group, defines the azimuth (horizontal rotation) at which the instrument is pointed. This value is expressed using the cooridinate system referred to by REFERENCE_COORD_SYSTEM_-NAME and REFERENCE_COORD_SYSTEM_INDEX contained within the same group. The interpretation of exactly what part of the instrument is being pointed is missionspecific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, e.g. identifying scenes which might contain a given object.

The interpretation for MER is TBD.

INSTRUMENT_AZIMUTH_METHOD **IDENTIFIER**

The instrument_azimuth_method identifies the method used to calculate the instrument azimuth from the azimuth motor clicks.

INSTRUMENT_BAND_ID **[PDS_MER_OPS]** **CHARACTER(16)**

The INSTRUMENT_BAND_ID element specifies an array of stings identifying the instrument represented by the corresponding band in the image. The first entry in the array indentifies the instrument for the first band, the second entry for the second band, etc. Also see CONFIGURATION_BAND_ID.

INSTRUMENT_BORESIGHT_ID **[PDS_MER_OPS]** **CHARACTER**

The INSTRUMENT_BORESITE_ID element defines the IVP (Inertial Vector Propagation) ID or boresight ID of the reference instrument used to designate commanded pointing.

INSTRUMENT_CALIBRATION_DESC **CHARACTER**

The instrument_calibration_desc element explains the method of calibrating an instrument and identifies reference documents which explain in detail the calibration of the instrument. As an example, this element would explain whether the calibration was time-independent (i.e., a single algorithm was used) or time-dependent and whether the calibration was performed in-flight or in a laboratory.

INSTRUMENT_COORDINATE **[PDS_MER_OPS]** **DOUBLE <rad>**

The INSTRUMENT_COORDINATE element is an array of coordinate parameters. The parameters will be a set of azimuth and elevation values (radians) or a set of xyz position parameters (m). If the INSTRUMENT_COORDINATE_ID is an IVP, these values are ignored.

INSTRUMENT_COORDINATE_ID **[PDS_MER_OPS]** **CHARACTER**

The INSTRUMENT_COORDINATE_ID element identifies the frame in which the INSTRUMENT_COORDINATE values are given

INSTRUMENT_COORDINATE_NAME **[PDS_MER_OPS]** **CHARACTER(26)**

The INSTRUMENT_COORDINATE_NAME element gives the name(s) associated with the value(s) in the INSTRUMENT_COORDINATE element. Valid values are NULL, MAST AZIMUTH, MAST MIRROR ACTUATOR AN-

GLE, AZIMUTH, ELEVATION, X, Y, Z.

INSTRUMENT_DATA_RATE [PDS_EN] REAL(-999, 365.6) <kb/s>

The instrument_data_rate element provides the rate at which data were transmitted from an instrument to the spacecraft. (cf. data_rate)

INSTRUMENT_DEPLOYMENT_STATE IDENTIFIER

The instrument_deployment_state element indicates the deployment state (i.e. physical configuration) of an instrument at the time of data acquisition. Note: For MPF, this referred to whether or not the IMP camera had been deployed to the end of its 62 cm mast at the time an image was acquired.

INSTRUMENT_DESC CHARACTER

The instrument_desc element describes a given instrument.

INSTRUMENT_ELEVATION [PDS_MER_OPS] REAL <deg>

The INSTRUMENT_ELEVATION element provides the value for the instrument's rotation in the vertical direction. It is usually measured from some kind of low hard stop. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. When in a DERIVED_GEOMETRY group, defines the elevation (vertical rotation) at which the instrument is pointed. This value is expressed using the cooridinate system referred to by REFERENCE_COORD_SYSTEM_-NAME and REFERENCE_COORD_SYSTEM_INDEX contained within the same group. The interpretation of exactly what part of the instrument is being pointed is mission-specific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, (e.g., identifying scenes which might contain a given object).

The interpretation for MER is TBD.

INSTRUMENT_ELEVATION_METHOD CHARACTER(20)

The instrument_elevation_method element identifies the method used to calculate the instrument elevation from the elevation motor clicks.

INSTRUMENT_FORMATTED_DESC [PDS_EN] CHARACTER

The instrument_formatted_desc element contains the formatted instrument descriptions. These descriptions represent the information collected for the PDS Version 1.0 instrument model and were created by extracting instrument information from several tables in the catalog data base. These descriptions represent an archive since the tables have been eliminated as part of the catalog streamlining task.

INSTRUMENT_HEIGHT REAL <m>

The instrument_height element provides the physical height of an instrument.

INSTRUMENT_HOST_DESC CHARACTER

The instrument_host_desc data element describes the spacecraft or earthbase from which particular instrument measurements were taken. For spacecraft, this description addresses the complement of instruments carried, the on-board communications and data processing equipment, the method of stabilization, the source of power and the capabilities or limitations of the spacecraft design which are related to data-taking activities. The description may be a synopsis of available mission documentation.

INSTRUMENT_HOST_ID **IDENTIFIER**

The instrument_host_id element provides a unique identifier for the host where an instrument is located. This host can be either a spacecraft or an earth base (e.g., and observatory or laboratory on the earth). Thus, the instrument_host_id element can contain values which are either spacecraft_id values or earth_base_id values.

INSTRUMENT_HOST_NAME **CHARACTER(120)**

The instrument_host_name element provides the full name of the host on which an instrument is based. This host can be either a spacecraft or an earth base. Thus, the instrument_host_name element can contain values which are either spacecraft_name values or earth_base_name values.

INSTRUMENT_HOST_TYPE **CHARACTER(20)**

The instrument_host_type element provides the type of host on which an instrument is based. For example, if the instrument is located on a spacecraft, the instrument_host_type element would have the value SPACECRAFT.

INSTRUMENT_ID **IDENTIFIER**

The instrument_id element provides an abbreviated name or acronym which identifies an instrument. Note: The instrument_id is not a unique identifier for a given instrument. Note also that the associated instrument_name element provides the full name of the instrument. Example values: IRTM (for Viking Infrared Thermal Mapper), PWS (for plasma wave spectrometer).

INSTRUMENT_IDLE_TIMEOUT **[PDS_MER_OPS]** **INTEGER(0, 32767) <S>**

The INSTRUMENT_IDLE_TIMEOUT element identifies the amount of time in seconds that an instrument may be idle before powering off.

INSTRUMENT_LENGTH **REAL <m>**

The instrument_length element provides the physical length of an instrument.

INSTRUMENT_MANUFACTURER_NAME **CHARACTER(60)**

The instrument_manufacturer_name element identifies the manufacturer of an instrument.

INSTRUMENT_MASS **REAL <kg>**

The instrument_mass element provides the mass of an instrument.

INSTRUMENT_MODE_DESC **CHARACTER**

The instrument_mode_desc element describes the instrument mode which is identified by the instrument_mode_id element.

INSTRUMENT_MODE_ID **IDENTIFIER**

The instrument_mode_id element provides an instrument-dependent designation of operating mode. This may be simply a number, letter or code, or a word such as ’normal’, ’full resolution’, ’near encounter’, or ’fixed grating’.

INSTRUMENT_MOUNTING_DESC **CHARACTER**

The instrument_mounting_desc element describes the mounting of an instrument (on a platform on spacecraft or a mounting at a lab) and the orientation of the instrument with respect to the platform.

INSTRUMENT_NAME **CHARACTER(60)**

The instrument_name element provides the full name of an instrument. Note: that the associated instrument_id element provides an abbreviated name or acronym for the instrument. Example values: FLUXGATE MAGNETOMETER, NEAR_INFRARED MAPPING SPECTROMETER.

INSTRUMENT_PARAMETER_NAME **CHARACTER(40)**

The instrument_parameter_name element provides the name of the data parameter which was measured by an instrument. As an example, the instrument_parameter_name value could be ELECTRIC FIELD COMPONENT. It is intended that the instrument_parameter_name element provide the name of the rawest measured value which has some physical significance. Thus, for example, while the detector of an instrument may actually record voltage differences, the electric field component which is proportional to those differences is considered to be the instrument parameter. Note: that the associated data_set_or_inst_parm_desc element describes the measured parameter.

INSTRUMENT_PARAMETER_RANGES **INTEGER**

The instrument_parameter_ranges element provides the number of instrument parameter ranges for a given instrument.

INSTRUMENT_PARAMETER_UNIT **CHARACTER(60)**

The instrument_parameter_unit element specifies the unit of measure of associated instrument parameters.

INSTRUMENT_POWER_CONSUMPTION **REAL <W>**

The instrument_power_consumption element provides power consumption information for an instrument. Note: instrument_power_consumption may vary with different modes of instrument operation.

INSTRUMENT_SERIAL_NUMBER **CHARACTER(20)**

The instrument serial number element provides the manufacturer's serial number assigned to an instrument. This number may be used to uniquely identify a particular instrument for tracing its components or determining its calibration history, for example.

INSTRUMENT_TEMPERATURE **REAL(>=-273) <degC>**

The INSTRUMENT_TEMPERATURE element provides the temperature, in degrees Celsius, of an instrument or some part of an instrument.

This keyword may be used in conjunction with INSTRUMENT_TEMPERATURE_POINT to more fully describe either single or multiple temperatures at various locations within a single instrument. If there is more than one measurement taken for a given instrument, a multi- value ordered set of values (i.e., sequence) may be constructed to associate each temperature measurement in the INSTRUMENT_TEMPERATURE list with a corresponding item in the INSTRUMENT_TEMPERATURE_POINT sequence of values.

INSTRUMENT_TEMPERATURE_COUNT **INTEGER(>=0)**

The instrument_temperature_count element provides the instrument temperature in raw counts or DN values.

INSTRUMENT_TEMPERATURE_NAME [PDS_MER_OPS] CHARACTER

The INSTRUMENT_TEMPERATURE_NAME element is an array of the formal names identifying each of the values used in INSTRUMENT_TEMPERATURE.

INSTRUMENT_TEMPERATURE_POINT [PDS_EN] CHARACTER(60) <n/a>

The INSTRUMENT_TEMPERATURE_POINT element identifies the measurement point or location on an instrument or some part of an instrument. This keyword may be used in conjunction with INSTRUMENT_TEMPERATURE to more fully describe either single or multiple temperatures at various locations within a single instrument. If there is more than one measurement taken for a given instrument, a multi-value ordered set of values (i.e., sequence) may be constructed to associate each temperature measurement in the INSTRUMENT_TEMPERATURE list with a corresponding item in the INSTRUMENT_TEMPERATURE_POINT sequence of values.

INSTRUMENT_TYPE CHARACTER(30)

The instrument_type element identifies the type of an instrument. Example values: POLARIMETER, RADIOMETER, REFLECTANCE SPECTROMETER, VIDICON CAMERA.

INSTRUMENT_VERSION_ID [PDS_MER_OPS] CHARACTER(8)

The INSTRUMENT_VERSION_ID element identifies the specific model of an instrument used to obtain data. For example, this keyword could be used to distinguish between an engineering model of a camera used to acquire test data, and a flight model of a camera used to acquire science data during a mission.

INSTRUMENT_VOLTAGE [PDS_EN] REAL <V>

The INSTRUMENT_VOLTAGE element provides the voltage, in volts, of an instrument or some part of an instrument.

This keyword may be used in conjunction with INSTRUMENT_VOLTAGE_POINT to more fully describe either single or multiple voltages at various locations within a single instrument. If there is more than one measurement taken for a given instrument, a multi-value ordered set of values (i.e., sequence) may be constructed to associate each voltage measurement in the INSTRUMENT_VOLTAGE list with a corresponding item in the INSTRUMENT_VOLTAGE_POINT sequence of values.

INSTRUMENT_VOLTAGE_POINT [PDS_EN] CHARACTER(60) <n/a>

The INSTRUMENT_VOLTAGE_POINT element identifies the measurement point or location on an instrument or some part of an instrument. This keyword may be used in conjunction with INSTRUMENT_VOLTAGE to more fully describe either single or multiple temperatures at various locations within a single instrument. If there is more than one measurement taken for a given instrument, a multi-value ordered set of values (i.e., sequence) may be constructed to associate each temperature measurement in the INSTRUMENT_VOLTAGE list with a corresponding item in the INSTRUMENT_VOLTAGE_POINT sequence of values.

INSTRUMENT_WIDTH REAL <m>

The instrument_width element provides the physical width of an instrument.

INTEGRATION_DELAY_FLAG [PDS_EN] CHARACTER(8)

The integration_delay_flag indicates whether the integration time for a rapidly acquired spectral cube was extended by shrinking the pixel synch pulse.

INTEGRATION_DURATION **REAL <s>**

The duration of a time over which a particular instrument is observing or integrating.

INTENSITY_TRANSFER_FUNCTION_ID **[PDS_SBN]** **CHARACTER(10)**

The INTENSITY_TRANSFER_FUNCTION_ID element designates the type of intensity transfer function (ITF) used to map raw data to intensity values for an image. Note: For the International Ultraviolet Explorer (IUE) spacecraft, the ITF maps values to flux numbers on a pixel by pixel basis across the image. The ITF for each camera is defined in geometrically correct space, and is generated from a series of geometrically corrected mercury flood-lamp flat-field images at graded exposure levels.

INTERCEPT_POINT_LATITUDE **[PDS_IMG_GLL]** **REAL(-90, 90) <deg>**

The intercept_point_latitude element provides the latitude of a point on the body surface. This intercept point can describe the point at which lighting geometry is calculated or the point at which the target body resolution is calculated.

INTERCEPT_POINT_LINE **[PDS_IMG_GLL]** **REAL(1, 2147483648) <pixel>**

The intercept_point_line element provides the instrument line location of a point on the body surface. This intercept point can describe the point at which lighting geometry is calculated or the point at which the target body resolution is calculated.

INTERCEPT_POINT_LINE_SAMPLE **[PDS_IMG_GLL]** **REAL(1, 2147483648) <pixel>**

The intercept_point_line_sample element provides the instrument sample location of a point on the body surface. This intercept point can describe the point at which lighting geometry is calculated or the point at which the target body resolution is calculated.

INTERCEPT_POINT_LONGITUDE **[PDS_IMG_GLL]** **REAL(0, 360) <deg>**

The intercept_point_longitude element provides the longitude of a point on the body surface. This intercept point can describe the point at which lighting geometry is calculated or the point at which the target body resolution is calculated. Value is in west longitude for Galileo

INTERCHANGE_FORMAT **CHARACTER(6)**

The interchange_format element represents the manner in which data items are stored. Example values: BINARY, ASCII.

INTERFRAME_DELAY **[PDS_EN]** **REAL(>=0) <ms>**

The INTERFRAME_DELAY element provides the time between successive frames of an image.

INTERFRAME_DELAY_DURATION **[PDS_EN]** **REAL(>=-999) <ms>**

The interframe_delay_duration element provides the duration in milliseconds (unless otherwise specified) of the delay between the end of one frame and the start of the next to allow time for the scanning mirror to return to its starting position.

INTERLINE_DELAY_DURATION **[PDS_EN]** **REAL(0, 64000) <ms>**

The interline_delay_duration element provides the duration in milliseconds (unless otherwise specified) of the delay between the end of one line of an image and the start of the next. Note: For Cassini, this refers to the infrared line.

Time is allowed for: 1) the infrared duration mirror to return to its starting point, 2) collection of background data and 3) the alignment of the exposure center times between the infrared and visible channels.

INVALID_CONSTANT **CONTEXT DEPENDENT**

The invalid_constant element supplies the value used when the received data were out of the legitimate range of values. Note: For PDS and Mars Observer applications – because of the unconventional data type of this data element, the element should appear in labels only within an explicit object, i.e. anywhere between an 'OBJECT =' and an 'END_-OBJECT'.

INVENTORY_SPECIAL_ORDER_NOTE **[PDS_EN]** **CHARACTER**

The inventory_special_order_note element is a text field that provides information on special orders that can be placed for a given data set collection or data set.

INVERTED_CLOCK_STATE_FLAG **CHARACTER(12)**

The inverted_clock_state element indicates whether a clock signal was inverted.

IRAS_CLOCK_ANGLE **[PDS_SBN]** **REAL <deg>**

The satellite viewing angle projected onto the plane perpedicular to the Sun- line, measured from ecliptic North, clock-wise as viewed from the Sun. This is the same direction as the IRAS orbital motion.

IRAS_CLOCK_ANGLE_RANGE **[PDS_SBN]** **REAL <deg>**

The change in the clock angle during the elapsed time of the scan.

IRAS_CLOCK_ANGLE_RATE **[PDS_SBN]** **REAL <deg>**

The average time rate of change of the clock angle during a scan.

IRAS_CLOCK_ANGLE_RATE_SIGMA **[PDS_SBN]** **REAL <deg>**

The standard deviation of the scan rate determined from variations in values from the gyro.

IRAS_HCON **[PDS_SBN]** **INTEGER**

HCON is hours-confirmation. In order to maximize the reliability of the IRAS observations, the satellite scanning strategy was designed so that a piece of the sky would be re-observed on timescales of hours (generally one orbit of 103 minutes). Three hours-confirmed surveys, designated HCONs 1, 2 and 3 respectivley, of the sky were made by IRAS over the course of its mission. HCON 1 and 2's observations were interleaved on timescales of weeks. HCON 3 consists of all scans after SOP 426, inclusive.(See Beichman et al. (1989) for further information.)

ISIS_STRUCTURE_VERSION_ID **CHARACTER(8)**

The isis_structure_version_id provides the version of ISIS software with which a PDS SPECTRAL_QUBE's physical structure is compatible.

Note that in order to work with ISIS software, an ISIS compliant label must also be provided with the data object. See the chapter 'SPECTRAL_QUBE' in Appendix A of the PDS Standards Reference, for more details on using PDS SPECTRAL_QUBEs with ISIS software.

ITEM_BITS **INTEGER**

The item_bits element indicates the number of bits allocated for a particular bit data item. Note: In the PDS, the item_-bits element is used when the items element specifies multiple occurrences of an implied item within a BIT_COLUMN object definition.

ITEM_BYTES **INTEGER**

The item_bytes data element represents the size in bytes of an item within a data object such as a column.

Notes:

(1) In the PDS, the term item_bytes is distinguished from the term bytes because both elements may appear in a single data object definition (e.g., a label) and refer to different parts of the data object. In an object such as a column, bytes represents the size of the column. Should the column be split into equal items, item_bytes would represent the size of each item. (2) In a field object, item_bytes specifies the maximum size of each item.

ITEM_OFFSET **INTEGER**

The item_offset data element indicates the number of bytes from the start of one item to the start of the next item in any ASCII column or array.

ITEMS **INTEGER(>=1)**

The items element defines the number of identical parts into which a single object, such as a column or field, has been divided. See also: repetitions.

Note: In the PDS, the data element ITEMS is used for subdivision of a single object, such as a column or a field. REPETITIONS is used for multiple occurrences of objects, such as in a container. For a fuller description of the use of these data elements, please refer to the Standards Reference.

JOURNAL_NAME **CHARACTER(60)**

The journal_name element identifies, where applicable, the published work (e.g., journal or report) which contains a reference document.

JPL_PRESS_RELEASE_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

This element describes the JPL press release id for a data product associated with the given data product.

KERNEL_TYPE **[SPICE]** **IDENTIFIER**

The kernel_type data element identifies the specific kernel of ancillary data produced within the SPICE system.

KERNEL_TYPE_ID **[PDS_NAIF]** **CHARACTER(8) <n/a>**

The kernel_type_id element identifies the type of the SPICE kernel file

KEYWORD_DEFAULT_VALUE **[PDS_EN]** **CHARACTER(20)**

The keyword_default_value element is used to initialize a template keyword value to a default value during construction of templates. When filling out templates, the data supplier provides a value for all keywords except those which have a default value.

KEYWORD_LATITUDE_TYPE **CHARACTER(30)**

Identifies the type of latitude (planetographic or planetocentric) used in the labels, e.g., for the maximum, minimum, center, reference, and standard-parallel latitudes. This can differ from the type of latitude that is equally sampled in certain database projections (see PROJECTION_LATITUDE_TYPE), though use of different values for the two keywords is not recommended. The IAU definition for direction of positive longitude should adopted: for objects with prograde rotation, a positive longitude direction of west is used in conjunction with PLANETOGRAPHIC latitudes, whereas for objects with retrograde rotation positive east longitude is used with PLANETOGRAPHIC latitudes. By IAU convention east longitude may be used with PLANETOCENTRIC latitude for any body. The keyword COORDINATE_SYSTEM_NAME describes these IAU-approved combinations of latitude and longitude definitions. The keywords KEYWORD_LATITUDE_TYPE and POSITIVE_LONGITUDE_DIRECTION separately specify the definitions for latitude and longitude and hence may be used to describe not only the IAU- approved combinations but also non-IAU-approved combinations as needed. Adherence to the IAU standard is recommended by the PDS.

KEYWORD_VALUE_HELP_TEXT [PDS_EN] CHARACTER

The keyword_value_help_text element provides text which describes the information required from the data supplier to assign a value to a template keyword.

LABEL_RECORDS INTEGER(>=0)

The label_records element indicates the number of physical file records that contain only label information. The number of data records in a file is determined by subtracting the value of label_records from the value of file_records. Note: In the PDS, the use of label_records along with other file-related data elements is fully described in the Standards Reference.

LABEL_REVISION_NOTE CHARACTER

The LABEL_REVISION_NOTE element is a free-form unlimited length character string providing information regarding the revision status and authorship of a PDS label. This should include the latest revision date and author of the current version, but may include a more complete history. This element is required in all Catalog labels and should be the second element in the label. Example: '1999-06-07 SBN:raugh Auto-generated, 1999-07-08 CN:JSH Updated;'

LAMP_STATE INTEGER

The state of the lamp on an instrument. The values noted are binary on/off values with respect to each of the lamps associated with the instrument.

LANDER_SURFACE_QUATERNION [PDS_SBN] REAL(0, 1)

The lander_surface_quaternion element provides an array of four values that define the relationship between the lander coordinate frame and the local level coordinate frame. These values are commonly listed in the order (cosine, x, y, z) or in the order (x, y, z, cosine).

LAST_ALT_FOOTPRINT_TDB_TIME [PDS_GEO_MGN] REAL

The last_alt_footprint_tdb_time element provides the value of the spacecraft ephemeris time that represents the last altimeter footprint of this orbit. It is equal to the altimetry_footprint_tdb_time value in the last record of this orbit's altimetry data file.

LAST_IMAGE_TIME [MARS_OBSERVER] TIME

The last_image_time element indicates the start_time (or image_time) that appears in the label of the last image on an archive medium.

LAST_NAME **CHARACTER(30)**

The last_name element provides the last name (surname) of an individual.

LAST_PRODUCT_ID **[MARS_OBSERVER]** **CHARACTER(40)**

The last_product_id data element indicates the product_id that appears in the label of the last data product on an archive medium.

LAST_RAD_FOOTPRINT_TDB_TIME **[PDS_GEO_MGN]** **REAL**

The last_rad_footprint_tdb_time element provides the value of the spacecraft ephemeris time of the last radiometer measurement of this orbit. It is equal to the rad_spacecraft_epoch_tdb_time value in the last record of this orbit's radiometry data file.

LATITUDE **REAL(-90, 90) <deg>**

For a Planetocentric, body-fixed, rotating coordinate system, latitude is defined as: The angle between the equatorial plane and a vector connecting the point of interest and the origin of the planetocentric coordinate system. Positive in the hemisphere north of the equator (i.e., hemisphere to the north of the solar system invariant plane) and negative in the southern hemisphere.

For a Planetographic, body-fixed, rotating coordinate system, latitude is defined as: The angle between the equatorial plane and a vector through the point of interest that is normal to a biaxial ellipsoid reference surface. Positive in the hemisphere north of the equator (i.e., hemisphere to the north of the solar system invariant plane) and negative in the southern hemisphere. Note: With a non-zero polar flattening, the vector does not intersect the coordinate system origin, except at the equator and the poles. See coordinate_system_name, coordinate_system_type and the PDS Cartographic Standards in the PDS Standards Reference V3.2 for further details.

LAUNCH_DATE **DATE**

The launch_date element identifies the date of launch of a spacecraft or a spacecraft_carrying vehicle. Formation rule: YYYY-MM-DD

LENS_TEMPERATURE **REAL(>=0) <K>**

The lens_temperature element provides the temperature of the lens in degrees kelvin at the time the observation was made.

LIGHT_FLOOD_STATE_FLAG **CHARACTER(3)**

The light_flood_state_flag element indicates the mode (on or off) of light flooding for an instrument.

LIGHT_SOURCE_DISTANCE **REAL(>=0) <km>**

The light_source_distance element provides the distance from the target body center and secondary light source center.

LIGHT_SOURCE_INCIDENCE_ANGLE **REAL(0, 180) <deg>**

The light_source_incidence_angle element provides a measure of the lighting condition at the intercept point. Incidence angle is the angle between the local vertical at intercept (surface) point and a vector from the intercept point to the light source.

LIGHT_SOURCE_NAME **CHARACTER(30)**

The light_source_name element provides the name of the light source used in observations when it is not the Sun. Note: For the Clementine Mission, the light source is the Earth when making lunar observations, and the Moon when making Earth observations.

LIGHT_SOURCE_PHASE_ANGLE REAL(0, 180) <deg>

The light_source_phase_angle element provides a measure of the relationship between the spacecraft viewing position and the light source. Light_source_phase_angle is defined as the angle between a vector from the intercept point to the light source and a vector from the intercept point to the spacecraft.

LIGHT_SOURCE_TYPE [PDS_MER_OPS] CHARACTER

The LIGHT_SOURCE_TYPE element identifies that source of illumination used in instrument calibration.

LIMB_ANGLE REAL(-90, 90) <deg>

The limb_angle element provides the value of the angle between the center of an instrument's field of view and the nearest point on the lit limb of the target body. Limb_angle values are positive off_planet and negative on_planet.

LINE_CAMERA_MODEL_OFFSET [PDS_MER_OPS] REAL <pixel>

The LINE_CAMERA_MODEL_OFFSET element provides the location of the image origin with respect to the camera model's origin. For CAHV/CAHVOR models, this origin is not the center of the camera, but is the upper-left corner of the 'standard' -size image, which is encoded in the CAHV vectors. (MIPL Projection - Perspective)

LINE_DISPLAY_DIRECTION IDENTIFIER

The line_display_direction element is the preferred orientation of lines within an image for viewing on a display device. The default value is down, meaning lines are viewed top to bottom on the display. See also SAMPLE_DISPLAY_DIRECTION. Note: The image rotation elements such as TWIST_ANGLE, CELESTIAL_NORTH_CLOCK_ANGLE, and BODY_POLE_CLOCK_ANGLE are all defined under the assumption that the image is displayed in its preferred orientation.

LINE_EXPOSURE_DURATION [MARS_OBSERVER] REAL <ms>

The line_exposure_duration data element indicates the time elapsed during the aquisition of one image line of data.

LINE_FIRST_PIXEL INTEGER(>=0)

The line_first_pixel element provides the line index for the first pixel that was physically recorded at the beginning of the image array. Note: In the PDS, for a fuller explanation on the use of this data element in the Image Map Projection Object, please refer to the PDS Standards Reference.

LINE_LAST_PIXEL INTEGER(>=0)

The line_last_pixel element provides the line index for the last pixel that was physically recorded at the end of the image array. Note: In the PDS, for a fuller explanation on the use of this data element in the Image Map Projection Object, please refer to the PDS Standards Reference.

LINE_PREFIX_BYTES INTEGER(>=0)

The line_prefix_bytes element indicates the number of non-image bytes at the beginning of each line. The value must represent an integral number of bytes.

LINE_PREFIX_MEAN **[PDS_MER_OPS]** **REAL**

The LINE_PREFIX_MEAN element provides the average of the DN values of the LINE_PREFIX_BYTES.

LINE_PREFIX_STRUCTURE **CHARACTER(120)**

The line_prefix_structure element indicates a pointer to a file containing a definition of the structure of the line prefix bytes. Note: In the PDS this data element is obsolete. It is kept in the data dictionary for historical purposes to allow data validation software to function. According to current standards, the structures of prefix and suffix data are illustrated through the use of the table object.

LINE_PROJECTION_OFFSET **REAL <pixel>**

The line_projection_offset element provides the line offset value of the map projection origin position from the line and sample 1,1 (line and sample 1,1 is considered the upper left corner of the digital array). Note: that the positive direction is to the right and down.

LINE_RESOLUTION **REAL(>=0) <km>**

The LINE_RESOLUTION element provides the vertical size of the pixel at the center of an image as projected onto the surface of the target.

LINE_SAMPLES **INTEGER(>=0)**

The line_samples element indicates the total number of data instances along the horizontal axis of an image.

LINE_SUFFIX_BYTES **INTEGER(>=0)**

The line_suffix_bytes element indicates the number of non-image bytes at the end of each line. This value must be an integral number of bytes.

LINE_SUFFIX_MEAN **[PDS_MER_OPS]** **INTEGER(1, 1024)**

The LINE_SUFFIX_MEAN element indicates the total number of data instances along the horizontal axis of an image.

LINE_SUFFIX_STRUCTURE **CHARACTER(120)**

The line_suffix_structure element indicates a pointer to a file containing a definition of the structure of the line suffix bytes. Note: In the PDS this data element is obsolete. It is kept in the data dictionary for historical purposes to allow data validation software to function. According to current standards, the structures of prefix and suffix data are illustrated through the use of the table object.

LINES **INTEGER(>=0)**

The lines element indicates the total number of data instances along the vertical axis of an image. Note: In PDS label convention, the number of lines is stored in a 32-bit integer field. The minimum value of 0 indicates no data received.

LOCAL_HOUR_ANGLE **REAL(0, 360) <deg>**

The local_hour_angle element provides a measure of the instantaneous apparent sun position at the subspacecraft point. The local_hour_angle is the angle between the extension of the vector from the Sun to the target body and the vector projection on the target body's ecliptic plane of a vector from the target body's planetocentric center to the observer (usually, the spacecraft). This angle is measured in a counterclockwise direction when viewed from north of the ecliptic plane. It may be converted from an angle in degrees to a local time, using the conversion of 15 degrees per hour, for those planets for which the rotational direction corresponds with the direction of measure of the angle.

LOCAL_MEAN_SOLAR_TIME **[PDS_IMG]** **CHARACTER(12)**

The desire to work with solar days, hours, minutes, and seconds of uniform length led to the concept of the fictitious mean Sun or FMS. The FMS is defined as a point that moves on the celestial equator of a planetary body at a constant rate that represents the average mean motion of the Sun over a planetary year. Local mean solar time, or LMST, is defined, by analogy with LTST, as the difference between the areocentric right ascensions of a point on the surface and of the FMS. The difference between LTST and LMST varies over time. The length of a mean solar day is constant and can be computed from the mean motion of the FMS and the rotation rate of a planet. The mean solar day is also called a 'sol'. Mean solar hours, minutes, and seconds are defined in the same way as the true solar units.

The acceptable range of values for local_mean_solar_time is '00:00:00.000' to '23:59:59.999'.

See also LOCAL_TRUE_SOLAR_TIME. (Definition adapted from [VAUGHAN1995].)

LOCAL_TIME **REAL(0, 24) <localday/24>**

The local_time element provides the local time of day at the center of the field of view of an instrument, measured in local hours from midnight. A local hour is defined as one twenty_fourth of a local solar day.

LOCAL_TRUE_SOLAR_TIME **[PDS_MER_OPS]** **CHARACTER(12)**

The LOCAL_TRUE_SOLAR_TIME element describes the local true solar time, or LTST. It is one of two types of solar time used to express the time of day at a point on the surface of a planetary body. LTST is measured relative to the true position of the Sun as seen from a point on the planet's surface. The coordinate system used to define LTST has its origin at the center of the planet. Its Zaxis is the north pole vector (or spin axis) of the planet. The X-axis is chosen to point in the direction of the vernal equinox of the planet's orbit. (The vernal or autumnal equinox vectors are found by searching the planetary ephemeris for those times when the vector from the planet's center to the Sun is perpendicular to the planet's north pole vector. The vernal equinox is the time when the Sun appears to rise above the planet's equator.) Positions of points in this frame can be expressed as a radius and areocentric 'right ascension' and 'declination' angles. The areocentric right ascension angle, or ARA, is measured positive eastward in the equatorial plane from the vernal equinox vector to the intersection of the meridian containing the point with the equator. Similarly, the areocentric declination is the angle between the equatorial plane and the vector to the point. LTST is a function of the difference between the ARAs of the vectors to the Sun and to the point on the planet's surface. Specifically, LTST = (a(P) - a(TS)) * (24 / 360) + 12 where, LTST = the local true solar time in true solar hours a(P) = ARA of the point on the planet's surface in deg a(TS) = ARA of the true sun in degThe conversion factor of 24/360 is applied to transform the angular measure in decimal degrees into hours-minutes-seconds of arc. This standard representation divides 360 degrees into 24 hours, each hour into 60 minutes, and each minute into 60 seconds of arc. The hours, minutes, and seconds of arc are called 'true solar' hours, minutes, and seconds when used to measure LTST. The constant offset of 12 hours is added to the difference in ARAs to place local noon (12:00:00 in hours, minutes, seconds) at the point where the Sun is directly overhead; at this time, the ARA of the true sun is the same as that of the surface point so that a(P) - a(TS) = 0. The use of 'true solar' time units can be extended to define a true solar day as 24 true solar hours. Due to the eccentricity of planetary orbits and the inclination of orbital planes to equatorial planes (obliquity), the Sun does not move at a uniform rate over the course of a planetary year. Consequently, the number of SI seconds in a true solar day, hour, minute or second is not constant. See also LOCAL_MEAN_SOLAR_TIME. (Definition adapted from [VAUGHAN1995].) This element replaces the older MPF_LOCAL_TIME, which should no longer be used.

LOGICAL_VOLUME_PATH_NAME **CHARACTER(72)**

The logical_volume_path_name element is a character string or set of character strings giving the root directory path for each logical volume. If missing, the volume begins in the root directory as usual.

LOGICAL_VOLUMES **INTEGER(>=1)**

The logical_volumes element is an integer indicating the number of logical volumes in the given volume. If it is missing, it has a default value of 1.

LONGITUDE **REAL(-180, 360) <deg>**

For a Planetocentric, body-fixed, rotating coordinate system, longitude is defined as: The angle increasing eastward between the prime meridian and the vector from the coordinate system origin to the point of interest, projected into the equatorial plane. This is a right-handed coordinate system.

For a Planetographic, body-fixed, rotating coordinate system, longitude is defined as: The angle between the prime meridian and the vector from the coordinate system origin to the point of interest, projected into the equatorial plane. Planetographic longitudes are defined to increase with time for a distant observer. Thus, they increase to the west for prograde rotators, and to the east for retrograde rotators.

For the Earth, Moon and Sun, PDS also supports the traditional use of the range (-180,180) Note: Longitudes are measured in the direction of rotation for all planetary rings. See ring_longitude, minimum_ring_longitude, maximum_-ring_longitude, b1950_ring_longitude, minimum_b1950_ring_longitude and maximum_b1950_ring_longitude.

LOOK_DIRECTION **IDENTIFIER**

The value (RIGHT or LEFT) indicates the side of the spacecraft groundtrack to which the antenna is pointed for data acquired within a synthetic aperture radar (SAR) image. Most SAR instruments acquire an image on only one side of the ground track at one time. This value also indicates from which side the SAR image is illuminated. If the spacecraft images to the left of its ground track (LOOK_DIRECTION = LEFT), the image will be illuminated from the (viewer's) left side, and, conversely, if the spacecraft looks to the right, the illumination will come from the right in the image file. The direction of illumination is critical to interpretation of features in the image.

LOWEST_DETECTABLE_OPACITY **[PDS_RINGS]** **REAL(>=0)**

The lowest_detectable_opacity element indicates the sensitivity of a ring occultation data set to faint rings. It specifies the normal ring opacity corresponding to a signal one standard deviation below the unobstructed signal. The value is computed assuming the data has been re-processed to the radial resolution specified by the reference_radial_resolution element.

MACROPIXEL_SIZE **[PDS_EN]** **INTEGER(>=1)**

The MACROPIXEL_SIZE element provides the sampling array size (e.g., 2x2, 4x4, 8x8), in pixels, that is used to reduce the amount of data an image contains by summing the values of the pixels, along the lines of the image. This process may be performed for images with increased exposure times in flight direction. Also known as summation mode.

MAGNET_ID **[PDS_MER_OPS]** **CHARACTER**

The MAGNET_ID element identifies a magnet instrument that is visible in an image or observation.

MAGNETIC_MOMENT **REAL <J/T>**

The magnetic_moment element provides the value of the magnetic moment of a target body.

MAILING_ADDRESS_LINE **CHARACTER**

The mailing_address_line element provides one line of the mailing address of an individual or institution. The ordering of the mailing address lines is provided by the associated tuple_sequence_number.

MANDATORY_COLUMN **[PDS_EN]** **CHARACTER(1)**

The mandatory_column element denotes whether an attribute may be set to a null value. Example: Y or N

MAP_DESC **CHARACTER**

The map_desc element describes the contents and processing history of a given map.

MAP_NAME **CHARACTER(40)**

The map_name element provides the name assigned to a map, and typically corresponds to the name of a prominent feature which appears on the map. Note: This element is also used within AMMOS as a unique identifier for decommutation maps.

MAP_NUMBER **CHARACTER(20)**

The map_number element provides a numeric identifier for a given map.

MAP_PROJECTION_DESC **CHARACTER**

The map_projection_desc element describes the map_projection_type unambiguously. It shall contain the mathematical expressions (it may even contain the source code or pseudo code, with comments) and any assumptions (e.g. the planet is assumed spherical). Additionally it shall describe the planet eccentricity, the treatment of the a_axis_radius, b_axis_-radius, and c_axis_radius when the projection was created, and where the map_scale (or map_resolution) is defined.

MAP_PROJECTION_ROTATION **REAL(0, 180) <deg>**

The map_projection_rotation element provides the clockwise rotation, in degrees, of the line and sample coordinates with respect to the map projection origin (line_projection_offset, line_projection_offset) This parameter is used to indicate where 'up' is in the projection. For example, in a polar stereographic projection does the zero meridian go center to bottom, center to top, center to left, or center to right? The polar projection is defined such that the zero meridian goes center to bottom. However, by rotating the map projection, the zero meridian can go in any direction. Note: 180 degrees is at the top of the North Pole and 0 degrees is at the top of the South Pole. For example, if 0 degrees is at the top of the North Pole than the map_projection_rotation would be 180 degrees.

MAP_PROJECTION_TYPE **CHARACTER(28)**

The map_projection_type element identifies the type of projection characteristic of a given map. Example value: ORTHOGRAPHIC.

MAP_RESOLUTION **REAL(>=0) <pix/deg>**

The map_resolution element identifies the scale of a given map. Please refer to the definition for map_scale for a more complete definition. Note: map_resolution and map_scale both define the scale of a map except that they are expressed in different units: map_resolution is in PIXEL/DEGREE and map_scale is in KM/PIXEL.

MAP_SCALE **REAL <km/pix>**

The map_scale element identifies the scale of a given map. The scale is defined as the ratio of the actual distance between two points on the surface of the target body to the distance between the corresponding points on the map. The map_scale references the scale of a map at a certain reference point or line. Certain map projections vary in scale throughout the map. For example, in a Mercator projection, the map_scale refers to the scale of the map at the equator. For Conic projections, the map_scale refers to the scale at the standard parallels. For an Orthographic point, the map_scale refers to the scale at the center latitude and longitude. The relationship between map_scale and the map_resolution element is that they both define the scale of a given map, except they are expressed in different units: map_scale is in KM/PIXEL and map_resolution is in PIXEL/DEGREE. Also note that one is inversely proportional to the other and that kilometers and degrees can be related given the radius of the planet: 1 degree = (2 * RADIUS * PI) / 360 kilometers.

MAP_SEQUENCE_NUMBER [JPL_AMMOS_SPECIFIC] INTEGER(>=0)

The map_sequence_number element identifies the sequence number of a particular series of decommutation maps.

MAP_SERIES_ID CHARACTER(20)

The map_series_id element identifies a map series (as specified by the agency which issued the map).

MAP_SHEET_NUMBER INTEGER(>=0)

The map_sheet_number element provides the sequence number of a map which comprises multiple sheets.

MAP_TYPE CHARACTER(20)

The map_type element identifies the general type of information depicted on a given map. Example values: GEOLOGIC, TOPOGRAPHIC, SHADED_RELIEF.

MAPPING_START_TIME [JPL_AMMOS_SPECIFIC] TIME

The mapping_start_time element is an alias for start_time used exclusively by AMMOS-MGN ephemeris files.

MAPPING_STOP_TIME [JPL_AMMOS_SPECIFIC] TIME

The mapping_stop_time element is an alias for stop_time used exclusively by AMMOS-MGN ephemeris files.

MASS REAL <kg>

The mass element provides the estimated mass of a target body.

MASS_DENSITY REAL <g/cm3>**

The mass_density element provides the bulk density (mass per unit volume) of a target body. Bulk density is defined as the ratio of total mass to total volume.

MAX_AUTO_EXPOS_ITERATION_COUNT [PDS_MER_OPS] INTEGER(0, 10)

The MAX_AUTO_EXPOS_ITERATION_COUNT element specifies the maximum number of exposure iterations the instrument will perform in order to obtain the requested exposure when operating in an autonomous mode.

MAXIMUM CONTEXT DEPENDENT

The maximum element indicates the largest value occurring in a given instance of the data object. Note: For PDS and Mars Observer applications – because of the unconventional data type of this data element, the element should appear in labels only within an explicit object, i.e. anywhere between an 'OBJECT =' and an 'END_OBJECT'.

MAXIMUM_ANGULAR_VELOCITY [PDS_MER_OPS] REAL <rad/s>

The element MAXIMUM_ANGULAR_VELOCITY specifies the maximum revolve velocity output of the torque controller for the scan and grind portion of the command.

MAXIMUM_B1950_RING_LONGITUDE [PDS_RINGS] REAL(0, 360) <deg>

The maximum_B1950_ring_longitude element specifies the maximum inertial longitude within a ring area relative to the B1950 prime meridian, rather than to the J2000 prime meridian. The prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of B1950. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane. Note: For areas that cross the prime meridian, the maximum ring longitude will have a value less than the minimum ring longitude.

MAXIMUM_BRIGHTNESS_TEMPERATURE REAL(>=2.4) <K>

The maximum_brightness_temperature element provides the maximum brightness temperature value measured within a given set of data or a given sequence. Brightness temperature is the temperature of aideal blackbody whose radiant energy in a particular wavelength range is the same as that of an observed object or feature.

MAXIMUM_CHANNEL_ID CHARACTER(4)

The maximum_channel_id element identifies the highest channel from which data were obtained. For example, the Voyager PLS instrument reported measurements in a number of energy/charge channels. But not all channel values were reported to Earth; the maximum_channel_id element indicated the highest energy reported in the telemetry stream.

MAXIMUM_COLUMN_VALUE [PDS_EN] REAL

The maximum_column_value element provides the maximum real value currently allowed by the PDS catalog for a given table element. This value is updated when new limits are discovered. Note: These elements are unique to a table and may have different values depending on which table the element is associated with.

MAXIMUM_CURRENT_PERSISTENCE [PDS_MER_OPS] INTEGER(0, 480)

The MAXIMUM_CURRENT_PERSISTENCE element gives the value of the persistence of the maximum current.

MAXIMUM_ELEVATION [PDS_MER_OPS] REAL <deg>

The MAXIMUM_ELEVATION element provides the elevation (as defined by the coordinate system) of the first line of the image. (MIPL Projections - Cylindrical)

MAXIMUM_EMISSION_ANGLE REAL(0, 180) <deg>

The maximum_emission_angle element provides the maximum emission angle value. See emission_angle.

MAXIMUM_INCIDENCE_ANGLE REAL(0, 180) <deg>

The maximum_incidence_angle element provides the maximum incidence angle value. See incidence_angle.

MAXIMUM_INSTRUMENT_EXPOSR_DUR REAL <ms>

The maximum_instrument_exposure_duration element provides the maximum possible exposure time for the instrument mode identified by the instrument_mode_id element. See instrument_exposure_duration.

MAXIMUM_INSTRUMENT_PARAMETER REAL

The maximum_instrument_parameter element provides an instrument's maximum usefully detectable signal level for a given instrument parameter. This value indicates the physical value corresponding to the maximum output of an instrument by the instrument_parameter_name element.

MAXIMUM_INSTRUMENT_TEMPERATURE **REAL(>=-273) <deg>**

The maximum instrument_temperature element provides the maximum temperature, in degrees Celcius, of an instrument or some part of an instrument.

NOTE: for MEX, the INSTRUMENT_TEMPERATURE,MAXIMUM_INSTRUMENT_TEMPERATURE, and INSTRUMENT_POINT shall always go together and describe the actual temperatures of a part of the instrument and its maximum. For example,

INSTRUMENT_TEMPERATURE = (10.2, 11.2) MAXIMUM_INSTRUMENT_TEMPERATURE = (N/A, 22.2) INSTRUMENT_POINT = (SPECTROMETER, FOCAL_PLANE)

MAXIMUM_LATITUDE **REAL(-90, 90) <deg>**

The maximum_latitude element specifies the northernmost latitude of a spatial area, such as a map, mosaic, bin, feature, or region. See latitude.

MAXIMUM_LENGTH **[PDS_EN]** **INTEGER(>=1)**

The maximum_length element supplies the maximum number of units associated with the representation of a data element.

MAXIMUM_LIMB_ANGLE **REAL(-90, 90) <deg>**

The maximum_limb_angle element provides the maximum value of the limb angle within a given set of data. See limb_angle.

MAXIMUM_LOCAL_TIME **REAL(0, 24) <localday/24>**

The maximum_local_time element provides the maximum local time of day on the target body, measured in hours from local midnight.

MAXIMUM_LONGITUDE **REAL(0, 360) <deg>**

The maximum_longitude element specifies the westernmost (left_most) longitude of a spatial area, such as a map, mosaic, bin, feature, or region. See longitude. Note: The maximum longitude data element is obsolete and should no longer be used. The assumed coordinate system was planetographic for prograde rotators (PDS Cartographic Standards V3.0). See coordinate_ system_type, easternmost_longitude and westernmost_longitude.

MAXIMUM_PARAMETER **REAL**

The maximum_parameter element specifies the maximum allowable value for a parameter input to a given data processing program. The parameter constrained by this value is identified by the parameter_name element.

MAXIMUM_PHASE_ANGLE **REAL(0, 180) <deg>**

The maximum_phase_angle element provides the maximum phase angle value. See phase_angle.

MAXIMUM_RADIAL_RESOLUTION **[PDS_RINGS]** **REAL(>=0) <km>**

The maximum_radial_resolution element indicates the maximum (coarsest) radial distance over which changes in ring properties can be detected within a data product.

MAXIMUM_RADIAL_SAMPLING_INTERV [PDS_RINGS] REAL(>=0) <km>

The maximum_radial_sampling_interval element indicates the maximum radial spacing between consecutive points in a ring profile. In practice, this may be somewhat smaller than the maximum_radres element because the profile may be over-sampled.

MAXIMUM_RESOLUTION REAL <km/pix>

The MAXIMUM_RESOLUTION element provides the value of the highest resolution obtained for a given image or data product.

MAXIMUM_RING_LONGITUDE [PDS_RINGS] REAL(0, 360) <deg>

The maximum_ring_longitude element specifies the maximum inertial longitude of a ring area relative to the prime meridian. In planetary ring systems, the prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of J2000. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane. Note: For areas that cross the prime meridian, the maximum ring longitude will have a value less than the minimum ring longitude. Note: The invariable plane of a planet is equivalent to its equatorial plane for every ringed planet except Neptune.

MAXIMUM_RING_RADIUS [PDS_RINGS] REAL(>=0) <km>

The maximum_ring_radius element indicates the maximum (outermost) radial location of an area within a planetary ring system. Radii are measured from the center of the planet along the nominal ring plane.

MAXIMUM_SAMPLING_PARAMETER REAL

The maximum_sampling_parameter element identifies the maximum value at which a given data item was sampled. For example, a spectrum that was measured in the 0.4 to 3.5 micrometer spectral region would have a maximum_sampling_parameter value of 3.5. The sampling parameter constrained by this value is identified by the sampling_parameter_name element. Note: The unit of measure for the sampling parameter is provided by the unit element.

MAXIMUM_SLANT_DISTANCE REAL <km>

The maximum_slant_distance element provides the maximum slant distance value. See slant_distance.

MAXIMUM_SOLAR_BAND_ALBEDO REAL(0, 1)

The maximum_solar_band_albedo element provides the maximum solar band albedo value measured within a given set of data or a given sequence.

MAXIMUM_SPECTRAL_CONTRAST REAL <K>

The maximum_spectral_contrast element provides the maximum value of spectral contrast within a given set of data. See spectral_contrast_range.

MAXIMUM_SURFACE_PRESSURE REAL <bar>

The maximum_surface_pressure element provides the maximum surface pressure value for the atmosphere of a given body.

MAXIMUM_SURFACE_TEMPERATURE **REAL(>=2.4) <K>**

The maximum_surface_temperature element provides the maximum equatorial surface temperature value for a given body during its year.

MAXIMUM_TRAVEL_DISTANCE **[PDS_MER_OPS]** **REAL <mm>**

The MAXIMUM_TRAVEL_DISTANCE element gives the maximum allowable travel distance of the MER RAT instrument along the Z axis.

MAXIMUM_WAVELENGTH **REAL <micron>**

The maximum_wavelength element identifies the maximum wavelength at which an observation can be made or was made. For instruments, this may depend on the instrument detector or filter characteristics. For data products, this is the effective upper limit on the wavelength detected.

MCP_GAIN_MODE_ID **CHARACTER(20)**

The MCP_gain_mode_id element identifies the MCP (Micro Channel Plate) gain state of an instrument.

MD5_CHECKSUM **CHARACTER(32)**

The MD5 algorithm takes as input a file (message) of arbitrary length and produces as output a 128-bit 'fingerprint' or 'message digest' of the input. It is conjectured that it is computationally infeasible to produce two messages having the same message digest, or to produce any message having a given prespecified target message digest. The MD5 algorithm is intended for digital signature applications.

The MD5 algorithm is designed to be quite fast on 32-bit machines. In addition, the MD5 algorithm does not require any large substitution tables; the algorithm can be coded quite compactly.

Most standard MD5 checksum calculators return a 32 character hexadecimal value containing lower case letters. In order to accomodate this existing standard, the PDS requires that the value assigned to the MD5_CHECKSUM keyword be a value composed of lowercase letters (a-f) and numbers (0-9). In order to comply with other standards relating to the use of lowercase letters in strings, the value must be quoted using double quotes.

Example: MD5_CHECKSUM = '0ff0a5dd0f3ea4e104b0eae98c87f36c'

The MD5 algorithm is an extension of the MD4 message-digest algorithm 1,2]. MD5 is slightly slower than MD4, but is more 'conservative' in design. MD5 was designed because it was felt that MD4 was perhaps being adopted for use more quickly than justified by the existing critical review; because MD4 was designed to be exceptionally fast, it is 'at the edge' in terms of risking successful cryptanalytic attack. MD5 backs off a bit, giving up a little in speed for a much greater likelihood of ultimate security. It incorporates some suggestions made by various reviewers, and contains additional optimizations. The MD5 algorithm has been placed in the public domain for review and possible adoption as a standard.

For OSI-based applications, MD5's object identifier is

md5 OBJECT IDENTIFIER ::= iso(1) member-body(2) US(840) rsadsi(113549) digestAlgorithm(2) 5}

In the X.509 type AlgorithmIdentifier [3], the parameters for MD5 should have type NULL.

The MD5 algorithm was described by its inventor, Ron Rivest of RSA Data Security, Inc., in an Internet Request For Comments document, RFC1321 (document available from the PDS).

References ========= [1] Rivest, R., The MD4 Message Digest Algorithm, RFC 1320, MIT and RSA Data Security, Inc., April 1992.

[2] Rivest, R., The MD4 message digest algorithm, in A.J. Menezes and S.A. Vanstone, editors, Advances in Cryptology - CRYPTO '90 Proceedings, pages 303-311, Springer-Verlag, 1991.

[3] CCITT Recommendation X.509 (1988), The Directory - Authentication Framework.

MEAN **REAL(>=0)**

The mean element provides the average of the DN values in the image array.

Note: For the Mars Pathfinder IMP camera, this was the average of only those pixels within the valid DN range of 0 to 4095.

MEAN_ORBITAL_RADIUS **REAL <km>**

The mean_orbital_radius element provides the mean distance between the center of a solar system object and the center of its primary (e.g., the primary body for a planet is the Sun, while the primary body for a satellite is the planet about which it orbits). As the radius of an elliptical orbit varies with time, the notion of mean radius allows for general, time-independent comparisons between the sizes of different bodies' orbits.

MEAN_RADIANCE **REAL**

The mean_radiance is the mean of the radiance values in a radiometrically corrected product.

MEAN_RADIUS **REAL <km>**

The mean_radius element is measured or derived using a variety of methods. It provides, approximately, an average of the equatorial and polar radii of the best fit spheroid (for planets) or ellipsoid (for satellites).

MEAN_REFLECTANCE **REAL**

The MEAN_REFLECTANCE element represents the mean reflectance of an imaged area of a target body in intensity over flux (I over F) units. 10,000 I over F units would be produced by normal incidence of sunlight on a Lambert disk at the target-body's distance from the sun

MEAN_SOLAR_DAY **REAL <d>**

The mean_solar_day element provides the average interval required for successive transits of the Sun. This is computed as if planets and satellites move in circular orbits about their primaries with periods as specified by the revolution_period element, and as if planets and satellites have spin axes which are perpendicular to their orbit planes.

MEAN_SURFACE_PRESSURE **REAL <bar>**

The mean_surface_pressure element provides the mean equatorial atmospheric pressure value at the mean equatorial surface of a body, averaged over the body's year.

MEAN_SURFACE_TEMPERATURE **REAL(>=2.4) <K>**

The mean_surface_temperature element provides the mean equatorial surface temperature of a body, averaged over the body's year.

MEAN_TRUNCATED_BITS **REAL(0, 4) <b/pixel>**

The MEAN_TRUNCATED_BITS element provides the mean number of truncated bits/pixel.

MEAN_TRUNCATED_SAMPLES **REAL(0, 800) <p/line>**

The MEAN_TRUNCATED_SAMPLES element provides the mean number of truncated pixels/line.

MEASURED_QUANTITY_NAME **[PDS_EN]** **CHARACTER(60)**

The measured_quantity_name element indicates the physical phenomenon measured by a declared unit of measure. For example, the measured quantity name for the unit AMPERE is ELECTRIC CURRENT. Note: A table of standard units, unit ids, and measured quantities based on those published by the Systeme Internationale appears in the 'Units of Measurement' section of the PSDD. (Please refer to the table of contents for its location.) The values in this table's 'Measured Quantity' column constitute the standard values for the data element measured_quantity_name.

MEASUREMENT_ATMOSPHERE_DESC **CHARACTER**

The measurement_atmosphere_desc element describes the atmospheric conditions through which data were taken.

MEASUREMENT_SOURCE_DESC **CHARACTER**

The measurement_source_desc element describes the source of light used in a laboratory-generated data set, or the radar transmitter in the case of radar astronomy experiments.

MEASUREMENT_STANDARD_DESC **CHARACTER**

The measurement_standard_desc element identifies the standard object on which observations are performed in order to calibrate an instrument.

MEASUREMENT_WAVE_CALBRT_DESC **CHARACTER**

The measurement_wave_calbrt_desc element identifies the technique and procedure used to calibrate wavelength.

MEDIAN **REAL**

The median element provides the median value (middle value) occurring in a given instance of the data object. Because of the unconventional data type of this data element, the element should appear in labels only within an explicit object, i.e. anywhere between an 'OBJECT =' and an 'END OBJECT'. Note: For the Mars Pathfinder IMP camera, this was the median value of only those pixels within the valid DN range of 0 to 4095. Note: For Mars Pathfinder, refers specifically to the median DN value in the image array.

MEDIUM_DESC **[PDS_EN]** **CHARACTER**

The medium_desc element provides the textual description for the medium used in the distribution of an ordered data set.

MEDIUM_FORMAT **IDENTIFIER**

The medium_format element identifies the unformatted recording capacity or recording density of a given medium.

MEDIUM_TYPE **CHARACTER(30)**

The medium_type element identifies the physical storage medium for a data volume. Examples: CD-ROM, CARTRIDGE TAPE.

MESS:AEX_BACB **[MESS]** **ASCII_INTEGER**

The background brightness used for MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:AEX_MAXE **[MESS]** **ASCII_INTEGER <ms>**

The maximum allowable exposure time from an MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:AEX_MINE **[MESS]** **ASCII_INTEGER <ms>**

The minimum allowable exposure time from an MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:AEX_STAT **[MESS]** **ASCII_INTEGER**

The bin in a DPU histogram of image brightness used for MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:AEX_STHR **[MESS]** **ASCII_INTEGER**

The number of pixels allowed to exceed target brightness during an MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:AEX_TGTB **[MESS]** **ASCII_INTEGER**

The target brightness used for MDIS automatic exposure time calculation.

In a test image that it analyzed to determine an exposure time using automatic exposure, DPU hardware generates a histogram of the image. The histogram is analyzed by the software to determine if the image is overexposed or underexposed, and the exposure time is adjusted accordingly by analyzing the histogram of raw DN values in different brightness bins. The background or dark current level (MESS:AEX_BACB) is taken into account an is assumed to be a constant value.

A threshold of number of pixels (MESS:AEX_STHR) is allowed to exceed a target brightness (MESS:AEX_TGTB). Starting with the maximum value, the number of pixels exceeding the target is counted, and the brightness of the histogram bin in which that threshold is reached (MESS:AEX_STAT) is reported. The exposure time is scaled back by the ratio of MESS:AEX_TGTB/MESS:AEX_STAT.

MESS:ATT_CLOCK_COUNT **[MESS]** **INTEGER(>=0) <S>**

The mission-elapsed-time, or MET, in seconds since MESSENGER launch, of the second during which the spacecraft attitude measurement in the header of an MDIS image was acquired.

MESS:ATT_FLAG **[MESS]** **ASCII_INTEGER**

Attitude quality flag for the spacecraft attitude quaternion in the header of an MDIS image:

7 = Attitude Knowledge OK (At least 1 Star Tracker is available and at least 50

6 = Attitude Knowledge OK (No Star Tracker is available but at least 50

5 = Attitude Knowledge OK (No Star Tracker is and between 10of gyro data is valid -OR- At least 1 Star Tracker is valid and between 0

4 = not a legal option

3 = Attitude Knowledge BAD (At least 1 Star Tracker is available and at least 50

2 = Attitude Knowledge BAD (No Star Tracker is available but at least 50

1 = Attitude Knowledge BAD (No Star Tracker is available and between 10and 50At least 1 Star Tracker is valid and between 0valid)

0 = Attitude Knowledge BAD (No Star Tracker data fewer than 10data valid).

MESS:ATT_Q1 **[MESS]** **REAL(-1, 1) <rad>**

The roll value of the vector component of the attitude quaternion representing spacecraft attitude, in the header of an MDIS image.

MESS:ATT_Q2 **[MESS]** **REAL(-1, 1) <rad>**

The pitch value of the vector component of the attitude quaternion representing spacecraft attitude, in the header of an MDIS image.

MESS:ATT_Q3 **[MESS]** **REAL(-1, 1) <rad>**

The yaw value of the vector component of the attitude quaternion representing spacecraft attitude, in the header of an MDIS image.

MESS:ATT_Q4 **[MESS]** **REAL(-1, 1) <rad>**

The scalar component of the attitude quaternion representing spacecraft attitude, in the header of an MDIS image.

MESS:CAM_T1 **[MESS]** **ASCII_INTEGER**

The temperature of the focal plane array in raw counts at observation time. The conversion formula to degrees Celsius depends on the camera performing the observation:

For WAC: Temperature = -263.2584 + Raw * 0.5022

For NAC: Temperature = -268.8441 + Raw * 0.5130

Where Raw is the raw counts in telemetry (MESS:CAM_T1).

MESS:CAM_T2 **[MESS]** **ASCII_INTEGER**

Camera temperature 2 in raw counts. The meaning depends on whether it is being reported by the WAC or NAC. A single telemetry point is used to return the raw value of filter wheel temperature (WAC), FILTER_TEMPERATURE once converted to units of degrees Celsius, or the raw value of telescope temperature (NAC), OPTICS_TEMPERATURE once converted to units of degrees Celsius, depending on which camera is in use.

For the WAC, this is temperature of the filter wheel. Thus, FILTER_TEMPERATURE observation because the telemetry point will be a measurement of the NAC telescope temperature. For the WAC the conversion from raw counts to degrees Celsius is:

T = -292.7603 + Raw * 0.5553

where Raw is the raw counts in MESS:CAM_T2.

For the NAC, this is temperature of the NAC telescope. Thus WAC was used for observation because the telemetry point will be a measurement of the WAC filter wheel temperature. For the NAC the conversion from raw counts to degrees Celsius is:

T = -269.7180 + Raw * 0.4861

where Raw is the raw counts in telemetry (MESS:CAM_T2).

MESS:CCD_TEMP **[MESS]** **ASCII_INTEGER**

MDIS CCD temperature in raw counts. The conversion formula to degrees Celsius depends on the camera performing the observation:

For WAC: Temperature = -318.4553 + Raw * 0.2718

For NAC: Temperature = -323.3669 + Raw * 0.2737

Where Raw is the raw counts in telemetry (MESS:CCD_TEMP).

MESS:COMP12_8 **[MESS]** **ASCII_INTEGER**

12 to 8 bit image compression enabled or disabled. Which algorithm is used is specified by MESS: 0 = disabled (images are 12-bit) 1 = enabled (images are 8-bit).

MESS:COMP_ALG **[MESS]** **ASCII_INTEGER**

12 to 8 bit compression algorithm (0-7) used to compress images from 12 to 8 bits. Whether this option is enabled is indicated by MESS:COMP12_8. The compression is implemented using one of eight lookup tables, which are optimized to the lower WAC CCD read noise and higher NAC read noise, light levels, and bias level (nominal or after inflight drift):

0 = Lo-noise hi-bias SNR proportional. Case: Either NAC or WAC, for nominal bias (all DNs greater than 12-bit 230). Formulation: Maps 12-bit DNs between bias and saturation into 8 bits, proportional to SNR. Information loss is spread evenly over dynamic range. Usage: Typical imaging with varied brightness.

1 = Lo-noise hi-bias DN-weighted SNR proportional. Case: Low-noise (WAC) CCD, bias nominal (all DNs greater than 12-bit 230). Formulation: Maps 12 bits between bias and saturation into 8 bits proportional to sliding scale. Information is preferentially retained at the low DN end. Usage: Faint objects. Saturates at a DN of 3000.

2 = Hi-noise hi-bias DN-weighted SNR proportional. Case: High-noise (NAC) CCD, bias nominal (all DNs greater than 12-bit 230). Formulation: Maps 12 bits between bias and saturation into 8 bits proportional to sliding scale. Information is preferentially retained at the low DN end. Usage: B/W, mostly low brightness.

3 = Lo-noise med-bias SNR proportional. Case: Either CCD, assuming bias has dropped tens DN (all DNs greater than 12-bit 180). Formulation: Maps 12-bit DNs between bias and saturation into 8 bits, proportional to SNR. Information loss is spread over dynamic range. Usage: Typical imaging, varied brightness.

4 = Lo-noise med-bias DN-weighted SNR proportional. Case: Lo-noise (WAC) CCD, assuming bias has dropped tens DN (all DNs greater than 12-bit 180). Formulation: Maps 12 bits between bias and saturation into 8 bits proportional to sliding scale. Information retained at low DN end. Usage: Faint objects. Saturates at a DN of 3000.

5 = Hi-noise med-bias DN-weighted SNR proportional. Case: High-noise (NAC) CCD, assuming bias has dropped tens DN (all DNs greater than 12-bit 180). Formulation: Maps 12 bits between bias and saturation into 8 bits proportional to sliding scale. Information is retained preferentially at the low end of the DN range. Usage: B/W, mostly low brightness.

6 = Zero-bias SNR proportional. Case: Contingency; assuming bias decreased to near 0 from the nominal 230 12-bit DNs. Formulation: Maps 12-bit DNs between bias and saturation into 8 bits, proportional to SNR. Information loss is spread over the dynamic range. Usage: Typical imaging, varied brightness.

7 = Linear. Case: either CCD, bias or read noise. Formulation: Maps 12-bit DNs between the bias level and saturation linearly into 8-bit space. Usage: High brightness mapping; information loss greatest at low DNs, preserves information at high DNs.

MESS:COMP_FST **[MESS]** **ASCII_INTEGER**

Status of lossless Fast compression of MDIS images. This is applied to images by the instrument itself. The images are first uncompressed on the solid-state recorder if lossy wavelet compression is applied: 0 = Fast disabled 1 = Fast enabled.

MESS:CRITOPNV **[MESS]** **ASCII_INTEGER**

When true, this indicates that the MDIS image is a critical optical navigation image and will be compressed by the MESSENGER Main Processor (MP) before other images. Normally, the MP compresses images in the order that they are received. 0 = False 1 = True.

MESS:DLNKPRIO **[MESS]** **ASCII_INTEGER**

Priority for downlink of an MDIS image file from the MESSENGER spacecraft: 0 ? Priority #0 (highest) 1 ? Priority #1 . . 9 ? Priority #9 (lowest).

MESS:DPU_ID **[MESS]** **ASCII_INTEGER**

The identified of the DPU used during acquisition of an MDIS image: 0 = DPU-A 1 = DPU-B.

MESS:EXP_MODE **[MESS]** **ASCII_INTEGER**

Exposure time mode used for acquisition of an MDIS image. Manual exposure uses a pre-commanded exposure time. Autoexposure determines the exposure time from test images taken before the exposure, targeting a specific brightness value. 0 = Manual 1 = Automatic.

MESS:EXPOSURE **[MESS]** **ASCII_INTEGER <ms>**

MDIS exposure time in milliseconds.

MESS:FPU_BIN **[MESS]** **ASCII_INTEGER**

On-chip image binning option for MDIS. Images may be taken either without on-chip binning or with 2x2 binning, which decreases the size of a full image from 1024x1024 pixels to 512x512 pixels. On-chip binning can be used to manage the size of raw images being stored on the spacecraft solid-state recorder, or to increase CCD sensitivity. If this option is used, sensitivity increases by about a factor of four but read noise is similar: 0 = 1x1 binning (none) 1 = 2x2 binning.

MESS:FW_GOAL **[MESS]** **ASCII_INTEGER**

The goal position, in raw counts of the position resolver on the MDIS filter wheel. For each commanded filter number, the instrument software will try to place the filter wheel at the following positions:

FILTER_NUMBER MESS:FW_GOAL 1 17376 2 11976 3 6492 4 1108 5 61104 6 55684 7 50148 8 44760 9 39256 10 33796 11 28252 12 22852

Actual position attained is reported in MESS:FW_POS.

MESS:FW_POS **[MESS]** **ASCII_INTEGER**

The actual position, in raw counts of the position resolver on the MDIS filter wheel. For each commanded filter number, the instrument software will try to place the filter wheel at the following positions:

FILTER_NUMBER MESS:FW_GOAL 1 17376 2 11976 3 6492 4 1108 5 61104 6 55684 7 50148 8 44760 9 39256 10 33796 11 28252 12 22852

Commanded position is reported in MESS:FW_GOAL. There is a tolerance of 240 resolver counts around MESS:FW_-GOAL for MESS:FW_POS to indicate that the filter wheel is correctly positioned.

MESS:FW_PV **[MESS]** **ASCII_INTEGER**

Validity flag for position of the MDIS filter wheel given in MESS:FW_POS. 0 = invalid 1 = valid.

MESS:FW_READ **[MESS]** **ASCII_INTEGER**

The raw value from the MDIS filter wheel resolver in resolver counts. It is used by the flight software to compute MESS:FW_POS. For each commanded filter number, the instrument software will try to place the filter wheel at the following positions:

FILTER_NUMBER MESS:FW_GOAL 1 17376 2 11976 3 6492 4 1108 5 61104 6 55684 7 50148 8 44760 9 39256 10 33796 11 28252 12 22852

Commanded position is reported in MESS:FW_GOAL. There is a tolerance of 240 resolver counts around MESS:FW_-GOAL for MESS:FW_POS to indicate that the filter wheel is correctly positioned.

MESS:FW_RV **[MESS]** **ASCII_INTEGER**

Validity flag for reading of the MDIS filter wheel given in MESS:FW_READ. 0 = invalid 1 = valid.

MESS:IMAGER **[MESS]** **ASCII_INTEGER**

Which of the two cameras was used during acquisition of an MDIS image: 0 = WAC 1 = NAC.

MESS:JAILBARS **[MESS]** **ASCII_INTEGER**

When true, this indicates that an MDIS image is subsampled by jailbars, a subset of all the image columns that are downlinked to save data volume in optical navigation images. The start column, stop column, and column spacing are indicated by MESS:JB_X0, MESS:JB_X1, and MESS:JB_SPACE respectively. Jailbars are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN. 0 = False 1 = True.

MESS:JB_SPACE **[MESS]** **ASCII_INTEGER**

The column spacing for jailbars in an MDIS image, a subset of all the image columns that are downlinked to save data volume in optical navigation images. Jailbars are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:JB_X0 **[MESS]** **ASCII_INTEGER**

The start column for jailbars in an MDIS image, a subset of all the image columns that are downlinked to save data volume in optical navigation images. Jailbars are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:JB_X1 **[MESS]** **ASCII_INTEGER**

The stop column for jailbars in an MDIS image, a subset of all the image columns that are downlinked to save data volume in optical navigation images. Jailbars are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:LATCH_UP **[MESS]** **ASCII_INTEGER**

Indicator if MDIS FPU (focal plane unit) is latched up. If the value is 1 then the image data are probably invalid. 0 = OK 1 = Latched.

MESS:MET_EXP **[MESS]** **INTEGER(>=0) <S>**

The mission-elapsed-time, or MET, in seconds since MESSENGER launch of the second during which an MDIS image completes its exposure.

MESS:PIV_CAL **[MESS]** **ASCII_INTEGER**

The offset in measured pivot position applied to MESS:PIV_POS and MESS:PIV_GOAL so that zero is as close as possible to true spacecraft nadir (+z axis). The correction is in increments of (180 DEGREES / (2**15)).

MESS:PIV_GOAL **[MESS]** **ASCII_INTEGER**

The commanded position of the MDIS pivot during exposure of an MDIS image, in increments of (180 DEGREES / (2**15)) with zero at nadir. -180 degrees is stowed.

MESS:PIV_MPEN **[MESS]** **ASCII_INTEGER**

Status of main processor (MP) control of the MDIS pivot. If this is enabled, then the pivot goes to a position broadcast by the MP that points MDIS to nadir or some other aimpoint. If not enabled then a discrete pivot position is commanded. 0 = Disabled 1 = Enabled.

MESS:PIV_POS **[MESS]** **ASCII_INTEGER**

The actual position of the MDIS pivot during exposure of an MDIS image, in increments of (180 DEGREES / (2**15)) with zero at nadir. -180 degrees is stowed.

MESS:PIV_PV **[MESS]** **ASCII_INTEGER**

Validity flag for position of the MDIS pivot given in MESS:PIV_POS. 0 = invalid 1 = valid.

MESS:PIV_READ **[MESS]** **ASCII_INTEGER**

Raw pivot reading from resolver (in units of resolver counts). The pivot platform resolver only covers 45 degrees of motion; the resolver read-out values repeat eight times over the entire 360 degrees that an unconstrained platform could travel. This value is used along with dead-reckoning knowledge of which octant the platform is in to give the value in MESS:PIV_POS.

MESS:PIV_RV **[MESS]** **ASCII_INTEGER**

Validity flag for reading of the MDIS pivot given in MESS:PIV_READ. 0 = invalid 1 = valid.

MESS:PIV_STAT **[MESS]** **ASCII_INTEGER**

Pivot control state of MDIS.

A resolver provides a position reading of the pivot platform. The resolver only covers 45 degrees of motion; the resolver read-out values repeat eight times over the entire 360 degrees that an unconstrained platform could travel. The DPU software must determine in which of the eight octants the platform is located before the resolver reading is meaningful. The software combines the octant with the resolver reading to form a position that covers the entire 360 degrees.

To determine the octant the DPU software must be commanded to 'home' the platform. To home the pivot platform, the software drives the motor open loop backwards into the hard stop at -185 degrees. Then the software drives the motor forward, open loop, prepositioning it to -179 degrees. Until homing is completed, the pivot platform is considered 'lost' and all other pivot commands will remain pending.

This status item describes that state of the pivot in determining this position knowledge.

0 = Lost 1 = Searching 2 = Found 3 = OK.

MESS:PIXELBIN **[MESS]** **ASCII_INTEGER**

Pixel binning done to MDIS images by the MESSENGER spacecraft main processor (MP). This is in addition to on-chip binning as described by MESS:FPU_BIN. 0 - no further binning 2 - 2x2 binning 4 - 4x4 binning 8 - 8x8 binning.

MESS:SOURCE **[MESS]** **ASCII_INTEGER**

Source of an MDIS image, either a scene image from the CCD or one of two test patterns: 0 = CCD 1 = Test pattern 2 = Inverted test pattern.

MESS:SUBF_DX1 **[MESS]** **ASCII_INTEGER**

The number of columns in the FIRST rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DX2 **[MESS]** **ASCII_INTEGER**

The number of columns in the SECOND rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DX3 **[MESS]** **ASCII_INTEGER**

The number of columns in the THIRD rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DX4 **[MESS]** **ASCII_INTEGER**

The number of columns in the FOURTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DX5 **[MESS]** **ASCII_INTEGER**

The number of columns in the FIFTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DY1 **[MESS]** **ASCII_INTEGER**

The number of rows in the FIRST rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DY2 **[MESS]** **ASCII_INTEGER**

The number of rows in the SECOND rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DY3 **[MESS]** **ASCII_INTEGER**

The number of rows in the THIRD rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DY4 **[MESS]** **ASCII_INTEGER**

The number of rows in the FOURTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_DY5 **[MESS]** **ASCII_INTEGER**

The number of rows in the FIFTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_X1 **[MESS]** **ASCII_INTEGER**

The zero-based starting column of the FIRST rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_X2 **[MESS]** **ASCII_INTEGER**

The zero-based starting column of the SECOND rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_X3 **[MESS]** **ASCII_INTEGER**

The zero-based starting column of the THIRD rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_X4 **[MESS]** **ASCII_INTEGER**

The zero-based starting column of the FOURTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_X5 **[MESS]** **ASCII_INTEGER**

The zero-based starting column of the FIFTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_Y1 **[MESS]** **ASCII_INTEGER**

The zero-based starting row of the FIRST rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_Y2 **[MESS]** **ASCII_INTEGER**

The zero-based starting row of the SECOND rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_Y3 **[MESS]** **ASCII_INTEGER**

The zero-based starting row of the THIRD rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_Y4 **[MESS]** **ASCII_INTEGER**

The zero-based starting row of the FOURTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBF_Y5 **[MESS]** **ASCII_INTEGER**

The zero-based starting row of the FIFTH rectangular subframe within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). There may be up to five subframes per image as defined by MESS:SUBFRAME. Subframes are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN.

MESS:SUBFRAME **[MESS]** **ASCII_INTEGER**

Number of rectangular subframes within an MDIS image to be retained after image compression by the MESSENGER spacecraft main processor (MP). Subframes may overlap each other, and are defined in the original 1024x1024 pixel MDIS coordinate system before pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN. Either a full image may be specified, or up to five discrete regions within the full image. In all cases, the first four columns of the original 1024x1024 image, which are physically masked and serve as a dark current reference, are downlinked as subframe 0, even if the full image case is described. Within the subframes, pixel binning as described by MESS:FPU_BIN and MESS:PIXELBIN is performed. 0 - no subframes (full image) 1 - 1 subframe 2 - 2 subframes 3 - 3 subframes 4 - 4 subframes 5 - 5 subframes

MESS:TIME_PLS **[MESS]** **ASCII_INTEGER**

Source of the 1 Hz time pulse used in time-tagging MDIS images: 0 = Software 1 = Main Processor A (MP-A) 2 = Main Processor B (MP-B) 3 = Software.

MESS:WVLRATIO **[MESS]** **ASCII_INTEGER**

Commanded (lossy) wavelet compression ratio for an MDIS image: 0: no wavelet compression (note: this expands an 8 or 12 bit image to 16 bits per pixel) 1: '1x' compression (actually lossless, with an indeterminate ratio) 2: 2x compression 3: 3x compression . . 32: 32x compression.

METEORITE_LOCATION_NAME **CHARACTER(70)**

The meteorite_location_name provides the name of the region or geographic feature where the meteorite was found.

METEORITE_NAME **CHARACTER(40)**

The meteorite_name element provides the name that is assigned to a meteorite. It is often derived from the name of the place or geographic feature where the meteorite was found.

METEORITE_SUB_TYPE **IDENTIFIER**

The meteorite_sub_type element defines a subcategory of a meteorite_type (see definition for meteorite_type). For example, octahedrites are a subtype of iron meteorites. Octahedrites contain 4 sets of parallel plates that intersect with each other in a complex manner.

METEORITE_TYPE **CHARACTER(40)**

The meteorite_type element defines which class a meteorite belongs to based on the meteorite composition and physical characteristics.

METHOD_DESC **CHARACTER**

The method_desc element describes the method used to perform a particular observation.

MID_JULIAN_DATE_VALUE **REAL(>=0)**

The MID_JULIAN_DATE_VALUE provides the full Julian date (i.e., including date fraction) of the mid-point of an observation or event. Julian dates are expressed as real numbers.

Note that this keyword should contain the full Julian date, not the modified Julian date.

MIDNIGHT_LONGITUDE **REAL(-180, 360) <deg>**

The midnight_longitude element identifies the longitude on the target body at which midnight was occurring at the time of the start of an observation sequence. Midnight_longitude is used to assist in geometry calculations. Note: The coordinate_system_type data element should be used in conjunction with this data element.

MINERAL_NAME **CHARACTER(60)**

The mineral_name element provides the name assigned to a mineral. The name is usually chosen by the person who first identified and described the mineral.

MINIMUM **CONTEXT DEPENDENT**

The minimum element indicates the smallest value occurring in a given instance of the data object. Note: For PDS and Mars Observer applications – because of the unconventional data type of this data element, the element should appear in labels only within an explicit object, i.e. anywhere between an 'OBJECT =' and an 'END_OBJECT'.

MINIMUM_AVAILABLE_SAMPLING_INT **REAL**

The minimum_available_sampling_interval element identifies the finest sampling at which a particular set of data is available. For example, magnetometer data are available in various sampling intervals ranging from 1.92 seconds to 96 seconds. Thus, for magnetometer data the value of the minimum_available_sampling_interval would be 1.92. Note: The unit of measure for the sampling interval is provided by the unit element.

MINIMUM_B1950_RING_LONGITUDE **[PDS_RINGS]** **REAL(0, 360) <deg>**

The minimum_B1950_ring_longitude element specifies the minimum inertial longitude within a ring area relative to the B1950 prime meridian, rather than to the J2000 prime meridian. The prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of B1950. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane. Note: For areas that cross the prime meridian, the minimum ring longitude will have a value greater than the maximum ring longitude.

MINIMUM_BRIGHTNESS_TEMPERATURE **REAL(>=2.4) <K>**

The minimum_brightness_temperature element provides the minimum brightness temperature value measured within a given set of data or a given sequence. Brightness temperature is the temperature of an ideal blackbody whose radiant energy in a particular wavelength range is the same as that of an observed object or feature.

MINIMUM_CHANNEL_ID **CHARACTER(4)**

The minimum_channel_id element provides an identification of the lowest energy channel from which PLS instrument data is telemetered to Earth while the instrument is operating in a particular mode in a given frame. Each mode consists of a specific number of energy/charge channels which sequentially measure current, but information from all measured channels may not be telemetered to Earth.

MINIMUM_COLUMN_VALUE **[PDS_EN]** **REAL**

The minimum_column_value provides the minimum real value currently allowed by the PDS catalog for a given table element. This value is updated when new limits are discovered. Note: These elements are unique to a table and may have different values depending on which table the element is associated with.

MINIMUM_EMISSION_ANGLE **REAL(0, 180) <deg>**

The minimum_emission_angle element provides the minimum emission angle value. See emission_angle.

MINIMUM_INCIDENCE_ANGLE **REAL(0, 180) <deg>**

The minimum_incidence_angle element provides the minimum incidence angle value. See incidence_angle.

MINIMUM_INSTRUMENT_EXPOSR_DUR **REAL <ms>**

The minimum_instrument_exposure_duration element provides the minimum possible exposure time for the instrument mode identified by the instrument_mode_id element. See instrument_exposure_duration.

MINIMUM_INSTRUMENT_PARAMETER **REAL**

The minimum_instrument_parameter element provides an instrument's minimum usefully detectable signal level for a given instrument parameter. This value indicates the physical value corresponding to the minimum output of an instrument. The instrument parameter to which this relates is identified by the instrument_parameter_name element.

MINIMUM_INSTRUMENT_TEMPERATURE REAL(>=-273) <deg>

The minimum instrument_temperature element provides the minimum temperature, in degrees Celcius, of an instrument or some part of an instrument.

MINIMUM_LATITUDE REAL(-90, 90) <deg>

The minimum_latitude element specifies the southernmost latitude of a spatial area, such as a map, mosaic, bin, feature, or region. See latitude.

MINIMUM_LENGTH [PDS_EN] INTEGER(>=1)

The minmum_length element supplies the minimum number of units that are required for the representation of a data element. This element is generally assigned a value of N/A except in the case where a minimum number of units are required for the value. For example a password may require a minimum number of characters to be valid.

MINIMUM_LIMB_ANGLE REAL(-90, 90) <deg>

The minimum_limb_angle element provides the minimum value of the limb angle within a given set of data. See limb_angle.

MINIMUM_LOCAL_TIME REAL(0, 24) <localday/24>

The minimum_local_time element provides the minimum local time of day on the target body, measured in hours from local midnight.

MINIMUM_LONGITUDE REAL(0, 360) <deg>

The minimum_longitude element specifies the easternmost (right_most) longitude of a spatial area, such as a map, mosaic, bin, feature, or region. See longitude. Note: The minimum longitude data element is obsolete and should no longer be used. The assumed coordinate system was planetographic for prograde rotators (PDS Cartographic Standards V3.0). See coordinate_ system_type, easternmost_longitude and westernmost_longitude.

MINIMUM_PARAMETER REAL

The minimum_parameter element specifies the minimum allowable value for a parameter input to a given data processing program. The parameter constrained by this value is identified by the parameter_name element.

MINIMUM_PHASE_ANGLE REAL(0, 180) <deg>

The minimum_phase_angle element provides the minimum phase angle value. See phase_angle.

MINIMUM_RADIAL_RESOLUTION [PDS_RINGS] REAL(>=0) <km>

The minimum_radial_resolution element indicates the minimum (finest) radial distance over which changes in ring properties can be detected within a data product.

MINIMUM_RADIAL_SAMPLING_INTERV [PDS_RINGS] REAL(>=0) <km>

The minimum_radial_sampling_interval element indicates the minimum radial spacing between consecutive points in a ring profile. In practice, this may be somewhat smaller than the minimum_radres element because the profile may be over-sampled.

MINIMUM_RING_LONGITUDE **[PDS_RINGS]** **REAL(0, 360) <deg>**

The minimum_ring_longitude element specifies the minimum inertial longitude of a ring area relative to the prime meridian. In planetary ring systems, the prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of J2000. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane. Note: For areas that cross the prime meridian, the minimum ring longitude will have a value greater than the maximum ring longitude. Note: The invariable plane of a planet is equivalent to its equatorial plane for every ringed planet except Neptune.

MINIMUM_RING_RADIUS **[PDS_RINGS]** **REAL(>=0) <km>**

The minimum_ring_radius element indicates the minimum (innermost) radial location of an area within a planetary ring system. Radii are measured from the center of the planet along the nominal ring plane.

MINIMUM_SAMPLING_PARAMETER **REAL**

The minimum_sampling_parameter element identifies the minimum value at which a given data item was sampled. For example, a spectrum that was measured in the 0.4 to 3.5 micrometer spectral region would have a minimum_sampling_parameter value of 0.4. The sampling parameter constrained by this value is identified by the sampling_parameter_name element. Note: The unit of measure for the sampling parameter is provided by the unit element.

MINIMUM_SLANT_DISTANCE **REAL <km>**

The minimum_slant_distance element provides the minimum slant distance value. See slant_distance.

MINIMUM_SOLAR_BAND_ALBEDO **REAL(0, 1)**

The minimum_solar_band_albedo element provides the minimum solar band albedo value measured within a given set of data or a given sequence.

MINIMUM_SPECTRAL_CONTRAST **REAL <K>**

The minimum_spectral_contrast element provides the minimum value of spectral contrast within a given set of data. See spectral_contrast_ range.

MINIMUM_SURFACE_PRESSURE **REAL <bar>**

The minimum_surface_pressure element provides the minimum surface pressure value for the atmosphere of a given body.

MINIMUM_SURFACE_TEMPERATURE **REAL(>=2.4) <K>**

The minimum_surface_temperature element provides the minimum equatorial surface temperature value for a given body during its year.

MINIMUM_WAVELENGTH **REAL <micron>**

The minimum_wavelength element identifies the minimum wavelength at which an observation can be made or was made. For instruments, this may depend on the instrument detector or filter characteristics. For data products, this is the effective lower limit on the wavelength detected.

MISSING_CONSTANT **CONTEXT DEPENDENT**

The missing_constant element supplies the value used to indicate that no data were available.

Note: The MISSING_CONSTANT element should appear only within an explicit object definition – i.e. anywhere between an 'OBJECT =' and an 'END_OBJECT'. MISSING_CONSTANT assumes the data type of its parent object.

MISSING_FRAMES **[PDS_EN]** **INTEGER(>=0) <n/a>**

The MISSING_FRAMES element is the total number of frames that are missing from a file.

Note: For MARS EXPRESS, a frame, which is also called a 'row', is eight lines of data. Each line, in turn, is composed of a sync marker followed by a group of blocks (GOB). This refers to the Data Compression Electronics (DCE) frames.

MISSING_LINES **[PDS_EN]** **INTEGER(>=0)**

The missing_lines element is the total number of lines of data missing from an image or observation when it was received on Earth. Note: For Cassini, this provides the number of missing or incomplete lines of image data.

MISSING_PACKET_FLAG **[PDS_EN]** **CHARACTER(3)**

The missing_packet_flag element indicates whether or not there were telemetry packets that were expected but not received.

MISSING_PIXELS **[PDS_EN]** **INTEGER(>=0)**

The missing_pixels element provides the number of pixels missing from an image or observation. Note: For Cassini, this refers to the core of a spectral cube, which indicates that the expected number of pixels (as determined by the commanded cube dimensions) did not arrive. The positions of these pixels are filled with CORE_NULL. Pixels purposefully set to CORE_NULL (e.g., due to time insertion) are not included in this total.

MISSING_SCAN_LINES **[PDS_GEO_VL]** **INTEGER(0, -2147483648)**

The MISSING_SCAN_LINES element is the total number of scan lines missing from an image or observation when it was received on Earth.

MISSION_ALIAS_NAME **CHARACTER(60)**

The mission_alias_name element provides an official name of a mission used during the initial design, implementation, or prelaunch phases. Example values: mission_name:MAGELLAN, mission_alias_name:VENUS RADAR MAPPER. The mission_alias_name element accepts set notation for multiple values.

MISSION_DESC **CHARACTER**

The mission_desc element summarizes major aspects of a planetary mission or project, including the number and type of spacecraft, the target body or bodies and major accomplishments.

MISSION_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The mission_id element provides a synonym or mnemonic for the mission_name element. Note: Within AMMOS this may also be a numeric value which is the DSN mission number.

MISSION_NAME **CHARACTER(60)**

The mission_name element identifies a major planetary mission or project. A given planetary mission may be associated with one or more spacecraft.

MISSION_NAME_OR_ALIAS **CHARACTER(30)**

The mission_name_or_alias element provides the capability to enter either a mission name or a mission alias name in a single input parameter field of a user view.

MISSION_OBJECTIVES_SUMMARY **CHARACTER**

The mission_objectives_summary element describes the major scientific objectives of a planetary mission or project.

MISSION_PHASE_DESC **CHARACTER**

The mission_phase_desc element summarizes key aspects of a mission phase.

MISSION_PHASE_NAME **CHARACTER(30)**

The mission_phase_name element provides the commonly-used identifier of a mission phase.

MISSION_PHASE_START_TIME **TIME**

The mission_phase_start_time element provides the date and time of the beginning of a mission phase in UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

MISSION_PHASE_STOP_TIME **TIME**

The mission_phase_stop_time element provides the date and time of the end of a mission phase in UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

MISSION_PHASE_TYPE **CHARACTER(20)**

The mission_phase_type element identifies the type of a major segment or 'phase' of a spacecraft mission. Example values: LAUNCH, CRUISE, ENCOUNTER.

MISSION_START_DATE **DATE**

The mission_start_date element provides the date of the beginning of a mission in UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

MISSION_STOP_DATE **DATE**

The mission_stop_date element provides the date of the end of a mission in UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

MODE_CONTINUATION_FLAG **CHARACTER(1)**

The mode_continuation_flag element is a yes-or-no flag which indicates if the first mode in a frame is a continuation of a measurement from the previous frame. Some modes require longer than one frame to make a measurement, resulting in their continuation to a subsequent frame. In that case, the mode_continuation_flag element would have the value Y.

MODE_INTEGRATION_DURATION **REAL(3.84, 122.88)** <s>

The mode_integration_duration element provides the length of time required to measure all the channels which are sampled when the instrument is operating in a given mode.

MODEL_COMPONENT_1 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_1 element consists of a set of values representing the first component of a model. The significance (or meaning) of this array of values is indicated by the first value of the MODEL_COMPONENT_ID and/or MODEL_COMPONENT_NAME elements. The interpretation of the values themselves depends on the model but they commonly represent a vector, a set of polynomial coefficients, or a simple numeric parameter. For example, for a geometric camera model with a value of CAHV for MODEL_NAME, the first value of the MODEL_COMPONENT_NAME data element is CENTER, meaning that the MODEL_COMPONENT_1 is a focal center vector. The three items in this vector provide X, Y, and Z coordinates of the focal point of the camera. The exact details about each model component vector are provided in MODEL_DESC.

MODEL_COMPONENT_2 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_2 element provides the value of the component of the MODEL_COMPONENT_ID for the second element.

MODEL_COMPONENT_3 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_3 element provides the value of the component of the MODEL_COMPONENT_ID for the third element.

MODEL_COMPONENT_4 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_4 element provides the value of the component of the MODEL_COMPONENT_ID for the forth element.

MODEL_COMPONENT_5 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_5 element provides the value of the component of the MODEL_COMPONENT_ID for the fifth element.

MODEL_COMPONENT_6 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_6 element provides the value of the component of the MODEL_COMPONENT_ID for the sixth element.

MODEL_COMPONENT_7 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_7 element provides the value of the component of the MODEL_COMPONENT_ID for the seventh element.

MODEL_COMPONENT_8 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_8 element provides the value of the component of the MODEL_COMPONENT_ID for the eighth element.

MODEL_COMPONENT_9 [PDS_MER_OPS] REAL

The MODEL_COMPONENT_9 element provides the value of the component of the MODEL_COMPONENT_ID for the nineth element.

MODEL_COMPONENT_ID [PDS_MER_OPS] CHARACTER

The MODEL_COMPONENT_ID element is used in conjunction with the MODEL_COMPONENT_n elements, where n is a number. The MODEL_COMPONENT_ID value should consist of a sequence of identifiers (usually 1 character), where each identifier corresponds to a model component vector. The first id in the sequence corresponds to MODEL_COMPONENT_1, the second corresponds to MODEL_COMPONENT_2, etc. For example, for a geometric camera model with a value of CAHV for MODEL_NAME, the MODEL_COMPONENT_ID would be (C, A, H, V). Please see the MODEL_COMPONENT_NAME data element for more details.

MODEL_COMPONENT_NAME [PDS_MER_OPS] CHARACTER

The MODEL_COMPONENT_NAME element is used in conjunction with the MODEL_COMPONENT_n elements, where n is a number. The MODEL_COMPONENT_NAME value should consist of a sequence of names, where each name identifies its corresponding model component vector. The first name in the sequence identifies MODEL_COMPONENT_1, the second identifies the MODEL_COMPONENT_2, etc. For example, for a geometric camera model with a value of CAHV for MODEL_NAME, the MODEL_COMPONENT_NAME would be (CENTER, AXIS, HORIZONTAL, VERTICAL). The three values of MODEL_COMPONENT_1 would describe the focal center vector; the three values of MODEL_COMPONENT_2 would describe the pointing direction (axis) vector; the three values of MODEL_COMPONENT_3 would describe the horizontal image plane vector, and the three values of the MODEL_COMPONENT_4 would describe the vertical image plane vector.

MODEL_COMPONENT_UNIT [PDS_MER_OPS] CHARACTER(30)

TBD

MODEL_DESC [PDS_MER_OPS] CHARACTER

The MODEL_DESC element provides a textual description of a model (or a pointer to a file containing the description). This is not intended to be a brief summary, but rather a detailed description of the model; at minimum, it should include a reference to a detailed description of the model in published literature. While other data elements such as CALIBRATION_SOURCE_ID, SOURCE_ID, COORDINATE_SYSTEM_NAME, and MODEL_COMPONENT_NAME provide quick identifiers that distinguish how this model was generated, the details and data behind each of these identifiers should be explicitly included in the model description.

MODEL_NAME [PDS_MER_OPS] CHARACTER(63)

The MODEL_NAME element provides an identifier for the type or kind of model. The value should be one of a well defined set, providing an application program with sufficient information to know how to handle the rest of the parameters within the model. (CAHVORE-3 is the only one that uses model component vectors 1-8.)

MODEL_RANKING [PDS_MER_OPS] CHARACTER

The MODEL_RANKING element provides the names of the existing models, listed from 'best' to 'worse' as determined by the project.

MODEL_TYPE [PDS_MER_OPS] CHARACTER(63)

The MODEL_TYPE element provides an identifier for the type or kind of model.

MOSAIC_DESC CHARACTER

The mosaic_desc element provides a brief textual description of a mosaic.

MOSAIC_IMAGES INTEGER(>=0)

The mosaic_images element identifies the number of images which are contained in a given mosaic.

MOSAIC_PRODUCTION_PARAMETER **CHARACTER(10)**

The mosaic_production_parameter element identifies the method of production of a mosaic product (e.g., manual vs. digital).

MOSAIC_SEQUENCE_NUMBER **INTEGER(>=0)**

The mosaic_sequence_number element is a numeric identifier which defines a group of related images on a single mosaic. The mosaic_sequence_number is necessary when several groups of images covering different regions are printed on one photo_product.

MOSAIC_SERIES_ID **CHARACTER(30)**

The mosaic_series_id element is an alphanumeric identifier for mosaics from a given mission.

MOSAIC_SHEET_NUMBER **INTEGER(>=0)**

The mosaic_sheet_number element is a numeric identifier for a mosaic series or for a mosaic within a mosaic series.

MPF_LOCAL_TIME **[PDS_EN]** **TIME <localday/24>**

The MPF_LOCAL_TIME element provides the local time at the lander site on the surface of Mars, measured in local hours, minutes, and seconds, from midnight. Local hours are defined as one twenty-fourth of a local solar day. Local minutes are one sixtieth of a local hour, and local seconds are one sixtieth of a local minute. Format is hh:mm:ss. Based on the IAU standard for the Martian prime meridian. See [DAVIESETAL1994] for more details.

Note: This keyword was used for the Mars Pathfinder mission and has been superseded by the LOCAL_TRUE_SOLAR_TIME element; it should no longer be used.

MRO:ACTIVITY_ID **[MRO]** **CHARACTER(5)**

This keyword describes the type of measurement contained in a CRISM EDR or other data product, and provides indication of how the observation is commanded. The format of the value is AC### where AC is a 2-letter designation of the type of measurement made, and ### is a 3-numeral designation of the instrument command macro that was executed to acquire the data. Macro numbers are in the range 0-255.

For EDRs, BI is measurement of detector bias, DF is a measurement of background including dark current and thermal background, LP is measurement of a focal plane lamp, SP is measurement of the internal integrating sphere, and SC is measurement of an external scene. TP indicates that the EDR contains any test pattern produced by instrument electronics. T1 through T7 specify the test pattern, test pattern 1 through test pattern 7. UN indicates that the EDR contains data in which housekeeping does not match the commanded instrument configuration.

For an RDR, RA indicates that the file contains values in units of radiance (W m-2 nm-1 sr-1). IF indicates that the file contains values in units of I/F, or radiance divided by solar flux scaled for heliocentric distance. AL indicates that the file contains values as estimated Labert albedo, which is I/F corrected for cosine of incidence angle and for atmospheric and thermal effects. SU indicates that the files contains summary parameters, unitless values derived from Lambert albedo.

For an RDR or a DDR, DE indicates that the files contains derived values related to observation geometry or independently characterized properties of the scene.

MRO:ADC_TIMING_SETTINGS **[MRO]** **CHARACTER(1)**

The MRO:ADC_TIMING_SETTINGS element provides the HiRISE Channel 0 analog-to-digital conversion timing settings for the reset and readout of the video waveform.

MRO:ANALOG_POWER_START_COUNT [MRO] CHARACTER

The MRO:ANALOG_POWER_START_COUNT element provides the spacecraft clock count corresponding to the UTC time when the power to the CPMM units was applied.

MRO:ANALOG_POWER_START_TIME [MRO] TIME

The MRO: ANALOG_POWER_START_TIME element provides the UTC time when the power to the CPMM units was applied.

MRO:ATMO_CORRECTION_FLAG [MRO] CHARACTER(3)

The MRO:ATMO_CORRECTION_FLAG element identifies whether a correction has been performed on a CRISM data product for photometric and atmospheric effects. This correction starts using I over F, and consists of division by cosine of the solar incidence angle, removal of modeled attenuation by atmospheric gases, and removal of modeled scattering and attenuation by atmospheric aerosols. ON indicates that a correction has been performed. In this case the units are Lambert albedo. OFF indicates that no correction has been performed. The units may be I_OVER_F, or LAMBERT_ALBEDO in which case I_OVER_F has been divided by cosine of the solar incidence angle but no further correction has occurred. More details can be found in the CRISM Data Products SIS.

MRO:AZIMUTH_SPACING_TYPE [MRO] CHARACTER(12)

The AZIMUTH_SPACING_TYPE element specifies the type of azimuth (i.e. along-track) spacing of SHARAD radar footprints after ground processing. UNIFORM means that azimuth lines are evenly spaced. NOT UNIFORM means that azimuth lines are not evenly spaced.

MRO:BARREL_BAFFLE_TEMPERATURE [MRO] REAL <degC>

The MRO:BARREL_BAFFLE_TEMPERATURE element provides the temperature of the HiRISE instrument's barrel baffle in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:BINNING [MRO] INTEGER(1, 16)

The MRO:BINNING element provides the HiRISE observation binning mode; i.e., the number of lines binned in an observation. MRO:LINE_EXPOSURE_DURATION = MRO:BINNING * MRO:SCAN_LINE_DURATION

MRO:CALIBRATION_LAMP_LEVEL [MRO] INTEGER(0, 4095)

The CALIBRATION_LAMP_LEVEL keyword provides the level of the CRISM calibration lamp identified by LIGHT_SOURCE_NAME. 0 indicates that a lamp is unpowered. Also if the lamp level is a non-zero value, MRO:CALIBRATION_LAMP_STATUS must equal ON, OPEN LOOP or CLOSED LOOP. For any lamp, if MRO:CALIBRATION_LAMP_STATUS = ON or OPEN LOOP, the lamp level is proportional to the current being supplied to the lamp. In the special cases of LIGHT_SOURCE_NAME = SPHERE LAMP 1 or LIGHT_SOURCE_NAME = SPHERE LAMP 2, if MRO:CALIBRATION_LAMP_STATUS = CLOSED LOOP, then the lamp level gives the setting of the photodiode in the integrating sphere that provides feedback to control the lamp current.

MRO:CALIBRATION_LAMP_STATUS [MRO] CHARACTER(11)

The MRO:CALIBRATION_LAMP_STATUS keyword gives the status of the CRISM calibration lamp identified by LIGHT_SOURCE_NAME. OFF indicates that the lamp is unpowered. ON or OPEN LOOP indicates that the lamp is on with the current at the digital values indicated in MRO:CALIBRATION_LAMP_LEVEL. CLOSED LOOP is only applicable for the integrating sphere (LIGHT_SOURCE_NAME = SPHERE LAMP 1 or LIGHT_SOURCE_NAME = SPHERE LAMP 2). In that case MRO:CALIBRATION_LAMP_LEVEL gives the setting of the photodiode in the integrating sphere that provides feedback to control the lamp output.

MRO:CALIBRATION_START_COUNT [MRO] CHARACTER(32)

The MRO:CALIBRATION_START_COUNT element gives the spacecraft clock count of the first line located in the CALIBRATION_IMAGE object.

MRO:CALIBRATION_START_TIME [MRO] TIME

The MRO:CALIBRATION_START_TIME element gives the UTC time of the first line located in the CALIBRATION_IMAGE object.

MRO:CCD_FLAG [MRO] CHARACTER(3)

The MRO:CCD_FLAG element identifies which CCDs were operating at the time of an observation. There is a special processing flag for each CCD used in the observation. The ordering for the values is RED0, RED1, RED2, RED3, RED4, RED5, RED6, RED7, RED8, RED9, IR10, IR11, BG12, and BG13.

Values are as follows:

ON = the CCD was actively acquiring data during the observation. OFF = the CCD was turned off during the observation.

MRO:CHANNEL_NUMBER [MRO] INTEGER(0, 1)

The MRO:CHANNEL_NUMBER element provides the HiRISE CCD channel number.

MRO:CLOSED_LOOP_TRACKING_FLAG [MRO] CHARACTER(8)

The MRO:CLOSED_LOOP_TRACKING_FLAG element is a flag used by the SHARAD on- board processing software to enable or disable the closed-loop tracking algorithm, which dynamically determines the opening of the receiving window based on the time delay of previous echoes.

MRO:COMMANDED_ID [MRO] CHARACTER(32)

The MRO:COMMANDED_ID element gives the the actual identification value provided to the HIRISE instrument through the MRO flight system commanding. This value is returned by the HiRISE instrument through the science channel header. During flight operations the COMMANDED_ID and the OBSERVATION_ID will be identically defined. However, during calibration data acquisition at Ball Aerospace and Assembly Test and Launch Operations (ATLO), the COMMANDED_ID and OBSERVATION_ID may be different. During these phases, the same commanding, with the same COMMANDED_ID, were run repeatedly on the HiRISE instrument. The result was a non unique identification required for the OBSERVATION_ID required for this value. In these cases the OBSERVATION_ID is built from the time of the observation rather than the commaned ID found in the Science Channel Header.

MRO:COMPRESSION_SELECTION_FLAG [MRO] CHARACTER(8)

The MRO:COMPRESSION_SELECTION_FLAG element is a flag used by the SHARAD on-board processing software to enable or disable the dynamic bit compression algorithm, which reduces the signal dynamic range based on the value of the echo strength.

MRO:CPMM_NEGATIVE_5_CURRENT [MRO] REAL <A>

The MRO:CPMM_NEGATIVE_5_CURRENT element provides the negative 5 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_NEGATIVE_5_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_NEGATIVE_5_VOLTAGE element provides the negative 5 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_NUMBER [MRO] INTEGER(0, 13)

The MRO:CPMM_NUMBER element provides the HiRISE CCD Processing/Memory Module number.

MRO:CPMM_POSITIVE_10_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_10_CURRENT element provides the positive 10 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_10_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_10_VOLTAGE element provides the positive 10 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_1_8_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_1_8_CURRENT element provides the positive 1_8 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_1_8_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_1_8_VOLTAGE element provides the positive 1_8 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_29_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_29_CURRENT element provides the positive 29 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_29_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_29_VOLTAGE element provides the positive 29 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_2_5_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_2_5_CURRENT element provides the positive 2_5 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_2_5_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_2_5_VOLTAGE element provides the positive 2_5 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_3_3_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_3_3_CURRENT element provides the positive 3_3 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_3_3_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_3_3_VOLTAGE element provides the positive 3_3 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_5_CURRENT [MRO] REAL <A>

The MRO:CPMM_POSITIVE_5_CURRENT element provides the positive 5 current of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_POSITIVE_5_VOLTAGE [MRO] REAL <V>

The MRO:CPMM_POSITIVE_5_VOLTAGE element provides the positive 5 voltage state of the HiRISE CCD Processing/Memory Module.

MRO:CPMM_PWS_BOARD_TEMPERATURE [MRO] REAL <degC>

The MRO:CPMM_PWS_BOARD_TEMPERATURE element provides the temperature of the HiRISE instrument's CCD Processing/Memory Module Power Supply Board in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:DELTA_LINE_TIMER_COUNT [MRO] REAL(0, 16777216)

The MRO:DELTA_LINE_TIMER_COUNT element provides the commanded count given to the HiRISE instrument to set the scan line duration. MRO:SCAN_LINE_DURATION = 74 + MRO:DELTA_LINE_TIMER_COUNT/16

MRO:DETECTOR_TEMPERATURE [MRO] REAL <degC>

The MRO:DETECTOR_TEMPERATURE element provides the temperature of the CRISM IR detector (if MRO:SENSOR_ID = 'L'), or the VNIR detector (if MRO:SENSOR_ID = 'S'). On each detector there are two temperature sensors. The primary source of IR detector temperature is IR temperature sensor 1 (column 50 in the EDR list file). The backup source of IR detector temperature is IR temperature sensor 2 (column 51 in the EDR list file). The primary source of VNIR detector temperature is VNIR temperature sensor 2 (column 65 in the EDR list file). The backup source of VNIR detector temperature is VNIR temperature sensor 1 (column 64 in the EDR list file).

MRO:DLL_FREQUENCY_CORRECT_COUNT [MRO] INTEGER(0, 255)

The MRO:DLL_FREQUENCY_CORRECT_COUNT element provides a count of the number of times the HiRISE 96 MHz clock frequency was observed to be correct. This is used with the recursive Digital Lock Loop reset circuit.

MRO:DLL_LOCKED_FLAG [MRO] CHARACTER(3)

The MRO:DLL_LOCKED_FLAG element provides the state of the 1st and 2nd 96 Mhz Digital Lock Loop flags for a HiRISE observation.

MRO:DLL_LOCKED_ONCE_FLAG [MRO] CHARACTER(3)

The MRO:DLL_LOCKED_ONCE_FLAG element indicates if the Digital Lock Loop ever locked during a HiRISE observation.

MRO:DLL_RESET_COUNT [MRO] INTEGER(0, 255)

The MRO:DLL_RESET_COUNT element provides the count of the number of times during a HiRISE observation the 96 MHz Digital Lock Loop had to be reset in order to lock to the incoming 48 Mhz clock and produce an 96 MHz clock.

MRO:EXPOSURE_PARAMETER [MRO] INTEGER(1, 480)

The MRO:EXPOSURE_PARAMETER element identifies the value supplied to the CRISM instrument to command the exposure time. At a given frame rate identified in MRO:FRAME_RATE, there are 480 possible exposure times ranging from 1 to 480. An exposure parameter of 480 yields an exposure time equal to the inverse of the frame rate. An exposure time parameter of 1 yields an exposure time 1/480 as large. For example, at a frame rate of 3.75 Hz, an exposure time parameter of 480 yields an exposure time of 0.26667 sec, whereas an exposure time parameter of 1 yields and exposure time of 0.00056 sec. This parameter is included independently of the exposure time itself because some of the Calibration Data Records (CDRs) are applicable to data taken at a particular exposure parameter.

MRO:FELICS_COMPRESSION_FLAG [MRO] CHARACTER(3)

The MRO:FELICS_COMPRESSION_FLAG element identifies whether FELICS data compression was applied to a HiRISE image.

MRO:FIELD_STOP_TEMPERATURE [MRO] REAL <degC>

The MRO:FIELD_STOP_TEMPERATURE element provides the temperature of the HiRISE instrument's focus mechanism field stop in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:FOCUS_MOTOR_TEMPERATURE [MRO] REAL <degC>

The MRO:FOCUS_MOTOR_TEMPERATURE element provides the temperature of the HiRISE instrument's focus mirror in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:FOCUS_POSITION_COUNT [MRO] REAL

The MRO:FOCUS_POSITION_COUNT element provides the raw count of the focus mechanism position in a HiRISE observation.

MRO:FPA_NEGATIVE_Y_TEMPERATURE [MRO] REAL <degC>

The MRO:FPA_NEGATIVE_Y_TEMPERATURE element provides the temperature of the HiRISE instrument's Focal Plane Array -Y location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:FPA_POSITIVE_Y_TEMPERATURE [MRO] REAL <degC>

The MRO:FPA_POSITIVE_Y_TEMPERATURE element provides the temperature of the HiRISE instrument's Focal Plane Array +Y side location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:FPE_TEMPERATURE [MRO] REAL <degC>

The MRO:FPE_TEMPERATURE element provides the temperature of the HiRISE or CRISM instrument's Focal Plane Electronics in degrees Celsius. For HiRISE, see Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004. For CRISM, the value refers to the focal plane electronics board mounted in the base of the gimbal. The values represents IR focal plane electronics if MRO:SENSOR_ID = 'L', and to the VNIR focal plane electronics if MRO:SENSOR_ID = 'S'. The source of CRISM IR focal plane electronics temperature is column 60 in the EDR list file. The source of

VNIR focal plane electronics temperature is column 71 in the EDR list file.

MRO:FRAME_RATE **[MRO]** **REAL(1, 30) <Hz>**

The MRO:FRAME_RATE element identifies the rate at which frames of data in a CRISM EDR were returned. Possible values are 1.0, 3.75, 5.0, 15.0, and 30.0.

MRO:HEATER_CONTROL_FLAG **[MRO]** **CHARACTER(3)**

The MRO:HEATER_CONTROL_FLAG element is a set of 14 on/off flags that indicate which of the 14 heater control areas were on at the time of a HiRISE observation.

MRO:HEATER_CONTROL_MODE **[MRO]** **CHARACTER(11)**

The MRO:HEATER_CONTROL_MODE element provides the state of the HiRISE heater control, either closed-loop or duty-cycle. Normally the closed-loop mode is used to keep nominal operating temperatures of the instrument. A duty-cycle mode is enabled during periods of high EM emissions from other MRO instruments.

MRO:HEATER_CURRENT **[MRO]** **REAL <A>**

The MRO:HEATER_CURRENT element provides the HiRISE heater current in amps.

MRO:IE_PWS_BOARD_TEMPERATURE **[MRO]** **REAL <degC>**

The MRO:IE_PWS_BOARD_TEMPERATURE element provides the temperature of the HiRISE instrument's Instrument Electronics Power Supply Board in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:IEA_NEGATIVE_15_VOLTAGE **[MRO]** **REAL <V>**

The MRO:IEA_NEGATIVE_15_VOLTAGE element provides the negative 15 voltage state of the HiRISE Interface Electronics Assembly.

MRO:IEA_POSITIVE_15_VOLTAGE **[MRO]** **REAL <V>**

The MRO:IEA_POSITIVE_15_VOLTAGE element provides the positive 15 voltage state of the HiRISE Interface Electronics Assembly.

MRO:IEA_POSITIVE_28_VOLTAGE **[MRO]** **REAL <V>**

The MRO:IEA_POSITIVE_28_VOLTAGE element provides the positive 28 voltage state of the HiRISE Interface Electronics Assembly.

MRO:IEA_POSITIVE_5_VOLTAGE **[MRO]** **REAL <V>**

The MRO:IEA_POSITIVE_5_VOLTAGE element provides positive 5 voltage state of the HiRISE Interface Electronics Assembly.

MRO:IEA_TEMPERATURE **[MRO]** **REAL <degC>**

The MRO:IEA_TEMPERATURE element provides the temperature of the HiRISE instrument's Instrument Electronics Assembly in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:IMAGE_EXPOSURE_DURATION [MRO] REAL

The MRO:IMAGE_EXPOSURE_DURATION element provides the total time of a HiRISE observation from the start of the first line to the end of the last line computed by multiplying the total number of lines in the array times the line exposure duration.

MRO:INST_CONT_BOARD_TEMPERATURE [MRO] REAL <degC>

The MRO:INST_CONT_BOARD_TEMPERATURE element provides the temperature of the HiRISE instrument control board in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:INST_CONT_FPGA_POS_2_5_VOLTAGE [MRO] REAL <V>

The MRO:INST_CONT_FPGA_POS_2_5_VOLTAGE element provides the positive 2_5 voltage state of the HiRISE instrument control Field-Programmable Gate Array.

MRO:INSTRUMENT_POINTING_MODE [MRO] CHARACTER(16)

The MRO:INSTRUMENT_POINTING_MODE element identifies pointing mode of the CRISM gimbal. For FIXED POINTING, the instrument remains at a single gimbal position while taking data. For DYNAMIC POINTING, the gimbal tracks a target and typically superimposes a very slow constant-rate scan. FIXED POINTING is the nominal mode for multispectral survey data, whereas DYNAMIC POINTING is the nominal mode for targeted observations.

MRO:INV_LOOKUP_TABLE_FILE_NAME [MRO] CHARACTER

The MRO:INV_LOOKUP_TABLE_FILE_NAME element identifies the name of the CRISM file that gives the 12-bit DN value replacing each 8-bit DN value if lossy compression was performed (if compression_type=8_BIT). The inverse lookup table file is a nine-column, 4095-row text file. Column 1 gives each 8-bit value, 0 through 255. Columns 2 through 9 give the 12- bit values that replace them if lookup tables 0 through 7, respectively, were selected for data acquisition. Lookup tables are selected on a line by line basis. Which table is used for each line is indicated in the pixel-processing descriptive file named in MRO:PIXEL_PROC_FILE_NAME.

MRO:INVALID_PIXEL_LOCATION [MRO] INTEGER(>=0) <pixel>

The INVALID_PIXEL_LOCATION keyword identifies the X,Y,Z locations within a CRISM TRDR at which the data values are invalid because they represent cosmic ray hits, with an increased in DN level above of threshold of several times the read noise in the data. Read noise is approximately 3 14-bit DNs. The X direction is the spatial direction within a single frame of data. The Y direction is the wavelength direction within a single frame of data. The Z direction in the spatial direction built up by accumulating successive frames of data at different times. A cosmic ray hit is manifested by an elevated DN level in a small cluster of adjacent X,Y locations in one or two successive frames in the Z direction. The pixel locations are defined as (X1,Y1,Z1), (X2,Y2,Z2),..., (Xn, Yn,Zn)} where Xn, Yn, and Zn are integer values of X,Y,Z coordinates of invalid pixels.

MRO:LINE_EXPOSURE_DURATION [MRO] REAL

The MRO:LINE_EXPOSURE_DURATION element provides the time from the start of exposure of one binned line to the start of exposure of the next binned line in a HiRISE image. MRO:LINE_EXPOSURE_DURATION = MRO:BINNING * MRO:SCAN_LINE_DURATION

MRO:LOOKUP_CONVERSION_TABLE [MRO] INTEGER

The MRO:LOOKUP_CONVERSION_TABLE element provides the HiRISE lookup conversion table used to define the translation from 8-bit back to 14-bit pixels in a HiRISE image. If no lookup table was used (LOOKUP_TABLE_-TYPE='N/A') then LOOKUP_CONVERSION_TABLE=((0,0)). This element consists of a sequence of 255 pairs of values. The first pair in the table corresponds to the range of 14-bit pixels that map to 0 DN value of the output 8-bit pixel. Subsequent pairs correspond to incremental output DN values.

MRO:LOOKUP_TABLE_FILE_NAME [MRO] CHARACTER

The MRO:LOOKUP_TABLE_FILE_NAME element identifies the name of the CRISM lookup table file that gives the 8-bit DN value replacing each 12-bit DN value if lossy compression is performed (if compression_type=8_BIT). The lookup table file is a nine-column, 4095-row text file. Column 1 gives each 12-bit value, 0 through 4095. Columns 2 through 9 give the 8- bit values that replace them if lookup tables 0 through 7, respectively, are selected. Lookup tables are selected on a line by line basis. Which table is used for each line is indicated in the pixel-processing descriptive file named in MRO:PIXEL_PROC_FILE_NAME.

MRO:LOOKUP_TABLE_K_VALUE [MRO] INTEGER(-9998, 32)

The MRO:LOOKUP_TABLE_K_VALUE element provides the 'pixel spread' value in a HiRISE image. This parameter is used only for the HiRISE SQUARE-ROOT LUT table mode. A -9998 value indicates a K value was not used.

MRO:LOOKUP_TABLE_MAXIMUM [MRO] INTEGER(-9998, 16384)

The MRO:LOOKUP_TABLE_MAXIMUM element provides the maximum 14-bit pixel value mapped to the 254 DN 8-bit pixel in a HiRISE image. This parameter is used only for the HiRISE LINEAR LUT table mode. A -9998 value indicates that the maximum value was not used.

MRO:LOOKUP_TABLE_MEDIAN [MRO] INTEGER(-9998, 16384)

The MRO:LOOKUP_TABLE_MEDIAN element provides the median 14-bit pixel value mapped to the 254 DN 8-bit pixel in a HiRISE image. This parameter is used only for the HiRISE SQUARE-ROOT LUT table mode. A -9998 value indicates that the table median value was not used.

MRO:LOOKUP_TABLE_MINIMUM [MRO] INTEGER(-9998, 16384)

The MRO:LOOKUP_TABLE_MINIMUM element provides the minimum 14-bit pixel value mapped to the 0 DN output pixel in a HiRISE image. This parameter is used only for the HiRISE LINEAR LUT table mode. A -9998 value indicates that the minimum value was not used.

MRO:LOOKUP_TABLE_NUMBER [MRO] INTEGER(-9998, 28)

The MRO:LOOKUP_TABLE_NUMBER element provides the number of the stored LUT used in a HiRISE image. This parameter is used only for the HiRISE STORED LUT table mode. A value of -9998 indicates that a table number was not used.

MRO:LOOKUP_TABLE_TYPE [MRO] CHARACTER(11)

The MRO:LOOKUP_TABLE_TYPE element provides the type of lookup table that was applied to convert 14-bit pixels to 8-bit pixels in a HiRISE image.

MRO:MANUAL_GAIN_CONTROL [MRO] INTEGER(0, 255)

The MRO:MANUAL_GAIN_CONTROL element is a parameter used by the SHARAD on-board processing software to set the receiver gain to a fixed value during data acquisition.

MRO:MAXIMUM_STRETCH [MRO] INTEGER(0, 1023)

The MRO:MAXIMUM_STRETCH element provides a contrast stretch value to be used in the display of a HiRISE Image. The MRO:MAXIMUM_STRETCH parameter specifies the DN value to map to the 255 DN value of the display. For color images, there will be three values, one for each color.

MRO:MEASUREMENT_ATM_COMPOSITION [MRO] CHARACTER

The MRO:MEASUREMENT_ATM_COMPOSITION element identifies the atmospheric gases present in the environment during a laboratory spectral measurement.

MRO:MEASUREMENT_GEOMETRY_DESC [MRO] CHARACTER

The MRO:MEASUREMENT_GEOMETRY_DESC element describes the geometry relevant to a laboratory spectral measurement.

MRO:MEASUREMENT_GEOMETRY_TYPE [MRO] CHARACTER(50)

The MRO:MEASUREMENT_GEOMETRY_TYPE element provides the type of measurement geometry relative to a laboratory spectral measurement. Examples are 'DIRECTIONAL HEMISPHERICAL', 'HEMISPHERICAL DIRECTIONAL', 'BIDIRECTIONAL, RADIANCE FACTOR', and 'BIDIRECTIONAL, RADIANCE COEFFICIENT'.

MRO:MEASUREMENT_MASS [MRO] CHARACTER

The MRO:MEASUREMENT_MASS element provides the mass of a sample used in a particular laboratory spectral measurement.

MRO:MEASUREMENT_MAX_RESOLUTION [MRO] REAL(>=0) <micron>

The MRO:MEASUREMENT_MAX_RESOLUTION element provides the maximum resolution of a laboratory spectral measurement.

MRO:MEASUREMENT_MIN_RESOLUTION [MRO] REAL(>=0) <micron>

The MRO:MEASUREMENT_MIN_RESOLUTION element provides the minimum resolution of a laboratory spectral measurement.

MRO:MEASUREMENT_PRESSURE [MRO] REAL(>=0)

The MRO:MEASUREMENT_PRESSURE element gives the atmospheric pressure of the environment during a laboratory spectral measurement.

MRO:MEASUREMENT_TEMPERATURE [MRO] REAL <degC>

The MRO:MEASUREMENT_TEMPERATURE element gives the temperature of the environment during a laboratory spectral measurement.

MRO:MECH_TLM_BOARD_TEMPERATURE [MRO] REAL <degC>

The MRO:MECH_TLM_BOARD_TEMPERATURE element provides the temperature of the HiRISE instrument's Mech/TLM Board in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MECH_TLM_FPGA_POS_2_5_VOLTAGE [MRO] REAL <V>

The MRO:MECH_TLM_FPGA_POS_2_5_VOLTAGE element provides the positive 2_5 voltage state of the HiRISE Mech/TLM Field-Programmable Gate Array.

MRO:MINIMUM_STRETCH [MRO] INTEGER(0, 1023)

The MRO:MINIMUM_STRETCH element provides contrast stretch values to be used in the display of a HiRISE Image. The MRO:MINIMUM_STRETCH parameter is the minimum DN value to map to the 0 DN value of the display. For color images, there will be three values, one for each color.

MRO:MS_TRUSS_LEG_0_A_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_0_A_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 0-A leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MS_TRUSS_LEG_0_B_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_0_B_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 0-B leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MS_TRUSS_LEG_120_A_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_120_A_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 120-A leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MS_TRUSS_LEG_120_B_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_120_B_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 120-B leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MS_TRUSS_LEG_240_A_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_240_A_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 240-A leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:MS_TRUSS_LEG_240_B_TEMPERATURE [MRO] REAL <degC>

The MRO:MS_TRUSS_LEG_240_B_TEMPERATURE element provides the temperature of the HiRISE instrument's metering structure truss 240-B leg in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:NOMINAL_ALONG_TRACK_RESOLUTION [MRO] REAL(0, 10000) <m>

The MRO:NOMINAL_ALONG_TRACK_RESOLUTION element gives the horizontal resolution of the instrument in the along-track direction achieved through azimuth processing, expressed in meters.

MRO:NUMERICAL_FILTER_TYPE [MRO] CHARACTER(12)

The MRO:NUMERICAL_FILTER_TYPE element is the parameter used by the SHARAD ground processing software for the selection of the method used for building the numerical filter used in the range compression of the signal.

MRO:OBSERVATION_NUMBER [MRO] INTEGER(>=0)

The MRO:OBSERVATION_NUMBER gives the monotonically increasing ordinal counter of the EDRs generated for a particular CRISM OBSERVATION_ID. CRISM generates several EDRs for a given OBSERVATION_ID.

MRO:OBSERVATION_START_COUNT [MRO] CHARACTER(30)

The MRO:OBSERVATION_START_COUNT element provides the spacecraft clock count corresponding to the UTC time identified by the MRO:OBSERVATION_START_TIME. This is the time when the HiRISE instrument begins its image acquisition sequence.

MRO:OBSERVATION_START_TIME [MRO] TIME

The MRO:OBSERVATION_START_TIME element provides the UTC start time of a HiRISE image acquisition sequence.

MRO:OPT_BNCH_BOX_BEAM_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_BOX_BEAM_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench near the box beam (+Y face) n degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_COVER_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_COVER_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench cover (external) in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_FLEXURE_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_FLEXURE_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench near the +X MDR flexure in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_FOLD_FLAT_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_FOLD_FLAT_TEMPERATURE element provides the temperature of the HiRISE instrument's optical fold flat mirror location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_FPA_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_FPA_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench near the Focal Plane Array in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_FPE_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_FPE_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench near the Focal Plane Electronics in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_LIVING_RM_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_LIVING_RM_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench in the sunken living room location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPT_BNCH_MIRROR_TEMPERATURE [MRO] REAL <degC>

The MRO:OPT_BNCH_MIRROR_TEMPERATURE element provides the temperature of the HiRISE instrument's optical bench near the tertiary mirror in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:OPTICAL_BENCH_TEMPERATURE [MRO] REAL <degC>

The MRO:OPTICAL_BENCH_TEMPERATURE element provides the temperature of the CRISM optical bench. It is a backup to MRO:SPHERE_TEMPERATURE for modeling the output radiance of the onboard integrating sphere as a function of sphere temperature.

MRO:PHASE_COMPENSATION_TYPE [MRO] CHARACTER(40)

The MRO:PHASE_COMPENSATION_TYPE element is a parameter used by the SHARAD on-board processing software to select the type of time shifting applied to received echoes before coherent summing.

MRO:PHASE_CORRECTION_TYPE [MRO] CHARACTER(32)

The MRO:PHASE_CORRECTION_TYPE element is the Parameter used by the SHARAD ground processing software for the selection of the algorithm used for the correction of any phase distortion in the signal caused by the ionosphere.

MRO:PHOTOCLIN_CORRECTION_FLAG [MRO] CHARACTER(3)

The MRO:PHOTOCLIN_CORRECTION_FLAG element describes the way in which topographic slopes were calculated as inputs to a thermal correction that has been performed on a calibrated CRISM data product.

This keyword has validity only in the case where the value of the keyword MRO:THERMAL_CORRECTION_MODE is PHYSICAL_MODEL;ADR_TE.

If MRO:PHOTOCLIN_CORRECTION_FLAG is OFF, then slopes used to calculate temperature come from the companion DDR. If it is ON, then the slopes are calculated using photoclinometry of CRISM data.

More details can be found at MRO:THERMAL_CORRECTION_MODE and in the CRISM Data Products SIS.

MRO:PIXEL_PROC_FILE_NAME [MRO] CHARACTER

The MRO:PIXEL_PROC_FILE_NAME element gives the name of the file that documents the CRISM onboard compression options selected. Onboard compression converts a 14- bit DN with a value of 0-16383 to a 12-bit- 0-4095 value or 8-bit 0-255 value for downlink. Corrections are done on a line by line basis. The pixel processing file is a 4-column, 480-row text file. The four elements in each row are the row number, the gain correction performed, the offset correction performed, and the 12 to 8 bit lookup table used if lossy compression is performed. Both gain and offset corrections are always performed to convert 14-bit to 12-bit values prior to downlink. First the offset is subtracted from the 14-bit value. Then the difference is multiplied by the gain to shorten the result to a 12-bit value. If lossy compression is being performed (if compression_type = 8_BIT), then the 12- to 8-bit lookup table value gives the table in the file named by MRO:LOOKUP_TABLE_FILE_NAME that was used to convert the 12-bit value to an 8- bit value.

MRO:POWERED_CPMM_FLAG [MRO] CHARACTER(3)

The MRO:POWERED_CPMM_FLAG element provides a set of 14 values that identify which HiRISE CCD Processing/Memory Modules were commanded to acquire imaging during the observation. The first element is for CPMM 0 and the last element is for CPMM 13.

MRO:PRIMARY_MIRROR_BAF_TEMPERATURE [MRO] REAL <degC>

The MRO:PRIMARY_MIRROR_BAF_TEMPERATURE element provides the temperature of the HiRISE instrument's primary mirror baffle near the base (external) in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:PRIMARY_MIRROR_MNT_TEMPERATURE [MRO] REAL <degC>

The MRO:PRIMARY_MIRROR_MNT_TEMPERATURE element provides the temperature of the HiRISE instrument's primary mirror mount in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:PRIMARY_MIRROR_TEMPERATURE [MRO] REAL <degC>

The MRO:PRIMARY_MIRROR_TEMPERATURE element provides the temperature of the HiRISE instrument's primary mirror at its maximum thickness in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:PULSE_REPETITION_INTERVAL [MRO] INTEGER(>=0)

The MRO:PULSE_REPETITION_INTERVAL element gives the time between the transmission of two consecutive SHARAD radar pulses, expressed in microseconds.

MRO:RADARGRAM_RETURN_INTERVAL [MRO] REAL(0, 1000000)

The MRO:RADARGRAM_RETURN_INTERVAL element gives the round trip time of an electromagnetic pulse from the center of Mars to the first sample of each echo in the data product. This time delay is expressed in terms of number of echo samples. Time distance between echo samples in SHARAD RDR data products is 0.075 microseconds.

MRO:READOUT_START_COUNT [MRO] CHARACTER(30)

The MRO:READOUT_START_COUNT element provides the spacecraft clock count when the HiRISE CCD Process/Memory Module begins transferring image data out of its buffer memory.

MRO:READOUT_START_TIME [MRO] TIME

The MRO:READOUT_START_TIME element provides the UTC time when the HiRISE CCD Process/Memory Module begins transferring image data out of buffer memory.

MRO:REFERENCE_FUNCTION_FILE_NAME [MRO] CHARACTER(256)

The MRO:REFERENCE_FUNCTION_FILE_NAME element gives the name of the file located in the CALIB directory containing the function used for building the numerical filter used in the range compression of the signal.

MRO:REPLACED_PIXEL_LOCATION [MRO] INTEGER <pixel>

The MRO:REPLACE_PIXEL_LOCATION keyword gives the X,Y,Z locations within a CRISM TRDR at which data values were replaced by interpolating from surrounding pixels, because original data values were affected by cosmic ray hits which increased the DN level above a threshold of several times the read noise in the data. Read noise is approximately 3 14-bit DNs. The X direction is the spatial direction within a single frame of data. The Y direction is the wavelength direction within a single frame of data. The Z direction in the spatial direction built up by accumulating successive frames of data at different times. A cosmic ray hit is manifested by an elevated DN level in a small cluster of adjacent X,Y locations in one or two successive frames in the Z direction. Replacement occurs by interpolating between the adjacent pixels in the XZ spatial directions. The pixel locations are defined as (X1,Y1,Z1), (X2,Y2,Z2),..., (Xn, Yn,Zn)} where Xn, Yn, and Zn are integer values of X,Y,Z coordinates of replaced pixels.

MRO:SCAN_EXPOSURE_DURATION [MRO] REAL(74, 1048650)

The MRO:SCAN_EXPOSURE_DURATION element provides the unbinned line readout rate of the HiRISE instrument in microseconds. This corresponds to the time between successive steps in the Time Delay Integration (TDI) process. The adjustment of this parameter is used to match image line acquisition to the boresight ground velocity. The value is the same for all CCDs for a given observation.

MRO:SEC_MIRROR_BAFFLE_TEMPERATURE [MRO] REAL <degC>

The MRO:SEC_MIRROR_BAFFLE_TEMPERATURE element provides the temperature of the HiRISE instrument's secondary mirror baffle near the base (external) in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:SEC_MIRROR_MTR_RNG_TEMPERATURE [MRO] REAL <degC>

The MRO:SEC_MIRROR_MTR_RNG_TEMPERATURE element provides the temperature of the HiRISE instrument's secondary mirror metering ring in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:SEC_MIRROR_TEMPERATURE [MRO] REAL <degC>

The MRO:SEC_MIRROR_TEMPERATURE element provides the temperature of the HiRISE instrument's secondary mirror in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:SENSOR_ID [MRO] CHARACTER(1)

The MRO:SENSOR_ID element identifies the CRISM focal plane from which data in an EDR or RDR were returned; S = short-wavelength or VNIR, L = long-wavelength or IR, J = joint where a data product is applicable to either.

MRO:SPATIAL_RESAMPLING_FILE [MRO] CHARACTER

The MRO:SPATIAL_RESAMPLING_FILE element gives the name of the file that has the optical distortions that are removed when spatial resampling of CRISM data occurs in sensor space. Spatial resampling is to remove differences in the spatial scale of the data between different wavelengths. The data are corrected for spatial scale by cubic resampling within rows to match the scale at 610 nm (row number 223) for the VNIR, or 2300 nm (row number 257) for the IR.

MRO:SPATIAL_RESAMPLING_FLAG [MRO] CHARACTER(3)

The MRO:SPATIAL_RESAMPLING_FLAG element identifies whether spatial resampling of CRISM data has occurred in sensor space. Spatial resampling is to remove differences in the spatial scale of the data between different wavelengths. The data are corrected for spatial scale by cubic resampling within rows to match the scale at 610 nm (row number 223) for the VNIR, or 2300 nm (row number 257) for the IR. OFF indicates no resampling, and ON indicates that resampling has occurred.

MRO:SPATIAL_RESCALING_FILE [MRO] CHARACTER

The MRO:SPATIAL_RESCALING_FILE element gives the name of the file that has the difference in magnification that is removed when spatial rescaling of CRISM VNIR data to IR data occurs in sensor space. Spatial rescaling is to remove differences in magnification between VNIR data and IR data. VNIR data are corrected to the spatial scale of the IR data at 2300 nm (row 257).

MRO:SPATIAL_RESCALING_FLAG [MRO] CHARACTER(3)

The MRO:SPATIAL_RESCALING_FLAG element identifies whether spatial rescaling of CRISM data has occurred in sensor space. Spatial rescaling is to remove differences in magnification between VNIR data and IR data. VNIR data are corrected to the spatial scale of the IR data at 2300 nm (row 257). OFF indicates no rescaling, and ON indicates that rescaling has occurred.

MRO:SPECIAL_PROCESSING_FLAG [MRO] CHARACTER(12)

The MRO:SPECIAL_PROCESSING_FLAG element indicates if special calibration processing was applied to a HiRISE CCD image. The HiRISE instrument may experience instability problems or a ow-signal image may have been poorly calibrated requiring an alternate calibration strategy. There is a special processing flag for each CCD used in the observation. The ordering for the values is RED0, RED1, RED2, RED3, RED4, RED5, RED6, RED7, RED8, RED9, IR10, IR11, BG12, and BG13.

Values are as follows:

NOMINAL = the standard calibration processing was used for the CCD image.

CUBENORM = the calibration processing used a columnar gain correction based on columnar statistics of the image.

NULL = the CCD was not operating or was missing for this observation.

MRO:SPECIMEN_CLASS_NAME [MRO] CHARACTER

The MRO:SPECIMEN_CLASS_NAME element provides the classification of a CRISM Spectral Library sample using the classification scheme defined in the CRISM Spectral Library SIS.

MRO:SPECIMEN_COLLECT_LOCATION_DESC [MRO] CHARACTER

The MRO:SPECIMEN_COLLECT_LOCATION_DESC describes the location where a CRISM Spectral Library sample was collected.

MRO:SPECIMEN_CURRENT_LOCATION_NAME [MRO] CHARACTER(50)

The MRO:SPECIMEN_CURRENT_LOCATION_NAME gives the name of the institution or laboratory where a CRISM Spectral Library sample is currently stored.

MRO:SPECIMEN_DESC [MRO] CHARACTER

The MRO:SPECIMEN_DESC element gives a description of a CRISM Spectral Library sample. An example is 'K-jarosite, from H. Kodama collection #A210'. The description does not have to be unique.

MRO:SPECIMEN_LAST_OWNER_NAME [MRO] CHARACTER(32)

The MRO:SPECIMEN_LAST_OWNER_NAME element gives the name of the individual or laboratory to whom a CRISM Spectral Library sample belongs.

MRO:SPECIMEN_MAX_PARTICLE_SIZE [MRO] REAL <micron>

The MRO:SPECIMEN_MAX_PARTICLE_SIZE element gives the maximum particle size of a CRISM Spectral Library sample.

MRO:SPECIMEN_MIN_PARTICLE_SIZE [MRO] REAL <micron>

The MRO:SPECIMEN_MIN_PARTICLE_SIZE element gives the minimum particle size of a CRISM Spectral Library sample.

MRO:SPECIMEN_NAME [MRO] CHARACTER

The MRO:SPECIMEN_NAME element gives the unique name of a CRISM Spectral Library sample.

MRO:SPECTRAL_RESAMPLING_FILE [MRO] CHARACTER

The MRO:SPECTRAL_RESAMPLING_FILE element gives the name of the file that has the optical distortions (to the nearest whole detector element) that are removed when spectral resampling of CRISM data occurs in sensor space. Spectral resampling is to remove differences in the wavelength scale of the data between different spatial positions across the field of view. The data are corrected for spectral scale by nearest neighbor resampling within columns to match the scale, to within 0.5 detector elements, to that of columns 260-359 for the VNIR, or columns 270-369 for the IR.

MRO:SPECTRAL_RESAMPLING_FLAG [MRO] CHARACTER(3)

The MRO:SPECTRAL_RESAMPLING_FLAG element identifies whether spectral resampling of CRISM data has occurred in sensor space. Spectral resampling is to remove differences in the wavelength scale of the data between different spatial positions across the field of view. The data are corrected for spectral scale by nearest neighbor resampling within columns to match the scale, to within 0.5 detector elements, to that of columns 260-359 for the VNIR, or columns 270-369 for the IR. OFF indicates no resampling, and ON indicates that resampling has occurred.

MRO:SPECTROMETER_HOUSING_TEMP [MRO] REAL <degC>

The MRO:SPECTROMETER_HOUSING_TEMP element gives the temperature of the CRISM spectrometer housing. This is a backup to direct determination, using measurements with the shutter closed, of the thermal background measured by the IR detector. The primary source of this temperature is a measurement digitized by the VNIR focal plane electronics, column 58 in the EDR list file. The backup source of this temperature is a measurement digitized by the IR focal plane electronics, column 69 in the EDR list file.

MRO:SPHERE_TEMPERATURE [MRO] REAL <degC>

The MRO:SPHERE_TEMPERATURE element gives the temperature of the CRISM onboard integrating sphere. It is used for modeling the output radiance of the sphere as a function of sphere temperature.

MRO:SPIDER_LEG_150_TEMPERATURE [MRO] REAL <degC>

The MRO:SPIDER_LEG_150_TEMPERATURE element provides the temperature of the HiRISE instrument's spider leg at the 150 degree location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:SPIDER_LEG_270_TEMPERATURE [MRO] REAL <degC>

The MRO:SPIDER_LEG_270_TEMPERATURE element provides the temperature of the HiRISE instrument's spider leg at the 270 degree location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:SPIDER_LEG_30_TEMPERATURE [MRO] REAL <degC>

The MRO:SPIDER_LEG_30_TEMPERATURE element provides the temperature of the HiRISE instrument's spider leg at the 30 degree location in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:START_SUB_SPACECRAFT_LATITUDE [MRO] REAL(-90, 90) <deg>

The MRO:START_SUB_SPACECRAFT_LATITUDE element gives the planetocentric latitude at the sub spacecraft point at the beginning of an MRO orbital swath.

MRO:START_SUB_SPACECRAFT_LONGITUDE [MRO] REAL(0, 360) <deg>

The MRO:START_SUB_SPACECRAFT_LONGITUDE element gives the planetocentric east longitude at the sub spacecraft point at the beginning of an MRO orbital swath.

MRO:STIMULATION_LAMP_FLAG [MRO] CHARACTER

The MRO:STIMULATION_LAMP_FLAG element is a set of three flags that identify which of the three HiRISE stimulation lamps have been turned on or off. Stimulation lamps are used to evaluate relative changes in instrument calibration throughout the mission. Stimulation lamps are always turned off for science observation data.

MRO:STOP_SUB_SPACECRAFT_LATITUDE [MRO] REAL(-90, 90) <deg>

The MRO:STOP_SUB_SPACECRAFT_LATITUDE element gives the planetocentric latitude at the sub spacecraft point at the end of an MRO orbital swath.

MRO:STOP_SUB_SPACECRAFT_LONGITUDE [MRO] REAL(0, 360) <deg>

The MRO:STOP_SUB_SPACECRAFT_LONGITUDE element gives the planetocentric east longitude at the sub spacecraft point at the end of an MRO orbital swath.

MRO:SUN_SHADE_TEMPERATURE [MRO] REAL <degC>

The MRO:SUN_SHADE_TEMPERATURE element provides the temperature of the HiRISE instrument's sun shade under the MLI in degrees Centigrade. See Figure 2.3, MRO HiRISE EDR SIS, REFKEYID JPLD-32004.

MRO:TDI [MRO] INTEGER(8, 128)

The MRO:TDI element provides the number of time delay and integration (TDI) stages used to increase the exposure time of a HiRISE observation.

MRO:THERMAL_CORRECTION_MODE [MRO] CHARACTER(35)

The MRO:THERMAL_CORRECTION_MODE element describes whether and what type of thermal correction has been performed to calibrated CRISM data. At wavelengths >2300 nm, CRISM measures both solar reflectance and thermal emission of the Martian surface. Three algorithms are available to perform an approximate removal of the thermal emission, to isolate solar reflectance. OFF indicates that no correction is performed. Data may be in units of radiance, I_OVER_F, or LAMBERT_ALBEDO. For any other choice, data are in units of LAMBERT_ALBEDO. CLIMATOLOGY;ADR_CL indicates that a predicted temperature for the correction was derived from a low spatial resolution climatic model contained in an Ancillary Data Record (ADR) with the string CL in the file name.

EMPIRICAL_MODEL_FROM_SPECTRUM;ALG_M indicates that temperature for the correction was estimated empirically from measured CRISM I_OVER_F at long wavelengths. PHYSICAL_MODEL;ADR_TE indicates that a predicted temperature for the correction was derived using information on surface physical properties from a companion DDR, and a model of thermal emission contained in an ADR with the string CL in the file name.

There are two variants of the case where this keyword equals PHYSICAL_MODEL;ADR_TE. If the keyword MRO:PHOTOCLIN_-CORRECTION_FLAG is OFF, then slopes used to calculate temperature come from the companion DDR. If the keyword MRO:PHOTOCLIN_CORRECTION_FLAG is ON, then the slopes are calculated using photoclinometry of CRISM data.

More details can be found in the CRISM Data Products SIS.

MRO:TRIM_LINES **[MRO]** **INTEGER(>=0)**

The MRO:TRIM_LINES element provides the number of lines that have been trimmed at the beginning of a HiRISE observation.

MRO:WAVELENGTH_FILE_NAME **[MRO]** **CHARACTER**

The MRO:WAVELENGTH_FILE_NAME element identifies the name of the file that describes wavelength sampling in a CRISM EDR, RDR, or CDR. There are two aspects to the wavelength sampling. One is the wavelength of light falling on each element of the 480-row detector. The second is the selection of which rows are included in downlink. For each detector there is a menu of four options; which option is selected is given in MRO:WAVELENGTH_FILTER, which has a value of 0, 1, 2, or 3. For an EDR, the wavelength file is a 5-column, 480-row text file. The five elements in each row are the row number and a 0 or 1 for MRO:WAVELENGTH_FILTER 0, 1, 2 and 3, indicating if the row is included in the EDR when that option is selected in MRO:WAVELENGTH_FILTER. For an RDR or CDR, the wavelength file is an image whose value at the location of a detector element is the center wavelength of that element, in nanometers.

MRO:WAVELENGTH_FILTER **[MRO]** **CHARACTER(1)**

The MRO:WAVELENGTH_FILTER keyword identifies which of four CRISM onboard menus of rows was selected for downlink. The four choices are 0, 1, 2, or 3. Each filter is a vector of 480 0's or 1's, one per row of the detector. 0 indicates that data are not saved; 1 indicates that data are saved. The values in the four vectors are in the file named by MRO:WAVELENGTH_FILE_NAME.

MRO:WEIGHTING_FUNCTION_NAME **[MRO]** **CHARACTER(32)**

The MRO:WEIGHTING_FUNCTION_NAME element gives the Parameter used by the SHARAD ground processing software for the selection of the function used for weighting the contribution of different frequencies in the signal before range compression..

MULT_PEAK_FRESNEL_REFLECT_CORR **[PDS_GEO_MGN]** **REAL**

The mult_peak_fresnel_reflect_corr element provides the correction factor that has been applied to derived_fresnel_reflectivity to allow for radar echoes possessing more than an single peak.

NAIF_DATA_SET_ID **CHARACTER(40)**

The naif_data_set_id element provides the data_set_id which contains the position information for the instrument. Note: This data element is obsolete. The product_id data element should be used instead.

NAIF_INSTRUMENT_ID **[PDS_NAIF]** **INTEGER**

The naif_instrument_id element provides the numeric ID used within the SPICE system to identify the spacecraft, spacecraft structure or science instrument.

NAME **CHARACTER(61)**

The name data element indicates a literal value representing the common term used to identify an element or object. See also: 'id'.

Note: In the PDS data dictionary, if the name identifier is prepended with a namespace identifier (e.g., CASSINI:TARGET_NAME), then the name identifier is restricted to 61 characters where the name identifier and the namespace identifiers are each restricted to 30 characters and are separated by a colon (for a total maximum length of 61 characters).

The name identifier and its component parts must conform to PDS nomenclature standards.

If the name identifier is used without a namespace identifier (e.g., TARGET_NAME), then the name identifer is restricted to 30 characters, and must conform to PDS nomenclature standards.

NAMESPACE_ID **[PDS_EN]** **CHARACTER(30)**

The NAMESPACE_ID element uniquely identifies a set of elements such that there is no ambiguity between elements having identical names but different origins.

NATIVE_START_TIME **CHARACTER(40)**

The native_start_time element provides a time value at the beginning of a time period of interest. Native time is 'native to' (that is, resident within) a given set of data, in those cases in which the native time field is in a format other than the standard UTC system format. For example, the spacecraft clock count could be a native time value.

NATIVE_STOP_TIME **CHARACTER(40)**

The native_stop_time element provides a time value at the end of a time period of interest. Native time is 'native to' (that is, resident within) a given set of data, in those cases in which the native time field is in a format other than the standard UTC system format. For example, the spacecraft clock count could be a native time value.

NAV_UNIQUE_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The nav_unique_id element is an AMMOS-MGN unique element used to express a NAV-unique identifier for the file. Note: This data element is obsolete. The source_product_id element should be used instead.

NODAL_REGRESSION_RATE **[PDS_RINGS]** **REAL(>=0) <deg/day>**

The nodal regression rate element defines the rate at which the ascending node of an inclined orbit rotates about the central body's pole. Note that, for inclined orbits about oblate planets, this value is always negative. See also RING_ASCENDING_NODE_LONGITUDE.

NODE_DESC **CHARACTER**

The node_desc element describes a PDS Node.

NODE_ID **CHARACTER(12)**

The node_id element provides the node id assigned to a science community node.

NODE_INSTITUTION_NAME **CHARACTER(60)**

The node_institution_name element identifies a university, research center, NASA center or other institution associated with a PDS node.

NODE_MANAGER_PDS_USER_ID **CHARACTER(60)**

The node_manager_pds_user_id element provides the pds_user_id of the node manager.

NODE_NAME **CHARACTER(60)**

The node_name element provides the officially recognized name of a PDS Node.

NOISE_LEVEL **REAL**

The noise_level element identifies the threshold at which signal is separable from noise in a given data set or for measurements performed by a particular instrument. For instruments the noise level is a function primarily of the instrument characteristics, while for data sets or data products the noise level can also be a function of the data processing history.

NOISE_TYPE **[PDS_RINGS]** **IDENTIFIER**

The noise_type element indicates the type of the noise statistics in a data product.

NOMINAL_ENERGY_RESOLUTION **REAL(2.9, 30)**

The nominal_energy_resolution element provides an approximation of the energy resolution obtained during a particular instrument mode. Energy resolution is defined as the width of an energy channel divided by the average energy of that channel. A nominal value is given as this quantity varies between channels.

NOMINAL_OPERATING_TEMPERATURE **REAL(2.4, 1100) <K>**

The nominal_operating_temperature element identifies the operating temperature as given in the specifications for an instrument detector.

NON_CLUSTERED_KEY **[PDS_EN]** **CHARACTER(1)**

The non_clustered_key element indicates whether a column in a table has a nonclustered index. This index is not unique does not determines the sorting order of the data, but is intended purely for query performance optimization.

NON_RANGE_PROF_CORRS_INDEX **[PDS_GEO_MGN]** **INTEGER**

The non_range_prof_corrs_index element provides the value of the index of the element in non_range_sharp_echo_prof that corresponds to the first element in best_non_range_sharp_model_tpt[0]. The indices start at zero.

NON_RANGE_SHARP_ECHO_PROF **[PDS_GEO_MGN]** **INTEGER**

The non_range_sharp_echo_prof element provides the value of the power vs. time echo profile, at half-baud (0.21 microsecond) intervals, assembled from up to 16 frequency components, without shifting their time origins (see range_-sharp_echo_profile element). This profile yields the best estimate of the time dispersion of the echo, and hence the value of the derived_rms_surface_slope and derived_fresnel_reflectivity element.

NON_RANGE_SHARP_FIT **[PDS_GEO_MGN]** **REAL**

The non_range_sharp_fit element provides the value of the 'goodness of fit' measuring the correlation between the observed profile non_range_sharp_echo_prof and the theoretical template best_non_range_sharp_model_tpt elements. Scaling_factors for the best_non_range_sharp_model_tpt and the non_range_sharp_echo_prof elements provide the value of the conversion factor that multiplies the integer array elements of the best_non_range_sharp_model_tpt and non_range_-sharp_echo_prof elements to yield their physical values, expressed as equivalent radar cross-sections in units of km**2.

NON_RANGE_SHARP_LOOKS [PDS_GEO_MGN] INTEGER

The non_range_sharp_looks element provides the value of the number of statistically independent measurements of echo profile that were summed to produce the value for the profile non_range_sharp_echo_prof element.

NORTH_AZIMUTH REAL(0, 360) <deg>

The north_azimuth element provides the value of the angle between a line from the image center to the north pole and a reference line in the image plane. The reference line is a horizontal line from the image center to the middle right edge of the image. This angle increases in a clockwise direction.

NORTH_AZIMUTH_CLOCK_ANGLE REAL(0, 360) <deg>

The north_azimuth_clock_angle element specifies the direction of the northward pointing azimuth on the surface of the target body as it appears at the center of an image. It is measured from the 'upward' direction, clockwise to the northward azimuth as projected into the image plane, assuming the image is displayed as defined by the SAMPLE_-DISPLAY_DIRECTION and LINE_DISPLAY_DIRECTION elements. This keyword is intended to be a replacement for the NORTH_AZIMUTH keyword which has not been used in a consistent way in the past. Note: In some cases, knowledge of the inertial orientation of the ratational axis improves with time. This keyword necessarily reflects the state of knowledge of the rotational axis at the time of preparing the data product as given by the POLE_DECLINATION and POLE_RIGHT_ASCENSION elements. Note also that this quantity can vary significantly within a single image, particularly when a large fraction of the body is included in the image, so it is sensitive to the accuracy of an image's pointing information. This keyword is undefined if the central pixel of an image does not intersect the target body.

NOT_APPLICABLE_CONSTANT CONTEXT DEPENDENT

The not_applicable_constant element supplies the numeric value used to represent the figurative constant 'N/A'. 'N/A' (Not Applicable) is defined as indicating when values within the domain of a particular data element do not apply in a specific instance.

NOTE CHARACTER

The note element is a text field which provides miscellaneous notes or comments (for example, concerning a given data set or a given data processing program).

NOTEBOOK_ENTRY_TIME TIME

The notebook_entry_time element provides the date and time at which an experimenter made a particular entry in the experimenter notebook. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

NSSDC_DATA_SET_ID [PDS_EN] CHARACTER(40)

The nssdc_data_set_id element is the identifier used by the NSSDC for a data set or data product. A PDS data set or collection may have one or more associated NSSDC data sets.

NTV_SAT_TIME_FROM_CLOSEST_APRH [PDS_IMG_GLL] CHARACTER(14)

The ntv_sat_time_from_closest_aprh (native satellite time from closest approach) element provides the time from closest approach to the satellite. This should not be confused with NTV_TIME_FROM_CLOSEST_APPROACH which is the time from closest approach to the central body. The format is +/- DDDHHMMSS, where negative refers to Days,Hours, Minutes, Seconds before the encounter.

NTV_TIME_FROM_CLOSEST_APPROACH [PDS_IMG_GLL] CHARACTER(14)

The ntv_time_from_closest_approach (native time from closest approach) element provides the time from closest approach to the central body. The format is +/- DDDHHMMSS, where negative refers to Days, Hours, Minutes, Seconds before the encounter.

NULL_CONSTANT **CONTEXT DEPENDENT**

The NULL_CONSTANT element supplies the numeric value used to represent the figurative constant 'NULL'. 'NULL' is defined as indicating when values within the domain of a particular element are temporarily unknown. A value is applicable and may be forthcoming. See also NOT_APPLICABLE_CONSTANT, UNKNOWN_CONSTANT.

OBJECT_CLASSIFICATION_TYPE **[PDS_EN]** **CHARACTER(20)**

The object_classification_type element identifies a defined object with a classification specified by the defining data system.

OBJECT_NAME **[PDS_EN]** **CHARACTER(12)**

The object_name element provides the template object name assigned by the Central Node data administrator to a logical template used in the PDS.

OBJECT_TYPE **[PDS_EN]** **IDENTIFIER**

The object_type data element indicates a system-specific categorization for a data object. Example: GENERIC, SPECIFIC. In the PDS, the difference between generic and specific objects is illustrated in the PDS Data Preparation Workbook.

OBLIQUE_PROJ_POLE_LATITUDE **REAL(-90, 90) <deg>**

One of the three angles defining the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection. This is the ordinary latitude in degrees of the pole (Z axis) of the oblique system.

OBLIQUE_PROJ_POLE_LONGITUDE **REAL(-180, 360) <deg>**

One of the three angles defining the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection. This is the ordinary longitude in degrees of the pole (Z axis) of the oblique system.

OBLIQUE_PROJ_POLE_ROTATION **REAL(0, 360) <deg>**

One of the three angles defining the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection. This is a rotation in degrees around the polar (Z) axis of the oblique system that completes the transformation from standard to oblique coordinates.

OBLIQUE_PROJ_X_AXIS_VECTOR **REAL(-1, 1)**

Unit vector in the direction of the X axis of the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection, in terms of the X, Y, and Z axes of the standard body-fixed coordinate system. In each system, the X axis points from the body center toward longitude and latitude (0,0) in that system, and the Z axis to (0,90), and the Y axis completes a right-handed coordinate system. The OBLIQUE_PROJ_X/Y/Z_AXIS_VECTORS make up the rows of a rotation matrix that when multiplied on the left of a vector referenced to the standard coordinate system converts it into its equivalent in the oblique coordinate system. This rotation matrix is the product of successively applied rotations by +/- OBLIQUE_PROJ_POLE_LONGITUDE around the Z axis, 90 - OBLIQUE_PROJ_POLE_LATITUDE around the once-rotated Y axis, and OBLIQUE_PROJ_POLE_ROTATION around the twice-rotated Z axis. For the first of these rotations, a positive sign is used if the OBLIQUE_PROJ_POLE_LONGITUDE is given as an east longitude, and a negative sign if it is expressed as a west longitude.

OBLIQUE_PROJ_Y_AXIS_VECTOR **REAL(-1, 1)**

Unit vector in the direction of the Y axis of the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection, in terms of the X, Y, and Z axes of the standard body-fixed coordinate system. In each system, the X axis points from the body center toward longitude and latitude (0,0) in that system, and the Z axis to (0,90), and the Y axis completes a right-handed coordinate system. The OBLIQUE_PROJ_X/Y/Z_AXIS_VECTORS make up the rows of a rotation matrix that when multiplied on the left of a vector referenced to the standard coordinate system converts it into its equivalent in the oblique coordinate system. This rotation matrix is the product of successively applied rotations by +/- OBLIQUE_PROJ_POLE_LONGITUDE around the Z axis, 90 - OBLIQUE_PROJ_POLE_LATITUDE around the once-rotated Y axis, and OBLIQUE_PROJ_POLE_ROTATION around the twice-rotated Z axis. For the first of these rotations, a positive sign is used if the OBLIQUE_PROJ_POLE_LONGITUDE is given as an east longitude, and a negative sign if it is expressed as a west longitude.

OBLIQUE_PROJ_Z_AXIS_VECTOR **REAL(-1, 1)**

Unit vector in the direction of the Z axis of the oblique coordinate system used in the OBLIQUE CYLINDRICAL projection, in terms of the X, Y, and Z axes of the standard body-fixed coordinate system. In each system, the X axis points from the body center toward longitude and latitude (0,0) in that system, and the Z axis to (0,90), and the Y axis completes a . right-handed coordinate system. The OBLIQUE_PROJ_X/Y/Z_AXIS_VECTORS make up the rows of a rotation matrix that when multiplied on the left of a vector referenced to the standard coordinate system converts it into its equivalent in the oblique coordinate system. This rotation matrix is the product of successively applied rotations by +/- OBLIQUE_PROJ_POLE_LONGITUDE around the Z axis, 90 - OBLIQUE_PROJ_POLE_LATITUDE around the once-rotated Y axis, and OBLIQUE_PROJ_POLE_ROTATION around the twice-rotated Z axis. For the first of these rotations, a positive sign is used if the OBLIQUE_PROJ_POLE_LONGITUDE is given as an east longitude, and a negative sign if it is expressed as a west longitude.

OBLIQUITY **REAL(0, 90) <deg>**

The obliquity element provides the value of the angle between the plane of the equator and the orbital plane of a target body.

OBSERVATION_ID **CHARACTER(30)**

The observation_id element uniquely identifies a scientific observation within a data set. Note: For Galileo the observation_id is in the form NNTIOOOOOOMM#SSSXXXX. Where NN is the orbit number, T is the scan platform target body initial (if applicable), I is the instrument, oooooo is the orbit planning guide objective mnemonic, MM is the sequential OAPEL number for each value of NNTIOOOOOO, # is the multiple observation flag symbol (- or +), SSS is the PA set number and XXXX is the MIPL processing code.

OBSERVATION_INCLINATION **REAL(0, 360) <deg>**

The OBSERVATION_INCLINATION element provides the value of the angle of inclination of an observation with respect to specific planes of a non-standard coordinate system.

Note for IRAS:

The IRAS satellite has a natural but non-standard coordinate system defined by SOLAR_ELONGATION and OBSERVATION_INCLINATION. SOLAR_ELONGATION is the angle between the line of site of the satellite and the Sun. OBSERVATION_INCLINATION is the angle between the ecliptic plane and the plane containing the Earth, Sun, and the observation direction (that is, the azimuth angle about the Earth-Sun axis). The value is zero when IRAS looks at the ecliptic plane in the direction opposite to the motion of the Earth around the Sun. The value increases clockwise around the Earth-Sun axis when facing the Sun, and opposite from the direction of the motion of the satellite in its polar orbit about the Earth. OBSERVATION_INCLINATION is related to IRAS_CLOCK_ANGLE by the equation OBSERVATION_INCLINATION = 90 - IRAS_CLOCK_ANGLE.

For IRAS, SOLAR_ELONGATION and OBSERVATION_INCLINATION are related to geocentric ecliptic latitude (beta) and longitude (lamda) and the longitude of the Sun (lamda Sun) through the equations:

sin(OBSERVATION_INCLINATION) = sin(beta)/sin(SOLAR_ELONGATION) and cos(SOLAR_ELONGATION) = cos(beta)*cos(lamda - lamda Sun).

OBSERVATION_NAME **CHARACTER**

The observation_name element provides the identifier for an observation or sequence of commands.

OBSERVATION_TIME **TIME**

The observation_time element provides the date and time of the midpoint between the start and end times (spacecraft, ground-based, or system event) in UTC system format.

OBSERVATION_TYPE **CHARACTER(30)**

The observation_type element identifies the general type of an observation.

OBSERVER_FULL_NAME **[PDS_SBN]** **CHARACTER**

The OBSERVER_FULL_NAME element provides the name of the person(s) that calculated or collected relevant data in support of an archived project or campaign. In the case of catalogs of calculated quantities OBSERVER_FULL_-NAME identifies the person who performed the calculations. In the case of compilations from the literature OB-SERVER_FULL_NAME indicates the identity of the person responsible for collecting the source observations into a single dataset.

OBSTRUCTION_ID **IDENTIFIER**

The obstruction_id element identifies a boom or other obstruction blocking the view of an instrument during an observation. For example, the Galileo SSI is occasionally blocked by a boom.

OCCULTATION_PORT_STATE **CHARACTER(6)**

The occultation port state describes a small aperture located away from the normal viewing direction, which is either open, in which case light is directed toward the telescope mirror by a small grazing incidence mirror or closed in which case a mechanism is used to block the light path.

OCCULTATION_TYPE **[PDS_RINGS]** **DATA_SET <n/a>**

The occultation type element distinguishes between two types of occultation experiments, stellar and radio. Stellar occultations involve observing a star as a targeted ring or body passes in front, as seen from either a spacecraft or Earth-based observatory. Radio occultations typically involve observing the continuous-wave radio transmissions from a spacecraft as it passes behind the target as seen from a radio telescope on Earth.

OFFSET **CONTEXT DEPENDENT**

The offset element indicates a shift or displacement of a data value. See also: scaling_factor. Note: Expressed as an equation: true value = offset value + (scaling factor x stored value).

OFFSET_FLAG **[PDS_EN]** **CHARACTER(3)**

The offset_flag element indicates whether an offset was used to shift or displace a data value. Note: For Cassini, this indicates whether an Occultation Mode spectral cube used the commanded X_OFFSET and Z_OFFSET ('OFF') or used offsets calculated by the flight software from the non- Occultation Mode spectral cube ('ON').

OFFSET_GRATING_POSITION **INTEGER(0, 7)**

The NIMS instrument has only 17 detectors but takes data in as many as 408 wavelengths by moving a grating across 31 possible physical positions. The offset grating position is a physical position from which the logical positions of the various instrument modes are defined. Its normal value is 4, but it may be commanded between 0 and 7 should the instrument's wavelength calibration change. See the NIMS instrument paper (R. W. Carlson et al, 'Near-Infrared Mapping Spectrometer Experiment on Galileo', Space Science Reviews 60, 457-502, 1992) for details.

OFFSET_MODE_ID **CHARACTER(20)**

The offset_mode_id identifies the analog value that is subtracted from the video signal prior to the analog/digital converters.

OFFSET_NUMBER **[PDS_GEO_VL]** **REAL(0, -2147483648)**

The OFFSET_NUMBER indicates the offset value used in the analog to digital conversion. The OFFSET_NUMBER times a constant is the voltage value added to the measured voltage signal before digitization.

ON_CHIP_MOSAIC_FLAG **[PDS_IMG_GLL]** **CHARACTER(1)**

Galileo Solid State Imaging-specific. The on_chip_mosaic_flag element indicates whether the image is part of a multiple exposure/single read-out mode, or ON_CHIP_MOSAIC. For example, four images of the target-body are acquired by slewing the camera to image the target at each of the four corners of the Charged Coupled Device (CCD) array. The CCD read-out is suppressed until all four exposures are completed, thus resulting in a 2X2 mosaic. An on chip mosaic is not limited to a 2x2 mosaic, it can be an nxm mosaic.

ON_LINE_IDENTIFICATION **[PDS_EN]** **CHARACTER(255)**

The on_line_identification element is a unique identifier for product resources which are on-line. It may be a URL to a home page, an e-mail address, an ftp site or a jukebox. An on_line_identification element may be associated with a data set, data set collection, mission, instrument, host, target or volume.

ON_LINE_NAME **[PDS_EN]** **CHARACTER(60)**

The on_line_name element is a unique name which corresponds to a given on_line_identification element. It is used to create HTML links to appropriate home pages.

OPERATING_SYSTEM_ID **CHARACTER(20)**

The operating_system_id element identifies the computer operating system and version of the operating system on which data were manipulated, (e.g., VMS 4.6,UNIX SYSTEM 5, DOS 4.0, MAC).

OPERATIONAL_CONSID_DESC **CHARACTER**

The operational_consid_desc element provides a brief description of operational characteristics which affect the measurements made by an instrument.

OPERATIONS_CONTACT_PDS_USER_ID **CHARACTER(60)**

The operations_contact_pds_user_id element provides the pds_user_id of the operations contact at a node.

OPTICS_DESC **CHARACTER**

The optics_desc element provides a textual description of the physical and operational characteristics of the optics of an instrument.

OPTICS_TEMPERATURE **[PDS_EN]** **REAL(>=-999) <degC>**

The optics_temperature element provides the temperature, in degrees celsius, of the optics of an instrument. Note: For Cassini, this temperature is specifically that of the front optics.

OPTIONAL_ELEMENT_SET **[PDS_EN]** **CHARACTER(30)**

The optional_element_set element identifies the data elements that are optional members of a defined object. Note: In the PDS, the data elements listed in this set must be approved for inclusion in the data dictionary.

OPTIONAL_OBJECT_SET **[PDS_EN]** **IDENTIFIER**

The optional_object_set element identifies the ODL objects that are optional members of a defined object.

ORBIT_DIRECTION **CHARACTER(30)**

The orbit_direction element provides the direction of movement along the orbit about the primary as seen from the north pole of the 'invariable plane of the solar system', which is the plane passing through the center of mass of the solar system and perpendicular to the angular momentum vect or of the solar system orbit motion. PROGRADE for positive rotation according to the right-hand rule, RETROGRADE for ne gative rotation. See also: orbital_inclination

ORBIT_NAME **ALPHANUMERIC**

The ORBIT_NAME element identifies the orbital revolution of the spacecraft around a target body in the manner specified by the mission that archived the data set. Use of the ORBIT_NUMBER element is preferred if the mission orbit naming convention is a continuously increasing number.

ORBIT_NUMBER **REAL(>=0)**

The orbit_number element identifies the number of the orbital revolution of the spacecraft around a target body. Note: In PDS Magellan altimetry and radiometry labels, the orbit_number data element refers to the Magellan orbit number corresponding to the following files: ephemeris, altimetry, and radiometry.

ORBIT_START_NUMBER **[JPL_AMMOS_SPECIFIC]** **INTEGER**

The orbit_start_number is an alias for start_orbit_number used exclusively by the AMMOS-MGN KEY_TIMES data file.

ORBIT_START_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

The orbit_start_time element is an alias for start_time used exclusively by AMMOS-MGN ephemeris files.

ORBIT_STOP_NUMBER **[JPL_AMMOS_SPECIFIC]** **INTEGER**

The orbit_stop_number is an alias for stop_orbit_number used exclusively by the AMMOS-MGN KEY_TIMES data file.

ORBIT_STOP_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

The orbit_stop_time element is an alias for stop_time used exclusively by AMMOS-MGN ephemeris files.

ORBITAL_ECCENTRICITY **REAL(0, 1)**

The orbital_eccentricity provides a measure of the non-circularity of an orbit. Circular orbits have eccentricities of 0, elliptical orbits have eccentricities between 0 and 1, parabolic trajectories have eccentricities of 1, and hyperbolic trajectories have eccentricities greater than 1.

ORBITAL_INCLINATION **REAL(-90, 180) <deg>**

The orbital_inclination element provides the value of the angle between the orbital plane of a target body and the ecliptic. The body's orbit direction is prograde if 0 ¡ i 90 degrees, where i is the value of orbital inclination. The orbit direction is retrograde if 90 ¡ i ¡ 180 degrees.

ORBITAL_SEMIMAJOR_AXIS **REAL <km>**

The orbital_semimajor_axis element provides the value of the semimajor axis of the orbit of a target body. The semimajor axis is one_half of the maximum dimension of an orbit.

ORDER_DATE **[PDS_EN]** **DATE**

The order_date element provides the date of when an order was placed for a data set.

ORDER_NUMBER **[PDS_EN]** **INTEGER(>=0)**

The order_number element is a unique system_generated number which is used to identify an order.

ORDER_STATUS **[PDS_EN]** **CHARACTER(10)**

The order_status element provides the status associated with orders and order items accepted by the PDS order function.

ORDER_STATUS_DATE **[PDS_EN]** **DATE**

The order_status_date element provides the effective date of an order status change.

ORDER_STATUS_DESC **[PDS_EN]** **CHARACTER**

The order_status_desc element details the status of an order.

ORDER_STATUS_ID **[PDS_EN]** **CHARACTER(20)**

The order_status_id element identifies the status of an order.

ORDER_STATUS_TIME **[PDS_EN]** **TIME**

The order_status_time element gives the date (and time, where applicable) as of which the status of an order was changed. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

ORDER_TYPE **[PDS_EN]** **CHARACTER(2)**

The order_type element identifies the type of order placed by a user of the PDS. Example values: PR=product orders, CD=CD-ROM fast track orders.

ORIGIN_OFFSET_VECTOR **REAL <m>**

The ORIGIN_OFFSET_VECTOR element specifies the offset from the reference coordinate system's origin to the origin of the coordinate system being defined by the enclosing COORDINATE_SYSTEM_STATE group. In other words, it is the location of the current system's origin as measured in the reference system.

ORIGIN_ROTATION_QUATERNION **[PDS_MER_OPS]** **REAL**

The ORIGIN_ROTATION_QUATERNION element provides an array of four values that specifies the rotation of the coordinate system being defined by the enclosing COORDINATE_SYSTEM_STATE group, relative to the reference system. Mathematically this can be expressed as follows: Given a vector expressed in the current frame, multiplication by this quaternion will give the same vector as expressed in the reference frame. Quaternions are expressed as a set of four numbers in the order (s, v1, v2, v3), where s = cos(theta/2) and v(n) = sin(theta/2)*a(n). Theta is the angle of rotation and a is the (x,y,z) vector around which the rotation occurs.

ORIGINAL_PRODUCT_ID **CHARACTER(76)**

The original_product_id element provides the temporary product identifier that was assigned to a product during active flight operations which was eventually replaced by a permanent id (see product_id).

OUTPUT_FLAG **[PDS_EN]** **CHARACTER(1)**

The output_flag element indicates whether standard values shall be output for hardcopy display.

OVERWRITTEN_CHANNEL_FLAG **[PDS_EN]** **CHARACTER(3)**

The overwritten_channel_flag element indicates whether spectral data was sacrificed in leiu of more precise timing information. Note: For Cassini, if the flag is set to 'ON', the observation time values are collected for each pixel and stored in the backplanes of the spectral cube. The spectral data in channels 347-352 will be set to the CORE_NULL value (-8192).

PACKET_CREATION_SCLK **[PDS_EN]** **CHARACTER(30)**

The PACKET_CREATION_SCLK specifies the value of the spacecraft clock at the time that data was packetized on board a spacecraft. This value is not always co-incident with the data acquisition time.

Note: for MPF and M98, this value was stored in the primary telemetry packet header of the first packet of a data file, and was the reference used for requesting the data packets from the TDS (Telemetry Delivery System).

PACKET_MAP_MASK **[PDS_MER_OPS]** **NON_DECIMAL**

The PACKET_MAP_MASK element is a binary or hexadecimal number identifying which of a data file's expected packets were actually received. The digits correspond positionally with the relative packet numbers of the data file. The bits are to be read left to right; i.e., the first (left-most) digit of the number corresponds to the first packet of the data file. A bit value of 1 indicates that the packet was received; a value of 0 indicates that it was not received. The number is stored in the PDS radix notation of ¡radix>#¡value>#.

PACKING_FLAG **[PDS_EN]** **CHARACTER(3)**

The packing_flag element indicates whether multiple spectral cubes were packed and stored as a single spectral cube product, due to their small size and lack of unique timing information.

PARALLEL_CLOCK_VOLTAGE_INDEX [PDS_EN] INTEGER(0, 15)

The parallel_clock_voltage_index element provides the commanded parallel clock voltage value which controls clocking frequency.

PARAMETER_DESC CHARACTER

The parameter_desc element defines the input or output parameter identified by the parameter_name element, including units, derivation (where applicable), and associated parameters.

PARAMETER_NAME [PDS_EN] CHARACTER(30)

The parameter_name element identifies a parameter input to or output from a program or algorithm.

PARAMETER_SEQUENCE_NUMBER [PDS_EN] INTEGER(>=0)

The parameter_sequence_number element provides an ordering sequence number for parameters used in user views and associated queries.

PARAMETER_SET_ID [PDS_EN] CHARACTER

The parameter_set_id element identifies the parameter set which was used to produce the data file. Note: For Cassini, typically this will be the COMMAND_SEQUENCE_NUMBER with a counter/character appended to the end. Instrument operations (IO) does not insure or check that this convention is followed.

PARAMETER_TYPE [PDS_EN] CHARACTER(1)

The parameter_type element provides the type of parameter (input or output) used in user views and associated queries.

PARENT_TEMPLATE [PDS_EN] CHARACTER(12)

The parent_template element contains the name of the template which provides the loader software with a keyword value which occurred elsewhere in the same or a different template. For example: the value for the data_set_id keyword is required in several templates to map the template information to the proper dataset, yet to avoid redundant data supplier effort it appears only on the DATASET template. For these templates, the parenttmplt provides the source of the data_set_id value, i.e. the DATASET template.

PARTICLE_SPECIES_NAME CHARACTER(20)

The particle_species_name element provides the name of a particle detected by a given instrument. Example values: ELECTRON, ION, PROTON, HYDROGEN, HELIUM, OXYGEN, etc. For ions, the specific atomic number designation may be used (e.g., Z=1, Z=2, Z=8, etc.).

PASS_NUMBER [PDS_PPI] REAL(>=0)

The pass_number data element indicates the number of days since initial spacecraft signal acquisition.

PATH_NAME CHARACTER(223)

The path_name data element identifies the full directory path – excluding the file name – used to locate a file on a storage medium or online system. To allow the indication of the full path and file name within a descriptive label, this data element is meant to be used in conjunction with the file_name data element. Note: In the PDS, the path_name data element is expressed according to the UNIX convention, using forward slashes to delimit directories. While the leading slash denoting the root directory is omitted, the final slash is used.

PDS_ADDRESS_BOOK_FLAG **CHARACTER(1)**

The pds_address_book_flag data element indicates whether or not a registered PDS user will have an entry in the PDS telephone directory.

PDS_AFFILIATION **CHARACTER**

The pds_affiliation data element describes the type of relationship an individual has with a PDS node. (e.g., staff, advisory group, etc..)

PDS_USER_ID **[PDS_EN]** **CHARACTER**

The pds_user_id element provides a unique identifier for each individual who is allowed access to the PDS. The system manager at the Central Node assigns this identifier at the time of user registration.

PDS_VERSION_ID **[PDS_EN]** **IDENTIFIER**

The PDS_version_id data element represents the version number of the PDS standards documents that is valid when a data product label is created. Values for the PDS_version_id are formed by appending the integer for the latest version number to the letters 'PDS'. Examples: PDS3, PDS4.

PEER_REVIEW_DATA_SET_STATUS **[PDS_EN]** **IDENTIFIER**

The peer_review_data_set_status element provides status for data sets which have been peer reviewed.

PEER_REVIEW_ID **[PDS_EN]** **CHARACTER(40)**

The peer_review_id element provides a unique identifier assigned by the bulk loading software to each peer review information set saved in the PDS data base.

PEER_REVIEW_RESULTS_DESC **[PDS_EN]** **CHARACTER**

The peer_review_results element provides the textual description of the results of a peer review.

PEER_REVIEW_ROLE **[PDS_EN]** **IDENTIFIER**

The peer_review_role element provides the role of a member of a peer review committee.

PEER_REVIEW_START_DATE **[PDS_EN]** **DATE**

The peer_review_start_date element provides the beginning date for a peer review in YYYYMMDD format.

PEER_REVIEW_STOP_DATE **[PDS_EN]** **DATE**

The peer_review_stop_date element provides the final date for a peer review in YYYYMMDD format.

PERIAPSIS_ALTITUDE **[PDS_EN]** **REAL(>=0) <km>**

The PERIAPSIS_ALTITUDE element provides the distance between the spacecraft and the target body surface at periapsis on a particular orbit.

Note: For MARS EXPRESS, the altitude is measured from the surface of the target body, which is defined by an ellipsoid in the NAIF planetary constants kernel. (Contact the NAIF NODE for more information.)

PERIAPSIS_ARGUMENT_ANGLE **REAL(0, 360) <deg>**

The periapsis_argument_angle element provides the value of the periapsis argument angle, which is defined as the angle measured from the ascending node of the orbit of a target body (relative to the reference plane) to the point in the orbit at which the target body obtains its closest approach to the primary body. See also: ascending_node_longitude.

PERIAPSIS_LATITUDE **REAL(-90, 90) <deg>**

The periapsis_latitude element specifies the latiitude on the planet's surface above which a spacecraft passes through periapsis on a particular orbit.

PERIAPSIS_LONGITUDE **REAL(0, 360) <deg>**

The periapsis_longitude element specifies the longitude on the planet's surface above which a spacecraft passes through periapsis on a particular orbit.

PERIAPSIS_TIME **[PDS_EN]** **TIME <n/a>**

The PERIAPSIS_TIME element is the time, in UTC format 'YYYY-MM-DDThh:mm:ss[.fff]Z', when the spacecraft passes through periapsis on a particular orbit. Periapsis is the closest approach point of the spacecraft to the target body surface in its orbit around the target body.

PERICENTER_PRECESSION_RATE **[PDS_RINGS]** **REAL <deg/day>**

The pericenter precession rate element defines the rate at which the pericenter of an eccentric orbit rotates about the central body's pole. See also RING_PERICENTER_LONGITUDE.

PERMISSION_FLAG **[PDS_EN]** **CHARACTER(1)**

The permission_flag element indicates whether or not a query is orderable.

PERSON_INSTITUTION_NAME **CHARACTER(60)**

The person_institution_name element identifies a university, research center, NASA center or other institution associated with an individual involved with the PDS.

PHASE_ANGLE **REAL(0, 180) <deg>**

The phase_angle element provides a measure of the relationship between the instrument viewing position and incident illumination (such as solar light). Phase_angle is measured at the target; it is the angle between a vector to the illumination source and a vector to the instrument. If not specfied, the target is assumed to be at the center of the instrument field of view. If illumination is from behind the instrument, phase_ angle will be small.

PHASE_INFORMATION_FLAG **[PDS_RINGS]** **CHARACTER(1)**

The phase_information_flag element is a yes-or-no flag that indicates whether a ring occultation data set includes information about the phase shift of a signal as it passes through the ring plane. A value of 'Y' indicates that the data is intrinsically complex. In general, this element equals 'Y' for radio occultation data and 'N' for stellar occultation data.

PHOTOMETRIC_CORRECTION_TYPE **CHARACTER(12)**

The PHOTOMETRIC_CORRECTION_TYPE element indicates the type of photometric correction applied to the data. This is relevant only for calibrated data cubes and derived products, as a final step in the calibration process (i.e., when CORE_NAME = RADIANCE or RADIANCE_FACTOR). Possible values include NONE, LAMBERT, MINNAERT; parameters should be provided as NOTE.

PI_PDS_USER_ID **CHARACTER(60)**

The pi_pds_user_id element provides the pds_user_id of the principal investigator associated with an instrument.

PIXEL_ANGULAR_SCALE **REAL(>=0) <arcsec/pixel>**

The two-valued PIXEL_ANGULAR_SCALE element (x,y) provides the angular scale of an image in arcseconds per pixel. The x value is here defined as the angular scale in the LINE_SAMPLE direction, and the y value is defined as the angular scale in the LINE direction. For detectors with square pixels, these two values will be the same. This keyword is typically used for images of the sky and the calibration images that apply to them.

PIXEL_ASPECT_RATIO **REAL(>=0)**

The PIXEL_ASPECT_RATIO element provides the ratio of the height (LINE_RESOLUTION) to the width (SAMPLE_RESOLUTION) of the projection of the pixel onto the surface of the target.

PIXEL_AVERAGING_HEIGHT **INTEGER(>=1)**

The pixel_averaging_height element provides the vertical dimension, in pixels, of the area over which pixels were averaged prior to image compression.

PIXEL_AVERAGING_WIDTH **INTEGER(>=1)**

The pixel_averaging_width element provides the horizontal dimension, in pixels, of the area over which pixels were averaged prior to image compression.

PIXEL_DOWNSAMPLE_OPTION **[PDS_MER_OPS]** **CHARACTER**

The PIXEL_DOWNSAMPLE_OPTION element specifies whether to downsample the image(s), and if so, which pixel resolution downsample method to use. Note for MER, if downsampling is specified, and two cameras are selected, both images will be downsampled. Note also that the camera hardware can downsample entire rows 4-to-1, but software must be used to do additional row-wise downsampling and any column downsampling. SW_MN - Downsampling done in software by calculation of the mean. HWSW - Use hardware binning by changing the commanded downsampling and subframe arguments to be consistent with hardware binning. Any subsequent downsampling is done in software by calculation of the mean. FRC_HW - Use hardware binning if downsampling (by mean calculation) and subframe arguments are consistent. SW_RJT -Software pixel averaging with outlier rejection. the pixel whos value lies farthest away from the mean of the sample is rejected. SW_MED - Software downsampling done by calculation of the median rather than the mean.

PIXEL_GEOMETRY_CORRECTION_FLAG **CHARACTER(1)**

The PIXEL_GEOMETRY_CORRECTION_FLAG element defines a flag used to indicate whether a correction has already been applied to the present data to account for the fact that the imaging pixels were not square. This flag is 'Y' if this correction has been applied, 'N' if it has not.

PIXEL_SUBSAMPLING_FLAG **[PDS_EN]** **CHARACTER(1) <n/a>**

The PIXEL_SUBSAMPLING_FLAG element indicates whether the product is the result of subsampling of the data. Subsampling is the process of measuring the brightness or intensity of a continuous image of discrete points, at an arbitrary interval, producing a new array of values.

PLANET_DAY_NUMBER **REAL <d>**

The planet_day_number element indicates the number of sidereal days (rotation of 360 degrees) elapsed since a reference day (e.g., the day on which a landing vehicle set down). Days are measured in rotations of the planet in question from the reference day (which is day zero).

Note: For MPF, the planet_day_number was measured from 1 rather than 0 as the first day of surface operations. Negative numbers referred to pre-surface (cruise) images.

PLANET_READING_SYSTEM_TEMP **[PDS_GEO_MGN]** **REAL <K>**

The planet_reading_system_temp element provides the value of the raw radiometer reading, when switched into the SAR antenna, converted to equivalent noise temperature.

PLANETARY_OCCULTATION_FLAG **[PDS_RINGS]** **CHARACTER(1)**

The planetary_occultation_flag element is a yes-or-no flag that indicates whether a ring occultation track also intersects the planet.

PLATFORM **IDENTIFIER**

The platform element describes the available platforms which the software supports.

PLATFORM_OR_MOUNTING_DESC **CHARACTER**

The platform_or_mounting_desc element describes the spacecraft platform or laboratory mounting frame on which an instrument is mounted.

PLATFORM_OR_MOUNTING_NAME **CHARACTER(60)**

The platform_or_mounting_name element identifies the spacecraft platform or the laboratory mounting frame on which an instrument is mounted. Example values: SCAN_PLATFORM, PROBE, MAGNETOMETER_BOOM.

POLE_DECLINATION **REAL(0, 90) <deg>**

The pole_declination element provides the value of the declination of the polar axis of a target body. See declination.

POLE_RIGHT_ASCENSION **REAL(0, 360) <deg>**

The pole_right_ascension element provides the value of the right_ascension of the polar axis of a target body. See right_ascension.

POSITION_TIME **TIME**

The position_time element provides the time when the location information of an event is derived, in the UTC system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

POSITIVE_AZIMUTH_DIRECTION **[PDS_MER_OPS]** **CHARACTER**

The POSITIVE_AZIMUTH_DIRECTION element provides the direction in which azimuth is measured in positive degrees for an observer on the surface of a body. The azimuth is measured with respect to the elevational reference plane. A value of CLOCKWISE indicates that azimuth increases positively clockwise, while a value of COUNTER-CLOCKWISE indicates that azimuth increases positively counter-clockwise.

POSITIVE_ELEVATION_DIRECTION **CHARACTER(10)**

The positive_elevation_direction element provides the direction in which elevation is measured in positive degrees for an observer on the surface of a body. The elevation is measured with respect to the azimuthal reference plane. A value of UP or ZENITH indicates that elevation is measured positively upwards, i.e., the zenith point would be at +90 degrees and the nadir point at -90 degrees. DOWN or NADIR indicates that the elevation is measured positively downwards; the zenith point would be at -90 degrees and the nadir point at +90 degrees.

POSITIVE_LONGITUDE_DIRECTION **IDENTIFIER**

The positive_longitude_direction element identifies the direction of longitude (e.g. EAST, WEST) for a planet. The IAU definition for direction of positive longitude is adopted. Typically, for planets with prograde rotations, positive longitude direction is to the WEST. For planets with retrograde rotations, positive longitude direction is to the EAST. Note: The positive_longitude_direction keyword should be used for planetographic systems, but not for planetocentric.

POWER_STATE_FLAG **[PDS_EN]** **CHARACTER(3)**

The power_state_flag element indicates whether a wavelength, or frequency channel is turned on or off. Note: For Cassini, this is a two-valued array describing the power state of the infrared and visible channels.

PREFERENCE_ID **INTEGER(>=0)**

The preference_id element indicates a user's degree of preference for one of a set of alternatives (for example, preference for a particular electronic mail system such as Internet). Values range from 1 to 4, with 1 indicating the highest preference.

PREPARE_CYCLE_INDEX **[PDS_EN]** **INTEGER(0, 15)**

The prepare_cycle_index element provides the element number within the Prepare Cycle table selected for this image. Prepare cycles include activities carried on within an instrument between sequential data acquisition and CCD readout operations. This includes such things as light flooding and erasure of the CCD and filter wheel stepping. Note: for Cassini, the Prepare Cycle table provides a translation of these values into cycle durations in seconds.

PRESSURE **[PDS_MER_OPS]** **CHARACTER**

The PRESSURE element identifies the type of pressure used in instrument calibrations.

PRIMARY_BODY_NAME **CHARACTER(30)**

The primary_body_name element identifies the primary body with which a given target body is associated as a secondary body.

PRIMARY_KEY **[PDS_EN]** **CHARACTER(40)**

In a TABLE object, the PRIMARY_KEY ELEMENT indicates the name(s) of one or more columns in the table that may be used to uniquely identify each row in the table.

PROCESS_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

Alias within AMMOS for product_creation_time. Note: This element is retained for use by Magellan AMMOS data products only. New products should use product_creation_time.

PROCESS_VERSION_ID **CHARACTER(20)**

The process_version_id element identifies the version (e.g., the method of processing) of a mosaic.

PROCESSING_CONTROL_PARM_NAME **CHARACTER(30)**

The processing_control_parm_name element identifies a parameter which allows a user to tailor a program or an algorithm to specific needs, such as outputting planetary surface coordinates in planetocentric or planetographic coordinates, specifying the units of the parameters to be plotted or specifying the scale of a map to be output.

PROCESSING_HISTORY_TEXT **CHARACTER**

The processing_history_text element provides an entry for each processing step and program used in generating a particular data file.

PROCESSING_LEVEL_DESC **CHARACTER**

The processing_level_desc element provides the CODMAC standard definition corresponding to a particular processing_level_id value. Note: For a fuller definition of CODMAC processing levels, please refer to the PDS Standards Reference.

PROCESSING_LEVEL_ID **IDENTIFIER**

The processing_level_id element identifies the processing level of a set of data according to the eight_level CODMAC standard.

PROCESSING_START_TIME **TIME**

The processing_start_time element gives the beginning date (and time, where appropriate) of processing for a particular set of data. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

PROCESSING_STOP_TIME **TIME**

The processing_stop_time element gives the ending date (and time, where appropriate) of processing for a particular set of data. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

PRODUCER_FULL_NAME **CHARACTER**

The producer_full_name element provides the full_name of the individual mainly responsible for the production of a data set. See also: full_name. Note: This individual does not have to be registered with the PDS.

PRODUCER_ID **CHARACTER(20)**

The producer_id element provides a short name or acronym for the producer or producing team/group of a dataset.

PRODUCER_INSTITUTION_NAME **CHARACTER(60)**

The producer_institution_name element identifies a university, research center, NASA center or other institution associated with the production of a data set. This would generally be an institution associated with the element producer_full_name.

PRODUCT_CREATION_TIME **TIME**

The product_creation_time element defines the UTC system format time when a product was created. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]

PRODUCT_DATA_SET_ID **CHARACTER(40)**

The product_data_set_id element provides the data_set_id of a cataloged data set that resulted from the application of the processing software to the source data sets. The data set name associated with the product data set is provided by the data_set_name element.

PRODUCT_ID **CHARACTER(40)**

The product_id data element represents a permanent, unique identifier assigned to a data product by its producer. See also: source_product_id. Note: In the PDS, the value assigned to product_id must be unique within its data set. Additional note: The product_id can describe the lowest-level data object that has a PDS label.

PRODUCT_NAME **[PDS_SBN]** **CHARACTER(80)**

The PRODUCT_NAME element provides the full name of a product. It is related to product_id and provides a brief, descriptive title for a particular data product (i.e., a single file).

PRODUCT_RELEASE_DATE **DATE**

The product_release_date data element identifies the date on which a particular data product is released from one system or process to another, according to system- or application-specific criteria. Formation rule: YYYY-MM-DD

PRODUCT_TYPE **IDENTIFIER**

The PRODUCT_TYPE data element identifies the type or category of a product within a data set. Examples: EDR, DOCUMENT, CALIBRATION_IMAGE, SPICE_SP_KERNEL, TRAJECTORY.

PRODUCT_VERSION_ID **CHARACTER(12)**

The product_version_id element identifies the version of an individual product within a data set. Example: 1.0, 2A, 1.2.3C. Note: This is not the same as the data set version that is an element of the data_set_id value. Product_version_id is intended for use within AMMOS to identify separate iterations of a given product, which will also have a unique file_name.

PRODUCT_VERSION_TYPE **CHARACTER(20)**

The product_version_type element identifies the version of an individual data product. It can be applied to any type of data that might appear in several incarnations, including ephemeris files, sequence files, or software. Example values: VERSION 1, PREDICT, ACTUAL, DRAFT, PRELIMINARY, FINAL, REVISION A.

PROGRAMMING_LANGUAGE_NAME **CHARACTER(20)**

The programming_language_name element identifies the major programming language in which a given data processing program or algorithm is written.

PROJECTED_STAR_DIAMETER **[PDS_RINGS]** **REAL(>=0) <km>**

The projected_star_diameter element indicates the projected linear diameter of a star at the distance of the given planet, during a stellar occultation experiment.

PROJECTION_AZIMUTH [PDS_MER_OPS] REAL <deg>

The PROJECTION_AZIMUTH element Provides the azimuth, in degrees, of the horizontal of projection for the PERSPECTIVE projection (loosely, where the camera is pointing.)

PROJECTION_ELEVATION [PDS_MER_OPS] REAL <deg>

The PROJECTION_ELEVATION element specifies the elevation, in degrees, of the vertical of projection (loosely, where the camera is pointing). For PERSPECTIVE, applies to the single output camera model; for CYLIND-PERSPECTIVE applies to each column's output camera model.

PROJECTION_ELEVATION_LINE [PDS_MER_OPS] REAL <pixel>

The PROJECTION_ELEVATION_LINE element specifies the image line which corresponds to PROJECTION_ELEVATION for each column of the CYLIND-PERSPECTIVE projection.

PROJECTION_LATITUDE_TYPE CHARACTER(30)

For some map projections, identifies the type of latitude that is sampled in equal increments by successive image lines. These projections are sometimes known informally as 'database projections' because their simplicity and global applicability for storing data for an entire planet are of greater interest than their formal cartographic properties. The EQUIRECTANGULAR and SIMPLE CYLINDRICAL projections can exist with projection latitude types of PLANETOGRAPHIC or PLANETOCENTRIC. The SINUSOIDAL projection can exist with these latitude types and also AUTHALIC latitude (which makes the projection strictly equal-area for an ellipsoid but does not preserve the equal-distance properties of the projection for the sphere) or RECTIFYING latitude (which, with the appropriate modification of the scaling of meridians, results in a map with all the cartographic properties of the sinusoidal projection of the sphere: equal areas, equal distances on all parallels, and equal distances on the central meridian). Projections other than those just discussed are uniquely defined by their cartographic properties (e.g., there is only one conformal cylindrical projection, the MERCATOR projection) and do not require this keyword. See also KEYWORD_LATITUDE_TYPE.

PROJECTION_ORIGIN_VECTOR [PDS_MER_OPS] REAL <m>

The PROJECTION_ORIGIN_VECTOR element provides the location of origin of the projection. This is an array with xyz points from which all the azimuth/elevation rays emanate.

PROTOCOL_TYPE [PDS_EN] CHARACTER(40)

The protocol_type element identifies the protocol type for the on_line_identification element. Example value: URL, FTP, E-MAIL.

PUBLICATION_DATE DATE

The publication_date element provides the date when a published item, such as a document or a compact disc, was issued. Formation rule: YYYY-MM-DD

QUATERNION REAL(-1, 1)

The QUATERNION element specifies a quaternion, which is a four-component representation of a rotation matrix. This particular definition is focused on the PDS use of quaternions; one should refer to other sources for a more complete discourse on quaternion math.

A quaternion may be used to specify the rotation of one Cartesian reference frame–sometimes referred to as the base frame or the 'From' frame–into coincidence with a second Cartesian reference frame–sometimes referred to as the target reference frame or the 'To' frame. Unlike an Euler rotation where three sequential rotations about primary axes are used, a quaternion rotation is a single action, specified by a Cartesian vector used as the positive axis of the rotation (right hand rule) and the magnitude (an angle) of rotation about that axis.

The quaternion may be thought of as defining the instantaneous orientation–sometimes called 'pointing'–of a structure such as an instrument, antenna, solar array or spacecraft bus, given relative to a specified reference frame (the base frame), at an epoch of interest.

Perhaps of more use is the concept that a quaternion may be used to rotate an arbitrary Cartesian 3-vector defined in one reference frame (e.g. an instrument's reference frame) to an equivalent vector defined in another reference frame (e.g. the frame tied to a spacecraft or the J2000 inertial reference frame).

A quaternion has four components. One of the components is a scalar, a function of the angle of rotation (cosine of half the rotation angle), while the remaining three components are used to specify a vector, given in the base reference frame, about which the rotation will be made. In the PDS context a quaternion has a magnitude of one, and so may be treated as a unit quaternion.

In many cases a time tag (epoch) must be associated with the quaternion because the orientation varies over time. A time tag is not needed if the 'To' and 'From' frames have a fixed offset.

The QUATERNION_DESC element is always to be paired with the QUATERNION element, and will contain a complete description of the formation and rotational sense of the quaternion specified with the QUATERNION keyword, and the structure (organization of the four components) of the quaternion.

In the lingo of the NASA 'SPICE' ancillary information system a rotation matrix is synonymous with a C-matrix–that which may be obtained from a C-kernel. The SPICE Toolkit provides an assortment of routines that deal with quaternions. The SPICE system also provides information about specification of reference frames and time tags suitable for use with quaternions in the SPICE context. The NAIF Node of the PDS can provide additional documentation on quaternions in a spacecraft ancillary data context ('Rotations Required Reading' and 'SPICE Quaternion White Paper').

QUATERNION_DESC **CHARACTER**

The QUATERNION_DESC element is a pointer to an accompanying quaternion description file used to describe the formation rules for the quaternion and the specific rotation accomplished by application of that quaternion. This keyword is required to be used in conjunction with the QUATERNION keyword. The file to which this keyword points is to be included in the /doc subdirectory of an archive product. This particular definition is focused on the PDS use of quaternions.

In typical space science usage (and especially within the SPICE context) a quaternion is used to rotate a Cartesian 3-component position vector given in one reference frame (the 'From' frame) to a second frame (the 'To' frame).

The quaternion description file must clearly provide three pieces of information. These items are as follows.

1) Define the structure or organization of the quaternion: specify which component provides the angle of rotation and which three components specify the vector about which the rotation is to occur. It is best if this description includes the actual equations used to form a rotation matrix from the quaternion elements being specified. As an example, in the SPICE context, the equations for forming a rotation matrix (a C-matrix) from the four quaternion elements are:

+- -+ — 2 2 — — 1 - 2 (q2 + q3) 2 (q1 q2 - q0 q3) 2 (q1 q3 + q0 q2) — — — — — — 2 2 — CMAT = — 2 (q1 q2 + q0 q3) 1 - 2 (q1 + q3) 2 (q2 q3 - q0 q1) — — — — — — 2 2 — — 2 (q1 q3 - q0 q2) 2 (q2 q3 + q0 q1) 1 - 2 (q1 + q2) — — — +- -+

2) Provide a clear, unambiguous identification (and mathematical specification, if not readily available elsewhere) of the base frame (the 'From' frame) in which an input vector is given;

3) Provide a clear, unambiguous identification (and mathematical specification, if not readily available elsewhere) of the target frame (the 'To' frame) into which the input vector will be rotated by direct application of the quaternion.

It is strongly suggested that equations showing how to apply the rotation matrix derived from the quaternion be provided. As an example, in the SPICE system:

A C-matrix is a 3x3 matrix that transforms Cartesian coordinates referenced to a "base frame" to coordinates in a target frame, which is often a frame fixed to an instrument, antenna, or other spacecraft structure for which knowing the orientation ('the pointing') is important.

The C-matrix transforms coordinates as follows: if a vector v has coordinates (x, y, z) in some base reference frame (like J2000), then v has coordinates (x', y', z') in instrument-fixed coordinates, where

[ ] [x] [x'] — C-matrix — — y — = — y'— [ ] [z] [z']

With regards to the quaternion structure issue, unlike for some geometric quantities there is no standard for how to form a quaternion. Two formation rules are in common use (see below), and it is strongly suggested that users pick one of these. But whatever is the rule being used in the particular instance must be carefully noted in the QUATERNION_-DESC file.

In the descriptions below, one system defines the four components with indices of 0 through 3. The other system uses indices 1 through 4. The use of one or the other numbering system is not important, but the two schemes are shown here to be consistent with other documentation or SPICE code that the user may encounter.

The first system defines components zero through three, with the 0th component as the scalar, and the 1st, 2nd and 3rd the vector components, where q0 = cos(a/2), q1 =-sin(a/2)*u1, q2 = -sin(a/2)*u2, q3 = -sin(a/2)*u3, where a is the angle (radians) representing the magnitude of the rotation, and u1, u2, u3 are components of the unit vector representing the axis of rotation. The order of the components in the QUATERNION keyword would be (q0, q1, q2, q3) under this system. This is the structure employed in SPICE C-Kernels and Toolkit subroutines, and is therefore the PDS recommended structure. The SPICE Toolkit provides an assortment of routines that deal with quaternions.

The second system defines components one through four, with the fourth component as the scalar, and the 1st, 2nd and 3rd as the vector components, where q1 = sin(a/2)*u1, q2 = sin(a/2)*u2, q3 = sin(a/2)*u3, q4 = cos(a/2), where a is the angle (radians) representing the magnitude of the rotation, and u1, u2, u3 are components of the vector representing the axis of rotation. The order of the components in the QUATERNION keyword will be (q1, q2, q3, q4) under this system. This is the structure often found in spacecraft telemetry.

The equations for forming a rotation matrix from the four quaternion elements as defined in this alternate scheme are:

+- -+ — 2 2 — — 1 - 2 (q2 + q3) 2 (q1 q2 + q4 q3) 2 (q1 q3 - q4 q2) — — — — — — 2 2 — ROT = — 2 (q1 q2 - q4 q3) 1 - 2 (q1 + q3) 2 (q2 q3 + q4 q1) — — — — — — 2 2 — — 2 (q1 q3 + q4 q2) 2 (q2 q3 - q4 q1) 1 - 2 (q1 + q2) — — — +- -+

The rotation matrix transforms coordinates as follows: if a vector v has coordinates (x, y, z) in some base reference frame (like J2000), then v has coordinates (x', y', z') in instrument-fixed coordinates, where

[ ] [x] [x'] — ROT — — y — = — y'— [ ] [z] [z']

(With ROT defined as shown above, this equation transforming a vector in the base frame to a vector in the target frame is the same as shown earlier for the SPICE-style quaternions. The name CMAT has been replaced with the name ROT to help emphasize that this second system is NOT what is used within SPICE.)

QUATERNION_MEASUREMENT_METHOD [PDS_MER_OPS] CHARACTER

The QUATERNION_MEASUREMENT_METHOD element specifies the quality of the rover orientation If UNKNOWN the attitude should simply not be trusted. This is the grade given on Landing, for example. TILT_ONLY ishe attitude estimate is only good for tilt determination (2-axis knowledge). Activities which require azimuth knowledge should be careful. COURSE specifies the attitude estimate 'complete' (it has all three axes) but is crude. This can occur because sungaze has not yet been performed or because some event (such as traverses or IDD activity) have reduced the quality of the estimate (a.k.a. ThreeAxisCoarse FINE indicates that the Sungaze completed successfully, and the attitude estimate is sufficient for pointing HGA (a.k.a. ThreeAxisFine).

RA_DEC_REF_PIXEL **REAL <pixel>**

The RA_DEC_REF_PIXEL element (x,y) specifies the reference pixel to which the right_ascension and declination apply. The x value is here defined as the pixel value in the LINE_SAMPLE direction, and the y value is defined as the pixel value in the LINE direction.

The reference pixel is commonly, but not always, defined to be the center of the image. The coordinate may be specified to sub-pixel precision, and may be specified outside the physical boundaries of the image.

RAD_ALONG_TRACK_FOOTPRINT_SIZE **[PDS_GEO_MGN]** **REAL <km>**

The rad_along_track_footprint_size provides the value of the along track dimension of the intersection of the SAR antenna (3dB one-way attenuation) cone with a sphere of radius average_planetary_radius.

RAD_CROSS_TRACK_FOOTPRINT_SIZE **[PDS_GEO_MGN]** **REAL <km>**

The rad_cross_track_footprint_size element provides the value of the cross track dimension of the intersection of the SAR antenna (3dB one-way attenuation) cone with a sphere of radius average_planetary_radius.

RAD_EMISSIVITY_PARTIAL **[PDS_GEO_MGN]** **REAL <km**-1>**

The rad_emissivity_partial element provides the value of the partial derivative of surface_emissivity with respect to average_planetary_radius.

RAD_FLAG2_GROUP **[PDS_GEO_MGN]** **INTEGER**

Additional flag fields (unused).

RAD_FLAG_GROUP **[PDS_GEO_MGN]** **INTEGER**

The RAD_FLAG_GROUP element identifies the following flag fields. RR_GEOC=0x0001 Geometry values have been corrected for ephemeris errors in the phase. RR_RADC=0x0002 The average_planetary_radius value has been corrected by altimeter radius values. RR_NOS1=0x0004 sar_average_backscatter[0] value missing. RR_NOS2=0x0008 sar_average_backscatter[1] value missing. RR_BAD=0x0010 The elements brightness_temperature, average_planetary_radius, planet_reading_system_temp, assumed_warm_sky_temperature, rad_receiver_system_temp, surface_emission_temperature, and surface_emissivity, and surface_temperature should be ignored. RR_CAL=0x0020 The spacecraft is operating in its 'radiometric calibration' mode, in which the SAR boresight is pointed away from the planet. The rad_footprint_latitude and rad_footprint_longitude fields contain the boresight latitude and longitude in the inertial (J2000) coordinate system, not in VBF85. RR_NRAD=0x0040 The average_planetary_radius value could not be estimated from the topography model. RR_RAD2=0x0080 This record was created under software version 2 or higher, in which elements rad_emissivity_partial, surface_temperature, raw_rad_antenna_power, raw_rad_load_power, alt_skip_factor, alt_gain_factor, and alt_coarse_resolution are significant.

RAD_FOOTPRINT_LATITUDE **[PDS_GEO_MGN]** **REAL <deg>**

The rad_footprint_latitude (VBF85) element provides the value of the crust-fixed latitude, at rad_spacecraft_epoch_tdb_time, of the intersection of the antenna boresight and the planetary surface (a sphere of radius average_planetary_radius element).

RAD_FOOTPRINT_LONGITUDE **[PDS_GEO_MGN]** **REAL <deg>**

The rad_footprint_longitude (VBF85) element provides the crust-fixed longitude, at rad_spacecraft_epoch_tdb_time, of the intersection of the antenna boresight and the planetary surface (a sphere of radius average_planetary_radius).

RAD_FOOTPRINTS **[PDS_GEO_MGN]** **INTEGER**

The footprints element provides the value of the number of Standard Format Data Units in a specific orbit's radiometry data file.

RAD_NUMBER **[PDS_GEO_MGN]** **INTEGER**

The rad_number element provides the value of the number assigned by the MSPF (Multimission SAR Processing Facility) SAR processor (from C-BIDR) to the burst header that contains the radiometer measurement referenced by this element. This is performed on every other burst, so rad_number will usually increase by 2 between records.

RAD_PARTIALS_GROUP **[PDS_GEO_MGN]** **REAL**

The rad_partials_group element provides the value of the partials of the rad_footprint_latitude, the rad_footprint_longitude, and the average_planetary_radius elements with respect to the rad_spacecraft_position_vector and rad_spacecraft_velocity_vector elements.

RAD_RECEIVER_SYSTEM_TEMP **[PDS_GEO_MGN]** **REAL <K>**

The rad_receiver_system_temp element provides the value of the receiver input radiometer reading, converted to equivalent noise temperature. This is the difference between raw_rad_antenna_power and raw_rad_load_power, converted to equivalent noise temperature and compensated for changes in receiver gain and temperature.

RAD_SPACECRAFT_EPOCH_TDB_TIME **[PDS_GEO_MGN]** **REAL**

The rad_spacecraft_epoch_tdb_time element provides the value of the ephemeris time at which the radiometry measurement was made.

RAD_SPACECRAFT_POSITION_VECTOR **[PDS_GEO_MGN]** **REAL <km>**

The rad_spacecraft_position_vector element provides the value of the spacecraft position at rad_spacecraft_epoch_tdb_time, relative to the Venus center of mass, expressed in inertial coordinates in the J2000 coordinate system.

RAD_SPACECRAFT_VELOCITY_VECTOR **[PDS_GEO_MGN]** **REAL <km/s>**

The rad_spacecraft_velocity_vector element provides the value of the spacecraft velocity at rad_spacecraft_epoch_tdb_time, relative to the Venus center of mass, expressed in inertial coordinates in the J2000 coordinate system.

RADIAL_RESOLUTION **[PDS_RINGS]** **REAL(>=0) <km>**

The radial_resolution element indicates the nominal radial distance over which changes in ring properties can be detected within a data product. Note: this value may be larger than the radial_sampling_interval value, since many data products are over-sampled.

RADIAL_SAMPLING_INTERVAL **[PDS_RINGS]** **REAL(>=0) <km>**

The radial_sampling_interval element indicates the average radial spacing between consecutive points in a ring profile. In practice, this may be somewhat smaller than the radres element because the profile may be over-sampled.

RADIANCE_OFFSET **[PDS_EN]** **REAL <n/a>**

The RADIANCE_OFFSET element provides the constant value by which a stored radiance value is shifted or displaced.

Note: Expressed as an equation: true_radiance_value = radiance_offset + radiance_scaling_factor * stored_radiance_-value. Use of this element is discouraged in favor of the more general offset element.

RADIANCE_SCALING_FACTOR **REAL(0, 999999)**

The radiance_scaling_factor element provides the constant value by which a stored radiance is multiplied. Note: Expressed as an equation: true_radiance_value = radiance_offset + radiance_scaling_factor * stored_radiance_value. Use of this element is discouraged in favor of the more general scaling_ factor.

RADIOMETRIC_CORRECTION_TYPE **[PDS_MER_OPS]** **CHARACTER**

The RADIOMETRIC_CORRECTION_TYPE element identifies the method used for radiometric correction.

RANGE_SHARP_ECHO_PROFILE **[PDS_GEO_MGN]** **INTEGER**

The range_sharp_echo_profile element provides the value of the power vs. time echo profile, at half-baud (0.21 microsecond) intervals, assembled from up to 16 frequency components, each shifted in time so as to align their rising edges. This profile yields the best estimate of the two-way echo time, and hence the value of the derived_planetary_radius element.

RANGE_SHARP_FIT **[PDS_GEO_MGN]** **REAL**

The range_sharp_fit element provides the value of the parameter which measures the correlation between the observed range_sharp_echo_profile and the theoretical template best_range_sharp_model_tmplt elements.

RANGE_SHARP_LOOKS **[PDS_GEO_MGN]** **INTEGER**

The range_sharp_looks element provides the value of the number of equivalent looks of statistically independent measurements of echo profile that were summed to produce the values for the range_sharp_echo_profile element.

RANGE_SHARP_PROF_CORRS_INDEX **[PDS_GEO_MGN]** **INTEGER**

The range_sharp_prof_corrs_index element provides the value of the index of the element in range_sharp_echo_profile that corresponds to the first element in best_range_sharp_model_tmplt[0]. The indices start at zero.

RANGE_SHARP_SCALING_FACTOR **[PDS_GEO_MGN]** **REAL <km**2>**

The range_sharp_scaling_factor element provides the value of the conversion factor for the best_range_model_tmplt and the range_sharp_echo_profile element that multiplies the integer array of the best_range_model_tmplt and range_-sharp_echo_profile elements to yield their physical values, expressed as specific radar cross-sections in units of km**2.

RATIONALE_DESC **CHARACTER**

The rationale_desc element describes the rationale for performing a particular observation.

RAW_RAD_ANTENNA_POWER **[PDS_GEO_MGN]** **REAL**

The raw_rad_antenna_power element provides the value of the radiometer noise power when the receiver is connected to the SAR antenna. It is corrected for systematic errors resulting from leakage of the altimeter signal.

RAW_RAD_LOAD_POWER **[PDS_GEO_MGN]** **REAL**

The raw_rad_load_power element provides the value of the radiometer noise power when the receiver is connected to a load at a known temperature. It is averaged over as many as 10 successive measurements and corrected for systematic errors resulting from leakage of the altimeter signal.

READOUT_CYCLE_INDEX **[PDS_EN]** **INTEGER(0, 15)**

The readout_cycle_index element provides the element number within the Readout Cycle table selected for this image. The readout cycle of an instrument involves that part of its function involved in reading the light values out of a CCD array. Note: for Cassini, the Readout Cycle table provides a translation of these values into cycle durations in seconds.

RECEIVED_DATA_RECORDS **[PDS_EN]** **INTEGER(>=0)**

The RECEIVED_DATA_RECORDS element provides the total number of records a reconstructed data product contains. This value can be compared with the EXPECTED_DATA_RECORDS element to determine if a data file is complete or if it is missing records.

RECEIVED_PACKETS **INTEGER(>=0)**

The received_packets element provides the total number of telemetry packets which constitute a reconstructed data product. cf. expected_packets

RECEIVED_POLARIZATION_TYPE **[PDS_EN]** **CHARACTER(60)**

Polarization of a signal received by an instrument.

RECEIVER_DESCRIPTION **[PDS_RINGS]** **CHARACTER**

The receiver_description element describes a given receiving instrument.

RECEIVER_ID **[PDS_RINGS]** **CHARACTER(12)**

The receiver_id element provides an abbreviated name or acronym which identifies a receiving instrument. It is used for experiments that have both transmitting and receiving instruments, in which case the instrument_id element refers to the transmitter.

RECEIVER_NAME **[PDS_RINGS]** **CHARACTER(60)**

The receiver_name element provides the unique full name of a receiving instrument. It is used for experiments that have both transmitting and receiving instruments, in which case the instrument_name element refers to the transmitter.

RECEIVER_NOISE_CALIBRATION **[PDS_GEO_MGN]** **REAL <km**2>**

The receiver_noise_calibration element provides the value of a measure of the altimeter noise background, obtained from the pulse- compressed altimeter signals by the mgmtac phase of the altimetry and radiometry data reduction program.

RECORD_BYTES **INTEGER(>=0)**

The record_bytes element indicates the number of bytes in a physical file record, including record terminators and separators. When RECORD_BYTES describes a file with RECORD_TYPE = STREAM (e.g. a SPREADSHEET), its value is set to the length of the longest record in the file.

Note: In the PDS, the use of record_bytes, along with other file-related data elements is fully described in the Standards Reference.

RECORD_FORMAT **CHARACTER(255)**

The RECORD_FORMAT element contains a FORTRAN-style format description for reading an entire row of an ASCII/EBCDIC table, or an entire occurrence of an ASCII/EBCDIC COLLECTION. Example: RECORD_FORMAT = '(F8.3,1X,I5,2X,A12)' Note: that this is an INPUT format only, and may not contain string constant expressions within the format.

RECORD_TYPE **IDENTIFIER**

The record_type element indicates the record format of a file. Note: In the PDS, when record_type is used in a detached label file it always describes its corresponding detached data file, not the label file itself. The use of record_type along with other file-related data elements is fully described in the PDS Standards Reference.

RECORDS **INTEGER(>=1)**

The records data element identifies the number of physical records in a file or other data object.

REFERENCE_AZIMUTH **[PDS_MER_OPS]** **REAL <deg>**

The REFERENCE_AZIMUTH element specifies the azimuth which is at the top (vertical in the polar projection. (MIPL Projections - Polar)

REFERENCE_COORD_SYSTEM_INDEX **[PDS_MER_OPS]** **INTEGER**

The REFERENCE_COORD_SYSTEM_INDEX element identifies which instance of the coordinate system named by REFERENCE_COORD_SYSTEM_NAME is the reference coordinate system for the group in which the keyword occurs. This index is a set of integers which serve to identify coordinate system instances in a mission-specific manner.

Note: For MER, the indices are based on the ROVER_MOTION_COUNTER. This counter is incremented each time the rover moves (or may potentially have moved, e.g., due to arm motion). The full counter may have up to 5 values (SITE, DRIVE, IDD, PMA, HGA), but normally only the first value (for SITE frames) or the first two values (for LOCAL_LEVEL or ROVER frames) are used for defining reference coordinate system instances. It is legal to use any number of indices to describe a reference coordinate system instance, however. See also REFERENCE_COORD_-SYSTEM_NAME and COORDINATE_SYSTEM_INDEX.

REFERENCE_COORD_SYSTEM_NAME **[PDS_MER_OPS]** **CHARACTER(20)**

The REFERENCE_COORD_SYSTEM_NAME element provides the full name of the reference coordinate system for the group in which the keyword occurs. All vectors and positions relating to 3-D space within the enclosing group are expressed using this reference coordinate system. In non-unique coordinate systems (such as 'SITE' for rover missions), which have multiple instances using the same name, REFERENCE_COORD_SYSTEM_INDEX is also required to completely identify the reference coordinate system.

Note: For MER, the reference is usually a SITE frame.

REFERENCE_DESC **CHARACTER**

The reference_desc element provides a complete bibliographic citation for a published work. The format for such citations is that employed by the Journal of Geophysical Research (JGR). This format is described in the JGR, Volume 98, No. A5, Pages 7849-7850, May 1, 1993 under 'References'. Data suppliers may also refer to recent issues of the Journal for examples of citations. Elements of a complete bibliographic citation must include, wherever applicable, author(s) or editor(s), title, journal name, volume number, page range and publication date (for journal article citations), or page range, publisher, place of publication, and publication date (for book citations).

REFERENCE_KEY_ID — CHARACTER(20)

The reference_key_id element provides the catalog with an identifier for a reference document. Additionally, it may be used in various catalog descriptions, for example in data_set_desc, as a shorthand notation of a document reference. The reference_key_id element is composed according to the following guidelines: 1. if there is an author for the publication, the general rule is: REFERENCE_KEY_ID = ¡author's last name>¡year>¡letter>, where ¡author's last name> is a maximum of 15 characters, and may need to be truncated. ¡year> is 4 characters for the year published. ¡letter> is optional but consists of one character used to distinguish multiple papers by the same author(s) in the same year. The following variations apply: a. If there is one author: ¡author's last name>¡year> Example value: SCARF1980 b. If there are two authors: ¡first author's last name>&¡second author's last name> ¡year> Example value: SCARF&GURNETT1977 c . If there are three or more authors: ¡first author's last name>ETAL¡year> Example value: GURNETTETAL1979 d. If one author has the same last name as another: ¡author's last name>,¡author's first initial> ¡year published> Example value: FREUD,A1935 e. If the same author(s) published more than one paper in the same year: ¡author's last name>¡year>¡letter> or ¡first author's last name>&¡second author's last name> ¡year>¡letter> or ¡first author's last name>ETAL¡year>¡letter> Example values: SCARF1980A SCARF&GURNETT1977B f. In cases where an initial reference has been catalogued and published on an Archive medium and subsequent references for the same author and same year are needed at a later date, the following rule applies: Leave the original reference as is, and add a letter to the subsequent references starting with the letter 'B' since the original reference will now be assumed to have an implicit 'A'. For example: PFORD1991, PFORD1991B. Note that if the initial reference has only been catalogued and not yet published, then it can be modified such that the 'A' is explicit, i.e. PFORD1991A. 2. If there is no author for the publication, the general rule is: REFERENCE_KEY_ID = ¡journal name>¡document identification> where ¡journal name> is a maximum of 10 characters, and may need to be abbreviated ¡document identification> is a maximum of 10 characters. This id may consist of a volume number, and/or document or issue number, and/or year of publication. Example values: SCIENCEV215N4532 JGRV88 JPLD-2468

REFERENCE_LATITUDE — REAL(-90, 90) <deg>

The reference_latitude element provides the new zero latitude in a rotated spherical coordinate system that was used in a given map_projection_type.

REFERENCE_LONGITUDE — REAL(-180, 360) <deg>

The reference_longitude element defines the zero longitude in a rotated spherical coordinate system that was used in a given map_projection_type.

REFERENCE_OBJECT_NAME — CHARACTER(60)

The reference_object_name element identifies the point, vector, or plane used as the origin from which an angle or a distance is measured. As an example, the reference object could be the center of a given planet (a point), the spacecraft z_axis (a vector) or the equatorial plane.

REFERENCE_POINT — REAL

The SUN_NORTH_POLE_CLOCK_ANGLE element specifies the direction of the north pole of the sun as projected onto the image plane. It is measured from the 'upward' direction, clockwise to the direction toward the sun's north pole, when the image is displayed as defined by the SAMPLE_DISPLAY_DIRECTION and LINE_DISPLAY_DIRECTION elements.

REFERENCE_POINT_DESC — CHARACTER

The REFERENCE_POINT_DESC keyword is used in conjunction with the REFERENCE_POINT and REFERENCE_-POINT_INDEX keywords to identify and describe the reference point associated with a multi-dimensional object - typically an IMAGE or ARRAY.

The reference point may be, for example, the center of a body, a standard star, or a specific location on a body or the celestial sphere. This keyword should be used to define what the reference point is, logically or physically. The REFERENCE_POINT_INDEX keyword describes the location of the reference point in units of axis index, while the REFERENCE_POINT keyword gives the same location in the physical units of the indices.

REFERENCE_POINT_INDEX **REAL**

The REFERENCE_POINT_INDEX keyword is used to give the precise location of a reference point (center of a body, standard star, coordinate system reference point, etc.) relative to the origin of the associated object - typically an IMAGE or ARRAY. The location is expressed as a sequence of values in units of the axis index, in the same order as the defined axes. The indices for each axis are assumed to be numbered positively from 1.

Although the indices are integral, the REFERENCE_POINT_INDEX values are floating point and may be expressed to an appropriate level of precision. For example, if the reference point is the location of the center of a target body and known to sub-pixel accuracy, then it may have a REFERENCE_POINT_INDEX value that looks like: (215.678, 500.234).

Note that the reference point is a logical concept, and thus is not required to be inside the associated object. If, for example, the reference point described for an IMAGE object is outside the field of view included in the IMAGE, the values for REFERENCE_POINT_INDEX are determined by extrapolation of the image axes. In this case some of the REFERENCE_POINT_INDEX values may be negative or greater than the maximum index found in the image.

The REFERENCE_POINT_INDEX as defined here is analogous to the CRPIXn values of the FITS standard. Users should note that the CRPIXn standard is often re-interpreted by data preparers, and should not assume that any particular CRPIXn set of numbers will map directly to a valid REFERENCE_POINT_INDEX without first verifying the local use of the CRPIXn keywords.

The REFERENCE_POINT_DESC keyword should be used in conjunction with REFERENCE_POINT_INDEX to describe the nature of the point being referenced.

See also the REFERENCE_POINT keyword, which locates the reference point in the physical units of the axes, rather than in index units (analogous to the FITS CRVALn keywords).

REFERENCE_RADIAL_RESOLUTION **[PDS_RINGS]** **REAL(>=0) <km>**

The reference_radial_resolution element specifies a reference radial resolution to which a ring occultation data set may be reprocessed. It is used to specify a standard radial resolution so that the noise properties of different data products may be more reliably compared. The values of the parameters lowest_detectable_opacity, highest_detectable_opacity and scaled_noise_level depend on this value.

REFERENCE_TARGET_NAME **CHARACTER(30)**

The reference_target_name element provides the name of the target body being used as the reference to help define a particular vector_component_id. For example, the RJ$ vector component is defined with the spacecraft as the reference target.

REFERENCE_TIME **[PDS_RINGS]** **TIME <n/a>**

The reference time element specifies the moment in time to which other quantities refer. This can be the moment relative to which a set of time intervals are measured (e.g. a column of times encoded in units of seconds), or the moment at which a set of orbital elements apply.

REFLECTANCE_SCALING_FACTOR **REAL(0, 1)**

The reflectance_scaling_factor element identifies the conversion factor from DN to reflectance.

REGION_DESC **CHARACTER**

The region_desc element describes a particular region of a planetary surface, indicating its historical significance, identifying major geological features and providing other descriptive information.

REGION_NAME **CHARACTER(30)**

The region_name element identifies a region of a planetary surface. In many cases, the name of a region derives from the major geologic features found within the region.

REGISTRATION_DATE **[PDS_EN]** **DATE**

The registration_date element provides the date as of which an individual is registered as an authorized user of the PDS system. Formation rule: YYYY-MM-DD

RELEASE_DATE **DATE**

The release_date element provides the date when a data set or portion of a data set is made available for use. Typically this is when the data is on-line and available for access.

RELEASE_ID **CHARACTER(4)**

The RELEASE_ID element identifies the unique identifier associated with a specific release of a data set. All initial releases should use a RELEASE_ID value of '0001'. Subsequent releases should use a value that represents the next increment over the previous RELEASE_ID (e.g., the second release should use a RELEASE_ID of '0002').

Releases are done when an existing data set or portion of a data set becomes available for distribution.

Note: The DATA_SET_ID and RELEASE_ID are used as a combined key to ensure all releases are unique.

RELEASE_MEDIUM **CHARACTER(30)**

The release_medium element provides a textual description for the medium used in the distribution of a released data set or portion of a data set. Examples include: CD-ROM, DVD, etc.

RELEASE_PARAMETER_TEXT **CHARACTER(255)**

The release_parameters_text element provides a list of parameters that identify the data being released. These parameters are formulated so that they can be appended to a data set browser query. The parameters are specific to individual data sets and their associated data set browsers.

REMOTE_NODE_PRIVILEGES_ID **[PDS_EN]** **CHARACTER(20)**

The remote_node_priviledges_id element identifies the systems at a remote node (or nodes) which a user is priviledged to access.

REPETITIONS **INTEGER(>=1)**

The repetitions data element within a data object such as a container, indicates the number of times that data object recurs. See also: items. Note: In the PDS, the data element ITEMS is used for multiple occruuences of a single object, such as a column. REPETITIONS is used for multiple occurrences of a repeating group of objects, such as a container.

For fuller explanation of the use of these data elements, please refer to the PDS Standards Reference.

REQUEST_DESC **[PDS_EN]** **CHARACTER**

The request_desc element describes a user's request for support.

REQUEST_TIME **[PDS_EN]** **TIME**

The request_time element provides the date (and time, where appropriate) at which a user's request was received by the Customer Support function.

REQUIRED_ELEMENT_SET **[PDS_EN]** **CHARACTER(30)**

The required_element_set element identifies the data elements that are mandatory members of a defined object. Note: In the PDS, the data elements listed in this set must be approved for inclusion in the data dictionary.

REQUIRED_FLAG **[PDS_EN]** **CHARACTER(1)**

The required_flag data element indicates whether a data element or object is needed for inclusion in a system or process. Note: In the PDS, required_flag is used in data dictionary tables to indicate whether a data element or object is a required or optional component of a data object.

REQUIRED_MEMORY_BYTES **INTEGER(>=0)**

The required_memory_bytes element indicates the amount of memory, in bytes, required to run the subject software.

REQUIRED_OBJECT_SET **[PDS_EN]** **CHARACTER(30)**

The required_object_set element identifies the ODL objects that are mandatory members of a defined object.

REQUIRED_STORAGE_BYTES **CHARACTER(12)**

The required_storage_bytes element provides the number of bytes required to store an uncompressed file. This value may be an approximation and is used to ensure enough disk space is available for the resultant file. Note: For Zip file labels, this keyword provides the total size of all the data files in the Zip file after being uncompressed. For the software inventory template, this is often the size of the uncompressed distribution tar file.

RESEARCH_TOPIC_DESC **CHARACTER**

The research_topic_desc element describes the topic of scientific research identified by the research_topic_name element.

RESEARCH_TOPIC_NAME **CHARACTER(60)**

The research_topic_name element provides the name of a topic of scientific research.

RESOLUTION_DESC **[PDS_EN]** **CHARACTER**

The resolution_desc element describes the resolution of and the approach used to resolve a user's request for support.

RESOLUTION_TIME **[PDS_EN]** **TIME**

The resolution_time element provides the date (and time, where appropriate) as of which a user's request is resolved.

RESOURCE_CLASS [PDS_EN] CHARACTER

The RESOURCE_CLASS element indicates the type of resource associated with the dataset. For the primary browser, the value should always be set to: application.dataSetBrowserP

RESOURCE_ID [DIS] CHARACTER(40)

The resource_id element provides an unique indentifier for the resource.

RESOURCE_KEYVALUE [DIS] CHARACTER(30)

The resource_keyvalue element identifies targets, missions, instrument hosts, and instrument names associated with the data set.

RESOURCE_LINK [PDS_EN] CHARACTER

The RESOURCE_LINK element provides the url of a data set browser that allows searching for particular data products or other ancillary files.

RESOURCE_NAME [PDS_EN] CHARACTER

The Resource_Name element provides the descriptive name of a resource url as it should appear in the Data Set Search results page.

RESOURCE_SIZE [DIS] REAL <MB>

The resource_size element provides the size in megabytes of the data set.

RESOURCE_STATUS [PDS_EN] CHARACTER

The RESOURCE_STATUS element indicates the operational status of the resource associated with the dataset. In most cases the value would be UP to indicate an operational data set browser, etc.

RESOURCE_TYPE [DIS] CHARACTER(30)

The resource_type element provides the type of the data set.

RETICLE_POINT_DECLINATION REAL(-90, 90) <deg>

The reticle_point_declination element refers to the declination of the principle points of the camera. Note: For the Clementine cameras the principle points are defined as the upper left pixel of the camera (line 1,sample 1), the upper right pixel (line 1, last sample), lower left (last line, sample 1), and lower right (last line, last sample).

RETICLE_POINT_LATITUDE REAL(-90, 90) <deg>

The reticle_point_latitude element provides the latitude of the surface intercept points of the principle points of the camera. Note: For the Clementine cameras the principle points are defined as the upper left pixel of the camera (line 1,sample 1), the upper right pixel (line 1, last sample), lower left (last line, sample 1), and lower right (last line, last sample).

RETICLE_POINT_LONGITUDE REAL(0, 360) <deg>

The reticle_point_longitude element provides the longitude of the surface intercept points of the principle points of the camera. Note: For the Clementine cameras the principle points are defined as the upper left pixel of the camera (line

1,sample 1), the upper right pixel (line 1, last sample), lower left (last line, sample 1), and lower right (last line, last sample).

RETICLE_POINT_NUMBER **IDENTIFIER**

The reticle_point_number element provides the number of an image reticle point, as follows: 1 upper left, 3 - upper right, 5 - middle, 7 - lower left, 9 - lower right.

RETICLE_POINT_RA **REAL(0, 360) <deg>**

The reticle_point_ra element refers to the right ascension of the principle points of the camera. Note: For the Clementine cameras the principle points are defined as the upper left pixel of the camera (line 1,sample 1), the upper right pixel (line 1, last sample), lower left (last line, sample 1), and lower right (last line, last sample).

REVOLUTION_NUMBER **INTEGER(>=0)**

The revolution_number element identifies the number of the observational pass of a spacecraft around a target body. Note: The Clementine Mission used this element in place of orbit_number because orbit number changes half way through the observational pass over the Moon and would not be an ideal parameter when interrogating the data set. The revolution number equals orbit number at the start of the observational pass.

REVOLUTION_PERIOD **REAL <d>**

The revolution_period element provides the time period of revolution of a solar system object about its spin axis.

RICE_OPTION_VALUE **INTEGER(2, 4096)**

The rice_option_value element is a RICE compressor specific variable providing the number of options used by compression. Note: Information about RICE compression is available in JPL Document 91-D, November 15, 1991, 'Some Practical Universal Noiseless Coding Techniques, Part III.'

RICE_START_OPTION **INTEGER(0, 4095)**

The rice_start_option element is a RICE compressor specific variable that identifies the start option. Note: Information about RICE compression is available in JPL Document 91-D, November 15, 1991, 'Some Practical Universal Noiseless Coding Techniques, Part III.'

RIGHT_ASCENSION **REAL(0, 360) <deg>**

The RIGHT_ASCENSION element provides the value of right ascension, which is defined as the arc of the celestial equator between the vernal equinox and the point where the hour circle through the point in question intersects the celestial equator (reckoned eastward). Right ascension is used in conjunction with the DECLINATION keyword to specify a point on the sky.

To accurately specify a point on the sky, the following additional keywords are needed:

COORDINATE_SYSTEM_ID – Specifies the reference system as B1950 or J2000.

EQUINOX_EPOCH - Specifies the epoch of equinox in decimal years.

For a complete discussion of right ascension, declination, epoch, and reference systems, see [SEIDELMANN1992]:

Seidelmann, P.K., Ed., 'Explanatory Supplement to the Astronomical Almanac', University Science Books, Sausalito, California, 1992.

To relate the specified values of right ascension and declination to an image, the following keyword is needed:

RA_DEC_REF_PIXEL - A two-valued keyword to specify the reference pixel to which the RA and dec apply.

An additional useful keyword for specifying the relation of declination and right_ascension to an image is:

PIXEL_ANGULAR_SCALE - the angular scale of the image in arcseconds per pixel.

RING_ASCENDING_NODE_LONGITUDE [PDS_RINGS] REAL(0, 360) <deg>

The ring ascending node longitude element defines the inertial longitude where an inclined ring intersects the central planet's invariable plane. This longitude is measured from the planet's prime meridian in the direction of orbital motion. In planetary ring systems, the prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of J2000. The ascending node is the one where ring particles cross from below to above the invariable plane, assuming that the 'above' side is defined by the pole about which the planet exhibits right-handed rotation. Because a node longitude changes with time, this value should always be specified for a particular moment in time, which can correspond to the time of an observation or can be specified with the REFERENCE_TIME element. See also NODAL_REGRESSION_RATE.

Note: The invariable plane of a planet is equivalent to its equatorial plane for every ringed planet except Neptune.

Note: The 'above' side of the invariable plane is the IAU-defined northern hemisphere for Jupiter, Saturn and Neptune, but the IAU-defined southern hemisphere for Uranus.

RING_ECCENTRICITY [PDS_RINGS] REAL(0, 1) <n/a>

The ring eccentricity element defines the non-circularity of a ring. It is equal to (apocenter_radius - pericenter_radius) / (2*mean_radius)

RING_EVENT_START_TIME [PDS_RINGS] TIME

The ring_event_start_time element indicates the starting instant of a data product as measured at the ring plane. This element differs from the observation start time because it allows for light travel time.

RING_EVENT_STOP_TIME [PDS_RINGS] TIME

The ring_event_stop_time element indicates the stopping instant of a data product as measured at the ring plane. This element differs from the observation stop time because it allows for light travel time.

RING_EVENT_TIME [PDS_RINGS] TIME

The ring_event_time element indicates the instant at which a data product has been acquired as measured at the ring plane. This element differs from the observation instant because it allows for light travel time.

RING_INCLINATION [PDS_RINGS] REAL(0, 90) <deg>

The ring inclination element provides the value of the angle between the orbital plane of a ring and the equatorial plane of the central planet.

RING_LONGITUDE [PDS_RINGS] REAL(0, 360) <deg>

The ring_longitude element specifies the inertial longitude of a ring feature relative to the prime meridian. In planetary ring systems, the prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of J2000. Longitudes are measured in the direction of orbital motion along the planet's invariable plane to the ring's ascending node, and thence along the ring plane. Note: The invariable plane of a planet is equivalent to its equatorial plane for every ringed planet except Neptune.

RING_OBSERVATION_ID [PDS_RINGS] CHARACTER(60)

The ring observation id uniquely identifies a single experiment or observation (image, occultation profile, spectrum, etc.) within a rings-related data set. This is the common id by which data are identified within the Rings Node catalog. It describes the smallest quantity of data that can be usefully cataloged or analyzed by itself. Note that a single observation may be associated with multiple data products (e.g. raw and calibrated versions of an image). Note also that a single data product may be associated with multiple observations (e.g. a single WFPC2 image file containing four different images). A ring observation id is constructed as follows: p/type/host/inst/time/... where p is a single-letter planet id (one of J, S, U, or N); type is IMG for images, OCC for occultation profile, etc.; host is the instrument host id, inst is the instrument id; time is the observation time as a date or instrument clock count; further information identifying the observation can then be appended as appropriate. Examples are: J/IMG/VG2/ISS/20693.01/N J/IMG/VG2/ISS/20693.02/W S/IMG/HST/WFPC2/1995-08-10/U2TF020B/PC1 U/OCC/VG2/RSS/1986-01-24/S U/OCC/VG2/RSS/19 01-24/X N/OCC/VG2/PPS/1989-08-25/SIGMA_SGR

RING_OCCULTATION_DIRECTION [PDS_RINGS] IDENTIFIER

The ring_occultation_direction element indicates the radial direction of a ring occultation track.

RING_PERICENTER_LONGITUDE [PDS_RINGS] REAL(0, 360) <deg>

The ring pericenter longitude element defines the inertial longitude where an eccentric ring is at pericenter, i.e. has its minimum radius. This longitude is measured from the planet's prime meridian in the direction of orbital motion. In planetary ring systems, the prime meridian is the ascending node of the planet's invariable plane on the Earth's mean equator of J2000. Because the pericenter longitude changes with time, this value should always be specified for a particular moment in time, which can correspond to the time of an observation or can be specified with the REFERENCE_TIME element. See also PERICENTER_PRECESSION_RATE. Note: The invariable plane of a planet is equivalent to its equatorial plane for every ringed planet except Neptune.

RING_RADIAL_MODE [PDS_RINGS] INTEGER <n/a>

The ring radial mode element defines a modulation to a ring's shape that is not described by a simple eccentricity. This element defines the number of radial cycles found in 360 degrees of ring longitude. For example, a value of 2 defines a planet-centered ellipse. Negative values refer to modes that rotate in a retrograde direction. A value of zero defines a 'breathing' mode, in which ring expands and contracts while remaining circular.

RING_RADIAL_MODE_AMPLITUDE [PDS_RINGS] REAL(>=0) <km>

The ring radial mode amplitude element defines the amplitude of a radial mode present within a ring. See also RING_-RADIAL_MODE.

RING_RADIAL_MODE_FREQUENCY [PDS_RINGS] REAL <deg/day>

The ring radial mode frequency element defines the rate at which a radial mode propagates around a ring. Negative values refer to modes that propagate in a retrograde direction. See also RING_RADIAL_MODE.

RING_RADIAL_MODE_PHASE [PDS_RINGS] REAL <deg/day>

The ring radial mode frequency element defines the rate at which a radial mode propagates around a ring. Negative values refer to modes that propagate in a retrograde direction. See also RING_RADIAL_MODE.

RING_RADIUS [PDS_RINGS] REAL(>=0) <km>

The ring_radius element indicates a radial location within a planetary ring system. Radii are measured from the center of the planet along the nominal ring plane.

RING_SEMIMAJOR_AXIS [PDS_RINGS] REAL(>=0) <km>

The ring semimajor axis element defines the mean radius of an eccentric ring, i.e. the average of the pericenter and apocenter distances.

RING_SYSTEM_SUMMARY CHARACTER

The ring_system_summary element provides a brief and general description of the rings or ring_like features associated with a particular solar system body.

ROLE_DESC CHARACTER

The role_desc element describes the role of an individual during his or her association with a particular institution. Note: The term 'role' is a more specific characterization of the individual's activities than is 'specialty' (see the specialty_name element).

ROTATION_DIRECTION IDENTIFIER

The rotation_direction element provides the direction of rotation as viewed from the north pole of the 'invariable plane of the solar system', which is the plane passing through the center of mass of the solar system and perpendicular to the angular momentum vector of the solar system. The value for this element is PROGRADE for counter -clockwise rotation, RETROGRADE for clockwise rotation and SYNCHRONOUS for satellites which are tidally locked with the primary. Sidereal_rotation_period and rotation_directio n_type are unknown for a number of satellites, and are not applicable (N/A) for satellites which are tumbling.

ROTATION_NOLOAD_CURRENT [PDS_MER_OPS] REAL <mA>

The ROTATION_NOLOAD_CURRENT element specifies the no load current for the rotation motor of an instrument.

Note: For MER, it is used for the MER RAT during all operations of the instrument.

ROTATION_TORQUE_PARAMETER [PDS_MER_OPS] REAL <V>

The ROTATION_TORQUE_PARAMETER element provides the open-loop voltage supplied to an instrument rotation motor.

Note: For MER, this is the grinding wheel rotation motor during initialization/diagnostics, seek and scan, grinding, and brushing operations.

ROTATION_VOLTAGE [PDS_MER_OPS] REAL <V>

The ROTATION_VOLTAGE element specifies the open-loop voltage supplied to the instrument rotation motor.

ROTATION_VOLTAGE_NAME [PDS_MER_OPS] CHARACTER

The ROTATION_VOLTAGE_NAME element provides the formal name of the ROTATION_VOLTAGE element values within an array.

ROTATIONAL_ELEMENT_DESC CHARACTER

The rotational_element_desc element describes the standard used for the definition of a planet's pole orientation and prime meridian. The description defines the right ascension and the declination values used to define the planet pole, and the spin angle value of the planet referenced to a standard time (typically EME1950 or J2000 time is used). Periodically, the right ascension, declination, and spin values of the planets are updated by the IAU/IAG/COOSPAR Working Group On Cartographic Coordinates and Rotational Elements because an unambiguous definition of a planet's coordinate system requires these values.

ROVER_HEADING **[PDS_EN]** **INTEGER(>=0)**

The ROVER_HEADING element provides a clockwise angular measure of the pointing direction of a rover from a specified direction in raw counts.

Note: For Mars Pathfinder, this value was measured from Lander north in BAMS (Binary Angle Measurements, where 2**16 BAMS equals one 360 degree revolution).

ROVER_MOTION_COUNTER **[PDS_MER_OPS]** **INTEGER(>=0)**

The ROVER_MOTION_COUNTER element provides a set of integers which describe a (potentially) unique location (position/orientation) for a rover. Each time an event occurs that moves, or could potentially move, the rover, a new motion counter value is created. This includes intentional motion due to drive commands, as well as potential motion due to other articulating devices, such as arms or antennae. This motion counter (or part of it) is used as a reference to define instances coordinate systems which can move such as SITE or ROVER frames. The motion counter is defined in a mission- specific manner. Although the original intent was to have incrementing indices (e.g., MER), the motion counter could also contain any integer values which conform to the above definition, such as time or spacecraft clock values.

Note: For MER, the motion counter consists of five values. In order, they are Site, Drive, IDD, PMA, and HGA. The Site value increments whenever a new major Site frame is declared. The Drive value increments any time intentional driving is done. Each of those resets all later indices to 0 when they increment. The IDD, PMA, and HGA increment whenever the corresponding articulation device moves. It is TBD whether IDD, PMA, and HGA are independent of each other, or reset the others to 0 in a hierarchical manner when they are incremented. Conceptually, a sixth value could be added by ground processing to indicate unintentional slippage (e.g., the wind blew the rover off a rock). This sixth value will never occur in telemetry but might occur in certain RDR's. (Implementation of this is TBD).

ROVER_MOTION_COUNTER_NAME **[PDS_MER_OPS]** **CHARACTER**

The ROVER_MOTION_COUNTER_NAME element is an array of values that provides the formal names identifiying each integer in ROVER_MOTION_COUNTER.

ROW_BYTES **INTEGER(>=1)**

The row_bytes element represents the maximum number of bytes in each data object row.

Notes:

(1) In the PDS, in object definitions for tables, the value of row_bytes includes terminators, separators, and delimiters unless row padding is used. For padding at the beginning of a row, the keyword row_prefix_bytes may be used. For padding at the end of a row, row_suffix_bytes may be used.

(2) In object definitions for spreadsheets, the value of row_bytes is the maximum number of bytes possible in the row if each field uses its maximum allocation of bytes and including all delimiters.

(3) See the Standards Reference, TABLE and SPREADSHEET objects for more information.

ROW_PREFIX_BYTES **INTEGER(>=0)**

The row_prefix_bytes element indicates the number of bytes prior to the start of the data content of each row of a table. The value must represent an integral number of bytes.

ROW_PREFIX_STRUCTURE **CHARACTER(120)**

The row_prefix_structure element indicates a pointer to a file that defines the structure of the row prefix bytes. See also: file_name Note: In the PDS this data element is obsolete. It is kept in the data dictionary for historical purposes to allow data validation tools to function. According to current standards, the structures of prefix and suffix data are illustrated through the use of the table object.

ROW_SUFFIX_BYTES **INTEGER(>=0)**

The row_suffix_bytes element indicates the number of bytes following the data at the end of each row. The value must be an integral number of bytes.

ROW_SUFFIX_STRUCTURE **CHARACTER(120)**

The row_suffix_structure element indicates a pointer to a file that defines the structure of the ROW_SUFFIX_BYTES. See also: file_name Note: In the PDS this data element is obsolete. It is kept in the data dictionary for historical purposes to allow data validation tools to function. According to current standards, the structures of prefix and suffix data are illustrated through the use of the table object.

ROWS **INTEGER(>=0)**

The rows element represents the number of rows in a data object. Note: In PDS, the term 'rows' is synonymous with 'records'. In PDS attached labels, the number of rows is equivalent to the number of file_records minus the number of label_records, as indicated in the file_object definition.

SAMPLE_BIT_MASK **NON DECIMAL**

The sample_bit_mask element identifies the active bits in a sample. Note: In the PDS, the domain of sample_bit_mask is dependent upon the currently-described value in the sample_bits element and only applies to integer values. For an 8-bit sample where all bits are active the sample_bit_mask would be 2#11111111#.

SAMPLE_BIT_METHOD **[PDS_MER_OPS]** **CHARACTER**

The SAMPLE_BIT_METHOD element identifies the method in which bit scaling is perfomed. MER, the bit scaling is a 12-bit to 8-bit scaling and can be performed hardware, software or both.

SAMPLE_BIT_MODE_ID **[PDS_MER_OPS]** **CHARACTER**

The SAMPLE_BIT_MODE_ID element identifies the type of pixel scaling performed.

Note: For MER, pixel scaling is accomplished by using onboard lookup tables or by shifting a specified bit into the most significant bit.

SAMPLE_BITS **INTEGER(1, 64)**

The sample_bits element indicates the stored number of bits, or units of binary information, contained in a line_sample value.

SAMPLE_CAMERA_MODEL_OFFSET **[PDS_MER_OPS]** **REAL <pixel>**

The SAMPLE_CAMERA_MODEL_OFFSET element provides the location of the image origin with respect to the camera model's origin. For CAHV/CAHVOR models, this origin is not the center of the camera, but is the upper-left corner of the 'standard' size image, which is encoded in the CAHV vectors.

SAMPLE_DISPLAY_DIRECTION **IDENTIFIER**

The SAMPLE_DISPLAY_DIRECTION element is the preferred orientation of samples within a line for viewing on a display device. The default is right, meaning samples are viewed from left to right on the display. See also LINE_DISPLAY_DIRECTION. Note: The image rotation elements such as TWIST_ANGLE, CELESTIAL_NORTH_CLOCK_ANGLE, and BODY_POLE_CLOCK_ANGLE are all defined under the assumption that the image is displayed in its preferred orientation.

SAMPLE_FIRST_PIXEL **INTEGER(>=0)**

The sample_first_pixel element provides the sample index for the first pixel that was physically recorded at the beginning of the image array. Note: In the PDS, for a fuller explanation on the use of this data element in the Image Map Projection Object, please refer to the PDS Standards Reference.

SAMPLE_LAST_PIXEL **INTEGER(>=0)**

The sample_last_pixel element provides the sample index for the last pixel that was physically recorded at the end of the image array. Note: In the PDS, for a fuller explanation on the use of this data element in the Image Map Projection Object, please refer to the PDS Standards Reference.

SAMPLE_PROJECTION_OFFSET **REAL <pixel>**

The sample_projection_offset element provides the sample offset value of the map projection origin position from line and sample 1,1 (line and sample 1,1 is considered the upper left corner of the digital array). Note: that the positive direction is to the right and down.

SAMPLE_RESOLUTION **REAL(>=0) <km>**

The SAMPLE_RESOLUTION element provides the horizontal size of the pixel at the center of an image as projected onto the surface of the target.

SAMPLE_TYPE **IDENTIFIER**

The sample_type element indicates the data storage representation of sample value.

SAMPLING_COUNT **[PDS_MER_OPS]** **INTEGER(>=0)**

The SAMPLING_COUNT element provides the number of data samples taken by an instrument or detector.

SAMPLING_DESC **CHARACTER**

The sampling_desc element describes how instrument parameters are sampled within an instrument or a section of an instrument. Generally, this includes information on the timing of samples and how they are taken as a function of energy, frequency, wavelength, position, etc.

SAMPLING_FACTOR **REAL**

The sampling_factor element provides the value N, where every Nth data point was kept from the original data set by selection, averaging, or taking the median. Note: When applied to an image object, the single value represented in sampling_factor applies to both the lines and the samples. When applied to a table object, the value applies only to the rows.

SAMPLING_MODE_ID **[PDS_EN]** **CHARACTER(10)**

The sampling_mode_id element identifies the resolution mode of a wavelength or frequency channel. Note: For Cassini, this is a two-valued array describing the resolution mode of the infrared and visible channels.

SAMPLING_PARAMETER_INTERVAL **REAL**

The sampling_parameter_interval element identifies the spacing of points at which data are sampled and at which a value for an instrument or dataset parameter is available. This sampling interval can be either the original (raw) sampling or the result of some resampling process. For example, in 48-second magnetometer data the sampling interval is 48. The sampling parameter (time, in the example) is identified by the sampling_parameter_name element.

SAMPLING_PARAMETER_NAME **CHARACTER(40)**

The sampling_parameter_name element provides the name of the parameter which determines the sampling interval of a particular instrument or dataset parameter. For example, magnetic field intensity is sampled in time increments, and a spectrum is sampled in wavelength or frequency.

SAMPLING_PARAMETER_RESOLUTION **REAL**

The sampling_parameter_resolution element identifies the resolution along the sampling parameter axis. For example, spectral data may be sampled every 0.0005 cm in wavelength, but the smallest resolvable width of a feature could be 0.001 cm. In this example, the sampling parameter resolution would be 0.001. Note: The unit element identified the unit of measure of the sampling parameter resolution.

SAMPLING_PARAMETER_UNIT **CHARACTER(60)**

The sampling_parameter_unit element specifies the unit of measure of associated data sampling parameters.

SAR_AVERAGE_BACKSCATTER **[PDS_GEO_MGN]** **REAL <dB>**

The sar_average_backscatter element provides the values of a pair of running averages of SAR image pixel values, sar_average_backscatter[0] taken from pixels lying westward of the antenna boresight, and sar_average_backscatter[1] taken from pixels lying to the east of it.

SAR_FOOTPRINT_SIZE **[PDS_GEO_MGN]** **REAL <km>**

The sar_footprint_size element provides the value of the approximate diameter of the surface footprint represented by the SAR backscatter values which are provided by the sar_average_backscatter element.

SATELLITE_TIME_FROM_CLST_APR **CHARACTER(20)**

The SATELLITE_TIME_FROM_CLST_APR element provides the time from closest approach to the nearest satellite. This element can be represented with a negative value, (e.g. before the satellite encounter). This element should not be confused with TIME_FROM_CLOSEST_APPROACH which is the from closest approach to the central body.

SATURATED_PIXEL_COUNT **INTEGER(>=0)**

The saturated_pixel_count element provides a count of the number of pixels in the array that are at or exceed the maximum DN value.

SC_EARTH_POSITION_VECTOR **REAL <km>**

The SC_EARTH_POSITION_VECTOR element indicates the x-, y-, z- components of the position vector from the spacecraft to the earth, expressed in J2000 coordinates, and corrected for light time, evaluated at the epoch at which the image was taken.

SC_GEOCENTRIC_DISTANCE **REAL <km>**

The SC_GEOCENTRIC_DISTANCE element provides the distance from the center of the earth to the spacecraft. The default unit is kilometer.

SC_SUN_POSITION_VECTOR **REAL <km>**

The sc_sun_position_vector element indicates the x-, y-, and z- components of the position vector from observer to sun, center expressed in J2000 coordinates, and corrected for light time and stellar aberration, evaluated at epoch at which image was taken.

SC_SUN_VELOCITY_VECTOR **REAL <km/s>**

The sc_sun_velocity_vector element indicates the x-, y-, and z- components of the velocity vector of sun relative to observer, expressed in J2000 coordinates, and corrected for light time, evaluated at epoch at which image was taken.

SC_TARGET_POSITION_VECTOR **REAL <km>**

The sc_target_position_vector element indicates the x-, y-, z- components of the position vector from observer to target center expressed in J2000 coordinates, and corrected for light time and stellar aberration, evaluated at epoch at which image was taken.

SC_TARGET_VELOCITY_VECTOR **REAL <km/s>**

The sc_target_velocity_vector element indicates the x-, y-, z- components of the velocity vector of target relative to observer, expressed in J2000 coordinates, and corrected for light time, evaluated at epoch at which image was taken.

SCALED_IMAGE_HEIGHT **REAL <km>**

The scaled_image_height element provides the height on the target surface of the projection of an image onto the surface. This is the distance on the surface between intercept points 2 (upper middle) and 8 (lower middle).

SCALED_IMAGE_WIDTH **REAL <km>**

The scaled_image_width element provides the width on the target surface of the projection of an image onto the surface. This is the distance on the surface between intercept points 4 (middle left) and 6 (middle right).

SCALED_NOISE_LEVEL **[PDS_RINGS]** **REAL(>=0)**

The scaled_noise_level element provides an indicator of the dynamic range within a ring occultation data set. It specifies the ratio of the RMS noise level in the data to the amplitude difference between an unobstructed signal (corresponding to opacity = 0) and a completely obstructed signal (corresponding to infinite opacity): (RMS noise)/(unobstructed signal - fully obstructed signal). The value is computed assuming the data has been re-processed to the radial resolution specified by the reference_radial_resolution element.

SCALED_PIXEL_HEIGHT **REAL <km>**

The scaled_pixel_height element provides the scaled height of a pixel at a given reticle point within an image. Scaled pixel height is defined as the height on the surface of the target of the projection of a pixel onto the surface.

SCALED_PIXEL_WIDTH **REAL <km>**

The scaled_pixel_width element provides the scaled width of a pixel at a given reticle point within an image. Scaled pixel width is defined as the width on the surface of the target of the projection of a pixel onto the surface.

SCALING_FACTOR **CONTEXT DEPENDENT**

The scaling factor element provides the constant value by which the stored value is multiplied. See also: offset. Note: Expressed as an equation: true value = offset value + (scaling factor x stored value). In PDS Magellan altimetry and radiometry labels, the scaling_factor data element is defined as the value of the conversion factor for the best_non_-range_sharp_model_tpt and the non_range_sharp_echo_prof element that multiplies the integer array elements of the best_non_range_sharp_model_tpt and the non_range_sharp_echo_prof to yield their physical values, expressed as equivalent radar cross-sections in units of km**2.

SCAN_MIRROR_ANGLE **REAL <deg>**

The scan_mirror_angle element indicates the angle of rotation of a scan mirror that has one degree of freedom at the time an observation was made.

SCAN_MIRROR_RATE **REAL <deg/s>**

The scan_mirror_angle element indicates the angle of rotation of a scan mirror that has one degree of freedom at the time an observation was made.

SCAN_MIRROR_TEMPERATURE **REAL <K>**

The scan_mirror_temperature element provides the temperature of the scan mirror at the time an observation was made.

SCAN_MODE_ID **IDENTIFIER**

The scan_mode_id element identifies one of several internal rates for data acquisition by an instrument.

SCAN_PARAMETER **[PDS_EN]** **REAL(>=0) <deg>**

The SCAN_PARAMETER element lists individual parameters of a scanning instrument. The parameters itself are explained in the SCAN_PARAMETER_DESC element that shall always accompany this keyword.

An example usage is (substitute quotes instead of apostrophies in the example below)):

SCAN_PARAMETER = (1.2 ¡DEGREE>, 12.2 ¡DEGREE>) SCAN_PARAMETER_DESC = ('SCAN_START_ANGLE', 'SCAN_STOP_ANGLE')

SCAN_PARAMETER_DESC **[PDS_EN]** **IDENTIFIER**

The SCAN_PARAMETER_DESC element describes the individual scan parameters listed in the element SCAN_PARAMETER. The elements SCAN_PARAMETER and SCAN_PARAMTER_DESC shall always be listed together in a label.

SCAN_RATE **[PDS_GEO_VL]** **REAL(0, 360) <b/s>**

SCAN_RATE is the measured data rate at which an instrument scanned an object while acquiring a data frame.

SCET_START_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

The scet_start_time element is defined as an alias for start_time for Magellan mission operations files in AMMOS.

SCET_STOP_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

The scet_stop_time element is defined as an alias for stop_time for Magellan mission operations files only.

SCIENTIFIC_OBJECTIVES_SUMMARY **CHARACTER**

The scientific_objectives_summary element explains the science data_gathering purposes for a particular type of observation, for a particular observation sequence or for which an instrument was designed.

SCIENTIST_FUNDING_ID **CHARACTER(12)**

The scientist_funding_id is the NASA code which supplies funding to the scientist.

SCLK_START_VALUE **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The sclk_start_value element is an alias for spacecraft_ clock_start_count which is used only by AMMOS-Magellan mission operations data files.

SCLK_STOP_VALUE **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

The sclk_stop_value element is an alias for spacecraft_ clock_stop_count which is used only in AMMOS-Magellan mission operations files.

SECOND_STANDARD_PARALLEL **REAL(-90, 90) <deg>**

Please refer to the definition for first_standard_parallel element to see how second_standard_parallel is defined.

SECTION_ID **IDENTIFIER**

The section_id element provides a unique identifier for a section of an instrument. An instrument section is a logical view of an instrument's operating functions, and is distinct from the instrument's physical composition. Essentially, instrument sections are a device to describe the instrument's functioning in terms of a set of 'black boxes', which are themselves described parametrically by the data which are produced. Various operational parts of the instrument, such as detectors, filters, and electronics, are considered to participate by providing data from a section, but have no direct physical relationship with the section, since the section is not a physical object. Instrument modes consist of sets of sections, and the physical implementation of a mode is the union of those physical units which are processing data for each section participating in the mode.

SEF_CREATION_TIME **[JPL_AMMOS_SPECIFIC]** **TIME**

This element is unique to the AMMOS-MGN KEY_TIMES data file. It defines the time of creation of the source sequence file.

SELECTION_QUERY_DESC **[PDS_EN]** **CHARACTER**

The selection_query_desc element provides a query statement, in Standard Query Language (SQL) or another query language, which constrains the set of items requested in an order.

SENSITIVITY_DESC **CHARACTER**

The sensitivity_desc element provides a textual description of the minimum response threshold of a detector.

SENSOR_HEAD_ELEC_TEMPERATURE **[PDS_EN]** **REAL(>=-999) <degC>**

The sensor_head_elec_temperature element provides the temperature, in degrees celsius (unless otherwise specified), of the sensor head electronics.

SEQ_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER(30)**

The seq_id element provides an identification of the spacecraft sequence associated with the given product.

SEQUENCE_ID **[PDS_MER_OPS]** **CHARACTER(30)**

The SEQUENCE_ID element provides an identification of the spacecraft sequence associated with the given product. This element may replace the older SEQ_ID element.

SEQUENCE_NAME **CHARACTER(60)**

The SEQUENCE_NAME element provides the title assigned to a particular observation sequence during planning or data processing. This element replaces the older SEQUENCE_TITLE, which should no longer be used.

SEQUENCE_NUMBER **INTEGER**

The sequence_number element indicates a number designating the place occupied by an item in an ordered sequence.

SEQUENCE_SAMPLES **INTEGER(>=0)**

The sequence_samples element specifies the number of samples in a given observation sequence.

SEQUENCE_TABLE_ID **CHARACTER(20)**

The sequence_table_id element provides an unique identifier for the sequence table that was used for a set of observations. The sequence table provides the image acquistion sequences that specify the camera and filter image sequencing. It indicates the order in which cameras are shuttered and the order for which filters are used.

SEQUENCE_TITLE **CHARACTER(60)**

The sequence_title element provides the title assigned to a particular observation sequence during planning or data processing.

SEQUENCE_VERSION_ID **[PDS_MER_OPS]** **CHARACTER(30)**

The SEQUENCE_VERSION_ID element specifies the version identifier for a particular sequence used during planning or data processing.

SFDU_FORMAT_ID **CHARACTER(12)**

The sfdu_format_id element provides the 12-character Standard Format Data Unit (SFDU) identification for a particular set of data.

SFDU_LABEL_AND_LENGTH **[PDS_GEO_MGN]** **CHARACTER(20)**

The SFDU_label_and_length element identifies the label and length of the Standard Format Data Unit (SFDU).

SHUTTER_CORRECT_THRESH_COUNT **[PDS_MER_OPS]** **INTEGER(>=0) <ms>**

The SHUTTER_CORRECT_THRESH_COUNT element specifies the exposure time threshold for conditional shutter subtraction.

Note: For MER, the count is in increments of 5.1 ms.

SHUTTER_CORRECTION_MODE_ID [PDS_MER_OPS] CHARACTER

The SHUTTER_CORRECTION_MODE_ID element specifies whether shutter subtraction was be performed on the image.

SHUTTER_EFFECT_CORRECTION_FLAG CHARACTER(5)

The shutter_effect_correction_flag element indicates whether or not a shutter effect correction was applied to the image. The shutter effect correction involves the removal from the image of the shutter, or fixed-pattern. Note: For MPF, this correction was applied to the image on board the spacecraft, before the image was transmitted to Earth.

SHUTTER_MODE_ID CHARACTER(20)

The shutter_mode_id element identifies the state of an imaging instrument's shutter during image acquisition. Note: the instrument shutter mode affects the radiometric properties of the camera. Example values: (VOYAGER) NAONLY - narrow angle camera shuttered only, WAONLY - wide angle camera shuttered only, BOTSIM - both cameras shuttered simultaneously, BSIMAN - BOTSIM mode followed by NAONLY, BODARK - shutter remained closed for narrow and wide angle camera, NADARK - narrow angle read out without shuttering, WADARK - wide angle read out without shuttering.

SHUTTER_OFFSET_FILE_NAME CHARACTER(20)

The shutter_offset_file_name element identifies the file that contains the corrections for discrepancies between commanded and actual shutter times. Because the shutter blades travel in a vertical direction, offsets in actual exposure are a function of image line number.

SHUTTER_STATE_FLAG [PDS_EN] CHARACTER(8)

The shutter_state_flag element indicates whether a shutter (usually a camera's) is in the enabled or disabled state. Note: For Cassini, this refers to the infrared camera shutter.

SHUTTER_STATE_ID [PDS_EN] CHARACTER(8)

The shutter_state_id element provides an indication of the state of an instrument's (usually a camera's) shutters at the time of a data taking exposure. Note: for Cassini this element indicates whether the shutters were enabled or disabled during the exposure.

SIDEREAL_ROTATION_PERIOD REAL <d>

The sidereal_rotation_period element indicates the time required for an object to complete one full rotation about its primary axis with respect to the stars. See rotation_direction.

SIGNAL_CHAIN_ID [PDS_EN] CHARACTER(10) <n/a>

The SIGNAL_CHAIN_ID element identifies the signal chain (electronic signal path) number selected for charge-coupled device (CCD) output.

Note: For MARS EXPRESS the High-Resolution Stereo Colour Imager (HRSC) is composed of 10 channels, each consisting of a charge-coupled device (CCD). The data from these sensors are sent to the Data Processing Unit (DPU) via 4 signal chains. One chain can be used for the Super Resolution Channel (SRC), leaving 3 chains available for the other 9 HRSC sensors.

SIGNAL_QUALITY_INDICATOR [PDS_GEO_MGN] REAL <dB>

The signal_quality_indicator element provides a measure of the signal-to- noise-ratio of the measurement of the derived_thresh_detector_index value. It is the ratio between the sum of the 10 successive values of range_sharp_echo_profile, starting 10 values after the element numbered by the derived_thresh_detector_index element value, to the 10 successive values of range_sharp_echo_profile, starting 20 values before the element numbered by the derived_thresh_detector_index element value. This ratio is expressed in decibels.

SITE_ID [JPL_AMMOS_SPECIFIC] CHARACTER

Short identifier for each CMD site. See CMD Subsystem doc.

SITE_NAME [JPL_AMMOS_SPECIFIC] CHARACTER

The site_name element is used to describe the spacecraft commanding site for AMMOS CMD subsystem. Values include MASTER, MCCC, SEQTRAN, GSOC.

SLANT_DISTANCE REAL <km>

The slant_distance element provides a measure of the distance from an observing position (e.g., a spacecraft) to a point on a target body. If not specified otherwise, the target point is assumed to be at the center of the instrument field of view.

SLIT_POSITION_ANGLE [PDS_SBN] REAL

The SLIT_POSITION_ANGLE element describes the orientation of the slit of a spectrograph as projected on the sky. This position angle is measured on the inside of the celestial sphere from the direction of the celestial North Pole in a counter-clockwise direction (eastward) toward the long axis of the spectrograph. This angle is defined such that 0 degrees points north and 90 degrees points east. North Pole is defined in J2000 coordinates.

SLIT_STATE CHARACTER(15)

The position of the slit on the Cassini UVIS instrument.

SLITWIDTH REAL(>=0)

The slitwidth element specifies the slitwidth of the instrument for a given observation. It can be given in either spatial or angular measure.

SLOPE_FILE_NAME CHARACTER(20)

The SLOPE_FILE_NAME element provides the file containing corrections for variances in responsivity (shading) across the field-of-view of an imaging sensor.

SMEAR_AZIMUTH REAL(0, 360) <deg>

The smear_azimuth element indicates the direction in which an image was smeared. The values of this angle increment in a clockwise direction from a horizontal reference line.

SMEAR_MAGNITUDE REAL(0, 800) <pixel>

The smear_magnitude element indicates how far an image was smeared during an exposure.

SNAPSHOT_MODE_FLAG [PDS_EN] CHARACTER(3)

The snapshot_mode_flag element indicates whether the instrument (usually a camera) was to end data collection after one instance, or after the commanded duration. Note: For Cassini, this refers to end of data collection after one spectral cube ('ON'), or after the commanded duration ('OFF').

SOFTWARE_ACCESSIBILITY_DESC [PDS_EN] CHARACTER

The software_access_desc element provides a description of the software's accessibility related to the software_type element.

SOFTWARE_DESC CHARACTER

The software_desc element describes the functions performed by the data processing software. If the subject software is a program library, this element may provide a list of the contents of the library.

SOFTWARE_FLAG CHARACTER(1)

The software_flag element is a yes-or-no flag which indicates whether documented software exists which can be used to process a data set.

SOFTWARE_ICON_FILE_SPEC CHARACTER

The software_icon_file_spec element supplies the name of an image file in GIF format that contains the icon that represents a particular tool.

SOFTWARE_ID CHARACTER(16)

The software_id element is a short-hand notation for the software name, typically sixteen characters in length or less (e.g., tbtool,lablib3).

SOFTWARE_LICENSE_TYPE IDENTIFIER

The software_license_type element indicates the licensing category under which this software falls.

SOFTWARE_NAME [PDS_MER_OPS] CHARACTER

The software_name element identifies data processing software such as a program or a program library.

SOFTWARE_PURPOSE IDENTIFIER

The software_purpose element describes the intended use of the software.

SOFTWARE_RELEASE_DATE DATE

The software_release_date element provides the date as of which a program was released for use. Formation rule: YYYY-MM-DD

SOFTWARE_TYPE [PDS_EN] IDENTIFIER

The software_type element associates a PDS software type with the processing software.

SOFTWARE_VERSION_ID CHARACTER

The software_version_id element indicates the version (development level) of a program or a program library.

SOLAR_AZIMUTH **[PDS_MER_OPS]** **REAL(0, 360) <deg>**

The SOLAR_AZIMUTH element provides one of two angular measurements indicating the direction to the sun as measured from a specific point on the surface of a planet (e.g., from a lander or rover). The azimuth is measured positively in the clockwise direction (as viewed from above) with the meridian passing through the positive spin axis of the planet (i.e., the north pole), defining the zero reference.

SOLAR_DISTANCE **REAL <km>**

The solar_distance element provides the distance from the center of the sun to the center of a target body.

SOLAR_ELEVATION **[PDS_MER_OPS]** **REAL(-90, 90) <deg>**

The SOLAR_ELEVATION element provides one of two angular measurements indicating the direction to the sun as measured from a specific point on the surface of a planet (e.g., from a lander or rover). The positive direction of the elevation, up or down, is set by the POSITIVE_ELEVATION_DIRECTION data element. It is measured from the plane which intersects the surface point and is normal to the line passing between the surface point and the planet's center of mass.

SOLAR_ELONGATION **[PDS_SBN]** **REAL <deg>**

The angle between the line of sight of observation and the direction of the Sun. Note: For IRAS: The line of sight of observation is the boresight of the telescope as measured by the satellite sun sensor.

SOLAR_ELONGATION_SIGMA **[PDS_SBN]** **REAL <deg>**

The standard deviation of the solar elongation determined from variations in values from the spacecraft sun-sensor.

SOLAR_LATITUDE **REAL(-90, 90) <deg>**

The solar_latitude element provides the subsolar latitude value. Subsolar latitude is defined as the latitude of the point on the target body surface that would be intersected by a straight line from the center of the sun to the center of the target body.

SOLAR_LONGITUDE **REAL(-180, 360) <deg>**

The solar_longitude element provides the value of the angle between the body_Sun line at the time of interest and the body_Sun line at the vernal equinox. This provides a measure of season on a target body, with values of 0 to 90 degrees representing northern spring, 90 to 180 degrees representing northern summer, 180 to 270 degrees representing northern autumn and 270 to 360 degrees representing northern winter. For IRAS: the geocentric ecliptic longitude (B1950) of the Sun at the start of a scan.

SOLAR_NORTH_POLE_CLOCK_ANGLE **REAL(0, 360) <deg>**

The SUN_NORTH_POLE_CLOCK_ANGLE element specifies the direction of the north pole of the sun as projected onto the image plane. It is measured from the 'upward' direction, clockwise to the direction toward the sun's north pole, when the image is displayed as defined by the SAMPLE_DISPLAY_DIRECTION and LINE_DISPLAY_DIRECTION elements.

SOURCE_DATA_SET_ID **IDENTIFIER**

The source_data_set_id element identifies a set of data which was used to produce the subject data set, data product or SPICE kernel.

SOURCE_FILE_NAME **CHARACTER(120)**

The source_file_name element provides the name of a specific file that resides within the same data directory and contributes data to a given product. See also: source_product_id.

SOURCE_ID **[PDS_MER_OPS]** **CHARACTER**

The SOURCE_ID element provides a unique identifier for the source of the data.

Note: For MER, the SOURCE_ID element is intended to provide a user of the data with a simple means for selecting the source of command.

SOURCE_LINE_SAMPLES **INTEGER(>=1)**

The source_line_samples element indicates the total number of samples in the image from which a rectangular subimage has been derived. Note: In the PDS, if source_line_samples appears in the image object, it should be greater than the value of line_samples, to indicate that the image described by lines and line_samples is a sub-image of the original (source) image.

SOURCE_LINES **INTEGER(>=1)**

The source_lines element indicates the total number of lines in the image from which a rectangular sub-image has been derived. Note: If source_lines appears in the image object, it should be greater than the value of lines, to indicate that the image described by lines and line_samples is a sub-image of the original (source) image.

SOURCE_NAME **[PDS_EN]** **CHARACTER(60)**

The source_name element supplies the name of the proponent of the data element or object. (For example, PDS CN/J.S.Hughes)

SOURCE_PRODUCT_ID **CHARACTER(76)**

The source_product_id data element identifies a product used as input to create a new product. The source_product_id may be based on a file name. See also: product_id. Note: For Mars Pathfinder, this refers to the filenames of the SPICE kernels used to produce the product and its ancillary data.

SOURCE_SAMPLE_BITS **INTEGER(1, 64)**

The source_sample_bits element indicates the number of bits, or units of binary information, that make up a sample value in the source file used to produce a sub-image.

SPACECRAFT_ALTITUDE **REAL <km>**

The spacecraft_altitude element provides the distance from the spacecraft to a reference surface of the target body measured normal to that surface.

SPACECRAFT_CLOCK_CNT_PARTITION **[PDS_IMG_GLL]** **INTEGER**

The spacecraft_clock_cnt_partition element indicates the clock partition active for the SPACECRAFT_CLOCK_START_COUNT and SPACECRAFT_CLOCK_STOP_COUNT elements.

SPACECRAFT_CLOCK_START_COUNT **CHARACTER(30)**

The spacecraft_clock_start_count element provides the value of the spacecraft clock at the beginning of a time period of interest. Note: In the PDS, sclk_start_counts have been represented in the following ways: Voyager - Flight Data

Subsystem (FDS) clock count (floating point 7.2) Mariner 9 - Data Automation Subsystem, Mariner 10 - FDS - spacecraft_clock Mars Pathfinder - spacecraft clock

SPACECRAFT_CLOCK_STOP_COUNT **CHARACTER(30)**

The spacecraft_clock_stop_count element provides the value of the spacecraft clock at the end of a time period of interest.

SPACECRAFT_DESC **CHARACTER**

The spacecraft_desc element describes the characteristics of a particular spacecraft. This description addresses the complement of instruments carried, the onboard communications and data processing equipment, the method of stabilization, the source of power and the capabilities or limitations of the spacecraft design which are related to data-taking activities. The description may be a synopsis of available mission documentation.

SPACECRAFT_ID **[JPL_AMMOS_SPECIFIC]** **IDENTIFIER**

The spacecraft_id element provides a synonym or mnemonic for the name of a spacecraft which is uniquely associable with the spacecraft name. Note: Within AMMOS only, this element is also an alias for dsn_spacecraft_num. This interpretation is not portable to the PDS.

SPACECRAFT_NAME **CHARACTER(60)**

The spacecraft_name element provides the full, unabbreviated name of a spacecraft. See also: spacecraft_id, instrument_host_id.

SPACECRAFT_OPERATING_MODE_ID **IDENTIFIER**

The spacecraft_operating_mode_id element identifies a particular configuration in which the spacecraft takes and returns data.

SPACECRAFT_OPERATIONS_TYPE **IDENTIFIER**

The spacecraft_operation_type element provides the type of mode of operation of a spacecraft. Example values: SUN-SYNCHRONOUS, GEOSTATIONARY, LANDER, ROVER, FLYBY.

SPACECRAFT_ORIENTATION **REAL**

The spacecraft orientation element provides the orientation of a spacecraft in orbit or cruise in respect to a given frame, (e.g. a non-spinning spacecraft might be flown in +Y or -Y direction in respect to the spacecraft mechanical build frame). This element shall be used in combination with the keyword spacecraft_orientation_desc that describes the convention used to describe the spacecraft orientation. The spacecraft orientation shall be given as a 3-tuple, one value for the x, y and z axes

SPACECRAFT_ORIENTATION_DESC **CHARACTER**

The SPACECRAFT_ORIENTATION_DESC element provides the definition, meaning and standard values for the spacecraft_orientation element. This element should be used in conjunction with the spacecraft_orientation element. The information given shall cover at least the reference frame used for the spacecraft orientation and the standard values that are used with the data set.

SPACECRAFT_POINTING_MODE **CHARACTER(12)**

The spacecraft_pointing_mode element provides the pointing mode of the spacecraft. The definition of the modes and the standard values are given via the SPACECRAFT_POINTING_MODE_DESC element, which shall always accompany thIS keyword

SPACECRAFT_POINTING_MODE_DESC **CHARACTER**

The spacecraft_pointing_mode_desc element provides information about the spacecraft_pointing_mode, lists the values of spacecraft_pointing_mode and defines them in detail. This element shall always accompany the spacecraft_pointing_mode element.

SPACECRAFT_SOLAR_DISTANCE **REAL(>=0) <km>**

The spacecraft_solar_distance element provides the distance from the spacecraft to the center of the sun. See also: solar_distance.

SPATIAL_SUMMING **INTEGER(>=1)**

The SPATIAL_SUMMING element provides the mode for on-board

SPECIAL_INSTRUCTION_ID_NUMBER **[PDS_EN]** **INTEGER(>=0)**

The special_instruction_id_number element is a unique key that is used to identify a particular set of special instructions in a user's order.

SPECIALTY_DESC **CHARACTER**

The specialty_desc element describes an individual's area of specialization during his or her association with a particular institution. Note: 'specialty' is a more general characterization of the individual's activities than is 'role'. See role_desc.

SPECTRAL_EDITING_FLAG **[PDS_EN]** **CHARACTER(3)**

The spectral_editing_flag element indicates whether the spectral cube has been reduced to a subset of the bands in the original cube. If the value is 'OFF', then none of the original bands of the cube were intentionally omitted. See BAND_BIN_ORIGINAL_BAND to determine which bands are present.

SPECTRAL_ORDER_DESC **[PDS_EN]** **CHARACTER**

The spectral order desc element provides detailed information on the values of the spectral order id element and their interpretation.

SPECTRAL_ORDER_ID **[PDS_EN]** **IDENTIFIER**

The spectral order identifier element defines the spectral order of a data object obtained from a grating. As spectral orders are in the range of [-n,...,+n] and several order could overlap, the spectral orders are given as a string. The element spectral_order_description shall accompany the spectral order id and explain in detail the meaning of this keyword.

SPECTRAL_SUMMING_FLAG **[PDS_EN]** **CHARACTER(3)**

The spectral_summing_flag element indicates whether the spectral cube has had some bands summed to reduce the spacecraft's Solid State Recorder (SSR) data volume. All instrument data is stored in the SSR prior to downlink to the ground. See BAND_BIN_ORIGINAL_BAND to determine which bands have been summed.

SPECTROMETER_SCAN_MODE_ID [PDS_EN] IDENTIFIER <n/a>

The SPECTROMETER_SCAN_MODE_ID element describes the scan mode of a spectrometer in general and imaging spectrometers in particular. Imaging spectrometers typically use a 2-D matrix array (e.g., a CCD), and produce a 3-D data cube (2 spatial dimensions and a third spectral axis). These data cubes are built in a progressive manner.

SPECTRUM_INTEGRATED_RADIANCE REAL <J/(m2)/s>**

The spectrum_integrated_radiance element provides the radiance value derived from integration across an entire spectrum.

SPECTRUM_NUMBER INTEGER(>=0)

The spectrum_number element provides the number which identifies a particular spectrum.

SPECTRUM_SAMPLES INTEGER(>=0)

The spectrum_samples element provides the number of samples which form a given spectrum.

SPICE_FILE_ID [PDS_MER_OPS] CHARACTER

The SPICE_FILE_ID element provides an abbreviated name or acronym which identifies particular SPICE file.

SPICE_FILE_NAME [PDS_IMG_GLL] CHARACTER(180)

The spice_file_name element provides the names of the SPICE files used in processing the data. For Galileo, the SPICE files are used to determine navigation and lighting information.

SQL_FORMAT [PDS_EN] IDENTIFIER

The sql_format element supplies the SQL data type used when the data element is declared as a column in a table in a relational data base management system.

SQRT_COMPRESSION_FLAG CHARACTER(5)

The sqrt_compression_flag element indicates whether or not square root compression was applied to the image. Note: For MPF, this compression was performed onboard the lander, prior to transmission of the data to Earth. It involved the compression of the pixels from 12 bits down to 8 bits.

SQRT_MAXIMUM_PIXEL INTEGER(>=0)

The sqrt_maximum_pixel element provides the maximum pixel value in an image prior to square root compression.

SQRT_MINIMUM_PIXEL INTEGER(>=0)

The sqrt_minimum_pixel element provides the minimum pixel value in an image prior to square root compression.

STANDARD_DATA_PRODUCT_ID CHARACTER(20)

The STANDARD_DATA_PRODUCT_ID element is used to link a data product (file) to a standard data product (collection of similar files) described within software interface specification document for a particular data set.

STANDARD_DEVIATION REAL(>=0)

The standard_deviation element provides the standard deviation of the DN values in the image array. Note: For the Mars Pathfinder image data, the standard deviation was calculated using only those pixels within the valid DN range of 0 to 4095.

STANDARD_VALUE_NAME **[PDS_EN]** **CHARACTER(60)**

The standard_value_name element provides a value for a particular data element.

STANDARD_VALUE_SET **[PDS_EN]** **CHARACTER(60)**

The standard_value_set element supplies the list of standard values that may be assigned to a data element. The standard_value_set may be explicitly specified via this data element or may be implicitly derived from GENERAL_-DATA_TYPE, VALID_MINIMUM and VALID_MAXIMUM data elements.

STANDARD_VALUE_SET_DESC **[PDS_EN]** **CHARACTER**

The standard_value_set_desc element is used to supply information about or descriptions of individual members of the standard value set.

STANDARD_VALUE_TYPE **[PDS_EN]** **IDENTIFIER**

The standard_value_type element indicates the type of standard value which exists for a PDS data element. Example values: static - values for the data element exist in a defined and fixed set of standard values, dynamic - values for the data element must either exist in a set of defined standard values or be approved by peer review for inclusion to the set of standard values, suggested - values for the data element must exist in a set of defined standard values or may be added to the set of standard values with no requirement for peer review, range - values for the data element must fall within a default range specified with the minimum and maximum elements, formation - values for the data element must conform to a formation rule.

STAR_DESCRIPTION **[PDS_RINGS]** **CHARACTER**

The star_description element describes the properties of a particular star. Information provided may include, for example, the star's type, V and K magnitudes, catalog references, alternative names, etc.

STAR_DIAMETER **[PDS_RINGS]** **REAL(>=0) <arcsecond>**

The star_diameter element indicates the angular diameter of a star.

STAR_NAME **[PDS_RINGS]** **CHARACTER(40)**

The star_name element provides the identifying name of star, including the catalog name if necessary. Examples include 'sigma Sgr' and 'SAO 123456' (for star number 123456 in the Smithsonian Astrophysical Observatory catalog).

STAR_WINDOW **[PDS_IMG_GLL]** **INTEGER**

The star_window element provides the location and size of up to 5 star areas (number of image areas defined by STAR_WINDOW_COUNT) in an edited Optical Navigation (OPNAV) image. The location and size of each image area is defined by four numbers: starting line, starting sample, number of lines, number of samples (the origin of the image coordinate system is at line, sample=1,1 for the upper-left corner with samples increasing to the right and lines increasing down). This element is Galileo Solid State Imaging- specific.

STAR_WINDOW_COUNT **[PDS_IMG_GLL]** **INTEGER(0, 5)**

Galileo Solid State Imaging-specific. The star_window_count element indicates the number of star areas, defined in the STAR WINDOW keyword, in an edited Optical Navigation (OPNAV) image.

START_AZIMUTH **[PDS_GEO_VL]** **REAL(0, 360) <deg>**

The START_AZIMUTH is the angular distance from a fixed reference position at which an image or observation starts. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system.

START_BIT **INTEGER(>=1)**

The start_bit element identifies the location of the first bit of a bit field data object such as a BIT_COLUMN or BIT_-ELEMENT. Bits are numbered from left to right, counting fro 1. The start_bit value assumes that any necessary byte re-ordering has already been performed.

START_BYTE **INTEGER(>=1)**

The start_byte element in a data object identifies the location of the first byte of the object, counting from 1. For nested objects, the start_byte value is relative to the start of the enclosing object.

START_DELIMITING_PARAMETER **[PDS_EN]** **REAL**

The start_delimiting_parameter element provides the beginning parameter value which, together with the stop_delimiting_parameter value, delimits a subset of data.

START_ERROR_STATE **[PDS_EN]** **INTEGER(>=0) <deg>**

The START_ERROR_STATE provides the state of the error flags returned by an instrument or instrument host at the beginning of a specified event.

Note: For Mars Pathfinder, this was the state of the APXS error state flags at the beginning of an APXS sampling interval.

START_GRATING_POSITION **INTEGER(0, 30)**

The NIMS instrument has only 17 detectors but takes data in as many as 408 wavelengths by moving a grating across 31 possible physical positions. The start grating position is a logical position relative to the (physical) offset grating position. Together, they control the starting physical grating position in the mode. In fixed grating modes, the start grating position may be commanded to any of the 31 physical positions. In multiple-grating- step modes, it may normally range between zero and one less than the grating increment. For example, in short map mode (with grating increment 4) the start grating position would be between zero and three. See the NIMS instrument paper (R. W. Carlson et al, 'Near-Infrared Mapping Spectrometer Experiment on Galileo', Space Science Reviews 60, 457-502, 1992) for details.

START_JULIAN_DATE **INTEGER**

The start_julian_date element provides the Julian date of the start of a time period of interest. Julian date is defined as an integer count of days elapsed since noon, January 1, 4713 B.C. Thus, the Julian date of noon January 1, 1960 (A.D.) is 2436935.

START_JULIAN_DATE_VALUE **REAL(>=0)**

The START_JULIAN_DATE_VALUE provides the full Julian date (i.e., including date fraction) of the start of an observation or event. Julian dates are expressed as real numbers.

Note that this keyword should contain the full Julian date, not the modified Julian date.

START_ORBIT_NUMBER **REAL(>=0)**

The start_orbit_number data element provides the the lowest revolution orbit number that contributed data to a given data product.

START_PAGE_NUMBER **[PDS_EN]** **CHARACTER(8)**

The start_page_number element identifies the beginning page number of a reference document which appears (as an article, for example) in a journal, report or other published work.

START_PRIMARY_KEY **[PDS_EN]** **CONTEXT DEPENDENT**

In a TABLE object, the START_PRIMARY_KEY element indicates the beginning of the range of values for the PRIMARY_KEY column in the table. If PRIMARY_KEY consists of multiple column names, then START_PRIMARY_-KEY is a sequence of values, one for each column. The data type of this keyword is determined by the data type of the column of interest.

START_RESCAN_NUMBER **[PDS_GEO_VL]** **INTEGER(0, -2147483648)**

The START_RESCAN_NUMBER is the scan line number at which the rescan mode begins. The rescan mode consists of scanning either vertically or horizontally repeatedly at the same azimuth.

START_SAMPLE_NUMBER **INTEGER(>=0)**

The start_sample_number element identifies the lowest of the sample numbers which define the orbit sequence portion located within a given bin.

START_SEQUENCE_NUMBER **CHARACTER(2)**

The start_sequence_number element provides the number of the first sequence in a revolution. See sequence_number.

START_SOLAR_LONGITUDE **REAL(-180, 360) <deg>**

The START_SOLAR_LONGITUDE element marks the beginning of a time range measured in solar longitude. Solar longitude is the value of the angle between the body_Sun line at the time of interest and the body_Sun line at the vernal equinox, thus providing a measure of the season on the target body. See also SOLAR_LONGITUDE and STOP_SOLAR_LONGITUDE.

START_TIME **TIME**

The start_time element provides the date and time of the beginning of an event or observation (whether it be a spacecraft, ground-based, or system event) in UTC. Formation rule: YYYY-MM-DDThh:mm:ss[.fff].

START_TIME_BASE **REAL <s>**

The start_time_base element provides the elapsed time from the beginning of each frame to the beginning of a particular mode.

START_TIME_ET **REAL(>=0)**

The START_TIME_ET element provides the time of data acquisition in spacecraft event time (SCET), ephemeris time (ET) format.

For Mars Odyssey, the START_TIME_ET represented the time of data acquisition of the leading edge of the detector array (filter 1), even if filter one was not downloaded.

START_TIME_FROM_CLOSEST_APRCH **CHARACTER(20)**

The start_time_from_closest_approach element provides the time from spacecraft periapsis at the beginning of a sequence. See time_from_closest_approach.

STATUS_NOTE **[PDS_EN]** **CHARACTER**

The status_note element supplies a log of modifications made to an element or object definition. The required entry includes ¡Version_Id / Date / Author / Desc>. Example format: 1̂.0 1990-03-28 DET New Data_Element Definition The description can continue for several lines.

STATUS_TYPE **[PDS_EN]** **CHARACTER(13)**

The status_type element indicates one of a fixed number of statuses that can describe a particular data element or object. Examples: PENDING, APPROVED.

STOP_AZIMUTH **[PDS_GEO_VL]** **REAL(0, 360) <deg>**

The STOP_AZIMUTH is the angular distance from a fixed reference position at which an image or observation stops. Azimuth is measured in a spherical coordinate system, in a plane normal to the principal axis. Azimuth values increase according to the right hand rule relative to the positive direction of the principal axis of the spherical coordinate system.

STOP_DELIMITING_PARAMETER **[PDS_EN]** **REAL**

The stop_delimiting_parameter element provides the ending parameter value which, together with the start_delimiting_parameter value, delimits a subset of data.

STOP_ERROR_STATE **[PDS_EN]** **INTEGER(>=0) <deg>**

The STOP_ERROR_STATE element provides the state of the error flags returned by an instrument or instrument host at the end of a specified event.

Note: For Mars Pathfinder, this was the state of the APXS error state flags at the end of an APXS sampling interval.

STOP_JULIAN_DATE_VALUE **REAL(>=0)**

The STOP_JULIAN_DATE_VALUE provides the full Julian date (i.e., including date fraction) of the end of an observation or event. Julian dates are expressed as real numbers.

Note that this keyword should contain the full Julian date, not the modified Julian date.

STOP_ORBIT_NUMBER **REAL(>=0)**

The stop_orbit_number data element provides the the highest revolution orbit number that contributed data to a given data product.

STOP_PRIMARY_KEY **[PDS_EN]** **CONTEXT DEPENDENT**

In a TABLE object, the STOP_PRIMARY_KEY element indicates the end of the range of values for the PRIMARY_KEY column in the table. If PRIMARY_KEY consists of multiple column names, then STOP_PRIMARY_KEY is a sequence of values, one for each column. The data type of this keyword is determined by the data type of the column of interest.

STOP_SAMPLE_NUMBER **INTEGER(>=0)**

The stop_sample_number element identifies the highest of the sample numbers which define the orbit sequence portion located within a given bin.

STOP_SEQUENCE_NUMBER **CHARACTER(2)**

The stop_sequence_number element provides the number of the last sequence in a revolution. See sequence_number.

STOP_SOLAR_LONGITUDE **REAL(-180, 360) <deg>**

The STOP_SOLAR_LONGITUDE element marks the end of a time range measured in solar longitude. Solar longitude is the value of the angle between the body_Sun line at the time of interest and the body_Sun line at the vernal equinox, thus providing a measure of the season on the target body. See also SOLAR_LONGITUDE and START_SOLAR_-LONGITUDE.

STOP_TIME **TIME**

The stop_time element provides the date and time of the end of an observation or event (whether it be a spacecraft, ground-based, or system event) in UTC. Formation rule: YYYY-MM-DDThh:mm:ss[.fff].

STOP_TIME_ET **REAL(>=0)**

The STOP_TIME_ET element provides the time of the end of data acquisition in spacecraft event time (SCET), ephemeris time (ET) format.

STOP_TIME_FROM_CLOSEST_APRCH **CHARACTER(20)**

The stop_time_from_closest_approach element provides the time from spacecraft periapsis at the end of a sequence. See time_from_closest_approach.

STORAGE_LEVEL_ID **[PDS_EN]** **CHARACTER(10)**

The storage_level_id element identifies a particular storage level. For example, if the complete pathname for a stored data file is 'JPLPDS::DISK$USER1 : [JJEANS.UNIVERSE]DESCRPTR.LIS' then the storage_level_id element value will be$ $JPLPDS, DISK$USER1, JJEANS, UNIVERSE, DESCRPTR.LIS.

STORAGE_LEVEL_NUMBER **[PDS_EN]** **INTEGER(>=0)**

The storage_level_number element describes the position of a given storage level within the overall storage hierarchy of an entire data set, data product, or SPICE kernel. As many storage levels are documented as are necessary to identify the data. Level 0 indicates the highest storage level, which successively higher level numbers indicate successively lower levels in the storage hierarchy.

STORAGE_LEVEL_TYPE **[PDS_EN]** **CHARACTER(10)**

The storage_level_type element identifies the type of storage structure to which a given storage_level_number refers. Example values: DATABASE, PHOTOGRAPHIC FRAME NUMBER, TAPE REEL NUMBER, VAX COMPUTER, VAX DIRECTORY, VAX FILE, VAX SUBDIRECTORY.

STRETCH_MAXIMUM **INTEGER(>=0)**

The stretch_maximum element provides the sample value in a data object which should normally be mapped to the highest display value available on an output device for optimum viewing. Sample values between stretch_minimum and stretch_maximum values are linearly interpolated over the dynamic range of the display device. If it is necessary to map the sample value to a value other than the highest display value (normally 255), the stretch_minimum is expressed as a sequence of values, where the first value represents the sample value in the data object and the second value represents the target output value to the display device. For example: stretch_maximum = 120 indicates that sample values greater than 120 should be mapped to 255 on the output device. stretch_minimum = (120,230) indicates that sample values greater than 120 should be mapped to 230 on the output device. The STRETCHED_FLAG keyword indicates whether the stretch has already been applied to the data (stretched_flag = true) or whether it needs to be applied (stretched_flag = false).

STRETCH_MINIMUM **INTEGER(>=0)**

The stretch_minimum element provides the sample value in a data object which should normally be mapped to the highest display value available on an output device for optimum viewing. Sample values between stretch_minimum and stretch_maximum values are linearly interpolated over the dynamic range of the display device. If it is necessary to map the sample value to a value other than the highest display value (normally 255), the stretch_minimum is expressed as a sequence of values, where the first value represents the sample value in the data object and the second value represents the target output value to the display device. For example: stretch_maximum = 120 indicates that sample values greater than 120 should be mapped to 255 on the output device. stretch_minimum = (120,230) indicates that sample values greater than 120 should be mapped to 230 on the output device. The STRETCHED_FLAG keyword indicates whether the stretch has already been applied to the data (stretched_flag = true) or whether it needs to be applied (stretched_flag = false).

STRETCHED_FLAG **CHARACTER(6)**

The stretched_flag element indicates whether a data object has been stretched using the minimum_stretch and maximum_stretch parameters. A value of TRUE means that it has been stretched and a value of FALSE means it has not been stretched.

SUB_LIGHT_SOURCE_AZIMUTH **REAL(0, 360) <deg>**

The sub_light_source_azimuth element provides the value of the angle between the line from the center of an image to the sub-light-source point and a horizontal reference line (in the image plane) extending from the image center to the middle right edge of the image.

SUB_LIGHT_SOURCE_LATITUDE **REAL(-90, 90) <deg>**

The sub_light_source_latitude element provides the latitude of the sub-light-source point. The sub-light-source point is the point on a body that lies under the light source.

SUB_LIGHT_SOURCE_LONGITUDE **REAL(0, 360) <deg>**

The sub_light_source_longitude element provides the longitude of the sub-light-source point. The sub-light-source point is the point on a body that lies under the light source.

SUB_OBJECT_NAME **[PDS_EN]** **CHARACTER(12)**

The sub_object_name element provides the template object name for a child object name subordinate to a parent object name. This object name is used by the catalog bulk loading software to establish a hierarchy between template objects. For full definitions of the terms object and sub-object, please refer to PDS standards documentation.

SUB_SOLAR_AZIMUTH **REAL(0, 360) <deg>**

The sub_solar_azimuth element provides the value of the angle between the line from the center of an image to the subsolar point and a horizontal reference line (in the image plane) extending from the image center to the middle right edge of the image. The values of this angle increase in a clockwise direction.

SUB_SOLAR_LATITUDE **REAL(-90, 90) <deg>**

The sub_solar_latitude element provides the latitude of the subsolar point. The subsolar point is that point on a body's reference surface where a line from the body center to the sun center intersects that surface.

SUB_SOLAR_LONGITUDE **REAL(-180, 360) <deg>**

The sub_solar_longitude element provides the longitude of the subsolar point. The subsolar point is that point on a body's reference surface where a line from the body center to the sun center intersects that surface. Note: The coordinate_system_type data element should be used in conjuncction with this data element.

SUB_SPACECRAFT_AZIMUTH **REAL(0, 360) <deg>**

The sub_spacecraft_azimuth element provides the value of the angle between the line from the center of an image to the subspacecraft point and a horizontal reference line (in the image plane) extending from the image center to the middle right edge of the image. The values of this angle increase in a clockwise direction.

SUB_SPACECRAFT_LATITUDE **REAL(-90, 90) <deg>**

The sub_spacecraft_latitude element provides the latitude of the subspacecraft point. The subspacecraft point is that point on a body which lies directly beneath the spacecraft.

SUB_SPACECRAFT_LINE **REAL**

The sub_spacecraft_line element is the image line containing the sub-spacecraft point. The subspacecraft point is that point on a body's reference surface where a line from the spacecraft center to the body center intersects the surface.

SUB_SPACECRAFT_LINE_SAMPLE **REAL**

The sub_spacecraft_line_sample element is the image sample coordinate containing the supspacecraft point. The subspacecraft point is that point on a body's reference surface where a line from the spacecraft center to the body center intersects the surface.

SUB_SPACECRAFT_LONGITUDE **REAL(-180, 360) <deg>**

The sub_spacecraft_longitude element provides the longitude of the subspacecraft point. The subspacecraft point is that point on a body's reference surface where a line from the spacecraft center to the body center intersects the surface. Note: The coordinate_system_type data element should be used in conjunction with this data element.

SUBFRAME_TYPE **[PDS_MER_OPS]** **CHARACTER**

The SUBFRAME_TYPE element specifies the method of subframing performed on the NONE indicates no subframing requested. SW_ONLY indicates software processsing HW_COND specifies hardware only if compatible. HW_SW indicates the of hardware then software. SUBFRM_SUN specifies the subframe around the sun.

SUFFIX_BASE **[ISIS]** **REAL**

The xxx_suffix_base element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of base values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS

Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_BASE. Each base value, together with the corresponding multiplier, describes the scaling performed on a 'true' data value to compute the value stored in the suffix location. It also defines the method for recovering the 'true' value: 'true' value = base + multiplier * stored value In ISIS practice, the value of the base is 0.0 for real items, since scaling is not usually necessary for floating point data. Note: Base and multiplier correspond directly to the data elements OFFSET and SCALING_FACTOR.

SUFFIX_BYTES [ISIS] INTEGER(4, 4)

The suffix_bytes element identifies the allocation in bytes of each suffix data value. It is the unit of the dimensions specified by the suffix_items element. In the current build of ISIS, suffix_bytes must always be 4. This means that all suffix items (unlike core items) occupy 4 bytes, even though in some cases the defined suffix data value may be less than 4 bytes in length.

SUFFIX_HIGH_INSTR_SAT [ISIS] CONTEXT DEPENDENT

The xxx_suffix_high_instr_sat element of a 1-3 dimensional qube object (where xxx is an axis name of the qube) provides the sequence of high instrument saturation values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_HIGH_INSTR_SAT. Each high instrument saturation value identifies the special value whose presence indicates the measuring instrument was saturated at the high end. This value must be algebraically less than the value of the xxx_suffix_valid_minimum element. For Standard ISIS Qubes, a value been chosen by ISIS convention. The general data type of the value is determined by the corresponding xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware- specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFCFFFF# for a VAX.

SUFFIX_HIGH_REPR_SAT [ISIS] CONTEXT DEPENDENT

The xxx_suffix_high_repr_sat element of a 1-3 dimensional qube object (where xxx is an axis name of the qube) provides the sequence of high representation saturation values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_HIGH_REPR_SAT. Each high representation saturation value identifies the special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being above the allowable range – which may happen during conversion from another data type. This value must be algebraically less than the value of the xxx_suffix_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of the value is determined by the corresponding xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If the corresponding xxx_suffix_item_type is real, the value will be hardware-specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFBFFFF# for a VAX.

SUFFIX_ITEM_BYTES [ISIS] INTEGER(1, 4)

The xxx_suffix_item_bytes element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of sizes (in bytes) of the suffix items along the xxx axis. Though all items occupy the number of bytes specified by the suffix_bytes element, an item may be defined to be less than 4 bytes in length. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_ITEM_BYTES.

SUFFIX_ITEM_TYPE **[ISIS]** **IDENTIFIER**

The xxx_suffix_item_type element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of data types of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_ITEM_TYPE.

SUFFIX_ITEMS **[ISIS]** **INTEGER(0, 512)**

The suffix_items element provides the sequence of dimensions of the suffix areas of a qube data object. The suffix size of the most frequently varying axis is given first. The length of the sequence is specified by the axes element, and its order must correspond to the order of dimensions in the core_items element, and the order of names in the axis_name element. Each suffix dimension is measured in units of the suffix_bytes element. In a Standard ISIS Qube, suffix items along the SAMPLE, LINE and BAND axes correspond to 'sideplanes', 'bottomplanes' and 'backplanes', respectively, of the core of the qube.

SUFFIX_LOW_INSTR_SAT **[ISIS]** **CONTEXT DEPENDENT**

The xxx_suffix_low_instr_sat element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of low instrument saturation values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_LOW_INSTR_SAT. Each low instrument saturation value identifies the special value whose presence indicates the measuring instrument was saturated at the low end. This value must be algebraically less than the value of the xxx_suffix_valid_minimum element. For Standard ISIS Qubes, a value been chosen by ISIS convention. The general data type of the value is determined by the corresponding xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware-specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFDFFFF# for a VAX.

SUFFIX_LOW_REPR_SAT **[ISIS]** **CONTEXT DEPENDENT**

The xxx_suffix_low_repr_sat element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of low representation saturation values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_LOW_REPR_SAT. Each low representation saturation value identifies the special value whose presence indicates the true value cannot be represented in the chosen data type and length – in this case being below the allowable range – which may happen during conversion from another data type. This value must be algebraically less than the value of the xxx_suffix_valid_minimum element. For Standard ISIS Qubes, a value has been chosen by ISIS convention. The general data type of the value is determined by the corresponding xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If the corresponding xx_suffix_item_type is real, the value will be hardware-specific (or rather floating-point-representation-specific) so that it may be specified exactly near the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFEFFFF# for a VAX.

SUFFIX_MULTIPLIER **[ISIS]** **REAL**

The xxx_suffix_multiplier element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of multipliers of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_MULTIPLIER. Each multiplier, together with the corresponding base value, describes the scaling performed on a 'true' data value to compute the value stored in the suffix location. It also defines the method for recovering the 'true' value: 'true'_value = base + multiplier * stored_value In ISIS practice, the value of the multiplier is 1.0 for real items, since scaling is not usually necessary for floating point data.

SUFFIX_NAME **[ISIS]** **CHARACTER(30)**

The xxx_suffix_name element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of names of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of dimensions in the core_items and suffix_items elements. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_NAME. Band suffix planes (backplanes) are commonly used to store geometry and other information corresponding at each pixel to the pixels of the core planes, such as latitude and longitude.

SUFFIX_NULL **[ISIS]** **CONTEXT DEPENDENT**

The xxx_suffix_null element of a 1-3 dimensional qube object (where xxx is an axis name of the qube) provides the sequence of null values of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_NULL. Each null value identifies the special value whose presence indicates missing data. This value must be algebraically less than the value of the xxx_suffix_valid_minimum element. For Standard ISIS Qubes, the null value is chosen to be the algebraically smallest value allowed by the xxx_suffix_item_type and xxx_suffix_item_bytes elements. The general data type of the null value is determined by the corresponding xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If core_item_type is real, the value will be hardware-specific (or rather floating-point-representation-specific) so that it may be specified exactly at the bottom of the allowable range of values. A non-decimal (hexadecimal) general data type is used for this purpose; e.g. 16#FFFFFFFF# for a VAX. Note: The SUFFIX_NULL element corresponds directly to the PDS standard data element MISSING.

SUFFIX_UNIT **[ISIS]** **CHARACTER(30)**

The xxx_suffix_unit element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of scientific units of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_UNIT.

SUFFIX_VALID_MINIMUM **[ISIS]** **CONTEXT DEPENDENT**

The xxx_suffix_valid_minimum element of a 1-3 dimensional qube object (where xxx is an axis_name of the qube) provides the sequence of valid minima of the suffix items along the xxx axis. The length of the sequence is specified by the axes element, and its order must correspond to the order of names in the xxx_suffix_names element. In a Standard ISIS Qube, the axis names are restricted to SAMPLE, LINE and BAND. For the BAND axis, for example, the element will be named BAND_SUFFIX_VALID_MINIMUM. Suffix item values algebraically less than the corresponding valid minimum are reserved for special values indicating missing data or various types of invalid data. The general data type of this element is determined by the xxx_suffix_item_type element. If the latter is integer or unsigned integer, the general data type is integer. If xxx_suffix_item_type is real, the general data type is non-decimal (hexadecimal, e.g. 16#FFEFFFFF#) so that a hardward-specific special value may be specified exactly.

SUN_FIND_FLAG **[PDS_MER_OPS]** **CHARACTER(5)**

The SUN_FIND_FLAG element indicates whether the sun is located in the image.

SUN_FIND_PARM **[PDS_MER_OPS]** **REAL**

The SUN_FIND_PARM element is an array of values that provides the numerical parameters used in finding the sun centroid.

Note: For MER, this value is valid if the SUN_FIND_FLAG element is 'TRUE'. If the SUN_FIND_FLAG element is 'FALSE', then this value becomes 'N/A'.

SUN_FIND_PARM_NAME **[PDS_MER_OPS]** **CHARACTER**

The SUN_FIND_PARM_NAME element provides the formal name of SUN_FIND_PARM element array values.

SUN_LINE **[PDS_MER_OPS]** **INTEGER(-1, NULL)**

The SUN_LINE element provides the line location of the sun within the image.

SUN_LINE_SAMPLE **[PDS_MER_OPS]** **INTEGER(-1, NULL)**

The SUN_LINE_SAMPLE element provides the sample location of the sun within the image.

SUN_SC_POSITION_VECTOR **REAL(>=0) <km>**

The SUN_SC_POSITION_VECTOR element defines the (x, y, z) components of the position vector from the Sun to the spacecraft expressed in the EME J2000 coordinate frame, corrected for light travel time and stellar aberration, and evaluated at the epoch at which the data were taken.

SUN_VIEW_DIRECTION **[PDS_MER_OPS]** **REAL**

The SUN_VIEW_DIRECTION element provides an array that represents a unit vector identifying the sun viewing direction.

SUN_VIEW_POSITION **[PDS_MER_OPS]** **REAL <m>**

The SUN_VIEW_POSITION element identifies a array which consists of a set of xyz sun viewing position parameters.

SUPPORT_REQUEST_DATE **[PDS_EN]** **DATE**

The support_request_date element provides the date that a support request was taken by the PDS operator.

SUPPORT_REQUEST_DESC **[PDS_EN]** **CHARACTER**

The support_request_desc element provides a textual description of an official PDS support request as recorded by the PDS operator after talking with a PDS user about a problem with the PDS.

SUPPORT_REQUEST_NO **[PDS_EN]** **INTEGER(>=0)**

The support_request_number provides a computer assigned unique number given to each support request recorded by the Central Node PDS operator.

SUPPORT_RESOLUTION **[PDS_EN]** **CHARACTER(60)**

The support_resolution element provides the textual description of the resolution to a problem recorded by the PDS operator.

SUPPORT_RESOLUTION_DATE [PDS_EN] DATE

The support_resolution_date element provides the date that a support request was resolved by the PDS.

SUPPORT_STAFF_FULL_NAME [PDS_EN] CHARACTER(60)

The support_staff_name element provides the full name of the PDS person entering the support request information into the PDS. See also: full_name.

SURFACE_BASED_INST_AZIMUTH [PDS_EN] REAL(0, 360) <deg>

The SURFACE_BASED_INST_AZIMUTH element is identical to and has been replaced by the FIXED_INSTRUMENT_AZIMUTH data element. This element was used exclusively on the Mars Pathfinder mission and should no longer be used.

SURFACE_BASED_INST_ELEVATION [PDS_EN] REAL(-90, 90) <deg>

The SURFACE_BASED_INST_ELEVATION element is identical to and has been replaced by the FIXED_INSTRUMENT_ELEVATION data element. This element was used exclusively on the Mars Pathfinder mission and should no longer be used.

SURFACE_BASED_INST_METHOD IDENTIFIER

The surface_based_inst_method element identifies the method used to calculate the surface based instrument pointing.

SURFACE_CLARITY_PERCENTAGE REAL(0, 100)

The surface_clarity_percentage element provides an estimate of the fraction of an image or observation of a surface which is unobscured (as by clouds). Surface_clarity_percentage is defined as the ratio of the unobscured area to the total observed area.

SURFACE_EMISSION_TEMPERATURE [PDS_GEO_MGN] REAL <K>

The surface_emission_temperature element provides the value of the temperature assumed for the planetary surface covered by the radiometer footprint, derived by correcting brightness_temperature for atmospheric emission and absorption.

SURFACE_EMISSIVITY [PDS_GEO_MGN] REAL

The surface_emissivity element provides the value of surface microwave emissivity, calculated by dividing (surface_emission_temperature - assumed_warm_sky_temperature) by (physical_surface_temperature - assumed_warm_sky_temperature).

SURFACE_GRAVITY REAL <m/s2>**

The surface_gravity element provides the average gravitational acceleration at the surface of a target body. Surface_gravity is computed from the mass and mean radius of the target body.

SURFACE_GROUND_LOCATION [PDS_MER_OPS] REAL <m>

The SURFACE_GROUND_LOCATION element specifies any point on the surface (for SURFACE_MODEL_TYPE 'PLANE'). This point is measured in the coordinates specified the REFERENCE_COORD_SYSTEM_* keywords in the same group.

SURFACE_MODEL_TYPE **[PDS_MER_OPS]** **CHARACTER**

The SURFACE_MODEL_TYPE element specifies the type of surface used for the re-projection performed during the mosaicing process.

SURFACE_NORMAL_VECTOR **[PDS_MER_OPS]** **REAL**

The SURFACE_NORMAL_VECTOR element specifies a vector normal to the surface (for of 'PLANE'). This vector is measured in the coordinates specified by the REFERENCE_COORD_SYSTEM_* keywords in the same group.

SURFACE_TEMPERATURE **[PDS_GEO_MGN]** **REAL <K>**

The surface_temperature element provides the value of the physical surface temperature of the radiometer footprint, calculated from average_planetary_radius and the project-adopted atmospheric model.

SWATH_WIDTH **[PDS_EN]** **INTEGER(1, 64) <pixel>**

The swath_width element provides the number of pixels (in the X direction) collected for a spectral cube during an observation. Note: For Cassini, this will differ from CORE_ITEMS for Occultation Mode cubes.

SYNODIC_ROTATION_PERIOD **REAL <d>**

The synodic_rotation_period element provides the time period required for a solar system object to complete one full rotation about its primary, returning to the same position in space relative to its primary.

SYSTEM_BULLETIN_DATE **[PDS_EN]** **DATE**

The system_bulletin_date element is the date and time when the PDS operator logged a PDS system bulletin.

SYSTEM_BULLETIN_DESC **[PDS_EN]** **CHARACTER**

The system_bulletin_desc element is the text of a PDS system bulletin.

SYSTEM_BULLETIN_ID **[PDS_EN]** **INTEGER(>=0)**

The system_bulletin_id element is a unique integer that identifies a PDS system bulletin.

SYSTEM_BULLETIN_TYPE **[PDS_EN]** **IDENTIFIER**

The system_bulletin_type element is a keyword that describes the type of bulletin displayed.

SYSTEM_CLASSIFICATION_ID **[PDS_EN]** **IDENTIFIER**

The system_classification_id data element identifies a data element or object according to the data system that uses it. In this document, system_classification_id is an indexing mechanism for data element names, to allow them to be identified as either system-specific, or recommended for common use. See also: general_classification_type.

SYSTEM_EVENT_DATE **[PDS_EN]** **DATE**

The system_event_date element provides the beginning date of a PDS scheduled event.

SYSTEM_EVENT_USER_NOTE **[PDS_EN]** **CHARACTER**

The system_event_user_note element provides information about a system event. Example value: THE SYSTEM WILL BE DOWN FOR PREVENTATIVE MAINTENANCE FROM NOON UNTIL MIDNIGHT.

SYSTEM_EXPERTISE_LEVEL **[PDS_EN]** **CHARACTER(10)**

The system_expertise_level element identifies an individual's level of expertise in the use of the PDS capabilities.

TABLE_BL_NAME **[PDS_EN]** **CHARACTER(12)**

The table_bl_name element represents the data base tersename used by the loader software to map a template value to a column in a table. There exists a unique mapping for each template keyword=value occurrence identifies the data base column. The formulation of the tblblname is governed by rules and abbreviations as defined in the PDS Data Administration Plan document.

TABLE_DESC **[PDS_EN]** **CHARACTER**

The table_desc element provides the ascii text description for a table in the PDS data base.

TABLE_NAME **[PDS_EN]** **CHARACTER(12)**

The table_name element provides a unique name for a table in the PDS data base. All tables in the data base will have a name and a description.

TABLE_STORAGE_TYPE **CHARACTER(60)**

The table_storage_type element indicates the order of storage for entries in a table. For enhanced portability and ease of display, the default and recommended storage type for tables is row major.

TABLE_TYPE **[PDS_EN]** **CHARACTER(1)**

The table_type element denotes whether the table contains High Level Catalog data, Detailed Level Catalog Data (Image), Detailed Level Catalog (Fields and Particles) data, or system data. Examples: H, F, I, or S

TARGET_CENTER_DISTANCE **REAL <km>**

The target_center_distance element provides the distance between an instrument and the center of mass of the named target.

TARGET_DESC **CHARACTER**

The target_desc element describes the characteristics of a particular target.

TARGET_DISTANCE **[PDS_MER_OPS]** **REAL <m>**

The TARGET_DISTANCE element provides a measure of the distance from an observing position (e.g., a spacecraft) to a point on a target body. If not specified otherwise, the target point is assumed to be at the center of the instrument field of view.

TARGET_GEOCENTRIC_DISTANCE **REAL <km>**

The TARGET_GEOCENTRIC_DISTANCE provides the distance from the center of the earth to the center of the target of an observation at the time of the observation. The default unit is kilometers. 'Center' is generally taken as center of figure, although in some higher-level products it may be center of mass. Users should consult the data set documentation to determine which is presented in those cases where the difference might be significant.

TARGET_HELIOCENTRIC_DISTANCE **REAL <km>**

The TARGET_HELIOCENTRIC_DISTANCE provides the distance from the sun to the target of an observation at the time of the observation. The default unit is kilometers. 'Center' is generally taken as center of figure, although in some higher- level products it may be center of mass. Users should consult the data set documentation to determine which is presented in those cases where the difference might be significant.

TARGET_LIST **[PDS_EN]** **CHARACTER(255)**

The target_list element provides a list of all solar system bodies within the field of view of the image. Note: For Cassini, this information is derived from star tracking data as well as the spacecraft and planetary body ephemerides, and is limited to the accuracy of that set of data.

TARGET_NAME **CHARACTER(120)**

The target_name element identifies a target. The target may be a planet, satellite,ring,region, feature, asteroid or comet. See target_type.

TARGET_PARAMETER_EPOCH **TIME**

The target_parameter_epoch element provides the reference epoch for the value associated with a particular target parameter, whose name is provided in the target_parameter_name element. The reference epoch is the date and time associated with measurement of a quantity which may vary with time. For example, the value provided for the obliquity of a planet will be given for a measurement taken at a specified time. That time will be referenced in the target_parameter_epoch element. See also target_parameter_value.

TARGET_PARAMETER_NAME **CHARACTER(30)**

The target_parameter_name element provides the name of a dynamic or physical parameter associated with a given target. This element may take as values only those names that are proper element names for the various dynamic and physical parameters cataloged as part of target information. Example values: BOND_ALBEDO, MEAN_SURFACE_TEMPERATURE, OBLIQUITY, ORBITAL_INCLINATION.

TARGET_PARAMETER_UNCERTAINTY **CHARACTER(40)**

The target_parameter_uncertainty element provides the numeric value of the uncertainty associated with the value given for a particular target parameter, whose name is provided in the associated target_parameter_name element. The uncertainty is expressed in the same units as the value of the parameter itself, and gives some measure of the provider's estimate of the reliability of a particular value stored in the catalog. See also target_parameter_value.

TARGET_PARAMETER_VALUE **CHARACTER(40)**

The target_parameter_value element provides the numeric value associated with a particular target parameter, whose name is provided in the associated target_parameter_name element. Each value provided is associated with a particular source, which is completely referenced in the associated data_source_desc. See also target_parameter_uncertainty, target_parameter_epoch.

TARGET_SUN_POSITION_VECTOR **REAL <km>**

The TARGET_SUN_POSITION_VECTOR element provides the x-, y-, z- components of the position vector from the target to the sun expressed in J2000 coordinates, and corrected for light time and stellar aberration, evaluated at the epoch at which the image was taken.

TARGET_SUN_VELOCITY_VECTOR **REAL <km/s>**

The TARGET_SUN_VELOCITY_VECTOR element indicates the x-, y-, z- components of the velocity vector of the target relative to the sun, expressed in J2000 coordinates, and corrected for light time, evaluated at the epoch at which the image was taken.

TARGET_TYPE **IDENTIFIER**

The target_type element identifies the type of a named target. Example values: PLANET, SATELLITE, RING, REGION, FEATURE, ASTEROID, COMET.

TASK_NAME **CHARACTER(40)**

The task_name element identifies the task with which an individual is or was affiliated during his or her association with a particular institution. Note: 'task' affiliations are distinct from 'mission' affiliations.

TECHNICAL_SUPPORT_TYPE **IDENTIFIER**

The technical_support_type element indicates the type of support provided for a piece of software. SOURCE_NAME = PDS CN/S. Hughes.

TELEMETRY_APPLICATION_ID **CHARACTER(10)**

The TELEMETRY_APPLICATION_ID element is used to link a data product (file) to a given application or structure description, when multiple formats exist within a single telemetry format.

TELEMETRY_FMT_EXTENSION_TYPE **[PDS_MER_OPS]** **CHARACTER(5)**

The TELEMETRY_FMT_EXTENSION_TYPE element provides additional information about what kind of telemetry was collected during scene looks versus calibration looks. Valid values are: LONG (Scene: Long Telemetry, Calibration: Long Telemetry) SHORT (Scene: Short Telemetry, Calibration: Short Telemetry) MIXED (Scene: Short Telemetry, Calibration: Long Telemetry)

TELEMETRY_FORMAT_ID **IDENTIFIER**

The TELEMETRY_FORMAT_ID element supplies a telemetry format code.

TELEMETRY_PROVIDER_ID **[PDS_MER_OPS]** **CHARACTER**

The TELEMETRY_PROVIDER_ID element identifies the provider and or version of the telemetry data used in the generation of this data.

TELEMETRY_PROVIDER_TYPE **[PDS_MER_OPS]** **CHARACTER(12)**

The TELEMETRY_PROVIDER_TYPE element classifies the source of the telemetry used in creation of this data set.

TELEMETRY_SOURCE_ID **[PDS_EN]** **IDENTIFIER**

The telemetry source identifier element identifies the telemetry (TLM) source. Normally, the telemetry from the spacecraft is routed through a dedicated channel into the user workstation. All of these elements in the TLM source may, however, be different over the lifecycle of a mission, e.g., the spacecraft flight model 1 and flight model 2 (FM1, FM2) or an electrical model (EM) might be used to send the data via a virtual channel 0 (VC0) or virtual channel 1

(VC1) to a electrical ground support equipment (EGSE) computer 0 (EGSE_ID_0). The different routes can be defined with the telemetry source id element.

Examples (substitute quotes instead of apostrophe in the below example): TELEMETRY_SOURCE_ID = ('FM1','VC0','EGSE_-ID_1') TELEMETRY_SOURCE_ID = ('EM','VC1','EGSE_ID_1')

TELEMETRY_SOURCE_NAME **[PDS_MER_OPS]** **CHARACTER(60)**

The TELEMETRY_SOURCE NAME element identifies the telemetry source used in creation of a data set.

TELEMETRY_SOURCE_TYPE **[PDS_MER_OPS]** **CHARACTER**

The TELEMETRY_SOURCE_TYPE element classifies the source of the telemetry used in creation of this data set.

TELEPHONE_NUMBER **CHARACTER(30)**

The telephone_number element provides the area code, telephone number and extension (if any) of an individual or node. See also: fts_number.

TELESCOPE_DIAMETER **REAL <m>**

The telescope_diameter element provides the diameter of the primary mirror of a telescope.

TELESCOPE_F_NUMBER **REAL(>=0.5)**

The telescope_f_number element provides the value of the ratio of the focal length to the aperture of a telescope.

TELESCOPE_FOCAL_LENGTH **REAL <m>**

The telescope_focal_length element provides the total optical path distance from the first element of the optics to the focal point of a telescope.

TELESCOPE_ID **IDENTIFIER**

The telescope_id element uniquely identifies a particular telescope.

TELESCOPE_LATITUDE **[PDS_RINGS]** **REAL(-90, 90) <deg>**

The telescope_latitude element indicates the planetographic latitude of a telescope site on the Earth's surface.

TELESCOPE_LONGITUDE **[PDS_RINGS]** **REAL(-180, 180) <deg>**

The telescope_longitude element indicates the longitude of a telescope site on the Earth's surface. East longitudes are positive and west longitudes are negative.

TELESCOPE_RESOLUTION **REAL(0, 3.14159) <rad>**

The telescope_resolution element provides the achievable angular resolution of a telescope.

TELESCOPE_SERIAL_NUMBER **CHARACTER(20)**

The telescope_serial_number element provides the serial number of a telescope.

TELESCOPE_SITE_RADIUS **[PDS_RINGS]** **REAL(>=0) <km>**

The telescope_site_radius element indicates the radial distance of a telescope site from the Earth's center.

TELESCOPE_T_NUMBER **REAL(>=0.5)**

The telescope_t_number element provides the effective f_number of a telescope. Note: The t_number differs from the f_number due to losses in the optical system.

TELESCOPE_T_NUMBER_ERROR **REAL**

The telescope_t_number_error element indicates the error associated with the t_number value for a particular telescope.

TELESCOPE_TRANSMITTANCE **REAL(0, 1)**

The telescope_transmittance element provides the transmittance value for a telescope. Transmittance is defined as the ratio of transmitted to incident flux through the telescope.

TEMPERATURE_TRANSLATION_DESC **CHARACTER**

The temperature_translation_desc element provides the conversion necessary to translate an instrument's transmitted temperature reading to a value which is relative to a standard temperature scale.

TEMPLATE **[PDS_EN]** **CHARACTER(30)**

The template element provides the identifier that appears in a physical template header.

TEMPLATE_BL_NAME **[PDS_EN]** **CHARACTER(12)**

The template_bl_name element represents the data base terse name associated with a template keyword. This terse-name is used during construction of templates to provide a reference to the keyword a full data element name rather than the terse representation. The formulation of the tmpltblname is governed by rules and abbreviations as defined in the PDS Data Administration Plan document.

TEMPLATE_NAME **[PDS_EN]** **CHARACTER(60)**

The template_name element provides the name of a template object used in the PDS system and the bulk loading software.

TEMPLATE_NOTE **[PDS_EN]** **CHARACTER**

The template_note element provides the textual description of the purpose for a template object as related to the data supplier. This description is distributed whenever a template is sent to a data supplier.

TEMPLATE_REVISION_DATE **[PDS_EN]** **DATE**

The template_revision_date element indicates the latest revision date for a template (i.e. 11/22/88).

TEMPLATE_STATUS **[PDS_EN]** **CHARACTER(40)**

The template_status element is updated by the loader software after certain events in the catalog loading process. The value of this field indicates the current status of a template or sub-template in the load process.

TEMPLATE_TYPE **[PDS_EN]** **CHARACTER(12)**

The template_type element provides a type or class of template object.

TEMPLATE_USE_INDICATOR [PDS_EN] CHARACTER(1)

The template_use_indicator element indicates whether or not template may recur within a set of templates.

TERSE_NAME [PDS_EN] CHARACTER(12)

The terse_name element supplies a twelve-character unique identifier for a data element and is an alternative to the thirty-character data element name. In the PDS, the terse name is an abbreviation of the data element name, according to the abbreviations documented in the Planetary Science Data Dictionary.

TEST_PHASE_NAME [PDS_MER_OPS] CHARACTER

The TEST_PHASE_NAME element identifies the phase of a test for instrument calibration.

TEST_PULSE_STATE CHARACTER(3)

The state of the Cassini UVIS instrument's test pulse mechanism.

TEXT_FLAG [PDS_EN] CHARACTER(1)

The text_flag element indicates whether or not a data element contains variable-length textual information (i.e., a description, a note, or a summary).

THRESHOLD_COST [PDS_EN] INTEGER(>=0) <us_dollar>

The threshold_cost element provides the maximum cost which is compared to the order item's calculated cost. When the threshold cost is exceeded, the order item is not accepted by the PDS order function.

TIME_FROM_CLOSEST_APPROACH CHARACTER(20)

The time_from_closest_approach element provides the time with respect to periapsis or closest approach.

TIME_RANGE_NUMBER [JPL_AMMOS_SPECIFIC] TIME

The time_range number is unique to AMMOS-MGN ephemeris files and identifies groups of time ranges in the catalog object.

TIMEOUT_PARAMETER [PDS_MER_OPS] INTEGER(>=0) <s>

The TIMEOUT_PARAMETER element provides the time at which an operation will timeout.

Note: For MER, this is the revolve timeout for grinding. If the grinding doesn't complete a full revolution within this time it will determine that it is not making sufficient progress and end the grinding.

TLM_CMD_DISCREPANCY_FLAG CHARACTER(5)

The tlm_cmd_discrepancy_flag element indicates whether or not discrepancies were found between the uplinked commands and the downlinked telemetry.

TLM_INST_DATA_HEADER_ID [PDS_MER_OPS] INTEGER(>=0)

The TLM_INST_DATA_HEADER_ID element indicates the version of the instrument specific information provided with telemetry data products. The version is incremented whenever there is a change to the header structure.

TORQUE_CONSTANT **[PDS_MER_OPS]** **REAL <n/a>**

The element TORQUE_CONSTANT specifies the rotation motor torque constant of an... (this description incomplete at this time)

Valid UNIT_ID is : mN*m/mA

TORQUE_GAIN **[PDS_MER_OPS]** **REAL <n/a>**

The element TORQUE_GAIN specifies the torque controller proportional gain, derivative and integral gain.

Valid UNIT_IDs are: rad/(sec*m N*m) rad/(mN*m) rad*sec/(mN *m)

TORQUE_GAIN_NAME **[PDS_MER_OPS]** **CHARACTER**

The TORQUE_GAIN_NAME element specifies the formal name of the TORQUE_GAIN element.

TOTAL_FOVS **INTEGER(>=0)**

The total_fovs (fields-of-view) element indicates the total number of fields of view associated with a single section of an instrument.

TOTAL_RESCAN_NUMBER **[PDS_GEO_VL]** **INTEGER(0, -2147483648)**

The TOTAL_RESCAN_NUMBER is the total number of rescan lines acquired.

TRANSFER_COMMAND_TEXT **CHARACTER**

The transfer_command_text element represents the complete command used to create a data volume, such as COPY or BACKUP for tape volumes. It should also include special flags that were used to perform the command (eg. tar -xvf).

TRANSMITTED_POLARIZATION_TYPE **[PDS_EN]** **CHARACTER(60)**

Polarization of a signal transmitted by the instrument or other source.

TRUE_ANOMALY_ANGLE **REAL(0, 360) <deg>**

The true_anomaly_angle element provides the value of the angle between the line connecting an orbiting body and the body around which it is orbiting (its primary) and the line connecting the periapsis position and the primary. True_-anomaly is measured in the orbiting body's orbital plane in the direction of motion from periapsis.

TRUTH_WINDOW **[PDS_IMG_GLL]** **INTEGER <pixel>**

Galileo Solid State Imaging-specific. Images can be edited so that only an image area or cut_out_window is compressed and transmitted to Earth. Within this cut_out_window there can be an image area or TRUTH_WINDOW of up to 96 X 96 pixels that will be transmitted with only lossless Huffman compression applied. The truth_window element indicates the location and size of this image area as defined by four numbers: starting line, starting sample, number of lines, number of samples (the origin of the image coordinate system is at line,sample=1,1 for the upper-left corner with samples increasing to the right and lines increasing down).

TUPLE_SEQUENCE_NUMBER **[PDS_EN]** **INTEGER(>=0)**

The tuple_sequence_number element is used in all text tables where the ordering of the ASCII text rows is required. This element is used in all text type tables in the PDS data base.

TWIST_ANGLE **REAL(0, 360) <deg>**

The twist_angle element provides the angle of rotation about an optical axis relative to celestial coordinates. The RIGHT_ASCENSION, DECLINATION and TWIST_ANGLE elements define the pointing direction and orientation of an image or scan platform. Note: The specific mathematical definition of TWIST_ANGLE depends on the value of the TWIST_ANGLE_TYPE element. If unspecified, TWIST_ANGLE_TYPE = GALILEO for Galileo data and TWIST_ANGLE_TYPE = DEFAULT for all other data.

Note: This element bears a simple relationship to the value of CELESTIAL_NORTH_CLOCK_ANGLE. When TWIST_-ANGLE_TYPE = DEFAULT, TWIST_ANGLE = (180 - CELESTIAL_NORTH_CLOCK_ANGLE) mod 360; when TWIST_ANGLE_TYPE = GALILEO, TWIST_ANGLE = (270 - CELESTIAL_NORTH_CLOCK_ANGLE) mod 360.

TWIST_ANGLE_TYPE **IDENTIFIER**

The twist_angle_type element determines the specific mathematical meaning of the element TWIST_ANGLE when it is used to specify the pointing of an image or scan platform. Allowed values are DEFAULT and GALILEO. If unspecified, the value is GALILEO for Galileo data and DEFAULT for all other data.

The three elements RIGHT_ASCENSION, DECLINATION and TWIST_ANGLE define the C-matrix, which transforms a 3-vector in celestial coordinates into a frame fixed to an image plane. Celestial coordinates refer to a frame in which the x-axis points toward the First Point of Aries and the z-axis points to the celestial pole; these coordinates are assumed to be in J2000 unless otherwise specified. Image plane coordinates are defined such that the x-axis points right, the y-axis points down, and the z-axis points along the camera's optic axis, when an image is displayed as defined by the SAMPLE_DISPLAY_DIRECTION and LINE_DISPLAY_DIRECTION elements.

For TWIST_ANGLE_TYPE = DEFAULT, the C-matrix is equal to C-matrix = [T]3 [90-D]1 [R+90]3

= —-sinR cosT-cosR sinD sinT cosR cosT-sinR sinD sinT cosD sinT— — sinR sinT-cosR sinD cosT -cosR sinT-sinR sinD cosT cosD cosT— — cosR cosD sinR cosD sinD —

For TWIST_ANGLE_TYPE = GALILEO, the C-matrix is defined by C-matrix = [T]3 [90-D]2 [R]3

= — sinR sinT+cosR sinD cosT cosR sinT+sinR sinD cosT -cosD cosT— —-sinR cosT-cosR sinD sinT cosR cosT-sinR sinD sinT cosD sinT— — cosR cosD sinR cosD sinD —

Here the notation [X]n specifies a rotation about the nth axis by angle X (in degrees). R refers to right ascension, D to declination, and T to twist angle.

TWIST_OFFSET_ANGLE **REAL(-90, 90) <deg>**

The twist_offset_angle element provides the angle at which an instrument is mounted, measured perpendicular to the plane defined by the cone and cross-cone axes. See also cone_offset_angle and cross_cone_offset_angle.

UNCOMPRESSED_FILE_NAME **CHARACTER(31)**

The UNCOMPRESSED_FILE_NAME element provides the location independent name of a file. It excludes node or volume location, directory path names, and version specification. To promote portability across multiple platforms, PDS requires the file_name to be limited to a 27-character basename, a full stop (. period), and a 3-character extension. Valid characters include capital letters A - Z, numerals 0 - 9, and the underscore character (_).

UNCORRECTED_DISTANCE_TO_NADIR **[PDS_GEO_MGN]** **REAL <km>**

The uncorrected_distance_to_nadir element provides the 'raw' measurement of range-to-surface, obtained from the pulse-compressed altimeter signals by the MGMTAC phase of the altimetry and radiometry data reduction program.

UNCORRECTED_START_TIME **TIME**

The uncorrected_start_time element provides the time of the observation as sent down by the spacecraft. This time may be incorrect due to a software problem that existed onboard the spacecraft. The difference between the START_TIME and the UNCORRECTED_START_TIME is the estimated correction that was applied to the START_TIME during ground processing.

UNEVEN_BIT_WEIGHT_CORR_FLAG **CHARACTER(3)**

The uneven_bit_weight_corr_flag element is used to indicate whether a correction has been applied to adjust for uneven bit weighting of the analog-to-digital converter. In image processing, the correction is applied to every pixel in an image.

UNIT **CHARACTER(40)**

The unit element provides the full name or standard abbreviation of a unit of measurement in which a value is expressed. Example values: square meter, meter per second. Note: A table of standard units representing those published by the Systeme Internationale appears in the 'Units of Measurement' section of the PSDD. (Please refer to the table of contents for its location.) The values in this table's 'Unit Name' column constitute the standard values for the data element UNIT.

UNIT_ID **CHARACTER(12)**

The unit_id element indicates the common abbreviation or symbol for a unit of measure. Example: The unit KILOGRAM has the unit_id 'kg'. Note: A table of standard units, unit ids, and measured quantities including those published by the Systeme Internationale appears in the 'Units of Measurement' section of the PSDD. (Please refer to the table of contents for its location.) The values in this table's 'Symbol' column constitute the standard values for the data element unit_id.

UNKNOWN_CONSTANT **CONTEXT DEPENDENT**

The unknown_constant element supplies the numeric value used to represent the figurative constant 'UNK'. 'UNK' (Unknown) is defined as indicating when values for a particular data element in a specific instance is permanently not known.

UPLOAD_ID **CHARACTER(60)**

The upload_id element describes a spacecraft command set that is associated with the given data product.

USAGE_NOTE **[PDS_EN]** **CHARACTER**

The usage_note element provides the information about the use of a particular data element or object within a particular context.

USER_PRODUCT_ID **CHARACTER(30)**

The user_product_id element provides an alternate logical file name constructed according to a producer-defined naming convention.

VALID_MAXIMUM **CONTEXT DEPENDENT**

The valid_maximum data element represents the maximum value that is valid for a data object. Valid_minimum and valid_ maximum define the valid range of values for a data object, such as -90 to 90 for a column object containing latitude values. Note: this element should appear in labels only between the 'OBJECT =' and 'END_OBJECT=' lines of an object with a specific data type.

VALID_MINIMUM **CONTEXT DEPENDENT**

The valid_minimum data element represents the minimum value that is valid for a data object. Valid_minimum and valid_ maximum define the valid range of values for a data object, such as -90 to 90 for a column object containing latitude values. Note: this element should appear in labels only between the 'OBJECT =' and 'END_OBJECT=' lines of an object with a specific data type.

VAR_DATA_TYPE **IDENTIFIER <n/a>**

Tables with variable length records may be stored in two files, with the fixed-length fields in one file and the variable-length fields in the other, usually named *.VAR. In a COLUMN object, the presence of the keywords VAR_DATA_-TYPE, VAR_ITEM_BYTES, and VAR_RECORD_TYPE indicates that the column's value is an offset into a variable length record in the *.VAR file. VAR_DATA_TYPE specifies the data type of the data found at the location in the *.VAR file. It is analogous to the keyword DATA_TYPE.

VAR_ITEM_BYTES **[PDS_EN]** **INTEGER(>=1) <B>**

Tables with variable length records may be stored in two files, with the fixed-length fields in one file and the variable-length fields in the other, usually named *.VAR. In a COLUMN object, the presence of the keywords VAR_DATA_-TYPE, VAR_ITEM_BYTES, and VAR_RECORD_TYPE indicates that the column's value is an offset into a variable length record in the *.VAR file. VAR_ITEM_BYTES specifies the number of bytes of data found at the location in the *.VAR file. It is analogous to the keyword BYTES.

VAR_RECORD_TYPE **[PDS_EN]** **CHARACTER(40) <n/a>**

Tables with variable length records may be stored in two files, with the fixed-length fields in one file and the variable-length fields in the other, usually named *.VAR. In a COLUMN object, the presence of the keywords VAR_DATA_-TYPE, VAR_ITEM_BYTES, and VAR_RECORD_TYPE indicates that the column's value is an offset into a variable length record in the *.VAR file. VAR_RECORD_TYPE specifies the type of variable length records in the *.VAR file.

VECTOR_COMPONENT_1 **REAL**

The vector_component_1 element provides the magnitude of the first component of a vector. The particular vector component being measured is identified by the vector_component_id_1 element.

VECTOR_COMPONENT_2 **REAL**

The vector_component_2 element provides the magnitude of the second component of a vector. The particular vector component being measured is identified by the vector_component_id_2 element.

VECTOR_COMPONENT_3 **REAL**

The vector_component_3 element provides the magnitude of the third component of a vector. The particular vector component being measured is identified by the vector_component_id_3 element.

VECTOR_COMPONENT_ID **IDENTIFIER**

The vector_component_id element identifies a vector component without reference to a particular vector component value.

VECTOR_COMPONENT_ID_1 **IDENTIFIER**

The vector_component_id_1 element identifies the first component of a vector. The magnitude of the first component of the vector is provided by the vector_component_1 element. Example value: RJ$ (a radial distance).

VECTOR_COMPONENT_ID_2 **IDENTIFIER**

The vector_component_id_2 element identifies the second component of a vector. The magnitude of the second component of the vector is provided by the vector_component_2 element. Example value: LATJ$S3 (a latitude).

VECTOR_COMPONENT_ID_3 **IDENTIFIER**

The vector_component_id_3 element identifies the third component of a vector. The magnitude of the third component of the vector is provided by the vector_component_3 element. Example value: LONJ$S3 (a longitude).

VECTOR_COMPONENT_TYPE **CHARACTER(12)**

The vector_component_type element identifies the type of information which is provided by a particular vector component identification element. Example values: LATITUDE, LONGITUDE, VELOCITY.

VECTOR_COMPONENT_TYPE_DESC **CHARACTER**

The vector_component_type_desc provides a general description of a particular vector component type.

VECTOR_COMPONENT_UNIT **CHARACTER(60)**

The vector_component_unit element specifies the unit of measure of associated dataset or sampling parameters. For example, in the ring information entity the unit element specifies that a given set of ring radii are measured in kilometers.

VERSION_ID **[JPL_AMMOS_SPECIFIC]** **CHARACTER**

This element is an alias for product_version_id used only by AMMOS-MGN ephemeris files.

VERSION_NUMBER **[JPL_AMMOS_SPECIFIC]** **INTEGER(>=0)**

The version_number element is defined as an alias for product_version_id and is available only for AMMOS-Magellan mission operations products.

VERTICAL_FOV **REAL(0, 360) <deg>**

The vertical_field_of_view element provides the angular measure of the vertical field of view of an instrument.

VERTICAL_FRAMELET_OFFSET **REAL(>=1)**

The vertical_framelet_offset element provides the column number of a framelet within a tiled image. In the PDS, offsets are counted from one.

VERTICAL_PIXEL_FOV **REAL(0, 360) <deg>**

The vertical_pixel_field_of_view element provides the angular measure of the vertical field of view of a single pixel.

VERTICAL_PIXEL_SCALE **REAL(0, 1000000000) <m/pixel>**

The VERTICAL_PIXEL_SCALE element indicates the vertical picture scale.

VOLUME_DESC **[PDS_EN]** **CHARACTER**

The volume_desc element describes the content and type of data contained in the volume.

VOLUME_FORMAT **IDENTIFIER**

The volume_format element identifies the logical format used in writing a data volume, such as ANSI, TAR, or BACKUP for tape volumes and ISO-9660, HIGH-SIERRA, for CD-ROM volumes.

VOLUME_ID **IDENTIFIER**

The volume_id element provides a unique identifier for a data volume. Example: MG_1001.

VOLUME_INSERT_TEXT **CHARACTER**

The volume_insert_text element provides a text field to be included on the volume insert. The text field should identify the data products or data sets included on the volume. The text field should consist of 8 or fewer lines of text where each line is no more than 60 characters wide.

VOLUME_NAME **CHARACTER(60)**

The volume_name element contains the name of a data volume. In most cases the volume_name is more specific than the volume_set_name. For example, the volume_name for the first volume in the VOYAGER IMAGES OF URANUS volume set is: Volume 1: Compressed Images 24476.54 - 26439.58

VOLUME_SERIES_NAME **CHARACTER(60)**

The volume_series_name element provides a full, formal name that describes a broad categorization of data products or data sets related to a planetary body or a research campaign (e.g. International Halley Watch). A volume series consists of one or more volume sets that represent data from one or more missions or campaigns. For example, the volume series MISSION TO VENUS consists of the following three volume sets: MAGELLAN: THE MOSAIC IMAGE DATA RECORD MAGELLAN: THE ALTIMETRY AND RADIOMETRY DATA RECORD PRE-MAGELLAN RADAR AND GRAVITY DATA SET COLLECTION

VOLUME_SET_ID **IDENTIFIER**

The volume_set_id element identifies a data volume or a set of volumes. Volume sets are normally considered as a single orderable entity. Examples: USA_NASA_PDS_MG_1001, USA_NASA_PDS_GR_0001_TO_GR_0009

VOLUME_SET_NAME **CHARACTER(60)**

The volume_set_name element provides the full, formal name of one or more data volumes containing a single data set or a collection of related data sets. Volume sets are normally considered as a single orderable entity. For example, the volume series MISSION TO VENUS consists of the following three volume sets: MAGELLAN: THE MOSAIC IMAGE DATA RECORD MAGELLAN: THE ALTIMETRY AND RADIOMETRY DATA RECORD PRE-MAGELLAN RADAR AND GRAVITY DATA SET COLLECTION In certain cases, the volume_set_name can be the same as the volume_name, such as when the volume_set consists of only one volume.

VOLUME_SETS **[PDS_EN]** **INTEGER(>=0)**

The volume_sets element provides the number of volume sets in a volume series. For example, there are currently six (6) volume sets associated with the volume series MISSION TO VENUS.

VOLUME_VERSION_ID **CHARACTER(12)**

The volume_version_id element indentifies the version of a data volume. All original volumes should use a volume_-version_id of 'Version 1'. Versions are used when data products are remade due to errors or limitations in the original volumes (test volumes, for example), and the new version makes the previous volume obsolete. Enhancements or revisions to data products which constitute alternate data products should be assigned a unique volume id, not a new version id. Examples: Version 1, Version 2.

VOLUMES **INTEGER**

The volumes element provides the number of physical data volumes contained in a volume set. Note: In the PDS, volumes represents the total number of related data volumes that comprise a single orderable unit, as represented by the volume_set_id. For Example, the volume set VOYAGER IMAGES OF URANUS has the volume_set_id of USA_-NASA_PDS_VG_0001_TO_VG_0003 and the value for volumes would be 3.

WAVELENGTH **[PDS_RINGS]** **REAL(>=0) <micron>**

The wavelength element identifies the mean wavelength to which an instrument detector/filter combination is sensitive.

WESTERNMOST_LONGITUDE **REAL(-180, 360) <deg>**

The following definitions describe westernmost longitude for the body-fixed, rotating coordinate systems:

For Planetocentric coordinates and for Planetographic coordinates in which longitude increases toward the east, the westernmost (leftmost) longitude of a spatial area (e.g.,a map, mosaic, bin,feature or region) is the minimum numerical value of longitude unless it crosses the Prime Meridian.

For Planetographic coordinates in which longitude increases toward the west (prograde rotator), the westernmost (leftmost) longitude of a spatial area (e.g., a map,mosaic, bin, feature or region) is the maximum numerical value of longitude unless it crosses the Prime Meridian.

For the Earth, Moon and Sun, PDS also supports the traditional use of the range (-180,180) in which case the westernmost (leftmost) longitude is the minimum numerical value of longitude unless it crosses -180.

WIND_SENSOR_HIGH_POWER_DUR **[PDS_EN]** **REAL(>=0)**

The WIND_SENSOR_HIGH_POWER_DUR element provides the elapsed time, in seconds, for a wind sensor to be in high power mode before switching to low power mode.

WIND_SENSOR_LOW_POWER_DUR **[PDS_EN]** **REAL(>=0)**

The WIND_SENSOR_LOW_POWER_DUR element provides the elapsed time, in seconds, for a wind sensor to be in low power mode before switching to high power mode.

WIND_SENSOR_POWER_TYPE **[PDS_EN]** **INTEGER(>=0)**

The WIND_SENSOR_POWER_TYPE Element provides a numeric identifier for the operating power mode of a wind sensor.

Note: For Mars Pathfinder, the three valid values were: 0: Low power throughout session, 1: High power throughout session, 2: Cyclic low and high power alternating throughout session, starting with low power.

X_AXIS_MAXIMUM [PDS_MER_OPS] REAL <m>

The X_AXIS_MAXIMUM element provides the value of the X coordinate of a VERTICAL at the top of the image. Note that +X is at the top of the image and is at the right, so +X corresponds to North.

X_AXIS_MINIMUM [PDS_MER_OPS] REAL <m>

The X_AXIS_MINIMUM element provides the value of the X coordinate of a VERTICAL at the bottom of the image.

X_OFFSET [PDS_EN] CONTEXT DEPENDENT

The x_offset element indicates a shift or displacement of a data value in the x-direction. Note: For Cassini, this refers to the commanded mirror offset (in the x direction) within the infrared normal resolution field of view. For visible and infrared, the actual data collection area will differ when not in normal resolution mode.

Y_AXIS_MAXIMUM [PDS_MER_OPS] REAL <m>

The Y_AXIS_MAXIMUM element provides the value of the Y coordinate of a VERTICAL at the right edge of the image.

Y_AXIS_MINIMUM [PDS_MER_OPS] REAL <m>

The Y_AXIS_MINIMUM element provides the value of the Y coordinate of a VERTICAL at the left edge of the image.

Y_OFFSET [PDS_EN] CONTEXT DEPENDENT

The y_offset element indicates a shift or displacement of a data value in the y-direction.

Z_AXIS_DISTANCE [PDS_MER_OPS] REAL <mm>

The Z_AXIS_DISTANCE element provides the distance from the z-axis home position to the lower motor hardstop of an instrument.

Note: For MER, this is the position to which the RAT will move after calibrating against the lower hardstop offset at the start of the RAT_DIAG or RAT_CAL commands and at the end of the RAT_GRIND, RAT_BRUSH commands.

Z_AXIS_POSITION [PDS_MER_OPS] REAL <mm>

The Z_AXIS_POSITION element provides the z-axis offset from the lower motor hardstop to which the RAT will move at the start of the RAT_BRUSH command.

Z_AXIS_STEP_SIZE [PDS_MER_OPS] REAL <mm>

The Z_AXIS_STEP_SIZE element specifies the distance or step size required to move the z-axis of an instrument.

Note: For MER, this is the distance the RAT is moved in the negative direction once the grinding wheel is no longer able to complete a full revolution in the seek and scan operation. This is also the distance required to move the z-axis in the positive direction once the grinding wheel completes a full revolution.

Z_AXIS_VELOCITY [PDS_MER_OPS] REAL <mm/s>

The Z_AXIS_VELOCITY element provides the z-axis velocity of an instrument during an operations period of an instrument command.

Z_AXIS_VELOCITY_NAME **[PDS_MER_OPS]** **CHARACTER**

The Z_AXIS_VELOCITY_NAME element provides the formal name of the values within the Z_AXIS_VELOCITY element array.

Z_OFFSET **[PDS_EN]** **CONTEXT DEPENDENT**

The z_offset element indicates a shift or displacement of a data value in the z-direction. Note: For Cassini, this refers to the commanded mirror offset (in the z direction) within the infrared normal resolution field of view. For visible and infrared, the actual data collection area will differ when not in normal-resolution mode.

ZERO_ELEVATION_LINE **[PDS_MER_OPS]** **REAL <pixel>**

The ZERO_ELEVATION_LINE element provides the image line representing 0.0 degree (MIPL Projections - Cylindrical).

Appendix A

STANDARD VALUES

The science community associated with the Planetary Data System has identified a list of data elements for which a standard list of values should be given. The section identifies these elements and their associated values. In some cases (particularly in cases related to the AMMOS-PDS interface) some values may be restricted to or from specific data types. Please refer to the appropriate standards specification – CDB-Any-Catalog2 – for specific restrictions pertinent to the AMMOS-PDS interface.

Also included is the standard value type, which indicates the nature of the lists presented, i.e., whether and how the lists can be updated. The standard value types are defined below:

STATIC

STATIC standard values are assigned by PDS Central Node system and data administrators. They may only be changed by the Central Node. Examples of such values are the 'Y' and 'N' permissable as values for a "flag"-type data element.

DYNAMIC

DYNAMIC standard value lists reflect values that have been submitted to the PDS so far by past and current planetary missions. New values for these lists may be proposed to the PDS by flight projects and other data systems such as AMMOS. Such new values are added to DYNAMIC upon completion of scientific peer review.

SUGGESTED

SUGGESTED lists also reflect values that have been submitted by past missions, but without benefit of peer review. These provide samples for the user – "University of Iowa" rather then "Univ. or IA", for example. It is expected that elements of the SUGGESTED lists eventually will become DYNAMIC.

FORMATION

The FORMATION standard value type indicates that the values are made up of components, and that those components must be arranged according to a standard form. Formation rules are illustrated for time expressions in this document (see DATA TYPE STANDARDS), and for PDS data_set_ids and names in the PDS standards documentation.

TEXT

The TEXT standard value type indicates that the values are made up of free form unlimited length character string.

ANGULAR_DISTANCE_NAME **[PDS_MER_OPS]** **SUGGESTED**

DWELL COMPLETION
GRIND COMPLETION

ANTIBLOOMING_STATE_FLAG **[PDS_EN]** **STATIC**

OFF
ON

APERTURE_TYPE **[PDS_SBN]** **DYNAMIC**

BOTH
LARGE
SMALL

APPLICATION_PACKET_NAME **SUGGESTED**

APX
ENG_IMG
IMG_ASI
OPS_IMG_1
OPS_IMG_2
RVR_AUTO_IMG
RVR_ENG_IMG
RVR_IMG
RVR_OPS_IMG
RVR_SCI_IMG
RVR_TECH_IMG
SCI_IMG_1
SCI_IMG_2
SCI_IMG_3
SCI_IMG_4
TECH_IMG

APPLICATION_PROCESS_NAME **[PDS_MER_OPS]** **SUGGESTED**

APXS
DESCENT IMAGER
HAZCAM LEFT FRONT
HAZCAM LEFT REAR
HAZCAM RIGHT FRONT
HAZCAM RIGHT REAR
MB
MI
MINITES
NAVCAM LEFT
NAVCAM RIGHT
PANCAM LEFT
PANCAM RIGHT
RAT

ARTICULATION_DEV_POSITION **[PDS_MER_OPS]** **RANGE**

ARTICULATION_DEV_POSITION_ID **[PDS_MER_OPS]** **SUGGESTED**

MI_CLOSED

MI_OPEN
NONE
PANCAM_L1_EMPTY
PANCAM_L2_753NM
PANCAM_L3_673NM
PANCAM_L4_602NM
PANCAM_L5_535NM
PANCAM_L6_483NM
PANCAM_L7_440NM
PANCAM_L8_440NM_SOL_ND5
PANCAM_R1_440NM
PANCAM_R2_754NM
PANCAM_R3_803NM
PANCAM_R4_864NM
PANCAM_R5_903NM
PANCAM_R6_933NM
PANCAM_R7_1001NM
PANCAM_R8_880NM_SOL_ND5

ARTICULATION_DEV_POSITION_NAME **[PDS_MER_OPS]** **SUGGESTED**
LEFT PANCAM FILTER
MI DUST COVER
RIGHT PANCAM FILTER

ARTICULATION_DEV_VECTOR_NAME **[PDS_MER_OPS]** **SUGGESTED**
GRAVITY

ARTICULATION_DEVICE_ANGLE_NAME **[PDS_MER_OPS]** **SUGGESTED**
AZIMUTH
AZIMUTH-INITIAL
AZIMUTH-MEASURED
AZIMUTH-REQUESTED
DIFFERENTIAL BOGIE
DIFFERENTIAL BOGIE POTENTIOMETER
ELEVATION
ELEVATION-INITIAL
ELEVATION-MEASURED
ELEVATION-REQUESTED
JOINT 1 AZIMUTH-ENCODER
JOINT 1 AZIMUTH-POTENTIOMETER
JOINT 2 ELEVATION-ENCODER
JOINT 2 ELEVATION-POTENTIOMETER
JOINT 3 ELBOW-ENCODER
JOINT 3 ELBOW-POTENTIOMETER
JOINT 4 WRIST-ENCODER
JOINT 4 WRIST-POTENTIOMETER
JOINT 5 TURRET-ENCODER
JOINT 5 TURRET-POTENTIOMETER
LEFT BOGIE
LEFT BOGIE POTENTIOMETER
LEFT FRONT WHEEL
LEFT FRONT WHEEL POTENTIOMETER

LEFT REAR WHEEL
LEFT REAR WHEEL POTENTIOMETER
RIGHT BOGIE
RIGHT BOGIE POTENTIOMETER
RIGHT FRONT WHEEL
RIGHT FRONT WHEEL POTENTIOMETER
RIGHT REAR WHEEL
RIGHT REAR WHEEL POTENTIOMETER

ARTICULATION_DEVICE_ID **[PDS_MER_OPS]** **SUGGESTED**

CHASSIS
FILTER
HGA
IDD
PMA

ARTICULATION_DEVICE_MODE **[PDS_MER_OPS]** **SUGGESTED**

DEPLOYED
FREE SPACE
GUARDED
PRELOAD
RETRACTING
STOWED

ARTICULATION_DEVICE_NAME **[PDS_MER_OPS]** **SUGGESTED**

FILTER ACTUATORS
HIGH GAIN ANTENNA
INSTRUMENT DEPLOYMENT DEVICE
MOBILITY CHASSIS
PANCAM MAST ASSEMBLY

ARTICULATION_DEVICE_TEMP_NAME **[PDS_MER_OPS]** **SUGGESTED**

AZIMUTH JOINT 1
TURRET JOINT 5

AXIS_NAME **DYNAMIC**

(BAND, SAMPLE, LINE)
(SAMPLE, BAND, LINE)
(SAMPLE, LINE, BAND)

AXIS_ORDER_TYPE **STATIC**

FIRST_INDEX_FASTEST
LAST_INDEX_FASTEST

AXIS_UNIT **DYNAMIC**

AMPERE
BITS
CANDELA
COULOMB
DAY

DEGREE
FARAD
GRAM
GRAY
HENRY
HERTZ
HOUR
JOULE
KELVIN
KILOGRAM
LUMEN
LUX
METER
MINUTE
MOLE
N/A
NEWTON
OHM
PASCAL
PIXEL
RADIAN
SECOND
SIEMENS
SIEVERT
STERADIAN
TELSA
VOLT
WATT
WEBER

BACKGROUND_SAMPLING_FREQUENCY **[PDS_EN]** **SUGGESTED**
1
16
2
32
4
64
8

BACKGROUND_SAMPLING_MODE_ID **[PDS_EN]** **NONE**
AVG2
AVG4
NOBACK
NORMAL
SINGLE
ZERO_SUB

BAD_PIXEL_REPLACEMENT_FLAG **STATIC**
FALSE
TRUE

BAND_BIN_UNIT **[ISIS]** **DYNAMIC**

MICROMETER

BAND_SEQUENCE **DYNAMIC**
(BLUE, GREEN, RED)
(BLUE, RED, GREEN)
(GREEN, BLUE, RED)
(GREEN, RED, BLUE)
(RED, BLUE, GREEN)
(RED, GREEN, BLUE)

BAND_STORAGE_TYPE **DYNAMIC**
BAND_SEQUENTIAL
LINE_INTERLEAVED
SAMPLE_INTERLEAVED

BIAS_STATE_ID **[PDS_EN]** **SUGGESTED**
HIGH
LOW

BIAS_STRIP_MEAN **[PDS_EN]** **RANGE**
N/A

BIT_DATA_TYPE **STATIC**
BINARY CODED DECIMAL
BOOLEAN
MSB_INTEGER
MSB_UNSIGNED_INTEGER
N/A
UNSIGNED_INTEGER

BLEMISH_PROTECTION_FLAG **STATIC**
OFF
ON

BROWSE_FLAG **STATIC**
N
Y

BROWSE_USAGE_TYPE **DYNAMIC**
OVERVIEW
PRIMARY
SECONDAY

BUFFER_MODE_ID **[PDS_EN]** **DYNAMIC**
BUFFER_14
BUFFER_8
DIRECT

CALIBRATION_LAMP_STATE_FLAG **[PDS_EN]** **STATIC**

OFF
ON

CHANNEL_GROUP_NAME **DYNAMIC**
FAR ENCOUNTER
FAR-NEAR ENCOUNTER
NEAR ENCOUNTER

CHANNEL_ID **DYNAMIC**
1
10
100
101
102
103
104
105
106
107
108
109
11
110
111
112
113
114
115
116
117
118
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128
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92
93
94
95
96
97
98
99
AB10
AB12
AB13
AD03
AD04
AL01
AL02
CH1
CH10
CH11
CH12
CH13
CH14
CH15
CH16
CH2
CH3
CH32
CH33
CH34
CH35
CH36
CH38
CH39

CH4
CH5
CH6
CH7
CH8
CH9
D1F1
D1F2
DA03
DA04
DP09
DP10
DP11
DZ01
EB01
EB02
EB03
EB04
EB05
EBD1
EBD2
EBD3
EBD4
EBD5
EG06
EG07
EG08
EG09
ESA0
ESB0
PD09
PD10
PD11
PL01
PL02
PL03
PL04
PL05
PL06
PL07
PL08
PL1
PSA1
PSA2
PSA3
PSB1
PSB2
PSB3
WIDE
ZD01

CHOPPER_MODE_ID **STATIC**

63_HERTZ

FREE_RUN
OFF
REFERENCE

CMPRS_QUANTZ_TBL_ID **[PDS_IMG_GLL]** **DYNAMIC**
UNIFORM
UNK
VG2
VG3

COLUMN_VALUE_NODE_ID **[PDS_EN]** **NONE**
A
F
I
N
P
R
S
U

COMMAND_FILE_NAME **[PDS_EN]** **TEXT**
N/A

COMMAND_NAME **SUGGESTED**
IMP_IMAGE_AZ_EL
IMP_IMAGE_LCLGRD
IMP_IMAGE_LCLVEC
IMP_IMAGE_OBJECT
IMP_IMAGE_VECTOR

COMPRESSION_TYPE **[PDS_IMG_GLL]** **DYNAMIC**
8_BIT
BARC RATE CONTROL
HUFFMAN
INTEGER COSINE TRANSFORM
NONE
SQRT_8
SQRT_9

COMPRESSOR_ID **[PDS_EN]** **SUGGESTED**
1
2
N/A

CONTACT_SENSOR_STATE **[PDS_MER_OPS]** **SUGGESTED**
CLOSED
CONTACT
NO CONTACT
OPEN

CONTACT_SENSOR_STATE_NAME **[PDS_MER_OPS]** **SUGGESTED**

APXS CONTACT SWITCH
APXS DOOR SWITCH
MB SWITCH 1
MB SWITCH 2
MI SWITCH 1
MI SWITCH 2
RAT SWITCH 1
RAT SWITCH 2

COORDINATE_SYSTEM_CENTER_NAME **DYNAMIC**

EARTH
JUPITER
NEPTUNE
PLANET'S CENTER
PVO
SATURN
SPACECRAFT
SUN
UNK
URANUS
VENUS

COORDINATE_SYSTEM_ID **DYNAMIC**

-JUPSYS3
-SATSYS3
-URNSYS3
BFS CRDS
ESL-CART
HG
ICC_ECLP
ICC_EQTL
ISC_ECLP
ISC_EQTR
NLS
NRSC
PLSCYL
PVO_ISCC
PVO_SSCC
SCC_ECLP
U1
VSO

COORDINATE_SYSTEM_INDEX_NAME **[PDS_MER_OPS]** **SUGGESTED**

DRIVE
HGA
IDD
PMA
SITE

COORDINATE_SYSTEM_NAME **DYNAMIC**

APXS_FRAME

BODY FIXED SPHERICAL COORDS
EARTH-SUN LINE CARTES COORDS
ECLIPTIC INERTIAL CART COORDS
ECLIPTIC INERTL SPHERCL COORDS
EQUATORIAL INERT SPHRCL COORDS
EQUATORIAL INERTIAL CART COORD
JUPITER MINUS SYSTEM III
MAST_FRAME
MB_FRAME
MEAN INERTIAL HG 1950
MI_FRAME
NEPTUNE WEST LONGITUDE SYSTEM
NON-ROTATING SPIN COORDINATES
PLANET CENTERED CYLINDRICAL
PLANETOCENTRIC
PLANETOGRAPHIC
PVO INERTIAL SPACECRAFT COORDS
PVO SPINNING SPACECRAFT COORDS
RAT_FRAME
ROVER_FRAME
SATURN MINUS LONGITUDE SYSTEM
SC CENTERED ECLIPTIC COORDS
URANUS MINUS LONGITUDE SYSTEM
URANUS WEST LONGITUDE SYSTEM
VENUS SOLAR ORBITAL COORDS

COORDINATE_SYSTEM_TYPE **STATIC**

BODY-FIXED NON-ROTATING
BODY-FIXED ROTATING
INERTIAL

CORE_HIGH_INSTR_SATURATION **[ISIS]** **DYNAMIC**

-32765
16#FFFCFFFF#
3

CORE_HIGH_REPR_SATURATION **[ISIS]** **DYNAMIC**

-32764
16'FFFBFFFF'
4

CORE_ITEM_TYPE **[ISIS]** **STATIC**

IEEE_REAL
INTEGER
LSB_INTEGER
LSB_UNSIGNED_INTEGER
MSB_INTEGER
MSB_UNSIGNED_INTEGER
PC_REAL
UNSIGNED_INTEGER
VAX_INTEGER
VAX_REAL

CORE_LOW_INSTR_SATURATION **[ISIS]** **DYNAMIC**
- -32766
- 16'FFFDFFFF'
- 2

CORE_LOW_REPR_SATURATION **[ISIS]** **DYNAMIC**
- -32767
- 1
- 16'FFFEFFFF'

CORE_MINIMUM_DN **[PDS_EN]** **RANGE**
- N/A

CORE_NAME **[ISIS]** **DYNAMIC**
- BRIGHTNESS_TEMPERATURE
- CALIBRATED_RADIANCE
- EMISSIVITY
- IFGM
- RAW DATA NUMBER
- RAW_RADIANCE
- SPECTRA
- SPECTRAL RADIANCE

CORE_NULL **[ISIS]** **DYNAMIC**
- -32768
- 0
- 16#FFFFFFFF#

CORE_UNIT **[ISIS]** **DYNAMIC**
- DIMENSIONLESS
- WATT*M**-2*SR**-1*uM**-1

CORE_VALID_MINIMUM **[ISIS]** **DYNAMIC**
- -32752
- 16#FFEFFFFF#
- 5

CYCLE_ID **DYNAMIC**
- GS3
- GS5

DARK_CURRENT_CORRECTION_FLAG **STATIC**
- FALSE
- TRUE

DARK_CURRENT_CORRECTION_TYPE **[PDS_EN]** **SUGGESTED**
- BOTH
- PRIME

DARK_CURRENT_DOWNLOAD_FLAG **STATIC**

FALSE
TRUE

DARK_STRIP_MEAN **[PDS_EN]** **RANGE**

N/A

DATA_BUFFER_STATE_FLAG **[PDS_EN]** **STATIC**

DISABLED
ENABLED

DATA_CONVERSION_TYPE **[PDS_EN]** **SUGGESTED**

12BIT
8LSB
TABLE

DATA_FORMAT **SUGGESTED**

COMPRESSED
FITS
GIF
HDF
JPEG
PDS
PICT
SPICE
VICAR

DATA_OBJECT_TYPE **DYNAMIC**

ARRAY
ARRAY, TABLE
BIT_COLUMN
COLLECTION
COLUMN
CONTAINER
CUBE
ELEMENT
FILE
FITS_LABEL
HEADER
HISTOGRAM
IMAGE
IMAGE_MAP_PROJECTION
INDEX_TABLE
MAP
N/A
OCCULTATION PROFILE
PALETTE
QUBE
SERIES
SPECTRAL_QUBE

SPECTRUM
SPICE KERNEL
SPICE_KERNEL
SPREADSHEET
TABLE
TABLE, IMAGE
TEXT
TIME SERIES
TIME_SERIES
TRAJECTORY AND EPHEMERIS DATA
TRAJECTORY_AND_EPHEMERIS_DATA
UNKNOWN
{IMAGE, TABLE, ARRAY}

DATA_PATH_TYPE **DYNAMIC**

N/A
REALTIME
REALTIME_PLAYBACK
RECORDED_DATA_PLAYBACK
UNK

DATA_PROVIDER_NAME **[PDS_EN]** **TEXT**

DATA_QUALITY_ID **DEFINITION**

-1
0
1
2
3
4
N/A

DATA_REGION **[PDS_EN]** **RANGE**

N/A

DATA_SET_CATALOG_FLAG **[PDS_EN]** **STATIC**

N
Y

DATA_SET_COLLECTION_ID **FORMATION**

GEM-C-3/4-GRIGG-SKJELL-DATA-V1.0
GRSFE-E-2/3/4/5-RDR-V1.0
IHW-C-2/3-CHRON-DATA-V1.0
IHW-C-2/3/4/5-SPACECRAFT-DATA-V1.0
IHW-C-3-ARCHIVE-ADDENDA-SELECT-DATA-V1.0
IHW-C-LC-2/3-V1.0
MGN-V-RSS-5-OCC-PROFILES-V1.0
MODEL-M-AMES-GCM-5-1977-4-SEASONS-V1.0
PREMGN-E/L/H/M/V-4/5-RAD/GRAV-V1.0
SBNSC-IDA/GASPRA-7-V1.0
SL9-J/C-3-IMPACT-EVENTS-SELECT-DATA-V1.0

VG1/VG2-SR/UR/NR-1/2/4-OCC-V1.0
VG1/VG2-SR/UR/NR-2/4-OCC-V1.0

DATA_SET_COLLECTION_MEMBER_FLG **STATIC**
N
Y

DATA_SET_COLLECTION_NAME **FORMATION**
AMES MARS GENERAL CIRCULATION MODEL 5 1977 4 SEASONS V1.0
GEM COMETARY DATA V1.0
GEOLOGIC REMOTE SENSING FIELD EXPERIMENT E 2/3/4/5 RDR V1.0
IHW COMET HALLEY CHRONOLOGICAL DATA V1.0
IHW COMET LC 2/3 CHRONOLOGICAL DATA V1.0
INTERNATIONAL HALLEY WATCH SPACECRAFT COMETARY DATA V1.0
INTERNATIONAL-HALLEY-WATCH-ARCHIVE-ADDENDA-SELECT-DATA-V1.0
MAGELLAN V RSS 5 OCCULTATION PROFILES V1.0
PRE-MAGELLAN E/L/H/M/V 4/5 RADAR/GRAVITY DATA V1.0
SHOEMAKER-LEVY-9-JUPITER-IMPACT-EVENTS-SELECT-DATA-V1.0
SPECIAL COLLECTION OF IDA & GASPRA DATA V1.0
VG1/VG2 SR/UR/NR EDITED/RESAMPLED RING OCCULTATION V1.0
VG1/VG2 SR/UR/NR RAW/EDITED/RESAMPLED RING OCCULTATION V1.0

DATA_SET_ID **FORMATION**
A-5-DDR-ASTERMAG-V1.0
A-5-DDR-ASTEROID-SPIN-VECTORS-V3.0
A-5-DDR-ASTNAMES-V1.0
A-5-DDR-POLE-POSITION-REF-V1.0
A-5-DDR-POLE-POSITION-V1.0
A-5-DDR-TAXONOMY-V1.0
ARCB-L-RTLS-3-70CM-V1.0
ARCB-L-RTLS-4-70CM-V1.0
ARCB-L-RTLS-5-12.6CM-V1.0
ARCB-V-RTLS-4-12.6CM-V1.0
ARCB/GSSR-M-RTLS-5-MODEL-V1.0
ARCB/NRAO-L-RTLS/GBT-4/5-70CM-V1.0
BUGLAB-E-BUG-4-V1.0
C130-E-ASAS-3-RDR-IMAGE-V1.0
C130-E-TIMS-2-EDR-IMAGE-V1.0
CLEM1-L-H-5-DIM-MOSAIC-V1.0
CLEM1-L-LIDAR-5-TOPO-V1.0
CLEM1-L-LWIR-3-RDR-V1.0
CLEM1-L-RSS-1-BSR-V1.0
CLEM1-L-RSS-5-BSR-V1.0
CLEM1-L-RSS-5-GRAVITY-V1.0
CLEM1-L-SPICE-6-V1.0
CLEM1-L-U-5-DIM-BASEMAP-V1.0
CLEM1-L-U-5-DIM-UVVIS-V1.0
CLEM1-L/E/Y-A/B/U/H/L/N-2-EDR-V1.0
CO-D-CDA-3/4/5-DUST-V1.0
CO-D-HRD-3-COHRD-V1.0
CO-D-HRD-3-COHRD-V2.0
CO-D-HRD-3-COHRD-V3.0

CO-E/J/S/SW-CAPS-2-UNCALIBRATED-V1.0
CO-E/J/S/SW-MIMI-2-CHEMS-UNCALIB-V1.0
CO-E/J/S/SW-MIMI-2-INCA-UNCALIB-V1.0
CO-E/J/S/SW-MIMI-2-LEMMS-UNCALIB-V1.0
CO-E/SW/J/S-MAG-2-REDR-RAW-DATA-V1.0
CO-E/V/J-ISSNA/ISSWA-2-EDR-V1.0
CO-E/V/J/S-VIMS-2-QUBE-V1.0
CO-J-CIRS-2/3/4-TSDR-V1.0
CO-J-UVIS-2-CUBE-V1.0
CO-J-UVIS-2-SPEC-V1.0
CO-J-UVIS-2-SSB-V1.0
CO-S-CIRS-2/3/4-TSDR-V1.0
CO-S-INMS-2-PKT-U-V1.0
CO-S-INMS-3-L1A-U-V1.0
CO-S-ISSNA/ISSWA-2-EDR-V1.0
CO-S-ISSNA/ISSWA-5-MIDR-V1.0
CO-S-RSS-1-SAGR1-V1.0
CO-S-RSS-1-SAGR2-V1.0
CO-S-RSS-1-SAGR3-V1.0
CO-S-RSS-1-SAGR4-V1.0
CO-S-RSS-1-SROC1-V1.0
CO-S-RSS-1-SROC2-V1.0
CO-S-RSS-1-SROC3-V1.0
CO-S-RSS-1-SROC4-V1.0
CO-S-UVIS-2-CALIB-V1.0
CO-S-UVIS-2-CALIB-V1.1
CO-S-UVIS-2-CUBE-V1.0
CO-S-UVIS-2-CUBE-V1.1
CO-S-UVIS-2-SPEC-V1.0
CO-S-UVIS-2-SPEC-V1.1
CO-S-UVIS-2-SSB-V1.0
CO-S-UVIS-2-SSB-V1.1
CO-S/J/E/V-SPICE-6-V1.0
CO-SS-RSS-1-SCC1-V1.0
CO-SS-RSS-1-SCC2-V1.0
CO-SS-RSS-1-SCC3-V1.0
CO-SS-RSS-1-SCE1-V1.0
CO-SSA-RADAR-3-ABDR-CSV-V1.0
CO-SSA-RADAR-5-BIDR-V1.0
CO-SSA-RSS-1-DIGR1-V1.0
CO-SSA-RSS-1-ENGR1-V1.0
CO-SSA-RSS-1-ENOC1-V1.0
CO-SSA-RSS-1-HYGR1-V1.0
CO-SSA-RSS-1-IAGR1-V1.0
CO-SSA-RSS-1-RHGR1-V1.0
CO-SSA-RSS-1-TBIS1-V1.0
CO-SSA-RSS-1-TBOC1-V1.0
CO-SSA-RSS-1-TBOC2-V1.0
CO-SSA-RSS-1-TBOC3-V1.0
CO-SSA-RSS-1-TIGR1-V1.0
CO-SSA-RSS-1-TIGR2-V1.0
CO-SSA-RSS-1-TIGR3-V1.0
CO-SSA-RSS-1-TIGR4-V1.0
CO-SSA-RSS-1-TIGR5-V1.0

CO-SSA-RSS-1-TIGR6-V1.0
CO-SSA-RSS-1-TIGR7-V1.0
CO-SSA-RSS-1-TIGR8-V1.0
CO-SSA-RSS-1-TIGR9-V1.0
CO-SSA-RSS-1-TOCC1-V1.0
CO-V/E/J/S-RADAR-3-LBDR-V1.0
CO-V/E/J/S-RADAR-3-SBDR-V1.0
CO-V/E/J/S/SS-RPWS-2-REFDR-ALL-V1.0
CO-V/E/J/S/SS-RPWS-2-REFDR-WBRFULL-V1.0
CO-V/E/J/S/SS-RPWS-2-REFDR-WFRFULL-V1.0
CO-V/E/J/S/SS-RPWS-3-RDR-LRFULL-V1.0
CO-V/E/J/S/SS-RPWS-4-SUMM-KEY60S-V1.0
CO-X-RSS-1-GWE1-V1.0
CO-X-RSS-1-GWE2-V1.0
CO-X-RSS-1-GWE3-V1.0
CO-X-UVIS-2-CALIB-V1.0
CO-X-UVIS-2-CUBE-V1.0
CO-X-UVIS-2-SPEC-V1.0
CO-X-UVIS-2-SSB-V1.0
CO-X-UVIS-2-WAV-V1.0
DI-C-SPICE-6-V1.0
DI/EAR-C-I0034-3-UH22M-TMPL1-V1.0
DI/EAR-C-I0046-2-IRTF-NIRIMG-TMPL1-V1.0
DI/EAR-C-I0046-2-IRTF-NIRSPEC-TMPL1-V1.0
DI/EAR-C-I0071-2-IRTF-MIR-TMPL1-V1.0
DI/EAR-C-I0276-2/3-MARTIR15M-TMPL1-V1.0
DI/EAR-C-KECK1LWS-3-9P-IMAGES-PHOT-V1.0
DI/EAR-C-LO72CCD-3-9P-IMAGES-PHOT-V1.0
DI/EAR-C-LPLCCD-3-MRBG61-TMPL1-V1.0
DI/EAR-C-LPLCCD-3-MTBG61-TMPL1-V1.0
DI/EAR-C-SQIID-3-9PNIRIMAGES-V1.0
DI/IRAS-C-FPA-5-9P-IMAGES-V1.0
DI/IRAS-C-FPA-5-9P-PHOT-V1.0
DIF-C-HRII-2-9P-ENCOUNTER-V1.0
DIF-C-HRII-3/4-9P-ENCOUNTER-V1.0
DIF-C-HRII-3/4-9P-ENCOUNTER-V2.0
DIF-C-HRIV-2-9P-ENCOUNTER-V1.0
DIF-C-HRIV-2-NAV-9P-ENCOUNTER-V1.0
DIF-C-HRIV-3-NAV-9P-ENCOUNTER-V1.0
DIF-C-HRIV-3/4-9P-ENCOUNTER-V1.0
DIF-C-HRIV-3/4-9P-ENCOUNTER-V2.0
DIF-C-HRIV/ITS/MRI-5-TEMPEL1-SHAPE-V1.0
DIF-C-MRI-2-9P-ENCOUNTER-V1.0
DIF-C-MRI-2-NAV-9P-ENCOUNTER-V1.0
DIF-C-MRI-2-NAV-9P-ENCOUNTER-V1.1
DIF-C-MRI-3-NAV-9P-ENCOUNTER-V1.0
DIF-C-MRI-3-NAV-9P-ENCOUNTER-V1.1
DIF-C-MRI-3/4-9P-ENCOUNTER-V1.0
DIF-C-MRI-3/4-9P-ENCOUNTER-V2.0
DIF-C-RSS-1-9P-ENCOUNTER-V1.0
DIF-CAL-HRII-2-9P-CRUISE-V1.0
DIF-CAL-HRII-2-GROUND-TV1-V1.0
DIF-CAL-HRII/HRIV-2-GROUND-TV2-V1.0
DIF-CAL-HRII/HRIV/MRI-2-GROUND-TV4-V1.0

DIF-CAL-HRIV-2-9P-CRUISE-V1.0
DIF-CAL-HRIV-2-NAV-9P-CRUISE-V1.0
DIF-CAL-MRI-2-9P-CRUISE-V1.0
DIF-CAL-MRI-2-NAV-9P-CRUISE-V1.0
DIF-CAL-MRI-2-NAV-9P-CRUISE-V1.1
DII-C-ITS-2-9P-ENCOUNTER-V1.0
DII-C-ITS-2-NAV-9P-ENCOUNTER-V1.0
DII-C-ITS-2-NAV-9P-ENCOUNTER-V1.1
DII-C-ITS-3-NAV-9P-ENCOUNTER-V1.0
DII-C-ITS-3/4-9P-ENCOUNTER-V1.0
DII-C-ITS-3/4-9P-ENCOUNTER-V2.0
DII-CAL-ITS-2-9P-CRUISE-V1.0
DII-CAL-ITS-2-GROUND-TV3-V1.0
DII-CAL-ITS-2-NAV-9P-CRUISE-V1.0
DII-CAL-ITS-2-NAV-9P-CRUISE-V1.1
DS1-A/C-SPICE-6-V1.0
DS1-C-IDS-3-RDR-BORRELLY-V1.0
DS1-C-MICAS-2-EDR-VISCCD-BORRELLY-V1.0
DS1-C-MICAS-3-RDR-VISCCD-BORRELLY-V1.0
DS1-C-MICAS-5-BORRELLY-DEM-V1.0
DS1-C-PEPE-2-EDR-BORRELLY-V1.0
DS1-C-PEPE-2-RAW-DATA-V1.0
EAR-A-2CP-3-RDR-ECAS-FILTER-CURVES-V1.0
EAR-A-2CP-3-RDR-ECAS-MEAN-V1.0
EAR-A-2CP-3-RDR-ECAS-STANDARD-STARS-V1.0
EAR-A-2CP-3-RDR-ECAS-V1.0
EAR-A-2CP-3-RDR-ECAS-V2.0
EAR-A-2CP-3-RDR-ECAS-V3.0
EAR-A-2CP-3-RDR-ECAS-V3.1
EAR-A-2CP-5-DDR-ECAS-PRINCIPAL-COMP-V1.0
EAR-A-3-DDR-APC-LIGHTCURVE-V1.0
EAR-A-3-EDC-IDA/GASPRA-APC/LC-V1.0
EAR-A-3-EDC-IDA/GASPRA-SPECTRA-V1.0
EAR-A-3-RDR-APD-POLARIMETRY-V1.0
EAR-A-3-RDR-APD-POLARIMETRY-V2.0
EAR-A-3-RDR-APD-POLARIMETRY-V3.0
EAR-A-3-RDR-APD-POLARIMETRY-V4.0
EAR-A-3-RDR-APD-POLARIMETRY-V4.1
EAR-A-3-RDR-APD-POLARIMETRY-V5.0
EAR-A-3-RDR-LARSON-FTS-SPECTRA-V1.0
EAR-A-3-RDR-METEORITE-SPECTRA-V1.0
EAR-A-3-RDR-METEORITE-SPECTRA-V2.0
EAR-A-3-RDR-NEO-LIGHTCURVES-V1.0
EAR-A-3-RDR-NEO-LIGHTCURVES-V1.1
EAR-A-3-RDR-OCCULTATIONS-V1.0
EAR-A-3-RDR-OCCULTATIONS-V2.0
EAR-A-3-RDR-OCCULTATIONS-V3.0
EAR-A-3-RDR-OCCULTATIONS-V4.0
EAR-A-3-RDR-OCCULTATIONS-V4.1
EAR-A-3-RDR-OCCULTATIONS-V5.0
EAR-A-3-RDR-PCME-V1.0
EAR-A-3-RDR-PCME-V2.0
EAR-A-3-RDR-RIVKIN-THREE-MICRON-V1.0
EAR-A-3-RDR-RIVKIN-THREE-MICRON-V2.0

EAR-A-3-RDR-RIVKIN-THREE-MICRON-V3.0
EAR-A-3-RDR-SAWYER-ASTEROID-SPECTRA-V1.0
EAR-A-3-RDR-SAWYER-ASTEROID-SPECTRA-V1.1
EAR-A-3-RDR-SAWYER-ASTEROID-SPECTRA-V1.2
EAR-A-3-RDR-SCAS-V1.0
EAR-A-3-RDR-SCAS-V1.1
EAR-A-3-RDR-STOOKEMAPS-V1.0
EAR-A-3-RDR-THREEMICRON-V1.0
EAR-A-3-RDR-THREEMICRON-V1.1
EAR-A-3-RDR-THREEMICRON-V1.2
EAR-A-3-RDR-TNO-LC-V1.0
EAR-A-3-RDR-TNO-PHOT-V1.0
EAR-A-3-RDR-TNO-PHOT-V2.0
EAR-A-3-RDR-TNO-PHOT-V3.0
EAR-A-3-RDR-TRIAD-POLARIMETRY-V1.0
EAR-A-3-RDR-TRIAD-POLARIMETRY-V2.0
EAR-A-3-RDR-TRIAD-POLARIMETRY-V2.1
EAR-A-3-RDR-VILAS-ASTEROID-SPECTRA-V1.0
EAR-A-3-RDR-VILAS-ASTEROID-SPECTRA-V1.1
EAR-A-5-DDR-ALBEDOS-V1.0
EAR-A-5-DDR-ALBEDOS-V1.1
EAR-A-5-DDR-ASTERMAG-V10.0
EAR-A-5-DDR-ASTERMAG-V11.0
EAR-A-5-DDR-ASTERMAG-V2.0
EAR-A-5-DDR-ASTERMAG-V3.0
EAR-A-5-DDR-ASTERMAG-V4.0
EAR-A-5-DDR-ASTERMAG-V5.0
EAR-A-5-DDR-ASTERMAG-V6.0
EAR-A-5-DDR-ASTERMAG-V7.0
EAR-A-5-DDR-ASTERMAG-V8.0
EAR-A-5-DDR-ASTERMAG-V9.0
EAR-A-5-DDR-ASTEROID-DENSITIES-V1.0
EAR-A-5-DDR-ASTEROID-DENSITIES-V1.1
EAR-A-5-DDR-ASTEROID-SPIN-VECTORS-V4.0
EAR-A-5-DDR-ASTEROID-SPIN-VECTORS-V4.1
EAR-A-5-DDR-ASTEROID-SPIN-VECTORS-V4.2
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V1.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V10.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V11.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V2.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V3.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V4.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V5.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V6.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V7.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V8.0
EAR-A-5-DDR-ASTNAMES-DISCOVERY-V9.0
EAR-A-5-DDR-ASTNAMES-V2.0
EAR-A-5-DDR-BIBLIOGRAPHY-V1.0
EAR-A-5-DDR-BIBLIOGRAPHY-V2.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V1.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V2.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V3.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V4.0

EAR-A-5-DDR-DERIVED-LIGHTCURVE-V5.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V6.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V7.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V8.0
EAR-A-5-DDR-DERIVED-LIGHTCURVE-V9.0
EAR-A-5-DDR-DISCOVERY-V1.0
EAR-A-5-DDR-EARTHAPP-V1.0
EAR-A-5-DDR-FAMILY-V1.0
EAR-A-5-DDR-FAMILY-V2.0
EAR-A-5-DDR-FAMILY-V3.0
EAR-A-5-DDR-FAMILY-V4.0
EAR-A-5-DDR-FAMILY-V4.1
EAR-A-5-DDR-PROPER-ELEMENTS-V1.0
EAR-A-5-DDR-RADAR-V1.0
EAR-A-5-DDR-RADAR-V10.0
EAR-A-5-DDR-RADAR-V11.0
EAR-A-5-DDR-RADAR-V12.0
EAR-A-5-DDR-RADAR-V13.0
EAR-A-5-DDR-RADAR-V3.0
EAR-A-5-DDR-RADAR-V4.0
EAR-A-5-DDR-RADAR-V5.0
EAR-A-5-DDR-RADAR-V6.0
EAR-A-5-DDR-RADAR-V7.0
EAR-A-5-DDR-RADAR-V7.1
EAR-A-5-DDR-RADAR-V8.0
EAR-A-5-DDR-RADAR-V9.0
EAR-A-5-DDR-RADARSHAPE-MODELS-V1.1
EAR-A-5-DDR-RADARSHAPE-MODELS-V2.0
EAR-A-5-DDR-SHAPE-MODELS-V1.0
EAR-A-5-DDR-SHAPE-MODELS-V2.0
EAR-A-5-DDR-SHAPE-MODELS-V2.1
EAR-A-5-DDR-STOOKE-SHAPE-MODELS-V1.0
EAR-A-5-DDR-TAXONOMY-V1.0
EAR-A-5-DDR-TAXONOMY-V2.0
EAR-A-5-DDR-TAXONOMY-V3.0
EAR-A-5-DDR-TAXONOMY-V4.0
EAR-A-5-DDR-TAXONOMY-V5.0
EAR-A-5-DDR-UBV-MEAN-VALUES-V1.0
EAR-A-5-DDR-UBV-MEAN-VALUES-V1.1
EAR-A-5-DDR-UBV-MEAN-VALUES-V1.2
EAR-A-6-DDR-DERIVED-LIGHTCURVE-REF-V1.0
EAR-A-8CPS-3-RDR-8COL-V1.0
EAR-A-COMPIL-3-TNO-CEN-COLOR-V1.0
EAR-A-COMPIL-3-TNO-CEN-COLOR-V2.0
EAR-A-COMPIL-3-TNO-CEN-COLOR-V3.0
EAR-A-COMPIL-3-TNO-CEN-COLOR-V4.0
EAR-A-COMPIL-5-BINMP-V1.0
EAR-A-COMPIL-5-BINSUM-V1.0
EAR-A-COMPIL-5-HIFAM-V1.0
EAR-A-COMPIL-5-TRIADRAD-V1.0
EAR-A-DBP-3-RDR-24COLOR-V1.0
EAR-A-DBP-3-RDR-24COLOR-V2.0
EAR-A-DBP-3-RDR-24COLOR-V2.1
EAR-A-GST-3-RDR-GEOGRAPHOS-RADAR-V1.0

EAR-A-GST-3-RDR-GEOGRAPHOS-RADAR-V1.1
EAR-A-HSTACS-5-CERESHST-V1.0
EAR-A-I0028-4-SBN0001/SMASSII-V1.0
EAR-A-I0034-3-WHITELEY-PHOT-V1.0
EAR-A-I0035-3-SDSSMOC-V1.0
EAR-A-I0035-3-SDSSMOC-V2.0
EAR-A-I0052-8-S3OS2-V1.0
EAR-A-I0054/I0055-5-2MASS-V1.0
EAR-A-I0065-3-TD10PHOT-V1.0
EAR-A-I0066-3-ITOKAWAPOL-V1.0
EAR-A-I0066-5-TORINOPOL-V1.0
EAR-A-I0287-3-ASTDENIS-V1.0
EAR-A-KECK1LWS/ETAL-5-DELBO-V1.0
EAR-A-M3SPEC-3-RDR-SMASS-V1.0
EAR-A-M3SPEC-3-RDR-SMASS-V2.1
EAR-A-RDR-3-52COLOR-V1.0
EAR-A-RDR-3-52COLOR-V2.0
EAR-A-RDR-3-52COLOR-V2.1
EAR-A-VARGBDET-3-KBOMAGS-V1.0
EAR-A-VARGBDET-5-METORB-V1.0
EAR-A-VARGBDET-5-MOTHEFAM-V1.0
EAR-A-VARGBDET-5-OCCALB-V1.0
EAR-A-VARGBDET-5-WISAST-V1.0
EAR-C-5-DDR-PCC-V1.0
EAR-C-CCD-3-EDR-HALLEY-OUTBURST-CT-V1.0
EAR-C-CCD-3-EDR-HALLEY-OUTBURST-ESO-V1.0
EAR-C-CCD-3-EDR-HALLEY-OUTBURST-UH-V1.0
EAR-C-CCD-3-RDR-GRIGG-SKJELL-V1.0
EAR-C-CCDIMGR-3-MEECH-19P-BORRELLY-V1.0
EAR-C-CFCCD-5-RDR-CTIO-BORR-PHOTOM-V1.0
EAR-C-COMPIL-5-COMET-NUC-PROPERTIES-V1.0
EAR-C-COMPIL-5-COMET-NUC-ROTATION-V1.0
EAR-C-COMPIL-5-DB-COMET-POLARIMETRY-V1.0
EAR-C-CS2-5-RDR-DEVICO-ATLAS-V1.0
EAR-C-I0039-2-SBN0007/KECKIIESI-V1.0
EAR-C-IDS-3-RDR-MCDNLD-V1.0
EAR-C-IDS/LCS-3-RDR-BORRELLY-MCDNLD-V1.0
EAR-C-IGI-3-EDR-BORRELLY-V1.0
EAR-C-IRPHOT-2-RDR-HALLEY-ADDENDA-V1.0
EAR-C-MCDIDS-3-RDR-MCDNLD-V1.0
EAR-C-PHOT-3-RDR-LOWELL-COMET-DB-V1.0
EAR-C-PHOT-3-RDR-LOWELL-V1.0
EAR-C-PHOT-5-RDR-LOWELL-COMET-DB-PR-V1.0
EAR-C-PHOT-5-RDR-LOWELL-V1.0
EAR-E-BUG-4-V1.0
EAR-J-AAT-3-EDR-SL9-V1.0
EAR-J-KECK-3-EDR-SL9-V1.0
EAR-J-SAAO-3-EDR-SL9-V1.0
EAR-J-SPIREX-3-EDR-SL9-V1.0
EAR-J/C-HSCCD-3-RDR-SL9-V1.0
EAR-J/SA-HSOTP-2-EDR-SL9-V1.0
EAR-SA-COMPIL-3-SATELLITE-COLOR-V1.0
ER2-E-AVIR-3-RDR-IMAGE-V1.0
ESO-C-EMMI-3-RDR-SL9-V1.0

ESO-J-IRSPEC-3-RDR-SL9-V1.0
ESO-J-SUSI-3-RDR-SL9-V1.0
ESO-J/S/N/U-SPECTROPHOTOMETER-4-V2.0
ESO1M-SR-APPH-4-OCC-V1.0
ESO22M-SR-APPH-4-OCC-V1.0
FEXP-E-AWND-3-RDR-TEMP-VELOCITY-V1.0
FEXP-E-DAED-3-RDR-SPECTRUM-V1.0
FEXP-E-GPSM-5-RDR-TOPOGRAPHIC-PROF-V1.0
FEXP-E-HSTP-4-RDR-TOPOGRAPHIC-PROF-V1.0
FEXP-E-PARB-3-RDR-SPECTRUM-V1.0
FEXP-E-PFES-3-RDR-SPECTRUM-V1.0
FEXP-E-REAG-3-RDR-OPT-DEP-V1.0
FEXP-E-RMTR/THRM-3-RDR-TEMPERATURE-V1.0
FEXP-E-SHYG-3-RDR-OPT-DEP-V1.0
FEXP-E-SIRS-4-RDR-SPECTRUM-V1.0
FEXP-E-WTHS-3-RDR-TEMP-VELOCITY-V1.0
GIO-C-DID-3-RDR-GRIGG-SKJELL-V1.0
GIO-C-DID-3-RDR-HALLEY-V1.0
GIO-C-EPA-3-RDR-GRIGG-SKJELL-V1.0
GIO-C-GRE-1-EDR-HALLEY-ADDENDA-V1.0
GIO-C-GRE-3-RDR-GRIGG-SKJELL-V1.0
GIO-C-GRE-3-RDR-HALLEY-V1.0
GIO-C-HMC-3-RDR-HALLEY-V1.0
GIO-C-IMS-3-RDR-HERS-HALLEY-V1.0
GIO-C-IMS-3-RDR-HIS-GRIGG-SKJELL-V1.0
GIO-C-IMS-3-RDR-HIS-HALLEY-V1.0
GIO-C-JPA-3-RDR-IIS-GRIGG-SKJELL-V1.0
GIO-C-JPA-4-DDR-HALLEY-MERGE-V1.0
GIO-C-JPA/MAG-4-RDR-GRIGG-SKJELL-V1.0
GIO-C-MAG-4-RDR-GRIGG-SKJELL-V1.0
GIO-C-MAG-4-RDR-HALLEY-8SEC-V1.0
GIO-C-OPE-3-RDR-GRIGG-SKJELL-V1.0
GIO-C-OPE-3-RDR-HALLEY-V1.0
GIO-C-PIA-3-RDR-HALLEY-V1.0
GO-A-MAG/POS-3-RDR/SUMM/TRAJ-GASPRA-V1.0
GO-A-MAG/POS-3-RDR/SUMM/TRAJ-IDA-V1.0
GO-A-NIMS-2-EDR-V1.0
GO-A-SSI-2-REDR-IDA/GASPRA-V1.0
GO-A-UVS-2-EDR-V1.0
GO-A-UVS-3-RDR-V1.0
GO-A/C-SSI-2-REDR-V1.0
GO-A/E-SSI-2-REDR-V1.0
GO-A1-PPR-2-RDR-V1.0
GO-A1-PPR-2-R_EDR-V1.0
GO-A2-PPR-2-RDR-V1.0
GO-CAL-PPR-2-R_EDR-V1.0
GO-CAL-SSI-6-V1.0
GO-D-GDDS-5-DUST-V2.0
GO-E-EPD-2-EDR-EARTH-2-V1.0
GO-E-EUV-2-EDR-V1.0
GO-E-NIMS-3-TUBE-V1.0
GO-E-NIMS-4-MOSAIC-V1.0
GO-E-PPR-2-R_EDR-V1.0
GO-E-UVS-2-EDR-V1.0

GO-E-UVS-3-RDR-V1.0
GO-E/A-EPD-2-EDR-EARTH-1-GASPRA-V1.0
GO-E/L-NIMS-2-EDR-V1.0
GO-E/L/CAL1-PPR-2-RDR-V1.0
GO-E/L/CAL2-PPR-2-RDR-V1.0
GO-J-EPD-2-REDR-HIGHRES-SECTOR-V1.0
GO-J-EPD-2-REDR-RTS-SCAN-AVG-V1.0
GO-J-EUV-2-EDR-JUPITER-V1.0
GO-J-HIC-3-RDR-HIGHRES-COUNTRATE-V1.0
GO-J-HIC-3-RDR-SURVEY-COUNTRATE-V1.0
GO-J-HIC-5-DDR-ENERGETIC-ION-COMP-V1.0
GO-J-MAG-2-REDR-RAW-DATA-V1.0
GO-J-MAG-3-RDR-HIGHRES-V1.0
GO-J-MAG-3-RDR-MAGSPHERIC-SURVEY-V1.0
GO-J-NIMS-2-EDR-V1.0
GO-J-NIMS-2-EDR-V2.0
GO-J-NIMS-3-TUBE-V1.0
GO-J-NIMS-4-ADR-SL9IMPACT-V1.0
GO-J-NIMS-4-MOSAIC-V1.0
GO-J-PLS-3-RDR-FULLRES-V1.0
GO-J-PLS-4-SUMM-BROWSE-V1.0
GO-J-POS-6-MOON-TRAJ-JUP-COORDS-V1.0
GO-J-POS-6-REDR-ROTOR-ATTITUDE-V1.0
GO-J-POS-6-SC-TRAJ-JUP-COORDS-V1.0
GO-J-POS-6-SC-TRAJ-MOON-COORDS-V1.0
GO-J-PPR-2-REDR-V1.0
GO-J-PPR-3-EDR-SL9-G/H/L/Q1-V1.0
GO-J-PPR-3-RDR-V1.0
GO-J-PWS-2-EDR-WAVEFORM-10KHZ-V1.0
GO-J-PWS-2-EDR-WAVEFORM-1KHZ-V1.0
GO-J-PWS-2-EDR-WAVEFORM-80KHZ-V1.0
GO-J-PWS-2-REDR-LPW-SA-FULL-V1.0
GO-J-PWS-2-REDR-RTS-SA-FULL-V1.0
GO-J-PWS-4-SUMM-SA60S-V1.0
GO-J-RSS-5-ROCC-V1.0
GO-J-SSD-5-DDR-STAR-SENSOR-V1.0
GO-J-UVS-2-EDR-JUPITER-V1.0
GO-J-UVS-2-EDR-SL9-V1.0
GO-J-UVS-3-RDR-SL9-G-FRAGMENT-V1.0
GO-J-UVS-3-RDR-V1.0
GO-J/JSA-SSI-2-REDR-V1.0
GO-L-NIMS-3-TUBE-V1.0
GO-L-PPR-2-R_EDR-V1.0
GO-V-EPD-2-EDR-V1.0
GO-V-EUV-2-EDR-V1.0
GO-V-NIMS-2-EDR-V1.0
GO-V-NIMS-3-TUBE-V1.0
GO-V-NIMS-4-MOSAIC-V1.0
GO-V-PPR-2-RDR-V1.0
GO-V-PPR-2-R_EDR-V1.0
GO-V-RSS-1-TDF-V1.0
GO-V-UVS-2-EDR-V1.0
GO-V-UVS-3-RDR-V1.0
GO-V/E-SSI-2-REDR-V1.0

GO-X-PPR-2-RDR-V1.0
GO-X-PPR-2-R_EDR-V1.0
GP-J-ASI-3-ENTRY-V1.0
GP-J-DWE-3-ENTRY-V1.0
GP-J-EPI-3-ENTRY-V1.0
GP-J-HAD-3-ENTRY-V1.0
GP-J-LRD-3-ENTRY-V1.0
GP-J-NEP-3-ENTRY-V1.0
GP-J-NFR-3-ENTRY-V1.0
GP-J-NMS-3-ENTRY-V1.0
GSSR-H-RTLS-4-ALT-V1.0
GSSR-M-RTLS-5-ALT-V1.0
GSSR-V-RTLS-5-12.6-9CM-V1.0
HP-SSA-ACP-3-DESCENT-V1.0
HP-SSA-DISR-2/3-EDR/RDR-V1.0
HP-SSA-DWE-2-3-DESCENT-V1.0
HP-SSA-HASI-2-3-4-MISSION-V1.1
HP-SSA-HK-2/3-V1.0
HST-J-FOS-3-SL9-IMPACT-V1.0
HST-J-GHRS-3-SL9-IMPACT-V1.0
HST-J-WFPC2-3-SL9-IMPACT-V1.0
HST-M-WFPC2-3-V1.0
HST-S-WFPC2-3-RPX-V1.0
HST-S-WFPC2-4-ASTROM2002-V1.0
HSTK-L-RTLS-4-3.8CM-V1.0
ICE-C-EPAS-3-RDR-GIACOBIN-ZIN-V1.0
ICE-C-ICI-3-RDR-GIACOBINI-ZIN-V1.0
ICE-C-MAG-3-RDR-GIACOBIN-ZIN-V1.0
ICE-C-PLAWAV-3-RDR-ESP-GIACOBIN-ZIN-V1.0
ICE-C-PLAWAV-3-RDR-MSP-GIACOBIN-ZIN-V1.0
ICE-C-RADWAV-3-RDR-GIACOBIN-ZIN-V1.0
ICE-C-SWPLAS-3-RDR-GIACOBIN-ZIN-V1.0
ICE-C-ULECA-3-RDR-GIACOBINI-ZIN-V1.0
IHW-C-AMDRAW-N-NDR-GZ-V1.0
IHW-C-AMPG-N-NDR-HALLEY-V1.0
IHW-C-AMSP-N-NDR-HALLEY-V1.0
IHW-C-AMSPEC-N-NDR-GZ-V1.0
IHW-C-AMVIS-2-RDR-CROMMELIN-V1.0
IHW-C-AMVIS-2-RDR-GZ-V1.0
IHW-C-AMVIS-2-RDR-HALLEY-V1.0
IHW-C-ASTR-2-EDR-CROMMELIN-V1.0
IHW-C-ASTR-2-EDR-GZ-V1.0
IHW-C-ASTR-2-EDR-HALLEY-V1.0
IHW-C-IRFCURV-3-EDR-HALLEY-V1.0
IHW-C-IRFTAB-2-RDR-CROMMELIN-V1.0
IHW-C-IRFTAB-2-RDR-GZ-V1.0
IHW-C-IRFTAB-3-RDR-HALLEY-V1.0
IHW-C-IRIMAG-3-EDR-GZ-V1.0
IHW-C-IRIMAG-3-EDR-HALLEY-V1.0
IHW-C-IRIMAG-N-NDR-GZ-V1.0
IHW-C-IRPHOT-2-RDR-CROMMELIN-V1.0
IHW-C-IRPHOT-2-RDR-GZ-V1.0
IHW-C-IRPHOT-3-RDR-HALLEY-V1.0
IHW-C-IRPOL-2-RDR-GZ-V1.0

IHW-C-IRPOL-3-RDR-HALLEY-V1.0
IHW-C-IRSPEC-3-EDR-GZ-V1.0
IHW-C-IRSPEC-3-EDR-HALLEY-V1.0
IHW-C-IRSPEC-N-NDR-HALLEY-V1.0
IHW-C-LSPN-2-DIDR-CROMMELIN-V1.0
IHW-C-LSPN-2-DIDR-GZ-V1.0
IHW-C-LSPN-2-DIDR-HALLEY-V1.0
IHW-C-LSPN-N-NDR-CROMMELIN-V1.0
IHW-C-LSPN-N-NDR-GZ-V1.0
IHW-C-LSPN-N-NDR-HALLEY-V1.0
IHW-C-MSNRDR-3-RDR-HALLEY-ETA-AQUAR-V1.0
IHW-C-MSNRDR-3-RDR-HALLEY-ORIONID-V1.0
IHW-C-MSNVIS-3-RDR-HALLEY-ETA-AQUAR-V1.0
IHW-C-MSNVIS-3-RDR-HALLEY-ORIONID-V1.0
IHW-C-NNSN-3-EDR-CROMMELIN-V1.0
IHW-C-NNSN-3-EDR-GZ-V1.0
IHW-C-NNSN-3-EDR-HALLEY-ADDENDA-V1.0
IHW-C-NNSN-3-EDR-HALLEY-V1.0
IHW-C-PPFLX-3-RDR-CROMMELIN-V1.0
IHW-C-PPFLX-3-RDR-GZ-V1.0
IHW-C-PPFLX-3-RDR-HALLEY-V1.0
IHW-C-PPMAG-3-RDR-CROMMELIN-V1.0
IHW-C-PPMAG-3-RDR-GZ-V1.0
IHW-C-PPMAG-3-RDR-HALLEY-V1.0
IHW-C-PPOL-3-RDR-CROMMELIN-V1.0
IHW-C-PPOL-3-RDR-GZ-V1.0
IHW-C-PPOL-3-RDR-HALLEY-V1.0
IHW-C-PPSTOKE-3-RDR-HALLEY-V1.0
IHW-C-RSCN-3-EDR-CROMMELIN-V1.0
IHW-C-RSCN-3-EDR-HALLEY-V1.0
IHW-C-RSCN-N-NDR-CROMMELIN-V1.0
IHW-C-RSCN-N-NDR-GZ-V1.0
IHW-C-RSCN-N-NDR-HALLEY-V1.0
IHW-C-RSOC-3-EDR-GZ-V1.0
IHW-C-RSOC-3-EDR-HALLEY-V1.0
IHW-C-RSOH-3-EDR-CROMMELIN-V1.0
IHW-C-RSOH-3-EDR-GZ-V1.0
IHW-C-RSOH-3-EDR-HALLEY-V1.0
IHW-C-RSOH-N-NDR-CROMMELIN-V1.0
IHW-C-RSRDR-3-EDR-HALLEY-V1.0
IHW-C-RSSL-3-EDR-HALLEY-V1.0
IHW-C-RSSL-N-NDR-CROMMELIN-V1.0
IHW-C-RSSL-N-NDR-GZ-V1.0
IHW-C-RSSL-N-NDR-HALLEY-V1.0
IHW-C-RSUV-2-EDR-HALLEY-V1.0
IHW-C-SPEC-2-DIDR-CROMMELIN-V1.0
IHW-C-SPEC-2-DIDR-GZ-V1.0
IHW-C-SPEC-2-EDR-CROMMELIN-V1.0
IHW-C-SPEC-2-EDR-GZ-V1.0
IHW-C-SPEC-2-EDR-HALLEY-V1.0
IHW-C-SPEC-3-DIDR-HALLEY-V1.0
IHW-C-SPEC-3-EDR-CROMMELIN-V1.0
IHW-C-SPEC-3-EDR-GZ-V1.0
IHW-C-SPEC-3-EDR-HALLEY-V1.0

IRAS-6-SDR-SATELLITE-STATUS-V1.0
IRAS-6-SDR-SATELLITE-STATUS-V1.1
IRAS-A-FPA-3-RDR-IMPS-V1.0
IRAS-A-FPA-3-RDR-IMPS-V3.0
IRAS-A-FPA-3-RDR-IMPS-V4.0
IRAS-A-FPA-3-RDR-IMPS-V5.0
IRAS-A-FPA-3-RDR-IMPS-V6.0
IRAS-D-6-SDR-SHF-V1.0
IRAS-D-FPA-3-RDR-ZOHF-LOW-RES-V1.0
IRAS-D-FPA-3-RDR-ZOHF-MED-RES-V1.0
IRAS-D-FPA-6-RDR-V1.0
IRAS-FPA-6-RDR-INSTRUMENT-INFO-V1.0
IRAS-FPA-6-RDR-INSTRUMENT-INFO-V1.1
IRTF-J/C-NSFCAM-3-RDR-SL9-V1.0
IRTF-SR-URAC-4-OCC-V1.0
IUE-C-LWP-3-EDR-IUECDB-V1.0
IUE-C-LWR-3-EDR-IUECDB-V1.0
IUE-C-SWP-3-EDR-IUECDB-V1.0
IUE-J-LWP-3-EDR-SL9-V1.0
IUE-J-SWP-3-EDR-SL9-V1.0
LICK1M-SR-CCDC-4-OCC-V1.0
LP-L-6-EPHEMERIS-V1.0
LP-L-6-POSITION-V1.0
LP-L-6-TRAJECTORY-V1.0
LP-L-COM-6-ATTITUDE-V1.0
LP-L-COM-6-COMMAND-V1.0
LP-L-COM-6-SUNPULSE-V1.0
LP-L-COM/GRS/NS/APS/MAG/ER-1-MDR-V1.0
LP-L-ENG-6-ATTITUDE-V1.0
LP-L-ENG-6-COMMAND-V1.0
LP-L-ENG-6-SUNPULSE-V1.0
LP-L-ENG/GRS/NS/APS/MAG/ER-1-MDR-V1.0
LP-L-ER-3-RDR-3DELEFLUX-80SEC-V1.0
LP-L-ER-3-RDR-HIGHRESFLUX-V1.0
LP-L-ER-4-ELECTRON-DATA-V1.0
LP-L-ER-4-SUMM-OMNIDIRELEFLUX-V1.0
LP-L-GRS-3-RDR-V1.0
LP-L-GRS/NS/APS-2-RDR-V1.0
LP-L-MAG-4-LUNAR-FIELD-TS-V1.0
LP-L-MAG-4-SUMM-LUNARCRDS-5SEC-V1.0
LP-L-MAG-5-LUNAR-FIELD-BINS-V1.0
LP-L-MAG-5-SURFACE-FIELD-MAP-V1.0
LP-L-NS-3-RDR-V1.0
LP-L-RSS-1-ATDF-V1.0
LP-L-RSS-5-GRAVITY-V1.0
LP-L-RSS-5-LOS-V1.0
LRO-L-CRAT-2-EDR-RAWDATA-V1.0
LRO-L-CRAT-3-CDR-CALIBRATED-V1.0
LRO-L-CRAT-3/4-DDR-PROCESSED-V1.0
LRO-L-DLRE-2-EDR-V1.0
LRO-L-LAMP-2-EDR-V1.0
LRO-L-LAMP-3-RDR-V1.0
LRO-L-LEND-2-EDR-V1.0
LRO-L-LEND-5-RDR-V1.0

LRO-L-MRFLRO-1-PDR-V1.0
LRO-L-MRFLRO-4-CDR-INSAR-V1.0
LRO-L-MRFLRO-4-CDR-V1.0
LRO-L-MRFLRO-5-CDR-MAP-V1.0
LRO-L-MRFLRO-5-CDR-MOSAIC-V1.0
M10-H-MAG-3-RDR-M1-HIGHRES-V1.0
M10-H-MAG-3-RDR-M3-HIGHRES-V1.0
M10-H-MAG-4-SUMM-M1-SUMMARY-V1.0
M10-H-MAG-4-SUMM-M3-SUMMARY-V1.0
M10-H-PLS-3-RDR-ELECTRON-COUNTS-V1.0
M10-H-PLS-5-DDR-ELECTRON-MOMENTS-V1.0
M10-H-POS-6-M1-FLYBY-TRAJ-V1.0
M10-H-POS-6-M3-FLYBY-TRAJ-42SEC-V1.0
MCD27M-SR-IIRAR-4-OCC-V1.0
MER1-M-APXS-2-EDR-OPS-V1.0
MER1-M-APXS-2-XRAYSPEC-SCI-V1.0
MER1-M-DESCAM-2-EDR-OPS-V1.0
MER1-M-ENG-6-MOBILITY-V1.0
MER1-M-ENG-6-RMC-OPS-V1.0
MER1-M-HAZCAM-2-EDR-OPS-V1.0
MER1-M-HAZCAM-3-ILUT-OPS-V1.0
MER1-M-HAZCAM-3-RADIOMETRIC-OPS-V1.0
MER1-M-HAZCAM-4-LINEARIZED-OPS-V1.0
MER1-M-HAZCAM-5-ANAGLYPH-OPS-V1.0
MER1-M-HAZCAM-5-DISPARITY-OPS-V1.0
MER1-M-HAZCAM-5-MESH-OPS-V1.0
MER1-M-HAZCAM-5-NORMAL-OPS-V1.0
MER1-M-HAZCAM-5-RANGE-OPS-V1.0
MER1-M-HAZCAM-5-REACHABILITY-OPS-V1.0
MER1-M-HAZCAM-5-ROUGHNESS-OPS-V1.0
MER1-M-HAZCAM-5-SLOPE-OPS-V1.0
MER1-M-HAZCAM-5-SOLAR-OPS-V1.0
MER1-M-HAZCAM-5-WEDGE-OPS-V1.0
MER1-M-HAZCAM-5-XYZ-OPS-V1.0
MER1-M-MB-2-EDR-OPS-V1.0
MER1-M-MB-4-SUMSPEC-SCI-V1.0
MER1-M-MI-2-EDR-OPS-V1.0
MER1-M-MI-2-EDR-SCI-V1.0
MER1-M-MI-2-RDR-SCI-V1.0
MER1-M-MI-3-ILUT-OPS-V1.0
MER1-M-MI-3-RADIOMETRIC-OPS-V1.0
MER1-M-MI-3-RDR-SCI-V1.0
MER1-M-MI-4-LINEARIZED-OPS-V1.0
MER1-M-MI-5-ANAGLYPH-OPS-V1.0
MER1-M-MI-5-MOSAIC-OPS-V1.0
MER1-M-MTES-2-EDR-V1.0
MER1-M-MTES-3-RDR-V1.0
MER1-M-MTES-4-BTR-V1.0
MER1-M-MTES-4-EMR-V1.0
MER1-M-NAVCAM-2-EDR-OPS-V1.0
MER1-M-NAVCAM-3-ILUT-OPS-V1.0
MER1-M-NAVCAM-3-RADIOMETRIC-OPS-V1.0
MER1-M-NAVCAM-4-LINEARIZED-OPS-V1.0
MER1-M-NAVCAM-5-ANAGLYPH-OPS-V1.0

MER1-M-NAVCAM-5-DISPARITY-OPS-V1.0
MER1-M-NAVCAM-5-MESH-OPS-V1.0
MER1-M-NAVCAM-5-MOSAIC-OPS-V1.0
MER1-M-NAVCAM-5-NORMAL-OPS-V1.0
MER1-M-NAVCAM-5-RANGE-OPS-V1.0
MER1-M-NAVCAM-5-ROUGHNESS-OPS-V1.0
MER1-M-NAVCAM-5-SLOPE-OPS-V1.0
MER1-M-NAVCAM-5-SOLAR-OPS-V1.0
MER1-M-NAVCAM-5-WEDGE-OPS-V1.0
MER1-M-NAVCAM-5-XYZ-OPS-V1.0
MER1-M-PANCAM-2-EDR-OPS-V1.0
MER1-M-PANCAM-2-EDR-SCI-V1.0
MER1-M-PANCAM-3-ILUT-OPS-V1.0
MER1-M-PANCAM-3-RADCAL-RDR-V1.0
MER1-M-PANCAM-3-RADIOMETRIC-OPS-V1.0
MER1-M-PANCAM-4-LINEARIZED-OPS-V1.0
MER1-M-PANCAM-5-ANAGLYPH-OPS-V1.0
MER1-M-PANCAM-5-DISPARITY-OPS-V1.0
MER1-M-PANCAM-5-MESH-OPS-V1.0
MER1-M-PANCAM-5-MOSAIC-OPS-V1.0
MER1-M-PANCAM-5-NORMAL-OPS-V1.0
MER1-M-PANCAM-5-RANGE-OPS-V1.0
MER1-M-PANCAM-5-ROUGHNESS-OPS-V1.0
MER1-M-PANCAM-5-SLOPE-OPS-V1.0
MER1-M-PANCAM-5-SOLAR-OPS-V1.0
MER1-M-PANCAM-5-WEDGE-OPS-V1.0
MER1-M-PANCAM-5-XYZ-OPS-V1.0
MER1-M-RAT-2-EDR-OPS-V1.0
MER1-M-RSS-1-EDR-V1.0
MER1-M-SPICE-6-V1.0
MER1/MER2-M-APXS-5-OXIDE-SCI-V1.0
MER1/MER2-M-IMU-4-EDL-V1.0
MER1/MER2-M-PANCAM-5-ATMOS-OPACITY-V1.0
MER2-M-APXS-2-EDR-OPS-V1.0
MER2-M-APXS-2-XRAYSPEC-SCI-V1.0
MER2-M-DESCAM-2-EDR-OPS-V1.0
MER2-M-ENG-6-MOBILITY-V1.0
MER2-M-ENG-6-RMC-OPS-V1.0
MER2-M-HAZCAM-2-EDR-OPS-V1.0
MER2-M-HAZCAM-3-ILUT-OPS-V1.0
MER2-M-HAZCAM-3-RADIOMETRIC-OPS-V1.0
MER2-M-HAZCAM-4-LINEARIZED-OPS-V1.0
MER2-M-HAZCAM-5-ANAGLYPH-OPS-V1.0
MER2-M-HAZCAM-5-DISPARITY-OPS-V1.0
MER2-M-HAZCAM-5-MESH-OPS-V1.0
MER2-M-HAZCAM-5-NORMAL-OPS-V1.0
MER2-M-HAZCAM-5-RANGE-OPS-V1.0
MER2-M-HAZCAM-5-REACHABILITY-OPS-V1.0
MER2-M-HAZCAM-5-ROUGHNESS-OPS-V1.0
MER2-M-HAZCAM-5-SLOPE-OPS-V1.0
MER2-M-HAZCAM-5-SOLAR-OPS-V1.0
MER2-M-HAZCAM-5-WEDGE-OPS-V1.0
MER2-M-HAZCAM-5-XYZ-OPS-V1.0
MER2-M-MB-2-EDR-OPS-V1.0

MER2-M-MB-4-SUMSPEC-SCI-V1.0
MER2-M-MI-2-EDR-OPS-V1.0
MER2-M-MI-2-EDR-SCI-V1.0
MER2-M-MI-2-RDR-SCI-V1.0
MER2-M-MI-3-ILUT-OPS-V1.0
MER2-M-MI-3-RADIOMETRIC-OPS-V1.0
MER2-M-MI-3-RDR-SCI-V1.0
MER2-M-MI-4-LINEARIZED-OPS-V1.0
MER2-M-MI-5-ANAGLYPH-OPS-V1.0
MER2-M-MI-5-MOSAIC-OPS-V1.0
MER2-M-MTES-2-EDR-V1.0
MER2-M-MTES-3-RDR-V1.0
MER2-M-MTES-4-BTR-V1.0
MER2-M-MTES-4-EMR-V1.0
MER2-M-NAVCAM-2-EDR-OPS-V1.0
MER2-M-NAVCAM-3-ILUT-OPS-V1.0
MER2-M-NAVCAM-3-RADIOMETRIC-OPS-V1.0
MER2-M-NAVCAM-4-LINEARIZED-OPS-V1.0
MER2-M-NAVCAM-5-ANAGLYPH-OPS-V1.0
MER2-M-NAVCAM-5-DISPARITY-OPS-V1.0
MER2-M-NAVCAM-5-MESH-OPS-V1.0
MER2-M-NAVCAM-5-MOSAIC-OPS-V1.0
MER2-M-NAVCAM-5-NORMAL-OPS-V1.0
MER2-M-NAVCAM-5-RANGE-OPS-V1.0
MER2-M-NAVCAM-5-ROUGHNESS-OPS-V1.0
MER2-M-NAVCAM-5-SLOPE-OPS-V1.0
MER2-M-NAVCAM-5-SOLAR-OPS-V1.0
MER2-M-NAVCAM-5-WEDGE-OPS-V1.0
MER2-M-NAVCAM-5-XYZ-OPS-V1.0
MER2-M-PANCAM-2-EDR-OPS-V1.0
MER2-M-PANCAM-2-EDR-SCI-V1.0
MER2-M-PANCAM-3-ILUT-OPS-V1.0
MER2-M-PANCAM-3-RADCAL-RDR-V1.0
MER2-M-PANCAM-3-RADIOMETRIC-OPS-V1.0
MER2-M-PANCAM-4-LINEARIZED-OPS-V1.0
MER2-M-PANCAM-5-ANAGLYPH-OPS-V1.0
MER2-M-PANCAM-5-DISPARITY-OPS-V1.0
MER2-M-PANCAM-5-MESH-OPS-V1.0
MER2-M-PANCAM-5-MOSAIC-OPS-V1.0
MER2-M-PANCAM-5-NORMAL-OPS-V1.0
MER2-M-PANCAM-5-RANGE-OPS-V1.0
MER2-M-PANCAM-5-ROUGHNESS-OPS-V1.0
MER2-M-PANCAM-5-SLOPE-OPS-V1.0
MER2-M-PANCAM-5-SOLAR-OPS-V1.0
MER2-M-PANCAM-5-WEDGE-OPS-V1.0
MER2-M-PANCAM-5-XYZ-OPS-V1.0
MER2-M-RAT-2-EDR-OPS-V1.0
MER2-M-RSS-1-EDR-V1.0
MER2-M-SPICE-6-V1.0
MESS-E/H/V-MASCS-2-VIRS-EDR-V1.0
MESS-E/V/H-GRNS-2-GRS-RAWDATA-V1.0
MESS-E/V/H-GRNS-2-NS-RAWDATA-V1.0
MESS-E/V/H-MASCS-2-UVVS-EDR-V1.0
MESS-E/V/H-MASCS-2-VIRS-EDR-V1.0

MESS-E/V/H-MASCS-3-UVVS-CDR-CALDATA-V1.0
MESS-E/V/H-MASCS-3-VIRS-CDR-CALDATA-V1.0
MESS-E/V/H-MDIS-2-EDR-RAWDATA-V1.0
MESS-E/V/H-MDIS-4-CDR-CALDATA-V1.0
MESS-E/V/H-MLA-2-EDR-RAWDATA-V1.0
MESS-E/V/H-SPICE-6-V1.0
MESS-E/V/H-XRS-2-EDR-RAWDATA-V1.0
MESS-E/V/H/SW-EPPS-2-EPS-RAWDATA-V1.0
MESS-E/V/H/SW-EPPS-2-FIPS-RAWDATA-V1.0
MESS-E/V/H/SW-MAG-2-EDR-RAWDATA-V1.0
MESS-E/V/H/SW-MAG-3-CDR-CALIBRATED-V1.0
MESS-V/H-RSS-1-EDR-RAWDATA-V1.0
MEX-M-ASPERA3-2-EDR-ELS-V1.0
MEX-M-ASPERA3-2-EDR-NPI-V1.0
MEX-M-ASPERA3-2/3-EDR/RDR-NPI-EXT1-V1.0
MEX-M-HRSC-3-RDR-V2.0
MEX-M-HRSC-5-REFDR-DTM-V1.0
MEX-M-HRSC-5-REFDR-MAPPROJECTED-V1.0
MEX-M-MARSIS-2-EDR-V1.0
MEX-M-MARSIS-3-RDR-AIS-V1.0
MEX-M-MARSIS-3-RDR-SS-V1.0
MEX-M-MRS-1/2/3-NEV-0001-V1.0
MEX-M-MRS-1/2/3-PRM-0107-V1.0
MEX-M-OMEGA-2-EDR-FLIGHT-V1.0
MEX-X-MRS-1/2/3-PRM-0147-V1.0
MEX-Y/M-SPI-2-IREDR-RAWXCRUISE/MARS-V1.0
MEX-Y/M-SPI-2-UVEDR-RAWXCRUISE/MARS-V1.0
MGN-V-RDRS-2-ALT-EDR-V1.0
MGN-V-RDRS-5-BIDR-FULL-RES-V1.0
MGN-V-RDRS-5-C-BIDR-V1.0
MGN-V-RDRS-5-CDR-ALT/RAD-V1.0
MGN-V-RDRS-5-DIM-V1.0
MGN-V-RDRS-5-GDR-EMISSIVITY-V1.0
MGN-V-RDRS-5-GDR-REFLECTIVITY-V1.0
MGN-V-RDRS-5-GDR-SLOPE-V1.0
MGN-V-RDRS-5-GDR-TOPOGRAPHIC-V1.0
MGN-V-RDRS-5-GVDR-V1.0
MGN-V-RDRS-5-MIDR-C1-V1.0
MGN-V-RDRS-5-MIDR-C2-V1.0
MGN-V-RDRS-5-MIDR-C3-V1.0
MGN-V-RDRS-5-MIDR-FULL-RES-V1.0
MGN-V-RDRS-5-SCVDR-V1.0
MGN-V-RDRS-5-TOPO-L2-V1.0
MGN-V-RSS-1-ATDF-V1.0
MGN-V-RSS-1-BSR-V1.0
MGN-V-RSS-1-ROCC-V2.0
MGN-V-RSS-5-GRAVITY-L2-V1.0
MGN-V-RSS-5-LOSAPDR-L2-V1.0
MGN-V-RSS-5-LOSAPDR-L2-V1.13
MGN-V-RSS-5-OCC-PROF-ABS-H2SO4-V1.0
MGN-V-RSS-5-OCC-PROF-RTPD-V1.0
MGS-M-ACCEL-0-ACCEL_DATA-V1.0
MGS-M-ACCEL-2-EDR-V1.1
MGS-M-ACCEL-5-ALTITUDE-V1.0

MGS-M-ACCEL-5-ALTITUDE-V1.1
MGS-M-ACCEL-5-PROFILE-V1.0
MGS-M-ACCEL-5-PROFILE-V1.1
MGS-M-ACCEL-5-PROFILE-V1.2
MGS-M-ER-3-MAP1/OMNIDIR-FLUX-V1.0
MGS-M-ER-3-PREMAP/OMNIDIR-FLUX-V1.0
MGS-M-ER-4-MAP1/ANGULAR-FLUX-V1.0
MGS-M-MAG-1-PREMAP/HIGHRES-FLUX-V1.0
MGS-M-MAG-3-MAP1/FULLWORD-RES-MAG-V1.0
MGS-M-MAG-3-PREMAP/FULLWORD-RES-MAG-V1.0
MGS-M-MAG/ER-5-SAMPLER-V1.0
MGS-M-MOC-NA/WA-2-DSDP-L0-V1.0
MGS-M-MOC-NA/WA-2-SDP-L0-V1.0
MGS-M-MOLA-1-AEDR-L0-V1.0
MGS-M-MOLA-3-PEDR-ASCII-V1.0
MGS-M-MOLA-3-PEDR-L1A-V1.0
MGS-M-MOLA-3-PRDR-L1A-V1.0
MGS-M-MOLA-5-IEGDR-L3-V1.0
MGS-M-MOLA-5-IEGDR-L3-V2.0
MGS-M-MOLA-5-MEGDR-L3-V1.0
MGS-M-MOLA-5-PEDR-SAMPLER-V1.0
MGS-M-MOLA-5-SHADR-V1.0
MGS-M-RSS-1-CRU-V1.0
MGS-M-RSS-1-CRUISE-V1.0
MGS-M-RSS-1-EXT-V1.0
MGS-M-RSS-1-MAP-V1.0
MGS-M-RSS-1-MOI-V1.0
MGS-M-RSS-5-EDS-V1.0
MGS-M-RSS-5-SDP-V1.0
MGS-M-RSS-5-TPS-V1.0
MGS-M-SPICE-6-CK-V1.0
MGS-M-SPICE-6-EK-V1.0
MGS-M-SPICE-6-FK-V1.0
MGS-M-SPICE-6-IK-V1.0
MGS-M-SPICE-6-LSK-V1.0
MGS-M-SPICE-6-PCK-V1.0
MGS-M-SPICE-6-SCLK-V1.0
MGS-M-SPICE-6-SPK-V1.0
MGS-M-SPICE-6-V1.0
MGS-M-TES-3-SAMPLER-V1.0
MGS-M-TES-3-TSDR-V1.0
MGS-M-TES-3-TSDR-V2.0
MGS-M-TES-5-SAMPLER-V1.0
MGS-SUN-RSS-1-ROCC-V1.0
MK88-L-120CVF-3-RDR-120COLOR-V1.0
MO-M-RSS-1-OIDR-V1.0
MODEL-M-AMES-GCM-5-LAT-LON-V1.0
MODEL-M-AMES-GCM-5-LAT-PRES-V1.0
MODEL-M-AMES-GCM-5-LAT-TIME-V1.0
MODEL-M-AMES-GCM-5-LAT-V1.0
MODEL-M-AMES-GCM-5-TIME-V1.0
MODEL-M-AMES-GCM-5-TOPOGRAPHY-V1.0
MPF-M-RSS-1/5-RADIOTRACK-V1.0
MPFL-M-ASIMET-2-EDR-SURF-V1.0

MPFL-M-ASIMET-2/3-EDR/RDR-EDL-V1.0
MPFL-M-ASIMET-3-RDR-SURF-V1.0
MPFL-M-ASIMET-4-DDR-EDL-V1.0
MPFL-M-IMP-2-EDR-V1.0
MPFL-M-IMP-5-3DPOSITION-V1.0
MPFR-M-APXS-2-EDR-V1.0
MPFR-M-APXS-5-DDR-V1.0
MPFR-M-RVRCAM-2-EDR-V1.0
MPFR-M-RVRCAM-5-MIDR-V1.0
MPFR-M-RVRENG-2/3-EDR/RDR-V1.0
MR10-H/L/V-NAC/WAC-2-EDR-V1.0
MR10-H/L/V-NAC/WAC-5-MIDR-V1.0
MR6/MR7-M-IRS-3-V1.0
MR9-M-IRIS-3-RDR-V1.0
MR9-M-ISS-2-EDR-V1.0
MR9/VO1/VO2-M-ISS/VIS-5-CLOUD-V1.0
MR9/VO1/VO2-M-RSS-5-GRAVITY-V1.0
MRO-M-ACCEL-0-ACCELDATA-V1.0
MRO-M-ACCEL-2-ACCELDATA-V1.0
MRO-M-ACCEL-2-PROFILE-V1.0
MRO-M-ACCEL-3-ALTITUDE-V1.0
MRO-M-CRISM-2-EDR-V1.0
MRO-M-CRISM-3-RDR-TARGETED-V1.0
MRO-M-CRISM-4/6-CDR-V1.0
MRO-M-CRISM-5-RDR-MULTISPECTRAL-V1.0
MRO-M-CRISM-6-DDR-V1.0
MRO-M-CTX-2-EDR-L0-V1.0
MRO-M-HIRISE-2-EDR-V1.0
MRO-M-HIRISE-3-RDR-V1.0
MRO-M-MARCI-2-EDR-L0-V1.0
MRO-M-MCS-2-EDR-V1.0
MRO-M-MCS-4-RDR-V1.0
MRO-M-RSS-1-MAGR-V1.0
MRO-M-RSS-1-MAGR0-V1.0
MRO-M-SHARAD-3-EDR-V1.0
MRO-M-SHARAD-4-RDR-V1.0
MRO-M-SPICE-6-V1.0
MSG-M-ER-3-OMNIDIRFLUX-V1.0
MSG-M-MAGER-3-FULLRESMAG-V1.0
MSSSO-J-CASPIR-3-RDR-SL9-STDS-V1.0
MSSSO-J-CASPIR-3-RDR-SL9-V1.0
MSX-A-SPIRIT3-5-SBN0003-MIMPS-V1.0
MSX-C-SPIRIT3-3-MSXSB-V1.0
MSX-D-SPIRIT3-3-MSXZODY-V1.0
MSX-L-SPIRIT3-2/4-V1.0
NDC8-E-ASAR-3-RDR-IMAGE-V1.0
NDC8-E-ASAR-4-RADAR-V1.0
NEAR-A-5-COLLECTED-MODELS-V1.0
NEAR-A-GRS-3-EDR-EROS/SURFACE-V1.0
NEAR-A-MAG-2-EDR-CRUISE1-V1.0
NEAR-A-MAG-2-EDR-CRUISE2-V1.0
NEAR-A-MAG-2-EDR-CRUISE3-V1.0
NEAR-A-MAG-2-EDR-CRUISE4-V1.0
NEAR-A-MAG-2-EDR-EARTH-V1.0

NEAR-A-MAG-2-EDR-ER/FAR/APPROACH-V1.0
NEAR-A-MAG-2-EDR-EROS/FLY/BY-V1.0
NEAR-A-MAG-2-EDR-EROS/ORBIT-V1.0
NEAR-A-MAG-2-EDR-EROS/SURFACE-V1.0
NEAR-A-MAG-3-RDR-CRUISE2-V1.0
NEAR-A-MAG-3-RDR-CRUISE3-V1.0
NEAR-A-MAG-3-RDR-CRUISE4-V1.0
NEAR-A-MAG-3-RDR-EARTH-V1.0
NEAR-A-MAG-3-RDR-EROS/FLY/BY-V1.0
NEAR-A-MAG-3-RDR-EROS/ORBIT-V1.0
NEAR-A-MSI-2-EDR-CRUISE1-V1.0
NEAR-A-MSI-2-EDR-CRUISE2-V1.0
NEAR-A-MSI-2-EDR-CRUISE3-V1.0
NEAR-A-MSI-2-EDR-CRUISE4-V1.0
NEAR-A-MSI-2-EDR-EARTH-V1.0
NEAR-A-MSI-2-EDR-ER/FAR/APPROACH-V1.0
NEAR-A-MSI-2-EDR-EROS/FLY/BY-V1.0
NEAR-A-MSI-2-EDR-EROS/ORBIT-V1.0
NEAR-A-MSI-2-EDR-MATHILDE-V1.0
NEAR-A-MSI-3-EDR-CRUISE1-V1.0
NEAR-A-MSI-3-EDR-CRUISE2-V1.0
NEAR-A-MSI-3-EDR-CRUISE3-V1.0
NEAR-A-MSI-3-EDR-CRUISE4-V1.0
NEAR-A-MSI-3-EDR-EARTH-V1.0
NEAR-A-MSI-3-EDR-EROS/FLY/BY-V1.0
NEAR-A-MSI-3-EDR-EROS/ORBIT-V1.0
NEAR-A-MSI-3-EDR-MATHILDE-V1.0
NEAR-A-MSI-5-DIM-EROS/ORBIT-V1.0
NEAR-A-MSI-5-EROS-SHAPE-MODELS-V1.0
NEAR-A-NIS-2-EDR-CRUISE1-V1.0
NEAR-A-NIS-2-EDR-CRUISE2-V1.0
NEAR-A-NIS-2-EDR-CRUISE3-V1.0
NEAR-A-NIS-2-EDR-CRUISE4-V1.0
NEAR-A-NIS-2-EDR-EARTH-V1.0
NEAR-A-NIS-2-EDR-ER/FAR/APPROACH-V1.0
NEAR-A-NIS-2-EDR-EROS/FLY/BY-V1.0
NEAR-A-NIS-2-EDR-EROS/ORBIT-V1.0
NEAR-A-NLR-2-EDR-CRUISE1-V1.0
NEAR-A-NLR-2-EDR-CRUISE2-V1.0
NEAR-A-NLR-2-EDR-CRUISE4-V1.0
NEAR-A-NLR-2-EDR-ER/FAR/APPROACH-V1.0
NEAR-A-NLR-2-EDR-EROS/ORBIT-V1.0
NEAR-A-NLR-5-CDR-EROS/ORBIT-V1.0
NEAR-A-NLR-5-EROS/SHAPE/GRAVITY-V1.0
NEAR-A-NLR-6-EROS-MAPS-MODELS-V1.0
NEAR-A-RSS-1/5-EROS/FLYBY-V1.0
NEAR-A-RSS-1/5-EROS/ORBIT-V1.0
NEAR-A-RSS-1/5-MATHILDE-V1.0
NEAR-A-RSS-5-EROS/GRAVITY-V1.0
NEAR-A-SPICE-6-CRUISE1-V1.0
NEAR-A-SPICE-6-CRUISE2-V1.0
NEAR-A-SPICE-6-CRUISE3-V1.0
NEAR-A-SPICE-6-CRUISE4-V1.0
NEAR-A-SPICE-6-EARTH-V1.0

NEAR-A-SPICE-6-ER/FAR/APPROACH-V1.0
NEAR-A-SPICE-6-EROS/FLY/BY-V1.0
NEAR-A-SPICE-6-EROS/ORBIT-V1.0
NEAR-A-SPICE-6-EROS/SURFACE-V1.0
NEAR-A-SPICE-6-MATHILDE-V1.0
NEAR-A-XGRS-2-EDR-CRUISE2-V1.0
NEAR-A-XGRS-2-EDR-CRUISE3-V1.0
NEAR-A-XGRS-2-EDR-CRUISE4-V1.0
NEAR-A-XGRS-2-EDR-EARTH-V1.0
NEAR-A-XGRS-2-EDR-ER/FAR/APPROACH-V1.0
NEAR-A-XGRS-2-EDR-EROS/ORBIT-V1.0
NEAR-A-XGRS-2-EDR-EROS/SURFACE-V1.0
NEAR-MSI-6-RDR-INSTRUMENT-INFO-V1.0
NH-J-ALICE-2-JUPITER-V1.0
NH-J-ALICE-3-JUPITER-V1.0
NH-J-LEISA-2-JUPITER-V1.0
NH-J-LEISA-3-JUPITER-V1.0
NH-J-LORRI-2-JUPITER-V1.0
NH-J-LORRI-3-JUPITER-V1.0
NH-J-MVIC-2-JUPITER-V1.0
NH-J-MVIC-3-JUPITER-V1.0
NH-J-PEPSSI-2-JUPITER-V1.0
NH-J-PEPSSI-3-JUPITER-V1.0
NH-J-SDC-2-JUPITER-V1.0
NH-J-SDC-3-JUPITER-V1.0
NH-J-SWAP-2-JUPITER-V1.0
NH-J-SWAP-3-JUPITER-V1.0
NH-X-ALICE-2-LAUNCH-V1.0
NH-X-ALICE-3-LAUNCH-V1.0
NH-X-LEISA-2-LAUNCH-V1.0
NH-X-LEISA-3-LAUNCH-V1.0
NH-X-LORRI-2-LAUNCH-V1.0
NH-X-LORRI-3-LAUNCH-V1.0
NH-X-MVIC-2-LAUNCH-V1.0
NH-X-MVIC-3-LAUNCH-V1.0
NH-X-PEPSSI-2-LAUNCH-V1.0
NH-X-PEPSSI-3-LAUNCH-V1.0
NH-X-SDC-2-LAUNCH-V1.0
NH-X-SDC-3-LAUNCH-V1.0
NH-X-SWAP-2-LAUNCH-V1.0
NH-X-SWAP-3-LAUNCH-V1.0
OAO-J-OASIS-3-RDR-SL9-V1.0
ODY-M-ACCEL-2-EDR-V1.0
ODY-M-ACCEL-5-ALTITUDE-V1.0
ODY-M-ACCEL-5-PROFILE-V1.2
ODY-M-GRS-2-EDR-V1.0
ODY-M-GRS-2-EDR-V2.0
ODY-M-GRS-4-CGS-V1.0
ODY-M-GRS-4-DHD-V1.0
ODY-M-GRS-4-DND-V1.0
ODY-M-GRS-5-AHD-V1.0
ODY-M-GRS-5-AND-V1.0
ODY-M-GRS-5-ELEMENTS-V1.0
ODY-M-GRS-5-SGS-V1.0

ODY-M-MAR-2-EDR-RAW-COUNTS-V1.0
ODY-M-MAR-2-REDR-RAW-DATA-V1.0
ODY-M-MAR-3-EDR-RAW-COUNTS-V1.0
ODY-M-MAR-3-RDR-CALIBRATED-DATA-V1.0
ODY-M-RSS-1-RAW-V1.0
ODY-M-SACCEL-2-EDR-V1.0
ODY-M-SACCEL-5-ALTITUDE-V1.0
ODY-M-SACCEL-5-PROFILE-V1.0
ODY-M-SPICE-6-SPK-V1.0
ODY-M-SPICE-6-V1.0
ODY-M-THM-2-IREDR-V1.0
ODY-M-THM-2-VISEDR-V1.0
ODY-M-THM-3-IRBTR-V1.0
ODY-M-THM-3-IRRDR-V1.0
ODY-M-THM-3-VISABR-V1.0
ODY-M-THM-3-VISRDR-V1.0
ODY-M-THM-5-IRGEO-V1.0
ODY-M-THM-5-VISGEO-V1.0
P10-J-CRT-4-SUMM-FLUX-15MIN-V1.0
P10-J-GTT-3/4-RDR/SUMM-V1.0
P10-J-HVM-3-RDR-HIGHRES-V1.0
P10-J-HVM-3-RDR-JUP-HIGHRES-V1.0
P10-J-HVM-4-SUMM-AVERAGE-1MIN-V1.0
P10-J-HVM-4-SUMM-JUP-NEAR-ENC-V1.0
P10-J-HVM-4-SUMM-JUP-SUMMARY-V1.0
P10-J-HVM-4-SUMM-NEAR-ENC-1MIN-V1.0
P10-J-POS-6-FLYBY-TRAJ-V1.0
P10-J-POS-6-JUP-FLYBY-TRAJ-V1.0
P10-J/SW-CPI-4-SUMM-CRUISE-15MIN-V1.0
P10-J/SW-CPI-4-SUMM-CRUISE-1HR-V1.0
P10-J/SW-PA-3-RDR-CRUISE-V1.0
P10-J/SW-PA-3-RDR-HIGH-RES-CRUISE-V1.0
P10-J/SW-PA-4-SUMM-CRUISE-1HR-V1.0
P10-J/SW-POS-6-LIGHT-TIME-V1.0
P10-J/SW-TRD-4-SUMM-CRUISE-1HR-V1.0
P10-J/SW-UV-4-SUMM-CRUISE-1DAY-V1.0
P11-J-CRT-4-SUMM-FLUX-15MIN-V1.0
P11-J-FGM-4-SUMM-36SEC-V1.0
P11-J-FGM-4-SUMM-5MIN-V1.0
P11-J-FGM-4-SUMM-JUP-36SEC-V1.0
P11-J-FGM-4-SUMM-JUP-5MIN-V1.0
P11-J-GTT-3/4-RDR/SUMM-V1.0
P11-J-HVM-3-RDR-HIGHRES-V1.0
P11-J-HVM-3-RDR-JUP-HIGHRES-V1.0
P11-J-HVM-4-SUMM-1MIN-V1.0
P11-J-HVM-4-SUMM-JUP-NEAR-ENC-V1.0
P11-J-HVM-4-SUMM-JUP-SUMMARY-V1.0
P11-J-HVM-4-SUMM-NEAR-ENC-1MIN-V1.0
P11-J-POS-6-FLYBY-TRAJ-V1.0
P11-J-POS-6-JUP-FLYBY-TRAJ-V1.0
P11-J/S/SW-CPI-4-SUMM-CRUISE-15MIN-V1.0
P11-J/S/SW-CPI-4-SUMM-CRUISE-1HR-V1.0
P11-J/S/SW-PA-3-RDR-CRUISE-V1.0
P11-J/S/SW-PA-3-RDR-HIGH-RES-CRUISE-V1.0

P11-J/S/SW-PA-4-SUMM-CRUISE-1HR-V1.0
P11-J/S/SW-POS-6-LIGHT-TIME-V1.0
P11-J/S/SW-TRD-4-SUMM-CRUISE-1HR-V1.0
P11-J/S/SW-UV-4-SUMM-CRUISE-1DAY-V1.0
P11-S-CRS-3-ENC-15.0MIN-V1.0
P11-S-CRT-4-SUMM-FLUX-15MIN-V1.0
P11-S-FGM-4-SUMM-146SEC-V1.0
P11-S-FGM-4-SUMM-5MIN-V1.0
P11-S-FGM-4-SUMM-SAT-146SEC-V1.0
P11-S-FGM-4-SUMM-SAT-5MIN-V1.0
P11-S-GTT-2/3/4-EDR/RDR/SUMM-V1.0
P11-S-HVM-3-RDR-HIGHRES-V1.0
P11-S-HVM-3-RDR-SAT-HIGHRES-V1.0
P11-S-HVM-4-ENC-1.0MIN-V1.0
P11-S-HVM-4-SUMM-1MIN-V1.0
P11-S-HVM-4-SUMM-SAT-SUMMARY-V1.0
P11-S-POS-6-FLYBY-TRAJ-V1.0
P12-V-ORAD-4-ALT/RAD-V1.0
P12-V-ORAD-5-BACKSCATTER-V1.0
P12-V-ORAD-5-RADAR-IMAGE-V1.0
P12-V-RSS-4-LOS-GRAVITY-V1.0
PAL200-SR-CIRC-4-OCC-V1.0
PVO-V-OCPP-5-PMDR-V1.0
PVO-V-OEFD-3–EFIELD-HIRES-V1.0
PVO-V-OEFD-4–EFIELD-24SEC-V1.0
PVO-V-OETP-3-HIRESELECTRONS-V1.0
PVO-V-OETP-5-BOWSHOCKLOCATION-V1.0
PVO-V-OETP-5-IONOPAUSELOCATION-V1.0
PVO-V-OETP-5-LORESELECTRONS-V1.0
PVO-V-OETP-5-SOLAREUV-24HRAVG-V1.0
PVO-V-OIMS-3-IONDENSITY-HIRES-V1.0
PVO-V-OIMS-4-IONDENSITY-12S-V1.0
PVO-V-OMAG-3–SCCOORDS-HIRES-V1.0
PVO-V-OMAG-3-P-SENSOR-HIRES-V1.0
PVO-V-OMAG-4–SCCOORDS-24SEC-V1.0
PVO-V-OMAG-4-P-SENSOR-24SEC-V1.0
PVO-V-ONMS-3-NEUTRALDENSITY-HIRES-V1.0
PVO-V-ONMS-3-SUPERTHRMLOXYGN-HIRES-V1.0
PVO-V-ONMS-4-IONMAXCOUNTRATE-12SEC-V1.0
PVO-V-ONMS-4-NEUTRALDENSITY-12SEC-V1.0
PVO-V-ONMS-4-SUPERTHRMLOXYGN-12SEC-V1.0
PVO-V-ONMS-4-THERMALION-12SEC-V1.0
PVO-V-ONMS-5-SUPERTHERMALIONLOC-V1.0
PVO-V-ORAD-2-PVRA-V1.0
PVO-V-ORPA-2–IVCURVES-HIRES-V1.0
PVO-V-ORPA-5-ELE/ION/PHOTO/UADS-V1.0
PVO-V-ORSE-1-ODR-OPENLOOP–V1.0
PVO-V-OUVS-5-IMIDR-V1.0
PVO-V-POS-5–VSOCOORDS-12SEC-V1.0
PVO-V-POS-6-SEDR-ORBITATTITUDE–V1.0
SAKIG-C-IMF-3-RDR-HALLEY-V1.0
SAKIG-C-SOW-3-RDR-HALLEY-V1.0
SDU-A-NAVCAM-2-EDR-ANNEFRANK-V1.0
SDU-C-DFMI-2-EDR-WILD2-V1.0

SDU-C-DYNSCI-2-WILD2-V1.0
SDU-C-NAVCAM-2-EDR-WILD2-V1.0
SDU-C-NAVCAM-3-RDR-WILD2-V1.0
SDU-C-NAVCAM-3-WILD2-S-IMAGES-V1.0
SDU-C-NAVCAM-5-WILD2-SHAPE-MODEL-V1.0
SDU-C-NAVCAM-5-WILD2-SHAPE-MODEL-V2.0
SDU-C-NAVCAM-5-WILD2-SHAPE-MODEL-V2.1
SDU-C-SPICE-6-V1.0
SDU-C-SRC-2-TEMPS-V1.0
SDU-C-SRC-6-GEOMETRY-V1.0
SDU-C/D-CIDA-1-EDF/HK-V1.0
SDU-C/E/L-DFMI-2-EDR-V1.0
STARDUST-C/E/L-DFMI-2-EDR-V1.0
STARDUST-C/E/L-NC-2-EDR-V1.0
SUISEI-C-ESP-3-RDR-HALLEY-V1.0
ULY-D-UDDS-5-DUST-V1.1
ULY-D-UDDS-5-DUST-V2.0
ULY-J-COSPIN-AT-4-FLUX-256SEC-V1.0
ULY-J-COSPIN-HET-3-RDR-FLUX-HIRES-V1.0
ULY-J-COSPIN-HFT-3-RDR-FLUX-HIRES-V1.0
ULY-J-COSPIN-KET-3-RDR-INTENS-HIRES-V1.0
ULY-J-COSPIN-KET-3-RDR-RAW-HIRES-V1.0
ULY-J-COSPIN-LET-3-RDR-FLUX-32SEC-V1.0
ULY-J-EPAC-4-SUMM-ALL-CHAN-1HR-V1.0
ULY-J-EPAC-4-SUMM-OMNI-ELE-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-OMNI-PRO-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PHA-24HR-V1.0
ULY-J-EPAC-4-SUMM-PRTL2-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PRTL3-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PSTL1-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PSTL2-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PSTL3-FLUX-1HR-V1.0
ULY-J-EPAC-4-SUMM-PSTL4-FLUX-1HR-V1.0
ULY-J-EPHEM-6-SUMM-SYS3/ECL50-V1.0
ULY-J-GAS-5-SKY-MAPS-V1.0
ULY-J-GAS-8-NO-DATA-V1.0
ULY-J-GRB-2-RDR-RAW-COUNT-RATE-V1.0
ULY-J-GWE-8-NULL-RESULTS-V1.0
ULY-J-HISCALE-4-SUMM-DE-V1.0
ULY-J-HISCALE-4-SUMM-LEFS150-V1.0
ULY-J-HISCALE-4-SUMM-LEFS60-V1.0
ULY-J-HISCALE-4-SUMM-LEMS120-V1.0
ULY-J-HISCALE-4-SUMM-LEMS30-V1.0
ULY-J-HISCALE-4-SUMM-W-V1.0
ULY-J-HISCALE-4-SUMM-WARTD-V1.0
ULY-J-SCE-1-ROCC-V1.0
ULY-J-SCE-1-TDF-V1.0
ULY-J-SCE-3-RDR-DOPPLER-HIRES-V1.0
ULY-J-SCE-4-SUMM-RANGING-10MIN-V1.0
ULY-J-SPICE-6-SPK-V1.0
ULY-J-SWICS-8-NO-DATA-V1.0
ULY-J-SWOOPS-5-RDR-PLASMA-HIRES-V1.0
ULY-J-URAP-4-SUMM-PFR-AVG-E-10MIN-V1.0
ULY-J-URAP-4-SUMM-PFR-PEAK-E-10MIN-V1.0

ULY-J-URAP-4-SUMM-RAR-AVG-E-10MIN-V1.0
ULY-J-URAP-4-SUMM-RAR-AVG-E-144S-V1.0
ULY-J-URAP-4-SUMM-RAR-PEAK-E-10MIN-V1.0
ULY-J-URAP-4-SUMM-WFA-AVG-B-10MIN-V1.0
ULY-J-URAP-4-SUMM-WFA-AVG-E-10MIN-V1.0
ULY-J-URAP-4-SUMM-WFA-PEAK-B-10MIN-V1.0
ULY-J-URAP-4-SUMM-WFA-PEAK-E-10MIN-V1.0
ULY-J-VHM/FGM-4-SUMM-JGCOORDS-60S-V1.0
UNK
VEGA1-C-DUCMA-3-RDR-HALLEY-V1.0
VEGA1-C-IKS-2-RDR-HALLEY-V1.0
VEGA1-C-IKS-3-RDR-HALLEY-PROCESSED-V1.0
VEGA1-C-MISCHA-3-RDR-HALLEY-V1.0
VEGA1-C-PM1-2-RDR-HALLEY-V1.0
VEGA1-C-PUMA-2-RDR-HALLEY-V1.0
VEGA1-C-PUMA-3-RDR-HALLEY-PROCESSED-V1.0
VEGA1-C-SP1-2-RDR-HALLEY-V1.0
VEGA1-C-SP2-2-RDR-HALLEY-V1.0
VEGA1-C-TNM-2-RDR-HALLEY-V1.0
VEGA1-C-TVS-2-RDR-HALLEY-V1.0
VEGA1-C-TVS-3-RDR-HALLEY-PROCESSED-V1.0
VEGA1-C/SW-MISCHA-3-RDR-ORIGINAL-V1.0
VEGA1-SW-MISCHA-3-RDR-CRUISE-V1.0
VEGA2-C-DUCMA-3-RDR-HALLEY-V1.0
VEGA2-C-PM1-2-RDR-HALLEY-V1.0
VEGA2-C-PUMA-2-RDR-HALLEY-V1.0
VEGA2-C-PUMA-3-RDR-HALLEY-PROCESSED-V1.0
VEGA2-C-SP1-2-RDR-HALLEY-V1.0
VEGA2-C-SP2-2-RDR-HALLEY-V1.0
VEGA2-C-TVS-2-RDR-HALLEY-V1.0
VEGA2-C-TVS-3-RDR-HALLEY-PROCESSED-V1.0
VEGA2-C-TVS-5-RDR-HALLEY-TRANSFORM-V1.0
VEGA2-C/SW-MISCHA-3-RDR-ORIGINAL-V1.0
VG1-J-6-SPK-V1.0
VG1-J-CRS-5-SUMM-FLUX-V1.0
VG1-J-LECP-4-15MIN
VG1-J-LECP-4-BR-15MIN
VG1-J-LECP-4-SUMM-AVERAGE-15MIN-V1.1
VG1-J-LECP-4-SUMM-SECTOR-15MIN-V1.1
VG1-J-MAG-4-1.92SEC
VG1-J-MAG-4-48.0SEC
VG1-J-MAG-4-9.60SEC
VG1-J-MAG-4-RDR-HGCOORDS-1.92SEC-V1.0
VG1-J-MAG-4-RDR-HGCOORDS-48.0SEC-V1.0
VG1-J-MAG-4-RDR-HGCOORDS-9.60SEC-V1.0
VG1-J-MAG-4-RDR-S3COORDS-1.92SEC-V1.1
VG1-J-MAG-4-RDR-S3COORDS-48.0SEC-V1.1
VG1-J-MAG-4-RDR-S3COORDS-9.60SEC-V1.1
VG1-J-MAG-4-SUMM-HGCOORDS-48.0SEC-V1.0
VG1-J-MAG-4-SUMM-S3COORDS-48.0SEC-V1.1
VG1-J-PLS-5-ION-MOM-96.0SEC
VG1-J-PLS-5-SUMM-ELE-MOM-96.0SEC-V1.1
VG1-J-PLS-5-SUMM-ION-INBNDSWIND-96S-V1.0
VG1-J-PLS-5-SUMM-ION-L-MODE-96S-V1.0

VG1-J-PLS-5-SUMM-ION-M-MODE-96S-V1.0
VG1-J-PLS-5-SUMM-ION-MOM-96.0SEC-V1.1
VG1-J-PLS/PRA-5-ELE-MOM-96.0SEC
VG1-J-POS-4-48.0SEC
VG1-J-POS-6-SUMM-HGCOORDS-V1.0
VG1-J-POS-6-SUMM-S3COORDS-V1.1
VG1-J-PRA-3-RDR-6SEC-V1.0
VG1-J-PRA-3-RDR-LOWBAND-6SEC-V1.0
VG1-J-PRA-4-SUMM-BROWSE-48SEC-V1.0
VG1-J-PWS-2-RDR-SA-4.0SEC-V1.1
VG1-J-PWS-2-SA-4.0SEC
VG1-J-PWS-4-SA-48.0SEC
VG1-J-PWS-4-SUMM-SA-48.0SEC-V1.1
VG1-J-SPICE-6-SPK-V2.0
VG1-J-UVS-3-RDR-V1.0
VG1-J/S/SS-PWS-1-EDR-WFRM-60MS-V1.0
VG1-J/S/SS-PWS-2-RDR-SAFULL-V1.0
VG1-J/S/SS-PWS-4-SUMM-SA1HOUR-V1.0
VG1-S-6-SPK-V1.0
VG1-S-CRS-4-SUMM-D1/D2-192SEC-V1.0
VG1-S-LECP-4-15MIN
VG1-S-LECP-4-BR-15MIN
VG1-S-LECP-4-SUMM-AVERAGE-15MIN-V1.0
VG1-S-LECP-4-SUMM-SECTOR-15MIN-V1.0
VG1-S-MAG-4-1.92SEC
VG1-S-MAG-4-48.0SEC
VG1-S-MAG-4-9.60SEC
VG1-S-MAG-4-SUMM-HGCOORDS-1.92SEC-V1.0
VG1-S-MAG-4-SUMM-HGCOORDS-48.0SEC-V1.0
VG1-S-MAG-4-SUMM-HGCOORDS-9.60SEC-V1.0
VG1-S-MAG-4-SUMM-L1COORDS-1.92SEC-V1.0
VG1-S-MAG-4-SUMM-L1COORDS-48.0SEC-V1.0
VG1-S-MAG-4-SUMM-L1COORDS-9.60SEC-V1.0
VG1-S-PLS-5-ELE-BR-96.0SEC
VG1-S-PLS-5-ELE-PAR-96.0SEC
VG1-S-PLS-5-ION-FBR-96.0SEC
VG1-S-PLS-5-ION-FIT-96.0SEC
VG1-S-PLS-5-ION-MOM-96.0SEC
VG1-S-PLS-5-SUM-IONWINDFIT-96S-V1.0
VG1-S-PLS-5-SUMM-ELE-FIT-96SEC-V1.0
VG1-S-PLS-5-SUMM-ELEFBR-96SEC-V1.0
VG1-S-PLS-5-SUMM-ION-SOLARWIND-96S-V1.0
VG1-S-PLS-5-SUMM-IONFBR-96SEC-V1.0
VG1-S-PLS-5-SUMM-IONFIT-96SEC-V1.0
VG1-S-PLS-5-SUMM-IONMOM-96SEC-V1.0
VG1-S-POS-4-48.0SEC
VG1-S-POS-4-SUMM-HGCOORDS-96SEC-V1.0
VG1-S-POS-4-SUMM-L1COORDS-V1.0
VG1-S-PRA-3-RDR-LOWBAND-6SEC-V1.0
VG1-S-PWS-2-RDR-SA-4.0SEC-V1.0
VG1-S-PWS-2-SA-4.0SEC
VG1-S-PWS-4-SA-48.0SEC
VG1-S-PWS-4-SUMM-SA-48SEC-V1.0
VG1-S-RSS-1-ROCC-V1.0

VG1-S-UVS-3-RDR-V1.0
VG1-SSA-RSS-1-ROCC-V1.0
VG1/VG2-J-IRIS-3-RDR-V1.0
VG1/VG2-J-IRIS-5-GRS-ATMOS-PARAMS-V1.0
VG1/VG2-J-IRIS-5-NS-ATMOS-PARAMS-V1.0
VG1/VG2-J-ISS-2-EDR-V2.0
VG1/VG2-J-ISS-2-EDR-V3.0
VG1/VG2-J-UVS-5-BRIGHTNESS-N/S-MAPS-V1.0
VG1/VG2-S-IRIS-3-RDR-V1.0
VG1/VG2-S-IRIS-5-NS-ATMOS-PARAMS-V1.0
VG1/VG2-S-ISS-2-EDR-V1.0
VG1/VG2-S-ISS-2-EDR-V2.0
VG1/VG2-S-UVS-5-BRIGHTNESS-N/S-MAPS-V1.0
VG1/VG2-SR/UR-RSS-4-OCC-V1.0
VG1/VG2-SR/UR/NR-RSS-4-OCC-V1.0
VG1/VG2-SR/UR/NR-UVS-2/4-OCC-V1.0
VG2-J-6-SPK-V1.0
VG2-J-CRS-5-SUMM-FLUX-V1.0
VG2-J-LECP-4-15MIN
VG2-J-LECP-4-BR-15MIN
VG2-J-LECP-4-SUMM-AVERAGE-15MIN-V1.0
VG2-J-LECP-4-SUMM-SECTOR-15MIN-V1.0
VG2-J-MAG-4-1.92SEC
VG2-J-MAG-4-48.0SEC
VG2-J-MAG-4-9.60SEC
VG2-J-MAG-4-RDR-HGCOORDS-1.92SEC-V1.0
VG2-J-MAG-4-RDR-HGCOORDS-9.60SEC-V1.0
VG2-J-MAG-4-RDR-S3COORDS-1.92SEC-V1.1
VG2-J-MAG-4-RDR-S3COORDS-9.60SEC-V1.1
VG2-J-MAG-4-SUMM-HGCOORDS-48.0SEC-V1.0
VG2-J-MAG-4-SUMM-S3COORDS-48.0SEC-V1.1
VG2-J-PLS-5-ELE-MOM-96.0SEC
VG2-J-PLS-5-ION-MOM-96.0SEC
VG2-J-PLS-5-SUMM-ELE-MOM-96.0SEC-V1.0
VG2-J-PLS-5-SUMM-ION-INBNDSWIND-96S-V1.0
VG2-J-PLS-5-SUMM-ION-L-MODE-96S-V1.0
VG2-J-PLS-5-SUMM-ION-M-MODE-96S-V1.0
VG2-J-PLS-5-SUMM-ION-MOM-96.0SEC-V1.0
VG2-J-POS-4-48.0SEC
VG2-J-POS-6-SUMM-HGCOORDS-V1.0
VG2-J-POS-6-SUMM-S3COORDS-V1.1
VG2-J-PRA-3-RDR-6SEC-V1.0
VG2-J-PRA-3-RDR-LOWBAND-6SEC-V1.0
VG2-J-PRA-4-SUMM-BROWSE-48SEC-V1.0
VG2-J-PWS-2-RDR-SA-4.0SEC-V1.0
VG2-J-PWS-2-SA-4.0SEC
VG2-J-PWS-4-SA-48.0SEC
VG2-J-PWS-4-SUMM-SA-48.0SEC-V1.0
VG2-J-UVS-0–SL9-NULL-RESULTS-V1.0
VG2-J-UVS-3-RDR-V1.0
VG2-J/S/U/N/SS-PWS-1-EDR-WFRM-60MS-V1.0
VG2-N-CRS-3-RDR-D1-6SEC-V1.0
VG2-N-CRS-4-SUMM-D1-96SEC-V1.0
VG2-N-CRS-4-SUMM-D2-96SEC-V1.0

VG2-N-IRIS-3-RDR-V1.0
VG2-N-ISS-2-EDR-V1.0
VG2-N-LECP-4-RDR-STEP-12.8MIN-V1.0
VG2-N-LECP-4-SUMM-SCAN-24SEC-V1.0
VG2-N-MAG-4-RDR-HGCOORDS-1.92SEC-V1.0
VG2-N-MAG-4-RDR-HGCOORDS-9.6SEC-V1.0
VG2-N-MAG-4-SUMM-HGCOORDS-48SEC-V1.0
VG2-N-MAG-4-SUMM-NLSCOORDS-12SEC-V1.0
VG2-N-PLS-5-RDR-2PROMAGSPH-48SEC-V1.0
VG2-N-PLS-5-RDR-ELEMAGSPHERE-96SEC-V1.0
VG2-N-PLS-5-RDR-IONINBNDWIND-48SEC-V1.0
VG2-N-PLS-5-RDR-IONLMODE-48SEC-V1.0
VG2-N-PLS-5-RDR-IONMAGSPHERE-48SEC-V1.0
VG2-N-PLS-5-RDR-IONMMODE-12MIN-V1.0
VG2-N-POS-5-SUMM-HGCOORDS-48SEC-V1.0
VG2-N-POS-5-SUMM-NLSCOORDS-12SEC-V1.0
VG2-N-PRA-2-RDR-HIGHRATE-60MS-V1.0
VG2-N-PRA-4-SUMM-BROWSE-48SEC-V1.0
VG2-N-PWS-1-EDR-WFRM-60MS-V1.0
VG2-N-PWS-2-RDR-SA-4SEC-V1.0
VG2-N-PWS-4-SUMM-SA-48SEC-V1.0
VG2-N-UVS-3-RDR-V1.0
VG2-NSA-RSS-5-ROCC-V1.0
VG2-S-6-SPK-V1.0
VG2-S-CRS-4-SUMM-D1/D2-1.92SEC-V1.0
VG2-S-LECP-4-15MIN
VG2-S-LECP-4-BR-15MIN
VG2-S-LECP-4-SUMM-AVERAGE-15MIN-V1.0
VG2-S-LECP-4-SUMM-SECTOR-15MIN-V1.0
VG2-S-MAG-4-1.92SEC
VG2-S-MAG-4-48.0SEC
VG2-S-MAG-4-9.60SEC
VG2-S-MAG-4-RDR-HGCOORDS-1.92SEC-V1.1
VG2-S-MAG-4-RDR-HGCOORDS-9.6SEC-V1.1
VG2-S-MAG-4-RDR-L1COORDS-1.92SEC-V1.1
VG2-S-MAG-4-RDR-L1COORDS-9.6SEC-V1.1
VG2-S-MAG-4-SUMM-HGCOORDS-48SEC-V1.1
VG2-S-MAG-4-SUMM-L1COORDS-48SEC-V1.1
VG2-S-PLS-5-ELE-BR-96.0SEC
VG2-S-PLS-5-ELE-PAR-96.0SEC
VG2-S-PLS-5-ION-FBR-96.0SEC
VG2-S-PLS-5-ION-FIT-96.0SEC
VG2-S-PLS-5-ION-MOM-96.0SEC
VG2-S-PLS-5-SUM-ION-SOLARWIND-96S-V1.0
VG2-S-PLS-5-SUMM-ELE-BR-96SEC-V1.0
VG2-S-PLS-5-SUMM-ELE-FIT-96SEC-V1.0
VG2-S-PLS-5-SUMM-ION-FBR-96SEC-V1.0
VG2-S-PLS-5-SUMM-ION-FIT-96SEC-V1.0
VG2-S-PLS-5-SUMM-ION-MOM-96SEC-V1.0
VG2-S-PLS-5-SUMM-ION-SOLARWIND-96S-V1.0
VG2-S-POS-4-48.0SEC
VG2-S-POS-4-SUMM-HGCOORDS-V1.0
VG2-S-POS-4-SUMM-L1COORDS-V1.0
VG2-S-PRA-3-RDR-LOWBAND-6SEC-V1.0

VG2-S-PWS-2-RDR-SA-4.0SEC-V1.0
VG2-S-PWS-2-SA-4.0SEC
VG2-S-PWS-4-SA-48.0SEC
VG2-S-PWS-4-SUMM-SA-48SEC-V1.0
VG2-S-RSS-1-ROCC-V1.0
VG2-S-UVS-3-RDR-V1.0
VG2-SR/UR/NR-PPS-1/2/4-OCC-V1.0
VG2-SR/UR/NR-PPS-2/4-OCC-V1.0
VG2-SR/UR/NR-PPS-4-OCC-V1.0
VG2-SR/UR/NR-UVS-4-OCC-V1.0
VG2-U-6-SPK-V1.0
VG2-U-CRS-4-SUMM-D1-96SEC-V1.0
VG2-U-CRS-4-SUMM-D2-96SEC-V1.0
VG2-U-IRIS-3-RDR-V1.0
VG2-U-ISS-2-EDR-V1.0
VG2-U-LECP-4-RDR-SECTOR-15MIN-V1.0
VG2-U-LECP-4-RDR-STEP-12.8MIN-V1.0
VG2-U-LECP-4-SUMM-AVERAGE-15MIN-V1.0
VG2-U-LECP-4-SUMM-SCAN-24SEC-V1.0
VG2-U-MAG-4-RDR-HGCOORDS-1.92SEC-V1.0
VG2-U-MAG-4-RDR-HGCOORDS-9.6SEC-V1.0
VG2-U-MAG-4-RDR-U1COORDS-1.92SEC-V1.0
VG2-U-MAG-4-RDR-U1COORDS-9.6SEC-V1.0
VG2-U-MAG-4-SUMM-HGCOORDS-48SEC-V1.0
VG2-U-MAG-4-SUMM-U1COORDS-48SEC-V1.0
VG2-U-PLS-5-RDR-ELEFIT-48SEC-V1.0
VG2-U-PLS-5-RDR-IONFIT-48SEC-V1.0
VG2-U-PLS-5-SUMM-ELEBR-48SEC-V1.0
VG2-U-PLS-5-SUMM-IONBR-48SEC-V1.0
VG2-U-POS-5-SUMM-HGCOORDS-48SEC-V1.0
VG2-U-POS-5-SUMM-U1COORDS-48SEC-V1.0
VG2-U-PRA-2-RDR-HIGHRATE-60MS-V1.0
VG2-U-PRA-4-SUMM-BROWSE-48SEC-V1.0
VG2-U-PWS-1-EDR-WFRM-60MS-V1.0
VG2-U-PWS-2-RDR-SA-4SEC-V1.0
VG2-U-PWS-4-SUMM-SA-48SEC-V1.0
VG2-U-UVS-3-RDR-V1.0
VL1-M-MET-4-BINNED-P-T-V-CORR-V1.0
VL1/VL2-M-FTS-3-FOOTPAD-TEMP-V1.0
VL1/VL2-M-FTS-4-SOL-AVG-FTPD-TEMP-V1.0
VL1/VL2-M-LCS-2-EDR-V1.0
VL1/VL2-M-LCS-5-ATMOS-OPTICAL-DEPTH-V1.0
VL1/VL2-M-LCS-5-ROCKS-V1.0
VL1/VL2-M-LR-2-EDR-V1.0
VL1/VL2-M-MET-3-P-V1.0
VL1/VL2-M-MET-4-BINNED-P-T-V-V1.0
VL1/VL2-M-MET-4-DAILY-AVG-PRESSURE-V1.0
VO1/VO2-M-IRTM-4-V1.0
VO1/VO2-M-IRTM-5-BINNED/CLOUDS-V1.0
VO1/VO2-M-MAWD-4-V1.0
VO1/VO2-M-VIS-2-EDR-BR-V2.0
VO1/VO2-M-VIS-2-EDR-V1.0
VO1/VO2-M-VIS-2-EDR-V2.0
VO1/VO2-M-VIS-5-DIM-V1.0

VO1/VO2-M-VIS-5-DTM-V1.0
VO2-M-RSS-4-LOS-GRAVITY-V1.0
WFF-E-ATM-1/5-V1.0
WHT-S-API/ISIS-1/3-RPX-V1.0

DATA_SET_NAME **FORMATION**

120-COLOR LUNAR NIR SPECTROPHOTOMETRY DATA V1.0
2001 MARS ODYSSEY RADIO SCIENCE RAW DATA SET - EXT V1.0
2001 MARS ODYSSEY RADIO SCIENCE RAW DATA SET - V1.0
24-COLOR ASTEROID SURVEY
2MASS ASTEROID AND COMET SURVEY V1.0
52 COLOR ASTEROID SURVEY V1.0
52 COLOR ASTEROID SURVEY V2.0
52-COLOR ASTEROID SURVEY
AMES MARS GENERAL CIRCULATION MODEL 5 LAT LON VARIABLES V1.0
AMES MARS GENERAL CIRCULATION MODEL 5 LAT PRES VARIABLE V1.0
AMES MARS GENERAL CIRCULATION MODEL 5 LAT TIME VARIABLE V1.0
AMES MARS GENERAL CIRCULATION MODEL 5 LAT VARIABLES V1.0
AMES MARS GENERAL CIRCULATION MODEL 5 TIME VARIABLES V1.0
AMES MARS GENERAL CIRCULATION MODEL 5 TOPOGRAPHY V1.0
ANGLO-AUSTRALIAN OBSERVATORY DATA FROM SL9 IMPACTS
ARCB/GSSR M RADIO TELESC DERIVED RADAR MODEL UNIT MAP V1.0
ARECIBO MOON RADIO TELESC RESAMPLED 70 CM RADAR MOSAIC V1.0
ARECIBO MOON RADIO TELESCOPE CALIBRATED 70 CM RADAR V1.0
ARECIBO MOON RADIO TELESCOPE DERIVED 12.6 CM RADAR V1.0
ARECIBO VENUS RADIO TELESCOPE RESAMPLED 12.6 CM RADAR V1.0
ARECIBO/NRAO MOON RTLS/GBT 4/5 70CM V1.0
ARRAY OF ICI COUNTS FOR STEPPED M/Q,V
ASTEROID 3-MICRON SURVEY V1.0
ASTEROID ABSOLUTE MAGNITUDES AND SLOPES V1.0
ASTEROID ABSOLUTE MAGNITUDES V10.0
ASTEROID ABSOLUTE MAGNITUDES V11.0
ASTEROID ABSOLUTE MAGNITUDES V2.0
ASTEROID ABSOLUTE MAGNITUDES V3.0
ASTEROID ABSOLUTE MAGNITUDES V4.0
ASTEROID ABSOLUTE MAGNITUDES V5.0
ASTEROID ABSOLUTE MAGNITUDES V6.0
ASTEROID ABSOLUTE MAGNITUDES V7.0
ASTEROID ABSOLUTE MAGNITUDES V8.0
ASTEROID ABSOLUTE MAGNITUDES V9.0
ASTEROID ALBEDOS
ASTEROID ALBEDOS FROM STELLAR OCCULTATIONS V1.0
ASTEROID ALBEDOS V1.0
ASTEROID BIBLIOGRAPHY V1.0
ASTEROID BIBLIOGRAPHY V2.0
ASTEROID DENSITIES
ASTEROID DENSITIES V1.0
ASTEROID DISCOVERY CIRCUMSTANCES V1.0
ASTEROID DYNAMICAL FAMILIES V2.0
ASTEROID DYNAMICAL FAMILIES V3.0
ASTEROID DYNAMICAL FAMILIES V4.0
ASTEROID DYNAMICAL FAMILIES V4.1
ASTEROID FAMILY IDENTIFICATIONS V1.0

ASTEROID LIGHTCURVE DERIVED DATA REFERENCES V1.0
ASTEROID LIGHTCURVE DERIVED DATA V1.0
ASTEROID LIGHTCURVE DERIVED DATA V2.0
ASTEROID LIGHTCURVE DERIVED DATA V3.0
ASTEROID LIGHTCURVE DERIVED DATA V4.0
ASTEROID LIGHTCURVE DERIVED DATA V5.0
ASTEROID LIGHTCURVE DERIVED DATA V6.0
ASTEROID LIGHTCURVE DERIVED DATA V7.0
ASTEROID LIGHTCURVE DERIVED DATA V8.0
ASTEROID LIGHTCURVE DERIVED DATA V9.0
ASTEROID NAMES AND DESIGNATIONS V1.0
ASTEROID NAMES AND DESIGNATIONS V2.0
ASTEROID NAMES AND DISCOVERY V1.0
ASTEROID NAMES AND DISCOVERY V10.0
ASTEROID NAMES AND DISCOVERY V11.0
ASTEROID NAMES AND DISCOVERY V2.0
ASTEROID NAMES AND DISCOVERY V3.0
ASTEROID NAMES AND DISCOVERY V4.0
ASTEROID NAMES AND DISCOVERY V5.0
ASTEROID NAMES AND DISCOVERY V6.0
ASTEROID NAMES AND DISCOVERY V7.0
ASTEROID NAMES AND DISCOVERY V8.0
ASTEROID NAMES AND DISCOVERY V9.0
ASTEROID OCCULTATIONS
ASTEROID OCCULTATIONS V1.0
ASTEROID OCCULTATIONS V2.0
ASTEROID OCCULTATIONS V4.0
ASTEROID OCCULTATIONS V4.1
ASTEROID OCCULTATIONS V5.0
ASTEROID PHOTOMETRIC CATALOG V1.0
ASTEROID POLARIMETRIC DATABASE V1.0
ASTEROID POLARIMETRIC DATABASE V2.0
ASTEROID POLARIMETRIC DATABASE V3.0
ASTEROID POLARIMETRIC DATABASE V4.0
ASTEROID POLARIMETRIC DATABASE V4.1
ASTEROID POLARIMETRIC DATABASE V5.0
ASTEROID POLE POSITIONS REFERENCES V1.0
ASTEROID POLE POSITIONS V1.0
ASTEROID POLE POSITIONS_REFERENCES V1.0
ASTEROID PROPER ELEMENTS V1.0
ASTEROID RADAR V1.0
ASTEROID RADAR V10.0
ASTEROID RADAR V11.0
ASTEROID RADAR V12.0
ASTEROID RADAR V13.0
ASTEROID RADAR V3.0
ASTEROID RADAR V4.0
ASTEROID RADAR V5.0
ASTEROID RADAR V6.0
ASTEROID RADAR V7.0
ASTEROID RADAR V7.1
ASTEROID RADAR V8.0
ASTEROID RADAR V9.0
ASTEROID SPIN VECTORS

ASTEROID SPIN VECTORS V3.0
ASTEROID SPIN VECTORS V4.0
ASTEROID SPIN VECTORS V4.1
ASTEROID TAXONOMY V1.0
ASTEROID TAXONOMY V2.0
ASTEROID TAXONOMY V3.0
ASTEROID TAXONOMY V4.0
ASTEROID TAXONOMY V5.0
ATM OBSERVATIONS AT NEVADA TEST SITE V1.0
Anglo-Australian Observatory Data from SL9 Impacts
BINARY MINOR PLANETS V1.0
BINARY NEAS SUMMARY V1.0
C130 EARTH ASAS CALIBRATED REDUCED DATA RECORD IMAGE V1.0
C130 EARTH TIMS EDITED EXPERIMENT DATA RECORD IMAGE V1.0
CASSINI COSMIC DUST ANALYZER CALIBRATED/RESAMPLED DATA
CASSINI E/J/S/SW CAPS UNCALIBRATED V1.0
CASSINI E/J/S/SW MIMI CHEMS SENSOR UNCALIBRATED DATA V1.0
CASSINI E/J/S/SW MIMI INCA SENSOR UNCALIBRATED DATA V1.0
CASSINI E/J/S/SW MIMI LEMMS SENSOR UNCALIBRATED DATA V1.0
CASSINI HIGH RATE DETECTOR V1.0
CASSINI HIGH RATE DETECTOR V2.0
CASSINI HIGH RATE DETECTOR V3.0
CASSINI JUP CIRS TIME-SEQUENTIAL DATA RECORDS V1.0
CASSINI JUPITR UVIS SOLAR STELLAR BRIGHTNESS TIME SERIES 1.0
CASSINI MAGNETOMETER RAW DATA V1.0
CASSINI ORBITER EARTH/VENUS/JUPITER /SATURN VIMS 2 QUBE V1.0
CASSINI ORBITER EARTH/VENUS/JUPITER ISSNA/ISSWA 2 EDR V1.0
CASSINI ORBITER EARTH/VENUS/JUPITER/SATURN VIMS 2 QUBE V1.0
CASSINI ORBITER JUPITER UVIS EDITED SPECTRA 1.0
CASSINI ORBITER JUPITER UVIS SPATIAL SPECTRAL IMAGE CUBE 1.0
CASSINI ORBITER RADAR ALTIMETER BURST DATA RECORD SUMMARY
CASSINI ORBITER RADAR LONG BURST DATA RECORD
CASSINI ORBITER RADAR SHORT BURST DATA RECORD
CASSINI ORBITER SATURN ISSNA/ISSWA 2 EDR V1.0
CASSINI ORBITER SATURN ISSNA/ISSWA 2 EDR VERSION 1.0
CASSINI ORBITER SATURN ISSNA/ISSWA 5 MIDR VERSION 1.0
CASSINI ORBITER SATURN UVIS CALIBRATION DATA 1.1
CASSINI ORBITER SATURN UVIS EDITED SPECTRA 1.0
CASSINI ORBITER SATURN UVIS EDITED SPECTRA 1.1
CASSINI ORBITER SATURN UVIS SPATIAL SPECTRAL IMAGE CUBE 1.0
CASSINI ORBITER SATURN UVIS SPATIAL SPECTRAL IMAGE CUBE 1.1
CASSINI ORBITER SSA RADAR 5 BIDR V1.0
CASSINI ORBITER STAR UVIS CALIBRATION DATA 1.0
CASSINI ORBITER STAR UVIS CALIBRATION DATA 1.1
CASSINI ORBITER X UVIS EDITED SPECTRA 1.0
CASSINI ORBITER X UVIS IMAGE AT ONE WAVELENGTH
CASSINI ORBITER X UVIS SPATIAL SPECTRAL IMAGE CUBE 1.0
CASSINI RSS RAW DATA SET - DIGR1 V1.0
CASSINI RSS RAW DATA SET - ENGR1 V1.0
CASSINI RSS RAW DATA SET - ENOC1 V1.0
CASSINI RSS RAW DATA SET - GWE1 V1.0
CASSINI RSS RAW DATA SET - GWE2 V1.0
CASSINI RSS RAW DATA SET - GWE3 V1.0
CASSINI RSS RAW DATA SET - HYGR1 V1.0

CASSINI RSS RAW DATA SET - IAGR1 V1.0
CASSINI RSS RAW DATA SET - RHGR1 V1.0
CASSINI RSS RAW DATA SET - SAGR1 V1.0
CASSINI RSS RAW DATA SET - SAGR2 V1.0
CASSINI RSS RAW DATA SET - SAGR3 V1.0
CASSINI RSS RAW DATA SET - SAGR4 V1.0
CASSINI RSS RAW DATA SET - SCC1 V1.0
CASSINI RSS RAW DATA SET - SCC2 V1.0
CASSINI RSS RAW DATA SET - SCC3 V1.0
CASSINI RSS RAW DATA SET - SCE1 V1.0
CASSINI RSS RAW DATA SET - SROC1 V1.0
CASSINI RSS RAW DATA SET - SROC2 V1.0
CASSINI RSS RAW DATA SET - SROC3 V1.0
CASSINI RSS RAW DATA SET - SROC4 V1.0
CASSINI RSS RAW DATA SET - TBIS1 V1.0
CASSINI RSS RAW DATA SET - TBOC1 V1.0
CASSINI RSS RAW DATA SET - TBOC2 V1.0
CASSINI RSS RAW DATA SET - TBOC3 V1.0
CASSINI RSS RAW DATA SET - TIGR1 V1.0
CASSINI RSS RAW DATA SET - TIGR2 V1.0
CASSINI RSS RAW DATA SET - TIGR3 V1.0
CASSINI RSS RAW DATA SET - TIGR4 V1.0
CASSINI RSS RAW DATA SET - TIGR5 V1.0
CASSINI RSS RAW DATA SET - TIGR6 V1.0
CASSINI RSS RAW DATA SET - TIGR7 V1.0
CASSINI RSS RAW DATA SET - TIGR8 V1.0
CASSINI RSS RAW DATA SET - TIGR9 V1.0
CASSINI RSS RAW DATA SET - TOCC1 V1.0
CASSINI S INMS LEVEL 1A EXTRACTED DATA V1.0
CASSINI S INMS TELEMETRY PACKET DATA V1.0
CASSINI SATURN CIRS TIME-SEQUENTIAL DATA RECORDS V1.0
CASSINI SATURN UVIS SOLAR STELLAR BRIGHTNESS TIME SERIES 1.0
CASSINI SATURN UVIS SOLAR STELLAR BRIGHTNESS TIME SERIES 1.1
CASSINI SPICE KERNELS V1.0
CASSINI V/E/J/S/SS RPWS CALIBRATED LOW RATE FULL RES V1.0
CASSINI V/E/J/S/SS RPWS EDITED WAVEFORM FULL RES V1.0
CASSINI V/E/J/S/SS RPWS EDITED WIDEBAND FULL RES V1.0
CASSINI V/E/J/S/SS RPWS RAW COMPLETE TLM PACKETS V1.0
CASSINI V/E/J/S/SS RPWS SUMMARY KEY PARAMETER 60S V1.0
CASSINI X UVIS SOLAR STELLAR BRIGHTNESS TIME SERIES 1.0
CCD IMAGES OF 19P/BORRELLY, 1987-2002
CCD OBSERVATIONS V1.0
CLEM1 LUNAR GRAVITY V1.0
CLEM1 LUNAR RADIO SCIENCE INTERMEDIATE AND REDUCED BISTATIC
CLEM1 LUNAR RADIO SCIENCE RAW BISTATIC RADAR V1.0
CLEM1 LUNAR TOPOGRAPHY V1.0
CLEM1-LUN/EAR/SKY-ASTAR/BSTAR/UVVIS/HRES/LWIR/NIR-2-EDR-V1.0
CLEMENTINE BASEMAP MOSAIC
CLEMENTINE HIRES MOSAIC
CLEMENTINE LWIR BRIGHTNESS TEMPERATURE V1.0
CLEMENTINE MOON SPICE KERNELS V1.0
CLEMENTINE UVVIS DIGITAL IMAGE MODEL
COLLECTED STARDUST/NAVCAM SHAPE MODELS OF 81P/WILD 2, V2.0
COLLECTED STARDUST/NAVCAM SHAPE MODELS OF 81P/WILD 2, V2.1

COMET HALLEY ARCHIVE - INFRARED PHOTOMETRY
COMET HALLEY ARCHIVE - NEAR NUCLEUS IMAGE DATA
CTIO CCD OBSERVATIONS V1.0
CTIO IMAGES OF 19P/BORRELLY WITH PHOTOMETRY
DATABASE OF COMET POLARIMETRY
DEEP IMPACT 9P/TEMPEL 1 ENCOUNTER - RADIO SCIENCE DATA V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW HRII CALIB DATA V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW HRII SPECTRAL CALIB DATA
DEEP IMPACT 9P/TEMPEL CRUISE - RAW HRIV CALIB DATA
DEEP IMPACT 9P/TEMPEL CRUISE - RAW HRIV CALIB DATA V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW HRIV NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW ITS CALIB DATA
DEEP IMPACT 9P/TEMPEL CRUISE - RAW ITS CALIB DATA V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW ITS NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW ITS NAV IMAGES V1.1
DEEP IMPACT 9P/TEMPEL CRUISE - RAW MRI CALIB DATA
DEEP IMPACT 9P/TEMPEL CRUISE - RAW MRI CALIB DATA V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW MRI NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL CRUISE - RAW MRI NAV IMAGES V1.1
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW HRII SPECTRA V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW HRII SPECTRAL DATA
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW HRIV DATA
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW HRIV DATA V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW HRIV NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW ITS DATA
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW ITS DATA V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW ITS NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW ITS NAV IMAGES V1.1
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW MRI DATA
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW MRI DATA V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW MRI NAV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - RAW MRI NAV IMAGES V1.1
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRII IMAGES
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRII SPECTRA V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRII SPECTRA V2.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRIV IMAGES
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRIV IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRIV IMAGES V2.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED HRIV NAV IMGS V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED ITS IMAGES
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED ITS IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED ITS IMAGES V2.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED ITS NAV IMGS V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED MRI IMAGES
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED MRI IMAGES V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED MRI IMAGES V2.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED MRI NAV IMGS V1.0
DEEP IMPACT 9P/TEMPEL ENCOUNTER - REDUCED MRI NAV IMGS V1.1
DEEP IMPACT PREFLIGHT THERMAL-VACUUM 1 HRII DATA
DEEP IMPACT PREFLIGHT THERMAL-VACUUM 2 HRII/HRIV DATA
DEEP IMPACT PREFLIGHT THERMAL-VACUUM 3 ITS DATA
DEEP IMPACT PREFLIGHT THERMAL-VACUUM 4 HRII/HRIV/MRI DATA
DEEP IMPACT SPICE KERNELS V1.0
DEEP IMPACT: IRAS IMAGES OF COMET 9P/TEMPEL 1

DEEP IMPACT: IRAS PHOTOMETRY OF COMET 9P/TEMPEL 1
DEEP SPACE 1 19P/BORRELLY ENCOUNTER UNCALIBRATED PEPE V1.0
DEEP SPACE 1 SPICE KERNELS V1.0
DELBO THERMAL INFRARED ASTEROID DIAMETERS AND ALBEDOS V1.0
DS1 DIGITAL ELEVATION MAPS OF COMET 19P/BORRELLY V1.0
DS1 IDS (PLASMA WAVE SPECTROMETER) DATA
DS1 IDS (PLASMA WAVE SPECTROMETER) DATA V1.0
DS1 MICAS DATA SAFE
DS1 MICAS IMAGES OF COMET 19P/BORRELLY
DS1 MICAS VISCCD EDR IMAGES OF COMET 19P/BORRELLY, V1.0
EARTH APPROACHING OBJECTS V1.0
EARTH ASTEROID 8CPS SURVEY REFLECT SPECTRA V1.0
EARTH ASTEROID DBP 24COLOR SURVEY V1.0
EARTH ASTEROID DBP 24COLOR SURVEY V2.0
EARTH BASED CCD OBSERVATIONS V1.0
EIGHT COLOR ASTEROID SURVEY
EIGHT COLOR ASTEROID SURVEY FILTER CURVES V1.0
EIGHT COLOR ASTEROID SURVEY MEAN DATA V1.0
EIGHT COLOR ASTEROID SURVEY PRIMARY DATA V1.0
EIGHT COLOR ASTEROID SURVEY PRINCIPAL COMPONENTS V1.0
EIGHT COLOR ASTEROID SURVEY STANDARD STARS V1.0
EIGHT COLOR ASTEROID SURVEY V2.0
EIGHT COLOR ASTEROID SURVEY V3.0
EPPS UNCALIBRATED (EDR) DATA E/V/H V1.0
ER2 EARTH AVIRIS CALIBRATED REDUCED DATA RECORD IMAGE V1.0
ESO NTT EMMI IMAGE DATA FROM SL9 IMPACTS WITH JUPITER V1.0
ESO NTT IRSPEC IMAGE DATA FROM SL9 IMPACTS WITH JUPITER V1.0
ESO NTT SUSI IMAGE DATA FROM SL9 IMPACTS WITH JUPITER V1.0
ESO1M SR AP-PHOTOMETER RESAMPLED RING OCCULTATION V1.0
ESO22M SR AP-PHOTOMETER RESAMPLED RING OCCULTATION V1.0
FIELD EXP E AWND CALIB RDR TEMPERATURE AND VELOCITY V1.0
FIELD EXP E DAEDALUS SPECTROMETER CALIB RDR SPECTRUM V1.0
FIELD EXP E GPSM DERIVED RDR TOPOGRAPHIC PROFILES V1.0
FIELD EXP E HSTP RESAMPLED RDR TOPOGRAPHIC PROFILES V1.0
FIELD EXP E RANGER II PLUS RDMT & THRM CALIB RDR TEMP V1.0
FIELD EXP E REAG CALIBRATED RDR OPTICAL DEPTH V1.0
FIELD EXP E SHYG CALIBRATED RDR OPTICAL DEPTH V1.0
FIELD EXP E SIRIS RESAMP REDUCED DATA RECORD SPECTRUM V1.0
FIELD EXP E WTHS CALIB RDR TEMPERATURE AND VELOCITY V1.0
FIELD EXP EARTH PARABOLA CALIBRATED RDR SPECTRUM V1.0
FIELD EXP EARTH PFES CALIBRATED RDR SPECTRUM V1.0
GAFFEY METEORITE SPECTRA V1.0
GAFFEY METEORITE SPECTRA V2.0
GALILEO DUST DETECTION SYSTEM V2.0
GALILEO EARTH ENERGETIC PARTICLES DETECTOR (EPD) EXPERIMENTA
GALILEO EARTH GASPRA ENERGETIC PARTICLES DETECTOR (EPD) EXPE
GALILEO JUPITER PLASMA RESAMPLED BROWSE SPECTRA V1.0
GALILEO JUPITER RDR FULL RESOLUTION PLASMA DATA V1.0
GALILEO NIMS EXPERIMENT DATA RECORDS: JUPITER OPERATIONS
GALILEO NIMS SPECTRAL IMAGE CUBES: JUPITER OPERATIONS
GALILEO NIMS SPECTRAL IMAGE TUBES: JUPITER OPERATIONS
GALILEO ORBITAL OPERATIONS SOLID STATE IMAGING 2 RAW EDR V1
GALILEO ORBITAL OPERATIONS SOLID STATE IMAGING RAW EDR V1.0
GALILEO ORBITER ASTEROID AND COMET SL9 SOLID STATE IMAGING 2

GALILEO ORBITER ASTEROID AND EARTH 2 SOLID STATE IMAGING 2 R
GALILEO ORBITER AT JUPITER CALIBRATED MAG HIGH RES V1.0
GALILEO ORBITER EUV JUPITER OPERATIONS EDR DATA
GALILEO ORBITER JUPITER RAW MAGNETOMETER DATA V1.0
GALILEO ORBITER PPR REDUCED DATA RECORD (RDR) V1.0
GALILEO ORBITER PPR REFORMATTED EDR V1.0
GALILEO ORBITER UVS JUPITER OPERATIONS EDR DATA
GALILEO ORBITER VENUS AND EARTH SOLID STATE IMAGING 2 RAW ED
GALILEO PROBE ASI RAW DATA SET
GALILEO PROBE DOPPLER WIND EXPERIMENT DATA V1.0
GALILEO PROBE EPI RAW DATA SET
GALILEO PROBE HELIUM ABUNDANCE DETECTOR DATA V1.0
GALILEO PROBE LRD RAW DATA SET
GALILEO PROBE NEP RAW DATA SET
GALILEO PROBE NET FLUX RADIOMETER DATA V1.0
GALILEO PROBE NMS RAW DATA SET
GALILEO SOLID STATE IMAGING CALIBRATION FILES V1.0
GALILEO SSI IDA/GASPRA IMAGES V1.0
GALILEO VENUS AND EARTH SOLID STATE IMAGING 2 RAW EDR V1
GALILEO VENUS ENERGETIC PARTICLES DETECTOR (EPD) EXPERIMENTA
GALILEO VENUS RANGE FIX RAW DATA V1.0
GASPRA GALILEO MAGNETOMETER/TRAJECTORY DATA V1.0
GEOGRAPHOS RADAR V1.0
GEOGRAPHOS RADAR V1.1
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GLL IDA UVS IDA ENCOUNTER RDR
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MER 1 MARS NAVIGATION CAMERA EDR OPS VERSION 1.0
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MER 1 MARS ROCK ABRASION TOOL EDR OPS VERSION 1.0
MER 1 MI RADIOMETRICALLY CALIBRATED RDR V1.0
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MER 2 MARS ALPHA PARTICLE X-RAY SPECTROMETER 2 EDR OPS V1.0
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MER 2 MARS DESCENT CAMERA EDR OPS VERSION 1.0
MER 2 MARS ENGINEERING 6 MOBILITY V1.0
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MER 2 MARS HAZARD AVOID CAMERA ANAGLYPH RDR OPS V1.0
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MER 2 MARS HAZARD AVOID CAMERA SURFACE NORMAL RDR OPS V1.0
MER 2 MARS HAZARD AVOID CAMERA SURFACE ROUGH RDR OPS V1.0
MER 2 MARS HAZARD AVOID CAMERA TERRAIN MESH RDR OPS V1.0
MER 2 MARS HAZARD AVOID CAMERA TERRAIN WEDGE RDR OPS V1.0
MER 2 MARS HAZARD AVOID CAMERA XYZ RDR OPS V1.0
MER 2 MARS HAZARD AVOIDANCE CAMERA EDR OPS VERSION 1.0
MER 2 MARS MICROSCOPIC IMAGER ANAGLYPH RDR OPS V1.0
MER 2 MARS MICROSCOPIC IMAGER CAMERA EDR OPS VERSION 1.0
MER 2 MARS MICROSCOPIC IMAGER CAMERA MOSAICS RDR OPS V1.0
MER 2 MARS MICROSCOPIC IMAGER INVERSE LUT RDR OPS V1.0
MER 2 MARS MICROSCOPIC IMAGER LINEARIZED RDR OPS V1.0
MER 2 MARS MICROSCOPIC IMAGER RADIOMETRIC RDR OPS V1.0
MER 2 MARS MICROSCOPIC IMAGER SCIENCE EDR VERSION 1.0
MER 2 MARS MOESSBAUER SPECTROMETER EDR OPS VERSION 1.0
MER 2 MARS NAVIGATION CAMERA ANAGLYPH RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA DISPARITY RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA EDR OPS VERSION 1.0
MER 2 MARS NAVIGATION CAMERA INVERSE LUT RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA LINEARIZED RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA MOSAICS RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA RADIOMETRIC RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA RANGE RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA SLOPE RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA SOLAR RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA SURFACE NORMAL RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA SURFACE ROUGH RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA TERRAIN MESH RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA TERRAIN WEDGE RDR OPS V1.0
MER 2 MARS NAVIGATION CAMERA XYZ RDR OPS V1.0
MER 2 MARS PANCAM RADIOMETRICALLY CALIBRATED RDR V1.0
MER 2 MARS PANORAMIC CAMERA ANAGLYPH RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA DISPARITY RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA EDR OPS VERSION 1.0
MER 2 MARS PANORAMIC CAMERA EDR SCIENCE V1.0
MER 2 MARS PANORAMIC CAMERA INVERSE LUT RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA LINEARIZED RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA MOSAICS RDR OPS V1.0

MER 2 MARS PANORAMIC CAMERA RADIOMETRIC RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA RANGE RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA SCIENCE EDR VERSION 1.0
MER 2 MARS PANORAMIC CAMERA SLOPE RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA SOLAR RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA SURFACE NORMAL RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA SURFACE ROUGH RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA TERRAIN MESH RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA TERRAIN WEDGE RDR OPS V1.0
MER 2 MARS PANORAMIC CAMERA XYZ RDR OPS V1.0
MER 2 MARS ROCK ABRASION TOOL EDR OPS VERSION 1.0
MER 2 MI RADIOMETRICALLY CALIBRATED RDR V1.0
MER 2 MOESSBAUER 4 SUMMED SPECTRA RDR SCIENCE V1.0
MER ALPHA PARTICLE X-RAY SPECTROMETER 5 OXIDE ABUNDANCE V1.0
MER MARS PANCAM ATMOSPHERIC OPACITY RDR V1.0
MER1 MARS MINIATURE THERMAL EMISSION SPECTROMETER BTR V1.0
MER1 MARS MINIATURE THERMAL EMISSION SPECTROMETER EDR V1.0
MER1 MARS MINIATURE THERMAL EMISSION SPECTROMETER EMR V1.0
MER1 MARS MINIATURE THERMAL EMISSION SPECTROMETER RDR V1.0
MER1/MER2 MARS IMU ENTRY DESCENT AND LANDING DATA V1.0
MER2 MARS MINIATURE THERMAL EMISSION SPECTROMETER BTR V1.0
MER2 MARS MINIATURE THERMAL EMISSION SPECTROMETER EDR V1.0
MER2 MARS MINIATURE THERMAL EMISSION SPECTROMETER EMR V1.0
MER2 MARS MINIATURE THERMAL EMISSION SPECTROMETER RDR V1.0
MESSENGER E/V/H GRNS 2 GAMMA RAY SPECTROMETER RAW DATA V1.0
MESSENGER E/V/H GRNS 2 NEUTRON SPECTROMETER RAW DATA V1.0
MESSENGER E/V/H MASCS 2 UVVS UNCALIBRATED DATA V1.0
MESSENGER E/V/H MASCS 2 VIRS UNCALIBRATED DATA V1.0
MESSENGER E/V/H MASCS 3 UVVS CALIBRATED DATA V1.0
MESSENGER E/V/H MASCS 3 VIRS CALIBRATED DATA V1.0
MESSENGER E/V/H MERCURY LASER ALTIMETER 2 EDR RAW DATA V1.0
MESSENGER E/V/H XRS UNCALIBRATED (EDR) DATA V1.0
MESSENGER MDIS CALIBRATED DATA RECORD V1.0
MESSENGER MDIS EXPERIMENT DATA RECORD V1.0
MESSENGER SPICE KERNELS V1.0
MESSENGER V/H RADIO SCIENCE SUBSYSTEM 1 EDR V1.0
METEOROID ORBITS V1.0
MEX SPICAM CRUISE/MARS IR EDR-RAW V1.0
MEX SPICAM CRUISE/MARS UV EDR-RAW V1.0
MGN ALTIMETER EXPERIMENT DATA RECORD ON COMPACT DISK
MGN ATDF RAW RADIO SCIENCE TRACKING DATA V1.0
MGN V RADAR SYSTEM DERIVED MIDR COMPRESSED ONCE V1.0
MGN V RADAR SYSTEM DERIVED MIDR COMPRESSED THRICE V1.0
MGN V RADAR SYSTEM DERIVED MIDR COMPRESSED TWICE V1.0
MGN V RDRS 5 COMPOSITE DATA RECORD ALT/RAD V1.0
MGN V RDRS 5 GLOBAL DATA RECORD EMISSIVITY V1.0
MGN V RDRS 5 GLOBAL DATA RECORD REFLECTIVITY V1.0
MGN V RDRS 5 GLOBAL DATA RECORD SLOPE V1.0
MGN V RDRS 5 GLOBAL DATA RECORD TOPOGRAPHIC V1.0
MGN V RDRS COMPRESSED BASIC IMAGE DATA RECORD CD ARCHIVE
MGN V RDRS DERIVED BASIC IMAGE DATA RECORD FULL RES V1.0
MGN V RDRS DERIVED DIGITAL IMAGE MAP DATA RECORD V1.0
MGN V RDRS DERIVED GLOBAL VECTOR DATA RECORD V1.0
MGN V RDRS DERIVED MOSAIC IMAGE DATA RECORD FULL RES V1.0

MGN V RDRS SPHERICAL HARMONIC AND TOPOGRAPHY MAP DATA V1.0
MGN V RSS LINE OF SIGHT ACCELERATION PROFILES V1.0
MGN V RSS LINE OF SIGHT ACCELERATION PROFILES V1.13
MGN V RSS SPHERICAL HARMONIC AND GRAVITY MAP DATA V1.0
MGS ACCELEROMETER RAW DATA RECORDS V1.0
MGS ACCELEROMETER RAW DATA RECORDS V1.1
MGS ALTITUDE DATA RECORDS V1.0
MGS ALTITUDE DATA RECORDS V1.1
MGS M THERMAL EMISSION SPECTROMETER 3 TSDR V2.0
MGS MARS ACCELEROMETER CONSTANT ALTITUDE V1.0
MGS MARS ACCELEROMETER ORBIT PROFILES V1.0
MGS MARS ELECTRON REFLECTOMETER OMNI DIR. ELECTRON FLUX V1.0
MGS MARS MAG PRE-MAP DETAIL WORD RESOLUTION V1.0
MGS MARS SPICE CK KERNELS V1.0
MGS MARS SPICE EK KERNELS V1.0
MGS MARS SPICE FK KERNELS V1.0
MGS MARS SPICE IK KERNELS V1.0
MGS MARS SPICE KERNELS V1.0
MGS MARS SPICE LSK KERNELS V1.0
MGS MARS SPICE PCK KERNELS V1.0
MGS MARS SPICE SCLK KERNELS V1.0
MGS MARS SPICE SPK KERNELS V1.0
MGS MARS TES SCIENCE DATA RECORD V1.0
MGS MARS/MOONS MAG/ER MAPPING ER ANGULAR FLUX V1.0
MGS MARS/MOONS MAG/ER MAPPING ER OMNIDIRECTIONAL FLUX V1.0
MGS MARS/MOONS MAG/ER MAPPING MAG FULL WORD RESOLUTION V1.0
MGS MARS/MOONS MAG/ER PRE-MAP ER OMNIDIRECTIONAL FLUX V1.0
MGS MARS/MOONS MAG/ER PRE-MAP MAG FULL WORD RESOLUTION V1.0
MGS MARS/MOONS MAGER MAG FIELD SS/PC COORDS V1.0
MGS PROFILE DATA RECORDS V1.1
MGS PROFILE DATA RECORDS V1.2
MGS RADIO SCIENCE – SCIENCE DATA PRODUCTS V1.0
MGS RS: ATMOSPHERIC TEMPERATURE-PRESSURE PROFILES V1.0
MGS RS: IONOSPHERIC ELECTRON DENSITY PROFILES V1.0
MGS SAMPLER MAGNETOMETER/ELECTRON REFLECTOMETER DATA
MGS SAMPLER MARS ORBITER LASER ALTIMETER PEDR ASCII TABLES
MGS SAMPLER THERMAL EMISSION SPECTROMETER CALIBRATED RADIANC
MGS SAMPLER THERMAL EMISSION SPECTROMETER GLOBAL TEMPERATURE
MGS SOLAR CONJUNCTION RAW DATA SET - ROCC V1.0
MO MARS RADIO SCIENCE 1 ORIGINAL/INTERMEDIATE DATA REC V1.0
MOC DSDP ARCHIVE
MOC SDP ARCHIVE
MOLA AGGREGATED EXPERIMENT DATA RECORD
MOLA INITIAL EXPERIMENT GRIDDED DATA RECORD
MOLA MISSION EXPERIMENT GRIDDED DATA RECORD
MOLA PRECISION EXPERIMENT DATA RECORD
MOLA PRECISION EXPERIMENT DATA RECORD ASCII TABLES
MOLA PRECISION RADIOMETRY DATA RECORD
MOLA SPHERICAL HARMONICS TOPOGRAPHY MODEL
MOTHE-DINIZ ASTEROID DYNAMICAL FAMILIES V1.0
MPF LANDER MARS IMAGER FOR MARS PATHFINDER 2 EDR V1.0
MPF LANDER MARS IMP STEREO-DERIVED 3D POSITIONS V1.0
MPF ROVER MARS ALPHA PROTON X-RAY SPECTROMETER DDR V1.0
MPF ROVER MARS ALPHA PROTON X-RAY SPECTROMETER EDR V1.0

MPFL MARS ATM STRUCT INST AND MET PKG CALIB SURFACE V1.0
MPFL MARS ATM STRUCT INST AND MET PKG DERIVED EDL V1.0
MPFL MARS ATM STRUCT INST AND MET PKG RAW AND CALIB EDL V1.0
MPFL MARS ATM STRUCT INST AND MET PKG RAW SURFACE V1.0
MPFR MARS ROVER CAMERA 5 MOSAICKED IMAGE DATA RECORD V1.0
MR6/MR7 MARS INFRARED SPECTROMETER CALIBRATED DATA V1.0
MR9/VO1/VO2 MARS IMAGING SCIENCE SUBSYSTEM/VIS 5 CLOUD V1.0
MRO ACCELEROMETER RAW DATA RECORDS V1.0
MRO ALTITUDE DATA RECORDS V1.0
MRO CONTEXT CAMERA EXPERIMENT DATA RECORD LEVEL 0 V1.0
MRO CRISM CALIBRATION DATA RECORD V1.0
MRO CRISM DERIVED DATA RECORD V1.0
MRO CRISM EXPERIMENT DATA RECORD V1.0
MRO CRISM MULTISPECTRAL REDUCED DATA RECORD V1.0
MRO CRISM TARGETED REDUCED DATA RECORD V1.0
MRO MARS CLIMATE SOUNDER LEVEL 2 EDR V1.0
MRO MARS CLIMATE SOUNDER LEVEL 4 RDR V1.0
MRO MARS COLOR IMAGER EXPERIMENT DATA RECORD LEVEL 0 V1.0
MRO MARS HIGH RESOLUTION IMAGE SCIENCE EXPERIMENT EDR V1.0
MRO MARS HIGH RESOLUTION IMAGE SCIENCE EXPERIMENT RDR V1.0
MRO MARS RAW RADIO SCIENCE 1 V1.0
MRO MARS SPICE KERNELS V1.0
MRO PROFILE DATA RECORDS V1.0
MRO SHARAD EXPERIMENT DATA RECORD V1.0
MRO SHARAD REDUCED DATA RECORD V1.0
MSSSO CASPIR IMAGES FROM THE SL9 IMPACTS WITH JUPITER V1.0
MSSSO CASPIR STAR CALS BEFORE SL9 IMPACTS WITH JUPITER V1.0
MSX INFRARED MINOR PLANET SURVEY V1.0
MSX LUNAR ECLIPSE OBSERVATION V1.0
MSX SMALL BODIES IMAGES V1.0
MSX ZODIACAL DUST DATA V1.0
MT. BIGELOW 61-INCH IMAGES OF 9P/TEMPEL 1
McDonald Observatory Faint Comet Spectro-Photometric Survey
N/A
NASA DC-8 EARTH AIRSAR RESAMPLED RADAR IMAGES V1.0
NDC8 EARTH ASAR CALIBRATED REDUCED DATA RECORD IMAGE V1.0
NEAR COLLECTED TARGET MODELS V1.0
NEAR EARTH ASTEROID LIGHTCURVES V1.0
NEAR EARTH ASTEROID LIGHTCURVES V1.1
NEAR EROS NLR DERIVED PRODUCTS - SHAPE MODEL V1.0
NEAR EROS RADIO SCIENCE DATA SET - EROS/FLYBY V1.0
NEAR EROS RADIO SCIENCE DATA SET - EROS/ORBIT V1.0
NEAR EROS RADIO SCIENCE DERIVED PRODUCTS - GRAVITY V1.0
NEAR GRS SPECTRA EROS ON ASTEROID
NEAR MAG DATA FOR CRUISE1
NEAR MAG DATA FOR CRUISE2
NEAR MAG DATA FOR CRUISE3
NEAR MAG DATA FOR CRUISE4
NEAR MAG DATA FOR EARTH
NEAR MAG DATA FOR ER/FAR/APPROACH
NEAR MAG DATA FOR EROS/FLY/BY
NEAR MAG DATA FOR EROS/ORBIT
NEAR MAG DATA FOR EROS/SURFACE
NEAR MATHILDE RADIO SCIENCE DATA SET - MFB V1.0

NEAR MSI DIM EROS GLOBAL BASEMAPS V1.0
NEAR MSI IMAGES FOR CRUISE1
NEAR MSI IMAGES FOR CRUISE2
NEAR MSI IMAGES FOR CRUISE3
NEAR MSI IMAGES FOR CRUISE4
NEAR MSI IMAGES FOR EARTH
NEAR MSI IMAGES FOR ER/FAR/APPROACH
NEAR MSI IMAGES FOR EROS/FLY/BY
NEAR MSI IMAGES FOR EROS/ORBIT
NEAR MSI IMAGES FOR MATHILDE
NEAR MSI SHAPE MODEL FOR 433 EROS V1.0
NEAR MULTISPECTRAL IMAGER V1.0
NEAR NIS SPECTRA FOR CRUISE1
NEAR NIS SPECTRA FOR CRUISE2
NEAR NIS SPECTRA FOR CRUISE3
NEAR NIS SPECTRA FOR CRUISE4
NEAR NIS SPECTRA FOR EARTH
NEAR NIS SPECTRA FOR ER/FAR/APPROACH
NEAR NIS SPECTRA FOR EROS/FLY/BY
NEAR NIS SPECTRA FOR EROS/ORBIT
NEAR NLR DATA FOR CRUISE1
NEAR NLR DATA FOR CRUISE2
NEAR NLR DATA FOR CRUISE4
NEAR NLR DATA FOR ER/FAR/APPROACH
NEAR NLR DATA FOR EROS/ORBIT
NEAR NLR LEVEL 2 DATA PRODUCTS V1.0
NEAR NLR LEVEL 3 DATA PRODUCTS V1.0
NEAR SPICE KERNELS CRUISE1
NEAR SPICE KERNELS CRUISE2
NEAR SPICE KERNELS CRUISE3
NEAR SPICE KERNELS CRUISE4
NEAR SPICE KERNELS EARTH
NEAR SPICE KERNELS ER/FAR/APPROACH
NEAR SPICE KERNELS EROS/FLY/BY
NEAR SPICE KERNELS EROS/ORBIT
NEAR SPICE KERNELS EROS/SURFACE
NEAR SPICE KERNELS MATHILDE
NEAR XGRS SPECTRA FOR CRUISE2
NEAR XGRS SPECTRA FOR CRUISE3
NEAR XGRS SPECTRA FOR CRUISE4
NEAR XGRS SPECTRA FOR EARTH
NEAR XGRS SPECTRA FOR ER/FAR/APPROACH
NEAR XGRS SPECTRA FOR EROS/ORBIT
NEAR XGRS SPECTRA FOR EROS/SURFACE
NEAR-INFRARED IMAGES OF COMET 9P/TEMPEL 1 V1.0
NEAR-INFRARED PHOTOMETRY OF ASTEROIDS FROM DENIS V1.0
NEW HORIZONS ALICE JUPITER ENCOUNTER V1.0
NEW HORIZONS ALICE POST-LAUNCH CHECKOUT V1.0
NEW HORIZONS LEISA JUPITER ENCOUNTER V1.0
NEW HORIZONS LEISA POST-LAUNCH CHECKOUT V1.0
NEW HORIZONS LORRI JUPITER ENCOUNTER V1.0
NEW HORIZONS LORRI POST-LAUNCH CHECKOUT V1.0
NEW HORIZONS MVIC JUPITER ENCOUNTER V1.0
NEW HORIZONS MVIC POST-LAUNCH CHECKOUT V1.0

NEW HORIZONS PEPSSI JUPITER ENCOUNTER V1.0
NEW HORIZONS PEPSSI POST-LAUNCH CHECKOUT V1.0
NEW HORIZONS SDC JUPITER ENCOUNTER V1.0
NEW HORIZONS SDC POST-LAUNCH CHECKOUT V1.0
NEW HORIZONS SWAP JUPITER ENCOUNTER V1.0
NEW HORIZONS SWAP POST-LAUNCH CHECKOUT V1.0
NIMS EXPERIMENT DATA RECORDS: EARTH/MOON 1 AND 2 ENCOUNTERS
NIMS EXPERIMENT DATA RECORDS: GASPRA/IDA ENCOUNTERS
NIMS EXPERIMENT DATA RECORDS: SL-9 COMET IMPACT WITH JUPITER
NIMS EXPERIMENT DATA RECORDS: VENUS ENCOUNTER
NIMS SPECTRAL IMAGE CUBES OF THE EARTH: E1 & E2 ENCOUNTERS
NIMS SPECTRAL IMAGE CUBES OF VENUS
NIMS SPECTRAL IMAGE TUBES OF THE EARTH: E1 & E2 ENCOUNTERS
NIMS SPECTRAL IMAGE TUBES OF THE MOON: E1 & E2 ENCOUNTERS
NIMS SPECTRAL IMAGE TUBES OF VENUS
NIMS Spectral Image Cubes of Venus
NIMS Spectral Image Cubes of the Earth: E1 & E2 Encounters
NIMS Spectral Image Tubes of Venus
NIMS Spectral Image Tubes of the Earth: E1 & E2 Encounters
NIMS Spectral Image Tubes of the Moon: E1 & E2 Encounters
ODY MARS GAMMA RAY SPECTROMETER 2 EDR V1.0
ODY MARS GAMMA RAY SPECTROMETER 2 EDR V2.0
ODY MARS GAMMA RAY SPECTROMETER 4 CGS V1.0
ODY MARS GAMMA RAY SPECTROMETER 4 DHD V1.0
ODY MARS GAMMA RAY SPECTROMETER 4 DND V1.0
ODY MARS GAMMA RAY SPECTROMETER 5 AHD V1.0
ODY MARS GAMMA RAY SPECTROMETER 5 AND V1.0
ODY MARS GAMMA RAY SPECTROMETER 5 ELEMENT CONCENTRATION V1.0
ODY MARS GAMMA RAY SPECTROMETER 5 SGS V1.0
ODY MARS SPICE KERNELS V1.0
ODYSSEY MARS ACCELEROMETER ALTITUDE DATA
ODYSSEY MARS ACCELEROMETER EDR DATA
ODYSSEY MARS ACCELEROMETER PROFILE DATA
ODYSSEY MARS ACCELEROMETER RAW DATA RECORDS V1.0
ODYSSEY MARS ALTITUDE DATA RECORDS V1.0
ODYSSEY MARS MARIE CALIBRATED DATA V1.0
ODYSSEY MARS MARIE RAW ENERGETIC PARTICLE DATA
ODYSSEY MARS MARIE REDUCED ENERGETIC PARTICLE DATA
ODYSSEY MARS MARIE REFORMATTED RAW DATA V1.0
ODYSSEY MARS PROFILE DATA RECORDS V1.0
ODYSSEY MARS PROFILE DATA RECORDS V1.2
ODYSSEY MARS SPICE DATA
ODYSSEY THEMIS INFRARED GEOMETRIC IMAGES V1.0
ODYSSEY THEMIS IR BRIGHTNESS TEMPERATURE RECORD V1.0
ODYSSEY THEMIS IR EDR V1.0
ODYSSEY THEMIS IR RDR V1.0
ODYSSEY THEMIS VIS APPARENT BRIGHTNESS RECORD V1.0
ODYSSEY THEMIS VIS EDR V1.0
ODYSSEY THEMIS VIS GEOMETRIC IMAGES V1.0
ODYSSEY THEMIS VIS RDR V1.0
OMEGA FLIGHT EXPERIMENT DATA RECORDS
P10 JUPITER CRT ELECTRON/PROTON/ION FLUX 15 MIN AVGS V1.0
P10 JUPITER HVM B-FIELD INSIDE 7 RJ JG COORDS 1 MIN AVG V1.0
P11 CRS 15 MINUTE SATURN ENCOUNTER DATA

P11 HVM 1 MINUTE SATURN ENCOUNTER DATA
P11 JUPITER CRT ELECTRON/PROTON/ION FLUX 15 MIN AVGS V1.0
P12 V ORBITING RADAR DERIVED BACKSCATTER CROSS SECTION V1.0
P12 V ORBITING RADAR RESAMPLED ALTIMETER/RADIOMETER V1.0
P12 V RADIO SCIENCE SUBSYSTEM RESAMPLED LOS GRAVITY V1.0
PAL200 SR CASS-IR-CAM RESAMPLED RING OCCULTATION V1.0
PHOTOMETRY OF IO AND EUROPA DURING SL9 IMPACT FLASHES
PHYSICAL CHARACTERISTICS OF COMETS
PIONEER 10 JUP CRT SUMM FLUX 15MIN V1.0
PIONEER 10 JUP GTT RDR/SUMM V1.0
PIONEER 10 JUP HVM RDR HIGH RESOLUTION V1.0
PIONEER 10 JUP HVM RDR JUP HIGHRES V1.0
PIONEER 10 JUP HVM SUMM 1MIN AVERAGED SYS3 COORDS V1.0
PIONEER 10 JUP HVM SUMM JUP NEAR ENC V1.0
PIONEER 10 JUP HVM SUMM JUP SUMMARY V1.0
PIONEER 10 JUP POS FLYBY TRAJECTORY V1.0
PIONEER 10 JUP POS JUP FLYBY TRAJ V1.0
PIONEER 10 JUP/SOL WIND CPI SUMM CRUISE 15MIN V1.0
PIONEER 10 JUP/SOL WIND CPI SUMM CRUISE 1HR V1.0
PIONEER 10 JUP/SOL WIND PA RDR CRUISE V1.0
PIONEER 10 JUP/SOL WIND PA RDR HIGH RESOLUTION CRUISE V1.0
PIONEER 10 JUP/SOL WIND PA SUMM CRUISE 1HR V1.0
PIONEER 10 JUP/SOL WIND POS LIGHT TIME V1.0
PIONEER 10 JUP/SOL WIND TRD SUMM CRUISE 1HR V1.0
PIONEER 10 JUP/SOL WIND UV SUMM CRUISE 1DAY V1.0
PIONEER 11 JUP CRT SUMM FLUX 15MIN V1.0
PIONEER 11 JUP FGM MAGNETIC FIELD 5 MIN AVG DATA V1.0
PIONEER 11 JUP FGM SUMM JUP 36SEC V1.0
PIONEER 11 JUP FGM SUMM JUP 5MIN V1.0
PIONEER 11 JUP GTT RDR/SUMM V1.0
PIONEER 11 JUP HVM RDR HIGH RESOLUTION V1.0
PIONEER 11 JUP HVM RDR JUP HIGHRES V1.0
PIONEER 11 JUP HVM SUMM JUP NEAR ENC V1.0
PIONEER 11 JUP HVM SUMM JUP SUMMARY V1.0
PIONEER 11 JUP POS JUP FLYBY TRAJ V1.0
PIONEER 11 JUP/SAT/SOL WIND CPI SUMM CRUISE 15MIN V1.0
PIONEER 11 JUP/SAT/SOL WIND CPI SUMM CRUISE 1HR V1.0
PIONEER 11 JUP/SAT/SOL WIND PA RDR CRUISE V1.0
PIONEER 11 JUP/SAT/SOL WIND PA RDR HIGH RES CRUISE V1.0
PIONEER 11 JUP/SAT/SOL WIND PA SUMM CRUISE 1HR V1.0
PIONEER 11 JUP/SAT/SOL WIND POS LIGHT TIME V1.0
PIONEER 11 JUP/SAT/SOL WIND TRD SUMM CRUISE 1HR V1.0
PIONEER 11 JUP/SAT/SOL WIND UV SUMM CRUISE 1DAY V1.0
PIONEER 11 JUPITER FGM MAGNETIC FIELD 36 SEC AVG V1.0
PIONEER 11 JUPITER HVM MAGNETIC FIELD 1 MINUTE DATA V1.0
PIONEER 11 JUPITER POS FLYBY TRAJECTORY V1.0
PIONEER 11 SAT CRT ELECTRON/PROTON/ION FLUX 15 MIN AVGS V1.0
PIONEER 11 SAT CRT SUMM FLUX 15MIN V1.0
PIONEER 11 SAT FGM MAGNETIC FIELD 5 MIN AVG DATA V1.0
PIONEER 11 SAT FGM SUMM SAT 146SEC V1.0
PIONEER 11 SAT FGM SUMM SAT 5MIN V1.0
PIONEER 11 SAT GTT EDR/RDR/SUMM V1.0
PIONEER 11 SAT HVM RDR HIGH RESOLUTION V1.0
PIONEER 11 SAT HVM RDR SAT HIGHRES V1.0

PIONEER 11 SAT HVM SUMM SAT SUMMARY V1.0
PIONEER 11 SATURN FGM MAGNETIC FIELD 146 SEC AVG DATA V1.0
PIONEER 11 SATURN FLYBY TRAJECTORY DATA V1.0
PIONEER 11 SATURN GTT EDR/RDR/SUMM V1.0
PIONEER 11 SATURN HVM MAGNETIC FIELD 1 MINUTE DATA V1.0
PIONEER 12 VENUS ORBITING RADAR DERIVED RADAR IMAGES V1.0
PLATE SHAPE MODEL OF COMET 9P/TEMPEL 1, V1.0
PLUTO-CHARON MUTUAL EVENTS V1.0
PLUTO-CHARON MUTUAL EVENTS V2.0
POLARIMETRY OF ASTEROID ITOKAWA V1.0
PROPERTIES OF COMET NUCLEI
PVO RPA PROC THERM ELEC, ION, PHOTOELEC, LOW RES. V1.0
PVO V OCPP POLARIMETRY MAP DATA RECORD V1.0
PVO V OUVS INBOUND MONOCHROME IMAGE DATA RECORD V1.0
PVO V SUPP EXPERIMENT DATA RECORD SC ORBIT/ATTITUDE V1.0
PVO V SUPP EXPERIMENTER DATA RECORD SC ORBIT/ATTITUDE V1.0
PVO VENUS EFD BROWSE ELECTRIC FIELD 24SEC AVGS V1.0
PVO VENUS EFD CALIBRATED ELECTRIC FIELD HIGH RES. V1.0
PVO VENUS EFD RESAMP BROWSE ELECTRIC FIELD 24SEC AVGS V1.0
PVO VENUS ELECT TEMP PROBE CALIB HIGH RES ELECTRONS VER 1.0
PVO VENUS ELECT TEMP PROBE DERVD BOW SHOCK LOCATION VER 1.0
PVO VENUS ELECT TEMP PROBE DERVD ELECT DENS LOW RES VER 1.0
PVO VENUS ELECT TEMP PROBE DERVD IONOPAUSE LOCATION VER 1.0
PVO VENUS ELECT TMP PROBE RESAMP SOLAR EUV 24 HR AVG VER 1.0
PVO VENUS ION MASS SPECTROMETER CALIB HIGH RES ION DENS V1.0
PVO VENUS ION MASS SPECTROMETER LOW RES ION DENSITY V1.0
PVO VENUS MAG CALIBRATED P-SENSOR HIGH RES V1.0
PVO VENUS MAG CALIBRATED S/C COORDINATES HIGH RES V1.0
PVO VENUS MAG CALIBRATED SC COORDINATES HIGH RES V1.0
PVO VENUS MAG RESAMPLED P-SENSOR 24SEC AVGS V1.0
PVO VENUS MAG RESAMPLED SC COORDS 24SEC AVGS V1.0
PVO VENUS ONMS BROWSE NEUTRAL DENSITY 12 SECOND V1.0
PVO VENUS ONMS BROWSE SUPERTHERMAL OXYGEN 12 SECOND V1.0
PVO VENUS ONMS BROWSE SUPRTHRML ION MAX COUNT RATE 12S V1.0
PVO VENUS ONMS BROWSE THERMAL ION 12 SECOND V1.0
PVO VENUS ONMS CALIBRATED NEUTRAL DENSITY HIGH RES. V1.0
PVO VENUS ONMS CALIBRATED SUPERTHERMAL OXYGEN HIGH RES. V1.0
PVO VENUS ONMS DERIVED SUPERTHERMAL ION LOCATION V1.0
PVO VENUS RADIO SCIENCE OPENLOOP ODR VERSION 1.0
PVO VENUS RETARD. POTENT. ANLYR. EDITED I/V CURVE (RDR) V1.0
PVO VENUS SC POSITION DERIVED VSO COORDS 12 SECOND VER1.0
RIVKIN THREE MICRON ASTEROID DATA V1.0
RIVKIN THREE MICRON ASTEROID DATA V2.0
RIVKIN THREE MICRON ASTEROID DATA V3.0
ROTATION OF COMET NUCLEI: TABLE 1
SAKIGAKE INTERPLANETARY MAGNETIC FIELD DATA V 1.0
SAKIGAKE SOLAR WIND EXPERIMENT DATA V1.0
SAN PEDRO MARTIR OPTICAL IMAGING OF 9P/TEMPEL 1 V1.0
SAWYER ASTEROID SPECTRA
SAWYER ASTEROID SPECTRA V1.0
SAWYER ASTEROID SPECTRA V1.1
SDSS MOVING OBJECT CATALOG V1.0
SDSS MOVING OBJECT CATALOG V2.0
SEVEN COLOR ASTEROID SURVEY

SEVEN COLOR ASTEROID SURVEY V1.0
SMALL BODY RADAR SHAPE MODELS V1.1
SMALL BODY RADAR SHAPE MODELS V2.0
SMALL BODY SHAPE MODELS V1.0
SMALL BODY SHAPE MODELS V2.0
SMALL BODY SHAPE MODELS V2.1
SMALL MAIN-BELT ASTEROID SPECTROSCOPIC SURVEY, PHASE II
SMALL PLANETARY SATELLITE COLORS V1.0
SMALL SOLAR SYSTEM OBJECTS SPECTROSCOPIC SURVEY V1.0
SMASS ASTEROID SURVEY V1.0
SMASS ASTEROID SURVEY V2.1
SOUTH AFRICAN ASTRON. OBS. IMAGE DATA FROM SL9 IMPACTS
SOUTH POLE IR EXPLORER DATA FROM SL9 IMPACTS WITH JUPITER
SPECTROPHOTOMETRY OF THE JOVIAN PLANETS AND TITAN
STARDUST C/E/L DUST FLUX MONITOR INSTRUMENT-2-EDR-V1.0
STARDUST CIDA DATA
STARDUST DFMI WILD 2 ENCOUNTER EDR DATA
STARDUST DUST COLLECTOR GEOMETRY V1.0
STARDUST NAVCAM CALIBRATED IMAGES OF 81P/WILD 2
STARDUST NAVCAM EARLY CRUISE IMAGES
STARDUST NAVCAM IMAGES FOR ANNEFRANK
STARDUST NAVCAM IMAGES OF ANNEFRANK
STARDUST NAVCAM IMAGES OF WILD 2
STARDUST SPICE KERNELS V1.0
STARDUST SRC TEMPERATURE DATA V1.0
STARDUST WILD 2 ENCOUNTER DYNAMIC SCIENCE EXPERIMENT DATA
STOOKE SMALL BODIES MAPS
STOOKE SMALL BODY SHAPE MODELS V1.0
SUISEI ENERGY SPECTRUM PARTICLE MEASUREMENTS V1.0
South African Astron. Obs. Image Data from SL9 Impacts
South Pole IR Explorer Data from SL9 Impacts with Jupiter
THE OAO/OASIS JUPITER OBSERVATION OF SL9 FRAGMENT K V1.0
TNO AND CENTAUR COLORS V1.0
TNO AND CENTAUR COLORS V2.0
TNO AND CENTAUR COLORS V3.0
TNO AND CENTAUR COLORS V4.0
TNO PHOTOMETRY
TORINO ASTEROID POLARIMETRY V1.0
TRANS-NEPTUNIAN OBJECT LIGHTCURVES V1.0
TRANS-NEPTUNIAN OBJECT PHOTOMETRY V2.0
TRANS-NEPTUNIAN OBJECT PHOTOMETRY V3.0
TRI-AXIAL ELLIPSOID MODEL OF COMET WILD 2
TRIAD ASTEROID POLARIMETRY V1.0
TRIAD ASTEROID POLARIMETRY V2.0
TRIAD ASTEROID POLARIMETRY V2.1
TRIAD RADIOMETRIC DIAMETERS AND ALBEDOS V1.0
UBV MEAN ASTEROID COLORS
UBV MEAN VALUES V1.0
UBV MEAN VALUES V1.1
UH2.2M REDUCED 9P/TEMPEL 1 IMAGES/ASTROMETRY V1.0
ULECA SELECTED COUNTS FOR GZ ENCOUNTER
ULY JUP COSPIN ANISOTROPY TELESCOPE 256 SEC. PARTICLE FLUX
ULY JUP COSPIN HIGH ENERGY TELESCOPE HIGH RES. PARTICLE FLUX
ULY JUP COSPIN HIGH FLUX TELESCOPE HIGH RES. ION FLUX

ULY JUP COSPIN KIEL ELE TEL HIRES PARTICLE RATES/INTENSITIES
ULY JUP COSPIN KIEL ELE TEL HIRES RAW PARTICLE COUNT RATES
ULY JUP COSPIN LOW ENERGY TELESCOPE 32 SEC PARTICLE FLUX
ULY JUP ENCOUNTER SWOOPS PLASMA HIRES DATA
ULY JUP GRB SOLAR X-RAY/COSMIC GAMMA-RAY RAW COUNT RATE
ULY JUP MAGNETIC FIELD JOVIGRAPHIC SYS III LH COORDS 60 AVGS
ULY JUP SCE DOPPLER HI-RES DATA
ULY JUP SCE RAW ARCHIVAL TRACKING DATA FILES V1.0
ULY JUP SCE RAW ODR V1.0
ULY JUP URAP PLASMA FREQ REC AVERAGE E-FIELD 10 MIN
ULY JUP URAP PLASMA FREQ REC PEAK E-FIELD 10 MIN
ULY JUP URAP RADIO ASTRONOMY REC AVERAGE E-FIELD 10 MIN
ULY JUP URAP RADIO ASTRONOMY REC AVERAGE E-FIELD 144 SEC
ULY JUP URAP RADIO ASTRONOMY REC PEAK E-FIELD 10 MIN
ULY JUP URAP WAVEFORM ANALYZER AVERAGE B-FIELD 10 MIN
ULY JUP URAP WAVEFORM ANALYZER AVERAGE E-FIELD 10 MIN
ULY JUP URAP WAVEFORM ANALYZER PEAK B-FIELD 10 MIN
ULY JUP URAP WAVEFORM ANALYZER PEAK E-FIELD 10 MIN
ULY JUPITER ENCOUNTER EPHEMERIS SYS3/ECL50 COORDS. VER. 1.0
ULY JUPITER GRAVITATIONAL WAVE EXPERIMENT NULL RESULTS
ULY JUPITER INTERSTELLAR NEUTRAL-GAS EXPERIMENT - NO DATA
ULY JUPITER INTERSTELLAR NEUTRAL-GAS EXPERIMENT SKY MAPS
ULY JUPITER SOLAR WIND ION COMPOSITION SPECTROMETER NO DATA
ULYSSES DUST DETECTION SYSTEM V2.0
ULYSSES DUST DETECTOR SYSTEM V1.0
ULYSSES JUP SPICE SPK KERNEL VERSION 1.0
ULYSSES JUPITER EPAC ALL DATA CHANNELS
ULYSSES JUPITER EPAC OMNI-DIRECTIONAL ELECTRON FLUX
ULYSSES JUPITER EPAC OMNI-DIRECTIONAL PROTON FLUX 1 HR AVGS.
ULYSSES JUPITER EPAC PROTON SPECTRAL DATA 1 HR V1.0
ULYSSES JUPITER EPAC PRTL2 SECTORED PROTON FLUX 1 HR V1.0
ULYSSES JUPITER EPAC PRTL3 SECTORED PROTON FLUX 1 HR V1.0
ULYSSES JUPITER EPAC PSTL1 PROTON SPECTRAL DATA 1 HR V1.0
ULYSSES JUPITER EPAC PSTL2 PROTON SPECTRAL DATA 1 HR V1.0
ULYSSES JUPITER EPAC PULSE HEIGHT 24HR
ULYSSES JUPITER HISCALE COMPOSITION APERTURE ION COUNTS
ULYSSES JUPITER HISCALE DEFLECTED ELECTRONS COUNTS
ULYSSES JUPITER HISCALE LEFS 150 ELECTRON/ION COUNTS
ULYSSES JUPITER HISCALE LEFS 60 ELECTRON/ION COUNTS
ULYSSES JUPITER HISCALE LEMS 120 ION COUNTS
ULYSSES JUPITER HISCALE LEMS 30 ION COUNTS
ULYSSES JUPITER HISCALE W ION COUNTS
ULYSSES JUPITER SOLAR CORONA EXPER. RANGING DATA 10 MIN AVG
UNKNOWN
VEGA1 CRUISE MAGNETOMETER DATA
VEGA1 DUST MASS SPECTROMETER MODAL DATA V1.0
VEGA1 DUST PARTICLE COUNTER MASS ANALYSER DATA V1.0
VEGA1 DUST PARTICLE IMPACT DETECTOR DATA V1.0
VEGA1 DUST PARTICLE IMPACT PLASMA DETECTOR DATA V1.0
VEGA1 HALLEY FLYBY MAGNETOMETER DATA
VEGA1 INFRARED SPECTROMETER HIGH RESOLUTION DATA V1.0
VEGA1 INFRARED SPECTROMETER IMAGING CHANNEL DATA V1.0
VEGA1 ORIGINAL MISCHA DATA SUBMISSION
VEGA1 PLASMAG-1 PLASMA ENERGY ANALYSER DATA V1.0

VEGA1 PUMA DUST MASS SPECTROMETER DATA V1.0
VEGA1 TUNDE-M ENERGETIC PARTICLE ANALYSER DATA V1.0
VEGA1 TV SYSTEM IMAGES PROCESSED BY KFKI V1.0
VEGA1 TV SYSTEM IMAGES V1.0
VEGA2 DUST PARTICLE COUNTER MASS ANALYSER DATA V1.0
VEGA2 DUST PARTICLE IMPACT DETECTOR DATA V1.0
VEGA2 DUST PARTICLE IMPACT PLASMA DETECTOR DATA V1.0
VEGA2 ORIGINAL MISCHA DATA SUBMISSION
VEGA2 PLASMAG-1 PLASMA ENERGY ANALYSER DATA V1.0
VEGA2 PUMA DUST MASS SPECTROMETER DATA V1.0
VEGA2 PUMA DUST MASS SPECTROMETER MODAL DATA V1.0
VEGA2 TV SYSTEM IMAGES PROCESSED BY KFKI V1.0
VEGA2 TV SYSTEM IMAGES TRANSFORMED BY IKF V1.0
VEGA2 TV SYSTEM IMAGES V1.0
VG1 J/S/SS PLASMA WAVE SPECTROMETER RAW WAVEFORM 60MS V1.0
VG1 J/S/SS PWS EDITED SPECTRUM ANALYZER FULL RES V1.0
VG1 J/S/SS PWS RESAMP SPECTRUM ANALYZER HOUR AVG V1.0
VG1 JUP CRS DERIVED PROTON/ION/ELECTRON FLUX BROWSE V1.0
VG1 JUP EPHEMERIS HELIOGRAPHIC COORDS BROWSE V1.0
VG1 JUP EPHEMERIS SYSTEM III (1965) COORDS BROWSE V1.1
VG1 JUP LECP CALIBRATED RESAMPLED SCAN AVERAGED 15MIN V1.1
VG1 JUP LECP CALIBRATED RESAMPLED SECTORED 15MIN V1.1
VG1 JUP MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 1.92SEC V1.0
VG1 JUP MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 48.0SEC V1.0
VG1 JUP MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 9.60SEC V1.0
VG1 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 1.92SEC V1.1
VG1 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 48.0SEC V1.1
VG1 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 9.60SEC V1.1
VG1 JUP MAG/EPHEMERIS RESAMPLED SYS III (1965) 48.0SEC V1.1
VG1 JUP PLASMA DERIVED ELECTRON MOMENTS 96.0 SEC V1.1
VG1 JUP PLS DERIVED ION IN/OUTBND MAGSHTH L-MODE 96SEC V1.0
VG1 JUP PLS DERIVED ION INBOUND SOLAR WIND 96SEC V1.0
VG1 JUP PLS DERIVED ION OUTBND MAGSHTH M-MODE 96SEC V1.0
VG1 JUP PLS PLASMA DERIVED ION MOMENTS 96.0 SEC V1.1
VG1 JUP PRA CALIBRATED HI-RES LOW FREQ. REC. BAND DATA V1.0
VG1 JUP PRA RESAMPLED SUMMARY BROWSE 48SEC V1.0
VG1 JUP PWS EDITED SPECTRUM ANALYZER 4.0SEC V1.1
VG1 JUP PWS RESAMPLED SPECTRUM ANALYZER 48SEC V1.1
VG1 JUP RADIO ASTRONOMY REDUCED 6SEC V1.0
VG1 JUPITER SPICE SPK KERNEL V2.0
VG1 JUPITER ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VG1 SAT CRS RESAMPLED SUMMARY D1 RATE ELEC 192SEC V1.0
VG1 SAT EPHEMERIS HELIOGRAPHIC COORDS BROWSE V1.0
VG1 SAT EPHEMERIS KRONOGRAPHIC (L1) COORDS BROWSE V1.1
VG1 SAT LECP CALIBRATED RESAMPLED SCAN AVERAGED 15MIN V1.0
VG1 SAT LECP CALIBRATED RESAMPLED SECTORED 15MIN V1.0
VG1 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 1.92SEC V1.0
VG1 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 48.0SEC V1.0
VG1 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 9.60SEC V1.0
VG1 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 1.92SEC V1.0
VG1 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 48.0SEC V1.0
VG1 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 9.6SEC V1.0
VG1 SAT PLS DERIVED ION SOLAR WIND 96SEC V1.0
VG1 SAT PLS DERIVED ION SOLAR WIND BROWSE 96SEC V1.0

VG1 SAT PRA CALIBRATED HI-RES LOW FREQ. REC. BAND DATA V1.0
VG1 SAT PWS EDITED SPECTRUM ANALYZER 4.0SEC V1.0
VG1 SAT PWS RESAMPLED SPECTRAL ANALYZER 48SEC V1.0
VG1 SATURN ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VG1/VG2 JUPITER IMAGING SCIENCE SUBSYSTEM EDITED EDR V2.0
VG1/VG2 JUPITER IMAGING SCIENCE SUBSYSTEM EDITED EDR V3.0
VG1/VG2 JUPITER IRIS 3 RDR V1.0
VG1/VG2 JUPITER IRIS DERIVED GREAT RED SPOT PARAMETERS V1.0
VG1/VG2 RADIO SCIENCE RING OCCULTATION DATA V1.0
VG1/VG2 SATURN IMAGING SCIENCE SUBSYSTEM EDITED EDR V1.0
VG1/VG2 SATURN IMAGING SCIENCE SUBSYSTEM EDITED EDR V2.0
VG1/VG2 SATURN IMAGING SCIENCE SUSBSYSTEM EDITED EDR V1.0
VG1/VG2 SATURN IMAGING SCIENCE SUSBSYSTEM EDITED EDR V2.0
VG1/VG2 SATURN IRIS 3 RDR V1.0
VG1/VG2 SR/UR RSS RESAMPLED RING OCCULTATION V1.0
VG1/VG2 SR/UR/NR UVS EDITED/RESAMPLED RING OCCULTATION V1.0
VG2 J/S/U/N/SS PLASMA WAVE SPECTROMETER RAW WFRM 60MS V1.0
VG2 JUP CRS DERIVED PROTON/ION/ELECTRON FLUX BROWSE V1.0
VG2 JUP EPHEMERIS HELIOGRAPHIC COORDS BROWSE V1.0
VG2 JUP EPHEMERIS SYSTEM III (1965) COORDS BROWSE V1.1
VG2 JUP LECP CALIBRATED RESAMPLED SCAN AVERAGED 15MIN V1.1
VG2 JUP LECP CALIBRATED RESAMPLED SECTORED 15MIN V1.1
VG2 JUP MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 9.60SEC V1.0
VG2 JUP MAG RESAMPLED HELIOGRAPHIC (RTN)COORDS 1.92SEC V1.0
VG2 JUP MAG RESAMPLED HELIOGRAPHIC (RTN)COORDS 48.0SEC V1.0
VG2 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 1.92SEC V1.1
VG2 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 48.0SEC V1.1
VG2 JUP MAG RESAMPLED SYSTEM III (1965) COORDS 9.60SEC V1.1
VG2 JUP PLASMA DERIVED ELECTRON MOMENTS 96.0 SEC V1.1
VG2 JUP PLS DERIVED ION IN/OUTBND MAGSHTH L-MODE 96SEC V1.0
VG2 JUP PLS DERIVED ION INBOUND SOLAR WIND 96SEC V1.0
VG2 JUP PLS DERIVED ION OUTBND MAGSHTH M-MODE 96SEC V1.0
VG2 JUP PLS PLASMA DERIVED ION MOMENTS 96.0 SEC V1.1
VG2 JUP PRA CALIBRATED HI-RES LOW FREQ. REC. BAND DATA V1.0
VG2 JUP PRA RESAMPLED SUMMARY BROWSE 48SEC V1.0
VG2 JUP PWS EDITED SPECTRUM ANALYZER 4.0SEC V1.1
VG2 JUP PWS RESAMPLED SPECTRAL ANALYZER 48SEC V1.1
VG2 JUP RADIO ASTRONOMY REDUCED 6SEC V1.0
VG2 JUPITER ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VG2 NEP CRS CALIB RDR D1 RATE HI RESOLUTION ELEC 6SEC V1.0
VG2 NEP CRS RESAMPLED SUMMARY D1 RATE ELEC 96SEC V1.0
VG2 NEP CRS RESAMPLED SUMMARY D2 RATE ELEC 96SEC V1.0
VG2 NEP LECP RESAMPLED RDR STEPPING SECTOR 12.8MIN V1.0
VG2 NEP LECP RESAMPLED SUMMARY SCAN AVERAGED 24SEC V1.0
VG2 NEP MAG RESAMP RDR HELIOGRAPHIC COORDINATES 1.92SEC V1.0
VG2 NEP MAG RESAMP RDR HELIOGRAPHIC COORDINATES 9.6SEC V1.0
VG2 NEP MAG RESAMP SUMMARY HELIOGRAPHIC COORDS 48SEC V1.0
VG2 NEP MAG RESAMPLED SUMMARY NLS COORDINATES 12SEC V1.0
VG2 NEP PLS DERIVED RDR 2 PROTON MAGSPHERE 48SEC V1.0
VG2 NEP PLS DERIVED RDR ELECTRON MAGNETOSPHERE 96SEC V1.0
VG2 NEP PLS DERIVED RDR ION INBOUND S-WIND 48SEC V1.0
VG2 NEP PLS DERIVED RDR ION MAGNETOSPHERE 48SEC V1.0
VG2 NEP PLS DERIVED RDR ION OUTBND MAGSHTH L-MODE 48SEC V1.0
VG2 NEP PLS DERIVED RDR ION OUTBND MAGSHTH M-MODE 12MIN V1.0

VG2 NEP PRA EDITED RDR HIGH RATE 60MS V1.0
VG2 NEP PRA RESAMPLED SUMMARY BROWSE 48SEC V1.0
VG2 NEP PWS EDITED RDR UNCALIB SPECTRUM ANALYZER 4SEC V1.0
VG2 NEP PWS RAW EXPERIMENT WAVEFORM 60MS V1.0
VG2 NEP PWS RESAMPLED SUMMARY SPECTRUM ANALYZER 48SEC V1.0
VG2 NEP TRAJECTORY DERIV SUMM HELIOGRAPHIC COORDS 48SEC V1.0
VG2 NEP TRAJECTORY DERIVED SUMM NLS COORDS 12SEC V1.0
VG2 NEPTUNE IMAGING SCIENCE SUBSYSTEM EDITED EDR V1.0
VG2 NEPTUNE IMAGING SCIENCE SUSBSYSTEM EDITED EDR V1.0
VG2 NEPTUNE IRIS 3 RDR V1.0
VG2 NEPTUNE ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VG2 PHOTOPOLARIMETER RING OCCULTATION DATA V1.0
VG2 SAT CRS RESAMPLED SUMMARY D1 RATE ELEC 192SEC V1.0
VG2 SAT EPHEMERIS HELIOGRAPHIC COORDS BROWSE V1.0
VG2 SAT EPHEMERIS KRONOGRAPHIC (L1) COORDS BROWSE V1.1
VG2 SAT LECP CALIBRATED RESAMPLED SCAN AVERAGED 15MIN V1.0
VG2 SAT LECP CALIBRATED RESAMPLED SECTORED 15MIN V1.0
VG2 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 1.92SEC V1.1
VG2 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 48.0SEC V1.1
VG2 SAT MAG RESAMPLED HELIOGRAPHIC (RTN) COORDS 9.60SEC V1.1
VG2 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 1.92SEC V1.1
VG2 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 48.0SEC V1.1
VG2 SAT MAG RESAMPLED KRONOGRAPHIC (L1) COORDS 9.6SEC V1.1
VG2 SAT PLS DERIVED ION SOLAR WIND 96SEC V1.0
VG2 SAT PLS DERIVED ION SOLAR WIND BROWSE 96SEC V1.0
VG2 SAT PRA CALIBRATED HI-RES LOW FREQ. REC. BAND DATA V1.0
VG2 SAT PWS EDITED SPECTRUM ANALYZER 4.0SEC V1.0
VG2 SAT PWS RESAMPLED SPECTRAL ANALYZER 48SEC V1.0
VG2 SATURN ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VG2 SR/UR/NR PPS EDITED/RESAMPLED RING OCCULTATION V1.0
VG2 SR/UR/NR PPS RAW/EDITED/RESAMPLED RING OCCULTATION V1.0
VG2 ULTRAVIOLET SPECTROMETER RING OCCULTATION DATA V1.0
VG2 URA CRS RESAMPLED SUMMARY D1 RATE ELEC 96SEC V1.0
VG2 URA CRS RESAMPLED SUMMARY D2 RATE ELEC 96SEC V1.0
VG2 URA LECP RESAMPLED RDR STEPPING SECTOR 12.8MIN V1.0
VG2 URA LECP RESAMPLED RDR STEPPING SECTOR 15MIN V1.0
VG2 URA LECP RESAMPLED SUMMARY SCAN AVERAGED 15MIN V1.0
VG2 URA LECP RESAMPLED SUMMARY SCAN AVERAGED 24SEC V1.0
VG2 URA MAG RESAMP RDR HELIOGRAPHIC COORDINATES 1.92SEC V1.0
VG2 URA MAG RESAMP RDR HELIOGRAPHIC COORDINATES 9.6SEC V1.0
VG2 URA MAG RESAMP SUMMARY HELIOGRAPHIC COORDS 48SEC V1.0
VG2 URA MAG RESAMPLED RDR U1 COORDINATES 1.92SEC V1.0
VG2 URA MAG RESAMPLED RDR U1 COORDINATES 9.6SEC V1.0
VG2 URA MAG RESAMPLED SUMMARY U1 COORDINATES 48SEC V1.0
VG2 URA PLS DERIVED RDR ELECTRON FIT 48SEC V1.0
VG2 URA PLS DERIVED RDR ION FIT 48SEC V1.0
VG2 URA PLS DERIVED SUMM ELECTRON BROWSE 48SEC V1.0
VG2 URA PLS DERIVED SUMMARY ION FIT 48SEC V1.0
VG2 URA PRA EDITED RDR HIGH RATE 60MS V1.0
VG2 URA PRA RESAMPLED SUMMARY BROWSE 48SEC V1.0
VG2 URA PWS EDITED RDR UNCALIB SPECTRUM ANALYZER 4SEC V1.0
VG2 URA PWS RAW EXPERIMENT WAVEFORM 60MS V1.0
VG2 URA PWS RESAMPLED SUMMARY SPECTRUM ANALYZER 48SEC V1.0
VG2 URA TRAJECTORY DERIV SUMM HELIOGRAPHIC COORDS 48SEC V1.0

VG2 URA TRAJECTORY DERIVED SUMM U1 COORDS 48SEC V1.0
VG2 URANUS IMAGING SCIENCE SUBSYSTEM EDITED EDR V1.0
VG2 URANUS IMAGING SCIENCE SUSBSYSTEM EDITED EDR V1.0
VG2 URANUS IRIS 3 RDR V1.0
VG2 URANUS ULTRAVIOLET SPECTROMETER SUBSYSTEM 3 RDR V1.0
VILAS ASTEROID SPECTRA V1.0
VILAS ASTEROID SPECTRA V1.1
VISUAL IMAGING AND PHOTOMETRY OF (29981) 1999 TD10 V1.0
VL1 MARS METEOROLOGY DATA RESAMPLED DATA BINNED-P-T-V V1.0
VL1/VL2 MARS LABELED RELEASE V1.0
VL1/VL2 MARS LANDING SITE ROCK POPULATIONS V1.0
VL1/VL2 MARS LCS DERIVED ATMOSPHERIC OPTICAL DEPTH V1.0
VL1/VL2 MARS LCS EXPERIMENT DATA RECORD V1.0
VL1/VL2 MARS METEOROLOGY CALIBRATED FOOTPAD TEMP V1.0
VL1/VL2 MARS METEOROLOGY DATA CALIBRATED DATA PRESSURE V1.0
VL1/VL2 MARS METEOROLOGY RESAMPLED DAILY AVG PRESSURE V1.0
VL1/VL2 MARS METEOROLOGY RESAMPLED DATA BINNED-P-T-V V1.0
VL1/VL2 MARS METEOROLOGY RESAMPLED SOL AVG FOOTPAD TEMP V1.0
VO1 MARS VISUAL IMAGING SUBSYSTEM DATA FOR SURVEY MISSION
VO1/VO2 MARS ATMOSPHERIC WATER DETECTOR 4 V1.0
VO1/VO2 MARS INFRARED THERMAL MAPPER RESAMPLED DATA V1.0
VO1/VO2 MARS IRTM BINNED DATA AND DERIVED CLOUDS V1.0
VO1/VO2 MARS VISUAL IMAGING SS EXPRMNT DATA REC BROWSE V2.0
VO1/VO2 MARS VISUAL IMAGING SS EXPRMNT DATA RECORD V2.0
VO1/VO2 MARS VISUAL IMAGING SUBSYSTEM DIGITAL IMAGE MODEL
VO1/VO2 MARS VISUAL IMAGING SUBSYSTEM DIGITAL IMAGING MODEL
VO1/VO2 MARS VISUAL IMAGING SUBSYSTEM DIGITAL TERRAIN MODEL
VO1/VO2 MARS VISUAL IMAGING SUBSYSTEM EXPERIMENT DATA RECORD
VO2 MARS RADIO SCIENCE SUBSYSTEM RESAMPLED LOS GRAVITY V1.0
VOYAGER 1 JUP LOW ENERGY CHARGED PARTICLE CALIB. 15MIN
VOYAGER 1 JUP LOW ENERGY CHARGED PARTICLE CALIB. BR 15MIN
VOYAGER 1 JUP PLASMA SPECTROMETER EDITED SPEC 4.0SEC
VOYAGER 1 JUP PLASMA WAVE SPECTROMETER RESAMP SPEC 48.0SEC
VOYAGER 1 JUP PLASMA/RADIO ASTRON. DERIVED ELECTRON MOM 96S
VOYAGER 1 JUPITER MAGNETOMETER RESAMPLED DATA 1.92 SEC
VOYAGER 1 JUPITER MAGNETOMETER RESAMPLED DATA 48.0 SEC
VOYAGER 1 JUPITER MAGNETOMETER RESAMPLED DATA 9.60 SEC
VOYAGER 1 JUPITER PLASMA DERIVED ION MOMENTS 96 SEC
VOYAGER 1 JUPITER POSITION RESAMPLED DATA 48.0 SECONDS
VOYAGER 1 JUPITER SPICE S- AND P-EPHEM. KERNELS
VOYAGER 1 SAT LOW ENERGY CHARGED PARTICLE CALIB. 15MIN
VOYAGER 1 SAT LOW ENERGY CHARGED PARTICLE CALIB. BR 15MIN
VOYAGER 1 SAT PLASMA WAVE SPECTROMETER RESAMP SPEC 48.0SEC
VOYAGER 1 SATURN EGRESS RADIO OCCULTATION RAW DATA V1.0
VOYAGER 1 SATURN MAGNETOMETER RESAMPLED DATA 1.92 SEC
VOYAGER 1 SATURN MAGNETOMETER RESAMPLED DATA 48.0 SEC
VOYAGER 1 SATURN MAGNETOMETER RESAMPLED DATA 9.60 SEC
VOYAGER 1 SATURN PLASMA DERIVED ELECTRON BROWSE 96 SEC
VOYAGER 1 SATURN PLASMA DERIVED ELECTRON PARAMETERS 96 SEC
VOYAGER 1 SATURN PLASMA DERIVED ION FITS 96 SEC
VOYAGER 1 SATURN PLASMA DERIVED ION FITS 96 SEC V1.0
VOYAGER 1 SATURN PLASMA DERIVED ION FITS BROWSE 96 SEC
VOYAGER 1 SATURN PLASMA DERIVED ION MOMENTS 96 SEC
VOYAGER 1 SATURN PLASMA WAVE SPECTROMETER EDITED SPEC 4.0SEC

VOYAGER 1 SATURN POSITION RESAMPLED DATA 48.0 SECONDS
VOYAGER 1 SATURN S- AND P-EPHEMERIS KERNELS
VOYAGER 1 SATURN SPICE S- AND P-EPHEM. KERNELS
VOYAGER 1 TITAN RADIO OCCULTATION RAW DATA V1.0
VOYAGER 1&2 JUPITER BRIGHTNESS NORTH/SOUTH MAP SET V1.0
VOYAGER 1&2 JUPITER IRIS DERIVED NORTH/SOUTH PARAMETERS V1.0
VOYAGER 1&2 SATURN BRIGHTNESS NORTH/SOUTH MAP SET V1.0
VOYAGER 1&2 SATURN IRIS DERIVED NORTH/SOUTH PARAMETERS V1.0
VOYAGER 2 JUP LOW ENERGY CHARGED PARTICLE CALIB. 15MIN
VOYAGER 2 JUP LOW ENERGY CHARGED PARTICLE CALIB. BR 15MIN
VOYAGER 2 JUP PLASMA WAVE SPECTROMETER EDITED SPEC 4.0SEC
VOYAGER 2 JUP PLASMA WAVE SPECTROMETER RESAMP SPEC 48.0SEC
VOYAGER 2 JUPITER MAGNETOMETER RESAMPLED DATA 1.92 SEC
VOYAGER 2 JUPITER MAGNETOMETER RESAMPLED DATA 48.0 SEC
VOYAGER 2 JUPITER MAGNETOMETER RESAMPLED DATA 9.60 SEC
VOYAGER 2 JUPITER PLASMA DERIVED ELECTRON MOMENTS 96 SEC
VOYAGER 2 JUPITER PLASMA DERIVED ION MOMENTS 96 SEC
VOYAGER 2 JUPITER POSITION RESAMPLED DATA 48.0 SECONDS
VOYAGER 2 JUPITER S- AND P-EPHEMERIS KERNELS
VOYAGER 2 JUPITER SPICE S- AND P-EPHEM. KERNELS
VOYAGER 2 JUPITER/SHOEMAKER-LEVY 9 UVS NULL RESULTS V1.0
VOYAGER 2 SAT LOW ENERGY CHARGED PARTICLE CALIB. 15MIN
VOYAGER 2 SAT LOW ENERGY CHARGED PARTICLE CALIB. BR 15MIN
VOYAGER 2 SAT PLASMA WAVE SPECTROMETER RESAMP SPEC 48.0SEC
VOYAGER 2 SATURN MAGNETOMETER RESAMPLED DATA 1.92 SEC
VOYAGER 2 SATURN MAGNETOMETER RESAMPLED DATA 48.0 SEC
VOYAGER 2 SATURN MAGNETOMETER RESAMPLED DATA 9.60 SEC
VOYAGER 2 SATURN PLASMA DERIVED ELECTRON BROWSE 96 SEC
VOYAGER 2 SATURN PLASMA DERIVED ELECTRON PARAMETERS 96 SEC
VOYAGER 2 SATURN PLASMA DERIVED ION FITS 96 SEC
VOYAGER 2 SATURN PLASMA DERIVED ION FITS 96 SEC V1.0
VOYAGER 2 SATURN PLASMA DERIVED ION FITS BROWSE 96 SEC
VOYAGER 2 SATURN PLASMA DERIVED ION MOMENTS 96 SEC
VOYAGER 2 SATURN PLASMA WAVE SPECTROMETER EDITED SPEC 4.0SEC
VOYAGER 2 SATURN POSITION RESAMPLED DATA 48.0 SECONDS
VOYAGER 2 SATURN RADIO OCCULTATION RAW DATA V1.0
VOYAGER 2 SATURN S- AND P-EPHEMERIS KERNELS
VOYAGER 2 SATURN SPICE S- AND P-EPHEM. KERNELS
VOYAGER 2 TRITON RADIO OCCULTATION REDUCED DATA V1.0
VOYAGER 2 URANUS PLASMA DERIVED ELECTRON BROWSE 96 SEC
VOYAGER 2 URANUS PLASMA DERIVED ELECTRON PARAMETERS 96 SEC
VOYAGER 2 URANUS S- AND P-EPHEMERIS KERNELS
VOYAGER 2 URANUS SPICE S- AND P-EPHEM. KERNELS
WHITELEY NEO PHOTOMETRY V1.0
WHT S API ISIS RAW AND CALIBRATED RING PLANE CROSSING V1.0
WISNIEWSKI ASTEROID ABSOLUTE MAGNITUDES V1.0

DATA_SET_PARAMETER_NAME **DYNAMIC**

1.4 MICROMETER BRIGHTNESS
ATMOSPHERIC PRESSURE
BRIGHTNESS TEMPERATURE
BRIGHTNESS TEMPERATURE STANDARD DEVIATN
CLOUD COUNT

CLOUD TYPE
COLUMN WATER ABUNDANCE
COUNT
D1 RATE
D2 RATE
DATA NUMBER
DERIVATIVE OF MODEL WITH ALBEDO
DERIVATIVE OF MODEL WITH INERTIA
ELECTRIC FIELD COMPONENT
ELECTRIC FIELD INTENSITY
ELECTRIC FIELD SPECTRAL DENSITY
ELECTRIC FIELD VECTOR
ELECTRIC FIELD WAVEFORM
ELECTRON ANGULAR DISTRIBUTION
ELECTRON CURRENT
ELECTRON DENSITY
ELECTRON DIFFERENTIAL FLUX
ELECTRON DIFFERENTIAL INTENSITY
ELECTRON ENERGY SPECTRUM
ELECTRON FLUX
ELECTRON INTENSITY
ELECTRON INTENSTIY
ELECTRON PITCH ANGLE DISTRIBUTION
ELECTRON PRESSURE
ELECTRON RATE
ELECTRON TEMPERATURE
EMISSIVITY
ENERGETIC NEUTRAL ATOM FLUX
FLUX
FLUX DENSITY
FLUX RATIO
INTEGRATED_VISIBLE_RADIANCE
ION ANGULAR DISTRIBUTION
ION COMPOSITION
ION CURRENT
ION DENSITY
ION DIFFERENTIAL FLUX
ION DIFFERENTIAL INTENSITY
ION ENERGY SPECTRUM
ION FLUX
ION INTENSITY
ION PITCH ANGLE DISTRIBUTION
ION PRESSURE
ION RATE
ION TEMPERATURE
ION THERMAL SPEED
ION VELOCITY
LAMBERT ALBEDO
LAMBERT ALBEDO STANDARD DEVIATION
LINE OF SIGHT ACCELERATION
MAGNETIC FIELD COMPONENT
MAGNETIC FIELD INTENSITY
MAGNETIC FIELD SPECTRAL DENSITY
MAGNETIC FIELD VECTOR

MAGNITUDE
MINNAERT ALBEDO
MODEL TEMPERATURE
N/A
OBSERVATION COUNT
OPTICAL DEPTH
PARTICLE FLUX INTENSITY
PARTICLE MULTIPLE PARAMETERS
PHASE CORRECTED ALBEDO
PHASE CORRECTED ALBEDO STANDARD DEVIATN
PHOTOGRAPHIC DENSITY
PIONEER-VENUS FRESNEL REFLECTIVITY CORR
PLANETARY ELEVATION
PLANETARY RADIUS
PLASMA BETA
PLASMA DENSITY
PLASMA FLOW
PLASMA PRESSURE
PLASMA VELOCITY
PLASMA WAVE SPECTRUM
PLASMA WAVE WAVEFORM
POLARIZATION
POSITION VECTOR
POWER FLUX
RADAR BACKSCATTER CROSS SECTION
RADAR ECHO POWER
RADAR MODEL ECHO POWER
RADAR SCALED BACKSCATTER CROSS SECTION
RADAR SCALED ECHO POWER
RADAR-DERIVED FRESNEL REFLECTIVITY
RADAR-DERIVED RMS SLOPE
RADAR-DERIVED SURFACE ROUGHNESS
RADIANCE
RADIANCE FACTOR
RADIO WAVE SPECTRUM
REFLECTANCE
RELATIVE INTENSITY
SAMPLED_VISABLE_RADIANCE
SAMPLED_VISIBLE_RADIANCE
SINGLE POINT THERMAL INERTIA
SPECTRAL INTENSITY
STOKES SCATTERING OPERATOR
TEMPERATURE
THERMAL_RADIANCE
VELOCITY
VISUAL BRIGHTNESS
WAVE ELECTRIC FIELD AMPLITUDE
WAVE ELECTRIC FIELD INTENSITY
WAVE ELECTRIC FIELD PHASE
WAVE MAGNETIC FIELD INTENSITY
WIND DIRECTION
WIND SPEED
WIND VELOCITY

DATA_SET_PARAMETER_UNIT **DYNAMIC**

(VOLTS/METER)**2/HERTZ
10**(-3)*CAL*CM**(-2)*S**(-1/2)*K**(-1)
10**-6 WATT / CM**-2 / STERADIAN / WAVENUMBER
AU OR DEGREES
CENTIMETER
CM**-3
CM-3
COUNTS/(CM**2*SECOND*STERADIAN*KEV)
COUNTS/(CM**2*SECOND*STERRADIAN*KEV)
COUNTS/SECOND
DEGREES
DEGREES CELSIUS
DIMENSIONLESS
ERG/SEC*CM**2(A)
EV
EV-3
JANSKY
KELVIN
KELVIN / (10**(-3)*CAL*CM**(-2)*S**(-1/2)*K**(-1))
KILOMETER
KILOMETERS/HOUR
KM/S
MAGNITUDE
METER
METERS/SECOND
MILLIBAR
MILLIBEL
MM/S**2
N/A
NANOTESLA
NEPTUNE RADII (24,765KM) OR DEGREES
PERCENT
PIXEL
PRECIPITABLE MICROMETERS
RADIAN
URANUS RADII (25,600KM) OR DEGREES
VOLT/METER
VOLTS/METER/HERTZ**.5
WATT
WATT/(METER*METER)/STERADIAN
WATT/CM**2/SR/CM**-1

DATA_SOURCE_ID **SUGGESTED**

CONNERNEY
ELEMENTS-PLANET
EQUATRADIUS-SUN
HANEL
MAGMOMENT-PLANET
MAGMOMENT-SATURN
MAGMOMENT-URANUS
MASS-SUN
MEANSOLARDAY-PLANET

N/A
NAUTICAL_ALMANAC_1989
NESS
ORBSEMIMAJAX-PLANET
PERIARGANG-PLANET
PHYSICAL-PLANET
PHYSICAL-SUN
RADIUS-PLANET
REVPER-PLANET
ROTATION-PLANET
ROTATION-SUN
RUSSELL
SURFGRAV-PLANET
SURFGRAV-SUN
VEVERKA

DATA_STREAM_TYPE **[JPL_AMMOS_SPECIFIC]** **STATIC**

ENGINEERING
MONITOR
QQC

DATA_TYPE **STATIC**

ASCII_COMPLEX
ASCII_INTEGER
ASCII_REAL
BINARY_CODED_DECIMAL
BIT_STRING
BOOLEAN
CHARACTER
COMPLEX
DATE
EBCDIC_CHARACTER
FLOAT
IBM_COMPLEX
IBM_INTEGER
IBM_REAL
IBM_UNSIGNED_INTEGER
IEEE_COMPLEX
IEEE_REAL
INTEGER
LSB_BIT_STRING
LSB_INTEGER
LSB_UNSIGNED_INTEGER
MAC_COMPLEX
MAC_INTEGER
MAC_REAL
MAC_UNSIGNED_INTEGER
MSB_BIT_STRING
MSB_INTEGER
MSB_UNSIGNED_INTEGER
N/A
PC_COMPLEX
PC_INTEGER

PC_REAL
PC_UNSIGNED_INTEGER
REAL
SUN_COMPLEX
SUN_INTEGER
SUN_REAL
SUN_UNSIGNED_INTEGER
TIME
UNSIGNED_INTEGER
VAXG_COMPLEX
VAXG_REAL
VAX_BIT_STRING
VAX_COMPLEX
VAX_DOUBLE
VAX_INTEGER
VAX_REAL
VAX_UNSIGNED_INTEGER

DELAYED_READOUT_FLAG **[PDS_EN]** **STATIC**
NO
YES

DERIVED_IMAGE_TYPE **[PDS_MER_OPS]** **SUGGESTED**
DISPARITY_LINE_MAP
DISPARITY_MAP
DISPARITY_SAMPLE_MAP
IMAGE
RANGE_MAP
REACHABILITY_MAP
ROUGHNESS_MAP
UVW_MAP
U_MAP
V_MAP
W_MAP
XYZ_MAP
X_MAP
Y_MAP
Z_MAP

DETAILED_CATALOG_FLAG **STATIC**
N
Y

DETECTOR_ERASE_COUNT **[PDS_MER_OPS]** **SUGGESTED**

DETECTOR_FIRST_LINE **[PDS_MER_OPS]** **SUGGESTED**

DETECTOR_ID **DYNAMIC**
A
AMBIENT_TEMPERATURE
B

C
CH1
CH2
CH3
CH4
CH5
CRS
D
GE_CID_62
HFM1
HFM2
HFM3
ISSN
ISSW
LECP
LFM1
LFM2
LFM3
N/A
PRA_ANTENNA
PRESSURE
PVORADANT
PWS_ANTENNA
REFERENCE_TEMP
RSSDETEB
RSSDETSC
SPECTROMETER_A
SPECTROMETER_B
SPECTROMETER_C
SPECTROMETER_D
THERMISTOR
TIMS
VISA
VISB
WIND_QUADRANT
WIND_SPEED

DETECTOR_LINES **[PDS_MER_OPS]** **SUGGESTED**

DETECTOR_TO_IMAGE_ROTATION **[PDS_MER_OPS]** **SUGGESTED**
0.0
180.0
270.0
90.0

DETECTOR_TYPE **DYNAMIC**
ANTENNA
CHARGE_INJECTION_DEV
DIPOLE_ANTENNA
FARADAY_CUP
HG:GE
HOT-FILM_ANEMOMETER

LINE_ARRAY
MCT
MONOPOLE_PR_ANTENNA
N/A
PBS
PBSE
RESIST_THERMOMETER
RING_CORE
SOLID_STATE
THERMISTOR
THERMOCOUPLE
THERMOPILE_ARRAY
VARIABLE_RELUCTANCE
VIDICON

DIFFRACTION_CORRECTED_FLAG **[PDS_RINGS]** **STATIC**
N
Y

DISCIPLINE_NAME **STATIC**
ATMOSPHERES
GEOSCIENCES
IMAGE PROCESSING
IMAGING SPECTROSCOPY
NAVIGATION ANCILLARY INFORMATION FACILITY
PLASMA INTERACTIONS
RADIOMETRY
RINGS
SMALL BODIES

DISPERSION_MODE_ID **[PDS_SBN]** **DYNAMIC**
HIGH
LOW

DISTRIBUTION_TYPE **[PDS_EN]** **TEXT**

DOCUMENT_FORMAT **DYNAMIC**
ADOBE PDF
ENCAPSULATED POSTSCRIPT
GIF
HTML
JPG
LATEX
MICROSOFT WORD
PNG
POSTSCRIPT
RICH TEXT
TEXT
TIFF

DOCUMENT_TOPIC_TYPE **SUGGESTED**

ARCHIVE VOLUME SIS
ASTEROID INFORMATION
ASTEROID POLE POSITIONS
ASTEROID REFLECTANCE SPECTRA
CALIBRATION DESCRIPTION
CALIBRATION REPORT
CARTOGRAPHY
COMET HALLEY
COMETS
CRS DOCUMENTATION
CRS NEPTUNE ANALYSIS
CRS NEPTUNE REPORT
CRS URANUS ANALYSIS
CRS URANUS REPORT
CURRENTS IN SATURN'S MAGNETOSPHERE
DATA ANALYSIS
DATA PRODUCT SIS
DATA RECOVERY TECHNIQUES AND ANALYSIS
DATA SET DERIVATION AND INTERPRETATIONS
DATA SET DESCRIPTION
DATA SET DESCRIPTION, DERIVATION TECHNIQUE, AND ANALYSIS
DATA SET DESCRIPTION, DERIVATION, AND INTERPRETATIONS
DATA USER REQUIREMENTS
DERIVATION AND ANALYSIS TECHNIQUES
ENERGETIC PARTICLES AT JUPITER
ENERGETIC PARTICLES AT NEPTUNE
ENERGETIC PARTICLES AT URANUS
EXPERIMENT RESULTS
FUNCTIONAL REQUIREMENTS DOCUMENT
GEOLOGY
GEOLOGY OF VENUS
GRSFE
HTML NAVIGATION
IHW LSPN ATLAS
IHW STUDY
IMAGE PROCESSING
INITIAL EXPERIMENT RESULTS
INSTRUMENT AND DATA SET DESCRIPTION
INSTRUMENT DESCRIPTION
INSTRUMENT DESCRIPTION AND EXPERIMENT OBJECTIVES SUMMARY
INSTRUMENT DESCRIPTION AND MEASUREMENT TECHNIQUE
IONOSPHERE OF VENUS
JOVIAN MAGNETOTAIL AND CURRENT SHEET
JPL INTEROFFICE MEMORANDUM
JUPITER ELECTRONS
JUPITER IONS
LECP DOCUMENTATION
LECP JUPITER DOCUMENTATION
LECP SATURN DOCUMENTATION
LECP URANUS DOCUMENTATION
LUNAR RADAR DATA
MAGELLAN PROJECT DOCUMENT
MAGNETIC FIELD AND PLASMA FLOW IN JUPITER MAGNETOSHEATH
MAGNETIC FIELD AT NEPTUNE

MAGNETIC FIELD CURRENT STRUCTURES MAGNETOSPHERE URANUS
MAGNETIC FIELD EXPERIMENT FOR VOYAGER 1 AND 2
MAGNETIC FIELD NEPTUNE
MAGNETIC FIELD STUDIES AT JUPITER BY VOYAGER 1
MAGNETIC FIELD STUDIES AT JUPITER BY VOYAGER 2
MAGNETIC FIELD STUDIES URANUS
MAGNETIC FIELD STUDIES VOYAGER 1 AT SATURN PRELIMINARY
MAGNETIC FIELD STUDIES VOYAGER 2 SATURN PRELIMINARY
MAGNETIC FIELD URANUS
MAGNETOMETRY
MAGNETOTAIL URANUS
MANUAL
MAPPING DESCRIPTION AND RESULTS
MARS GRAVITY
MARS RADAR DATA
MERCURY RADAR DATA
MISSION DESCRIPTION
MISSION DESCRIPTION AND INSTRUMENT OVERVIEW
MISSION RESULTS
MISSION SCIENCE
MODELING JOVIAN CURRENT SHEET AND INNER MAGNETOSPHERE
MULTISPECTRAL SCANNER
N/A
NEAR EARTH ASTEROIDS
NEPTUNE PLASMA - ELECTRON OBSERVATIONS
NEPTUNE PLASMA - INITIAL RESULTS
NEPTUNE PLASMA - LOW ENERGY
NEPTUNE PLASMA - LOW ENERGY IONS
NEPTUNE PLASMA - PLASMA MANTLE
OPERATING MANUAL
OPERATIONS REPORT
OPTICAL ENGINEERING
ORIGIN OF PLANETARY MAGNETIC FIELDS
PHYSICS OF JOVIAN MAGNETOSPHERE COORDINATE SYSTEMS
PLANETARY ATMOSPHERES
PLANETARY MAPPING
PLS INSTRUMENT DESCRIPTION
PROCEEDINGS
PROJECT FINAL REPORT
PROJECT SUMMARY
RADAR AND GRAVITY DATA
RADAR ASTRONOMY
RADAR GEOLOGY
RADAR IMAGING
REFLECTANCE
REMOTE SENSING
REMOTE SENSING BOTANY
SATURN ELECTRONS
SATURN IONS
SCIENCE REPORT
SENSOR CALIBRATION
SOFTWARE DESCRIPTION
SOFTWARE INTERFACE SPECIFICATION
SPACECRAFT DESCRIPTION

SPACECRAFT DESIGN
STRUCTURE DYNAMICS SATURN'S OUTER MAGNETOSPHERE BOUNDARY
SURFACE WAVES URANUS MAGNETOPAUSE
URANUS ELECTRONS
URANUS IONS
USER'S GUIDE
VENUS GRAVITY
VENUS LIGHTNING
VENUS RADAR DATA
VG1 PWS JUPITER OVERVIEW
VG1 PWS SATURN OVERVIEW
VG2 PRA NEPTUNE OVERVIEW
VG2 PRA URANUS OVERVIEW
VG2 PWS JUPITER OVERVIEW
VG2 PWS NEPTUNE OVERVIEW
VG2 PWS SATURN OVERVIEW
VG2 PWS URANUS OVERVIEW
VOLUME CONTENTS
VOYAGER AT URANUS
VOYAGER 2 AT URANUS
VOYAGER AT SATURN
VOYAGER MEASUREMENT ROTATION PERIOD SATURN MAGNETIC FIELD
Z3 ZONAL HARMONIC MODEL SATURN'S MAGNETIC FIELD ANALYSIS

DOWNLOAD_PRIORITY **[PDS_MER_OPS]** **SUGGESTED**

DOWNLOAD_TYPE **SUGGESTED**
DS
DSIM
DSIMNS
DSNS
IM
IMNS
NONE
NS

DOWNSAMPLE_METHOD **[PDS_MER_OPS]** **SUGGESTED**
BOTH
HARDWARE
NONE
SOFTWARE

DUST_FLAG **[PDS_GEO_VL]** **STATIC**
FALSE
TRUE

EARLY_IMAGE_RETURN_FLAG **[PDS_MER_OPS]** **SUGGESTED**
FALSE
TRUE

EARLY_PIXEL_SCALE_FLAG **[PDS_MER_OPS]** **SUGGESTED**

FALSE
TRUE

EARTH_BASE_ID **STATIC**
C154
GSR
KP36
KP50
KP84
LO72
MK88
PGD
S229

EARTH_BASE_INSTITUTION_NAME **DYNAMIC**
HAWAII INSTITUTE OF GEOPHYSICS
INTERNATIONAL HALLEY WATCH
JET PROPULSION LABORATORY
KITT PEAK NATIONAL OBSERVATORY
LOWELL OBSERVATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
MAUNA KEA OBSERVATORY
MIT
N/A
NASA AMES RESEARCH CENTER
NATIONAL ASTRONOMY AND IONOSPHERIC CENTER
UNITED STATES GEOPHYSICAL SURVEY
UNITED STATES GEOPHYSICAL SURVEY, RESTON
UNIVERSITY OF ARIZONA

EDR_SOFTWARE_NAME **[CLEM]** **STATIC**
NRL-ACT-MGRAB

ELECTRONIC_MAIL_TYPE **DYNAMIC**
ARPANET
BITNET
DECNET
E-MAIL
GSFC
INTERNAT
INTERNET
JEMS
MAIL (GTE TELENET)
N/A
NASAMAIL
NSFNET
NSI/DECNET
SPAN/NSI
TCP/IP
TELEMAIL
UNK

ELECTRONICS_BIAS **[PDS_EN]** **RANGE**

N/A

ELECTRONICS_ID **DYNAMIC**

ASAS
AVIR
CRS
IRS
IRTM
ISSN
ISSW
LECP
MAWD
MEA
N/A
P
PLS
PRA
PVORADCTL
PWS
RDRS
RSSELECEB
RSSELECSC
S
TIMS
VISA
VISB

ENCODING_TYPE **DYNAMIC**

CLEM-JPEG-0
CLEM-JPEG-0 DECOMPRESSED
CLEM-JPEG-1
CLEM-JPEG-1 DECOMPRESSED
CLEM-JPEG-2
CLEM-JPEG-2 DECOMPRESSED
CLEM-JPEG-3
CLEM-JPEG-3 DECOMPRESSED
DECOMPRESSED
GIF87A
GIF89A
HUFFMAN FIRST DIFFERENCE
JP2
N/A
PDF-ADOBE-1.1
PNG
PREVIOUS PIXEL
PS-ADOBE-1.0
PS-ADOBE-2.0
PS-ADOBE-3.0
RICE
RUN LENGTH
ZIP

ENCODING_TYPE_VERSION_NAME **SUGGESTED**
ISO/IEC15444-1:2004

ERROR_CONDITION **[PDS_MER_OPS]** **DEFINITION**

ERROR_MASK **[PDS_MER_OPS]** **SUGGESTED**
BOTH
CONTACT1
CONTACT2
NONE

ERROR_STATE **[PDS_MER_OPS]** **SUGGESTED**
ANOMALY_REPORT
BUSY_REV
BUSY_ROT
BUSY_Z
CONTACT_CHANGE
DCFPGA_PWR
DCFPGA_SEU
DISABLED_REV
DISABLED_ROT
ENC_DISABLED_Z
GRIN
INITIAL_CONTACT
MOT_DISABLED_Z
POS_UNKNOWN_Z
RETRACT_Z
SEEK_SCAN_FAIL
TIMEOUT_REV
TIMEOUT_ROT
TIMEOUT_Z

EVENT_NAME **DYNAMIC**
N/A
VOYAGER 1 JUPITER BOWSHOCK CROSSING
VOYAGER 1 JUPITER MAGNETOPAUSE CROSSING
VOYAGER 2 JUPITER BOWSHOCK CROSSING
VOYAGER 2 JUPITER MAGNETOPAUSE CROSSING
VOYAGER 2 JUPITER PLASMA SHEET CROSSING

EVENT_TYPE **DYNAMIC**
ALFVEN WING CROSSING
BOWSHOCK CROSSING
CLOSEST APPROACH
CURRENT SHEET CROSSING
FLUX TUBE CROSSING
INTERPLANETARY SHOCK CROSSING
L-SHELL CROSSING
MAGNETOPAUSE CROSSING
NEUTRAL SHEET CROSSING
OCCULTATION

PLASMA SHEET CROSSING

EXPECTED_MAXIMUM **[PDS_EN]** **RANGE**
N/A

EXPERTISE_AREA_TYPE **STATIC**
ASTRONOMY
COMPUTER ANALYST
COMPUTER SCIENCE
DATA ENGINEERING
ENGINEERING
GEOSCIENCE
IMAGE PROCESSING
LIBRARY SCIENCE
MANAGEMENT
N/A
OPERATIONS
SCIENCE
SOFTWARE ENGINEERING
SPACE SCIENCE
SYSTEM ENGINEERING
UNK

EXPOSURE_DURATION_COUNT **[PDS_MER_OPS]** **SUGGESTED**

EXPOSURE_OFFSET_FLAG **STATIC**
OFF
ON

EXPOSURE_SCALE_FACTOR **[PDS_MER_OPS]** **SUGGESTED**

EXPOSURE_TABLE_ID **[PDS_MER_OPS]** **SUGGESTED**
EDL
FHAZCAM_L
FHAZCAM_R
MI_CLOSED
MI_OPEN
NAVCAM_L
NAVCAM_R
NONE
PANCAM_L1
PANCAM_L2
PANCAM_L3
PANCAM_L4
PANCAM_L5
PANCAM_L6
PANCAM_L7
PANCAM_L8
PANCAM_R1
PANCAM_R2
PANCAM_R3

PANCAM_R4
PANCAM_R5
PANCAM_R6
PANCAM_R7
PANCAM_R8
RHAZCAM_L
RHAZCAM_R

EXPOSURE_TBL_UPDATE_FLAG **[PDS_MER_OPS]** **SUGGESTED**
FALSE
TRUE

EXPOSURE_TYPE **SUGGESTED**
AUTO
EXTENDED
INCREMENTAL
MANUAL
NONE
NORMAL
PRETIMED
REUSE

FACILITY_NAME **DYNAMIC**
APPLIED COHERENT TECHNOLOGY CORPORATION
APPLIED PHYSICS LAB
ATMOSPHERES NODE
BRANCH OF ASTROGEOLOGY
CENTER FOR SPACE RESEARCH
DEPARTMENT OF ASTRONOMY
DEPARTMENT OF ATMOSPHERIC SCIENCES
EARTH AND PLANETARY REMOTE SENSING LABORATORY
GEOPHYSICS AND PLANETARY PHYSICS
HERZBERG INSTITUTE OF ASTROPHYSICS
KOSMOCHEMIE
LABORATORY FOR TERRESTRIAL PHYSICS
LUNAR AND PLANETARY LABORATORY
MARS SPACE FLIGHT FACILITY
MGS RS REMOTE MISSION SUPPORT AREA
MULTIMISSION IMAGE PROCESSING SUBSYSTEM
NAVIGATION ANCILLARY INFORMATION FACILITY
PDS DATA DISTRIBUTION LABORATORY
PDS GEOSCIENCES NODE
PLANETARY DATA SYSTEM
RADIO SCIENCE SYSTEMS GROUP
SETI INSTITUTE
SPACE SCIENCE LABORATORY
TES OPERATIONS FACILITY
THE BLACKETT LABORATORY

FAST_HK_ITEM_NAME **[PDS_EN]** **SUGGESTED**
IR_RD_SHLD_TMP_2
IR_SPC_BDY_TMP_1

ME_TEMP
SPE_TEMP

FAST_HK_PICKUP_RATE **[PDS_EN]** **RANGE**
N/A

FIELD_DELIMITER **STATIC**
COMMA
SEMICOLON
TAB
VERTICAL_BAR

FIELD_NUMBER **RANGE**

FIELDS **RANGE**

FILE_STATE **[PDS_EN]** **STATIC**
CLEAN
DIRTY

FILTER_NAME **DYNAMIC**
A
B
BLUE
BLUE-GREEN
C
CLEAR
D
E
F
GREEN
IR-7270
IR-7560
IR-8890
IR-9680
L1000_R480
L440_R440
L450_R670
L670_R670
L800_R750
L860_R-DIOPTER
L885_R947
L900_R600
L925_R935
L930_R530
L935_R990
L965_R965
LONGWAVE
METHANE-JST
METHANE-U
MINUS BLUE

MI_CLOSED
MI_OPEN
N/A
NEAR-INFRARED
NONE
ORANGE
PANCAM_L2_753NM
PANCAM_L8_440NM
PANCAM_LV_602NM
PANCAM_R8_880NM
RED
SHORTWAVE
SODIUM-D
SOLAR UV-22
T11
T15
T20
T7
T9
ULTRAVIOLET
VIOLET

FILTER_NUMBER **DEFINITION**

0
1
2
3
4
5
6
7
8
A
B
C1
C2
C3
D
HFM1
LFM1
N/A

FILTER_TEMPERATURE **[PDS_EN]** **RANGE**

N/A

FILTER_TYPE **DYNAMIC**

ABSORPTION
CIRCULAR-VARIABLE INTERFERENCE
INTERFERENCE
MULTILAYER INTERFERENCE
N/A
RESTSTRAHLEN

FLAT_FIELD_CORRECTION_FLAG		**STATIC**
BACKLASH-UOFA		
FALSE		
MPFNAV-MIPS		
TELEMETRY		
TRUE		
FLAT_FIELD_CORRECTION_PARM	**[PDS_MER_OPS]**	**SUGGESTED**
FLIGHT_SOFTWARE_VERSION_ID	**[PDS_EN]**	**NONE**
N/A		
FOV_SHAPE_NAME		**DYNAMIC**
CIRCULAR		
DIPOLE		
ELLIPSOIDAL		
LINEAR		
N/A		
RECTANGULAR		
SQUARE		
UNK		
FRAME_ID		**DYNAMIC**
BOTH		
HALFL		
LEFT		
LELE1		
LELE2		
LELEM		
M2		
M3		
M4		
MELE1		
MELE2		
MONO		
REAR		
RIGHT		
FRAME_PARAMETER_DESC	**[PDS_EN]**	**DYNAMIC**
DARK_ACQUISITION_RATE		
EXPOSURE_DURATION		
EXPOSURE_TIME		
EXTERNAL_REPETITION_TIME		
FRAME_ACQUISITION_RATE		
FRAME_SUMMING		
INTERNAL_REPETITION_TIME		
FRAME_TYPE	**[PDS_MER_OPS]**	**SUGGESTED**
MONO		

STEREO

FTP_FILE_FORMAT **SUGGESTED**
COMPRESSED
GZIP
TAR
ZIP

GAIN_MODE_ID **DYNAMIC**
100K
10K
400K
40K
HIGH
LOW
N/A
UNK

GENERAL_CATALOG_FLAG **STATIC**
N
Y

GENERAL_CLASSIFICATION_TYPE **[PDS_EN]** **STATIC**
BIBLIO
DATASET
DIS
GEOMETRY
IMAGING
INSTRUMENT
MAP
METEORITE
MGN-ALTRAD
MINERAL
MISSION
PARAM
PERS
PHYSICAL
PLASMA
QUBE
RADIOMETRY
RINGS
SOFTWARE
STATISTICAL
STRUCTURE
SYSTEM
TARGET
TIME

GENERAL_DATA_TYPE **STATIC**
ALPHABET
ALPHANUMERIC

ASCII_INTEGER
BIBLIO
CHARACTER
CONTEXT DEPENDENT
CONTEXT_DEPENDENT
DATA_SET
DATE
DECIMAL
DOUBLE
EXPONENTIAL
IDENTIFIER
INTEGER
NON DECIMAL
NON_DECIMAL
REAL
TIME

GEOMETRY_PROJECTION_TYPE **[PDS_MER_OPS]** **SUGGESTED**
LINEARIZED
RAW

GROUP_APPLICABILITY_FLAG **[PDS_MER_OPS]** **SUGGESTED**
FALSE
TRUE

GROUP_ID **[PDS_MER_OPS]** **SUGGESTED**

HARDWARE_MODEL_ID **SUGGESTED**
MACINTOSH
MACINTOSH_II
PC
SUN_3
SUN_4
SUN_SPARC_STATION
TDDS
VAX_11/750
VAX_11/780

HEADER_TYPE **DYNAMIC**
BDV
ENVI
FITS
GSFC_ODL
IGPP_FFH
SPREADSHEET
TEXT
VICAR
VICAR2

HI_VOLTAGE_POWER_SUPPLY_STATE **STATIC**
OFF

ON

HOUSEKEEPING_CLOCK_COUNT **[PDS_EN]** **RANGE**
N/A

ICT_ZIGZAG_PATTERN **[PDS_IMG_GLL]** **DYNAMIC**
ALT
ZIGZAG

IMAGE_MID_TIME **[PDS_EN]** **FORMATION**
N/A

IMAGE_OBSERVATION_TYPE **DYNAMIC**
BLACK_SKY
DARK_CURRENT
DARK_STRIP
FLAT_FIELD
HISTOGRAM
LIMB
NULL_STRIP
REGULAR
SUMMATION

IMAGE_TYPE **[PDS_MER_OPS]** **SUGGESTED**
COL_SUM
HISTOGRAM
REF_PIXELS
REGULAR
ROW_SUM
THUMBNAIL

INDEX_TYPE **[PDS_EN]** **STATIC**
CUMULATIVE
SINGLE

INST_AZ_ROTATION_DIRECTION **SUGGESTED**
CCW
CW

INST_CMPRS_FILTER **[PDS_MER_OPS]** **SUGGESTED**
A
B
C
D
E
F
Q

INST_CMPRS_QUANTZ_TYPE **DYNAMIC**

TABULAR

INST_CMPRS_SEG_FIRST_LINE	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_SEG_FIRST_LINE_SAMP	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_SEG_LINES	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_SEG_SAMPLES	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_SEGMENT_STATUS	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_SEGMENTS	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_STAGES	**[PDS_MER_OPS]**	**SUGGESTED**
INST_CMPRS_TYPE	**[PDS_EN]**	**SUGGESTED**

LOSSLESS
LOSSY
NOTCOMP

INST_GAIN_STATE	**[PDS_MER_OPS]**	**DEFINITION**
INST_LASER_1_STATUS_FLAG	**[PDS_MER_OPS]**	**DEFINITION**
INST_LASER_2_STATUS_FLAG	**[PDS_MER_OPS]**	**DEFINITION**
INST_LASER_HEATER_STATUS_FLAG	**[PDS_MER_OPS]**	**DEFINITION**
INST_LINEAR_MOTOR_STATUS_FLAG	**[PDS_MER_OPS]**	**DEFINITION**
INST_OPTICAL_SWITCH_STATE	**[PDS_MER_OPS]**	**DEFINITION**
INST_SPARE_BIT_FLAG	**[PDS_MER_OPS]**	**DEFINITION**
INSTITUTION_NAME		**DYNAMIC**

APPLIED COHERENT TECHNOLOGY
ARIZONA STATE UNIVERSITY
AT&T BELL LABORATORIES
BOSTON UNIVERSITY
BROWN UNIVERSITY
CALIFORNIA INSTITUTE OF TECHNOLOGY
CORNELL UNIVERSITY
DECEASED
DENISON UNIVERSITY
GEORGIA INSTITUTE OF TECHNOLOGY

HERZBERG INSTITUTE OF ASTROPHYSICS
HONEYBEE ROBOTICS
IMPERIAL COLLEGE
INSTITUTE FOR ASTRONOMY
ISTITUTO NAZIONALE DI ASTROFISICA
JET PROPULSION LABORATORY
JOHNS HOPKINS UNIVERSITY
JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
KITT PEAK NATIONAL OBSERVATORY
KONKOLY OBSERVATORY OF THE HUNGARIAN ACADEMY OF SCIENCE
LOS ALAMOS NATIONAL LABORATORY
LUNAR AND PLANETARY INSTITUTE
MALIN SPACE SCIENCE SYSTEMS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
MAX PLANCK INSTITUTE
MAX-PLANCK-INSTITUT FUR AERONOMIE
N/A
NASA HEADQUARTERS
NASA/AMES RESEARCH CENTER
NASA/GODDARD INSTITUTE FOR SPACE STUDIES
NASA/GODDARD SPACE FLIGHT CENTER
NASA/JOHNSON SPACE CENTER
NATIONAL AERONAUTICS SPACE MUSEUM
NATIONAL SPACE SCIENCE DATA CENTER
NEW MEXICO STATE UNIVERSITY
NORTHWESTERN UNIVERSITY
PLANETARY SCIENCE INSTITUTE
RADIOPHYSICS INCORPORATED
RUSSIAN INSTITUTE OF SPACE RESEARCH
SAN JOSE STATE UNIVERSITY
SCIENCE APPLICATIONS INTERNATIONAL CORP
SETI INSTITUTE
SMITHSONIAN ASTROPHYSICAL OBSERVATORY
SMITHSONIAN INSTITUTE OF TECHNOLOGY
SOUTHWEST RESEARCH INSTITUTE
STANFORD UNIVERSITY
STERLING CORPORATION
TEXAS A & M UNIVERSITY
UNITED STATES GEOLOGICAL SURVEY
UNIVERSITA DEGLI STUDI DI PAVIA
UNIVERSITA’ DI ROMA LA SAPIENZA
UNIVERSITAT BONN
UNIVERSITAT KIEL
UNIVERSITY OF ARIZONA
UNIVERSITY OF CALIFORNIA, BERKELEY
UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNIVERSITY OF CHICAGO
UNIVERSITY OF COLORADO
UNIVERSITY OF FLORIDA
UNIVERSITY OF HAWAII
UNIVERSITY OF IOWA
UNIVERSITY OF KANSAS
UNIVERSITY OF MAINZ
UNIVERSITY OF MARYLAND

UNIVERSITY OF NEW MEXICO
UNIVERSITY OF VIRGINIA
UNIVERSITY OF WASHINGTON
UNIVERSITY OF WISCONSIN
UNK
WASHINGTON UNIVERSITY
WELLESLEY COLLEGE

INSTRUMENT_AZIMUTH **[PDS_MER_OPS]** **SUGGESTED**

INSTRUMENT_AZIMUTH_METHOD **SUGGESTED**

BACKLASH-UOFA
MPFNAV-MIPS
TELEMETRY

INSTRUMENT_BORESIGHT_ID **[PDS_MER_OPS]** **SUGGESTED**

CAMERA_BAR
LEFT_NAVCAM
LEFT_PANCAM
MINI_TES
RIGHT_NAVCAM
RIGHT_PANCAM

INSTRUMENT_COORDINATE **[PDS_MER_OPS]** **SUGGESTED**

INSTRUMENT_COORDINATE_ID **[PDS_MER_OPS]** **SUGGESTED**

IVP OBJECT
LL 3DPNT
LL AZEL
MAST AZEL
MAST RELATIVE AZEL
NONE
RVR BODY 3DPNT
RVR BODY AZEL
SITE 3DPNT

INSTRUMENT_COORDINATE_NAME **[PDS_MER_OPS]** **DEFINITION**

INSTRUMENT_DATA_RATE **[PDS_EN]** **SUGGESTED**

-999
121.9
182.8
243.7
365.6
60.9

INSTRUMENT_DEPLOYMENT_STATE **SUGGESTED**

DEPLOYED
STOWED

INSTRUMENT_ELEVATION **[PDS_MER_OPS]** **SUGGESTED**

INSTRUMENT_ELEVATION_METHOD **SUGGESTED**

INSTRUMENT_HOST_ID **STATIC**

24COL
AAO
AMON
ARCB
ASTR
AUSTC14
BUGLAB
C130
C154
CLEM1
CO
CTIO
CTIO15
CTIO15M
CTIOPPT
DIF
DII
DS1
ECAS
ER-2
ESO
ESO1M
ESO22M
FEXP
GDSCC
GEMGB
GIO
GO
GP
GSR
GSSR
HP
HST
HSTK
ICE
IRAS
IRSN
IRTF
IUE
KECK1
KP36
KP50
KP84
LICK1M
LO72
LOWELL
LP
LRO

LSPN
M10
MCD21
MCD27
MCD27M
MDM
MER1
MER2
MESS
MEX
MGN
MGS
MK88
MKO
MKOPPT
MKOUH22M
MO
MODEL
MPFL
MPFR
MR6
MR7
MR9
MRO
MSN
MSSSO
MSX
MTBG61
MTSC14
N/A
NDC8
NEAR
NH
NNSN
NRAO
O325T1
O325T2
O376T1
O376T3
O413T2
OAO
OBS007T1
OBS055T3
OBS055T4
OBS055T6
OBS056T2
OBS056T3
OBS056T6
OBS211T1
OBS211T2
OBS240T1
OBS320T13
OBS321T3
OBS325T1

OBS325T2
OBS327T1
OBS376T1
OBS376T3
OBS378T2
OBS413T2
ODY
P10
P11
P12
PAL
PAL200
PEDB
PGD
PPN
PUBLIT
PVO
REUNIC14
RSN
S229
SAKIG
SDU
SPEC
SUISEI
TRRLAB
UH
ULY
UNK
VARGBTEL
VEGA1
VEGA2
VG1
VG2
VL1
VL2
VO1
VO2
VTH
WFF
WHT

INSTRUMENT_HOST_NAME **STATIC**

2001 MARS ODYSSEY
24-COLOR SURVEY
AMES MARS GENERAL CIRCULATION MODEL
APACHE POINT OBSERVATORY 2.5-M SDSS RITCHEY-CHRETIEN ALTAZIMUTH REFLECTOR
APACHE PT OBS. 2.5M SDSS RITCHEY-CHRETIEN ALTAZIMUTH REFL
ARECIBO OBSERVATORY
ARECIBO OBSERVATORY 305-M FIXED SPHERICAL REFLECTING ANTENNA
BLOOMSBURG UNIVERSITY GONIOMETER LABORATORY
CASSINI ORBITER
CERRO TOLOLO INTER-AMERICAN OBSERVATORY 1-M BOLLER & CHIVENS

RITCHEY-CHRETIEN REFLECTOR
CERRO TOLOLO INTER-AMERICAN OBSERVATORY 1.5 METER
CERRO TOLOLO INTER-AMERICAN OBSERVATORY 1.5-M RITCHEY-CHRETIEN CASSEGRAIN REFLECTOR
CERRO TOLOLO INTER-AMERICAN OBSERVATORY 2MASS 1.3M TELESCOPE
CERRO TOLOLO INTERAMERICAN OBSERVATORY
CLEMENTINE 1
CTIO 1.5M TELESCOPE
CTIO PLANETARY PATROL TELESCOPE
DEEP IMPACT FLYBY SPACECRAFT
DEEP IMPACT IMPACTOR SPACECRAFT
DEEP SPACE 1
EIGHT COLOR ASTEROID SURVEY
EL LEONCITO ASTRONOMICAL COMPLEX 2.15-M BOLLER & CHIVENS REFLECTOR
EUROPEAN SOUTHERN OBSERVATORY
EUROPEAN SOUTHERN OBSERVATORY 1-M PHOTOMETRIC CASSEGRAIN REFLECTOR
EUROPEAN SOUTHERN OBSERVATORY 1-M TELESCOPE
EUROPEAN SOUTHERN OBSERVATORY 1.52-M SPECTROGRAPHIC CASSEGRAIN/COUDE REFLECTOR
EUROPEAN SOUTHERN OBSERVATORY 2.2-M TELESCOPE
EUROPEAN SOUTHERN OBSERVATORY 3.6-M EQUATORIAL CASSEGRAIN/COUDE REFLECTOR
FIELD EXPERIMENT
FRED L. WHIPPLE OBSERVATORY 2MASS 1.3M TELESCOPE
GALILEO ORBITER
GALILEO PROBE
GEM GROUND-BASED OBSERVATORIES: CALAR ALTO AND ESO
GIOTTO
GOLDSTONE DEEP SPACE COMMUNICATIONS COMPLEX
GOLDSTONE SOLAR SYSTEM RADAR
HAYSTACK OBSERVATORY
HUBBLE SPACE TELESCOPE
HUYGENS PROBE
ICE
IHW AMATEUR OBSERVATIONS NETWORK
IHW ASTROMETRY NETWORK
IHW INFRARED STUDIES NETWORK
IHW LARGE-SCALE PHENOMENA NETWORK
IHW METEOR STUDIES NETWORK
IHW NEAR-NUCLEUS STUDIES NETWORK
IHW PHOTOMETRY AND POLARIMETRY NETWORK
IHW RADIO STUDIES NETWORK
IHW SPECTROSCOPY AND SPECTROPHOTOMETRY NETWORK
INFRARED ASTRONOMICAL SATELLITE
INFRARED TELESCOPE FACILITY
INTERNATIONAL ULTRAVIOLET EXPLORER
ISAAC NEWTON GROUP 4.2-M WILLIAM HERSCHEL TELESCOPE
KECK I 10M TELESCOPE
KITT PEAK NATIONAL OBSERVATORY 2.13-M CORNING CASSEGRAIN/COUDE REFLECTOR
KITT PEAK NATIONAL OBSERVATORY 36 INCH (0.914M) TELESCOPE
KITT PEAK NATIONAL OBSERVATORY 50 INCH (1.27M) TELESCOPE

KITT PEAK NATIONAL OBSERVATORY 84 INCH (2.13M) TELESCOPE
LICK OBSERVATORY ANNA L. NICKEL 1-METER TELESCOPE
LOWELL OBSERVATORY
LOWELL OBSERVATORY 72 INCH (1.83M) TELESCOPE
LUNAR PROSPECTOR
LUNAR RECONNAISSANCE ORBITER
MAGELLAN
MARINER 10
MARINER 6
MARINER 7
MARINER 9
MARS EXPLORATION ROVER 1
MARS EXPLORATION ROVER 2
MARS EXPRESS
MARS GLOBAL SURVEYOR
MARS OBSERVER
MARS PATHFINDER LANDER
MARS RECONNAISSANCE ORBITER
MAUNA KEA OBSERVATORY
MAUNA KEA OBSERVATORY 2.24-M CASSEGRAIN/COUDE REFLECTOR
MAUNA KEA OBSERVATORY 3.2-M INFRARED CASS. REFLECTOR (IRTF)
MAUNA KEA OBSERVATORY 3.2-M NASA INFRARED CASSEGRAIN EQUAT. REFLECTOR (IRTF)
MAUNA KEA OBSERVATORY 88 INCH (2.24M) TELESCOPE
MAUNA KEA OBSERVATORY PLANETARY PATROL TELESCOPE
MCDONALD OBSERVATORY 2.1-M STRUVE WARNER & SWASEY REFLECTOR
MCDONALD OBSERVATORY 2.1M TELESCOPE
MCDONALD OBSERVATORY 2.7-M HARLAN J. SMITH TELESCOPE
MCDONALD OBSERVATORY 2.7M HARLAN J. SMITH TELESCOPE
MCDONALD OBSERVATORY 2.7M TELESCOPE
MCGRAW-HILL 1.3M TINSLEY CASSEGRAIN/COUDE REFLECTOR
MCGRAW-HILL 2.4M HILTNER RITCHEY-CHRETIEN EQUATRL REFLCTR
MESSENGER
MICHIGAN-DARTMOUTH-MIT OBSERVATORY
MICROROVER FLIGHT EXPERIMENT
MIDCOURSE SPACE EXPERIMENT
MOUNT BIGELOW (CATALINA) STATION 1.54-M CASSEGRAIN/COUDE REFLECTOR
MOUNT BIGELOW 61 INCH (1.54M) TELESCOPE
MOUNT STROMLO SIDING SPRING OBSERVATORY
MT. SINGLETON C14 PORTABLE TELESCOPE
N/A
NASA C-130 AIRCRAFT
NASA DC-8 AIRCRAFT
NASA ER-2 AIRCRAFT
NASA GODDARD SPACE FLIGHT CENTER WALLOPS FLIGHT FACILITY
NASA INFRARED TELESCOPE FACILITY
NATIONAL ASTRONOMICAL OBSERVATORY-ENSENADA 1.5 M
NATIONAL RADIO ASTRONOMY OBSERVATORY
NEAR EARTH ASTEROID RENDEZVOUS
NEW HORIZONS
NULL
OKAYAMA ASTROPHYSICAL OBSERVATORY
PALOMAR OBSERVATORY

PALOMAR OBSERVATORY 200-IN HALE TELESCOPE
PIONEER
PIONEER 10
PIONEER 11
PIONEER VENUS ORBITER
PLANETARY GEOSCIENCES DIVISION SPECTROSCOPY LAB
PROPER ELEMENTS DATABASE OF MILANI AND KNEZEVIC
PUBLISHED LITERATURE
QUEENSLAND AUSTRALIA PORTABLE C-14
REUNION ISLAND PORTABLE C-14
SAKIGAKE
SL9 EARTH-BASED OBSERVATORIES
STARDUST
SUISEI
TERRESTRIAL LABORATORY
ULYSSES
UNIVERSITY OF ARIZONA 1.54M CATALINA REFLECTOR
UNIVERSITY OF ARIZONA 2.29M STEWARD OBSERVATORY REFLECTOR
UNIVERSITY OF HAWAII
UNIVERSITY OF HAWAII 2.2-METER TELESCOPE
UNKNOWN
USGS RESTON SPECTROSCOPY LABORATORY
VARIOUS GROUND-BASED TELESCOPES
VARIOUS TELESCOPE HOSTS
VEGA 1
VEGA 2
VIKING LANDER 1
VIKING LANDER 2
VIKING ORBITER 1
VIKING ORBITER 2
VOYAGER 1
VOYAGER 2
W.M. KECK OBSERVATORY 10-M KECK I RITCHEY-CHRETIEN ALTAZIMUTH REFLECTOR
W.M. KECK OBSERVATORY 10-M KECK II RITCHEY-CHRETIEN ALTAZIMUTH REFLECTOR

INSTRUMENT_HOST_TYPE **STATIC**

DATA BASE
EARTH BASED
N/A
ROVER
SPACECRAFT
UNK

INSTRUMENT_ID **DYNAMIC**

120CVF
2CP
8CPS
A-STAR
ACCEL
ACP
ALICE

AMES-GCM
AMPG
AMSP
AMVIS
API
APPH
APS
APXS
ASAR
ASAS
ASI
ASIMET
ASPERA-3
ASTR
ATM
AVIR
AWND
B&C
B-STAR
BUG
CAM1
CAM2
CAPS
CASPIR
CCD
CCDC
CCDIMGR
CDA
CFCCD
CIDA
CIRC
CIRS
COM
COMPIL
COSPIN-AT
COSPIN-HET
COSPIN-HFT
COSPIN-KET
COSPIN-LET
CPI
CRAT
CRISM
CRS
CRT
CS2
CTIOCCD
CTX
CVF
DAED
DBP
DDS
DERIV
DESCAM
DFMI

DID
DISR
DK2A
DLRE
DSS14
DUCMA
DWE
DYNSCI
EMMI
ENG
EPA
EPAC
EPAS
EPD
EPI
EPPS
ER
ES2
ESOCCD
ESP
EUV
FC1B
FC2A
FC3A
FGM
FPA
FRONT_HAZCAM_LEFT
FTS
GAS
GBT
GCMS
GDDS
GPMS
GPSM
GRB
GRE
GRS
GTT
GWE
HAD
HASI
HAZCAM
HIC
HIRES
HIRISE
HISCALE
HMC
HRD
HRII
HRIV
HRSC
HSCCD
HSOTP
HSTACS

HSTP
HUYGENS_HK
HVM
I0028
I0034
I0035
I0039
I0046
I0051
I0052
I0054
I0055
I0059
I0060
I0061
I0062
I0065
I0066
I0069
I0070
I0071
I0276
I0287
ICI
IDS
IGI
IIRAR
IKS
IMF
IMP
IMS
IMU
INMS
INSBPHOT
IPP
IRFCURV
IRFTAB
IRIMAG
IRIS
IRPHOT
IRPOL
IRR
IRS
IRSPEC
IRTM
ISIS
ISS
ISSN
ISSNA
ISSW
ISSWA
ITS
JPA
KECK1LWS

LAMP
LCS
LECP
LEISA
LEND
LFTS
LIDAR
LO72CCD
LORRI
LPLCCD
LR1
LR2
LRD
LSPN
LWIR
LWP
LWR
M3SPEC
MAG
MAGER
MAR
MARCI
MARSIS
MASCS
MAWD
MB
MCDIDS
MCS
MDIS-NAC
MDIS-WAC
MET
MI
MICAS
MIMI
MINI-TES
MISCHA
MLA
MOC
MOLA
MRFLRO
MRI
MRS
MSI
MSNRDR
MSNVIS
MTES
MVIC
N/A
NAVCAM
NEP
NFR
NIMS
NIR
NIS

NLR
NMS
NNSN
NS
NSFCAM
OASIS
OEFD
OETP
OIMS
OMAG
OMEGA
ONMS
OPE
ORAD
ORPA
ORSE
OUVS
PA
PANCAM
PARB
PEPE
PEPSSI
PFES
PHOT
PIA
PLAWAV
PLS
PM1
POS
PPFLX
PPMAG
PPOL
PPR
PPS
PPSTOKE
PRA
PUMA
PWS
RADAR
RADR
RADWAV
RAT
RCAC31034A
RCLT
RCRR
RCRT
RDRS
REAG
RMTR
RPWS
RSCN
RSOC
RSOH
RSRDR

RSS
RSS-VG1S
RSS-VG2S
RSS-VG2U
RSSL
RSUV
RTLS
RVRC
SCE
SDC
SEIS
SHARAD
SHYG
SIRS
SOW
SP1
SP2
SPEC
SPICAM
SPICE
SPIRIT3
SPK
SQIID
SRC
SSD
SSI
SUSI
SWAP
SWICS
SWOOPS
SWP
TEL
TES
THEMIS
THRM
TIMS
TNM
TRD
TVS
UDDS
UHCCD
ULECA
UNK
URAC
URAP
UV
UVIS
UVS
UVVIS
VARGBDET
VHM/FGM
VIMS
VIS
VISA

VISB
WFPC2
WINDSOCK
WTHS
XGR
XRFS
XRS

INSTRUMENT_MANUFACTURER_NAME **DYNAMIC**

DAEDALUS ENTERPRISES, INC.
GEOPHYSICAL AND ENVIRONMENTAL RESEARCH INC.
HUGHES AIRCRAFT
JET PROPULSION LABORATORY
JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
JPL
MARTIN MARIETTA
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
METEOROLOGICAL RESEARCH INC.
N/A
RAYTEK INCORPORATED
SANTA BARBARA RESEARCH CENTER
SPACETAC
THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
THE UNIVERSITY OF IOWA
TRW/GE/NASA
UNIVERSITY OF CALIFORNIA, BERKELEY
UNIVERSITY OF IOWA
UNK

INSTRUMENT_MODE_ID **DYNAMIC**

...
..D
.G.
.GD
4X1SUMMATION_FRAME
ALTIMETRY
CONTIGUOUS_READOUT
CRUISE
E1-LONG
E1-SHORT
E2-LONG
E2-SHORT
ENCOUNTER
FAR_ENCOUNTER
FAR_ENCOUNTER_STOW
FIXED_PLANET
FIXED_REFERENCE
FIXED_SPACE
FIXLOH
FIXLOL
FULL_FRAME
GS3GAINHI/WFMPWRON
HAA

HARAD
HARAD1
IM1
IM10
IM11
IM12
IM13
IM14
IM15
IM2
IM26
IM2A
IM2C
IM2W
IM3
IM4
IM5
IM6
IM7
IM8
IM9
IMK
IMO
IMQ
L-LONG
L-SHORT
L..
L.D
LEVEL
LEVEL1
LEVEL2
LEVEL3
LG.
LGD
M-LONG
M-SHORT
MODIFIED_NORMAL
N/A
NEAR_ENCOUNTER
NORMAL
OC3
OPERATING
PB8
POLHIH
POLHIL
POLLO
POLLO1
RADIOMETRY
SAR
SS05
SS07
SS18
SS19
URANUS_SCAN_CYCLIC

VLOBRH
VLOBRL
WAVELENGTH_SCANNING
WINDOWED_FRAME
XXXXXH
XXXXXL

INSTRUMENT_NAME **DYNAMIC**

120-COLOR CIRCULAR-VARIABLE-FILTER (CVF) PHOTOMETER
2 CHANNEL PHOTOMETER
2MASS CAMERA - NORTH
2MASS CAMERA - SOUTH
8 COLOR PHOTOMETRIC SYSTEM
A STAR TRACKER CAMERA
ACCELEROMETER
ADV. SOLID-STATE ARRAY SPECTRORADIOMETER
ADVANCE CAMERA FOR SURVEYS
AEROSOL COLLECTOR PYROLYSER
AIRBORNE VISIBLE/IR IMAGING SPECTROMETER
AIRSAR
ALICE UV IMAGER
ALPHA PARTICLE SPECTROMETER
ALPHA PARTICLE X-RAY SPECTROMETER
ALPHA PROTON X-RAY SPECTROMETER
AMATEUR PHOTOGRAPHY
AMATEUR SPECTROGRAPHS
AMATEUR VISUAL OBSERVATIONS
ANALYZER OF SPACE PLASMA AND ENERGETIC ATOMS (3RD VERSION)
APERTURE PHOTOMETER
ARECIBO RADAR DATA
ATMOSPHERIC STRUCTURE INSTRUMENT
ATMOSPHERIC STRUCTURE INSTRUMENT / METEOROLOGY PACKAGE
AUXILIARY PORT IMAGER
B STAR TRACKER CAMERA
BECKMAN DK2A RATIO RECORDING SPECTROREFLECTOMETER
BLOOMSBURG UNIVERSITY GONIOMETER
BOLLER & CHIVENS SPECTROGRAPH
CAMERA 1
CAMERA 2
CASSEGRAIN FOCUS DIRECT IMAGE CCD CAMERA
CASSEGRAIN IR CAMERA
CASSEGRAIN SPECTROMETER
CASSINI PLASMA SPECTROMETER
CCD IMAGER
CFIM+T2KA
CHARGED PARTICLE INSTRUMENT
CIRCULARLY VARIABLE FILTER
COMETARY AND INTERSTELLAR DUST ANALYZER
COMMUNICATION SYSTEM
COMPACT RECONNAISSANCE IMAGING SPECTROMETER FOR MARS
COMPILATION
COMPOSITE INFRARED SPECTROMETER
CONTEXT CAMERA

COSMIC DUST ANALYZER
COSMIC RAY SUBSYSTEM
COSMIC RAY SYSTEM
COSMIC RAY TELESCOPE
COSMIC RAY TELESCOPE FOR THE EFFECTS OF RADIATION
COSPIN-ANISOTROPY TELESCOPE
COSPIN-HIGH ENERGY TELESCOPE
COSPIN-HIGH FLUX TELESCOPE
COSPIN-KIEL ELECTRON TELESCOPE
COSPIN-LOW ENERGY TELESCOPE
CROSS-DISPERSED ECHELLE SPECTROMETER
CRS
CRYOGENIC ARRAY SPECTROMETER/IMAGER
CTIO 1.0M 2DFRUTTI SPECTROGRAPH
CTIO 1.5-METER CASSEGRAIN SPECTROGRAPH
CTIO CCD SYSTEM
DAEDALUS SPECTROMETER
DEEP IMPACT HIGH RESOLUTION INSTRUMENT - IR SPECTROMETER
DEEP IMPACT HIGH RESOLUTION INSTRUMENT - VISIBLE CCD
DEEP IMPACT IMPACTOR TARGETING SENSOR - VISIBLE CCD
DEEP IMPACT MEDIUM RESOLUTION INSTRUMENT - VISIBLE CCD
DENIS 3-CHANNEL NEAR-INFRARED CAMERA
DERIVATION
DESCENT CAMERA
DESCENT IMAGER SPECTRAL RADIOMETER
DIVINER LUNAR RADIOMETER EXPERIMENT
DOPPLER WIND EXPERIMENT
DUAL BEAM PHOTOMETER
DUAL TECHNIQUE MAGNETOMETER
DUST DETECTION INSTRUMENT
DUST FLUX MONITOR INSTRUMENT
DUST IMPACT DETECTOR
DUST IMPACT MASS ANALYZER
DUST IMPACT PLASMA DETECTOR
DUST PARTICLE COUNTER AND MASS ANALYZER
DUST PARTICLE DETECTOR
DYNAMIC SCIENCE EXPERIMENT
ELECTRON REFLECTOMETER
ELECTRON TEMPERATURE PROBE
ENERGETIC PARTICLE AND PLASMA SPECTROMETER
ENERGETIC PARTICLE ANISOTROPY SPECTROMETER
ENERGETIC PARTICLE COMPOSITION INSTRUMENT
ENERGETIC PARTICLE EXPERIMENT
ENERGETIC PARTICLES DETECTOR
ENERGETIC PARTICLES INVESTIGATION
ESO BOLLER AND CHIVENS SPECTROGRAPH
ESO CCD SYSTEM
ESO MULTIMODE INSTRUMENT
EXTREME ULTRAVIOLET SPECTROMETER
FIELD PORTABLE ANEMOMETER MASTS
FINK SPECTROGRAPH
FLUXGATE MAGNETOMETER
FOCAL PLANE ARRAY
FRONT HAZARD AVOIDANCE CAMERA LEFT

GALILEO DUST DETECTION SYSTEM
GALILEO ORBITER STAR SCANNER
GALILEO PROBE MASS SPECTROMETER
GALILEO PROBE NEPHELOMETER
GAMMA RAY SPECTROMETER
GAMMA RAY SPECTROMETER / HIGH ENERGY NEUTRON DETECTOR
GAMMA RAY/NEUTRON SPECTROMETER/HIGH ENERGY NEUTRON DETECTOR
GAS CHROMATOGRAPH MASS SPECTROMETER
GAS INSTRUMENT
GEIGER TUBE TELESCOPE
GIOTTO RADIOSCIENCE EXPERIMENT
GOLDSTONE DEEP SPACE NETWORK ANTENNA DSS-14
GPS MICROTERRAIN
GRAVITATIONAL WAVE EXPERIMENT
GROUND-BASED CCDS
HALLEY MULTICOLOUR CAMERA
HASSELBLAD 70MM STEREO CAMERA SYSTEM
HAZARD AVOIDANCE CAMERA
HEAVY ION COUNTER
HELIOSPHERIC INST-SPECTRA,COMPOSITION,ANISOTROPY AT LOW ENER
HELIUM ABUNDANCE DETECTOR
HELIUM ABUNDANCE INTERFEROMETER
HELIUM VECTOR MAGNETOMETER
HIGH RATE DETECTOR
HIGH RESOLUTION IMAGING SCIENCE EXPERIMENT
HIGH RESOLUTION STEREO CAMERA
HIGH SPEED OCCULTATION TIMING PHOTOMETER
HUBBLE SPACE TELESCOPE
HUYGENS ATMOSPHERIC STRUCTURE INSTRUMENT
HUYGENS PROBE HOUSEKEEPING
IHW ASTROMETRY NETWORK
IHW INFRARED IMAGING DATA
IHW INFRARED PHOTOMETRY DATA
IHW INFRARED POLARIMETRY DATA
IHW INFRARED SPECTROSCOPY DATA
IHW LARGE-SCALE PHENOMENA NETWORK
IHW NEAR-NUCLEUS STUDIES NETWORK
IHW SPECTROSCOPY AND SPECTROPHOTOMETRY
IMAGER FOR MARS PATHFINDER
IMAGING GRISM INSTRUMENT
IMAGING PHOTOPOLARIMETER
IMAGING SCIENCE SUBSYSTEM
IMAGING SCIENCE SUBSYSTEM - NARROW ANGLE
IMAGING SCIENCE SUBSYSTEM - WIDE ANGLE
INERTIAL MEASUREMENT UNIT
INFRARED FILTER REFERENCE CURVES
INFRARED FILTER REFERENCE TABLES
INFRARED INTERFEROMETER SPECTROMETER
INFRARED INTERFEROMETER SPECTROMETER AND RADIOMETER
INFRARED RADIOMETER
INFRARED SPECTROMETER
INFRARED THERMAL MAPPER
INSB INFRARED ARRAY
INSB PHOTOMETER AT IRTF

INTENSIFIED DISSECTOR SCANNER
INTERMEDIATE DISPERSION SPECTROGRAPH AND IMAGING SYSTEM
INTERPLANETARY MAGNETIC FIELD EXPERIMENT
ION AND NEUTRAL MASS SPECTROMETER
ION COMPOSITION INSTRUMENT
ION MASS SPECTROMETER
ION PROPULSION SYSTEM DIAGNOSTIC SUBSYSTEM
IRIS
JOHNSTONE PLASMA ANALYZER (JPA)
JPL MID-INFRARED LARGE-WELL IMAGER
KECK ECHELLE SPECTROGRAPH AND IMAGER
KECK I LONG WAVELENGTH SPECTROGRAPH (IR)
LA RUCA SITE 1K IMAGER
LABELED RELEASE
LARGE CASSEGRAIN SPECTROGRAPH
LARGE CASSEGRAIN SPECTROMETER
LARSON FOURIER TRANSFORM SPECTROMETER
LARSON IHW SPECTROGRAPH
LASER RANGEFINDER
LIDAR HIGH-RESOLUTION IMAGER
LIGHTNING AND RADIO EMISSION DETECTOR
LINEAR ETALON IMAGING SPECTRAL ARRAY
LONG RANGE RECONNAISSANCE IMAGER
LONG WAVELENGTH INFRARED CAMERA
LONG-WAVELENGTH PRIME
LONG-WAVELENGTH REDUNDANT
LOW ENERGY CHARGED PARTICLE
LOWELL 72IN VISUAL CCD CAMERA
LOWELL HIGH SPEED CCD SYSTEM
LP ENGINEERING
LPL VISUAL CCD CAMERA
LUNAR EXPLORATION NEUTRON DETECTOR
LYMAN ALPHA MAPPING PROJECT
MAGNETOMETER
MAGNETOMETER - ELECTRON REFLECTOMETER
MAGNETOSPHERIC IMAGING INSTRUMENT
MARK III SPECTROGRAPH
MARS ADVANCED RADAR FOR SUBSURFACE AND IONOSPHERE SOUNDING
MARS ATMOSPHERIC WATER DETECTOR
MARS CLIMATE SOUNDER
MARS COLOR IMAGER
MARS EXPRESS ORBITER RADIO SCIENCE
MARS ORBITER CAMERA
MARS ORBITER LASER ALTIMETER
MARS PATHFINDER IMP WINDSOCKS
MARS RADIATION ENVIRONMENT EXPERIMENT
MCDONALD INTENSIFIED DISSECTOR SCANNER
MER1 ENGINEERING
MER2 ENGINEERING
MERCURY ATMOSPHERIC AND SURFACE COMPOSITION SPECTROMETER
MERCURY DUAL IMAGING SYSTEM NARROW ANGLE CAMERA
MERCURY DUAL IMAGING SYSTEM WIDE ANGLE CAMERA
MERCURY LASER ALTIMETER
METEOR COUNTS - RADAR

METEOR COUNTS - VISUAL
METEOROLOGY
MICROSCOPIC IMAGER
MINI-RF LRO
MINIATURE INTEGRATED CAMERA-SPECTROMETER
MINIATURE THERMAL EMISSION SPECTROMETER
MIRSI - MID-INFRARED SPECTROMETER AND IMAGER
MOESSBAUER SPECTROMETER
MULTI-SPECTRAL IMAGER
MULTISPECTRAL VISIBLE IMAGING CAMERA
N/A
NAVIGATION CAMERA
NEAR INFRARED CAMERA
NEAR INFRARED MAPPING SPECTROMETER
NEAR INFRARED SPECTROMETER
NEAR LASER RANGEFINDER
NEPHELOMETER ENERGETIC PARTICLES INSTRUMENT
NET FLUX RADIOMETER
NEUTRAL MASS SPECTROMETER
NEUTRON SPECTROMETER
NSF CAMERA
OBSERVATOIRE MINERALOGIE, EAU, GLACES, ACTIVITE
OKAYAMA ASTROPHYSICAL SYSTEM - IR IMAGING & SPECTROSCOPY
OPTICAL PROBE EXPERIMENT
ORBITER NEUTRAL MASS SPECTROMETER
ORBITER RADIO SCIENCE EXPERIMENT
ORBITER RETARDING POTENTIAL ANALYZER
ORBITING RADAR
PANORAMIC CAMERA
PARABOLA
PARTICULATE IMPACT ANALYZER
PHOTOMETER
PHOTOMETRIC FLUX DATA
PHOTOMETRIC MAGNITUDE DATA
PHOTOPOLARIMETER RADIOMETER
PHOTOPOLARIMETER SUBSYSTEM
PIONEER VENUS ORBITER ULTRAVIOLET SPECTROMETER
PLANETARY RADIO ASTRONOMY RECEIVER
PLASMA ENERGY ANALYZER
PLASMA EXPERIMENT FOR PLANETARY EXPLORATION
PLASMA INSTRUMENT
PLASMA SCIENCE EXPERIMENT
PLASMA WAVE ANALYZER
PLASMA WAVE EXPERIMENT
PLASMA WAVE INSTRUMENT
PLASMA WAVE RECEIVER
PLUTO ENERGETIC PARTICLE SPECTROMETER SCIENCE INVESTIGATION
POLARIMETRY DATA
PORTABLE FIELD EMISSION SPECTROMETER
PRIMO I PHOTOMETER
PVO ORBITER ION MASS SPECTROMETER
QUADRISPHERICAL PLASMA ANALYZER
RADAR
RADAR SYSTEM

RADIO AND PLASMA WAVE SCIENCE
RADIO OH SPECTRAL LINE DATA
RADIO SCIENCE SUBSYSTEM
RADIO SPECTRAL LINE DATA
RADIO TELESCOPE
RADIOWAVE DETECTOR
RATAN-600
RAYNGER II PLUS
RCAC31034A
REAGAN SUNPHOTOMETER
ROBERT C. BYRD GREEN BANK TELESCOPE
ROCK ABRASION TOOL
ROVER CAMERA LEFT
ROVER CAMERA REAR
ROVER CAMERA RIGHT
SAMPLE RETURN CAPSULE
SDSS PHOTOMETRIC CAMERA
SEISMOMETER
SHALLOW RADAR
SHORT-WAVELENGTH PRIME
SIMULTANEOUS QUAD INFRARED IMAGING DEVICE (SQIID)
SINGLE BEAM VIS/IR INTEL SPECTRORADIOMTR
SOLAR CORONA EXPERIMENT
SOLAR WIND AROUND PLUTO
SOLAR WIND ION COMPOSITION SPECTROMETER
SOLAR WIND OBSERVATIONS OVER THE POLES OF THE SUN
SOLAR WIND PLASMA EXPERIMENT
SOLAR X-RAY/COSMIC GAMMA-RAY BURST INSTRUMENT
SOLAR-WIND EXPERIMENT
SOLAR-WIND INSTRUMENT
SOLID STATE IMAGING SYSTEM
SPATIAL INFRARED IMAGING TELESCOPE
SPECTRAL HYGROMETER
SPEX
SPICAM
SPICE AND P-EPHEMERIS KERNELS
SPICE KERNELS
STOKES PARAMETERS
STOVER CCD SPECTROGRAPH CAMERA
STUDENT DUST COUNTER
SUPERB SEEING IMAGER
TEKTRONIX 2048X2048 CCD
TELESCOPES
TELEVISION SYSTEM
THERMAL EMISSION IMAGING SYSTEM
THERMAL EMISSION SPECTROMETER
THERMAL INFRARED MULTI-MODE INSTRUMENT 2
THERMAL INFRARED MULTISPECTRAL SCANNER
THERMISTOR PROBE
TINSLEY PHOTOMETER
TORINO PHOTOPOLARIMETER
TRAPPED RADIATION DETECTOR
TRIAXIAL FLUXGATE MAGNETOMETER
TUNDE-M ENERGETIC PARTICLE ANALYZER

UH CCD SYSTEM
UH TEKTRONIX 2K CCD
ULTRA LOW ENERGY CHARGE ANALYZER
ULTRAVIOLET IMAGING SPECTROGRAPH
ULTRAVIOLET PHOTOMETER
ULTRAVIOLET SPECTROMETER
ULTRAVIOLET/VISIBLE CAMERA
ULYSSES DUST DETECTION SYSTEM
ULYSSES JUPITER SPICE S- AND P-EPHEM. KERNELS
UNIFIED RADIO AND PLASMA WAVE EXPERIMENT
UNIVERSITY OF ROCHESTER ARRAY CAMERA
UNK
UNK - INSTRUMENT ID (FC1B)
UNK - INSTRUMENT ID (FC2A)
UNK - INSTRUMENT ID (FC3A)
UNK - INSTRUMENT ID (FTS)
UNKNOWN
VARIOUS GROUND-BASED DETECTORS
VARIOUS RADIO TELESCOPES
VECTOR HELIUM/FLUXGATE MAGNETOMETERS
VERY LARGE ARRAY
VIKING METEOROLOGY INSTRUMENT SYSTEM
VISUAL AND INFRARED MAPPING SPECTROMETER
VISUAL IMAGING SUBSYSTEM
VISUAL IMAGING SUBSYSTEM - CAMERA A
VISUAL IMAGING SUBSYSTEM - CAMERA B
VISUAL IMAGING SUBSYSTEM CAMERA A
VISUAL IMAGING SUBSYSTEM CAMERA B
WALLOPS/GSFC AIRBORNE TOPOGRAPHIC MAPPER
WEATHER STATION
WIDE FIELD PLANETARY CAMERA 2
X-RAY FLORESCENCE
XRAY SPECTROMETER
XRAY/GAMMA RAY SPECTROMETER

INSTRUMENT_PARAMETER_NAME **DYNAMIC**

ATMOSPHERIC PRESSURE
ATMOSPHERIC TEMPERATURE
ATOMIC NUMBER (Z)
BRIGHTNESS
D1 RATE
D2 RATE
ELECTRIC FIELD COMPONENT
ELECTRIC FIELD WAVEFORM
ELECTRON CURRENT
ELECTRON RATE
ENERGY/NUCLEON
ION CURRENT
ION RATE
MAGNETIC FIELD COMPONENT
N/A
PARTICLE MULTIPLE PARAMETERS
PARTICLE RATE

PHOTON FLUX
PLANETARY RADIUS
POSITION VECTOR
PRESSURE
RADAR ECHO POWER
RADIANCE
RADIANCE A
RADIANCE B
RADIANCE C1
RADIANCE C2
RADIANCE C3
RADIANCE CHANNEL 1
RADIANCE CHANNEL 2
RADIANCE CHANNEL 3
RADIANCE CHANNEL 4
RADIANCE CHANNEL 5
RADIANCE D
RADIANT POWER
RSSDETEB POWER
SPECTRAL INTENSITY
SPECTRAL RADIANCE
TEMPERATURE
UNK
WAVE ELECTRIC FIELD AMPLITUDE
WAVE ELECTRIC FIELD INTENSITY
WAVE FLUX DENSITY
WAVE MAGNETIC FIELD INTENSITY
WIND DIRECTION
WIND SPEED
WIND VELOCITY

INSTRUMENT_PARAMETER_UNIT **DYNAMIC**

10**-6 WATT / CM**-2 / STERADIAN / WAVENUMBER
AMPS
COUNTS/SECOND
DEGREE
DEGREES CELSIUS
DIMENSIONLESS
KILOMETERS/HOUR
METER
METERS/SECOND
MEV X MEV
MEV/NUCLEON
MILLIBAR
N/A
NANOTESLA
NUMBER OF NUCLEAR PROTONS
UNK
VOLT/METER
VOLTS
WATT/(METER*METER)/STERADIAN
WATT/METER**2/HERTZ
WATTS

WATTS/AREA/STERADIANS
WATT_METER**-2_MICROMETER**-1

INSTRUMENT_TEMPERATURE **RANGE**

INSTRUMENT_TEMPERATURE_POINT **[PDS_EN]** **DYNAMIC**

COVER ACTUATOR
DETECTOR OPTICAL BENCH SPECTROMETER HOUSING
ELECTRONICS CHASSIS
IR DETECTOR
IR RADIATOR
M1_MIRROR
N/A
OBA CUBE SUPPORT
OBA1
OBA2
OBA3
UV DETECTOR

INSTRUMENT_TYPE **DYNAMIC**

3-COLOR PUSHBROOM IMAGER
ABRADER
ACCELEROMETER
ACOUSTIC SENSOR
ANEMOMETER
ANTENNAE
ATMOSPHERIC PROFILER
ATTITUDE CONTROL SYSTEM
BAROMETER
BETA DETECTOR
CALORIMETER/SPECTROMETER
CAMERA
CCD
CCD CAMERA
CCD/SPECTROGRAPH
CHARGED PARTICLE ANALYZER
CHARGED PARTICLE TELESCOPE
COMPUTATION
COSMIC DUST ANALYZER
COSMIC RAY DETECTOR
DETECTOR ARRAY
DOSIMETER
DRILL
DUST DETECTOR
DUST IMPACT DETECTOR
DUST SAMPLE COLLECTOR
ELECTRODE COLLECTOR
ELECTRON REFLECTOMETER
ELECTRON SPECTROMETER
ELECTROSTATIC ANALYZER
ENERGETIC PARTICLE DETECTOR
ENERGETIC PARTICLES DETECTOR

EYE
FARADAY CUP
FLUXGATE MAGNETOMETER
FLUXGATE SENSOR
FRAMING CAMERA
GAMMA RAY SPECTROMETER
GAMMA-RAY BURST DETECTOR
GAS DETECTOR
HIGH ENERGY PARTICLE DETECTOR
HOUSEKEEPING
HYGROMETER
IMAGER
IMAGING CAMERA
IMAGING SCIENCE SUBSYSTEM
IMAGING SPECTROMETER
IN SITU METEOROLOGY
INFRARED IMAGER
INFRARED IMAGING DEVICE
INFRARED IMAGING SPECTROMETER
INFRARED INTERFEROMETER
INFRARED PHOTOMETER
INFRARED POLARIMETER
INFRARED SPECTROMETER
ION MASS SPECTROMETER
LASER ALTIMETER
LASER RANGEFINDER
LINEAR ARRAY CAMERA
LOW-FREQUENCY RADIO ARRAY
MAGNETOMETER
MAGNETOMETER ELECTRON REFLECTO
MAGNETOSPHERIC IMAGING
MASS SPECTROMETER
METEOROLOGY
N/A
NEPHELOMETER
NEUTRAL PARTICLE DETECTOR
NEUTRON SPECTROMETER
OPTICAL SPECTROGRAPH
OPTICAL TELESCOPE
PARTICLE COUNTER
PARTICLE DETECTOR
PARTICLE TELESCOPE
PHOTOELECTRIC PHOTOMETER
PHOTOMETER
PHOTOMULTIPLIER
PHOTOPOLARIMETER
PHOTOPOLARIMETER RADIOMETER
PLASMA EXPERIMENT
PLASMA INSTRUMENT
PLASMA WAVE
PLASMA WAVE SPECTROMETER
POLARIMETER
QUADRAPOLE MASS SPECTROMETER
QUADRUPOLE MASS SPECTROMETER

RADAR
RADAR ANTENNA
RADAR MAPPER
RADIO AND PLASMA WAVE SCIENCE
RADIO SCIENCE
RADIO SPECTROMETER
RADIO TELESCOPE
RADIOMETER
REFERENCE DATA
RELFECTANCE SPECTROMETER
RETARDING POTENTIAL ANALYZER
SPECTROGRAPH
SPECTROMETER
SPECTROREFLECTOMETER
STAR SCANNER
SYNTHESIZED ARRAY
TELESCOPE
THERMAL INFRARED SPECTROMETER
THERMISTOR
THERMOMETER
TOTAL POWER DETECTOR
ULTRAVIOLET SPECTROMETER
UNK
UNKNOWN
UV/VISIBLE SPECTROMETER
VIDICON CAMERA
VISIBLE SPECTROMETER
VISUAL COUNT
WIDE FIELD CAMERA
WIDE FIELD PLANETARY CAMERA 2
XRAY SPECTROMETER

INSTRUMENT_VERSION_ID **[PDS_MER_OPS]** **SUGGESTED**
BB
EM
FM

INSTRUMENT_VOLTAGE **[PDS_EN]** **RANGE**

INSTRUMENT_VOLTAGE_POINT **[PDS_EN]** **DYNAMIC**
N/A
UV

INTEGRATION_DELAY_FLAG **[PDS_EN]** **STATIC**
DISABLED
ENABLED

INTERCHANGE_FORMAT **STATIC**
ASCII
BINARY
EBCDIC

INTERFRAME_DELAY_DURATION **[PDS_EN]** **RANGE**

N/A

INTERLINE_DELAY_DURATION **[PDS_EN]** **RANGE**

N/A

INVERTED_CLOCK_STATE_FLAG **STATIC**

INVERTED
NON-INVERTED
NOT INVERTED

ISIS_STRUCTURE_VERSION_ID **DYNAMIC**

2.1

JOURNAL_NAME **DYNAMIC**

ADVANCES IN SPACE RESEARCH
AMERICAN SOCIETY OF PHOTOGRAMMETRY
ANNUAL REVIEW OF EARTH AND PLANETARY SCIENCE
APPLIED OPTICS
ASTEROIDS
ASTEROIDS II
ASTRONOMICAL JOURNAL
ASTRONOMY AND ASTROPHYSICS JOURNAL
ASTROPHYSICAL JOURNAL
BULLETIN AMERICAN METEOROLOGICAL SOCIETY
BULLETIN OF THE ASTRONOMICAL INSTITUTE OF CZECHOSLAVAKIA
BULLETIN OF THE GEOLOGICAL SOCIETY OF AMERICA
COSMIC ELECTRODYNAMICS
EOS TRANSACTIONS
EOS TRANSACTIONS, AMERICAN GEOPHYSICAL UNION
GEOLOGICAL SURVEY BULLETIN
GEOPHYSICAL MONOGRAPH
GEOPHYSICAL RESEARCH LETTERS
GIOTTO STUDY NOTE
ICARUS
ICARUS-INTERNATIONAL JOURNAL OF SOLAR SYSTEM STUDIES
IEEE TRANSACTIONS ON GEOSCIENCE AND ELECTRONICS
IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING
IEEE TRANSACTIONS ON MAGNETICS
IEEE TRANSACTIONS ON NUCLEAR SCIENCE
IHW ASTROMETRY NETWORK NEWSLETTER
INT. SOC. OPT. ENG.
IUE NEWSLETTER
J. GEOPHYS. RES.
JOURNAL OF ATMOSPHERIC SCIENCES
JOURNAL OF GEOPHYSICAL RESEARCH
JOURNAL OF GEOPHYSICAL RESEARCH LETTERS
JOURNAL OF SPACECRAFT AND ROCKETS
JOURNAL OF THE OPTICAL SOCIETY OF AMERICA
JPL DOCUMENT

JPL PUBLICATION
JPL TECHNICAL REPORT 32-1550
JPL TECHNICAL REPORT 32-1550, VOL.V
KIEV COMET CIRCULAR
KOSMICH. ISSLED.
LASER FOCUS/ELECTRO-OPTICS
MAGNETICS
MICROWAVE SYSTEM NEWS
MINOR PLANET CIRCULAR
MONTHLY NOTES OF THE ROYAL ASTRONOMICAL SOCIETY
N/A
NASA CONFERENCE PUBLICATION
NASA PUBLICATION
NASA SPECIAL PUBLICATION
NATURE
NINETEENTH CONFERENCE ON AGRICULTURE AND FOREST METEOROLOGY
OCCULTATION NEWSLETTER
PHD DISSERTATION
PHOTOGRAMMETRIC ENGINEERING AND REMOTE SENSING
PHYSICS OF THE EARTH AND PLANETARY INTERIORS
PHYSICS OF THE JOVIAN MAGNETOSPHERE
PIONEER VENUS PROJECT SPECIFICATION PC-456.O4
PROC OF SOCIETY OF PHOTO-OPTICAL INSTRUMENTATION ENGINEERS
PROC SYMPOSIUM PLANET ATMOS ROYAL SOC CANADA
PROCEEDINGS OF IGARRS'89 SYMPOSIUM
PROCEEDINGS OF THE 12TH LUNAR & PLANETARY SCIENCE CONFERENCE
PROCEEDINGS OF THE 19TH LUNAR & PLANETARY SCIENCE CONFERENCE
PROCEEDINGS OF THE 20TH LUNAR & PLANETARY SCIENCE CONFERENCE
PROCEEDINGS SPIE
PROJECT MAGELLAN SIS DOCUMENT
PUBLICATION OF THE ASTRONOMICAL SOCIETY OF THE PACIFIC
PUBLICATIONS OF THE LICK OBSERVATORY
RADIO SCIENCE
REMOTE SENSING OF ENVIRONMENT
SCIENCE
SCIENTIFIC AMERICAN
SPACE SCI. REV.
SPACE SCIENCE REVIEW
THE ASTRONOMICAL JOURNAL
THE EARTH, MOON AND PLANETS
THE MOON
THE PLANETARY REPORT
THESIS
UC SPACE SCIENCE LAB SERIES
YALE PLANETARY EXPLORATION SERIES

KERNEL_TYPE **[SPICE]** **STATIC**

CLOCK_COEFFICIENTS
EPHEMERIS
EVENTS
INSTRUMENT
LEAPSECONDS
POINTING

TARGET_CONSTANTS

KEYWORD_LATITUDE_TYPE **DYNAMIC**
PLANETOCENTRIC
PLANETOGRAPHIC

LAMP_STATE **N/A**

LANDER_SURFACE_QUATERNION **[PDS_SBN]** **RANGE**

LIGHT_FLOOD_STATE_FLAG **STATIC**
OFF
ON

LIGHT_SOURCE_NAME **DYNAMIC**
EARTH
IR LAMP 1
IR LAMP 2
IR SPHERE LAMP
MOON
NONE
SPHERE LAMP 1
SPHERE LAMP 2
VNIR LAMP 1
VNIR LAMP 2
VNIR SPHERE LAMP

LIGHT_SOURCE_TYPE **[PDS_MER_OPS]** **SUGGESTED**

LINE_CAMERA_MODEL_OFFSET **[PDS_MER_OPS]** **SUGGESTED**

LINE_DISPLAY_DIRECTION **STATIC**
DOWN
LEFT
RIGHT
UP

LINE_PREFIX_MEAN **[PDS_MER_OPS]** **SUGGESTED**

LINE_SUFFIX_MEAN **[PDS_MER_OPS]** **SUGGESTED**

LOCAL_TRUE_SOLAR_TIME **[PDS_MER_OPS]** **SUGGESTED**

LOOK_DIRECTION **STATIC**
LEFT
RIGHT

MACROPIXEL_SIZE **[PDS_EN]** **RANGE**

MAGNET_ID **[PDS_MER_OPS]** **SUGGESTED**

CAPTURE
FILTER
N/A
NULL
RAT
SWEEP
UNK

MAP_PROJECTION_TYPE **DYNAMIC**

AITOFF
ALBERS
BONNE
BRIESEMEISTER
CYLINDRICAL EQUAL AREA
EQUIDISTANT
EQUIRECTANGULAR
GNOMONIC
HAMMER
HENDU
LAMBERT AZIMUTHAL EQUAL AREA
LAMBERT CONFORMAL
MERCATOR
MOLLWEIDE
OBLIQUE CYLINDRICAL
ORTHOGRAPHIC
POLAR STEREOGRAPHIC
SIMPLE CYLINDRICAL
SINUSOIDAL
STEREOGRAPHIC
TRANSVERSE MERCATOR
VAN DER GRINTEN
WERNER

MAX_AUTO_EXPOS_ITERATION_COUNT **[PDS_MER_OPS]** **SUGGESTED**

MAXIMUM_ANGULAR_VELOCITY **[PDS_MER_OPS]** **SUGGESTED**

MAXIMUM_ELEVATION **[PDS_MER_OPS]** **SUGGESTED**

MEDIUM_FORMAT **DYNAMIC**

1.0_MB
1.6_MB
150_MB
1600 BPI
1_GB
2.0_MB
2_GB
30_MB

360_KB
5_GB
60_MB
6250_BPI
650_MB
800_BPI

MEDIUM_TYPE **STATIC**

12-IN WORM DISK
14-IN WORM DISK
19-MM HELICAL SCAN TAPE
3.5-IN MAGNETO-OPTIC DISK
3.5-IN. FLOPPY DISK
4-MM HELICAL SCAN TAPE
5.25-IN FLOPPY DISK
5.25-IN MAGNETO-OPTIC DISK
5.25-IN WORM DISK
7-TRACK MAG TAPE
8-MM HELICAL SCAN TAPE
9-TRACK MAG TAPE
CARTRIDGE TAPE
CD-ROM
CD-WO
DVD-R
DVD-ROM
ELECTRONIC
MAG TAPE
MAGNETIC TAPE
N/A
NULL
PHOTO
TAPE

METEORITE_SUB_TYPE **DYNAMIC**

OCTAHEDRITES

METEORITE_TYPE **DYNAMIC**

ACHONDRITE
CARBONACEOUS CHONDRITE
ENSTATITE CHONDRITE
IRON
ORDINARY CHONDRITE
STONY-IRON

MINERAL_NAME **DYNAMIC**

ALBITE
ANORTHITE
CARBON BLACK
DIOPSIDE
ENSTATITE
FELDSPAR
GRAPHITE

MAGNETITE
NICKEL
OLIVINE
TROILITE

MISSING_LINES **[PDS_EN]** **RANGE**
N/A

MISSING_PACKET_FLAG **[PDS_EN]** **STATIC**
NO
YES

MISSING_PIXELS **[PDS_EN]** **RANGE**
N/A

MISSION_ALIAS_NAME **DYNAMIC**
CASSINI
CLEMENTINE 1
COMET IMPACT 94
DI
GALILEO EUROPA MISSION (GEM)
GALILEO MILLENNIUM MISSION (GMM)
GEM
HUBBLE SPACE TELESCOPE
HUYGENS
INTERNATIONAL SOLAR POLAR MISSION
INTERNATIONAL SUN-EARTH EXPLOR
INTERNATIONAL UV EXPLORER
IRAS
JUPITER ORBITER-PROBE (JOP)
LRO
MARINER 10
MARINER 6 & 7
MARINER 9
MARS ENVIRONMENTAL SURVEY
MARS ENVIRONMENTAL SURVEY (MESUR PATHFINDER)
MESS
MEX
MGS
MJS77
MRO
MS-T5
MSX
N/A
NEAR
NH
ODYSSEY
P12
PIONEER 12
PIONEER F
PIONEER G
PLANET-A

UNK
VENERA-GALLEY 2
VENUS RADAR MAPPER (VRM)
VIKING75
VRM

MISSION_NAME **STATIC**

2001 MARS ODYSSEY
ASTEROID OBSERVATIONS
CASSINI-HUYGENS
CASSINI-HUYGENS MISSION TO SATURN AND TITAN
COMET SL9/JUPITER COLLISION
DEEP IMPACT
DEEP SPACE 1
DEEP SPACE PROGRAM SCIENCE EXPERIMENT
GALILEO
GEOLOGIC REMOTE SENSING FIELD EXPERIMENT
GIOTTO
GIOTTO EXTENDED MISSION
GROUND BASED ATMOSPHERIC OBSERVATIONS
HST
IHW
INFRARED ASTRONOMICAL SATELLITE
INTERNATIONAL COMETARY EXPLORER
INTERNATIONAL HALLEY WATCH
INTERNATIONAL ULTRAVIOLET EXPLORER
IUE
LUNAR PROSPECTOR
LUNAR RECONNAISSANCE ORBITER
MAGELLAN
MARINER 10
MARINER69
MARINER71
MARS ENVIRONMENTAL SURVEY (MESUR PATHFINDER)
MARS EXPLORATION ROVER
MARS EXPRESS
MARS GLOBAL SURVEYOR
MARS OBSERVER
MARS PATHFINDER
MARS RECONNAISSANCE ORBITER
MESSENGER
MIDCOURSE SPACE EXPERIMENT
N/A
NEAR EARTH ASTEROID RENDEZVOUS
NEW HORIZONS
PIONEER
PIONEER 10
PIONEER 11
PIONEER VENUS
PRE-MAGELLAN
SAKIGAKE
SATURN OCCULTATION OF 28 SAGITTARIUS 1989
SATURN RING PLANE CROSSING 1995

SATURN SMALL SATELLITE ASTROMETRY
STARDUST
SUISEI
SUPPORT ARCHIVES
ULYSSES
VEGA 1
VEGA 2
VIKING
VOYAGER

MISSION_NAME_OR_ALIAS **STATIC**

GALILEO
MAGELLAN
MARINER69
MARINER71
MARS OBSERVER
N/A
PIONEER
UNK
VENUS RADAR MAPPER (VRM)
VIKING
VOYAGER

MISSION_PHASE_NAME **DYNAMIC**

4-DAY CHECKOUT
ALL
AMALTHEA 34 ENCOUNTER
AMALTHEA 34 ORBIT
CALLISTO 10 ENCOUNTER
CALLISTO 10 ORBIT
CALLISTO 20 ENCOUNTER
CALLISTO 20 ORBIT
CALLISTO 21 ENCOUNTER
CALLISTO 21 ORBIT
CALLISTO 22 ENCOUNTER
CALLISTO 22 ORBIT
CALLISTO 23 ENCOUNTER
CALLISTO 23 ORBIT
CALLISTO 3 ENCOUNTER
CALLISTO 3 ORBIT
CALLISTO 30 ENCOUNTER
CALLISTO 30 ORBIT
CALLISTO 9 ENCOUNTER
CALLISTO 9 ORBIT
COMMISSIONING
CRUISE
EARLY CRUISE
EARTH 1 ENCOUNTER
EARTH 2 ENCOUNTER
EARTH CRUISE
EARTH ENCOUNTER
EARTH FLYBY
EARTH PHASING LOOP A

EARTH PHASING LOOP B
EARTH-EARTH CRUISE
EARTH-JUPITER CRUISE
EARTH-VENUS CRUISE
EARTH1 ENCOUNTER
EARTH2 ENCOUNTER
EUROPA 12 ENCOUNTER
EUROPA 12 ORBIT
EUROPA 13 ORBIT
EUROPA 14 ENCOUNTER
EUROPA 14 ORBIT
EUROPA 15 ENCOUNTER
EUROPA 15 ORBIT
EUROPA 16 ENCOUNTER
EUROPA 16 ORBIT
EUROPA 17 ENCOUNTER
EUROPA 17 ORBIT
EUROPA 18 ENCOUNTER
EUROPA 18 ORBIT
EUROPA 19 ENCOUNTER
EUROPA 19 ORBIT
EUROPA 26 ENCOUNTER
EUROPA 26 ORBIT
EUROPA 4 ENCOUNTER
EUROPA 4 ORBIT
EUROPA 6 ENCOUNTER
EUROPA 6 ORBIT
EXTENDED MISSION
EXTENDED-EXTENDED MISSION
GANYMEDE 1 ENCOUNTER
GANYMEDE 1 ORBIT
GANYMEDE 2 ENCOUNTER
GANYMEDE 2 ORBIT
GANYMEDE 28 ENCOUNTER
GANYMEDE 28 ORBIT
GANYMEDE 29 ENCOUNTER
GANYMEDE 29 ORBIT
GANYMEDE 7 ENCOUNTER
GANYMEDE 7 ORBIT
GANYMEDE 8 ENCOUNTER
GANYMEDE 8 ORBIT
GASPRA ENCOUNTER
IDA ENCOUNTER
INTERPLANETARY CRUISE
IO 0 ENCOUNTER
IO 24 ENCOUNTER
IO 24 ORBIT
IO 25 ENCOUNTER
IO 25 ORBIT
IO 27 ENCOUNTER
IO 27 ORBIT
IO 31 ENCOUNTER
IO 31 ORBIT
IO 32 ENCOUNTER

IO 32 ORBIT
IO 33 ENCOUNTER
IO 33 ORBIT
JUPITER 0 ORBIT
JUPITER 35 ORBIT
JUPITER 5 ORBIT
JUPITER APPROACH
JUPITER ENCOUNTER
JUPITER ORBIT INSERTION
JUPITER ORBIT OPERATIONS
KENNEDY SPACE CENTER
LATE CRUISE
LAUNCH
LAUNCH AND DEPLOYMENT
LOW EARTH ORBIT
LUNAR MAPPING
LUNAR ORBIT ACQUISITION
MAPPING
MAPPING CYCLE 1
MAPPING CYCLE 2
MERCURY 1 CRUISE
MERCURY 1 FLYBY
MERCURY 2 CRUISE
MERCURY 2 FLYBY
MERCURY 3 CRUISE
MERCURY 3 FLYBY
MERCURY 4 CRUISE
MERCURY ORBIT
MID CRUISE
NEPTUNE ENCOUNTER
NOMINAL MISSION
ORBIT INSERTION
PRIMARY MISSION
PRIMARY SCIENCE PHASE
PRIME MISSION ORBIT OPERATIONS
PROBE
PROBE RELEASE
PROBE RELEASE AND ODM
SATURN ENCOUNTER
SHOEMAKER-LEVY 9 ENCOUNTER
SURVEY MISSION
URANUS ENCOUNTER
VENUS 1 CRUISE
VENUS 1 FLYBY
VENUS 2 CRUISE
VENUS 2 FLYBY
VENUS ENCOUNTER
VENUS-EARTH CRUISE

MISSION_PHASE_TYPE **STATIC**

CRUISE
EARTH-EARTH CRUISE
EARTH-VENUS CRUISE

EARTH1 ENCOUNTER
ENCOUNTER
EXTENDED MISSION
GASPRA ENCOUNTER
INTERPLANETARY CRUIS
LANDED
LAUNCH
MAPPING CYCLE
MAPPING CYCLE 1
MAPPING CYCLE 2
MAPPING CYCLE 3
MAPPING CYCLE 4
MAPPING CYCLE 5
N/A
ORBIT CHECKOUT
ORBIT INSERTION
ORBITAL
ORBITAL OPERATIONS
PRELAUNCH
VENUS ENCOUNTER
VENUS-EARTH CRUISE

MODE_CONTINUATION_FLAG **STATIC**
N
Y

MODEL_COMPONENT_1 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_2 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_3 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_4 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_5 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_6 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_7 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_8 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_9 **[PDS_MER_OPS]** **SUGGESTED**

MODEL_COMPONENT_ID **[PDS_MER_OPS]** **SUGGESTED**
A
C
E

H
O
P
R
T
V

MODEL_COMPONENT_NAME **[PDS_MER_OPS]** **SUGGESTED**
AXIS
CENTER
ENTRANCE
HORIZONTAL
MPARM
MTYPE
OPTICAL
RADIAL
VERTICAL

MODEL_DESC **[PDS_MER_OPS]** **TEXT**

MODEL_NAME **[PDS_MER_OPS]** **SUGGESTED**
CAHV
CAHVOR
CAHVORE-1
CAHVORE-2
CAHVORE-3

MODEL_RANKING **[PDS_MER_OPS]** **SUGGESTED**

MODEL_TYPE **[PDS_MER_OPS]** **SUGGESTED**
CAHV
CAHVOR
CAHVORE
NONE

MRO:ATMO_CORRECTION_FLAG **[MRO]** **DEFINITION**
OFF
ON

MRO:AZIMUTH_SPACING_TYPE **[MRO]** **DYNAMIC**
NOT UNIFORM
UNIFORM

MRO:PHOTOCLIN_CORRECTION_FLAG **[MRO]** **DEFINITION**
OFF
ON

MRO:SPATIAL_RESAMPLING_FLAG **[MRO]** **DEFINITION**
OFF

ON

MRO:SPATIAL_RESCALING_FLAG **[MRO]** **DEFINITION**
OFF
ON

MRO:THERMAL_CORRECTION_MODE **[MRO]** **DEFINITION**
CLIMATOLOGY;ADR_CL
EMPIRICAL_MODEL_FROM_SPECTRUM;ALG_M
OFF
PHYSICAL_MODEL;ADR_TE

NAME **DYNAMIC**

NAMESPACE_ID **[PDS_EN]** **STATIC**
CASSINI
PDSDD

NODE_ID **STATIC**
ATMOS
EN
ESA
GEOSCIENCE
HQ
IMAGING
IMAGING-JPL
N/A
NAIF
NSSDC
PPI-UCLA
RAD
RINGS
RS
SBN

NODE_INSTITUTION_NAME **DYNAMIC**
EUROPEAN SPACE AGENCY
GODDARD SPACE FLIGHT CENTER
HQ
JET PROPULSION LABORATORY
JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
N/A
NASA/AMES RESEARCH CENTER
NEW MEXICO STATE UNIVERSITY
SETI INSTITUTE
STANFORD UNIVERSITY
UNITED STATES GEOLOGICAL SURVEY
UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNIVERSITY OF HAWAII
UNIVERSITY OF IOWA

UNIVERSITY OF MARYLAND
WASHINGTON UNIVERSITY

NODE_NAME **STATIC**
CENTRAL
ENGINEERING
EUROPEAN SPACE AGENCY
GEOSCIENCES
HQ
IMAGING
N/A
NATIONAL SPACE SCIENCE DATA CENTER
NAVIGATION ANCILLARY INFORMATION FACILITY
PLANETARY ATMOSPHERES
PLANETARY PLASMA INTERACTIONS
PLANETARY PLASMA INTERACTIONS - UCLA
PLANETARY RINGS
RADIO SCIENCE
RADIOMETRY
SMALL BODIES

NOISE_TYPE **[PDS_RINGS]** **DYNAMIC**
GAUSSIAN
POISSON
UNK

OBJECT_CLASSIFICATION_TYPE **[PDS_EN]** **STATIC**
DATA SET CATALOG
DEFINITION
PRODUCT CATALOG
STRUCTURE
SYSTEM

OBJECT_TYPE **[PDS_EN]** **STATIC**
GENERIC
GENERIC_GROUP
SPECIFIC
SPECIFIC_GROUP

OBSTRUCTION_ID **STATIC**
NOT_POSSIBLE
POSSIBLE
PRESENCE_VERIFIED

OCCULTATION_PORT_STATE **STATIC**
CLOSED
OPEN

OFFSET_FLAG **[PDS_EN]** **STATIC**
OFF

ON

ON_CHIP_MOSAIC_FLAG **[PDS_IMG_GLL]** **STATIC**
N
UNK
Y

OPERATING_SYSTEM_ID **FORMATION**
DOS 3.3
DOS 4.0
MAC
OS/2
UNIX 4.2 BSD
UNIX SYSTEM 5
VMS 4.6

OPTICS_TEMPERATURE **[PDS_EN]** **RANGE**
N/A

ORBIT_DIRECTION **STATIC**
N/A
PROGRADE
RETROGRADE
UNK
UNKNOWN

ORIGIN_OFFSET_VECTOR **SUGGESTED**

ORIGIN_ROTATION_QUATERNION **[PDS_MER_OPS]** **SUGGESTED**

OUTPUT_FLAG **[PDS_EN]** **STATIC**
N
Y

OVERWRITTEN_CHANNEL_FLAG **[PDS_EN]** **STATIC**
OFF
ON

PACKET_CREATION_SCLK **[PDS_EN]** **NONE**

PACKET_MAP_MASK **[PDS_MER_OPS]** **SUGGESTED**

PACKING_FLAG **[PDS_EN]** **STATIC**
OFF
ON

PARALLEL_CLOCK_VOLTAGE_INDEX **[PDS_EN]** **RANGE**
N/A

PARAMETER_SET_ID **[PDS_EN]** **TEXT**
N/A

PARTICLE_SPECIES_NAME **DYNAMIC**
ELECTRONS
IONS
Z=1
Z=10
Z=13
Z=2
Z=3
Z=6
Z=8

PDS_ADDRESS_BOOK_FLAG **STATIC**
N
NULL
Y

PDS_VERSION_ID **[PDS_EN]** **STATIC**
PDS3
PDS4

PEER_REVIEW_DATA_SET_STATUS **[PDS_EN]** **DYNAMIC**
MAJOR LIENS
MINOR LIENS
PASSED

PEER_REVIEW_ROLE **[PDS_EN]** **DYNAMIC**
CHAIR
DATA PREPARER
DATA SUPPLIER
EXTERNAL PEER
PDS CENTRAL NODE
PDS DA
PDS DET
PDS PROJECT SCIENTIST
PDS SCIENCE MANAGER

PERMISSION_FLAG **[PDS_EN]** **STATIC**
N
Y

PERSON_INSTITUTION_NAME **SUGGESTED**
ARIZONA STATE UNIVERSITY
BROWN UNIVERSITY
CALIFORNIA INSTITUTE OF TECHNOLOGY
CORNELL UNIVERSITY
DENISON UNIVERSITY

GEORGIA INSTITUTE OF TECHNOLOGY
INSTITUTE FOR ASTRONOMY
JET PROPULSION LABORATORY
JOHNS HOPKINS UNIVERSITY
KITT PEAK NATIONAL OBSERVATORY
KONKOLY OBSERVATORY OF THE HUNGARIAN ACADEMY OF SCIENCE
LOS ALAMOS NATIONAL LABORATORY
LUNAR AND PLANETARY INSTITUTE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
N/A
NASA HEADQUARTERS
NASA/AMES RESEARCH CENTER
NASA/GODDARD SPACE FLIGHT CENTER
NASA/JOHNSON SPACE CENTER
NATIONAL AERONAUTICS SPACE MUSEUM
NEW MEXICO STATE UNIVERSITY
PLANETARY SCIENCE INSTITUTE
RADIOPHYSICS INCORPORATED
SCIENCE APPLICATIONS INTERNATIONAL CORP
SMITHSONIAN ASTROPHYSICAL OBSERVATORY
STANFORD UNIVERSITY
SWRI
TEXAS A & M UNIVERSITY
UNITED STATES GEOLOGICAL SURVEY
UNIVERSITY OF ARIZONA
UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNIVERSITY OF CHICAGO
UNIVERSITY OF COLORADO
UNIVERSITY OF FLORIDA
UNIVERSITY OF HAWAII
UNIVERSITY OF IOWA
UNIVERSITY OF MARYLAND
UNIVERSITY OF NEW MEXICO
UNIVERSITY OF VIRGINIA
UNIVERSITY OF WASHINGTON
UNIVERSITY OF WISCONSIN
UNK
WASHINGTON UNIVERSITY
WELLESLEY COLLEGE

PHASE_INFORMATION_FLAG **[PDS_RINGS]** **STATIC**

N
Y

PIXEL_DOWNSAMPLE_OPTION **[PDS_MER_OPS]** **SUGGESTED**

HWSW
HW_COND
NONE
SW_MEAN
SW_MEDIAN
SW_OUTRJT

PIXEL_SUBSAMPLING_FLAG **[PDS_EN]** **STATIC**
N
Y

PLANETARY_OCCULTATION_FLAG **[PDS_RINGS]** **STATIC**
N
Y

PLATFORM **SUGGESTED**
IBM/DOS
MAC/OSX
MULTIPLE
SUN/SUNOS
SUN_10/SOLARIS
SUN_2/SUNOS
VAX/VMS

PLATFORM_OR_MOUNTING_NAME **DYNAMIC**
MAGNETOMETER BOOM
METEOROLOGY BOOM ASSEMBLY
N/A
PIONEER VENUS ORBITER
PROBE DESCENT MODULE
ROTOR
SCAN PLATFORM
SCIENCE BOOM
SPACECRAFT
SPACECRAFT BUS
STATOR

POSITIVE_AZIMUTH_DIRECTION **[PDS_MER_OPS]** **SUGGESTED**
CLOCKWISE
COUNTERCLOCKWISE

POSITIVE_ELEVATION_DIRECTION **DYNAMIC**
DOWN
NADIR
UP
ZENITH

POSITIVE_LONGITUDE_DIRECTION **STATIC**
EAST
WEST

POWER_STATE_FLAG **[PDS_EN]** **STATIC**
OFF
ON

PREFERENCE_ID **DEFINITION**
1

2
3
4

PREPARE_CYCLE_INDEX **[PDS_EN]** **RANGE**
N/A

PRESSURE **[PDS_MER_OPS]** **SUGGESTED**
AMBIENT

PRIMARY_BODY_NAME **STATIC**
CERES
COMET
EARTH
GALAXY
HALLEY
JUPITER
MARS
N/A
NEPTUNE
P/GRIGG_SKJELLERUP
PLUTO
SATURN
SL9
SOLAR SYSTEM BARYCENTER
SUN
UNK
URANUS

PROCESSING_LEVEL_ID **STATIC**
1
2
3
4
5
6
7
8
N

PRODUCER_INSTITUTION_NAME **DYNAMIC**
AMES RESEARCH CENTER
APPLIED PHYSICS LABORATORY
ARIZONA STATE UNIVERSITY
CALIFORNIA INSTITUTE OF TECHNOLOGY
CORNELL UNIVERSITY
GODDARD SPACE FLIGHT CENTER
JET PROPULSION LABORATORY
JOHANNES GUTENBERG UNIVERSITY
JOHNS HOPKINS APPLIED PHYSICS LABORATORY
JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
MAX PLANCK INSTITUTE
MULTIMISSION IMAGE PROCESSING LABORATORY, JET PROPULSION LAB
MULTIMISSION IMAGE PROCESSING SUBSYSTEM, JET PROPULSION LAB
MULTIMISSION SAR PROCESSING FACILITY, JET PROPULSION LAB
NASA/GODDARD SPACE FLIGHT CENTER
NATIONAL ASTRONOMY AND IONOSPHERE CENTER, CORNELL UNIVERSITY
NAVAL RESEARCH LABORATORY
PLANETARY SCIENCE INSTITUTE
RADIOPHYSICS, INCORPORATED
STANFORD UNIVERSITY
U.S. GEOLOGICAL SURVEY
U.S.G.S. FLAGSTAFF
UNIVERSITY OF ARIZONA
UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNIVERSITY OF COLORADO
UNIVERSITY OF HAWAII
UNIVERSITY OF IOWA
UNIVERSITY OF WASHINGTON
UPPSALA UNIVERSITET
WASHINGTON UNIVERSITY

PRODUCT_TYPE **SUGGESTED**

AEDR
AGK
AMD
ANCILLARY
ANNOTATED_TIFF
APXS_EDR
APXS_XRC
ASP
ASTROMETRY_TABLE
AVERAGED_HEND_DATA
AVERAGED_NEUTRON_DATA
BCK
BRO
BROWSE
BSP
BTR
C1-MIDR
C2-MIDR
C3-MIDR
CAHV_LIN_RDR
CALIBRATED_1D_SPECTROGRAPH
CALIBRATED_IMAGE
CALIBRATED_QUALITY_MASK
CALIBRATION
CALIBRATION_MODEL
CATALOG
CCL
CEB_AD_TEMP
CEB_AGND
CEB_AGND_SPARE1

CEB_AGND_SPARE2
CEB_AGND_SPARE3
CEB_ALT_ACT_CURR
CEB_CPU_PLUS_5
CEB_CPU_PLUS_5_CURR
CEB_CPU_TEMP
CEB_HTR_CNTRL_TEMP
CEB_IS_TEMP_A
CEB_IS_TEMP_B
CEB_MAIN_ACTUATOR_CURR
CEB_MINUS_12V_CEB_AN
CEB_MNT_RNG_TEMP_A
CEB_MNT_RNG_TEMP_B
CEB_OS_TEMP_A
CEB_OS_TEMP_B
CEB_PC_CURR_REF
CEB_PLUS_12V_CEB_AN
CEB_PLUS_28_CURR
CEB_PLUS_5_CRYO
CEB_PS1_TEMP
CEB_PS2_TEMP
CEB_PS_CURR_REF
CEB_SPARE_CURR_SENSE_2
CEB_SPARE_CURR_SENSE_3
CHAN_GRS_CEB_TMP
CHAN_GRS_GPA_TMP
CHAN_GRS_GSH_TMP
CHAN_GRS_HEND_TMP
CHAN_GRS_NS_TMP
CHAN_RPC_1_CUR
CHAN_RPC_3_CUR
CHAN_RPC_8_CUR
CHAN_RPC_8_VLT
CHAN_RPC_9_CUR
CLEANED_IMAGE
COMMAND_LIST
CORRECTED_GAMMA_SPECTRA
CPT
CSV
DATA
DCO
DCS
DDR
DECOMPRESSED_RAW_IMAGE
DECOMPRESSED_RAW_TIFF
DERIVED_HEND_DATA
DERIVED_NEUTRON_DATA
DERIVED_SPECTRUM
DICTIONARY
DISPARITY_RDR
DKF
DOCUMENT
DOCUMENTATION
DSDP

E KERNEL NOTES
ECH
ECT
EDITED_DATA
EDITED_SPECTRA
EDITED_SPECTRUM
EDR
EDS
EMR
ENB
ENGINEERING_DATA
ENGINEERING_QUALITY_MASK
EOP
ESS
E_KERNEL
E_KERNEL_PEF
F-MIDR
FILTER_RESPONSE
FND
FOOTPRINT_GEOMETRY
FOV_MAP
FRK
GAMMA_GPA_TEMP
GAMMA_RAY_SPECTRA
GAZETTEER
GDF
GDN
GDR
GEDR
GEOMED_CALIBRATED_IMAGE
GEOMED_CALIBRATED_TIFF
GEOMETRY
GEOMETRY_MODEL
GIF_BROWSE_IMAGE
GNC
GREDR
GSDR
GTDR
HCK
HEA
IDD_REACH_RDR
ILUT_RDR
IMAGE_SCAN
IMG
INDEX
ION
IPN
JITTER
L2N
LIT
LMC
LOG
LOS
LSK

MB_DSC
MB_EDR
MCH
MCT
MDIM
MESSAGE_LOG
MFT
MIDR
MIF
MPD
MPF
NEUTRON_COUNTING_RATE
NMC
NOISE_DATA
OBSERVATION_HEADER
OCH
OCS
ODA
ODF
ODR
ONF
OPACITY
OPT
P-MIDR
PCK
PEDR
PRD
PROFILE
RAD_CORR_RDR
RANGE_RDR
RAT_EDR
RAW_2D_SPECTROGRAPH
RAW_DATA
RAW_IMAGE
RAW_QUALITY_MASK
RDR
REDR
REFDR
RING_PROFILE
RSR
SAK
SCK
SDP
SFO
SHA
SHB
SIMULATED_DATA
SLOPE_RDR
SOE
SOFTWARE
SOLAR_FLUX_DENSITY
SOURCE_DATA
SOURCE_GEOMETRY
SOURCE_JITTER_DATA

SPC
SPICE_KERNEL
SPICE_SP_KERNEL
SPK
SRA
SRD
SRF
SRG
SRI
SRT
SUMMED_GAMMA_SPECTRA
SUPPORT_IMAGE
SURF_NORM_RDR
TARGETED_RDR
TCK
TDF
TDL
TFK
TNF
TPH
TPS
TRAJECTORY
TRO
UDR
UHFD
USO
VECTOR_GEOMETRY
WEA
XYZ_RDR

PROJECTION_AZIMUTH **[PDS_MER_OPS]** **SUGGESTED**

PROJECTION_ELEVATION **[PDS_MER_OPS]** **SUGGESTED**

PROJECTION_LATITUDE_TYPE **DYNAMIC**
AUTHALIC
PLANETOCENTRIC
PLANETOGRAPHIC
RECTIFYING

QUATERNION **RANGE**

QUATERNION_DESC **N/A**

QUATERNION_MEASUREMENT_METHOD **[PDS_MER_OPS]** **SUGGESTED**
COARSE
COURSE
FINE
TILT_ONLY
UNKNOWN

READOUT_CYCLE_INDEX **[PDS_EN]** **RANGE**
N/A

RECEIVED_POLARIZATION_TYPE **[PDS_EN]** **DYNAMIC**
CIRCULAR
ELLIPTICAL
HORIZONTAL
LEFT CIRCULAR
LEFT ELLIPTICAL
LINEAR
PARALLEL
PERPENDICULAR
RIGHT CIRCULAR
RIGHT ELLIPTICAL
VERTICAL

RECORD_TYPE **STATIC**
FIXED_LENGTH
STREAM
UNDEFINED
VARIABLE_LENGTH

REFERENCE_AZIMUTH **[PDS_MER_OPS]** **SUGGESTED**

REFERENCE_COORD_SYSTEM_NAME **[PDS_MER_OPS]** **SUGGESTED**
GENERIC_FIXED
LANDER_FRAME
LOCAL_LEVEL_FRAME
MAST_FRAME
PANCAM_FRAME
ROVER_FRAME
SITE_FRAME

REFERENCE_OBJECT_NAME **DYNAMIC**
EQUATORIAL PLANE
JUPITER
N/A
NEPTUNE
SATURN
SPACECRAFT
SUN
UNK
URANUS

REFERENCE_POINT **SUGGESTED**

REFERENCE_POINT_DESC **SUGGESTED**

REFERENCE_POINT_INDEX **SUGGESTED**

REFERENCE_TARGET_NAME **DYNAMIC**

ASCENDING NODE
EARTH
N/A
PLANET
SPACECRAFT
SUN SPIN AXIS
VENUS
VOYAGER

RELEASE_MEDIUM **NONE**

RELEASE_PARAMETER_TEXT **NONE**

REQUIRED_FLAG **[PDS_EN]** **STATIC**

N
Y

RESOURCE_CLASS **[PDS_EN]** **STATIC**

APPLICATION.CATALOG
APPLICATION.DATASETBROWSER
APPLICATION.DATASETBROWSERC
APPLICATION.DATASETBROWSERP
APPLICATION.DATASETBROWSERX
APPLICATION.INTERFACE
APPLICATION.TARGETBROWSER
APPLICATION.WEBSITE
DATA.VOLUME
DATA.VOLUMEFUTURE
DATA.VOLUMEOFFLINE
DATA.VOLUMEREMOTE
DATA.VOLUMESUPERCEDED

RESOURCE_LINK **[PDS_EN]** **STATIC**

RESOURCE_NAME **[PDS_EN]** **STATIC**

RESOURCE_STATUS **[PDS_EN]** **STATIC**

RETICLE_POINT_NUMBER **STATIC**

1
3
7
9

RING_OCCULTATION_DIRECTION **[PDS_RINGS]** **STATIC**

BOTH
EGRESS
INGRESS

MULTIPLE

ROTATION_DIRECTION **STATIC**

N/A
PROGRADE
RETROGRADE
SYNCHRONOUS
UNK
UNKNOWN

ROTATION_VOLTAGE_NAME **[PDS_MER_OPS]** **SUGGESTED**

SCAN
SEEK

ROVER_MOTION_COUNTER_NAME **[PDS_MER_OPS]** **SUGGESTED**

DRIVE
HGA
IDD
PMA
SITE

SAMPLE_BIT_METHOD **[PDS_MER_OPS]** **SUGGESTED**

HARDWARE
HARDWARE_INVERTED
NONE
SOFTWARE
SOFTWARE_INVERTED

SAMPLE_BIT_MODE_ID **[PDS_MER_OPS]** **SUGGESTED**

AUTOSHIFT
LUT1
LUT2
LUT3
LUT4
LUT5
MSB_BIT10
MSB_BIT11
MSB_BIT7
MSB_BIT8
MSB_BIT9
NONE
UNDEF

SAMPLE_BITS **DYNAMIC**

1
16
2
32
4
64
8

SAMPLE_DISPLAY_DIRECTION **STATIC**

DOWN
LEFT
RIGHT
UP

SAMPLE_TYPE **DYNAMIC**

IEEE_REAL
LSB_INTEGER
LSB_UNSIGNED_INTEGER
MSB_INTEGER
MSB_UNSIGNED_INTEGER
PC_REAL
UNSIGNED_INTEGER
VAX_REAL

SAMPLING_MODE_ID **[PDS_EN]** **SUGGESTED**

HI-RES
HYPERSPEC
MULTISPEC
N/A
NORMAL
UNDER

SAMPLING_PARAMETER_NAME **DYNAMIC**

ALONG TRACK DISTANCE
ATOMIC NUMBER
DELAY-DOPPLER
DISTANCE
ENERGY PER NUCLEON
FREQUENCY
FREQUENCY OFFSET
N/A
PIXEL
TIME
UNK
VOLTAGE
WAVE NUMBER
WAVELENGTH

SAMPLING_PARAMETER_UNIT **DYNAMIC**

AMPLITUDE
AREA
ATOMIC NUMBER
CENTIMETER
DEGREE
DEGREE (AREOCENTRIC SOLAR LONGITUDE)
HERTZ
HOUR
INTENSITY

KILOMETER
MARS SOLAR DAY
MARS SOLAR DAY / 25
METER
MEV PER NUCLEON
MICROMETER
MICROSECOND
MINUTE
N/A
NANOMETER
PHASE
SECOND
SECONDS
TICKS
UNK
VOLTS

SCAN_MODE_ID **DYNAMIC**

.055
4.0
EPF
LONG
SHORT

SCAN_PARAMETER_DESC **[PDS_EN]** **DYNAMIC**

SCAN_START_ANGLE
SCAN_STEP_ANGLE
SCAN_STEP_NUMBER
SCAN_STOP_ANGLE

SECTION_ID **DYNAMIC**

ALT
ARCB
ASAR
ASAS
AVIR
AWND
CH1
CH2
CRS
DAED
GPSM
GSSR
HFM
HSTK
HSTP
IMG
IRTM
ISSN
ISSW
LECP
LFM

MAWD
MET
PARB
PFES
PLS
PRA
RAD
REAG
RMTR
RSS
SA
SAR
SHYG
SIRS
THRM
TIMS
VISA
VISB
WFRM
WTHS

SENSOR_HEAD_ELEC_TEMPERATURE **[PDS_EN]** **RANGE**
N/A

SEQUENCE_NAME **SUGGESTED**

SEQUENCE_VERSION_ID **[PDS_MER_OPS]** **SUGGESTED**

SHUTTER_CORRECTION_MODE_ID **[PDS_MER_OPS]** **SUGGESTED**
CONDITIONAL
FALSE
TRUE

SHUTTER_EFFECT_CORRECTION_FLAG **STATIC**
FALSE
TRUE

SHUTTER_STATE_FLAG **[PDS_EN]** **STATIC**
DISABLED
ENABLED

SHUTTER_STATE_ID **[PDS_EN]** **NONE**
DISABLED
ENABLED

SIGNAL_CHAIN_ID **[PDS_EN]** **SUGGESTED**
0
1
2
3

SLIT_STATE **STATIC**

HIGH RESOLUTION
LOW RESOLUTION
OCCULTATION

SNAPSHOT_MODE_FLAG **[PDS_EN]** **STATIC**

OFF
ON

SOFTWARE_ACCESSIBILITY_DESC **[PDS_EN]** **TEXT**

ACCESSIBLE THROUGH PDS CATALOG
N/A
NOT ACCESSIBLE THROUGH PDS CATALOG - CONTACT NODE
NOT ACCESSIBLE THRU THE PDS CATALOG SYSTEM-CONTACT NODE.
UNK

SOFTWARE_FLAG **STATIC**

N
Y

SOFTWARE_LICENSE_TYPE **SUGGESTED**

COMMERCIAL
PUBLIC_DOMAIN
SHAREWARE

SOFTWARE_PURPOSE **SUGGESTED**

ANALYSIS
BROWSE
COPY
DATA_MODELING
DEVELOPMENT
DISPLAY
DOCUMENTATION
INVENTORY
MANAGEMENT
MATHEMATICS
MODIFICATION
PROCESSING
PRODUCTION
REFORMATTING
SUBSETTING
THEORY
TRANSFORMATION
VERIFICATION

SOFTWARE_TYPE **[PDS_EN]** **STATIC**

N/A
UNK

SOLAR_NORTH_POLE_CLOCK_ANGLE **RANGE**

SOURCE_ID **[PDS_MER_OPS]** **SUGGESTED**

COMMANDED
EDL COMMANDED
FP COMMANDED
GROUND COMMANDED
NAV COMMANDED

SOURCE_SAMPLE_BITS **DYNAMIC**

1
16
2
32
4
64
8

SPACECRAFT_ID **[JPL_AMMOS_SPECIFIC]** **STATIC**

GO
GP
MGN
MGS
MO
MR10
MR4
MR6
MR7
MR9
MRO
ODY
P10
P11
P12
UL
VG1
VG2
VL1
VL2
VO1
VO2

SPACECRAFT_NAME **DYNAMIC**

2001 MARS ODYSSEY
CASSINI ORBITER
CLEMENTINE 1
GALILEO ORBITER
GALILEO PROBE
MAGELLAN
MARINER 10
MARINER 4
MARINER 6

MARINER 7
MARINER 9
MARS EXPLORATION ROVER 1
MARS EXPLORATION ROVER 2
MARS GLOBAL SURVEYOR
MARS OBSERVER
MESSENGER
PIONEER 10
PIONEER 11
PIONEER 12
ULYSSES
VIKING LANDER 1
VIKING LANDER 2
VIKING ORBITER 1
VIKING ORBITER 2
VOYAGER 1
VOYAGER 2

SPACECRAFT_OPERATING_MODE_ID **DYNAMIC**
GS3
GS5

SPACECRAFT_OPERATIONS_TYPE **STATIC**
ATMOSPHERIC_PROBE
FLYBY
LANDER
N/A
ORBITER
ORBITER_OPERATIONS
PROBE
ROVER

SPACECRAFT_POINTING_MODE **DYNAMIC**
ACROSSTRACK
ALONGTRACK
INERT
LIMB
NADIR
TRACKING

SPECTRAL_EDITING_FLAG **[PDS_EN]** **STATIC**
OFF
ON

SPECTRAL_SUMMING_FLAG **[PDS_EN]** **STATIC**
OFF
ON

SPECTROMETER_SCAN_MODE_ID **[PDS_EN]** **DYNAMIC**
FULL_SCAN
PUSHBROOM

REDUCED_SCAN
WHISKBROOM

SPICE_FILE_ID **[PDS_MER_OPS]** **SUGGESTED**

SQL_FORMAT **[PDS_EN]** **STATIC**
CHAR(N)
FLOAT
INTEGER
SMALLINT

SQRT_COMPRESSION_FLAG **STATIC**
FALSE
TRUE

STANDARD_VALUE_TYPE **[PDS_EN]** **STATIC**
DEFINITION
DYNAMIC
FORMATION
RANGE
STATIC
SUGGESTED
TEXT

STATUS_TYPE **[PDS_EN]** **STATIC**
APPROVED
OBSOLETE
PENDING
PROPOSED

STRETCHED_FLAG **STATIC**
FALSE
TRUE

SUBFRAME_TYPE **[PDS_MER_OPS]** **SUGGESTED**
HW_COND
HW_SW
NONE
SUN_FULL
SUN_NO_IMG
SW_ONLY

SUFFIX_HIGH_INSTR_SAT **[ISIS]** **DYNAMIC**
-32765
16#FFFCFFFF#
3

SUFFIX_HIGH_REPR_SAT **[ISIS]** **DYNAMIC**
-32764

16#FFFBFFFF#
4

SUFFIX_ITEM_BYTES **[ISIS]** **STATIC**
1
2
4

SUFFIX_ITEM_TYPE **[ISIS]** **DYNAMIC**
UNSIGNED_INTEGER
VAX_BIT_STRING
VAX_INTEGER
VAX_REAL

SUFFIX_LOW_INSTR_SAT **[ISIS]** **DYNAMIC**
-32766
16#FFFDFFFF#
2

SUFFIX_LOW_REPR_SAT **[ISIS]** **DYNAMIC**
-32767
1
16#FFFEFFFF#

SUFFIX_NAME **[ISIS]** **DYNAMIC**
BACKGROUND
EMISSION ANGLE
INCIDENCE ANGLE
INTERCEPT ALTITUDE
LATITUDE
LONGITUDE
PHASE ANGLE
SLANT DISTANCE

SUFFIX_NULL **[ISIS]** **DYNAMIC**
-32768
0
16#FFFFFFFF#

SUFFIX_VALID_MINIMUM **[ISIS]** **DYNAMIC**
-32752
16#FFEFFFFF#
5

SUN_FIND_FLAG **[PDS_MER_OPS]** **SUGGESTED**
FALSE
TRUE

SUN_FIND_PARM_NAME **[PDS_MER_OPS]** **SUGGESTED**

BRIGHTNESS THRESHOLD
SUMMED BRIGHTNESS
WINDOW SIZE

SURFACE_BASED_INST_METHOD **DYNAMIC**
L_FRAME_QUATERNION
NULL

SURFACE_GROUND_LOCATION **[PDS_MER_OPS]** **SUGGESTED**

SURFACE_MODEL_TYPE **[PDS_MER_OPS]** **SUGGESTED**
INFINITY
PLANE

SURFACE_NORMAL_VECTOR **[PDS_MER_OPS]** **SUGGESTED**

SWATH_WIDTH **[PDS_EN]** **RANGE**
N/A

SYSTEM_BULLETIN_TYPE **[PDS_EN]** **STATIC**
CATALOG
CATALOG-VIEW
CD-ROM
CENTRAL-NODE
CONFERENCES
DATA-SET
DISCIPLINE-NODE
DOCUMENTS
DPS
MEETINGS
MISC
NSI/DECNET
OPERATIONS
ORDER
ORDER_INSTRUCTIONS
PEER-REVIEW
RELEASE_NOTES
SOFTWARE
TOOLS

SYSTEM_CLASSIFICATION_ID **[PDS_EN]** **STATIC**
CLEM
COMMON
DIS
ISIS
JPL_AMMOS_SPECIFIC
MARS_OBSERVER
MESS
MRO
PDS_ATMOS

PDS_EN
PDS_GEO_MGN
PDS_GEO_VL
PDS_IMG
PDS_IMG_GLL
PDS_MER_OPS
PDS_NAIF
PDS_PPI
PDS_RINGS
PDS_SBN
SPICE

TABLE_STORAGE_TYPE **DYNAMIC**
COLUMN MAJOR
ROW MAJOR

TARGET_LIST **[PDS_EN]** **NONE**
N/A

TARGET_NAME **SUGGESTED**
1 CERES
10 HYGIEA
100 HEKATE
1000 PIAZZIA
1001 GAUSSIA
1003 LILOFEE
1004 BELOPOSKYA
1005 ARAGO
1006 LAGRANGEA
1007 PAWLOWIA
10094 EIJIKATO
101 HELENA
1011 LAODAMIA
1012 SAREMA
1013 TOMBECKA
1014 SEMPHYRA
1015 CHRISTA
1016 ANITRA
1017 JACQUELINE
1018 ARNOLDA
1019 STRACKEA
10199 CHARIKLO
102 MIRIAM
1020 ARCADIA
1021 FLAMMARIO
1022 OLYMPIADA
1023 THOMANA
1024 HALE
1025 RIEMA
10261 NIKDOLLEZHAL
1028 LYDINA
103 HERA

1030 VITJA
1031 ARCTICA
1032 PAFURI
1034 MOZARTIA
1035 AMATA
1036 GANYMED
1038 TUCKIA
1039 SONNEBERGA
104 KLYMENE
1041 ASTA
1042 AMAZONE
1045 MICHELA
1046 EDWIN
1047 GEISHA
1048 FEODOSIA
105 ARTEMIS
105 ARTHEMIS
1050 META
1051 MEROPE
1052 BELGICA
1055 TYNKA
1056 AZALEA
1057 WANDA
1058 GRUBBA
106 DIONE
1060 MAGNOLIA
1061 PAEONIA
1063 AQUILEGIA
1065 AMUNDSENIA
1067 LUNARIA
1069 PLANCKIA
107 CAMILLA
1071 BRITA
1075 HELINA
1076 VIOLA
1077 CAMPANULA
1078 MENTHA
108 HECUBA
1080 ORCHIS
1084 TAMARIWA
1086 NATA
1087 ARABIS
1088 MITAKA
1089 TAMA
109 FELICITAS
1090 SUMIDA
1094 SIBERIA
1095 TULIPA
1097 VICIA
1098 HAKONE
1099 FIGNERIA
109P/SWIFT-TUTTLE 1 (1862 O1)
10P/TEMPEL 2 (1873 N1)
11 PARTHENOPE

110 LYDIA
1101 CLEMATIS
1102 PEPITA
1103 SEQUOIA
1104 SYRINGA
1105 FRAGARIA
1106 CYDONIA
11066
11066 SIGURD
1107 LICTORIA
11079 MITSUNORI
1108 DEMETER
1109 TATA
111 ATE
1110 JAROSLAWA
1114 LORRAINE
1115 SABAUDA
1117 REGINITA
1118 HANSKYA
112 IPHIGENIA
1122 NEITH
1123 SHAPLEYA
1124 STROOBANTIA
1126 OTERO
1127 MIMI
1128 ASTRID
113 AMALTHEA
1130 SKULD
1131 PORZIA
1133 LUGDUNA
1134 KEPLER
1135 COLCHIS
1137 RAISSA
1139 ATAMI
114 KASSANDRA
1140 CRIMEA
1143 ODYSSEUS
1144 ODA
1145 ROBELMONTE
1146 BIARMIA
1147 STAVROPOLIS
1148 RARAHU
1149 VOLGA
115 THYRA
1150 ACHAIA
1152 PAWONA
1154 ASTRONOMIA
11548 JERRYLEWIS
1155 AENNA
116 SIRONA
1162 LARISSA
1164 KOBOLDA
1165 IMPRINETTA
1166 SAKUNTALA

1167 DUBIAGO
117 LOMIA
1170 SIVA
1171 RUSTHAWELIA
1172 ANEAS
1173 ANCHISES
1176 LUCIDOR
1177 GONNESSIA
1178 IRMELA
118 PEITHO
1180 RITA
1181 LILITH
1185 NIKKO
1186 TURNERA
1187 AFRA
1188 GOTHLANDIA
1189 TERENTIA
119 ALTHAEA
1194 ALETTA
1196 SHEBA
1198 ATLANTIS
1199 GELDONIA
12 VICTORIA
120 LACHESIS
1201 STRENUA
1204 RENZIA
1208 TROILUS
1209 PUMMA
121 HERMIONE
1212 FRANCETTE
1213 ALGERIA
1214 RICHILDE
1215 BOYER
1219 BRITTA
122 GERDA
1222 TINA
1226 GOLIA
1228 SCABIOSA
1229 TILIA
122P/DEVICO 1 (1846 D1)
123 BRUNHILD
1234 ELYNA
1236 THAIS
124 ALKESTE
1242 ZAMBESIA
1243 PAMELA
1244 DEIRA
12447 YATESCUP
1245 CALVINIA
1246 CHAKA
1248 JUGURTHA
1249 RUTHERFORDIA
125 LIBERATRIX
1251 HEDERA

1252 CELESTIA
1256 NORMANNIA
1257 MORA
125P/SPACEWATCH 1 (1991 R2)
126 VELLEDA
1261 LEGIA
1262 SNIADECKIA
1263 VARSAVIA
1264 LETABA
1266 TONE
1268 LIBYA
1269 ROLLANDIA
126P/IRAS 1 (1983 M1)
127 JOHANNA
1271 ISERGINA
1272 GEFION
1273 HELMA
1274 DELPORTIA
1275 CIMBRIA
1276 UCCLIA
1277 DOLORES
1278 KENYA
1279 UGANDA
128 NEMESIS
1280 BAILLAUDA
1281 JEANNE
1282 UTOPIA
1283 KOMSOMOLIA
1284 LATVIA
1289 KUTAISSI
129 ANTIGONE
1293 SONJA
1294 ANTWERPIA
13 EGERIA
130 ELEKTRA
1300 MARCELLE
1301 YVONNE
1302 WERRA
1304 AROSA
1306 SCYTHIA
1307 CIMMERIA
131 VALA
1310 VILLIGERA
13111 PAPACOSMAS
1312 VASSAR
1316 KASAN
1317 SILVRETTA
1318 NERINA
1319 DISA
132 AETHRA
1320 IMPALA
1321 MAJUBA
1322 COPPERNICUS
1323 TUGELA

1324 KNYSNA
1325 INANDA
1326 LOSAKA
1327 NAMAQUA
1328 DEVOTA
1329 ELIANE
133 CYRENE
1330 SPIRIDONIA
1331 SOLVEJG
1332 MARCONIA
1333 CENEVOLA
1335 DEMOULINA
1336 ZEELANDIA
1337 GERARDA
134 SOPHROSYNE
1340 YVETTE
1342 BRABANTIA
1343 NICOLE
1345 POTOMAC
1348 MICHEL
135 HERTHA
1350 ROSSELIA
1351 UZBEKISTANIA
1352 WAWEL
1355 MAGOEBA
1355 MANGOEBA
1356 NYANZA
1358 GAIKA
136 AUSTRIA
1360 TARKA
1361 LEUSCHNERIA
1362 GRIQUA
1364 SAFARA
1365 HENYEY
1367 NONGOMA
1368 NUMIDIA
1369 OSTANINA
137 MELIBOEA
1372 HAREMARI
1373 CINCINNATI
1374 ISORA
1375 ALFREDA
1379 LOMONOSOWA
138 TOLOSA
1384 KNIERTJE
1385 GELRIA
1386 STORERIA
139 JUEWA
1390 ABASTUMANI
1391 CARELIA
1392 PIERRE
1393 SOFALA
1396 OUTENIQUA
1399 TENERIFFA

14 IRENE
140 SIWA
1400 TIRELA
1403 IDELSONIA
1403 ILDESONIA
1406 KOMPPA
1407 LINDELOF
1409 ISKO
140P/BOWELL-SKIFF 1 (1980 E1)
141 LUMEN
1414 JEROME
1418 FAYETA
141P/MACHHOLZ 2 (1994 P1-A)
142 POLANA
1420 RADCLIFFE
1422 STROMGRENIA
1423 JOSE
1424 SUNDMANIA
1425 TUORLA
1427 RUVUMA
1428 MOMBASA
143 ADRIA
1431 LUANDA
1432 ETHIOPIA
1433 GERAMTINA
1434 MARGOT
1436 SALONTA
1439 VOGTIA
144 VIBILIA
1442 CORVINA
1444 PANNONIA
1445 KONKOLYA
1449 VIRTANEN
145 ADEONA
1451 GRANO
1453 FENNIA
1455 MITCHELLA
1458 MINEURA
1459 MAGNYA
146 LUCINA
1461 JEAN-JACQUES
1463 NORDENMARKIA
1467 MASHONA
1469 LINZIA
147 PROTOGENEIA
1471 TORNIO
1474 BEIRA
1478 VIHURI
148 GALIIA
148 GALLIA
1480 AUNUS
1481 TUBINGIA
1483 HAKOILA
1484 POSTREMA

1487 BODA
149 MEDUSA
1490 LIMPOPO
1493 SIGRID
1494 SAVO
1499 PORI
15 EUNOMIA
150 NUWA
1501 BAADE
1502 ARENDA
1506 XOSA
1508 KEMI
1509 ESCLANGONA
151 ABUNDANTIA
1510 CHARLOIS
1512 OULU
1517 BEOGRAD
1518 ROVANIEMI
152 ATALA
1520 IMATRA
1529 OTERMA
153 HILDA
1530 RANTASEPPA
1531 HAERTMUT
1534 NASI
1535 PAIJANNE
1539 BORELLY
1539 BORRELLY
154 BERTHA
1541 ESTONIA
1542 SCHALEN
1545 THERNOE
1546 IZASK
1548 PALOMAA
1549 MIKKO
1550 TITO
1553 BAUERSFELDA
1554 YUGOSLAVIA
1556 WINGOLFIA
156 XANTHIPPE
1560 STRATTONIA
1562 GONDOLATSCH
1563 NOEL
1564 SRBIJA
1565 LEMAITRE
1566 ICARUS
1567 ALIKOSKI
1568 AISLEEN
157 DEJANIRA
1571 CESCO
1573 VAISALA
1574 MEYER
1575 WINIFRED
1576 FABIOLA

1577 REISS
1578 KIRKWOOD
1579 HERRICK
158 KORONIS
1580 BETULIA
1581 ABANDERADA
1583 ANTILOCHUS
1584 FUJI
1585 UNION
1587 KAHRSTEDT
159 AEMILIA
1591 BAIZE
1592 MATHIEU
1593 FAGNES
1594 DANJON
1595 TANGA
16 CYG A
16 PSYCHE
160 UNA
1600 VYSSOTSKY
1601 PATRY
1602 INDIANA
1603 NEVA
1604 TOMBAUGH
1605 MILANKOVITCH
1606 JEKHOVSKY
1607 MAVIS
1609 BRENDA
161 ATHOR
1613 SMILEY
1615 BARDWELL
1618 DAWN
1619 UETA
162 LAURENTIA
1620 GEOGRAPHOS
1621 DRUZHBA
1625 THE NORC
1626 SADEYA
1627 IVAR
1628 STROBEL
1629 PECKER
163 ERIGONE
1634 NDOLA
1635 BOHRMANN
1636 PORTER
1637 SWINGS
1638 RUANDA
164 EVA
1640 NEMO
1642 HILL
1644 RAFITA
1645 WATERFIELD
1646 ROSSELAND
165 LORELEY

1650 HECKMANN
1651 BEHRENS
1653 YAKHONTOVIA
1654 BOJEVA
1655 COMAS SOLA
1656 SUOMI
1657 ROEMERA
1658 INNES
1659 PUNKAHARJU
166 RHODOPE
1660 WOOD
1662 HOFFMANN
1664 FELIX
1665 GABY
1667 PELS
167 URDA
1677 TYCHO BRAHE
1679 NEVANLINNA
168 SIBYLLA
1680 PER BRAHE
1685 TORO
1689 FLORIS-JAN
169 ZELIA
1691 OORT
1692 SUBBOTINA
1693 HERTZPRUNG
1693 HERTZSPRUNG
1694 KAISER
1695 WALBECK
1697 KOSKENNIEMI
17 THETIS
170 MARIA
1700 ZVEZDARA
1701 OKAVANGO
1702 KALAHARI
1705 TAPIO
1706 DIECKVOSS
171 OPHELIA
1711 SANDRINE
1712 ANGOLA
1715 SALLI
1716 PETER
1717 ARLON
172 BAUCIS
1722 GOFFIN
1724 VLADIMIR
1725 CRAO
1726 HOFFMEISTER
1727 METTE
1728 GOETHE LINK
1729 BERYL
173 INO
1730 MARCELINE
1731 SMUTS

1734 ZHONGOLOVICH
1738 OOSTERHOFF
174 PHAEDRA
1740 PAAVO NURMI
1743 SCHMIDT
1746 BROUWER
1747 WRIGHT
1748 MAUDERLI
1749 TELAMON
175 ANDROMACHE
1750 ECKERT
1751 HERGET
1754 CUNNINGHAM
1759 KIENLE
176 IDUNA
1765 WRUBEL
1766 SLIPHER
1768 APPENZELLA
177 IRMA
1771 MAKOVER
1772 GAGARIN
1775 ZIMMERWALD
1777 GEHRELS
178 BELISANA
1781 VAN BIESBROECK
1783 ALBITSKIJ
1785 WURM
179 KLYTAEMNESTRA
1793 ZOYA
1794 FINSEN
1795 WOLTJER
1796 RIGA
1797 SCHAUMASSE
1798 WATTS
1799 KOUSSEVITZKY
18 MELPOMENE
180 GARUMNA
1806 DERICE
1807 SLOVAKIA
181 EUCHARIS
1815 BEETHOVEN
1816 LIBERA
1819 LAPUTA
182 ELSA
1828 KASHIRINA
183 ISTRIA
1830 POGSON
1831 NICHOLSON
1836 KOMAROV
1838 URSA
1839 RAGAZZA
184 DEJOPEJA
1841 MASSRYK
1842 HYNEK

1847 STOBBE
1848 DELVAUX
185 EUNIKE
1854 SKVORTSOV
1856 RUZENA
1857 PARCHOMENKO
1858 LOBACHEVSKIJ
186 CELUTA
1860 BARBAROSSA
1862 APOLLO
1863 ANTINOUS
1865 CERBERUS
1866 SISYPHUS
1867 DEIPHOBUS
187 LAMBERTA
188 MENIPPE
1882 RAUMA
1883 RIMITO
1888 ZU CHONG-ZHI
189 PHTHIA
1891 GONDOLA
1892 LUCIENNE
19 FORTUNA
190 ISMENE
1901 MORAVIA
1902 SHAPOSHNIKOV
1903 ADZHIMUSHKAJ
1904 MASSEVITCH
1906 NAEF
1907 RUDNEVA
191 KOLGA
1911 SCHUBART
1915 QUETZALCOATL
1919 CLEMENCE
192 NAUSIKAA
1920 SARMIENTO
1923 OSIRIS
1929 KOLLAA
193 AMBROSIA
1930 LUCIFER
1932 JANSKY
1933 TINCHEN
1934 JEFFERS
1936 LUGANO
194 PROKNE
1943 ANTEROS
1948 KAMPALA
195 EURYKLEIA
1951 LICK
196 PHILOMELA
1963 BEZOVEC
1967 MENZEL
1968 MEHLTRETTER
197 ARETE

1970 SUMERIA
1977 SHURA
198 AMPELLA
1980 TEZCATLIPOCA
1989 TATRY
1989N1
1989N2
199 BYBLIS
1990 PILCHER
1991 XB
1992 GALVARINO
1992 NA
1992 UB
1994 SHANE
1994 VK8
1995 BM2
1995 HAJEK
1995 WQ5
1996 GQ21
1996 PW
1996 TO66
1996 TP66
1996 UK
1997 CS29
1997 CZ5
1998 BU48
1998 HK151
1998 KY26
1998 TITIUS
1998 VG44
1998 WH24
1998 WS
1998 XY95
1999 DE9
1999 HIRAYAMA
1999 KR16
19P/BORRELLY 1 (1904 Y2)
1P/HALLEY 1 (1682 Q1)
2 PALLAS
20 MASSALIA
200 DYNAMENE
2000 EB173
2000 GN171
2001 CZ31
2001 EINSTEIN
2001 FZ173
201 PENELOPE
2010 CHEBYSHEV
2011 VETERANIYA
2014 VASILEVSKIS
2017 WESSON
2019 VAN ALBADA
2022 WEST
2024 MCLAUGHLIN

2029 BINOMI
203 POMPEJA
2031 BAM
2035 STEARNS
2038 BISTRO
204 KALLISTO
2040 CHALONGE
2042 SITARSKI
2045 PEKING
2048 DWORNIK
205 MARTHA
2050 FRANCIS
2052 TAMRIKO
2053 NUKI
2056 NANCY
206 HERSILIA
2060 CHIRON
2063 BACCHUS
2064 THOMSEN
2065 SPICER
2067 AKSNES
207 HEDDA
2070 HUMASON
2073 JANACEK
2074 SHOEMAKER
2078 NANKING
208 LACRIMOSA
2081 SAZAVA
2083 SMITHER
2085 HENAN
2086 NEWELL
2087 KOCHERA
2088 SAHLIA
2089 CETACEA
208L ACRIMOSA
209 DIDO
2090 MIZUHO
2091 SAMPO
2093 GENICHESK
2096 VAINO
2098 ZYSKIN
2099 OPIK
21 LUTETIA
210 ISABELLA
2100 RA-SHALOM
2100 RASHALOM
2102 TANTALUS
2103 LAVERNA
2104 TORONTO
2105 GUDY
2106 HUGO
2107 ILMARI
211 ISOLDA
2111 TSELINA

2112 ULYANOV
2113 EHRDNI
2118 FLAGSTAFF
2119 SCHWALL
212 MEDEA
2121 SAVASTOPOL
2128 WETHERILL
213 LILAEA
2130 EVDOKIYA
2131 MAYALL
2139 MAKHARADZE
214 ASCHERA
2140 KEMEROVO
2141 SIMFEROPOL
2143 JIMARNOLD
2147 KHARADZE
2149 SCHWAMBRANIYA
2150 NYCTIMENE
2151 HADWIGER
2152 HANNIBAL
2156 KATE
2157 ASHBROOK
2159 KUKKAMAKI
216 KLEOPATRA
2161 GRISSOM
2167 ERIN
2169 TAIWAN
217 EUDORA
2174 ASMODEUS
218 BIANCA
2185 GUANGDONG
2189 ZARAGOZA
219 THUSNELDA
2194 ARPOLA
2196 ELLICOTT
21P/GIACOBINI-ZINNER 1 (1900 Y1)
22 KALLIOPE
220 STEPHANIA
2201 OLJATO
2204 LYYLI
2207 ANTENOR
2208 PUSHKIN
221 EOS
2212 HEPHAISTOS
2215 SICHUAN
222 LUCIA
2223 SARPEDON
223 ROSA
2231 DURRELL
2234 SCHMADEL
2235 VITTORE
224 OCEANA
2241 ALCATHOUS
2244 TESLA

2246 BOWELL
225 HENRIETTA
2251 TIKHOV
2253 ESPINETTE
2258 VIIPURI
2259 SOFIEVKA
226 WERINGIA
2260 NEOPTOLEMUS
2263 SHAANXI
2266 TCHAIKOVSKY
2268 SZMYTOWNA
227 PHILOPOSPHIA
2271 KISO
2272 MONTEZUMA
2278 GOTZ
2279 BARTO
228 AGATHE
2280 KUNIKOV
2282 ANDRES BELLO
229 ADELINDA
2291 KEVO
2292 SEILI
2296 KUGULTINOV
2299 HANKO
22P/KOPFF 1 (1906 Q1)
23 THALIA
230 ATHAMANTIS
2303 RETSINA
2305 KING
2306 BAUSCHINGER
2308 SCHILT
231 VINDOBONA
2311 EL LEONCITO
2312 DUBOSHIN
2316 JO-ANN
2317 GALYA
232 RUSSIA
2327 GERSHBERG
2328 ROBESON
233 ASTEROPE
2331 PARVULESCO
2332 KALM
2335 JAMES
234 BARBARA
2341 AOLUTA
2345 FUCIK
2346 LILIO
2349 KURCHENKO
235 CAROLINA
2353 ALVA
2354 LAVROV
2357 PHERECLOS
236 HONORIA
2363 CEBRIONES

2365 INTERKOSMOS
2369 CHEKHOV
237 COELESTINA
2370 VAN ALTENA
2371 DIMITROV
2373 IMMO
2374 VLADVYSOTSKIJ
2375 RADEK
2378 PANNEKOEK
2379 HEISKANEN
238 HYPATIA
2380 HEILONGJIANG
2381 LANDI
2382 NONIE
2386 NIKONOV
239 ADRASTEA
2390 NEZARKA
2396 KOCHI
2397 LAPPAHARVI
23P/BRORSEN-METCALF 1 (1847 O1)
24 THEMIS
240 VANADIS
2401 AEHLITA
2402 SATPAEV
2403 SUMAVA
2405 WELCH
2407 HAUG
2409 CHAPMAN
241 GERMANIA
2410 MORRISON
2411 ZELLNER
242 KRIEMHILD
2420 CIURLIONIS
2423 IBARRURI
2427 KOBZAR
2428 KAMENYAR
243 IDA
2430 BRUCE HELIN
2438 OLESHKO
244 SITA
2440 EDUCATIO
2442 CORBETT
2444 LEDERLE
2446 LUNACHARSKY
2448 SHOLOKHOV
2449 KENOS
245 VERA
2451 DOLLFUS
2455 SOMVILLE
246 ASPORINA
2463 STERPIN
2464 NORDENSKIOLD
2465 WILSON
2467 KOLLONTAI

2468 REPIN
247 EUKRATE
2478 TOKAI
248 LAMEIA
2482 PERKIN
2489 SUVOROV
249 ILSE
2490 BUSSOLINI
2491 TVASHTRI
2493 ELMER
24P/SCHAUMASSE 1 (1911 X1)
25 PHOCAEA
250 BETTINA
2501 LOHJA
2503 LIAONING
2504 GAVIOLA
2507 BOBONE
2508 ALUPKA
2509 CHUKOTKA
251 SOPHIA
2510 SHANDONG
2511 PATTERSON
25143 ITOKAWA
2519 ANNAGERMAN
252 CLEMENTINA
2521 HEIDI
2524 BUDOVICIUM
2525 O'STEEN
2525 O_STEEN
2527 GREGORY
253 MATHILDE
2538 VANDERLINDEN
254 AUGUSTA
2547 HUBEI
2548 LELOIR
255 OPPAVIA
2558 VIV
2559 SVOBODA
256 WALPURGA
2560 SIEGMA
2566 KIRGHIZIA
2567 ELBA
2569 MADELINE
257 SILESIA
2575 BULGARIA
2577 LITVA
2579 SPARTACUS
258 TYCHE
2582 HARIMAYA-BASHI
259 ALATHEA
259 ALETHEIA
2590 MOURAO
2598 MERLIN
2599 VESELI

26 PROSERPINA
260 HUMBERTA
2604 MARSHAK
2606 ODESSA
261 PRYMNO
2612 KATHRYN
262 VALDA
2625 JACK LONDON
2629 RUDRA
263 DRESDA
2631 ZHEJIANG
2634 JAMES BRADLEY
2635 HUGGINS
264 LIBUSSA
2640 HALLSTROM
2645 DAPHNE PLANE
265 ANNA
2651 KAREN
2653 PRINCIPIA
2655 GUANGXI
2659 MILLIS
266 ALINE
267 TIRZA
2674 PANDARUS
2675 TOLKIEN
268 ADOREA
2681 OSTROVSKIJ
2685 MASURSKY
26879 HAINES
269 JUSTITIA
26P/GRIGG-SKJELLERUP 1 (1922 K1)
27 EUTERPE
270 ANAHITA
2703 RODARI
2704 JULIAN LOEWE
2708 BURNS
2709 SAGAN
271 PENTHESILEA
2715 MIELIKKI
2717 TELLERVO
272 ANTONIA
2720 PYOTR PERVYJ
2724 ORLOV
2728 YATSKIV
273 ATROPOS
2730 BARKS
2732 WITT
2733 HAMINA
2735 ELLEN
2736 OPS
2737 KOTKA
274 PHILAGORIA
2744 BIRGITTA
2746 HISSAO

2748 PATRICK GENE
275 SAPIENTIA
2750 LOVIISA
2754 EFIMOV
276 ADELHEID
2760 KACHA
2762 FOWLER
2763 JEANS
277 ELVIRA
2772 DUGAN
2775 ODISHAW
2778 TANGSHAN
278 PAULINA
2780 MONNING
2789 FOSHAN
279 THULE
2790 NEEDHAM
2791 PARADISE
2795 LEPAGE
2796 KRON
27P/CROMMELIN 1 (1928 W1)
28 BELLONA
2801 HUYGENS
2807 KARL MARX
2809 VERNADSKIJ
281 LUCRETIA
2810 LEV TOLSTOJ
2813 ZAPPALA
2815 SOMA
2816 PIEN
2818 JUVENALIS
282 CLORINDE
2820 IISALMI
2827 VELLAMO
2829 BOBHOPE
283 EMMA
2830 GREENWICH
2834 CHRISTY CAROL
284 AMALIA
2840 KALLAVESI
2841 PUIJO
2850 MOZHAISKIJ
2851 HARBIN
2852 DECLERCQ
2855 BASTIAN
2857 NOT
286 ICLEA
2861 LAMBRECHT
2864 SODERBLOM
287 NEPHTHYS
2872 GENTELEC
2873 BINZEL
2874 JIM YOUNG
2875 LAGERKVIST

2879 SHIMIZU
288 GLAUKE
2881 MEIDEN
289 NENETTA
2891 MCGETCHIN
2892 FILIPENKO
2893 PEIROOS
29 AMPHITRITE
290 BRUNA
2902 WESTERLUND
2905 PLASKETT
2906 CALTECH
2908 SHIMOYAMA
291 ALICE
2911 MIAHELENA
2912 LAPALMA
2914 GLARNISCH
2917 SAWYER HOGG
292 LUDOVICA
2920 AUTOMEDON
2923 SCHUYLER
2925 BEATTY
2927 ALAMOSA
2929 HARRIS
293 BRASILIA
2930 EURIPIDES
2934 ARISTOPHANES
2938 HOPI
294 FELICIA
2946 MUCHACHOS
2949 KAVERZNEV
295 THERESIA
2952 LILLIPUTIA
2953 VYSHESLAVIA
2955 NEWBURN
2956 YEOMANS
2957 TATSUO
2959 SCHOLL
296 PHAETUSA
2961 KATSURAHAMA
2962 OTTO
2965 SURIKOV
2966 KORSUNIA
297 CAECILIA
2973 PAOLA
2975 SPAHR
2977 CHIVILIKHIN
298 BAPTISTINA
2988 KORHONEN
2991 BILBO
2993 WENDY
2996 BOWMAN
29P/SCHWASSMANN-WACHMANN 1 (1927 V1)
2P/ENCKE 1 (1818 W1)

3 JUNO
30 URANIA
3000 LEONARDO
3007 REAVES
301 BAVARIA
3015 CANDY
302 CLARISSA
3020 NAUDTS
3022 DOBERMANN
3023 HEARD
3028 ZHANGGUOXI
303 JOSEPHINE
3033 HOLBAEK
3036 KRAT
3037 ALKU
304 OLGA
3040 KOZAI
3043 SAN DIEGO
306 UNITAS
3060 DELCANO
3063 MAKHAON
3065 SARAHILL
3066 MCFADDEN
3067 AKMATOVA
307 NIKE
3073 KURSK
3074 POPOV
308 POLYXO
3085 DONNA
309 FRATERNITAS
3090 TJOSSEM
3096 BEZRUC
31 EUPHROSYNE
310 MARGARITA
3101 GLODERBERGER
3102 KROK
3103 EGER
3104 DURER
3105 STRUMPFF
3106 MORABITO
3109 MACHIN
311 CLAUDIA
3116 GOODRICKE
312 PIERRETTA
3121 TAMINES
3122 FLORENCE
3123 DUNHAM
3124 KANSAS
3128 OBRUCHEV
313 CHALDAEA
3137 HORKY
3139 SHANTOU
314 ROSALIA
3141 BUCHAR

3151 TALBOT
3152 JONES
3153 LINCOLN
3155 LEE
3158 ANGA
316 GOBERTA
3162 NOSTALGIA
3167 BABCOCK
3169 OSTRO
317 ROXANE
3170 DZHANIBEKOV
3175 NETTO
3179 BERUTI
3181 AHMERT
3181 AHNERT
3182 SHIMANTO
319 LEONA
3192 A'HEARN
3197 WEISSMAN
3198 WALLONIA
3199 NEFERTITI
32 POMONA
3200 PHAETHON
3204 LINDGREN
3209 BUCHWALD
321 FLORENTINA
3214 MAKARENKO
3216 HARRINGTON
322 PHAEO
3220 MURAYAMA
3224 IRKUTSK
3225 HOAG
323 BRUCIA
3231 MILA
324 BAMBERGA
3242 BACKCHISARAJ
3246 BIDSTRUP
3248 FARINELLA
3249 MUSASHINO
325 HEIDELBERGA
3254 BUS
3255 THOLEN
3256 DAGUERRE
3258 SOMNIUM
3259 BROWNLEE
326 TAMARA
3262 MIUNE
3265 FLETCHER
3267 GLO
3268 DE SANCTIS
327 COLUMBIA
3274 MAILLEN
3285 RUTH WOLFE
3287 OLMSTEAD

3288 SELEUCUS
329 SVEA
3296 BOSQUE ALEGRE
33 POLYHYMNIA
3300 MCGLASSON
3306 BYRON
3307 ATHABASCA
3308 FERRERI
3309 BRORFELDE
331 ETHERIDGEA
3311 PODOBED
3314 BEALS
3317 PARIS
332 SIRI
3320 NAMBA
3321 DASHA
3328 INTERPOSITA
3330 GANTRISCH
3332 RAKSHA
3333 SCHABER
334 CHICAGO
3340 YINHAI
3341 HARTMANN
3343 NEDZEL
3345 TARKOVSKIJ
3349 MANAS
335 ROBERTA
3352 MCAULIFFE
3354 MCNAIR
336 LACADIERA
3363 BOWEN
3364 ZDENKA
3365 RECOGNE
3367 ALEX
337 DEVOSA
3371 GIACCONI
3375 AMY
3376 ARMANDHAMMER
338 BUDROSA
3381 MIKKOLA
3385 BRONNINA
3388 TSANGHINCHI
3389 SINZOT
339 DOROTHEA
3394 BANNO
3395 JITKA
34 CIRCE
340 EDUARDA
3400 AOTEAROA
3401 VANPHILOS
3406 OMSK
341 CALIFORNIA
3416 DORRIT
3417 TAMBLYN

342 ENDYMION
3430 BRADFIELD
3431 NAKANO
3435 BOURY
344 DESIDERATA
3440 STAMPFER
3443 LEETSUNGDAO
3445 PINSON
3447 BURCKHALTER
345 TERCIDINA
3451 MENTOR
3458 BODUOGNAT
346 HERMENTARIA
347 PARIANA
3474 LINSLEY
3478 FANALE
348 MAY
3483 SVETLOV
349 DEMBOWSKA
3491 FRIDOLIN
3492 PETRA-PEPI
3493 STEPANOV
3494 PURPLE MOUNTAIN
3498 BELTON
35 LEUKOTHEA
350 ORNAMENTA
3501 OLEGIYA
3507 VILAS
3511 TSVETAEVA
352 GISELA
3523 ARINA
3526 JEFFBELL
3527 MCCORD
3528 COUNSELMAN
353 RUPERTO-CAROLA
3533 TOYOTA
3534 SAX
3536 SCHLEICHER
354 ELEONORA
3542 TANJIAZHEN
3545 GAFFEY
3546 ATANASOFF
355 GABRIELLA
3551 VERENIA
3559 VIOLAUMAYER
356 LIGURIA
3563 CANTERBURY
3566 LEVITAN
3567 ALVEMA
357 NININA
3573 HOLMBERG
3575 ANYUTA
3576 GALINA
3578 CARESTIA

358 APOLLONIA
3581 ALVAREZ
3586 VASNETSOV
3587 DESCARTES
359 GEORGIA
3592 NEDBAL
36 ATALANTE
360 CARLOVA
3600 ARCHIMEDES
361 BONONIA
3611 DABU
3615 SAFRONOV
362 HAVNIA
3627 SAYERS
3628 BOZNEMCOVA
363 PADUA
3630 LUBOMIR
3635 KREUTZ
3636 PAJDUSAKOVA
364 ISARA
3640 GOSTIN
3642 FRIEDEN
3645 FABINI
3647 DERMOTT
365 CORDUBA
3654 AAS
3657 ERMOLOVA
3658 FELDMAN
366 VICENTINA
366 VINCENTINA
3663 TISSERAND
3665 FITZGERALD
3669 VERTINSKIJ
367 AMICITIA
3670 NORTHCOTT
3674 ERBISBUHL
3677 MAGNUSSON
3678 MONGMANWAI
368 HAIDEA
3682 WELTHER
3684 BERRY
3686 ANTOKU
3687 DZUS
369 AERIA
3691 BEDE
37 FIDES
3700 GEOWILLIAMS
3701 PURKYNE
3702 TRUBETSKAYA
3704 GAOSHIQI
3709 POLYPOITES
371 BOHEMIA
3710 BOGOSLOVSKIJ
3712 KRAFT

3713 PIETERS
372 PALMA
3728 IRAS
373 MELUSINA
3730 HURBAN
3734 WALAND
3737 BECKMAN
374 BURGUNDIA
3740 MENGE
3744 HORN-D'ARTURO
3748 TATUM
375 URSULA
3752 CAMILLO
3753 CRUITHNE
3759 PIIRONEN
376 GEOMETRIA
3760 POUTANEN
3762 AMARAVELLA
3767 DIMAGGIO
377 CAMPANIA
3775 ELLENBETH
378 HOLMIA
3782 CELLE
3786 YAMADA
3787 AIVAZOVSKIJ
3789 ZHONGGUO
379 HUENNA
3792 PRESTON
3793 LEONTEUS
3796 LENE
38 LEDA
380 FIDUCIA
3800 KARAYUSUF
3809 AMICI
381 MYRRHA
3813 FORTOV
3816 CHUGAINOV
3819 ROBINSON
382 DODONA
3824 BRENDALEE
3827 ZDENEKHORSKY
3829 GUNMA
383 JANINA
3831 PETTENGILL
3832 SHAPIRO
3833 CALINGASTA
384 BURDIGALA
3841 DICICCO
3849 INCIDENTIA
385 ILMATAR
3850 PELTIER
3853 HAAS
3858 DORCHESTER
386 SIEGENA

3860 PLOVDIV
3861 LORENZ
3862 AGEKIAN
3869 NORTON
387 AQUITANIA
3873 RODDY
3875 STAEHLE
388 CHARYBDIS
3880 KAISERMAN
3885 BOGORODSKIJ
3886 SHCHERBAKOVIA
3888 HOYT
389 INDUSTRIA
3894 WILLIAMCOOKE
38P/STEPHAN-OTERMA 1 (1942 V1)
39 LAETITIA
390 ALMA
3900 KNEZEVIC
3903 KLIMENT OHRIDSKI
3906 CHAO
391 INGEBORG
3910 LISZT
3913 CHEMIN
3915 FUKUSHIMA
392 WILHELMINA
3920 AUBIGNAN
3925 TRET'YAKOV
3925 TRET_YAKOV
393 LAMPETIA
3935 TOATENMONGAKKAI
3939 HURUHATA
394 ARDUINA
3940 LARION
3944 HALLIDAY
3949 MACH
395 DELIA
3958 KOMENDANTOV
396 AEOLIA
3963 PARADZHANOV
3968 KOPTELOV
397 VIENNA
3971 VORONIKHIN
3972 RICHARD
3976 LISE
398 ADMETE
3985 RAYBATSON
399 PERSEPHONE
3990 HEIMDAL
3995 SAKAINO
3999 ARISTARCHUS
4 VESTA
40 HARMONIA
400 DUCROSA
4001 PTOLEMAEUS

4002 SHINAGAWA
4005 DYAGILEV
4006 SANDLER
4015 WILSON-HARRINGTON
402 CHLOE
4025 RIDLEY
403 CYANE
4031 MUELLER
4033 YATSUGATAKE
4037 IKEYA
4038 KRISTINA
4039 SOUSEKI
404 ARSINOE
405 THIA
4051 HATANAKA
4055 MAGELLAN
4056 TIMWARNER
406 ERNA
4060 DEIPYLOS
4062 SCHIAPARELLI
4063 EUFORBO
4068 MENESTHEUS
407 ARACHNE
4072 YAYOI
4082 SWANN
4083 JODY
4085 WEIR
409 ASPASIA
4096 KUSHIRO
41 DAPHNE
410 CHLORIS
4100 SUMIKO
4103 CHAHINE
4104 ALU
4107 RUFINO
4112 HRABAL
4116 ELACHI
412 ELISABETHA
4121 CARLIN
4124 HERRIOT
4125 LEW ALLEN
4127 KYOGUKU
413 EDBURGA
4132 BARTOK
4135 SVETLANOV
414 LIRIOPE
4142 DERSU-UZALA
4143 HUZIAK
4145 MAXIMOVA
4147 LENNON
415 PALATIA
4156
4157 IZU
4159 FREEMAN

416 VATICANA
4165 DIDKOVSKIJ
417 SUEVIA
4175 BILLBAUM
4179 TOUTATIS
418 ALEMANNIA
4182 MOUNT LOCKE
4188 KITEZH
419 AURELIA
4191 ASSESSE
4194 SWEITZER
4197 TOUTATIS
42 ISIS
420 BERTHOLDA
4200 SHIZUKAGOZEN
4201 OROSZ
4205 DAVID HUGHES
421 ZAHRINGIA
4215 KAMO
4219 NAKAMURA
422 BEROLINA
4220 FLOOD
4222 NANCITA
423 DIOTIMA
424 GRATIA
425 CORNELIA
4256 KAGAMIGAWA
426 HIPPO
4261 GEKKO
4265 KANI
4272 ENTSUJI
4276 CLIFFORD
4278 HARVEY
4280 SIMONENKO
4282 ENDATE
4284 KAHO
4287 TRISOV
429 LOTIS
4292 AOBA
4297 EICHHORN
4299 WIYN
43 ARIADNE
430 HYBRIS
4304 GEICHENKO
4305 CLAPTON
431 NEPHELE
4311 ZGURIDI
432 PYTHIA
4327 RIES
433 EROS
4332 MILTON
434 HUNGARIA
4340 DENCE
4341 POSEIDON

4342 FREUD
4343 TETSUYA
435 ELLA
4352 KYOTO
4353 ONIZAKI
436 PATRICIA
4369 SEIFERT
437 RHODIA
4370 DICKENS
4372 QUINCY
4373 CRESPO
4374 TADAMORI
4375 KIYOMORI
43754 1983 AA
4376 SHIGEMORI
4382 STRAVINSKY
4387 TANAKA
439 OHIO
4390 MADRETERESA
4396 GRESSMANN
44 NYSA
4407 TAIHAKU
441 BATHILDE
4417 LECAR
442 EICHSFELDIA
4422 JARRE
4424 ARKHIPOVA
4426 ROERICH
443 PHOTOGRAPHICA
4434 NIKULIN
4435 HOLT
444 GYPTIS
4440 TCHANTCHES
4448 PHILDAVIS
445 EDNA
4456 MAWSON
4457 VAN GOGH
446 AETERNITAS
4460 BIHORO
4461 SAYAMA
447 VALENTINE
4483 PETOFI
4484 SIF
449 HAMBURGA
4490 BAMBERY
4491 OTARU
4497 TAGUCHI
45 EUGENIA
4502 ELIZABETHANN
451 PATIENTIA
4510 SHAWNA
4511 REMBRANDT
4512 SINUHE
4516 PUGOVKIN

4520 DOVZHENKO
4522 BRITASTRA
453 TEA
4533 ORTH
4534 RIMSKIJ-KORSAKOV
4546 FRANCK
4547 MASSACHUSETTS
4548 WIELEN
455 BRUCHSALIA
4556 GUMILYOV
4558 JANESICK
456 ABNOBA
4562
457 ALLEGHENIA
4570 RUNCORN
458 HERCYNIA
4580 CHILD
4584 AKAN
459 SIGNE
4591 BRYANTSEV
45P/HONDA-MRKOS-PAJDUSAKOVA 1 (1948 X1)
46 HESTIA
460 SCANIA
4601 LUDKEWYCZ
4606 SAHEKI
4607 SEILANDFARM
461 SASKIA
4610 KAJOV
4611 VULKANEIFEL
4613 MAMORU
4617 ZADUNAISKY
4619 POLYAKHOVA
462 ERIPHYLA
4621 TAMBOV
4628 LAPLACE
4635 RIMBAUD
464 MEGAIRA
4640 HARA
4649 SUMOTO
465 ALEKTO
4650 MORI
466 TISIPHONE
4666 DIETZ
467 LAURA
4673 BORTLE
4678 NINIAN
468 LINA
4682 BYKOV
4686 MAISICA
469 ARGENTINA
46P/WIRTANEN 1 (1948 A1)
47 AGLAJA
47 TUC
470 KILIA

4701 MILANI
4702 BEROUNKA
4706 DENNISREUTER
471 PAPAGENA
4711 KATHY
4713 STEEL
4718 ARAKI
4719 BURNABY
472 ROMA
4725 MILONE
4726 FEDERER
4730 XINGMINGZHOU
4733 ORO
4737 KILADZE
474 PRUDENTIA
4748 TOKIWAGOZEN
475 OCLLO
4750 MUKAI
476 HEDWIG
4761 URRUTIA
4764 JONEBERHART
4769 CASTALIA
477 ITALIA
4770 LANE
4774 HOBETSU
4778 FUSS
478 TERGESTE
4786 TATIANINA
479 CAPRERA
4796 LEWIS
48 DORIS
480 HANSA
4804 PASTEUR
481 EMITA
4820 FAY
4824 STRADONICE
4826 WILHELMS
483 SEPPINA
4833 MEGES
4838 BILLMCLAUGHLIN
4839 DAISETSUZAN
484 PITTSBURGHIA
4843 MEGANTIC
4844 MATSUYAMA
4845 TSUBETSU
4849 ARDENNE
485 GENUA
4856 SEABORG
487 VENETIA
488 KREUSA
4880 TOVSTONOGOV
4884 BRAGARIA
4889 PRAETORIUS
489 COMACINA

49 PALES
490 VERITAS
4900 MAYMELOU
4902 THESSANDRUS
4909 COUTEAU
491 CARINA
4910 KAWASATO
4914 PARDINA
4917 YURILVOVIA
4923 CLARKE
493 GRISELDIS
4931 TOMSK
4939
494 VIRTUS
4944 KOZLOVSKIJ
4945 IKENOZENNI
4948
495 EULALIA
4950 HOUSE
4951 IWAMOTO
4954 ERIC
4955 GOLD
4956 NOYMER
4957 BRUCEMURRAY
496 GRYPHIA
4968 SUZAMUR
4969 LAWRENCE
497 IVA
4977 RAUTHGUNDIS
498 TOKIO
4982 BARTINI
499 VENUSIA
4997 KSANA
49P/AREND-RIGAUX 1 (1951 C2)
4P/FAYE 1 (1843 W1)
5 ASTRAEA
50 VIRGINIA
500 SELINUR
5008 MIYAZAWAKENJI
501 URHIXIDUR
5010 AMENEMHET
5016 MIGIRENKO
502 SIGUNE
503 EVELYN
504 CORA
5045 HOYIN
505 CAVA
506 MARION
5065 JOHNSTONE
5067 OCCIDENTAL
5069 TOKEIDAI
507 LAODICA
508 PRINCETONIA
5087 EMEL’YANOV

509 IOLANDA
5090 WYETH
5091 ISAKOVSKIJ
51 NEMAUSA
510 MABELLA
5102 BENFRANKLIN
5103 DIVIS
5108 LUBECK
511 DAVIDA
5111 JACLIFF
5118 ELNAPOUL
512 TAURINENSIS
5122 MUCHA
513 CENTESIMA
5133 PHILLIPADAMS
5134 EBILSON
514 ARMIDA
5142 OKUTAMA
5143 HERACLES
5145 PHOLUS
5147 MARUYAMA
515 ATHALIA
5159 BURBINE
516 AMHERSTIA
517 EDITH
518 HALAWE
5184 CAVAILLE-COLL
519 SYLVANIA
5195 KAENDLER
5196 BUSTELLI
52 EUROPA
5208 ROYER
521 BRIXIA
5214 OOZORA
5215 TSURUI
522 HELGA
5222 IOFFE
523 ADA
5230 ASAHINA
5234 SECHENOV
524 FIDELIO
5240 KWASAN
5242 KENREIMONIN
5243 CLASIEN
525 ADELAIDE
526 JENA
5261 EUREKA
5264 TELEPHUS
527 EURYANTHE
5275 ZDISLAVA
528 REZIA
529 PREZIOSA
5294 ONNETOH
53 KALYPSO

530 TURANDOT
5301 NOVOBRANETS
531 ZERLINA
532 HERCULINA
533 SARA
5330 SENRIKYU
5333 KANAYA
534 NASSOVIA
5343 RYZHOV
5344 RYABOV
5349 PAULHARRIS
536 MERAPI
537 PAULY
5379 ABEHIROSHI
539 PAMINA
5392 PARKER
54 ALEXANDRA
540 ROSAMUNDE
5401 MINAMIODA
541 DEBORAH
543 CHARLOTTE
5438 LORRE
544 JETTA
5448 SIEBOLD
545 MESSALINA
5461 AUTUMN
547 PRAXEDIS
548 KRESSIDA
5481 KIUCHI
5485 KAULA
549 JESSONDA
5492 THOMA
55 PANDORA
550 SENTA
551 ORTRUD
553 KUNDRY
5535 ANNEFRANK
554 PERAGA
555 NORMA
5552 STUDNICKA
5553 CHODAS
556 PHYLLIS
5565 UKYOUNODAIBU
5576 ALBANESE
558 CARMEN
5585 PARKS
559 NANON
5591 KOYO
5592 OSHIMA
5595 ROTH
55P/TEMPEL-TUTTLE 1 (1865 Y1)
56 MELETE
560 DELILA
5610 BALSTER

562 SALOME
563 SULEIKA
5632 INGELEHMANN
564 DUDU
5641 MCCLEESE
5641 TRAVERSA
5649 DONNASHIRLEY
565 MARBACHIA
566 STEREOSKOPIA
567 ELEUTHERIA
5678 DUBRIDGE
568 CHERUSKIA
5685 SANENOBUFUKUI
569 MISA
57 MNEMOSYNE
570 KYTHERA
571 DULCINEA
572 REBEKKA
573 RECHA
574 REGINHILD
5751 ZAO
576 EMANUELA
578 HAPPELIA
579 SIDONIA
5797 BIVOJ
58 CONCORDIA
581 TAUNTONIA
581 TAUTONIA
582 OLYMPIA
583 KLOTILDE
5832 MARTAPRINCIPE
584 SEMIRAMIS
586 THEKLA
5870 BALTIMORE
588 ACHILLES
589 CROATIA
59 ELPIS
592 BATHSEBA
593 TITANIA
595 POLYXENA
5956 D'ALEMBERT
5959 SHAKLAN
596 SCHEILA
597 BANDUSIA
598 OCTAVIA
599 LUISA
6 HEBE
60 ECHO
600 MUSA
601 NERTHUS
602 MARIANNA
604 TEKMESSA
6051 ANAXIMENES
6057 ROBBIA

606 BRANGANE
6063 JASON
607 JENNY
6071 SAKITAMA
6077 MESSNER
6078 BURT
6084 BASCON
61 DANAE
611 VALERIA
612 VERONIKA
6129 DEMOKRITOS
613 GINEVRA
6139 NAOMI
614 PIA
6146 ADAMKRAFFT
616 ELLY
617 PATROCLUS
618 ELFRIEDE
619 TRIBERGA
6193 MANABE
62 ERATO
620 DRAKONIA
621 WERLANDI
622 ESTHER
6233 KIMURA
624 HEKTOR
6249 JENNIFER
625 XENIA
626 NOTBURGA
627 CHARIS
628 CHRISTINE
629 BERNARDINA
63 AUSONIA
630 EUPHEMIA
631 PHILIPPINA
6310 JANKONKE
633 ZELIMA
634 UTE
635 VUNDTIA
6354 VANGELIS
638 MOIRA
6384 KERVIN
639 LATONA
64 ANGELINA
640 BRAMBILLA
6410 FUJIWARA
642 CLARA
643 SCHEHEREZADE
6447 TERRYCOLE
648 PIPPA
6489 GOLEVKA
649 JOSEFA
6493 CATHYBENNET
65 CYBELE

650 AMALASUNTHA
6500 KODAIRA
651 ANTIKLEIA
653 BERENIKE
654 ZELINDA
6560 PRAVDO
657 GUNLOD
6585 O'KEEFE
659 NESTOR
6592 GOYA
66 MAJA
660 CRESCENTIA
661 CLOELIA
662 NEWTONIA
663 GERLINDE
664 JUDITH
665 SABINE
666 DESDEMONA
6669 OBI
667 DENISE
668 DORA
67 ASIA
670 OTTEGEBE
671 CARNEGIA
673 EDDA
674 RACHELE
675 LUDMILLA
676 MELITTA
677 AALTJE
678 FREDEGUNDIS
679 PAX
67P/CHURYUMOV-GERASIMENKO 1 (1969 R1)
68 LETO
680 GENOVEVA
683 LANZIA
6847 KUNZ-HALLSTEIN
685 HERMIA
686 GERSUIND
687 TINETTE
688 MELANIE
69 HESPERIA
690 WRATISLAVIA
6908 KUNIMOTO
6916 LEWISPEAR
692 HIPPODAMIA
694 EKARD
695 BELLA
696 LEONORA
697 GALILEA
699 HELA
6P/D'ARREST 1 (1851 M1)
6P/D_ARREST 1 (1851 M1)
7 IRIS
70 PANOPAEA

7002 BRONSHTEN
702 ALAUDA
704 INTERAMNIA
705 ERMINIA
7056 KIERKEGAARD
706 HIRUNDO
709 FRINGILLA
71 NIOBE
712 BOLIVIANA
713 LUSCINIA
714 ULULA
715 TRANSVAALIA
716 BERKELEY
717 WISIBADA
718 ERIDA
72 FERONIA
720 BOHLINIA
721 TABORA
7211 XERXES
722 FRIEDA
7224 VESNINA
7225 HUNTRESS
723 HAMMONIA
724 HAPAG
725 AMANDA
726 JOELLA
727 NIPPONIA
728 LEONISIS
729 WATSONIA
73 KLYTIA
731 SORGA
732 TIJILAKI
732 TJILAKI
733 MOCIA
734 BENDA
7341
735 MARGHANNA
7353 KAZUYA
737 AREQUIPA
739 MANDEVILLE
74 GALATEA
740 CANTABIA
741 BOTOLPHIA
742 EDISONA
743 EUGENISIS
746 MARLU
747 WINCHESTER
7474
748 SIMEISA
7480 NORWAN
749 MALZOVIA
7496 MIROSLAVHOLUB
75 EURYDIKE
750 OSKAR

751 FAINA
7512 MONICALAZZARIN
7516 KRANJC
752 SULAMITIS
753 TIFLIS
754 MALABAR
755 QUINTILLA
756 LILLIANA
7562 KAGIROINO-OKA
757 PORTLANDIA
758 MANCUNIA
759 VINIFERA
76 FREIA
760 MASSINGA
761 BRENDELIA
762 PULCOVA
7638 GLADMAN
764 GEDANIA
767 BONDIA
768 STRUVEANA
77 FRIGGA
770 BALI
771 LIBERA
772 TANETE
7728 GIBLIN
773 IRMINTRAUD
774 ARMOR
775 LUMIERE
776 BERBERICIA
777 GUTEMBERGA
778 THEOBALDA
779 NINA
78 DIANA
780 ARMENIA
781 KARTVELIA
782 MONTEFIORE
783 NORA
784 PICKERINGIA
785 ZWETANA
786 BREDICHINA
7868 BARKER
787 MOSKVA
788 HOHENSTEINA
789 LENA
7898 OHKUMA
79 EURYNOME
790 PRETORIA
791 ANI
792 METCALFIA
793 ARIZONA
795 FINI
796 SARITA
797 MONTANA
798 RUTH

7P/PONNS-WINNECKE 1 (1858 E1)
8 FLORA
80 SAPPHO
801 HELWERTHIA
803 PICKA
8034 AKKA
804 HISPANIA
805 HORMUTHIA
808 MERXIA
809 LUNDIA
81 TERPSICHORE
8106 CARPINO
811 NAUHEIMA
813 BAUMEIA
814 TAURIS
815 COPPELIA
816 JULIANA
817 ANNIKA
8176
819 BARNARDIANA
81P/WILD 2 (1978 A2)
82 ALKMENE
821 FANNY
822 LALAGE
823 SISIGAMBIS
824 ANASTASIA
825 TANINA
826 HENRIKA
829 ACADEMIA
83 BEATRIX
834 BURNHAMIA
838 SERAPHINA
839 VALBORG
84 KLIO
844 LEONTINA
845 NAEMA
846 LIPPERTA
847 AGNIA
848 INNA
849 ARA
85 IO
850 ALTONA
851 ZEISSIA
853 NANSENIA
856 BACKLUNDA
857 GLASENAPPIA
858 EL DJEZAIR
858 ELDJEZAIR
859 BOUZAREAH
86 SEMELE
860 URSINA
862 FRANZIA
863 BENKOELA
864 AASE

866 FATME
868 LOVA
869 MELLENA
87 SYLVIA
870 MANTO
872 HOLDA
873 MECHTHILD
874 ROTRAUT
877 WALKURE
879 RICARDA
88 THISBE
880 HERBA
881 ATHENE
882 SWETLANA
884 PRIAMUS
886 WASHINGTONIA
887 ALINDA
889 ERYNIA
89 JULIA
8906 YANO
891 GUNHILD
892 SEELIGERIA
893 LEOPOLDINA
894 ERDA
895 HELIO
897 LYSISTRATA
898 HILDEGARD
899 JOKASTE
8P/TUTTLE 1 (1858 A1)
9 METIS
90 ANTIOPE
900 ROSALINDE
901 BRUNSIA
904 ROCKEFELLIA
905 UNIVERSITAS
906 RESPOLDA
907 RHODA
908 BUDA
909 ULLA
91 AEGINA
910 ANNELIESE
911 AGAMEMNON
912 MARITIMA
913 OTILA
914 PALISANA
915 COSETTE
917 LYKA
918 ITHA
919 ILSEBILL
92 UNDINA
921 JOVITA
923 HERLUGA
924 TONI
925 ALPHONSINA

928 HILDRUM
929 ALGUNDE
93 MINERVA
930 WESTPHALIA
931 WHITTEMORA
932 HOOVERIA
934 THURINGIA
936 KUNIGUNDE
937 BETHGEA
94 AURORA
940 KORDULA
941 MURRAY
943 BEGONIA
944 HIDALGO
945 BARCELONA
946 POESIA
947 MONTEROSA
949 HEL
95 ARETHUSA
950 AHRENSA
951 GASPRA
952 CAIA
953 PAINLEVA
954 LI
955 ALSTEDE
956 ELISA
957 CAMELIA
958 ASPLINDA
96 AEGLE
961 GUNNIE
962 ASLOG
965 ANGELICA
966 MUSCHI
968 PETUNIA
969 LEOCADIA
97 KLOTHO
970 PRIMULA
971 ALSATIA
972 COHNIA
973 ARALIA
974 LIOBA
976 BENJAMINA
977 PHILIPPA
978 AIDAMINA
979 ILSEWA
97P/METCALF-BREWINGTON 1 (1906 V2)
98 IANTHE
980 ANACOSTIA
981 MARTINA
982 FRANKLINA
983 GUNILA
984 GRETIA
985 ROSINA
986 AMELIA

987 WALLIA
988 APPELLA
989 SCHWASSMANNIA
98P/TAKAMIZAWA 1 (1984 O1)
99 DIKE
994 OTTHILD
996 HILARITAS
9969 BRAILLE
997 PRISKA
9P/TEMPEL 1 (1867 G1)
ABEE
ACHERNAR
ADRASTEA
ALAIS
ALFIANELLO
ALLEGAN
ALLENDE
ALPHA CEN
ALPHA LEO
ALPHA LYR
ALPHA PAV
ALTAIR
AMALTHEA
ANANKE
ANDOVER
ANGRA DOS REIS
APXSSITE
ARCTURUS
ARIEL
ASTEROID
ASTEROID 10007
ASTEROID 10473
ASTEROID 10504
ASTEROID 11785
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ASTEROID 12281
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ASTEROID 17511
ASTEROID 18514
ASTEROID 19356
ASTEROID 1994 CB
ASTEROID 1995 FX
ASTEROID 1997 GL3
ASTEROID 22449
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ASTEROID 9219
ASTEROID 9970
ASTEROID 99907
ATLANTA
ATLAS
AUMALE
AUSSON
BABBS MILL (TROOSTS IRON)
BALD MOUNTAIN
BARWISE
BEREBA
BET HYI
BETA ANDROMEDAE
BETA ARIETIS
BETA CEN
BETA CMA
BLACK SKY
BRUDERHEIM
BUSCHHOF
BUTLER
C/AUSTIN (1982 M1)
C/AUSTIN (1989 X1)
C/BRADFIELD (1979 Y1)
C/BRADFIELD (1987 P1)
C/CERNIS (1983 O1)
C/HALE-BOPP (1995 O1)
C/HARTLEY-GOOD (1985 R1)
C/HYAKUTAKE (1996 B2)
C/ICHIMURA (1987 W1)
C/IRAS-ARAKI-ALCOCK (1983 H1)
C/LEVY-RUDENKO (1984 V1)
C/MCNAUGHT (1987 U3)
C/MEIER (1980 V1)
C/NISHIKAWA-TAKAMIZAWA-TAGO (1987 B1)
C/OKAZAKI-LEVY-RUDENKO (1989 Q1)
C/PANTHER (1980 Y2)
C/SEARGENT (1978 T1)
C/SHOEMAKER-LEVY (1991 T2)
C/SUGA-SAIGUSA-FUJIKAWA (1983 J1)
C/TABUR (1996 Q1)
C/WILSON (1986 P1)
C/YANAKA (1989 A1)
C/ZANOTTA-BREWINGTON (1991 Y1)
CABEZO DE MAYO
CAL
CAL LAMPS
CALIBRATION
CALIBRATION FIELD

CALIMG
CALLISTO
CALYPSO
CAL_TARGET
CANOPUS
CARME
CASEY COUNTY
CASTALIA
CERES
CHAINPUR
CHARON
CHASSIGNY
CHULAFINNEE
COLBY (WISCONSIN)
COLD BOKKEVELD
COLESCIPOLI
COLLESCIPOLI
COMET
COOLIDGE
CYNTHIANA
DANDAPUR
DANIELS KUIL
DAPHNIS
DARK
DARK SKY
DEIMOS
DELTA PISCIUM
DESPINA
DIONE
DIONE B
DRAKE CREEK
DUST
EARTH
ELARA
ELENOVKA
EMISSION NEBULA
ENCELADUS
EPIMETHEUS
EROS
ETA-AQUARID
EUROPA
FARMINGTON
FELIX
FOMALHAUT
FOREST CITY
FRANKFORT (STONE)
GALATEA
GAMMA ORIONIS
GANYMEDE
GASPRA
GEOGRAPHOS
GIACOBINI-ZINNER
GIRGENTI
GLL PCT

GRIGG SKJELLERUP
GROSNAJA
GRUENEBERG
H5 CHONDRITES
H6 CHONDRITES
HALLEY
HAMLET
HARAIYA
HD 60753
HD 79447
HD 92044
HD151288
HELENE
HIMALIA
HOMESTEAD
HVITTIS
HYPERION
IAPETUS
IC 2391
IC 433
IDA
INDARCH
INTERSTELLAR PARTICLES
INTERSTELLAR_PARTICLES
IO
IO PLASMA TORUS
IRON BAR
IRON POWDER
J RINGS
J1 IO
J10 LYSITHEA
J11 CARME
J12 ANANKE
J13 LEDA
J17 CALLIRRHOE
J18 THEMISTO
J19 MEGACLITE
J2 EUROPA
J20 TAYGETE
J22 HARPALYKE
J23 KALYKE
J24 IOCASTE
J27 PRAXIDYKE
J6 HIMALIA
J7 ELARA
J8 PASIPHAE
J9 SINOPE
JANUS
JELICA
JOHNSTOWN
JONZAC
JUPITER
JUVINAS
K07S4

KAINSAZ
KAROONDA
KHAIRPUR
KNYAHINA
KNYAHINYA
L4 CHONDRITES
L5 CHONDRITES
L6 CHONDRITES
LANCE
LANCON
LANDER
LANDOLT FIELD
LARISSA
LE TEILLEUL
LEDA
LEEDEY
LEOVILLE
LL3 CHONDRITES
LL6 CHONDRITES
LYSITHEA
M 1
M 31
M 42
M 78
M 79
M11
M7
MAG
MANBHOOM
MARS
MASURSKY
MATHILDE
MERCURY
METEORITE
METEOROID
METHONE
METIS
MEZOE-MADARAS
MIGHEI
MIMAS
MINOR SATELLITE
MIRANDA
MOKOIA
MOON
MURCHISON
MURRAY
N RINGS
N/A
N7 LARISSA
N8 PROTEUS
NAIAD
NAKHLA
NANJEMOY
NEPTUNE

NEREID
NERFT
NGC 3114
NGC 3532
NGC 6543
NGC 7027
NICKEL POWDER
NOBLEBOROUGH
NOGOYA
NON SCIENCE
OBERON
OCHANSK
OLIVENZA
OLMEDILLA DE ALARCON
OPEN CLUSTER
ORGUEIL
ORION
ORIONID
ORNANS
P/LEVY 1 (1991 L3)
P/MCNAUGHT-RUSSELL 1 (1994 X1)
PADVARNINKAI
PALLENE
PAN
PANDORA
PANTAR
PARAGOULD
PARNALLEE
PARNELLEE
PASAMONTE
PASIPHAE
PAVLOVKA
PETERSBURG
PHI 1 CETI
PHOBOS
PHOEBE
PILLISTFER
PLAQUE
PLEIADES
PLUTO
POLYDEUCES
PPR RCT
PROMETHEUS
PROTEUS
PUCK
QUEENS MERCY
QUENGGOUK
REFERENCE
REFLECTION NEBULA
RHEA
ROCK
RODA
ROSE CITY
ROVER

S RINGS
S19 YMIR
S1_2004
S20 PAALIAQ
S21 TARVOS
S24 KIVIUQ
S26 ALBIORIX
S28 ERRIAPO
S29 SIARNAQ
S2_2004
S5_2004
SARATOV
SATELLITE
SATURN
SCAT LIGHT
SCORPIUS
SEVRUKOVO
SHALKA
SHELBURNE
SIGMA SGR
SINOPE
SIOUX COUNTY
SIRIUS
SKY
SL9
SOKO-BANJA
SOLAR SYSTEM
SOLAR WIND
SOLAR_SYSTEM
SPACECRAFT_DECK
SPICA
ST. MARKS
ST. MICHEL
STANNERN
STAR
STARFIELD
STIM LAMP
SUN
SYSTEM
TATAHOUINE
TAU CETI
TELESTO
TETHYS
THALASSA
THEBE
TIESCHITZ
TITAN
TITANIA
TOURINNES-LA-GROSSE
TRITON
U RINGS
U12 PORTIA
U13 ROSALIND
U16 CALIBAN

U17 SYCORAX
UMBRIEL
UNK
URANUS
UTRECHT
VAVILOVKA
VEGA
VENUS
VERAMIN
VIGARANO
WARRENTON
WINDSOCK
ZAVID
ZHOVTNEVYI

TARGET_PARAMETER_NAME **STATIC**

A AXIS RADIUS
ALL
ASCENDING NODE LONGITUDE
B AXIS RADIUS
BOND ALBEDO
C AXIS RADIUS
EQUATORIAL RADIUS
FLATTENING
MAGNETIC MOMENT
MASS
MASS DENSITY
MEAN RADIUS
MEAN SOLAR DAY
N/A
OBLIQUITY
ORBITAL ECCENTRICITY
ORBITAL INCLINATION
ORBITAL SEMIMAJOR AXIS
PERIAPSIS ARGUMENT ANGLE
POLE DECLINATION
POLE RIGHT ASCENSION
REVOLUTION PERIOD
SIDEREAL ROTATION PERIOD
SURFACE GRAVITY
UNK

TARGET_TYPE **STATIC**

ASTEROID
CALIBRATION
COMET
DUST
GALAXY
GLOBULAR CLUSTER
METEORITE
METEOROID
METEOROID STREAM
METEOROID_STREAM

N/A
NEBULA
OPEN CLUSTER
PLANET
PLANETARY NEBULA
PLANETARY SYSTEM
PLANETARY_SYSTEM
PLASMA CLOUD
REFERENCE
RING
SATELLITE
STAR
STAR CLUSTER
SUN
TERRESTRIAL SAMPLE
TRANS-NEPTUNIAN OBJ

TASK_NAME **DYNAMIC**

DATA RECOVERY AND ANALYSIS
GROUP LEADER
GRSFE
N/A
PLANETARY DATA SYSTEM
RESEARCH STAFF
UNK
VIKING

TECHNICAL_SUPPORT_TYPE **SUGGESTED**

FULL
ONE_TIME
PROTOTYPE

TELEMETRY_FORMAT_ID **STATIC**

AI8
ALL
BDT
BK5
BPB
BPT
EHR
ELS
ESS
HCA
HCJ
HCM
HIM
HIS
HMA
HPB
HPJ
HPW
HRW

IM4
IM8
LNR
LPB
LPU
LRS
MPB
MPP
MPR
MPW
PW4
PW8
RAW
RCP
RWR
SCI
SPT
XCM
XED
XPB
XPN
XPW
XRW

TELEMETRY_PROVIDER_TYPE **[PDS_MER_OPS]** **SUGGESTED**
TDS

TELEMETRY_SOURCE_ID **[PDS_EN]** **DYNAMIC**
EGSE_ID_0
EGSE_ID_1
EM
FM0
FM1
VC0
VC1

TELEMETRY_SOURCE_TYPE **[PDS_MER_OPS]** **SUGGESTED**
DATA PRODUCT
SFDU

TELESCOPE_ID **DYNAMIC**
A
B
C
D
IRS
ISS-NA
ISS-WA
MAWD
N/A
VISA
VISB

TEST_PHASE_NAME **[PDS_MER_OPS]** **SUGGESTED**
CALIBRATION
CHECKOUT
DEVELOPMENT
INTEGRATION AND TEST

TEST_PULSE_STATE **STATIC**
OFF
ON

TEXT_FLAG **[PDS_EN]** **STATIC**
N
Y

TLM_CMD_DISCREPANCY_FLAG **STATIC**
FALSE
TRUE

TORQUE_CONSTANT **[PDS_MER_OPS]** **SUGGESTED**

TORQUE_GAIN **[PDS_MER_OPS]** **SUGGESTED**

TORQUE_GAIN_NAME **[PDS_MER_OPS]** **SUGGESTED**
DERIVATIVE
INTEGRAL
PROPORTIONAL

TRANSMITTED_POLARIZATION_TYPE **[PDS_EN]** **DYNAMIC**
CIRCULAR
ELLIPTICAL
HORIZONTAL
LEFT CIRCULAR
LEFT ELLIPTICAL
LINEAR
PARALLEL
PERPENDICULAR
RIGHT CIRCULAR
RIGHT ELLIPTICAL
VERTICAL

TWIST_ANGLE_TYPE **STATIC**
DEFAULT
GALILEO

UNEVEN_BIT_WEIGHT_CORR_FLAG **STATIC**
OFF
ON

VAR_DATA_TYPE **STATIC**

ASCII_COMPLEX
ASCII_INTEGER
ASCII_REAL
BINARY_CODED_DECIMAL
BIT_STRING
BOOLEAN
CHARACTER
COMPLEX
DATE
EBCDIC_CHARACTER
FLOAT
IBM_COMPLEX
IBM_INTEGER
IEEE_COMPLEX
IEEE_REAL
INTEGER
LSB_BIT_STRING
LSB_INTEGER
LSB_UNSIGNED_INTEGER
MAC_COMPLEX
MAC_INTEGER
MAC_REAL
MAC_UNSIGNED_INTEGER
MSB_BIT_STRING
MSB_INTEGER
MSB_UNSIGNED_INTEGER
N/A
PC_COMPLEX
PC_INTEGER
PC_REAL
PC_UNSIGNED_INTEGER
REAL
SUN_COMPLEX
SUN_INTEGER
SUN_REAL
SUN_UNSIGNED_INTEGER
TIME
UNSIGNED_INTEGER
VAXG_COMPLEX
VAXG_REAL
VAX_BIT_STRING
VAX_COMPLEX
VAX_DOUBLE
VAX_INTEGER
VAX_REAL
VAX_UNSIGNED_INTEGER

VECTOR_COMPONENT_ID **DYNAMIC**

CLST_LAT
CLST_LNG
DECLNATN
ESL_X

ESL_Y
ESL_Z
GAMMA
ICC_X
ICC_Y
ICC_Z
LAT
LATJ$-3
LATS$-3
LATU$-3
LONG
LONJ$-3
LONS$-3
LONU$-3
PHI
PVO_X
PVO_Y
PVO_Z
R
RADIUS
RHO
RJ$
RS$
RU$
R_ASCNSN
SIGMA
THETA
V
VPHI
VR
VRHO
VSO_X
VSO_Y
VSO_Z
VZ
WX
WY
WZ
W_LONG
X
XE
XS
Y
YE
YS
Z
ZE
ZS

VECTOR_COMPONENT_ID_1 **DYNAMIC**

RJ$
RS$
RU$

VECTOR_COMPONENT_ID_2 **DYNAMIC**

LATJ$-3
LATS$-3
LATU$-3

VECTOR_COMPONENT_ID_3 **DYNAMIC**

LONJ$-3
LONS$-3
LONU$-3

VECTOR_COMPONENT_TYPE **DYNAMIC**

DISTANCE
ISCC X
ISCC Y
ISCC Z
LATITUDE
LONGITUDE
RANGE
SSCC X
SSCC Y
SSCC Z
ULATITUDE
VELOCITY
X
Y
Z

VECTOR_COMPONENT_UNIT **DYNAMIC**

AU
DEGREES
JOVIAN RADII (1Rj = 71398km)
KM/S
N/A
PLANETARY RADII
RN (RN = 24,765KM)
RU (RU = 25,600KM)
SATURN RADII (1 Rs = 60330 km)
UNK
URANUS RADII (1 Ru = 25600 km)

VOLUME_FORMAT **DYNAMIC**

ANSI
HIGH-SIERRA
ISO-9660
ISO-9660_LEVEL1
ISO-9660_LEVEL2
NONE
TAR
UDF_ISO-9660_BRIDGE
VAX-BACKUP

VOLUME_SERIES_NAME **DYNAMIC**

AMES MARS GENERAL CIRCULATION MODEL
BLOOMSBERG UNIVERSITY GONIOMETER OBSERVA
CASSINI ORBITER
CLEMENTINE MISSION
DEEP IMPACT
DEEP IMPACT SUPPORT ARCHIVE
DEEP SPACE 1
DEEP SPACE 1 MISSION
DI GROUND-BASED SUPPORT ARCHIVES
DIS_VOLUME_SER_NAME_AA_0001
DS1 DATA
EARTH-BASED RING OCCULTATIONS
GIANT PLANET SATELLITE ASTROMETRY
GIOTTO EXTENDED MISSION PROJECT
GROUND BASED ATMOSPHERIC OBSERVATIONS
IHW ARCHIVE ADDENDA
INTERNATIONAL HALLEY WATCH
IUE COMET DATABASE
LUNAR RADAR OBSERVATIONS
LUNAR RECONNAISSANCE ORBITER
MARS EXPLORATION ROVER
MARS GRAVITY
MARS ODYSSEY
MESSENGER
MISSION TO EARTH
MISSION TO JUPITER
MISSION TO MARS
MISSION TO MERCURY
MISSION TO SATURN
MISSION TO SMALL BODIES
MISSION TO THE MOON
MISSION TO VENUS
N/A
NEAR EARTH ASTEROID ENCOUNTER MISSION
NEW HORIZONS
PIONEER VENUS ORBITER SERIES
PLANETARY DATA SYSTEM EDUCATIONAL RESOUR
SATURN RING PLANE CROSSING 1995-1996
SBN DELIVERY VOLUMES
SBN ONLINE ARCHIVES, ASTEROID DATA
SBN ONLINE ARCHIVES, COMET DATA
SBN SPECIAL COLLECTIONS, IDA/GASPRA
SHOEMAKER-LEVY 9 IMPACT EVENTS
SKY SURVEY
STARDUST
VOYAGERS TO THE OUTER PLANETS

VOLUME_SET_ID **FORMATION**

DE_DLR_PF_MEXHRS_1000
DE_UNIK_IGM_MEXMRS_1000
EU_ESA_DSCI_GEM_0001

FR_CNES_CNRS_MEXOMG_1000
FR_IPSLCNRS_MEXSPI_1000
IT_URM1_DINF_MEXMDS_1000
N/A
SE_IRF_IRFK_MEXASP_1000
SE_IRF_IRFK_MEXASP_3000
USA_NASA_IHW_HAL
USA_NASA_IHW_HAL_0001_TO_HAL_0023
USA_NASA_IHW_HAL_0024
USA_NASA_IHW_HAL_0025_TO_HAL_0026
USA_NASA_JPL_CORADR_0001
USA_NASA_JPL_CORADR_0042
USA_NASA_JPL_CORADR_0043
USA_NASA_JPL_CORADR_0045
USA_NASA_JPL_CORADR_0046
USA_NASA_JPL_CORADR_0047
USA_NASA_JPL_CORADR_0048
USA_NASA_JPL_CORADR_0050
USA_NASA_JPL_CORADR_0051
USA_NASA_JPL_CORADR_0053
USA_NASA_JPL_CORADR_0054
USA_NASA_JPL_CORADR_0055
USA_NASA_JPL_CORADR_0058
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USA_NASA_JPL_CORS_0001_TO_CORS_0010
USA_NASA_JPL_CORS_0021_TO_CORS_0028
USA_NASA_JPL_CORS_0041_TO_CORS_0050
USA_NASA_JPL_CORS_0081_TO_CORS_0085
USA_NASA_JPL_CORS_0101
USA_NASA_JPL_CORS_0102
USA_NASA_JPL_CORS_0103
USA_NASA_JPL_CORS_0104_TO_CORS_0116

USA_NASA_JPL_CORS_0117_TO_CORS_0126
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USA_NASA_JPL_CORS_0128
USA_NASA_JPL_CORS_0129
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USA_NASA_JPL_CORS_0132
USA_NASA_JPL_CORS_0133
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USA_NASA_USGS_MG_1272
USA_NASA_USGS_MG_1273
USA_NASA_USGS_MG_1274
USA_NASA_USGS_MG_1275
USA_NASA_USGS_MG_1276
USA_NASA_USGS_MG_1277
USA_NASA_USGS_MG_1278
USA_NASA_USGS_MG_1279
USA_NASA_USGS_MG_1280
USA_NASA_USGS_MG_1281
USA_NASA_USGS_MG_1282
USA_NASA_USGS_MG_1283
USA_NASA_USGS_MG_1284
USA_NASA_USGS_MG_1285
USA_NASA_USGS_MG_1286
USA_NASA_USGS_MG_1287
USA_NASA_USGS_MG_1288
USA_NASA_USGS_MG_1289
USA_NASA_USGS_MG_1290
USA_NASA_USGS_MG_1291
USA_NASA_USGS_MG_1292
USA_NASA_USGS_MG_1293
USA_NASA_USGS_MG_1294
USA_NASA_USGS_MG_1295
USA_NASA_USGS_MG_1296
USA_NASA_USGS_MG_1297
USA_NASA_USGS_MG_1298
USA_NASA_USGS_MG_1299
USA_NASA_USGS_MG_1300
USA_NASA_USGS_MG_1301
USA_NASA_USGS_MG_1302
USA_NASA_USGS_MG_1303
USA_NASA_USGS_MG_1304
USA_NASA_USGS_MG_1305
USA_NASA_USGS_MG_1306
USA_NASA_USGS_MG_1307
USA_NASA_USGS_MG_1308
USA_NASA_USGS_MG_1309
USA_NASA_USGS_MG_1310
USA_NASA_USGS_MG_1311
USA_NASA_USGS_MG_1313
USA_NASA_USGS_MG_1314
USA_NASA_USGS_MG_1315
USA_NASA_USGS_MG_1316
USA_NASA_USGS_MG_1317

USA_NASA_USGS_MG_1318
USA_NASA_USGS_MG_1319
USA_NASA_USGS_MG_1320
USA_NASA_USGS_MG_1321
USA_NASA_USGS_MG_1322
USA_NASA_USGS_MG_1323
USA_NASA_USGS_MG_1324
USA_NASA_USGS_MG_1325
USA_NASA_USGS_MG_1326
USA_NASA_USGS_MG_1327
USA_NASA_USGS_MG_1328
USA_NASA_USGS_MG_1329
USA_NASA_USGS_MG_1330
USA_NASA_USGS_MG_1331
USA_NASA_USGS_MG_1332
USA_NASA_USGS_MG_1333
USA_NASA_USGS_MG_1334
USA_NASA_USGS_MG_1335
USA_NASA_USGS_MG_1336
USA_NASA_USGS_MG_1337
USA_NASA_USGS_MG_1338
USA_NASA_USGS_MG_1339
USA_NASA_USGS_MG_1340
USA_NASA_USGS_MG_1341
USA_NASA_USGS_MG_1342
USA_NASA_USGS_MG_1343
USA_NASA_USGS_MG_1344
USA_NASA_USGS_MG_1345
USA_NASA_USGS_MG_1346
USA_NASA_USGS_MG_1347
USA_NASA_USGS_MG_1348
USA_NASA_USGS_MG_1349
USA_NASA_USGS_MG_1352
USA_NASA_USGS_MG_1353
USA_NASA_USGS_MG_1354
USA_NASA_USGS_MG_1355
USA_NASA_USGS_MG_1356
USA_NASA_USGS_MG_1357
USA_NASA_USGS_MG_1358
USA_NASA_USGS_MG_1359
USA_NASA_USGS_MG_1360
USA_NASA_USGS_MG_1361
USA_NASA_USGS_MG_1362
USA_NASA_USGS_MG_1363
USA_NASA_USGS_MG_1364
USA_NASA_USGS_MG_1365
USA_NASA_USGS_MG_1366
USA_NASA_USGS_MG_1367
USA_NASA_USGS_MG_1368
USA_NASA_USGS_MG_1369
USA_NASA_USGS_MG_1370
USA_NASA_USGS_MG_1371
USA_NASA_USGS_MG_1372
USA_NASA_USGS_MG_1373

USA_NASA_USGS_MG_1374
USA_NASA_USGS_MG_1375
USA_NASA_USGS_MG_1376
USA_NASA_USGS_MG_1377
USA_NASA_USGS_MG_1378
USA_NASA_USGS_MG_1379
USA_NASA_USGS_MG_1380
USA_NASA_USGS_MG_1381
USA_NASA_USGS_MG_1382
USA_NASA_USGS_MG_1383
USA_NASA_USGS_MG_1384
USA_NASA_USGS_MG_1385
USA_NASA_USGS_MG_1386
USA_NASA_USGS_MG_1387
USA_NASA_USGS_MG_1388
USA_NASA_USGS_MG_1389
USA_NASA_USGS_MG_1390
USA_NASA_USGS_MG_1391
USA_NASA_USGS_MG_1392
USA_NASA_USGS_MG_1393
USA_NASA_USGS_MG_1394
USA_NASA_USGS_MG_1395
USA_NASA_USGS_MG_1396
USA_NASA_USGS_MG_1397
USA_NASA_USGS_MG_1398
USA_NASA_USGS_MG_1399
USA_NASA_USGS_MG_1400
USA_NASA_USGS_MG_1401
USA_NASA_USGS_MG_1402
USA_NASA_USGS_MG_1403
USA_NASA_USGS_MG_1404
USA_NASA_USGS_MG_1405
USA_NASA_USGS_MG_1406
USA_NASA_USGS_MG_1407
USA_NASA_USGS_MG_1408
USA_NASA_USGS_MG_1409
USA_NASA_USGS_MG_1410
USA_NASA_USGS_MG_1411
USA_NASA_USGS_MG_1412
USA_NASA_USGS_MG_1413
USA_NASA_USGS_MG_1414
USA_NASA_USGS_MG_1415
USA_NASA_USGS_MG_1416
US_UIOW_DPA_MEXMDI_1000

VOLUME_SET_NAME **DYNAMIC**

CLEMENTINE BASEMAP MOSAIC
CLEMENTINE HIRES MOSAIC
CLEMENTINE UVVIS MOSAIC
CLEMENTINE: BASEMAP MOSAIC
CLEMENTINE: EDR IMAGE ARCHIVE
CLEMENTINE: INTERMEDIATE AND REDUCED BISTATIC RADAR DATA
CLEMENTINE: RAW BISTATIC RADAR DATA ARCHIVE

COMET HALLEY ARCHIVE
COMETS CROMMELIN AND GIACOBINI-ZINNER ARCHIVE
DTM/MDIM: GLOBAL COVERAGE
ELECTRON TEMPERATURE PROBE PROCESSED DATA SETS
FIELDS AND PARTICLES DATA SETS
GALILEO EARTH/MOON NIMS EXPERIMENT DATA RECORDS V1.0
GALILEO PROBE ARCHIVE
GALILEO SOLID STATE IMAGING ORBITS 11 - 17
GALILEO SOLID STATE IMAGING RAW EDR IMAGES
GALILEO VENUS NIMS EXPERIMENT DATA RECORDS V1.0
GALILEO: NEAR INFRARED MAPPING SPECTROMETER (NIMS) CUBE DAT
GALILEO: NEAR INFRARED MAPPING SPECTROMETER (NIMS) CUBE DATA
GALILEO: NEAR INFRARED MAPPING SPECTROMETER (NIMS) EDR DATA
GALILEO: RAW RADIO SCIENCE DATA
GEOLOGIC REMOTE SENSING FIELD EXPERIMENT
GIOTTO EXTENDED MISSION ARCHIVE
GROUND BASED ATMOSPHERIC OBSERVATIONS
HST/WFPC2 SATURN IMAGES THROUGH NOVEMBER 1995
IRIS DERIVED PARAMETERS JUPITER & SATURN
IRIS FULL RESOLUTION SPECTRA JUPITER
IRIS FULL RESOLUTION SPECTRA NEPTUNE
IRIS FULL RESOLUTION SPECTRA SATURN
IRIS FULL RESOLUTION SPECTRA URANUS
LUNAR PROSPECTOR LEVEL 0 ARCHIVE
LUNAR PROSPECTOR: LINE OF SIGHT ACCELERATION PROFILE DATA
LUNAR PROSPECTOR: SPHERICAL HARMONIC MODELS AND GRAVITY DATA
MAGELLAN: ALTIMETRY AND RADIOMETRY COMPOSITE DATA
MAGELLAN: FULL RESOLUTION RADAR MOSAICS
MAGELLAN: GLOBAL ALTIMETRY AND RADIOMETRY DATA
MAGELLAN: LINE OF SIGHT ACCELERATION PROFILE DATA
MAGELLAN: RADAR DATA PRODUCTS
MAGELLAN: RADIO OCCULTATION RAW DATA
MAGELLAN: RSS 5 OCCULTATION PROFILES
MAGELLAN: SPHERICAL HARMONIC MODELS AND DIGITAL MAP DATA
MAGELLAN: THE MOSAIC IMAGE DATA
MAGNETOMETER AND ELECTRIC FIELD DETECTOR
MARINER 9 IRIS SPECTRAL OBSERVATIONS OF MARS
MARS CLIMATE SOUNDER EDR
MARS GLOBAL SURVEYOR MAG/ER LEVEL 1 ARCHIVE
MARS GLOBAL SURVEYOR PRE-MAPPING PHASE DVD-ROM ARCHIVE
MARS GLOBAL SURVEYOR SCIENCE SAMPLER
MARS GLOBAL SURVEYOR SPICE FILES
MARS GLOBAL SURVEYOR TES-TSDR
MARS ODYSSEY SPICE FILES
MARS PATHFINDER: THE ASI/MET ARCHIVE
MARS PATHFINDER: THE IMAGER FOR MARS PATHFINDER EDR
MARS PATHFINDER: THE ROVER ARCHIVE
MDIM: AMAZONIS PLANITIA REGION
MDIM: ARABIA TERRA REGION
MDIM: ELYSIUM PLANITIA REGION
MDIM: PLANUM AUSTRALE REGION
MDIM: VASTITAS BOREALIS REGION
MDIM: XANTHE TERRA REGION
MGS ACCELEROMETER DATA PRODUCTS

MGS MARS ORBITER LASER ALTIMETER AEDR ARCHIVE
MGS MARS ORBITER LASER ALTIMETER ARCHIVE
MGS MARS ORBITER LASER ALTIMETER PEDR AND EGDR ARCHIVES
MGS MARS ORBITER LASER ALTIMETER RADIOMETRY ARCHIVES
MGS RST SCIENCE DATA PRODUCTS
MGS: RAW RADIO SCIENCE DATA FROM CRUISE
MGS: RAW RADIO SCIENCE DATA FROM MAPPING
MGS: RAW RADIO SCIENCE DATA FROM MOI
MGS: RAW RS DATA FROM EXTENDED MISSION
MGS: RAW RS SOLAR CONJUNCTION DATA
MISSION TO MARS
MO: RS DATA PRODUCTS
MOC DSDP ARCHIVE
MOC SDP ARCHIVE
MODEL: AMES MARS GENERAL CIRCULATION MODEL
MPF: SURFACE RADIO SCIENCE DATA
MRO CRISM OBSERVATIONS
MRO SHARAD OBSERVATIONS
MRO: RAW RS GRAVITY DATA
MULTI-LOOK COLOR MDIM - VOLUME 14
MULTI-LOOK COLOR MDIM: AMAZONIS PLANITIA REGION
MULTI-LOOK COLOR MDIM: ARABIA TERRA REGION
MULTI-LOOK COLOR MDIM: ELYSIUM PLANITIA REGION
MULTI-LOOK COLOR MDIM: PLANUM AUSTRALE REGION
MULTI-LOOK COLOR MDIM: VASTITAS BOREALIS REGION
MULTI-LOOK COLOR MDIM: XANTHE TERRA REGION
NEAR: CALIBRATED NEAR-INFRARED SPECTROMETER
NEAR: GEOMETRY
NEAR: MAGNETOMETER
NEAR: MULTI-SPECTRAL IMAGER EDR DATA
NEAR: NEAR LASER RANGE FINDER
NEAR: NEAR LASER RANGEFINDER
NEAR: NEAR MULTISPECTRAL IMAGER
NEAR: NEAR-INFRARED SPECTROMETER
NEAR: X-RAY/GAMMA-RAY SPECTROMETER
NEUTRAL MASS SPECTROMETER DATA
ODY: GRS AHD ARCHIVE
ODY: GRS AND ARCHIVE
ODY: GRS CGS ARCHIVE
ODY: GRS DHD ARCHIVE
ODY: GRS DND ARCHIVE
ODY: GRS EDR ARCHIVE
ODY: GRS SGS ARCHIVE
ODY: RAW RADIO SCIENCE DATA FROM MAPPING
ODYSSEY MISSION TO MARS - MARIE DATA
PDS WELCOME TO THE PLANETS
PDS/SBN IDA/GASPRA DATA COLLECTION, DECEMBER 1999
PIONEER VENUS ORBITER
PRE-MAGELLAN RADAR AND GRAVITY DATA
SHOEMAKER-LEVY 9 IMPACT EVENTS - SELECT
STARDUST NAVCAM PREFLIGHT CALIBRATION DATA
SUPPLEMENTAL EXPERIMENTER DATA RECORD (SEDR) RAW DATA
ULYSSES AT JUPITER - FIELDS AND PARTICLES
ULYSSES AT JUPITER - SCE RAW DATA

UVS DERIVED NORTH/SOUTH MAPS
VIKING LANDER EDR IMAGES
VIKING LANDER FOOTPAD TEMPERATURE SENSOR DATA
VIKING LANDER METEOROLOGY BINNED PRESSURE, TEMP, WIND CORR
VIKING LANDERS IMAGING ATMOSPHERIC OPTICAL DEPTH DATA
VIKING LANDERS METEOROLOGY BINNED PRESSURE, TEMP, WIND
VIKING LANDERS METEOROLOGY POINT-BY-POINT PRESSURE DATA
VIKING LANDERS METEOROLOGY SUMMARY PRESSURE DATA
VIKING ORBITER 1 & 2: INFRARED THERMAL MAPPER DATA
VIKING ORBITER IMAGES OF MARS
VIKING ORBITERS AND MARINER 9 MARS CLOUD CATALOG
VIKING ORBITERS INFRARED THERMAL MAPPER BINNED/CLOUDS
VIKING ORBITERS MARS ATMOSPHERIC WATER DETECTOR
VOYAGER 1 PLASMA WAVE SPECTROMETER WAVEFORM DATA
VOYAGER 1: RAW RADIO SCIENCE DATA FROM SATURN
VOYAGER 1: RAW RADIO SCIENCE DATA FROM SATURN - EGR
VOYAGER 1: RAW RADIO SCIENCE DATA FROM TITAN
VOYAGER 2 PLASMA WAVE SPECTROMETER WAVEFORM DATA
VOYAGER 2: RAW RADIO SCIENCE DATA FROM SATURN
VOYAGER AT JUPITER - FIELDS AND PARTICLES LOW RATE SCIENCE
VOYAGER IMAGES OF JUPITER
VOYAGER IMAGES OF NEPTUNE
VOYAGER IMAGES OF SATURN
VOYAGER IMAGES OF URANUS
VOYAGER RADIO OCCULTATION REDUCED DATA

X_AXIS_MAXIMUM **[PDS_MER_OPS]** **SUGGESTED**

X_AXIS_MINIMUM **[PDS_MER_OPS]** **SUGGESTED**

X_OFFSET **[PDS_EN]** **RANGE**
N/A

Y_AXIS_MAXIMUM **[PDS_MER_OPS]** **SUGGESTED**

Y_AXIS_MINIMUM **[PDS_MER_OPS]** **SUGGESTED**

Y_OFFSET **[PDS_EN]** **RANGE**
N/A

Z_AXIS_VELOCITY **[PDS_MER_OPS]** **RANGE**

Z_AXIS_VELOCITY_NAME **[PDS_MER_OPS]** **SUGGESTED**
SCAN
SEEK

Z_OFFSET **[PDS_EN]** **RANGE**
N/A

ZERO_ELEVATION_LINE **[PDS_MER_OPS]** **SUGGESTED**

Appendix B

JPL-MGDS STANDARD VALUES

This section defines standard values that are unique to the JPL Multimission Ground Data System (MGDS, formerly the Space Flight Operations Center). These values are mostly specific to products that are unique to MGDS. Other values are repeated here so as to correlate them with associated values. Please refer to the MGDS-PDS interface specification in the MGDS Software Interface Specification, module CDB-Any-Catalog2 for specific restrictions and conventions regarding use of these elements and values.

Top-Level Mission Ground Data System Parameters

Mission Name	Mission ID	Acronym	Spacecraft Name	Spacecraft Acronym	ID
VOYAGER	0	VGR	VOYAGER_1	VGR1	31
			VOYAGER_1_SIM		41
			VOYAGER_2	VGR2	32
			VOYAGER_2_SIM		42
ULYSSES	3	ULS	ULYSSES	ULS	55
			ULYSSES_SIM		65
GALILEO	1	GLL	GALILEO	GLL	77
			GALILEO_SIM		87
CASSINI	7	CAS	CASSINI	CAS	82
			CASSINI_SIM		90
			CASSINI_ITL		81
			CASSINI_HS_SIM		149
MARS_PATHFINDER	6	MPF	MARS_PATHFINDER	MPF	53

			MARS_PATHFINDER_SIM		84
MARS_GLOBAL_SURVEYOR	5	MGS	MARS_GLOBAL_SURVEYOR	MGS	94
			MARS_GLOBAL_SURVEYOR_SIM	MGS	95
MARS_SURVEYOR_98	14	M98	MARS_SURVEYOR_98_ORBITER	M98O	127
			MARS_SURVEYOR_98_LANDER	M98L	116
			MARS_SURVEYOR_98_ORBITER_SIM		120
			MARS_SURVEYOR_98_LANDER_SIM		60
MARS_SURVEYOR_01	15	M01	MARS_SURVEYOR_01_ORBITER	M01O	
			MARS_SURVEYOR_01_LANDER	M01L	
			MARS_SURVEYOR_01_ORBITER_SIM		
			MARS_SURVEYOR_01_LANDER_SIM		
MARS_SURVEYOR_03	16	M03	MARS_SURVEYOR_03_ORBITER	M03O	
			MARS_SURVEYOR_03_LANDER	M03L	
			MARS_SURVEYOR_03_ORBITER_SIM		
			MARS_SURVEYOR_03_LANDER_SIM		
PLUTO_EXPRESS	17	PEX	PLUTO_EXPRESS	PX1	200
			PLUTO_EXPRESS_1_SIM		201
			PLUTO_EXPRESS_2	PX2	202
			PLUTO_EXPRESS_2_SIM		203
DEEP_SPACE_1	9	DS1	DEEP_SPACE_1	DS1	
			DEEP_SPACE_1_SIM		
DEEP_SPACE_3	12	DS3	DEEP_SPACE_3	DS3	
			DEEP_SPACE_3_SIM		

Table Notes:

1. Mission and Spacecraft Name values are formal names used in software interfaces, and are constrained by the rules of CCSDS Parameter Value Language (CCSDS standard CCSD0006). In most instances, these values should be interpreted by software without sensitivity to alphabetic case, although by convention, values are normally expressed in all caps.

2. Mission Ids are used exclusively within the MGDS to index parameters and adaptation code common to all spacecraft in a mission, and are defined in the NJPL SIS Module. There is also a 24-character limit on spacecraft names used with DSN.

3. Mission Acronyms are frequently used by software to refer to mission configuration information. Values are limited to three characters.

4. No spacecraft acronyms are currently defined for non-spacecraft.

5. Spacecraft IDs are numerical values assigned by the DSN (and CCSDS) as labels for packet telemetry data emitted by the spacecraft. Unique values are generally assigned for separate spacecraft, as well as for unique spacecraft simulators that can flow telemetry data through parts of the Ground Data System in order to keep this data distinct from that of the real spacecraft.

6. Spacecraft acronyms are not generally used within the MGDS, but are used in the DSN, and occasionally in the Planetary Data System (referred to as spacecraft ID in the PDS).

Appendix C

META-DATA DEFINITION OBJECTS

The PDS works with the planetary science community in order to create standardized definitions for data objects and data elements. (All of the data structure objects developed to date appear in the following section, and the element definitions make up the bulk of this document.) The PDS uses two data definition objects to capture information about data objects and data elements.

An example of a filled-out element object accompanies the element definition object. Examples of filledout object definitions may be found in the subsequent section ("PDS Structure Objects").

ELEMENT DEFINITION OBJECT

```
OBJECT                          = ELEMENT_DEFINITION
  NAME                          = <data element name>
  STATUS_TYPE                   = {PENDING, APPROVED, OBSOLETE}
  STATUS_NOTE                   = "V1.0 1990-03-10 IAM New Data_Element
                                  Definition"
  DESCRIPTION                   = <data element description>
  SOURCE_NAME                   ="PDS CN/I.B.Proponent"
  GENERAL_DATA_TYPE             = {CHARACTER, ALPHABET, ALPHANUMERIC,
                                  INTEGER, REAL, DECIMAL, EXPONENTIAL,
                                  TIME, DATE, CONTEXT_DEPENDENT}
  UNIT                          = <default unit of measure>
  VALID_MAXIMUM                 = <maximum value>
  VALID_MINIMUM                 = <minimum value>
  MAXIMUM_LENGTH                = <maximum length for character fields>
  MINIMUM_LENGTH                = <minimum length for character fields>
  STANDARD_VALUE_SET            = <standard values>
  STANDARD_VALUE_TYPE           = {STATIC, DYNAMIC, SUGGEST,RANGE,
                                  FORMATION, TEXT, DEFINITION}
  STANDARD_VALUE_SET_DESC       = <standard value descriptions>
  DEFAULT                       = <standard value or unknown, n/a, error>
  FORMATION_RULE_DESC           = <a standard or algorithm for the creation of
                                  values>
  SYSTEM_CLASSIFICATION_ID      = <system index>
  GENERAL_CLASSIFICATION_TYPE   = <subject index>
  OBJECT                        = ALIAS
    ALIAS_NAME                  = <alias name>
    OBJECT_NAME                 = <alias object name>
    USAGE_NOTE                  = <notes of the alias history or use>
```

```
    END_OBJECT                  = ALIAS
    OBJECT                      = LOCAL_ENVIRONMENT
        SQL_FORMAT              = <sql standard format>
        TERSE_NAME              = <data element terse name>
    END_OBJECT                  = LOCAL_ENVIRONMENT
END_OBJECT                      = ELEMENT_DEFINITION
```

ELEMENT DEFINITION EXAMPLE

```
OBJECT                              = ELEMENT_DEFINITION
  NAME                              = PRODUCT_ID
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V1.0 1992-03-10 MAC New Data_Element
                                       Definition"
  DESCRIPTION                       = "The product_id data element represents
                                       a permanent, unique identifier assigned to
                                       a data product by its producer. See also:
                                       source_product_id.

                                       Note: In the PDS, the value assigned to product_id
                                       must be unique within its data set."
  SOURCE_NAME                       = "PDS CN/MAC"
  GENERAL_DATA_TYPE                 = CHARACTER
  UNIT                              = "N/A"
  VALID_MAXIMUM                     = "N/A"
  VALID_MINIMUM                     = "N/A"
  MAXIMUM_LENGTH                    = 40
  MINIMUM_LENGTH                    = "N/A"
  STANDARD_VALUE_SET                = "N/A"
  STANDARD_VALUE_TYPE               = SUGGEST
  STANDARD_VALUE_SET_DESC           = "N/A"
  DEFAULT                           = "N/A"
  FORMATION_RULE_DESC               = "N/A"
  SYSTEM_CLASSIFICATION_ID          = COMMON
  GENERAL_CLASSIFICATION_TYPE       = DATASET
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
  OBJECT                            = LOCAL_ENVIRONMENT
    SQL_FORMAT                      = "CHAR(40)"
    TERSE_NAME                      = productid
  END_OBJECT                        = LOCAL_ENVIRONMENT
END_OBJECT                          = ELEMENT_DEFINITION
```

OBJECT DEFINITION OBJECT

```
OBJECT                            = GENERIC_OBJECT_DEFINITION
  NAME                            = <object name - See object naming standard>
  STATUS_TYPE                     = {PENDING, APPROVED}
  STATUS_NOTE                     = "V1.0 yyyy-mm-dd JSH Note"
  DESCRIPTION                     = <object description>
  SOURCE_NAME                     = <mission name, node id>
  REQUIRED_ELEMENT_SET            = <data elements that are required members
                                    of the defined object>
  OPTIONAL_ELEMENT_SET            = <data elements that are optional members
                                    of the defined object. For generic objects
                                    these include all PSDD elements.>
  REQUIRED_OBJECT_SET             = <objects that are required members of the
                                    defined object>
  OPTIONAL_OBJECT_SET             = <objects that are optional members of the
                                    defined object>
  OBJECT_CLASSIFICATION_TYPE      = {DATA SET CATALOG, DEFINITION
                                    PRODUCT, CATALOG, STRUCTURE,
                                    SYSTEM}
  OBJECT                          = ALIAS
    ALIAS_NAME                    = <alias object name>
    USAGE_NOTE                    = <node, mission, institutition, task, or person>
  END_OBJECT                      = ALIAS
END_OBJECT                        = OBJECT_DEFINITION
```

Appendix D

PDS STRUCTURE OBJECTS

The following is a set of data object type definitions reflecting information about objects recently standardized in the PDS. Structure objects outline the format in which the science data appear in PDS labels. Examples of structure objects are table and image.

An explanation of each PDS structure object is included in the PDS Standards Reference. In that document for each object there is text that describes the object, outlines it uses, and illustrates one or more examples.

The following is a partial list of objects. It will grow as existing data object types are reviewed and standardized. They appear here for the information and reference of the data supplier.

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = ALIAS
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V1.0 1992-09-24 MAC New Data Object Definition"
  DESCRIPTION                       = "The alias object provides a method of identifying
                                        alternate terms or names for approved data elements
                                        or objects within a data system. "
  SOURCE_NAME                       = PDS-CN/M.Cribbs
  REQUIRED_ELEMENT_SET              = {ALIAS_NAME,
                                        USAGE_NOTE}
  OPTIONAL_ELEMENT_SET              = {OBJECT_NAME,
                                        PSDD}
  REQUIRED_OBJECT_SET               = "N/A"
  OPTIONAL_OBJECT_SET               = "N/A"
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = ARRAY
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V1.0 1993-11-24 SMH Optional AXIS_ORDER_TYPE
                                        added and AXIS_START and AXIS_STOP selected for
                                        approval; decided at MC splinter held 09-16-93.
                                        V0.2 1993-07-29 SMH Final revisions based on ORC
                                        review. Approved 08-11-93 pending decision on axis
                                        ordering options and start/stop axis keywords. V0.1
                                        1993-01-22 ACR Object proposal resulting from
                                        Technical session held 13 Jan 1993. "
  DESCRIPTION                       = "The ARRAY object is provided to describe
                                        dimensioned arrays of homogeneous objects. Note
                                        that an ARRAY can contain only a single object,
                                        which can itself be another ARRAY or COLLECTION if
                                        required. A maximum of 6 axes is allowed in an
                                        ARRAY. The optional _AXIS_ elements can be used
                                        to describe the variation between successive
                                        objects in the ARRAY. Values for AXIS_ITEMS and
                                        _AXIS_ elements for multidimensional arrays are
                                        supplied as sequences in which the rightmost or
                                        last item varies the fastest as the default. The
                                        default may be changed to leftmost or first item
                                        varying the fastest by including the optional
                                        element AXIS_ORDER_TYPE with a value of
                                        FIRST_INDEX_FASTEST. "
  SOURCE_NAME                       = PDS-SBN
  REQUIRED_ELEMENT_SET              = {AXES,
                                        AXIS_ITEMS,
                                        NAME}
  OPTIONAL_ELEMENT_SET              = {AXIS_INTERVAL,
                                        AXIS_NAME,
                                        AXIS_ORDER_TYPE,
                                        AXIS_START,
                                        AXIS_STOP,
                                        AXIS_UNIT,
                                        CHECKSUM,
                                        DESCRIPTION,
                                        INTERCHANGE_FORMAT,
                                        START_BYTE,
                                        PSDD}
  REQUIRED_OBJECT_SET               = "N/A"
  OPTIONAL_OBJECT_SET               = {ARRAY,
                                        BIT_ELEMENT,
                                        COLLECTION,
                                        ELEMENT}
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = BIT_COLUMN
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V2.1 1991-09-30 MDM New Data Object Definition V2.2
                                        1992-07-06 MAC Updated for revised PSDD "
  DESCRIPTION                       = "The bit_column object identifies a bit string
                                        embedded in a column. Bit_columns defined within
                                        columns are analogous to columns defined within
                                        rows. Note: It is recommended by the Planetary Data
                                        System that all new objects should be defined with
                                        all fields on byte boundaries. This precludes
                                        having multiple values strung together in bit
                                        strings, as occurs in the bit_column object.
                                        Bit_column is intended for use in describing
                                        existing binary data strings, but is not
                                        recommended for use in defining new data objects
                                        because it will not be recognized by most
                                        general-purpose software. Additional Note: A bit
                                        column cannot contain embedded objects. "
  SOURCE_NAME                       = PDS-CN/M.Martin
  REQUIRED_ELEMENT_SET              = {BIT_DATA_TYPE,
                                        BITS,
                                        DESCRIPTION,
                                        NAME,
                                        START_BIT}
  OPTIONAL_ELEMENT_SET              = {BIT_MASK,
                                        FORMAT,
                                        INVALID_CONSTANT,
                                        ITEM_BITS,
                                        ITEM_OFFSET,
                                        ITEMS,
                                        MAXIMUM,
                                        MINIMUM,
                                        MISSING_CONSTANT,
                                        OFFSET,
                                        SCALING_FACTOR,
                                        UNIT,
                                        PSDD}
  REQUIRED_OBJECT_SET               = "N/A"
  OPTIONAL_OBJECT_SET               = "N/A"
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = BIT_ELEMENT
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V1.0 1996-08-26 KL New Data Object Definition"
  DESCRIPTION                       = "The bit_element object identifies a bit string
                                        embedded in a element. "
  SOURCE_NAME                       = PDS-CN/M.Martin
  REQUIRED_ELEMENT_SET              = "N/A"
  OPTIONAL_ELEMENT_SET              = "N/A"
  REQUIRED_OBJECT_SET               = "N/A"
  OPTIONAL_OBJECT_SET               = "N/A"
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                             = GENERIC_OBJECT_DEFINITION
  NAME                             = CATALOG
  STATUS_TYPE                      = APPROVED
  STATUS_NOTE                      = "V1.0 1992-07-31 SMH New Data Object Definition V1.1
                                     1992-08-04 GMW Updated description, element and
                                     object sets V1.2 2007-09-28 SHS Made SOFTWARE and
                                     REFERENCE objects optional. "
  DESCRIPTION                      = "The CATALOG object is used within a VOLUME object
                                     to reference completed PDS high level catalog
                                     templates. These provide additional information
                                     related to the data sets on the volume. "
  SOURCE_NAME                      = PDS-CN/S.Hess
  REQUIRED_ELEMENT_SET             = "N/A"
  OPTIONAL_ELEMENT_SET             = {DATA_SET_ID,
                                     LOGICAL_VOLUME_PATH_NAME,
                                     LOGICAL_VOLUMES,
                                     PSDD}
  REQUIRED_OBJECT_SET              = {DATA_SET,
                                     INSTRUMENT,
                                     INSTRUMENT_HOST,
                                     MISSION}
  OPTIONAL_OBJECT_SET              = {DATA_SET_COLLECTION,
                                     PERSONNEL,
                                     REFERENCE,
                                     SOFTWARE,
                                     TARGET}
  OBJECT_CLASSIFICATION_TYPE       = STRUCTURE
  OBJECT                           = ALIAS
    ALIAS_NAME                     = "N/A"
    USAGE_NOTE                     = "N/A"
  END_OBJECT                       = ALIAS
END_OBJECT                         = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = COLLECTION
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1993-07-29 SMH Final revisions based on ORC
                                  review. Approved 08-11-93. V0.1 1993-01-25 JSH New
                                  Data Object Definition "
  DESCRIPTION                   = "The COLLECTION object allows the ordered grouping
                                  of heterogeneous objects into a named collection.
                                  The COLLECTION object may contain a mixture of
                                  different object types including other COLLECTIONS.
                                  The optional START_BYTE data element provides the
                                  starting location relative to an enclosing object.
                                  If a START_BYTE is not specified, a value of 1 is
                                  assumed. "
  SOURCE_NAME                   = PDS-CN
  REQUIRED_ELEMENT_SET          = {BYTES,
                                  NAME}
  OPTIONAL_ELEMENT_SET          = {CHECKSUM,
                                  DESCRIPTION,
                                  INTERCHANGE_FORMAT,
                                  START_BYTE,
                                  PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = {ARRAY,
                                  BIT_ELEMENT,
                                  COLLECTION,
                                  ELEMENT}
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = COLUMN
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V2.1 1991-09-30 MDM New Data Object Definition V2.2
                                   1992-07-06 MAC Updated for revised PSDD "
  DESCRIPTION                   = "The COLUMN object identifies a single column in a
                                   data object. Note: In the PDS, columns must not
                                   contain embedded COLUMN objects. "
  SOURCE_NAME                   = PDS-CN/M.Martin
  REQUIRED_ELEMENT_SET          = {BYTES,
                                   DATA_TYPE,
                                   NAME,
                                   START_BYTE}
  OPTIONAL_ELEMENT_SET          = {BIT_MASK,
                                   COLUMN_NUMBER,
                                   DERIVED_MAXIMUM,
                                   DERIVED_MINIMUM,
                                   DESCRIPTION,
                                   FORMAT,
                                   INVALID_CONSTANT,
                                   ITEM_BYTES,
                                   ITEM_OFFSET,
                                   ITEMS,
                                   MAXIMUM,
                                   MAXIMUM_SAMPLING_PARAMETER,
                                   MINIMUM,
                                   MINIMUM_SAMPLING_PARAMETER,
                                   MISSING_CONSTANT,
                                   OFFSET,
                                   SAMPLING_PARAMETER_INTERVAL,
                                   SAMPLING_PARAMETER_NAME,
                                   SAMPLING_PARAMETER_UNIT,
                                   SCALING_FACTOR,
                                   UNIT,
                                   VALID_MAXIMUM,
                                   VALID_MINIMUM,
                                   PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = {ALIAS,
                                   BIT_COLUMN}
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                            = GENERIC_OBJECT_DEFINITION
  NAME                            = CONTAINER
  STATUS_TYPE                     = APPROVED
  STATUS_NOTE                     = "V3.0 1992-06-01 MAC New Data Object Definition"
  DESCRIPTION                     = "The container object is a method of grouping a set
                                      of sub-objects (such as columns) that repeat within
                                      a data objects (such as a table). Use of the
                                      container object allows repeating groups to be
                                      defined within a data structure. "
  SOURCE_NAME                     = PDS-CN
  REQUIRED_ELEMENT_SET            = {BYTES,
                                      DESCRIPTION,
                                      NAME,
                                      REPETITIONS,
                                      START_BYTE}
  OPTIONAL_ELEMENT_SET            = {PSDD}
  REQUIRED_OBJECT_SET             = "N/A"
  OPTIONAL_OBJECT_SET             = {COLUMN,
                                      CONTAINER}
  OBJECT_CLASSIFICATION_TYPE      = STRUCTURE
  OBJECT                          = ALIAS
    ALIAS_NAME                    = "N/A"
    USAGE_NOTE                    = "N/A"
  END_OBJECT                      = ALIAS
END_OBJECT                        = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                           = GENERIC_OBJECT_DEFINITION
  NAME                           = DIRECTORY
  STATUS_TYPE                    = APPROVED
  STATUS_NOTE                    = "V1.0 1992-08-05 RM New Data Object Definition"
  DESCRIPTION                    = "The Directory object is used to define a
                                     hierarchical file organization on a linear tape
                                     media. It identifies all directories and
                                     subdirectories below the root level (Note: The root
                                     directory object is implicit). Subdirectories are
                                     identified by embedding DIRECTORY objects. Files
                                     within the directories and subdirectories are
                                     sequentially identified by using FILE objects with
                                     a sequence_number value corresponding to their
                                     position on the tape. A sequence_number value
                                     will be unique for each file on the tape. "
  SOURCE_NAME                    = PDS-CN/R.Monarrez
  REQUIRED_ELEMENT_SET           = {NAME}
  OPTIONAL_ELEMENT_SET           = {RECORD_TYPE,
                                     SEQUENCE_NUMBER,
                                     PSDD}
  REQUIRED_OBJECT_SET            = {FILE}
  OPTIONAL_OBJECT_SET            = {DIRECTORY}
  OBJECT_CLASSIFICATION_TYPE     = STRUCTURE
  OBJECT                         = ALIAS
    ALIAS_NAME                   = "N/A"
    USAGE_NOTE                   = "N/A"
  END_OBJECT                     = ALIAS
END_OBJECT                       = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = DOCUMENT
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1992-07-31 AMF New Data Object Definition"
  DESCRIPTION                   = "The DOCUMENT object is used to identify a
                                    particular document provided on a volume to support
                                    a data set or data set collection. A document can
                                    be made up of one or many files in a single format.
                                    Multiple versions of a document can be supplied on
                                    a volume with separate formats, requiring a
                                    DOCUMENT object for each document version, i.e.,
                                    OBJECT = TEX_DOCUMENT and OBJECT = PS_DOCUMENT
                                    when including both the TEX and Postscript versions
                                    of the same document. If the document's
                                    INTERCHANGE_FORMAT is BINARY, it is recommended
                                    that the ABSTRACT_TEXT keyword be used for ASCII
                                    browsing and text searches. "
  SOURCE_NAME                   = PDS-CN/A.Farny
  REQUIRED_ELEMENT_SET          = {DOCUMENT_FORMAT,
                                    DOCUMENT_NAME,
                                    DOCUMENT_TOPIC_TYPE,
                                    INTERCHANGE_FORMAT,
                                    PUBLICATION_DATE}
  OPTIONAL_ELEMENT_SET          = {ABSTRACT_TEXT,
                                    DESCRIPTION,
                                    ENCODING_TYPE,
                                    FILES,
                                    PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = ELEMENT
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1993-07-29 SMH Final revisions based on ORC
                                   review. Approved 08-11-93. V0.1 1993-02-22 ACR
                                   Object proposal resulting from Technical session
                                   held 13 Jan 1993. "
  DESCRIPTION                   = "The ELEMENT object provides a means of defining a
                                   lowest level component of a data object that is
                                   stored in an integral multiple of 8-bit bytes.
                                   Element objects may be embedded in COLLECTION and
                                   ARRAY data objects. The optional START_BYTE
                                   element identifies a location relative to the
                                   enclosing object. If not explicitly included, a
                                   START_BYTE = 1 is assumed for the ELEMENT. "
  SOURCE_NAME                   = PDS-SBN
  REQUIRED_ELEMENT_SET          = {BYTES,
                                   DATA_TYPE,
                                   NAME}
  OPTIONAL_ELEMENT_SET          = {BIT_MASK,
                                   DERIVED_MAXIMUM,
                                   DERIVED_MINIMUM,
                                   DESCRIPTION,
                                   FORMAT,
                                   INVALID_CONSTANT,
                                   MAXIMUM,
                                   MINIMUM,
                                   MISSING_CONSTANT,
                                   OFFSET,
                                   SCALING_FACTOR,
                                   START_BYTE,
                                   UNIT,
                                   VALID_MAXIMUM,
                                   VALID_MINIMUM,
                                   PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = FIELD
  STATUS_TYPE                   = PENDING
  STATUS_NOTE                   = "V1.1 2002-12-20 SJ/ACR Revised proposal following
                                   technical discussion. "
  DESCRIPTION                   = "The FIELD object is used inside a SPREADSHEET
                                   object to define a single delimited column within
                                   the logical table. "
  SOURCE_NAME                   = PDS-PPI
  REQUIRED_ELEMENT_SET          = {BYTES,
                                   DATA_TYPE,
                                   NAME}
  OPTIONAL_ELEMENT_SET          = {DESCRIPTION,
                                   FIELD_DELIMITER,
                                   FIELD_NUMBER,
                                   FORMAT,
                                   ITEM_BYTES,
                                   ITEMS,
                                   MISSING_CONSTANT,
                                   UNIT,
                                   PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = FILE
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = “V1.0 1991-07-07 MDM New Data Element Definition
                                    V1.1 1992-07-06 MDD Update for revised PSDD ”
  DESCRIPTION                   = “The file object is used to define the format of a
                                    file, to reference external files, and to indicate
                                    boundaries between label records and data records
                                    in data files with attached labels. In the PDS, the
                                    file object may be used in two ways: 1) As a
                                    container, or envelope, for label files. All label
                                    files contain an implicit file object that starts
                                    at the top of the label and ends where the label
                                    ends. In these cases, the PDS recommends against
                                    using the NAME keyword to reference the file name.
                                    2) As an explicit object, used when a file
                                    reference is needed in a label, in which case the
                                    optional file_name data element is used to
                                    identify the file being referenced. The keywords in
                                    the file object always describe the file being
                                    referenced, not the file in which they are
                                    contained, i.e., if used in a detached label file,
                                    they describe the detached data file, not the label
                                    file itself. ”
  SOURCE_NAME                   = PDS-CN
  REQUIRED_ELEMENT_SET          = {FILE_RECORDS,
                                    RECORD_TYPE}
  OPTIONAL_ELEMENT_SET          = {FILE_NAME,
                                    LABEL_RECORDS,
                                    RECORD_BYTES,
                                    SEQUENCE_NUMBER,
                                    PSDD}
  REQUIRED_OBJECT_SET           = “N/A”
  OPTIONAL_OBJECT_SET           = {ARRAY,
                                    COLLECTION,
                                    DOCUMENT,
                                    GAZETTEER_TABLE,
                                    HEADER,
                                    HISTOGRAM,
                                    HISTORY,
                                    IMAGE,
                                    IMAGE_MAP_PROJECTION,
                                    PALETTE,
                                    QUBE,
                                    SERIES,
                                    SPECTRAL_QUBE,
                                    SPECTRUM,
                                    SPICE_KERNEL,
                                    SPREADSHEET,
                                    TABLE,
                                    TEXT}
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = “N/A”
```

```
        USAGE_NOTE                  = "N/A"
    END_OBJECT                      = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = HEADER
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1992-07-24 SMH New Data Object Definition V1.1
                                    1992-08-04 GMW Updated description. "
  DESCRIPTION                   = "The HEADER object is used to identify and define
                                    the attributes of commonly used header data
                                    structures for non-PDS formats such as VICAR or
                                    FITS. These structures are usually system or
                                    software specific and are described in detail in a
                                    referenced description text file. The use of bytes
                                    within the header object refers to the number of
                                    bytes for the entire header, not a single record. "
  SOURCE_NAME                   = PDS-CN
  REQUIRED_ELEMENT_SET          = {BYTES,
                                    HEADER_TYPE}
  OPTIONAL_ELEMENT_SET          = {DESCRIPTION,
                                    INTERCHANGE_FORMAT,
                                    RECORDS,
                                    PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = HISTOGRAM
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = “V1.0 1991-07-07 MDM New Data Object Definition
                                   V1.1 1002-06-12 JSH Reviewed Data Object ”
  DESCRIPTION                   = “The histogram object is a sequence of numeric
                                   values that provides the number of occurrences of a
                                   data value or a range of data values in a data
                                   object. The number of items in a histogram will
                                   normally be equal to the number of distinct values
                                   allowed in a field of the data object. (For
                                   example, an 8-bit integer field can have 256
                                   values. This would result in a 256-item histogram.)
                                   Histograms may be used to bin data, in which case
                                   an offset and scaling factor indicate the dynamic
                                   range of the data represented. The following
                                   equation allows the calculation of the range of
                                   each ’bin’ in the histogram. ’bin lower boundary’ =
                                   (’bin element’ * scaling_factor) + offset. ”
  SOURCE_NAME                   = PDS-CN
  REQUIRED_ELEMENT_SET          = {DATA_TYPE,
                                   ITEM_BYTES,
                                   ITEMS}
  OPTIONAL_ELEMENT_SET          = {BYTES,
                                   INTERCHANGE_FORMAT,
                                   OFFSET,
                                   SCALING_FACTOR,
                                   PSDD}
  REQUIRED_OBJECT_SET           = “N/A”
  OPTIONAL_OBJECT_SET           = “N/A”
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = “N/A”
    USAGE_NOTE                  = “N/A”
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = IMAGE
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V2.1 1991-01-20 MDM New Data Object Definition;
                                   2008-04-23 PDS-EN/EDR Added optional WINDOW
                                   sub-object. "
  DESCRIPTION                   = "An image object is a regular array of sample
                                   values. Image objects are normally processed with
                                   special display tools to produce a visual
                                   representation of the sample values. This is done
                                   by assigning brightness levels or display colors to
                                   the various sample values. Images are composed of
                                   LINES and SAMPLES. They may contain multiple
                                   bands, in one of several storage orders. Note:
                                   Additional engineering values may be prepended or
                                   appended to each LINE of an image, and are stored
                                   as concatenated TABLE objects, which must be named
                                   LINE_PREFIX and LINE_SUFFIX. IMAGE objects may
                                   be associated with other objects, including
                                   HISTOGRAMs, PALETTEs, HISTORY, and TABLEs which
                                   contain statistics, display parameters, engineering
                                   values, or other ancillary data. "
  SOURCE_NAME                   = PDS-CN/M.Martin
  REQUIRED_ELEMENT_SET          = {LINE_SAMPLES,
                                   LINES,
                                   SAMPLE_BITS,
                                   SAMPLE_TYPE}
  OPTIONAL_ELEMENT_SET          = {BAND_SEQUENCE,
                                   BAND_STORAGE_TYPE,
                                   BANDS,
                                   CHECKSUM,
                                   DERIVED_MAXIMUM,
                                   DERIVED_MINIMUM,
                                   DESCRIPTION,
                                   ENCODING_TYPE,
                                   FIRST_LINE,
                                   FIRST_LINE_SAMPLE,
                                   INVALID_CONSTANT,
                                   LINE_DISPLAY_DIRECTION,
                                   LINE_PREFIX_BYTES,
                                   LINE_SUFFIX_BYTES,
                                   MISSING_CONSTANT,
                                   OFFSET,
                                   SAMPLE_BIT_MASK,
                                   SAMPLE_DISPLAY_DIRECTION,
                                   SAMPLING_FACTOR,
                                   SCALING_FACTOR,
                                   SOURCE_FILE_NAME,
                                   SOURCE_LINE_SAMPLES,
                                   SOURCE_LINES,
                                   SOURCE_SAMPLE_BITS,
                                   STRETCH_MAXIMUM,
                                   STRETCH_MINIMUM,
                                   STRETCHED_FLAG,
```

```
                                         PSDD}
    REQUIRED_OBJECT_SET                 = "N/A"
    OPTIONAL_OBJECT_SET                 = {WINDOW}
    OBJECT_CLASSIFICATION_TYPE          = STRUCTURE
    OBJECT                              = ALIAS
        ALIAS_NAME                      = IMAGE_STRUCTURE
        USAGE_NOTE                      = "NULL"
    END_OBJECT                          = ALIAS
END_OBJECT                              = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                    = GENERIC_OBJECT_DEFINITION
  NAME                    = INDEX_TABLE
  STATUS_TYPE             = APPROVED
  STATUS_NOTE             = "V1.0 1994-11-23 TMA Index_table proposal accepted"
  DESCRIPTION             = "The INDEX_TABLE object is a specific type of TABLE
                              object that provides information about the data
                              stored on an archive volume. The INDEX table
                              contains one row for each data file (or data
                              product label file in the case where detached
                              labels are used) on the volume. The table is
                              formatted so that it may be read directly by many
                              data management systems on various host computers.
                              All fields (columns) are separated by commas, and
                              character filesd are enclosed by double quotation
                              marks. Each record ends in a carriage return/line
                              feed sequence. This allows the table to be treated
                              as a fixed length record file on hosts that support
                              this file type, and as a normal text file on other
                              hosts. It is recommended that RECORD_BYTES and
                              ROW_BYTES be even numbers to simplify ingestion of
                              these files on systems where byte-level parsing is
                              either difficult or impossible. There are two
                              categories of columns for an Index table:
                              Identification and Search. PDS data element names
                              should be used as column names wherever
                              appropriate. The required columns are used for
                              identification. The optional columns are data
                              dependent and are used for search. For example,
                              the following may be useful for searching:
                              LOCATION (e.g., LATITUDE, LONGITUDE,ORBIT_NUMBER)
                              TIME (e.g.,
                              START_TIME,SPACECRAFT_CLOCK_START_COUNT)
                              FEATURE (e.g., FEATURE_TYPE) OBSERVATIONAL
                              CHARACTERISTICS (e.g., INCIDENCE_ANGLE) INSTRUMENT
                              CHARACTERISTICS (e.g., FILTER_NAMES) For archive
                              volumes created before this standard was approved:
                              1) If the keyword INDEX_TYPE is not present, the
                              value defaults to SINGLE unless the Index's
                              filename is given as CUMINDEX.TAB. 2) If the
                              keyword INDEXED_FILE_NAME is not present, the
                              value defaults to '*.*' indicating that the index
                              encompasses all files on the volume. The required
                              COLUMN objects must be named (NAME=):
                              FILE_SPECIFICATION_NAME OR PATH_NAME and
                              FILE_NAME PRODUCT_ID (**) VOLUME_ID (*)
                              DATA_SET_ID (*) PRODUCT_CREATION_TIME (*)
                              LOGICAL_VOLUME_PATH_NAME (must be used with
                              PATH_NAME and FILE_NAME for a logical volume) (*)
                              (*) If the value is constant across the data in
                              the index table, this keyword can appear as a
                              keyword inside the INDEX_TABLE object. If the
                              value is not constant, then a column of the given
                              name must be used. (**) PRODUCT_ID is not required
                              if it has the same value as FILE_NAME or
```

```
                                 FILE_SPECIFICATION_NAME. Required keywords for
                                 required COLUMN Objects: NAME DATA_TYPE
                                 START_BYTE BYTES DESCRIPTION Optional keywords
                                 for required COLUMN Objects: UNKNOWN_CONSTANT
                                 NOT_APPLICABLE_CONSTANT NULL_CONSTANT
                                 Optional COLUMN Objects (NAME=): MISSION_NAME
                                 INSTRUMENT_NAME (or ID) INSTRUMENT_HOST_NAME (or
                                 ID) TARGET_NAME PRODUCT_TYPE MISSION_PHASE_NAME
                                 VOLUME_SET_ID START_TIME STOP_TIME
                                 SPACECRAFT_CLOCK_START_COUNT
                                 SPACECRAFT_CLOCK_STOP_COUNT any other search
                                 columns ”
  SOURCE_NAME                  = PDS-CN
  REQUIRED_ELEMENT_SET         = {COLUMNS,
                                 INDEX_TYPE,
                                 INTERCHANGE_FORMAT,
                                 ROW_BYTES,
                                 ROWS}
  OPTIONAL_ELEMENT_SET         = {DESCRIPTION,
                                 INDEXED_FILE_NAME,
                                 NAME,
                                 NOT_APPLICABLE_CONSTANT,
                                 UNKNOWN_CONSTANT}
  REQUIRED_OBJECT_SET          = {COLUMN}
  OPTIONAL_OBJECT_SET          = “N/A”
  OBJECT_CLASSIFICATION_TYPE   = STRUCTURE
  OBJECT                       = ALIAS
    ALIAS_NAME                 = “N/A”
    USAGE_NOTE                 = “N/A”
  END_OBJECT                   = ALIAS
END_OBJECT                     = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                             = GENERIC_OBJECT_DEFINITION
  NAME                             = PALETTE
  STATUS_TYPE                      = APPROVED
  STATUS_NOTE                      = "V1.0 1992-08-04 GMW New Data Object Definition V1.1
                                      1992-08-11 GWM Updated per ORC Review. "
  DESCRIPTION                      = "The PALETTE object is a sub-class of the table
                                      object. It contains entries which represents color
                                      assignments for SAMPLE values contained in an
                                      IMAGE. If the palette is stored in an external file
                                      from the data file, then it should be stored in
                                      ASCII format as 256 ROWS, each composed of 4
                                      COLUMNS. The first column contains the SAMPLE
                                      value (0 to 255 for an 8-bit SAMPLE), and the
                                      remaining 3 COLUMNS contain the relative amount (a
                                      value from 0 to 255) of each primary color to be
                                      assigned for that SAMPLE value. If the palette is
                                      stored in the data file, then it should be stored
                                      in BINARY format as 256 consecutive 8-bit values
                                      for each primary color (RED, GREEN, BLUE) resulting
                                      in a 768 byte record. "
  SOURCE_NAME                      = PDS-CN/G.M.Woodward
  REQUIRED_ELEMENT_SET             = {COLUMNS,
                                      INTERCHANGE_FORMAT,
                                      ROW_BYTES,
                                      ROWS}
  OPTIONAL_ELEMENT_SET             = {DESCRIPTION,
                                      NAME,
                                      PSDD}
  REQUIRED_OBJECT_SET              = {COLUMN}
  OPTIONAL_OBJECT_SET              = "N/A"
  OBJECT_CLASSIFICATION_TYPE       = STRUCTURE
  OBJECT                           = ALIAS
    ALIAS_NAME                     = "N/A"
    USAGE_NOTE                     = "N/A"
  END_OBJECT                       = ALIAS
END_OBJECT                         = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                        = GENERIC_OBJECT_DEFINITION
  NAME                        = QUBE
  STATUS_TYPE                 = APPROVED
  STATUS_NOTE                 = "V0.5 1992-08-12 R. Mehlman New Data Object
                                 Definition V1.0 1992-08-17 R.Monarrez Edited for
                                 DPW "
  DESCRIPTION                 = "The QUBE object is a multidimensional array (called
                                 the core) of sample values in multiple dimensions.
                                 QUBEs of one to three dimensions can support
                                 optional suffix areas in each axis. A
                                 specialization of the QUBE object is the ISIS
                                 (Integrated Software for Imaging Spectrometers)
                                 Standard Qube, which is a three-dimensional QUBE
                                 with two spatial dimensions and one spectral
                                 dimension. Its axes have the interpretations
                                 'sample', 'line and 'band'. Three physical storage
                                 orders are allowed: band-sequential,
                                 line_interleaved (band-interleaved-by-line) and
                                 sample_interleaved (band-interleaved-by-pixel). An
                                 example of a Standard ISIS Qube is a spectral image
                                 qube containing data from an imaging spectrometer.
                                 Such a qube is simultaneously a set of images (at
                                 different wavelengths) of the same target area, and
                                 a set of spectra at each point of the target area.
                                 Typically, suffix areas in such a qube are confined
                                 to 'backplanes' containing geometric or quality
                                 information about individual spectra, i.e. about
                                 the set of corresponding values at the same pixel
                                 location in each band. NOTE: The following required
                                 and optional elements of the Qube object are
                                 ISIS-specific. Since the ISIS system was designed
                                 before the current version of the PDS Data
                                 Dictionary, some of the element names conflict with
                                 current PDS nomenclature standards. NOTE: In a
                                 Generalized ISIS Qube, the axis names are
                                 arbitrary, but in a Standard ISIS Qube, the
                                 standard value set applies. "
  SOURCE_NAME                 = Galileo/NIMS
  REQUIRED_ELEMENT_SET        = {AXES,
                                 AXIS_NAME,
                                 CORE_BASE,
                                 CORE_HIGH_INSTR_SATURATION,
                                 CORE_HIGH_REPR_SATURATION,
                                 CORE_ITEM_BYTES,
                                 CORE_ITEM_TYPE,
                                 CORE_ITEMS,
                                 CORE_LOW_INSTR_SATURATION,
                                 CORE_LOW_REPR_SATURATION,
                                 CORE_MULTIPLIER,
                                 CORE_NULL,
                                 CORE_VALID_MINIMUM,
                                 SUFFIX_BYTES,
                                 SUFFIX_ITEMS}
  OPTIONAL_ELEMENT_SET        = {BAND_BIN_CENTER,
```

```
                                      BAND_BIN_DETECTOR,
                                      BAND_BIN_GRATING_POSITION,
                                      BAND_BIN_ORIGINAL_BAND,
                                      BAND_BIN_STANDARD_DEVIATION,
                                      BAND_BIN_UNIT,
                                      BAND_BIN_WIDTH,
                                      CORE_NAME,
                                      CORE_UNIT,
                                      SUFFIX_BASE,
                                      SUFFIX_HIGH_INSTR_SAT,
                                      SUFFIX_HIGH_REPR_SAT,
                                      SUFFIX_ITEM_BYTES,
                                      SUFFIX_ITEM_TYPE,
                                      SUFFIX_LOW_INSTR_SAT,
                                      SUFFIX_LOW_REPR_SAT,
                                      SUFFIX_MULTIPLIER,
                                      SUFFIX_NAME,
                                      SUFFIX_NULL,
                                      SUFFIX_UNIT,
                                      SUFFIX_VALID_MINIMUM,
                                      PSDD}
  REQUIRED_OBJECT_SET               = "N/A"
  OPTIONAL_OBJECT_SET               = "N/A"
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = CUBE
    USAGE_NOTE                      = "NULL"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = SERIES
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V1.0 1991-09-12 GMW New Data Object Definition V2.0
                                        1992-07-06 SMH Updated per ORC discussions "
  DESCRIPTION                       = "The series object is a sub-class of the table
                                        object. It is used for storing a sequence of
                                        measurements organized in a specific way (e.g.,
                                        ascending time, radial distances). The current
                                        version uses the same physical format specification
                                        as the table object, but includes sampling
                                        parameter information that describes the variation
                                        between elements in the series. The sampling
                                        parameter keywords are required for the series
                                        object, and may be optional for one or more column
                                        sub-objects, depending on the data organization. "
  SOURCE_NAME                       = PDS-CN
  REQUIRED_ELEMENT_SET              = {COLUMNS,
                                        INTERCHANGE_FORMAT,
                                        ROW_BYTES,
                                        ROWS,
                                        SAMPLING_PARAMETER_INTERVAL,
                                        SAMPLING_PARAMETER_NAME,
                                        SAMPLING_PARAMETER_UNIT}
  OPTIONAL_ELEMENT_SET              = {DERIVED_MAXIMUM,
                                        DERIVED_MINIMUM,
                                        DESCRIPTION,
                                        MAXIMUM_SAMPLING_PARAMETER,
                                        MINIMUM_SAMPLING_PARAMETER,
                                        NAME,
                                        ROW_PREFIX_BYTES,
                                        ROW_SUFFIX_BYTES,
                                        PSDD}
  REQUIRED_OBJECT_SET               = {COLUMN}
  OPTIONAL_OBJECT_SET               = {CONTAINER}
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = SPECTRAL_QUBE
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 2008-04-25 PDS-EN/EDR New Group Object
                                    Definition. "
  DESCRIPTION                   = "Note that the SPECTRAL_QUBE described here is
                                    specifically a PDS SPECTRAL_QUBE. While similar
                                    to the ISIS Qube, it is not identical. (For
                                    guidelines on producing a spectral qube that is
                                    compliant with both PDS and ISIS, see the
                                    SPECTRAL_QUBE chapter of Appendix A of the PDS
                                    Standards Reference.) The SPECTRAL_QUBE object
                                    is a three-dimensional object with two spatial
                                    dimensions and one spectral dimension. The axes
                                    have the interpretations 'sample', 'line', and
                                    'band', respectively. Each of the three axes in a
                                    SPECTRAL_QUBE object may optionally include suffix
                                    data that extend the length of the axis.
                                    Conceptually, this can be viewed as forming one or
                                    more suffix planes that are attached to the core
                                    qube. Suffix planes that extend the band dimension
                                    are called BACKPLANES. Suffix planes that extend
                                    the sample dimension are called SIDEPLANES. Suffix
                                    planes that extend the line dimension are called
                                    BOTTOMPLANES. Note that these terms refer to the
                                    'logical' axes – that is, how the axes are
                                    conceptually modeled – and are not necessarily
                                    related to the physical storage of the
                                    SPECTRAL_QUBE object. The suffix planes are used
                                    for storing auxiliary data that are associated with
                                    the core data. For example, a backplane might be
                                    used for storing the latitude values for each
                                    spatial-spatial pixel. Another backplane might be
                                    used for storing the wavelength of the deepest
                                    absorption feature that was found in the spectrum
                                    at each spatial-spatial pixel. One or more
                                    SIDEPLANES might be used for storing engineering
                                    data that are associated with each spatial line.
                                    Within the logical structure of the SPECTRAL_QUBE,
                                    SAMPLE=1 is the left edge of the spatial-spatial
                                    core image. LINE=1 is the top edge of the
                                    spatial-spatial core image. BAND=1 corresponds to
                                    the spatial-spatial images at the 'front' of the
                                    qube. Core coordinates do not carry over to the
                                    suffix regions. The file in which a
                                    SPECTRAL_QUBE data object is stored is physically
                                    access as though it were a one-dimensional data
                                    structure. Storing the SPECTRAL_QUBE thus
                                    requires that the 'logical' three-dimensional
                                    structure be mapped into the one-dimensional
                                    physical file structure. This involves moving
                                    through the three-dimensional structure in certain
                                    patterns to determine the linear sequence of core
                                    and suffix pixel values that occur in the file. In
```

SPECTRAL_QUBE files, this pattern is defined by specifying which axis index varies fastest in the linear sequence of pixel values in the file, which axis varies second fastest, and which axis varies slowest. In SPECTRAL_QUBE files, the names of the three axes are always SAMPLE, LINE, and BAND. The AXIS_NAME keyword has an array of values that list the names of the axes in the qube. The order of the names specifies the qube storage order in the file. The first axis is the fastest varying, and the third axis is the slowest varying. The SPECTRAL_QUBE supports the following three storage order: - (SAMPLE, LINE, BAND) - Band Sequential (BSQ) - (SAMPLE, BAND, LINE) - Band Interleaved by Line (BIL) - (BAND, SAMPLE, LINE) - Band Interleaved by Pixel (BIP) The lengths of the core axes are given by the CORE_ITEMS keyword and the lengths of the suffix axes are given by the SUFFIX_ITEMS keyword. Both these keywords have array values, whose order corresponds to the order of the axes given by the AXIS_NAME keyword. In the physical file storage, suffix pixel data (if present) are interspersed with the associated core pixel data. For example, in a BSQ storage order file, the physical qube storage in the file begins with the pixels in the first (top) line of the spatial-spatial image plane at the first wavelength band. This is followed by the sideplane pixel values that extend this line of core pixels. Next are the core pixels for the second line, followed by the sideplane pixels for the second line. After the last line of this first core image plane (and its associated sideplane pixels) comes the bottomplane pixels associated with the first band. This is then repeated for the second through last bands. Finally, all the backplane data are stored after all the core data and associated sideplane and bottomplane pixels. If a SPECTRAL_QUBE file includes suffixes on more than one axis, then the region that is the intersection between two (or all three) of the suffix regions is called a CORNER region. The PDS requires that space for CORNER region data be allocated in the data files. However, this space is never actually used. In a SPECTRAL_QUBE file, core pixels can occupy one, two or four bytes. All core pixels within a single file must be of the same physical storage size. Suffix pixels can also occupy one, two, or four bytes of storage in the file. All the suffix pixels within a single file must be of the same physical storage size. Suffix pixels need not be the same size as core pixels. Handling of different pixel data types is described in detail below. In SPECTRAL_QUBE files, core pixel values can be represented by one of several formats. The formats available are dependent on the number of bytes used to store the values in the file. The format is given by the CORE_ITEM_TYPE keyword and the number of bytes stored is given by the CORE_ITEM_BYTES keyword. The following table shows the allowable formats and the number of bytes of storage the use: CORE_ITEM_BYTES CORE_ITEM_TYPE Type Conversion Parameters 1, 2, or 4 UNSIGNED_INTEGER Yes 1, 2, or 4 MSB_UNSIGNED_INTEGER Yes 1, 2, or 4 LSB_UNSIGNED_INTEGER Yes 1, 2, or 4 INTEGER Yes 1, 2, or 4 MSB_INTEGER Yes 1, 2, or 4 LSB_INTEGER Yes 4 IEEE_REAL No 4 VAX_REAL No 4 PC_REAL No As the table above indicates, stored integer values can be converted to real values, representing the actual pixel. The type conversion parameters are given by the CORE_BASE and CORE_MULTIPLIER keywords, and the real value being represented is determined as follows: 'real_value' = CORE_BASE + (CORE_MULTIPLIER * REAL(stored_value)) For 4-byte real formats, the stored values are floating point values that directly represent the pixel values. The same data types and number of storage bytes that are shown in the above table are also available to suffix pixels. However, suffix pixels need not be the same size or have the same data type as the core pixels. Therefore, there is a SUFFIX_ITEM_BYTES keyword to indicate the number of bytes stored for suffix pixels and a SUFFIX_ITEM_TYPE keyword to describe the data type of the suffix pixels. Each suffix plane within a single file can have a different data format. Thus, the values of these keywords are arrays. Each element of the array refers to a separate suffix plane. The SPECTRAL_QUBE allows the number of bytes used to store data in each suffix pixel (SUFFIX_ITEM_BYTES) to be less than the total number of bytes allowcated to each suffix pixel (SUFFIX_BYTES). It is therefore necessary to describe how the stored bytes are aligned within the allocated bytes. The BIT_MASK keyword is used for this purpose. Note that in the following list of required and optional objects and groups, while the *_SUFFIX groups are listed as optional, they are required if their named axis appears in the qube. ”

SOURCE_NAME = PDS-EN/E. Rye

REQUIRED_ELEMENT_SET = {AXES,
AXIS_NAME,

```
                                CORE_ITEM_BYTES,
                                CORE_ITEM_TYPE,
                                CORE_ITEMS,
                                SUFFIX_ITEMS}
  OPTIONAL_ELEMENT_SET        = {CORE_BASE,
                                CORE_HIGH_INSTR_SATURATION,
                                CORE_HIGH_REPR_SATURATION,
                                CORE_LOW_INSTR_SATURATION,
                                CORE_LOW_REPR_SATURATION,
                                CORE_MULTIPLIER,
                                CORE_NAME,
                                CORE_NULL,
                                CORE_UNIT,
                                CORE_VALID_MINIMUM,
                                ISIS_STRUCTURE_VERSION_ID,
                                LINE_DISPLAY_DIRECTION,
                                MD5_CHECKSUM,
                                SAMPLE_DISPLAY_DIRECTION,
                                SUFFIX_BYTES}
  REQUIRED_OBJECT_SET         = {BAND_BIN}
  OPTIONAL_OBJECT_SET         = {BAND_SUFFIX,
                                IMAGE_MAP_PROJECTION,
                                LINE_SUFFIX,
                                SAMPLE_SUFFIX}
  OBJECT_CLASSIFICATION_TYPE  = STRUCTURE
  OBJECT                      = ALIAS
    ALIAS_NAME                = "N/A"
    USAGE_NOTE                = "N/A"
  END_OBJECT                  = ALIAS
END_OBJECT                    = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = SPECTRUM
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1992-07-06 SMH New Data Object Definition"
  DESCRIPTION                   = "The spectrum object is a form of table used for
                                    storing spectral measurements. The spectrum is
                                    assumed to have a number of measurements of the
                                    observation target taken in different spectral
                                    bands. It uses the same physical format
                                    specification as the table object, but includes
                                    sampling parameter information which indicates the
                                    spectral region measured in successive columns or
                                    rows. The common sampling parameters for spectrum
                                    objects are wavelength, frequency, and velocity. "
  SOURCE_NAME                   = PDS-CN/S.Hess
  REQUIRED_ELEMENT_SET          = {COLUMNS,
                                    INTERCHANGE_FORMAT,
                                    ROW_BYTES,
                                    ROWS}
  OPTIONAL_ELEMENT_SET          = {DERIVED_MAXIMUM,
                                    DERIVED_MINIMUM,
                                    DESCRIPTION,
                                    MAXIMUM_SAMPLING_PARAMETER,
                                    MINIMUM_SAMPLING_PARAMETER,
                                    NAME,
                                    ROW_PREFIX_BYTES,
                                    ROW_SUFFIX_BYTES,
                                    SAMPLING_PARAMETER_INTERVAL,
                                    SAMPLING_PARAMETER_NAME,
                                    SAMPLING_PARAMETER_UNIT,
                                    PSDD}
  REQUIRED_OBJECT_SET           = {COLUMN}
  OPTIONAL_OBJECT_SET           = {CONTAINER}
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = SPICE_KERNEL
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.0 1992-02-12 CHA New Data Object Definition"
  DESCRIPTION                   = "The spice_kernel object defines a single kernel
                                    from a collection of SPICE kernels. SPICE kernels
                                    provide ancillary data needed to support the
                                    planning and subsequent analysis of space science
                                    observations. The SPICE system includes the
                                    software and documentation required to read the
                                    SPICE kernels and use the data contained therein to
                                    help plan observations or interpret space science
                                    data. This software and associated documentation
                                    are collectively called the NAIF Toolkit. Kernel
                                    files are the major components of the SPICE system.
                                    The EPHEMERIS kernel type (SPK) contains spacecraft
                                    and planet, satellite or other target body
                                    ephemeris data that provide position and velocity
                                    of a spacecraft as a function of time. The
                                    TARGET_CONSTANTS kernel type (PCK) contains
                                    planet, satellite, comet or asteroid cartographic
                                    constants for that object. The INSTRUMENT kernel
                                    type (IK) contains a collection of science
                                    instrument information, including specification of
                                    the mounting alignment, internal timing, and other
                                    information needed to interpret measurements made
                                    with the instrument. The POINTING kernel type (CK)
                                    contains pointing data (e.g., the inertially
                                    referenced attitude for a spacecraft structure upon
                                    which instruments are mounted, given as a function
                                    of time). The EVENTS kernel type (EK) contains
                                    event information (e.g., spacecraft and instrument
                                    commands, ground data system event logs, and
                                    experimenter's notebook comments). The LEAPSECONDS
                                    kernel type (LSK) contains an account of the
                                    leapseconds needed to correlate civil time (UTC)
                                    with ephemeris time (TDB). This is the measure of
                                    time used in the SP kernel files. The SPACECRAFT
                                    CLOCK COEFFICIENTS kernel type (CLK) contains the
                                    data needed to correlate a spacecraft clock with
                                    ephemeris time. "
  SOURCE_NAME                   = PDS-NAIF/C.Acton
  REQUIRED_ELEMENT_SET          = {DESCRIPTION,
                                    INTERCHANGE_FORMAT,
                                    KERNEL_TYPE}
  OPTIONAL_ELEMENT_SET          = {PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = SPREADSHEET
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V1.1 2002-12-20 SJ/ACR Revised proposal following
                                   technical discussion. "
  DESCRIPTION                   = "The SPREADSHEET object provides a variable-length,
                                   delimited ASCII format for labeling sparse tables
                                   and matrices. It is designed for use with
                                   spreadsheet and database text dump files in formats
                                   such as the comma-separated value (CSV) format. "
  SOURCE_NAME                   = PDS-PPI
  REQUIRED_ELEMENT_SET          = {FIELD_DELIMITER,
                                   FIELDS,
                                   ROW_BYTES,
                                   ROWS}
  OPTIONAL_ELEMENT_SET          = {DESCRIPTION,
                                   NAME,
                                   PSDD}
  REQUIRED_OBJECT_SET           = {FIELD}
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = TABLE
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "V2.1 1991-09-30 MDM New Data Object Definition V2.2
                                  1992-07-06 MAC Updated for revised PSDD "
  DESCRIPTION                   = "The TABLE object is a uniform collection of rows
                                  containing ASCII and/or binary values stored in
                                  columns. Note: In the PDS, if any of the columns in
                                  a table are in binary format, the value of the
                                  keyword interchange_format is BINARY and the
                                  value of record_type is FIXED_LENGTH. On the
                                  other hand, if the columns contain only ASCII data,
                                  interchange_format = ASCII and record_type can
                                  equal STREAM, VARIABLE_LENGTH, or FIXED_LENGTH. "
  SOURCE_NAME                   = PDS-CN/M.Martin
  REQUIRED_ELEMENT_SET          = {COLUMNS,
                                  INTERCHANGE_FORMAT,
                                  ROW_BYTES,
                                  ROWS}
  OPTIONAL_ELEMENT_SET          = {DESCRIPTION,
                                  NAME,
                                  ROW_PREFIX_BYTES,
                                  ROW_SUFFIX_BYTES,
                                  TABLE_STORAGE_TYPE,
                                  PSDD}
  REQUIRED_OBJECT_SET           = {COLUMN}
  OPTIONAL_OBJECT_SET           = {CONTAINER}
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = TABLE_STRUCTURE
    USAGE_NOTE                  = "NULL"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                           = GENERIC_OBJECT_DEFINITION
  NAME                           = TEXT
  STATUS_TYPE                    = APPROVED
  STATUS_NOTE                    = "V1.0 1992-07-01 RM New Data Object Definition"
  DESCRIPTION                    = "The TEXT object provides general description of a
                                     file of plain text. It is recommended that text
                                     objects contain no special formatting characters,
                                     with the exception of the carriage return/line feed
                                     sequence and the page break. It or Unix line
                                     terminators will cause text to be unreadable on
                                     other host computers. Tabs are discouraged, since
                                     they are interpreted differently by different
                                     applications. To ensure ease of display by many
                                     text processors, it is recommended that text lines
                                     be limited to 70 characters. "
  SOURCE_NAME                    = NULL
  REQUIRED_ELEMENT_SET           = {NOTE,
                                     PUBLICATION_DATE}
  OPTIONAL_ELEMENT_SET           = {INTERCHANGE_FORMAT,
                                     PSDD}
  REQUIRED_OBJECT_SET            = "N/A"
  OPTIONAL_OBJECT_SET            = "N/A"
  OBJECT_CLASSIFICATION_TYPE     = STRUCTURE
  OBJECT                         = ALIAS
    ALIAS_NAME                   = "N/A"
    USAGE_NOTE                   = "N/A"
  END_OBJECT                     = ALIAS
END_OBJECT                       = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                              = GENERIC_OBJECT_DEFINITION
  NAME                              = VOLUME
  STATUS_TYPE                       = APPROVED
  STATUS_NOTE                       = "V2.0 1992-08-05 MDM New Data Object Definition;
                                        2008-04-16 EDR Added optional DD_VERSION_ID in
                                        response to SCR3-1021 "
  DESCRIPTION                       = "The volume object describes a physical unit used to
                                        store or distribute data products (e.g. a magnetic
                                        tape, CD_ROM disk, On-Line Magnetic disk or floppy
                                        disk) which contains directories and files. The
                                        directories and files may include documentation,
                                        software, calibration and geometry information as
                                        well as the actual science data. "
  SOURCE_NAME                       = PDS-CN
  REQUIRED_ELEMENT_SET              = {DATA_SET_ID,
                                        DESCRIPTION,
                                        MEDIUM_TYPE,
                                        PUBLICATION_DATE,
                                        VOLUME_FORMAT,
                                        VOLUME_ID,
                                        VOLUME_NAME,
                                        VOLUME_SERIES_NAME,
                                        VOLUME_SET_ID,
                                        VOLUME_SET_NAME,
                                        VOLUME_VERSION_ID,
                                        VOLUMES}
  OPTIONAL_ELEMENT_SET              = {BLOCK_BYTES,
                                        DATA_SET_COLLECTION_ID,
                                        DD_VERSION_ID,
                                        FILES,
                                        HARDWARE_MODEL_ID,
                                        LOGICAL_VOLUME_PATH_NAME,
                                        LOGICAL_VOLUMES,
                                        MEDIUM_FORMAT,
                                        NOTE,
                                        OPERATING_SYSTEM_ID,
                                        PRODUCT_TYPE,
                                        TRANSFER_COMMAND_TEXT,
                                        VOLUME_INSERT_TEXT,
                                        PSDD}
  REQUIRED_OBJECT_SET               = {CATALOG,
                                        DATA_PRODUCER}
  OPTIONAL_OBJECT_SET               = {DATA_SUPPLIER,
                                        DIRECTORY,
                                        FILE}
  OBJECT_CLASSIFICATION_TYPE        = STRUCTURE
  OBJECT                            = ALIAS
    ALIAS_NAME                      = "N/A"
    USAGE_NOTE                      = "N/A"
  END_OBJECT                        = ALIAS
END_OBJECT                          = GENERIC_OBJECT_DEFINITION
```

```
OBJECT                          = GENERIC_OBJECT_DEFINITION
  NAME                          = WINDOW
  STATUS_TYPE                   = APPROVED
  STATUS_NOTE                   = "2008-04-23 PDS-EN/EDR New Data Object Definition."
  DESCRIPTION                   = "The WINDOW object is used to identify an area of
                                    interest within an IMAGE object. For example:
                                    - In sparse images, a sub-image would indicate
                                    where the valid data are located. - In
                                    mosaicked images, sub-images could indicate the
                                    borders of the constituent images. - In
                                    approach images, a sub-image could indicate the
                                    area where the target is expected to be found.
                                    The WINDOW object identifies a rectangular area of
                                    interest within an IMAGE object. WINDOW objects
                                    may not serve as the primary object in a data
                                    product, nor may they appear outside the context of
                                    an IMAGE object. The areas described by separate
                                    WINDOW objects may overlap in whole or in part, but
                                    WINDOW object definitions may not be nested. The
                                    boundaries and physical attributes of the WINDOW
                                    object are always determined with reference to the
                                    enclosing (parent) IMAGE object. That is, 'first'
                                    is defined with respect to the
                                    LINE_DISPLAY_DIRECTION and
                                    SAMPLE_DISPLAY_DIRECTION of the IMAGE and the
                                    WINDOW must have the same SAMPLE_TYPE and
                                    SAMPLE_BITS as the IMAGE. WINDOW objects may not
                                    have prefix or suffix bytes. As a rule, PDS
                                    structures are one-based rather than zero-based.
                                    Thus, references to the parent object using
                                    FIRST_LINE and FIRST_LINE_SAMPLE should be
                                    counted starting at (1,1) rather than (0,0). "
  SOURCE_NAME                   = PDS-EN/E. Rye
  REQUIRED_ELEMENT_SET          = {DESCRIPTION,
                                    FIRST_LINE,
                                    FIRST_LINE_SAMPLE,
                                    LINE_SAMPLES,
                                    LINES}
  OPTIONAL_ELEMENT_SET          = {NAME,
                                    TARGET_NAME,
                                    PSDD}
  REQUIRED_OBJECT_SET           = "N/A"
  OPTIONAL_OBJECT_SET           = "N/A"
  OBJECT_CLASSIFICATION_TYPE    = STRUCTURE
  OBJECT                        = ALIAS
    ALIAS_NAME                  = "N/A"
    USAGE_NOTE                  = "N/A"
  END_OBJECT                    = ALIAS
END_OBJECT                      = GENERIC_OBJECT_DEFINITION
```

Appendix E

ELEMENT ALIASES

The Planetary Data System maintains a list of aliases in its data dictionary in order to alow older labels using obsolete (or improved) data element names to be verified by more recent software.

The following is a list of those terms that have been replaced by other data element names. Due to the fact that some aliases do not apply in every instance, we also provide applicable information about the context in which an alias applies.

This list appears solely to allow PDS users to track data elements that might have disappeared from the PSDD, and to point those users to the term that is currently valid.

PLEASE USE THE VALID PSDD DATA ELEMENT NAMES FOR PDS LABELS. DO NOT USE ALIASES IN PDS LABELS.

ALIAS_NAME	**DATA_ELEMENT_NAME**	**OBJECT_CONTEXT**
activity_id	observation_id	event
axis_interval	sampling_parameter_interval	qube
axis_name	sampling_parameter_name	qube
axis_unit	sampling_parameter_unit	qube
base	offset	image
base	offset	column
base	offset	bit_column
bytes	row_bytes	table
core_base	offset	qube
core_multiplier	scaling_factor	qube
data_type	bit_data_type	bit_column
directory_name	path_name	file
event_start_time	start_time	event
event_stop_time	stop_time	event
format	interchange_format	table
general_catalog_flag	data_set_catalog_flag	volume
header_bytes	bytes	header
header_records	records	header
image_records	lines	image
index_source_file_name	indexed_file_name	index_table
invalid	invalid_constant	element
item_type	data_type	element
item_type	data_type	histogram
maximum_value	maximum	column
maximum_value	maximum	bit_column
media	medium_type	volume

media_format	volume_format	volume
media_type	medium_type	volume
medium	medium_type	volume
minimum_value	minimum	column
minimum_value	minimum	bit_column
missing	missing_constant	element
multiplier	scaling_factor	column
multiplier	scaling_factor	bit_column
records	file_records	file
row_columns	columns	table
source_image_id	source_product_id	image
spice_file_name	source_product_id	file
storage_type	table_storage_type	table
table_rows	rows	table
tapes	volumes	volume
type	data_type	column
type	bit_data_type	bit_column
x_axis_first_pixel	line_first_pixel	image_map_projection
x_axis_framelet_offset	horizontal_framelet_offset	image_map_projection
x_axis_last_pixel	line_last_pixel	image_map_projection
x_axis_projection_offset	line_projection_offset	image_map_projection
y_axis_first_pixel	sample_first_pixel	image_map_projection
y_axis_framelet_offset	vertical_framelet_offset	image_map_projection
y_axis_last_pixel	sample_last_pixel	image_map_projection
y_axis_projection_offset	sample_projection_offset	image_map_projection

Appendix F

DATA ELEMENT CLASSIFIED LISTINGS

This section provides listings of elements by category to aid users in finding elements appropriate for a particular purpose. Elements found in this list may be further researched using the Index found at the end of this document.

This list is organized alphabetically according to the following classifications:

Bibliographic Data Elements

Data Set Data Elements

Data Structure Data Elements

Data System Related Data Elements

Distributed Inventory System Data Elements

Geometry Data Elements

Image Data Elements

Instrument Data Elements

Integrated Software for Imagers and Spectrometers (ISIS) Dat

Map Projection Data Elements

Meteorite Related Data Elements

Mineralogy Data Elements

Mission / Spacecraft / Earth-Based Data Elements

Parameter Data Elements

Personnel / Institution Data Elements

Physical Organization / Media Data Elements

Plasma Data Elements

QUBE Data Elements

RINGS Data Elements

Radiometry / Spectroscopy Data Elements

Software Data Elements

Statistical Data Elements

Target Data Elements

Time / Event / Observation Data Elements

Bibliographic Data Elements

ABSTRACT_DESC
AUTHOR_FULL_NAME
CITATION_DESC
DOCUMENT_TOPIC_TYPE
JOURNAL_NAME
PUBLICATION_DATE
REFERENCE_DESC
REFERENCE_KEY_ID
RESEARCH_TOPIC_DESC
RESEARCH_TOPIC_NAME

Data Set Data Elements

BROWSE_FLAG
BROWSE_USAGE_TYPE
CONFIDENCE_LEVEL_NOTE
DATA_OBJECT_TYPE
DATA_RECORDS
DATA_SET_COLLECTION_DESC
DATA_SET_COLLECTION_ID
DATA_SET_COLLECTION_MEMBER_FLG
DATA_SET_COLLECTION_NAME
DATA_SET_COLLECTION_RELEASE_DT
DATA_SET_COLLECTION_USAGE_DESC
DATA_SET_DESC
DATA_SET_ID
DATA_SET_LOCAL_ID
DATA_SET_NAME
DATA_SET_OR_INST_PARM_DESC
DATA_SET_OR_INSTRUMENT_PARM_NM
DATA_SET_PARAMETER_NAME
DATA_SET_PARAMETER_UNIT
DATA_SET_RELEASE_DATE
DATA_SETS
DETAILED_CATALOG_FLAG
FIRST_PRODUCT_ID
GENERAL_CATALOG_FLAG
IRAS_HCON
LAST_PRODUCT_ID
MAXIMUM_SAMPLING_PARAMETER
MEASUREMENT_ATMOSPHERE_DESC
MEASUREMENT_SOURCE_DESC
MEASUREMENT_STANDARD_DESC
MEASUREMENT_WAVE_CALBRT_DESC
MINIMUM_AVAILABLE_SAMPLING_INT
MINIMUM_SAMPLING_PARAMETER
NAME
NATIVE_START_TIME
NATIVE_STOP_TIME
NODAL_REGRESSION_RATE
NOISE_LEVEL
OCCULTATION_TYPE
ORIGINAL_PRODUCT_ID
PERICENTER_PRECESSION_RATE
PROCESSING_LEVEL_DESC
PROCESSING_LEVEL_ID
PROCESSING_START_TIME
PROCESSING_STOP_TIME
PRODUCT_DATA_SET_ID
PRODUCT_ID
PRODUCT_NAME
PRODUCT_TYPE
REFERENCE_POINT
REFERENCE_POINT_DESC
REFERENCE_POINT_INDEX
REFERENCE_TIME
REQUIRED_STORAGE_BYTES
RING_ASCENDING_NODE_LONGITUDE
RING_ECCENTRICITY
RING_INCLINATION
RING_OBSERVATION_ID
RING_PERICENTER_LONGITUDE
RING_RADIAL_MODE
RING_RADIAL_MODE_AMPLITUDE
RING_RADIAL_MODE_FREQUENCY
RING_RADIAL_MODE_PHASE
RING_SEMIMAJOR_AXIS
SAMPLING_FACTOR
SAMPLING_PARAMETER_INTERVAL
SAMPLING_PARAMETER_NAME
SAMPLING_PARAMETER_RESOLUTION
SAMPLING_PARAMETER_UNIT
SFDU_FORMAT_ID
SOLAR_NORTH_POLE_CLOCK_ANGLE
SOURCE_DATA_SET_ID
SOURCE_PRODUCT_ID
STANDARD_DATA_PRODUCT_ID
TELEMETRY_APPLICATION_ID
USER_PRODUCT_ID

Data Structure Data Elements

ABSTRACT_TEXT
AXES
AXIS_ITEMS
AXIS_NAME
BAND_BIN_BAND_NUMBER
BAND_BIN_CENTER
BAND_BIN_DETECTOR
BAND_BIN_FILTER_NUMBER
BAND_BIN_GRATING_POSITION
BAND_BIN_ORIGINAL_BAND
BAND_BIN_STANDARD_DEVIATION
BAND_BIN_UNIT
BAND_BIN_WIDTH
BAND_SEQUENCE

BAND_STORAGE_TYPE
BANDS
BIT_DATA_TYPE
BIT_MASK
BITS
BYTES
CHECKSUM
COLUMNS
CORE_BASE
CORE_HIGH_INSTR_SATURATION
CORE_HIGH_REPR_SATURATION
CORE_ITEM_BYTES
CORE_ITEM_TYPE
CORE_ITEMS
CORE_LOW_INSTR_SATURATION
CORE_LOW_REPR_SATURATION
CORE_MULTIPLIER
CORE_NAME
CORE_NULL
CORE_UNIT
CORE_VALID_MINIMUM
DATA_TYPE
DERIVED_MAXIMUM
DERIVED_MINIMUM
DESCRIPTION
DOCUMENT_FORMAT
DOCUMENT_NAME
FIELD_DELIMITER
FIELD_NUMBER
FIELDS
FILE_RECORDS
FIRST_LINE
FIRST_LINE_SAMPLE
FORMAT
HEADER_TYPE
INDEX_TYPE
INDEXED_FILE_NAME
INTERCHANGE_FORMAT
INVALID_CONSTANT
ITEM_BITS
ITEM_BYTES
ITEM_OFFSET
ITEMS
LABEL_RECORDS
LINE_PREFIX_BYTES
LINE_PREFIX_STRUCTURE
LINE_SAMPLES
LINE_SUFFIX_BYTES
LINE_SUFFIX_STRUCTURE
LINES
LOGICAL_VOLUME_PATH_NAME
LOGICAL_VOLUMES
MAXIMUM
MINIMUM
MISSING_CONSTANT
MISSING_SCAN_LINES
NAME
NOT_APPLICABLE_CONSTANT
NULL_CONSTANT
OFFSET
RECORD_BYTES
RECORD_FORMAT
RECORD_TYPE
RECORDS
REPETITIONS
ROW_BYTES
ROW_PREFIX_BYTES
ROW_PREFIX_STRUCTURE
ROW_SUFFIX_BYTES
ROW_SUFFIX_STRUCTURE
ROWS
SAMPLE_BIT_MASK
SAMPLE_BITS
SAMPLE_TYPE
SCALING_FACTOR
SOURCE_FILE_NAME
SOURCE_LINE_SAMPLES
SOURCE_LINES
SOURCE_SAMPLE_BITS
START_BIT
START_BYTE
SUFFIX_BASE
SUFFIX_BYTES
SUFFIX_HIGH_INSTR_SAT
SUFFIX_HIGH_REPR_SAT
SUFFIX_ITEM_BYTES
SUFFIX_ITEM_TYPE
SUFFIX_ITEMS
SUFFIX_LOW_INSTR_SAT
SUFFIX_LOW_REPR_SAT
SUFFIX_MULTIPLIER
SUFFIX_NAME
SUFFIX_NULL
SUFFIX_UNIT
SUFFIX_VALID_MINIMUM
TABLE_STORAGE_TYPE
UNIT
UNKNOWN_CONSTANT
VALID_MAXIMUM
VALID_MINIMUM

Data System Related Data Elements

ADDRESS_TEXT
ALIAS_NAME
ALT_ALONG_TRACK_FOOTPRINT_SIZE
ALT_COARSE_RESOLUTION
ALT_CROSS_TRACK_FOOTPRINT_SIZE

ALT_FLAG2_GROUP
ALT_FLAG_GROUP
ALT_FOOTPRINT_LATITUDE
ALT_FOOTPRINT_LONGITUDE
ALT_FOOTPRINTS
ALT_GAIN_FACTOR
ALT_PARTIALS_GROUP
ALT_SKIP_FACTOR
ALT_SPACECRAFT_POSITION_VECTOR
ALT_SPACECRAFT_VELOCITY_VECTOR
ALTIMETRY_FOOTPRINT_TDB_TIME
ANTIBLOOMING_STATE_FLAG
APPLICABLE_START_SCLK
APPLICABLE_START_TIME
APPLICABLE_STOP_SCLK
APPLICABLE_STOP_TIME
ARCHIVE_STATUS
ARCHIVE_STATUS_DATE
ARCHIVE_STATUS_NOTE
ASSUMED_WARM_SKY_TEMPERATURE
ATMOS_CORRECTION_TO_DISTANCE
AVAILABLE_VALUE_TYPE
AVERAGE_ASC_NODE_LONGITUDE
AVERAGE_ECCENTRICITY
AVERAGE_INCLINATION
AVERAGE_ORBIT_PERI_TDB_TIME
AVERAGE_PERIAPSIS_ARGUMENT
AVERAGE_PLANETARY_RADIUS
AVERAGE_SEMIMAJOR_AXIS
BACKGROUND_SAMPLING_FREQUENCY
BACKGROUND_SAMPLING_MODE_ID
BEST_NON_RANGE_SHARP_MODEL_TPT
BEST_RANGE_SHARP_MODEL_TMPLT
BIAS_STATE_ID
BIAS_STRIP_MEAN
BILLING_ADDRESS_LINE
BL_NAME
BL_SQL_FORMAT
BRIGHTNESS_TEMPERATURE
BUFFER_MODE_ID
CALIBRATION_LAMP_STATE_FLAG
CCSDS_SPACECRAFT_NUMBER
CHANGE_DATE
CLASSIFICATION_ID
CLUSTERED_KEY
COLUMN_DESCRIPTION
COLUMN_NAME
COLUMN_ORDER
COLUMN_VALUE
COLUMN_VALUE_NODE_ID
COLUMN_VALUE_TYPE
COMMAND_FILE_NAME
COMMAND_INSTRUMENT_ID
COMMENT_DATE
COMMENT_ID
COMMENT_TEXT
COMMITTEE_MEMBER_FULL_NAME
COMPRESSOR_ID
COMPUTER_VENDOR_NAME
COPIES
CORE_MINIMUM_DN
CREATE_DATE
CRITICALITY
CURATING_NODE_ID
DARK_STRIP_MEAN
DATA_BUFFER_STATE_FLAG
DATA_CONVERSION_TYPE
DATA_ENGINEER_FULL_NAME
DATA_PROVIDER_NAME
DATA_REGION
DATA_SET_CATALOG_FLAG
DATA_SET_COLL_OR_DATA_SET_ID
DATA_SET_TERSE_DESC
DATA_STREAM_TYPE
DD_VERSION_ID
DECAL_NAME
DELAYED_READOUT_FLAG
DELIMITING_PARAMETER_NAME
DERIVED_FRESNEL_REFLECT_CORR
DERIVED_FRESNEL_REFLECTIVITY
DERIVED_PLANETARY_RADIUS
DERIVED_PLANETARY_THRESH_RADI
DERIVED_RMS_SURFACE_SLOPE
DERIVED_THRESH_DETECTOR_INDEX
DISPLAY_FORMAT
DISTRIBUTION_TYPE
DSN_SPACECRAFT_NUM
DSN_STATION_NUMBER
EDIT_ROUTINE_NAME
EFFECTIVE_TIME
ELECTRONICS_BIAS
EPHEMERIS_LATITUDE_CORRECTION
EPHEMERIS_LONGITUDE_CORRECTION
EPHEMERIS_RADIUS_CORRECTION
EXPECTED_MAXIMUM
FAST_HK_ITEM_NAME
FAST_HK_PICKUP_RATE
FILE_STATE
FILTER_TEMPERATURE
FIRST_ALT_FOOTPRINT_TDB_TIME
FIRST_RAD_FOOTPRINT_TDB_TIME
FLIGHT_SOFTWARE_VERSION_ID
FOOTPRINT_NUMBER
FOOTPRINT_POINT_LATITUDE
FOOTPRINT_POINT_LONGITUDE
FORMAL_CORRELATIONS_GROUP
FORMAL_ERRORS_GROUP
FORMATION_RULE_DESC

FRAME_PARAMETER
FRAME_PARAMETER_DESC
FULL_NAME
GENERAL_CLASSIFICATION_TYPE
GENERAL_DATA_TYPE
HELP_ID
HELP_NAME
HELP_TEXT
HOST_ID
HOUSEKEEPING_CLOCK_COUNT
IMAGE_MID_TIME
INST_CMPRS_TYPE
INSTRUMENT_DATA_RATE
INSTRUMENT_FORMATTED_DESC
INSTRUMENT_TEMPERATURE_POINT
INSTRUMENT_VOLTAGE
INSTRUMENT_VOLTAGE_POINT
INTEGRATION_DELAY_FLAG
INTERFRAME_DELAY_DURATION
INTERLINE_DELAY_DURATION
INVENTORY_SPECIAL_ORDER_NOTE
JPL_PRESS_RELEASE_ID
KERNEL_TYPE_ID
KEYWORD_DEFAULT_VALUE
KEYWORD_VALUE_HELP_TEXT
LABEL_REVISION_NOTE
LAST_ALT_FOOTPRINT_TDB_TIME
LAST_RAD_FOOTPRINT_TDB_TIME
MACROPIXEL_SIZE
MANDATORY_COLUMN
MAP_SEQUENCE_NUMBER
MAPPING_START_TIME
MAPPING_STOP_TIME
MAXIMUM_COLUMN_VALUE
MAXIMUM_LENGTH
MEASURED_QUANTITY_NAME
MEDIUM_DESC
MINIMUM_COLUMN_VALUE
MINIMUM_LENGTH
MISSING_FRAMES
MISSING_LINES
MISSING_PACKET_FLAG
MISSING_PIXELS
MISSION_ID
MULT_PEAK_FRESNEL_REFLECT_CORR
NAIF_INSTRUMENT_ID
NAMESPACE_ID
NAV_UNIQUE_ID
NON_CLUSTERED_KEY
NON_RANGE_PROF_CORRS_INDEX
NON_RANGE_SHARP_ECHO_PROF
NON_RANGE_SHARP_FIT
NON_RANGE_SHARP_LOOKS
NSSDC_DATA_SET_ID
OBJECT_CLASSIFICATION_TYPE
OBJECT_NAME
OBJECT_TYPE
OBSERVATION_INCLINATION
OFFSET_FLAG
ON_LINE_IDENTIFICATION
ON_LINE_NAME
OPTICS_TEMPERATURE
OPTIONAL_ELEMENT_SET
OPTIONAL_OBJECT_SET
ORBIT_START_NUMBER
ORBIT_START_TIME
ORBIT_STOP_NUMBER
ORBIT_STOP_TIME
ORDER_DATE
ORDER_NUMBER
ORDER_STATUS
ORDER_STATUS_DATE
ORDER_STATUS_DESC
ORDER_STATUS_ID
ORDER_STATUS_TIME
ORDER_TYPE
OUTPUT_FLAG
OVERWRITTEN_CHANNEL_FLAG
PACKING_FLAG
PARALLEL_CLOCK_VOLTAGE_INDEX
PARAMETER_NAME
PARAMETER_SEQUENCE_NUMBER
PARAMETER_SET_ID
PARAMETER_TYPE
PARENT_TEMPLATE
PATH_NAME
PDS_USER_ID
PDS_VERSION_ID
PEER_REVIEW_DATA_SET_STATUS
PEER_REVIEW_ID
PEER_REVIEW_RESULTS_DESC
PEER_REVIEW_ROLE
PEER_REVIEW_START_DATE
PEER_REVIEW_STOP_DATE
PERIAPSIS_ALTITUDE
PERIAPSIS_TIME
PERMISSION_FLAG
PIXEL_SUBSAMPLING_FLAG
PLANET_READING_SYSTEM_TEMP
POWER_STATE_FLAG
PREPARE_CYCLE_INDEX
PRIMARY_KEY
PROCESS_TIME
PROTOCOL_TYPE
QUATERNION
QUATERNION_DESC
RAD_ALONG_TRACK_FOOTPRINT_SIZE
RAD_CROSS_TRACK_FOOTPRINT_SIZE

RAD_EMISSIVITY_PARTIAL
RAD_FLAG2_GROUP
RAD_FLAG_GROUP
RAD_FOOTPRINT_LATITUDE
RAD_FOOTPRINT_LONGITUDE
RAD_FOOTPRINTS
RAD_NUMBER
RAD_PARTIALS_GROUP
RAD_RECEIVER_SYSTEM_TEMP
RAD_SPACECRAFT_EPOCH_TDB_TIME
RAD_SPACECRAFT_POSITION_VECTOR
RAD_SPACECRAFT_VELOCITY_VECTOR
RADIANCE_OFFSET
RANGE_SHARP_ECHO_PROFILE
RANGE_SHARP_FIT
RANGE_SHARP_LOOKS
RANGE_SHARP_PROF_CORRS_INDEX
RANGE_SHARP_SCALING_FACTOR
RAW_RAD_ANTENNA_POWER
RAW_RAD_LOAD_POWER
READOUT_CYCLE_INDEX
RECEIVED_POLARIZATION_TYPE
RECEIVER_NOISE_CALIBRATION
REGISTRATION_DATE
REMOTE_NODE_PRIVILEGES_ID
REQUEST_DESC
REQUEST_TIME
REQUIRED_ELEMENT_SET
REQUIRED_FLAG
REQUIRED_OBJECT_SET
RESOLUTION_DESC
RESOLUTION_TIME
RESOURCE_CLASS
RESOURCE_ID
RESOURCE_KEYVALUE
RESOURCE_LINK
RESOURCE_NAME
RESOURCE_SIZE
RESOURCE_STATUS
RESOURCE_TYPE
SAMPLING_MODE_ID
SAR_AVERAGE_BACKSCATTER
SAR_FOOTPRINT_SIZE
SCAN_PARAMETER
SCAN_PARAMETER_DESC
SCET_START_TIME
SCET_STOP_TIME
SCLK_START_VALUE
SCLK_STOP_VALUE
SEF_CREATION_TIME
SELECTION_QUERY_DESC
SENSOR_HEAD_ELEC_TEMPERATURE
SEQ_ID
SFDU_LABEL_AND_LENGTH
SHUTTER_STATE_FLAG
SHUTTER_STATE_ID
SIGNAL_CHAIN_ID
SIGNAL_QUALITY_INDICATOR
SITE_ID
SITE_NAME
SNAPSHOT_MODE_FLAG
SOFTWARE_ACCESSIBILITY_DESC
SOFTWARE_TYPE
SOURCE_NAME
SPACECRAFT_ID
SPACECRAFT_ORIENTATION
SPACECRAFT_ORIENTATION_DESC
SPECIAL_INSTRUCTION_ID_NUMBER
SPECTRAL_EDITING_FLAG
SPECTRAL_ORDER_DESC
SPECTRAL_ORDER_ID
SPECTRAL_SUMMING_FLAG
SPECTROMETER_SCAN_MODE_ID
SQL_FORMAT
STANDARD_VALUE_NAME
STANDARD_VALUE_SET
STANDARD_VALUE_SET_DESC
STANDARD_VALUE_TYPE
START_DELIMITING_PARAMETER
START_PAGE_NUMBER
START_PRIMARY_KEY
STATUS_NOTE
STATUS_TYPE
STOP_DELIMITING_PARAMETER
STOP_PRIMARY_KEY
STORAGE_LEVEL_ID
STORAGE_LEVEL_NUMBER
STORAGE_LEVEL_TYPE
SUB_OBJECT_NAME
SUPPORT_REQUEST_DATE
SUPPORT_REQUEST_DESC
SUPPORT_REQUEST_NO
SUPPORT_RESOLUTION
SUPPORT_RESOLUTION_DATE
SUPPORT_STAFF_FULL_NAME
SURFACE_EMISSION_TEMPERATURE
SURFACE_EMISSIVITY
SURFACE_TEMPERATURE
SWATH_WIDTH
SYSTEM_BULLETIN_DATE
SYSTEM_BULLETIN_DESC
SYSTEM_BULLETIN_ID
SYSTEM_BULLETIN_TYPE
SYSTEM_CLASSIFICATION_ID
SYSTEM_EVENT_DATE
SYSTEM_EVENT_USER_NOTE
SYSTEM_EXPERTISE_LEVEL
TABLE_BL_NAME

TABLE_DESC
TABLE_NAME
TABLE_TYPE
TARGET_LIST
TEMPLATE
TEMPLATE_BL_NAME
TEMPLATE_NAME
TEMPLATE_NOTE
TEMPLATE_REVISION_DATE
TEMPLATE_STATUS
TEMPLATE_TYPE
TEMPLATE_USE_INDICATOR
TERSE_NAME
TEXT_FLAG
THRESHOLD_COST
TIME_RANGE_NUMBER
TRANSMITTED_POLARIZATION_TYPE
TUPLE_SEQUENCE_NUMBER
UNCORRECTED_DISTANCE_TO_NADIR
UNIT_ID
USAGE_NOTE
VAR_DATA_TYPE
VAR_ITEM_BYTES
VAR_RECORD_TYPE
VERSION_ID
VERSION_NUMBER
VOLUME_DESC
X_OFFSET
Y_OFFSET
Z_OFFSET

Distributed Inventory System Data Elements

RELEASE_DATE
RELEASE_ID
RELEASE_MEDIUM
RELEASE_PARAMETER_TEXT

Geometry Data Elements

A_AXIS_RADIUS
AIRMASS
APPARENT_MAGNITUDE
ASCENDING_NODE_LONGITUDE
AZIMUTH
B_AXIS_RADIUS
BODY_POLE_CLOCK_ANGLE
C_AXIS_RADIUS
CELESTIAL_NORTH_CLOCK_ANGLE
CENTER_ELEVATION
CENTER_LATITUDE
CENTER_LONGITUDE
COORDINATE_SYSTEM_CENTER_NAME
COORDINATE_SYSTEM_DESC
COORDINATE_SYSTEM_ID
COORDINATE_SYSTEM_NAME
COORDINATE_SYSTEM_REF_EPOCH
COORDINATE_SYSTEM_TYPE
DECLINATION
EARTH_TARGET_POSITION_VECTOR
EARTH_TARGET_VELOCITY_VECTOR
EASTERNMOST_LONGITUDE
ELEVATION
EMISSION_ANGLE
EQUATORIAL_RADIUS
EQUINOX_EPOCH
FIXED_INSTRUMENT_AZIMUTH
FIXED_INSTRUMENT_ELEVATION
FLATTENING
GAIN_NUMBER
GEOCENTRIC_DISTANCE
IMAGE_COUNT
INCIDENCE_ANGLE
IRAS_CLOCK_ANGLE
IRAS_CLOCK_ANGLE_RANGE
IRAS_CLOCK_ANGLE_RATE
IRAS_CLOCK_ANGLE_RATE_SIGMA
KERNEL_TYPE
KEYWORD_LATITUDE_TYPE
LATITUDE
LIGHT_SOURCE_DISTANCE
LIMB_ANGLE
LOCAL_HOUR_ANGLE
LONGITUDE
MAXIMUM_EMISSION_ANGLE
MAXIMUM_INCIDENCE_ANGLE
MAXIMUM_LATITUDE
MAXIMUM_LONGITUDE
MAXIMUM_PHASE_ANGLE
MEAN_SOLAR_DAY
MIDNIGHT_LONGITUDE
MINIMUM_EMISSION_ANGLE
MINIMUM_INCIDENCE_ANGLE
MINIMUM_LATITUDE
MINIMUM_LONGITUDE
MINIMUM_PHASE_ANGLE
NAIF_DATA_SET_ID
NORTH_AZIMUTH
NORTH_AZIMUTH_CLOCK_ANGLE
OBLIQUE_PROJ_POLE_LATITUDE
OBLIQUE_PROJ_POLE_LONGITUDE
OBLIQUE_PROJ_POLE_ROTATION
OBLIQUE_PROJ_X_AXIS_VECTOR
OBLIQUE_PROJ_Y_AXIS_VECTOR
OBLIQUE_PROJ_Z_AXIS_VECTOR
OBLIQUITY
OFFSET_NUMBER
ORBIT_DIRECTION

ORBIT_NAME
ORBIT_NUMBER
ORBITAL_ECCENTRICITY
ORBITAL_INCLINATION
ORBITAL_SEMIMAJOR_AXIS
PERIAPSIS_ARGUMENT_ANGLE
PERIAPSIS_LATITUDE
PERIAPSIS_LONGITUDE
PHASE_ANGLE
PIXEL_ANGULAR_SCALE
PLANET_DAY_NUMBER
POLE_DECLINATION
POLE_RIGHT_ASCENSION
POSITIVE_LONGITUDE_DIRECTION
PROJECTION_LATITUDE_TYPE
RA_DEC_REF_PIXEL
REFERENCE_LATITUDE
REFERENCE_LONGITUDE
RETICLE_POINT_DECLINATION
RETICLE_POINT_RA
REVOLUTION_NUMBER
REVOLUTION_PERIOD
RIGHT_ASCENSION
ROTATION_DIRECTION
ROVER_HEADING
SC_EARTH_POSITION_VECTOR
SC_GEOCENTRIC_DISTANCE
SC_SUN_POSITION_VECTOR
SC_SUN_VELOCITY_VECTOR
SC_TARGET_POSITION_VECTOR
SC_TARGET_VELOCITY_VECTOR
SCAN_RATE
SIDEREAL_ROTATION_PERIOD
SLANT_DISTANCE
SLITWIDTH
SOLAR_DISTANCE
SOLAR_ELONGATION
SOLAR_ELONGATION_SIGMA
SOLAR_LATITUDE
SOLAR_LONGITUDE
SPACECRAFT_ALTITUDE
SPACECRAFT_POINTING_MODE
SPACECRAFT_POINTING_MODE_DESC
SPACECRAFT_SOLAR_DISTANCE
START_AZIMUTH
START_ORBIT_NUMBER
START_RESCAN_NUMBER
START_SOLAR_LONGITUDE
STOP_AZIMUTH
STOP_ORBIT_NUMBER
STOP_SOLAR_LONGITUDE
SUB_LIGHT_SOURCE_AZIMUTH
SUB_SOLAR_AZIMUTH
SUB_SOLAR_LATITUDE
SUB_SOLAR_LONGITUDE
SUB_SPACECRAFT_AZIMUTH
SUB_SPACECRAFT_LATITUDE
SUB_SPACECRAFT_LONGITUDE
SURFACE_BASED_INST_AZIMUTH
SURFACE_BASED_INST_ELEVATION
SYNODIC_ROTATION_PERIOD
TARGET_GEOCENTRIC_DISTANCE
TARGET_HELIOCENTRIC_DISTANCE
TARGET_SUN_POSITION_VECTOR
TARGET_SUN_VELOCITY_VECTOR
TELEMETRY_SOURCE_ID
TIME_FROM_CLOSEST_APPROACH
TOTAL_RESCAN_NUMBER
TRUE_ANOMALY_ANGLE
VECTOR_COMPONENT_1
VECTOR_COMPONENT_2
VECTOR_COMPONENT_3
VECTOR_COMPONENT_ID
VECTOR_COMPONENT_ID_1
VECTOR_COMPONENT_ID_2
VECTOR_COMPONENT_ID_3
VECTOR_COMPONENT_TYPE
VECTOR_COMPONENT_TYPE_DESC
VECTOR_COMPONENT_UNIT
WESTERNMOST_LONGITUDE

Image Data Elements

AUTO_EXPOSURE_DATA_CUT
AUTO_EXPOSURE_PIXEL_FRACTION
AZIMUTH
AZIMUTH_FOV
BAD_PIXEL_REPLACEMENT_FLAG
BAND_CENTER
BAND_NUMBER
BAND_SEQUENCE
BAND_STORAGE_TYPE
BANDS
BLEMISH_FILE_NAME
BLEMISH_PROTECTION_FLAG
BODY_POLE_CLOCK_ANGLE
CELESTIAL_NORTH_CLOCK_ANGLE
CENTER_ELEVATION
CENTER_FILTER_WAVELENGTH
CENTER_RING_RADIUS
CENTRAL_BODY_DISTANCE
CHECKSUM
CMPRS_QUANTZ_TBL_ID
COMPRESSION_TYPE
CONE_ANGLE
CONE_OFFSET_ANGLE
CROSS_CONE_ANGLE
CROSS_CONE_OFFSET_ANGLE

CROSSTRACK_SUMMING
CUT_OUT_WINDOW
DARK_CURRENT_CORRECTION_FLAG
DARK_CURRENT_CORRECTION_TYPE
DARK_CURRENT_DOWNLOAD_FLAG
DARK_CURRENT_FILE_NAME
DARK_LEVEL_CORRECTION
DESCRIPTION
DETECTOR_ASPECT_RATIO
DETECTOR_DESC
DETECTOR_ID
DETECTOR_PIXEL_HEIGHT
DETECTOR_PIXEL_WIDTH
DETECTOR_TYPE
DOWNTRACK_SUMMING
DUST_FLAG
EDIT_MODE_ID
EDR_FILE_NUMBER
EDR_TAPE_ID
ELECTRONICS_DESC
ELECTRONICS_ID
ELEVATION
ELEVATION_FOV
ELEVATION_MOTOR_CLICKS
EMISSION_ANGLE
ENCODING_COMPRESSION_RATIO
ENCODING_MAX_COMPRESSION_RATIO
ENCODING_MIN_COMPRESSION_RATIO
ENCODING_TYPE
ENTROPY
ERROR_PIXELS
EXPOSURE_COUNT
EXPOSURE_DURATION
EXPOSURE_OFFSET_FLAG
EXPOSURE_OFFSET_NUMBER
EXPOSURE_TYPE
FILTER_NAME
FILTER_NUMBER
FILTER_TYPE
FIRST_LINE
FIRST_LINE_SAMPLE
FLAT_FIELD_CORRECTION_FLAG
FLAT_FIELD_FILE_NAME
FOV_SHAPE_NAME
FOVS
GAIN_NUMBER
HORIZONTAL_FOV
HORIZONTAL_FRAMELET_OFFSET
HORIZONTAL_PIXEL_FOV
HORIZONTAL_PIXEL_SCALE
HUFFMAN_TABLE_TYPE
ICT_DESPIKE_THRESHOLD
ICT_QUANTIZATION_STEP_SIZE
ICT_ZIGZAG_PATTERN
IMAGE_DURATION
IMAGE_ID
IMAGE_KEY_ID
IMAGE_NUMBER
IMAGE_OBSERVATION_TYPE
IMAGE_TIME
INCIDENCE_ANGLE
INST_CMPRS_BLK_SIZE
INST_CMPRS_BLOCKS
INST_CMPRS_MODE
INST_CMPRS_NAME
INST_CMPRS_PARAM
INST_CMPRS_QUALITY
INST_CMPRS_QUANTZ_TBL_ID
INST_CMPRS_QUANTZ_TYPE
INST_CMPRS_RATE
INST_CMPRS_RATIO
INST_CMPRS_SYNC_BLKS
INTERCEPT_POINT_LATITUDE
INTERCEPT_POINT_LINE
INTERCEPT_POINT_LINE_SAMPLE
INTERCEPT_POINT_LONGITUDE
INTERFRAME_DELAY
INVERTED_CLOCK_STATE_FLAG
LATITUDE
LIGHT_FLOOD_STATE_FLAG
LIGHT_SOURCE_INCIDENCE_ANGLE
LIGHT_SOURCE_NAME
LIGHT_SOURCE_PHASE_ANGLE
LINE_DISPLAY_DIRECTION
LINE_EXPOSURE_DURATION
LINE_FIRST_PIXEL
LINE_LAST_PIXEL
LINE_PREFIX_BYTES
LINE_PREFIX_STRUCTURE
LINE_PROJECTION_OFFSET
LINE_RESOLUTION
LINE_SAMPLES
LINE_SUFFIX_BYTES
LINE_SUFFIX_STRUCTURE
LINES
LOCAL_TIME
LONGITUDE
LOOK_DIRECTION
MAP_PROJECTION_ROTATION
MAXIMUM_EMISSION_ANGLE
MAXIMUM_INCIDENCE_ANGLE
MAXIMUM_INSTRUMENT_EXPOSR_DUR
MAXIMUM_LATITUDE
MAXIMUM_LOCAL_TIME
MAXIMUM_LONGITUDE
MAXIMUM_PHASE_ANGLE
MAXIMUM_SLANT_DISTANCE
MAXIMUM_SPECTRAL_CONTRAST

MAXIMUM_WAVELENGTH
MEAN
MEAN_RADIANCE
MEAN_REFLECTANCE
MEAN_TRUNCATED_BITS
MEAN_TRUNCATED_SAMPLES
MINIMUM_EMISSION_ANGLE
MINIMUM_INCIDENCE_ANGLE
MINIMUM_INSTRUMENT_EXPOSR_DUR
MINIMUM_LATITUDE
MINIMUM_LOCAL_TIME
MINIMUM_PHASE_ANGLE
MINIMUM_SLANT_DISTANCE
MINIMUM_SPECTRAL_CONTRAST
MINIMUM_WAVELENGTH
MISSING_SCAN_LINES
MOSAIC_DESC
MOSAIC_IMAGES
MOSAIC_PRODUCTION_PARAMETER
MOSAIC_SEQUENCE_NUMBER
MOSAIC_SERIES_ID
MOSAIC_SHEET_NUMBER
NORTH_AZIMUTH
NORTH_AZIMUTH_CLOCK_ANGLE
NOTE
NTV_SAT_TIME_FROM_CLOSEST_APRH
NTV_TIME_FROM_CLOSEST_APPROACH
OBSERVATION_ID
OBSTRUCTION_ID
OFFSET_NUMBER
ON_CHIP_MOSAIC_FLAG
OPTICS_DESC
PHASE_ANGLE
PHOTOMETRIC_CORRECTION_TYPE
PIXEL_ASPECT_RATIO
PIXEL_AVERAGING_HEIGHT
PIXEL_AVERAGING_WIDTH
PLANET_DAY_NUMBER
POLE_DECLINATION
PROCESS_VERSION_ID
PROCESSING_HISTORY_TEXT
RADIANCE_SCALING_FACTOR
REFLECTANCE_SCALING_FACTOR
REGION_DESC
REGION_NAME
RETICLE_POINT_LATITUDE
RETICLE_POINT_LONGITUDE
RETICLE_POINT_NUMBER
SAMPLE_BIT_MASK
SAMPLE_BITS
SAMPLE_DISPLAY_DIRECTION
SAMPLE_FIRST_PIXEL
SAMPLE_LAST_PIXEL
SAMPLE_PROJECTION_OFFSET
SAMPLE_RESOLUTION
SAMPLE_TYPE
SATELLITE_TIME_FROM_CLST_APR
SATURATED_PIXEL_COUNT
SCALED_IMAGE_HEIGHT
SCALED_IMAGE_WIDTH
SCALED_PIXEL_HEIGHT
SCALED_PIXEL_WIDTH
SCAN_MODE_ID
SCAN_RATE
SHUTTER_MODE_ID
SHUTTER_OFFSET_FILE_NAME
SLANT_DISTANCE
SLOPE_FILE_NAME
SMEAR_AZIMUTH
SMEAR_MAGNITUDE
SOLAR_DISTANCE
SOLAR_LATITUDE
SOLAR_LONGITUDE
SOURCE_FILE_NAME
SOURCE_LINE_SAMPLES
SOURCE_LINES
SOURCE_SAMPLE_BITS
SPACECRAFT_ALTITUDE
SPACECRAFT_CLOCK_CNT_PARTITION
SPACECRAFT_CLOCK_START_COUNT
SPACECRAFT_CLOCK_STOP_COUNT
SPATIAL_SUMMING
SPECTRUM_NUMBER
SPECTRUM_SAMPLES
SPICE_FILE_NAME
SQRT_COMPRESSION_FLAG
SQRT_MAXIMUM_PIXEL
SQRT_MINIMUM_PIXEL
STANDARD_DEVIATION
STAR_WINDOW
STAR_WINDOW_COUNT
START_AZIMUTH
START_RESCAN_NUMBER
START_TIME_FROM_CLOSEST_APRCH
STOP_AZIMUTH
STOP_TIME_FROM_CLOSEST_APRCH
STRETCH_MAXIMUM
STRETCH_MINIMUM
STRETCHED_FLAG
SUB_LIGHT_SOURCE_LATITUDE
SUB_LIGHT_SOURCE_LONGITUDE
SUB_SOLAR_AZIMUTH
SUB_SOLAR_LATITUDE
SUB_SOLAR_LONGITUDE
SUB_SPACECRAFT_AZIMUTH
SUB_SPACECRAFT_LATITUDE
SUB_SPACECRAFT_LINE
SUB_SPACECRAFT_LINE_SAMPLE

SUB_SPACECRAFT_LONGITUDE
SURFACE_CLARITY_PERCENTAGE
TARGET_CENTER_DISTANCE
TELEMETRY_FORMAT_ID
TEMPERATURE_TRANSLATION_DESC
TIME_FROM_CLOSEST_APPROACH
TOTAL_FOVS
TOTAL_RESCAN_NUMBER
TRUE_ANOMALY_ANGLE
TRUTH_WINDOW
TWIST_ANGLE
TWIST_ANGLE_TYPE
UNEVEN_BIT_WEIGHT_CORR_FLAG
VERTICAL_FOV
VERTICAL_FRAMELET_OFFSET
VERTICAL_PIXEL_FOV
VERTICAL_PIXEL_SCALE

Instrument Data Elements

ACCUMULATION_COUNT
AMBIENT_TEMPERATURE
APERTURE_TYPE
APXS_COMMUNICATION_ERROR_COUNT
APXS_MECHANISM_ANGLE
AZIMUTH_MOTOR_CLICKS
BAND_NAME
BANDWIDTH
BUILD_DATE
CENTER_FILTER_WAVELENGTH
CENTER_FREQUENCY
CONE_ANGLE
CONE_OFFSET_ANGLE
CONVERTER_CURRENT_COUNT
CONVERTER_VOLTAGE_COUNT
CROSS_CONE_ANGLE
CROSS_CONE_OFFSET_ANGLE
CRYOCOOLER_DURATION
CRYOCOOLER_TEMPERATURE
CYCLE_ID
DATA_PATH_TYPE
DATA_RATE
DATA_SET_OR_INST_PARM_DESC
DATA_SET_OR_INSTRUMENT_PARM_NM
DETECTOR_ASPECT_RATIO
DETECTOR_DESC
DETECTOR_ID
DETECTOR_TEMPERATURE
DETECTOR_TYPE
DETECTORS
DISPERSION_MODE_ID
DOWNLOAD_TYPE
EDIT_MODE_ID
ELECTRONICS_DESC
ELECTRONICS_ID
EXPECTED_DATA_RECORDS
EXPECTED_PACKETS
EXPOSURE_DURATION
EXPOSURE_OFFSET_FLAG
EXPOSURE_OFFSET_NUMBER
FILTER_NAME
FILTER_NUMBER
FILTER_TYPE
FOCAL_PLANE_TEMPERATURE
FOV_SHAPE_NAME
FOVS
FRAME_DURATION
FRAME_ID
FRAME_SEQUENCE_NUMBER
FRAMES
GAIN_MODE_ID
HI_VOLTAGE_POWER_SUPPLY_STATE
HORIZONTAL_FOV
HORIZONTAL_PIXEL_FOV
IMPORTANT_INSTRUMENT_PARMS
INST_AZ_ROTATION_DIRECTION
INSTRUMENT_AZIMUTH_METHOD
INSTRUMENT_CALIBRATION_DESC
INSTRUMENT_DEPLOYMENT_STATE
INSTRUMENT_DESC
INSTRUMENT_ELEVATION_METHOD
INSTRUMENT_HEIGHT
INSTRUMENT_HOST_ID
INSTRUMENT_HOST_NAME
INSTRUMENT_HOST_TYPE
INSTRUMENT_ID
INSTRUMENT_LENGTH
INSTRUMENT_MANUFACTURER_NAME
INSTRUMENT_MASS
INSTRUMENT_MODE_DESC
INSTRUMENT_MODE_ID
INSTRUMENT_MOUNTING_DESC
INSTRUMENT_NAME
INSTRUMENT_PARAMETER_NAME
INSTRUMENT_PARAMETER_RANGES
INSTRUMENT_PARAMETER_UNIT
INSTRUMENT_POWER_CONSUMPTION
INSTRUMENT_SERIAL_NUMBER
INSTRUMENT_TEMPERATURE
INSTRUMENT_TEMPERATURE_COUNT
INSTRUMENT_TYPE
INSTRUMENT_WIDTH
INTEGRATION_DURATION
INTENSITY_TRANSFER_FUNCTION_ID
LAMP_STATE
LANDER_SURFACE_QUATERNION
LENS_TEMPERATURE
MAXIMUM_CHANNEL_ID

MAXIMUM_INSTRUMENT_EXPOSR_DUR
MAXIMUM_INSTRUMENT_PARAMETER
MAXIMUM_INSTRUMENT_TEMPERATURE
MAXIMUM_SAMPLING_PARAMETER
MAXIMUM_WAVELENGTH
MCP_GAIN_MODE_ID
MEASUREMENT_WAVE_CALBRT_DESC
MEDIAN
MINIMUM_AVAILABLE_SAMPLING_INT
MINIMUM_CHANNEL_ID
MINIMUM_INSTRUMENT_EXPOSR_DUR
MINIMUM_INSTRUMENT_PARAMETER
MINIMUM_INSTRUMENT_TEMPERATURE
MINIMUM_SAMPLING_PARAMETER
MINIMUM_WAVELENGTH
MODEL_COMPONENT_UNIT
NOISE_LEVEL
NOMINAL_ENERGY_RESOLUTION
NOMINAL_OPERATING_TEMPERATURE
OCCULTATION_PORT_STATE
OFFSET_MODE_ID
OPERATIONAL_CONSID_DESC
OPTICS_DESC
PLATFORM_OR_MOUNTING_DESC
PLATFORM_OR_MOUNTING_NAME
POSITIVE_ELEVATION_DIRECTION
RECEIVED_DATA_RECORDS
RECEIVED_PACKETS
RICE_OPTION_VALUE
RICE_START_OPTION
SAMPLING_DESC
SAMPLING_FACTOR
SAMPLING_PARAMETER_INTERVAL
SAMPLING_PARAMETER_NAME
SAMPLING_PARAMETER_RESOLUTION
SAMPLING_PARAMETER_UNIT
SCAN_MIRROR_ANGLE
SCAN_MIRROR_RATE
SCAN_MIRROR_TEMPERATURE
SCAN_MODE_ID
SCIENTIFIC_OBJECTIVES_SUMMARY
SECTION_ID
SENSITIVITY_DESC
SEQUENCE_TABLE_ID
SHUTTER_EFFECT_CORRECTION_FLAG
SHUTTER_MODE_ID
SLIT_POSITION_ANGLE
SLIT_STATE
SPECTRUM_INTEGRATED_RADIANCE
SPECTRUM_NUMBER
SPECTRUM_SAMPLES
START_ERROR_STATE
STOP_ERROR_STATE
SURFACE_BASED_INST_METHOD
TELESCOPE_DIAMETER
TELESCOPE_F_NUMBER
TELESCOPE_FOCAL_LENGTH
TELESCOPE_ID
TELESCOPE_RESOLUTION
TELESCOPE_SERIAL_NUMBER
TELESCOPE_T_NUMBER
TELESCOPE_T_NUMBER_ERROR
TELESCOPE_TRANSMITTANCE
TEMPERATURE_TRANSLATION_DESC
TEST_PULSE_STATE
TOTAL_FOVS
TWIST_OFFSET_ANGLE
VERTICAL_FOV
VERTICAL_PIXEL_FOV
WIND_SENSOR_HIGH_POWER_DUR
WIND_SENSOR_LOW_POWER_DUR
WIND_SENSOR_POWER_TYPE

Integrated Software for Imagers and Spectrometers (ISIS) Dat

ISIS_STRUCTURE_VERSION_ID

Map Projection Data Elements

CENTER_LATITUDE
CENTER_LONGITUDE
FIRST_STANDARD_PARALLEL
HORIZONTAL_FRAMELET_OFFSET
LINE_FIRST_PIXEL
LINE_LAST_PIXEL
LINE_PROJECTION_OFFSET
MAP_DESC
MAP_NAME
MAP_NUMBER
MAP_PROJECTION_DESC
MAP_PROJECTION_ROTATION
MAP_PROJECTION_TYPE
MAP_RESOLUTION
MAP_SCALE
MAP_SERIES_ID
MAP_SHEET_NUMBER
MAP_TYPE
OBLIQUE_PROJ_POLE_LATITUDE
OBLIQUE_PROJ_POLE_LONGITUDE
OBLIQUE_PROJ_POLE_ROTATION
OBLIQUE_PROJ_X_AXIS_VECTOR
OBLIQUE_PROJ_Y_AXIS_VECTOR
OBLIQUE_PROJ_Z_AXIS_VECTOR
POSITIVE_LONGITUDE_DIRECTION
REFERENCE_LATITUDE
REFERENCE_LONGITUDE
ROTATIONAL_ELEMENT_DESC

SAMPLE_FIRST_PIXEL
SAMPLE_LAST_PIXEL
SAMPLE_PROJECTION_OFFSET
SECOND_STANDARD_PARALLEL
VERTICAL_FRAMELET_OFFSET

Meteorite Related Data Elements

METEORITE_LOCATION_NAME
METEORITE_NAME
METEORITE_SUB_TYPE
METEORITE_TYPE

Mineralogy Data Elements

MINERAL_NAME

Mission / Spacecraft / Earth-Based Data Elements

ANGULAR_DISTANCE
ANGULAR_DISTANCE_NAME
ANGULAR_VELOCITY
APPLICATION_PACKET_ID
APPLICATION_PACKET_NAME
APPLICATION_PROCESS_ID
APPLICATION_PROCESS_NAME
APPLICATION_PROCESS_SUBTYPE_ID
ARTICULATION_DEV_INSTRUMENT_ID
ARTICULATION_DEV_POSITION
ARTICULATION_DEV_POSITION_ID
ARTICULATION_DEV_POSITION_NAME
ARTICULATION_DEV_VECTOR
ARTICULATION_DEV_VECTOR_NAME
ARTICULATION_DEVICE_ANGLE
ARTICULATION_DEVICE_ANGLE_NAME
ARTICULATION_DEVICE_ID
ARTICULATION_DEVICE_MODE
ARTICULATION_DEVICE_NAME
ARTICULATION_DEVICE_TEMP
ARTICULATION_DEVICE_TEMP_NAME
AUTO_EXPOSURE_PERCENT
BAD_PIXEL_REPLACEMENT_ID
CALIBRATION_SOURCE_ID
CAMERA_LOCATION_ID
CHOPPER_MODE_ID
CLEARANCE_DISTANCE
COMMAND_DESC
COMMAND_NAME
COMMAND_OPCODE
COMMAND_SEQUENCE_NUMBER
CONE_ANGLE
CONE_OFFSET_ANGLE
CONFIGURATION_BAND_ID
CONTACT_SENSOR_STATE
CONTACT_SENSOR_STATE_NAME
COORDINATE_SYSTEM_INDEX
COORDINATE_SYSTEM_INDEX_NAME
CROSS_CONE_ANGLE
CROSS_CONE_OFFSET_ANGLE
DERIVED_IMAGE_TYPE
DETECTOR_ERASE_COUNT
DETECTOR_FIRST_LINE
DETECTOR_LINES
DETECTOR_TO_IMAGE_ROTATION
DOWNLOAD_ID
DOWNLOAD_PRIORITY
DOWNSAMPLE_METHOD
EARLY_IMAGE_RETURN_FLAG
EARLY_PIXEL_SCALE_FLAG
EARTH_BASE_DESC
EARTH_BASE_ID
EARTH_BASE_INSTITUTION_NAME
EARTH_BASE_NAME
EMECL_SC_QUATERNION
ERROR_CONDITION
ERROR_MASK
ERROR_STATE
EXPOSURE_DURATION_COUNT
EXPOSURE_SCALE_FACTOR
EXPOSURE_TABLE_ID
EXPOSURE_TBL_UPDATE_FLAG
FLAT_FIELD_CORRECTION_PARM
FRAME_TYPE
GEOMETRY_PROJECTION_TYPE
GRATING_POSITION_INCREMENT
GRATING_POSITIONS
GROUP_APPLICABILITY_FLAG
GROUP_ID
IMAGE_TYPE
INST_CMD_CAL_CO_ADD
INST_CMD_CAL_DWELL
INST_CMD_CAL_FREQUENCY
INST_CMD_CENTER_AZIMUTH
INST_CMD_CENTER_ELEVATION
INST_CMD_CO_ADD
INST_CMD_COLUMNS
INST_CMD_DWELL
INST_CMD_HIGH_CHANNEL
INST_CMD_HORIZONTAL_SPACE
INST_CMD_LOW_CHANNEL
INST_CMD_PHASE_ALGORITHM_NAME
INST_CMD_ROWS
INST_CMD_VERTICAL_SPACE
INST_CMPRS_DESC
INST_CMPRS_FILTER
INST_CMPRS_SEG_FIRST_LINE
INST_CMPRS_SEG_FIRST_LINE_SAMP
INST_CMPRS_SEG_LINES

INST_CMPRS_SEG_MISSING_PIXELS
INST_CMPRS_SEG_SAMPLES
INST_CMPRS_SEGMENT_QUALITY
INST_CMPRS_SEGMENT_STATUS
INST_CMPRS_SEGMENTS
INST_CMPRS_STAGES
INST_DECOMP_STAGES
INST_FIELD_OF_VIEW
INST_GAIN_STATE
INST_LASER_1_STATUS_FLAG
INST_LASER_2_STATUS_FLAG
INST_LASER_HEATER_STATUS_FLAG
INST_LINEAR_MOTOR_STATUS_FLAG
INST_OPTICAL_SWITCH_STATE
INST_SPARE_BIT_FLAG
INSTRUMENT_AZIMUTH
INSTRUMENT_BAND_ID
INSTRUMENT_BORESIGHT_ID
INSTRUMENT_COORDINATE
INSTRUMENT_COORDINATE_ID
INSTRUMENT_COORDINATE_NAME
INSTRUMENT_ELEVATION
INSTRUMENT_HOST_DESC
INSTRUMENT_HOST_ID
INSTRUMENT_HOST_NAME
INSTRUMENT_HOST_TYPE
INSTRUMENT_IDLE_TIMEOUT
INSTRUMENT_MOUNTING_DESC
INSTRUMENT_TEMPERATURE_NAME
INSTRUMENT_VERSION_ID
LAUNCH_DATE
LIGHT_SOURCE_TYPE
LINE_CAMERA_MODEL_OFFSET
LINE_PREFIX_MEAN
LINE_SUFFIX_MEAN
LOCAL_TRUE_SOLAR_TIME
MAGNET_ID
MAX_AUTO_EXPOS_ITERATION_COUNT
MAXIMUM_ANGULAR_VELOCITY
MAXIMUM_CURRENT_PERSISTENCE
MAXIMUM_ELEVATION
MAXIMUM_RESOLUTION
MAXIMUM_TRAVEL_DISTANCE
MESS:AEX_BACB
MESS:AEX_MAXE
MESS:AEX_MINE
MESS:AEX_STAT
MESS:AEX_STHR
MESS:AEX_TGTB
MESS:ATT_CLOCK_COUNT
MESS:ATT_FLAG
MESS:ATT_Q1
MESS:ATT_Q2
MESS:ATT_Q3
MESS:ATT_Q4
MESS:CAM_T1
MESS:CAM_T2
MESS:CCD_TEMP
MESS:COMP12_8
MESS:COMP_ALG
MESS:COMP_FST
MESS:CRITOPNV
MESS:DLNKPRIO
MESS:DPU_ID
MESS:EXP_MODE
MESS:EXPOSURE
MESS:FPU_BIN
MESS:FW_GOAL
MESS:FW_POS
MESS:FW_PV
MESS:FW_READ
MESS:FW_RV
MESS:IMAGER
MESS:JAILBARS
MESS:JB_SPACE
MESS:JB_X0
MESS:JB_X1
MESS:LATCH_UP
MESS:MET_EXP
MESS:PIV_CAL
MESS:PIV_GOAL
MESS:PIV_MPEN
MESS:PIV_POS
MESS:PIV_PV
MESS:PIV_READ
MESS:PIV_RV
MESS:PIV_STAT
MESS:PIXELBIN
MESS:SOURCE
MESS:SUBF_DX1
MESS:SUBF_DX2
MESS:SUBF_DX3
MESS:SUBF_DX4
MESS:SUBF_DX5
MESS:SUBF_DY1
MESS:SUBF_DY2
MESS:SUBF_DY3
MESS:SUBF_DY4
MESS:SUBF_DY5
MESS:SUBF_X1
MESS:SUBF_X2
MESS:SUBF_X3
MESS:SUBF_X4
MESS:SUBF_X5
MESS:SUBF_Y1
MESS:SUBF_Y2
MESS:SUBF_Y3
MESS:SUBF_Y4

MESS:SUBF_Y5
MESS:SUBFRAME
MESS:TIME_PLS
MESS:WVLRATIO
MISSION_ALIAS_NAME
MISSION_DESC
MISSION_NAME
MISSION_NAME_OR_ALIAS
MISSION_OBJECTIVES_SUMMARY
MISSION_PHASE_DESC
MISSION_PHASE_NAME
MISSION_PHASE_START_TIME
MISSION_PHASE_STOP_TIME
MISSION_PHASE_TYPE
MISSION_START_DATE
MISSION_STOP_DATE
MODEL_COMPONENT_1
MODEL_COMPONENT_2
MODEL_COMPONENT_3
MODEL_COMPONENT_4
MODEL_COMPONENT_5
MODEL_COMPONENT_6
MODEL_COMPONENT_7
MODEL_COMPONENT_8
MODEL_COMPONENT_9
MODEL_COMPONENT_ID
MODEL_COMPONENT_NAME
MODEL_DESC
MODEL_NAME
MODEL_RANKING
MODEL_TYPE
MRO:ACTIVITY_ID
MRO:ADC_TIMING_SETTINGS
MRO:ANALOG_POWER_START_COUNT
MRO:ANALOG_POWER_START_TIME
MRO:ATMO_CORRECTION_FLAG
MRO:AZIMUTH_SPACING_TYPE
MRO:BARREL_BAFFLE_TEMPERATURE
MRO:BINNING
MRO:CALIBRATION_LAMP_LEVEL
MRO:CALIBRATION_LAMP_STATUS
MRO:CALIBRATION_START_COUNT
MRO:CALIBRATION_START_TIME
MRO:CCD_FLAG
MRO:CHANNEL_NUMBER
MRO:CLOSED_LOOP_TRACKING_FLAG
MRO:COMMANDED_ID
MRO:COMPRESSION_SELECTION_FLAG
MRO:CPMM_NEGATIVE_5_CURRENT
MRO:CPMM_NEGATIVE_5_VOLTAGE
MRO:CPMM_NUMBER
MRO:CPMM_POSITIVE_10_CURRENT
MRO:CPMM_POSITIVE_10_VOLTAGE
MRO:CPMM_POSITIVE_1_8_CURRENT
MRO:CPMM_POSITIVE_1_8_VOLTAGE
MRO:CPMM_POSITIVE_29_CURRENT
MRO:CPMM_POSITIVE_29_VOLTAGE
MRO:CPMM_POSITIVE_2_5_CURRENT
MRO:CPMM_POSITIVE_2_5_VOLTAGE
MRO:CPMM_POSITIVE_3_3_CURRENT
MRO:CPMM_POSITIVE_3_3_VOLTAGE
MRO:CPMM_POSITIVE_5_CURRENT
MRO:CPMM_POSITIVE_5_VOLTAGE
MRO:CPMM_PWS_BOARD_TEMPERATURE
MRO:DELTA_LINE_TIMER_COUNT
MRO:DETECTOR_TEMPERATURE
MRO:DLL_FREQUENCY_CORRECT_COUNT
MRO:DLL_LOCKED_FLAG
MRO:DLL_LOCKED_ONCE_FLAG
MRO:DLL_RESET_COUNT
MRO:EXPOSURE_PARAMETER
MRO:FELICS_COMPRESSION_FLAG
MRO:FIELD_STOP_TEMPERATURE
MRO:FOCUS_MOTOR_TEMPERATURE
MRO:FOCUS_POSITION_COUNT
MRO:FPA_NEGATIVE_Y_TEMPERATURE
MRO:FPA_POSITIVE_Y_TEMPERATURE
MRO:FPE_TEMPERATURE
MRO:FRAME_RATE
MRO:HEATER_CONTROL_FLAG
MRO:HEATER_CONTROL_MODE
MRO:HEATER_CURRENT
MRO:IE_PWS_BOARD_TEMPERATURE
MRO:IEA_NEGATIVE_15_VOLTAGE
MRO:IEA_POSITIVE_15_VOLTAGE
MRO:IEA_POSITIVE_28_VOLTAGE
MRO:IEA_POSITIVE_5_VOLTAGE
MRO:IEA_TEMPERATURE
MRO:IMAGE_EXPOSURE_DURATION
MRO:INST_CONT_BOARD_TEMPERATURE
MRO:INST_CONT_FPGA_POS_2_5_VOLTAGE
MRO:INSTRUMENT_POINTING_MODE
MRO:INV_LOOKUP_TABLE_FILE_NAME
MRO:INVALID_PIXEL_LOCATION
MRO:LINE_EXPOSURE_DURATION
MRO:LOOKUP_CONVERSION_TABLE
MRO:LOOKUP_TABLE_FILE_NAME
MRO:LOOKUP_TABLE_K_VALUE
MRO:LOOKUP_TABLE_MAXIMUM
MRO:LOOKUP_TABLE_MEDIAN
MRO:LOOKUP_TABLE_MINIMUM
MRO:LOOKUP_TABLE_NUMBER
MRO:LOOKUP_TABLE_TYPE
MRO:MANUAL_GAIN_CONTROL
MRO:MAXIMUM_STRETCH
MRO:MEASUREMENT_ATM_COMPOSITION
MRO:MEASUREMENT_GEOMETRY_DESC
MRO:MEASUREMENT_GEOMETRY_TYPE

MRO:MEASUREMENT_MASS
MRO:MEASUREMENT_MAX_RESOLUTION
MRO:MEASUREMENT_MIN_RESOLUTION
MRO:MEASUREMENT_PRESSURE
MRO:MEASUREMENT_TEMPERATURE
MRO:MECH_TLM_BOARD_TEMPERATURE
MRO:MECH_TLM_FPGA_POS_2_5_VOLTAGE
MRO:MINIMUM_STRETCH
MRO:MS_TRUSS_LEG_0_A_TEMPERATURE
MRO:MS_TRUSS_LEG_0_B_TEMPERATURE
MRO:MS_TRUSS_LEG_120_A_TEMPERATURE
MRO:MS_TRUSS_LEG_120_B_TEMPERATURE
MRO:MS_TRUSS_LEG_240_A_TEMPERATURE
MRO:MS_TRUSS_LEG_240_B_TEMPERATURE
MRO:NOMINAL_ALONG_TRACK_RESOLUTION
MRO:NUMERICAL_FILTER_TYPE
MRO:OBSERVATION_NUMBER
MRO:OBSERVATION_START_COUNT
MRO:OBSERVATION_START_TIME
MRO:OPT_BNCH_BOX_BEAM_TEMPERATURE
MRO:OPT_BNCH_COVER_TEMPERATURE
MRO:OPT_BNCH_FLEXURE_TEMPERATURE
MRO:OPT_BNCH_FOLD_FLAT_TEMPERATURE
MRO:OPT_BNCH_FPA_TEMPERATURE
MRO:OPT_BNCH_FPE_TEMPERATURE
MRO:OPT_BNCH_LIVING_RM_TEMPERATURE
MRO:OPT_BNCH_MIRROR_TEMPERATURE
MRO:OPTICAL_BENCH_TEMPERATURE
MRO:PHASE_COMPENSATION_TYPE
MRO:PHASE_CORRECTION_TYPE
MRO:PHOTOCLIN_CORRECTION_FLAG
MRO:PIXEL_PROC_FILE_NAME
MRO:POWERED_CPMM_FLAG
MRO:PRIMARY_MIRROR_BAF_TEMPERATURE
MRO:PRIMARY_MIRROR_MNT_TEMPERATURE
MRO:PRIMARY_MIRROR_TEMPERATURE
MRO:PULSE_REPETITION_INTERVAL
MRO:RADARGRAM_RETURN_INTERVAL
MRO:READOUT_START_COUNT
MRO:READOUT_START_TIME
MRO:REFERENCE_FUNCTION_FILE_NAME
MRO:REPLACED_PIXEL_LOCATION
MRO:SCAN_EXPOSURE_DURATION
MRO:SEC_MIRROR_BAFFLE_TEMPERATURE
MRO:SEC_MIRROR_MTR_RNG_TEMPERATURE
MRO:SEC_MIRROR_TEMPERATURE
MRO:SENSOR_ID
MRO:SPATIAL_RESAMPLING_FILE
MRO:SPATIAL_RESAMPLING_FLAG
MRO:SPATIAL_RESCALING_FILE
MRO:SPATIAL_RESCALING_FLAG
MRO:SPECIAL_PROCESSING_FLAG
MRO:SPECIMEN_CLASS_NAME
MRO:SPECIMEN_COLLECT_LOCATION_DESC
MRO:SPECIMEN_CURRENT_LOCATION_NAME
MRO:SPECIMEN_DESC
MRO:SPECIMEN_LAST_OWNER_NAME
MRO:SPECIMEN_MAX_PARTICLE_SIZE
MRO:SPECIMEN_MIN_PARTICLE_SIZE
MRO:SPECIMEN_NAME
MRO:SPECTRAL_RESAMPLING_FILE
MRO:SPECTRAL_RESAMPLING_FLAG
MRO:SPECTROMETER_HOUSING_TEMP
MRO:SPHERE_TEMPERATURE
MRO:SPIDER_LEG_150_TEMPERATURE
MRO:SPIDER_LEG_270_TEMPERATURE
MRO:SPIDER_LEG_30_TEMPERATURE
MRO:START_SUB_SPACECRAFT_LATITUDE
MRO:START_SUB_SPACECRAFT_LONGITUDE
MRO:STIMULATION_LAMP_FLAG
MRO:STOP_SUB_SPACECRAFT_LATITUDE
MRO:STOP_SUB_SPACECRAFT_LONGITUDE
MRO:SUN_SHADE_TEMPERATURE
MRO:TDI
MRO:THERMAL_CORRECTION_MODE
MRO:TRIM_LINES
MRO:WAVELENGTH_FILE_NAME
MRO:WAVELENGTH_FILTER
MRO:WEIGHTING_FUNCTION_NAME
OBSERVATION_NAME
OFFSET_GRATING_POSITION
ORIGIN_OFFSET_VECTOR
ORIGIN_ROTATION_QUATERNION
PACKET_MAP_MASK
PIXEL_DOWNSAMPLE_OPTION
PIXEL_GEOMETRY_CORRECTION_FLAG
PLATFORM_OR_MOUNTING_DESC
PLATFORM_OR_MOUNTING_NAME
POSITIVE_AZIMUTH_DIRECTION
PRESSURE
PROJECTION_AZIMUTH
PROJECTION_ELEVATION
PROJECTION_ELEVATION_LINE
PROJECTION_ORIGIN_VECTOR
QUATERNION_MEASUREMENT_METHOD
RADIOMETRIC_CORRECTION_TYPE
REFERENCE_AZIMUTH
REFERENCE_COORD_SYSTEM_INDEX
REFERENCE_COORD_SYSTEM_NAME
ROTATION_NOLOAD_CURRENT
ROTATION_TORQUE_PARAMETER
ROTATION_VOLTAGE
ROTATION_VOLTAGE_NAME
ROVER_MOTION_COUNTER
ROVER_MOTION_COUNTER_NAME
SAMPLE_BIT_METHOD
SAMPLE_BIT_MODE_ID
SAMPLE_CAMERA_MODEL_OFFSET

SAMPLING_COUNT
SEQUENCE_ID
SEQUENCE_NAME
SEQUENCE_VERSION_ID
SHUTTER_CORRECT_THRESH_COUNT
SHUTTER_CORRECTION_MODE_ID
SOFTWARE_NAME
SOLAR_AZIMUTH
SOLAR_ELEVATION
SOURCE_ID
SPACECRAFT_DESC
SPACECRAFT_ID
SPACECRAFT_NAME
SPACECRAFT_OPERATIONS_TYPE
SPACECRAFT_SOLAR_DISTANCE
SPICE_FILE_ID
START_GRATING_POSITION
SUBFRAME_TYPE
SUN_FIND_FLAG
SUN_FIND_PARM
SUN_FIND_PARM_NAME
SUN_LINE
SUN_LINE_SAMPLE
SUN_SC_POSITION_VECTOR
SUN_VIEW_DIRECTION
SUN_VIEW_POSITION
SURFACE_GROUND_LOCATION
SURFACE_MODEL_TYPE
SURFACE_NORMAL_VECTOR
TARGET_DISTANCE
TELEMETRY_FMT_EXTENSION_TYPE
TELEMETRY_PROVIDER_ID
TELEMETRY_PROVIDER_TYPE
TELEMETRY_SOURCE_NAME
TELEMETRY_SOURCE_TYPE
TEST_PHASE_NAME
TIMEOUT_PARAMETER
TLM_CMD_DISCREPANCY_FLAG
TLM_INST_DATA_HEADER_ID
TORQUE_CONSTANT
TORQUE_GAIN
TORQUE_GAIN_NAME
TWIST_OFFSET_ANGLE
X_AXIS_MAXIMUM
X_AXIS_MINIMUM
Y_AXIS_MAXIMUM
Y_AXIS_MINIMUM
Z_AXIS_DISTANCE
Z_AXIS_POSITION
Z_AXIS_STEP_SIZE
Z_AXIS_VELOCITY
Z_AXIS_VELOCITY_NAME
ZERO_ELEVATION_LINE

Parameter Data Elements

AXIS_INTERVAL
AXIS_ORDER_TYPE
AXIS_START
AXIS_STOP
AXIS_UNIT
DATA_LINES
DATA_SET_OR_INST_PARM_DESC
DATA_SET_OR_INSTRUMENT_PARM_NM
DATA_SET_PARAMETER_NAME
DATA_SET_PARAMETER_UNIT
IMPORTANT_INSTRUMENT_PARMS
INSTRUMENT_PARAMETER_NAME
INSTRUMENT_PARAMETER_UNIT
MAXIMUM_INSTRUMENT_PARAMETER
MAXIMUM_SAMPLING_PARAMETER
MINIMUM_AVAILABLE_SAMPLING_INT
MINIMUM_INSTRUMENT_PARAMETER
MINIMUM_SAMPLING_PARAMETER
SAMPLING_PARAMETER_INTERVAL
SAMPLING_PARAMETER_NAME
SAMPLING_PARAMETER_RESOLUTION
SAMPLING_PARAMETER_UNIT
TARGET_PARAMETER_UNCERTAINTY
TARGET_PARAMETER_VALUE

Personnel / Institution Data Elements

ALTERNATE_TELEPHONE_NUMBER
AUTHOR_FULL_NAME
COGNIZANT_FULL_NAME
DA_CONTACT_PDS_USER_ID
DEFINING_AUTHORITY_NAME
DISCIPLINE_DESC
DISCIPLINE_NAME
ELECTRONIC_MAIL_ID
ELECTRONIC_MAIL_TYPE
EXPERTISE_AREA_DESC
EXPERTISE_AREA_TYPE
FACILITY_NAME
FAX_NUMBER
FTS_NUMBER
FULL_NAME
INSTITUTION_NAME
LAST_NAME
MAILING_ADDRESS_LINE
NODE_DESC
NODE_ID
NODE_INSTITUTION_NAME
NODE_MANAGER_PDS_USER_ID
NODE_NAME
OBSERVER_FULL_NAME
OPERATIONS_CONTACT_PDS_USER_ID

PDS_ADDRESS_BOOK_FLAG
PDS_AFFILIATION
PERSON_INSTITUTION_NAME
PI_PDS_USER_ID
PREFERENCE_ID
PRODUCER_FULL_NAME
PRODUCER_ID
PRODUCER_INSTITUTION_NAME
ROLE_DESC
SCIENTIST_FUNDING_ID
SPECIALTY_DESC
TASK_NAME
TELEPHONE_NUMBER

Physical Organization / Media Data Elements

BLOCK_BYTES
COLUMN_NUMBER
FILES
HARDWARE_MODEL_ID
MEDIUM_FORMAT
MEDIUM_TYPE
OPERATING_SYSTEM_ID
SEQUENCE_NUMBER
TRANSFER_COMMAND_TEXT
VOLUME_FORMAT
VOLUME_ID
VOLUME_INSERT_TEXT
VOLUME_NAME
VOLUME_SERIES_NAME
VOLUME_SET_ID
VOLUME_SET_NAME
VOLUME_SETS
VOLUME_VERSION_ID
VOLUMES

Plasma Data Elements

CHANNEL_GEOMETRIC_FACTOR
CHANNEL_GROUP_NAME
CHANNEL_ID
CHANNEL_INTEGRATION_DURATION
CHANNELS
CONE_ANGLE
CONE_OFFSET_ANGLE
CONTAMINATION_DESC
CONTAMINATION_ID
CROSS_CONE_ANGLE
CROSS_CONE_OFFSET_ANGLE
CYCLE_ID
DATA_COVERAGE_PERCENTAGE
DATA_QUALITY_DESC
DATA_QUALITY_ID
DETECTOR_GROUPS
DETECTOR_ID
DETECTOR_TYPE
ELECTRONICS_DESC
ELECTRONICS_ID
FRAME_DURATION
FRAME_ID
FRAME_SEQUENCE_NUMBER
FRAMES
GAIN_MODES
INSTRUMENT_PARAMETER_RANGES
LOCAL_HOUR_ANGLE
MAXIMUM_CHANNEL_ID
MAXIMUM_INSTRUMENT_PARAMETER
MAXIMUM_WAVELENGTH
MINIMUM_AVAILABLE_SAMPLING_INT
MINIMUM_CHANNEL_ID
MINIMUM_INSTRUMENT_PARAMETER
MINIMUM_WAVELENGTH
MODE_CONTINUATION_FLAG
MODE_INTEGRATION_DURATION
NOMINAL_ENERGY_RESOLUTION
PARTICLE_SPECIES_NAME
SAMPLING_DESC
SAMPLING_PARAMETER_INTERVAL
SAMPLING_PARAMETER_NAME
SAMPLING_PARAMETER_RESOLUTION
SAMPLING_PARAMETER_UNIT
SPACECRAFT_OPERATING_MODE_ID
START_TIME_BASE
VECTOR_COMPONENT_1
VECTOR_COMPONENT_2
VECTOR_COMPONENT_3
VECTOR_COMPONENT_ID
VECTOR_COMPONENT_ID_1
VECTOR_COMPONENT_ID_2
VECTOR_COMPONENT_ID_3
VECTOR_COMPONENT_TYPE
VECTOR_COMPONENT_TYPE_DESC
VECTOR_COMPONENT_UNIT

QUBE Data Elements

AXES
AXIS_NAME
BAND_BIN_BAND_NUMBER
BAND_BIN_BASE
BAND_BIN_CENTER
BAND_BIN_DETECTOR
BAND_BIN_FILTER_NUMBER
BAND_BIN_GRATING_POSITION
BAND_BIN_MULTIPLIER
BAND_BIN_ORIGINAL_BAND
BAND_BIN_STANDARD_DEVIATION
BAND_BIN_UNIT

BAND_BIN_WIDTH
CORE_BASE
CORE_HIGH_INSTR_SATURATION
CORE_HIGH_REPR_SATURATION
CORE_ITEM_BYTES
CORE_ITEM_TYPE
CORE_ITEMS
CORE_LOW_INSTR_SATURATION
CORE_LOW_REPR_SATURATION
CORE_MULTIPLIER
CORE_NAME
CORE_NULL
CORE_UNIT
CORE_VALID_MINIMUM
ISIS_STRUCTURE_VERSION_ID
SUFFIX_BASE
SUFFIX_BYTES
SUFFIX_HIGH_INSTR_SAT
SUFFIX_HIGH_REPR_SAT
SUFFIX_ITEM_BYTES
SUFFIX_ITEM_TYPE
SUFFIX_ITEMS
SUFFIX_LOW_INSTR_SAT
SUFFIX_LOW_REPR_SAT
SUFFIX_MULTIPLIER
SUFFIX_NAME
SUFFIX_NULL
SUFFIX_UNIT
SUFFIX_VALID_MINIMUM

RINGS Data Elements

B1950_DECLINATION
B1950_RIGHT_ASCENSION
B1950_RING_LONGITUDE
DIFFRACTION_CORRECTED_FLAG
EARTH_RECEIVED_START_TIME
EARTH_RECEIVED_STOP_TIME
HIGHEST_DETECTABLE_OPACITY
LOWEST_DETECTABLE_OPACITY
MAXIMUM_B1950_RING_LONGITUDE
MAXIMUM_RADIAL_RESOLUTION
MAXIMUM_RADIAL_SAMPLING_INTERV
MAXIMUM_RING_LONGITUDE
MAXIMUM_RING_RADIUS
MINIMUM_B1950_RING_LONGITUDE
MINIMUM_RADIAL_RESOLUTION
MINIMUM_RADIAL_SAMPLING_INTERV
MINIMUM_RING_LONGITUDE
MINIMUM_RING_RADIUS
NOISE_TYPE
PHASE_INFORMATION_FLAG
PLANETARY_OCCULTATION_FLAG
PROJECTED_STAR_DIAMETER
RADIAL_RESOLUTION
RADIAL_SAMPLING_INTERVAL
RECEIVER_DESCRIPTION
RECEIVER_ID
RECEIVER_NAME
REFERENCE_RADIAL_RESOLUTION
RING_EVENT_START_TIME
RING_EVENT_STOP_TIME
RING_EVENT_TIME
RING_LONGITUDE
RING_OCCULTATION_DIRECTION
RING_RADIUS
SCALED_NOISE_LEVEL
STAR_DESCRIPTION
STAR_DIAMETER
STAR_NAME
TELESCOPE_LATITUDE
TELESCOPE_LONGITUDE
TELESCOPE_SITE_RADIUS
WAVELENGTH

Radiometry / Spectroscopy Data Elements

BIN_NUMBER
BIN_POINTS
BRIGHTNESS_TEMPERATURE_ID
INCIDENCE_ANGLE
LIMB_ANGLE
MAXIMUM_BRIGHTNESS_TEMPERATURE
MAXIMUM_LIMB_ANGLE
MAXIMUM_SOLAR_BAND_ALBEDO
MAXIMUM_SPECTRAL_CONTRAST
MINIMUM_BRIGHTNESS_TEMPERATURE
MINIMUM_LIMB_ANGLE
MINIMUM_SOLAR_BAND_ALBEDO
MINIMUM_SPECTRAL_CONTRAST
SCALING_FACTOR
SEQUENCE_SAMPLES
SEQUENCE_TITLE
SPECTRUM_INTEGRATED_RADIANCE
SPECTRUM_NUMBER
SPECTRUM_SAMPLES
START_SAMPLE_NUMBER
START_SEQUENCE_NUMBER
STOP_SAMPLE_NUMBER
STOP_SEQUENCE_NUMBER

Software Data Elements

ALGORITHM_DESC
ALGORITHM_NAME
ALGORITHM_VERSION_ID
ANTECEDENT_SOFTWARE_NAME
ARCHIVE_FILE_NAME

AVAILABILITY_ID
COGNIZANT_FULL_NAME
DATA_FORMAT
DEFINING_AUTHORITY_NAME
EDR_SOFTWARE_NAME
ENCODING_TYPE_VERSION_NAME
FILE_NAME
FILE_SPECIFICATION_NAME
FORMAT_DESC
FTP_FILE_FORMAT
FTP_SITE_ID
ISIS_STRUCTURE_VERSION_ID
MAXIMUM_PARAMETER
MINIMUM_PARAMETER
PARAMETER_DESC
PLATFORM
PROCESSING_CONTROL_PARM_NAME
PRODUCT_CREATION_TIME
PRODUCT_DATA_SET_ID
PRODUCT_VERSION_ID
PRODUCT_VERSION_TYPE
PROGRAMMING_LANGUAGE_NAME
REQUIRED_MEMORY_BYTES
SFDU_FORMAT_ID
SOFTWARE_DESC
SOFTWARE_FLAG
SOFTWARE_ICON_FILE_SPEC
SOFTWARE_ID
SOFTWARE_LICENSE_TYPE
SOFTWARE_PURPOSE
SOFTWARE_RELEASE_DATE
SOFTWARE_VERSION_ID
SOURCE_DATA_SET_ID
TECHNICAL_SUPPORT_TYPE
UNCOMPRESSED_FILE_NAME

Statistical Data Elements

CHECKSUM
MAXIMUM
MD5_CHECKSUM
MEAN
MEDIAN
MINIMUM
STANDARD_DEVIATION

Target Data Elements

BODY_POLE_CLOCK_ANGLE
BOND_ALBEDO
CELESTIAL_NORTH_CLOCK_ANGLE
DATA_SOURCE_DESC
DATA_SOURCE_ID
ELEVATION
FEATURE_NAME
FEATURE_TYPE
FEATURE_TYPE_DESC
LIMB_ANGLE
MAGNETIC_MOMENT
MASS
MASS_DENSITY
MAXIMUM_BRIGHTNESS_TEMPERATURE
MAXIMUM_SLANT_DISTANCE
MAXIMUM_SOLAR_BAND_ALBEDO
MAXIMUM_SPECTRAL_CONTRAST
MAXIMUM_SURFACE_PRESSURE
MAXIMUM_SURFACE_TEMPERATURE
MEAN_ORBITAL_RADIUS
MEAN_RADIUS
MEAN_SOLAR_DAY
MEAN_SURFACE_PRESSURE
MEAN_SURFACE_TEMPERATURE
MINIMUM_BRIGHTNESS_TEMPERATURE
MINIMUM_INCIDENCE_ANGLE
MINIMUM_LATITUDE
MINIMUM_LONGITUDE
MINIMUM_SLANT_DISTANCE
MINIMUM_SOLAR_BAND_ALBEDO
MINIMUM_SPECTRAL_CONTRAST
MINIMUM_SURFACE_PRESSURE
MINIMUM_SURFACE_TEMPERATURE
MOSAIC_DESC
MOSAIC_IMAGES
MOSAIC_PRODUCTION_PARAMETER
MOSAIC_SEQUENCE_NUMBER
MOSAIC_SERIES_ID
MOSAIC_SHEET_NUMBER
OBLIQUITY
ORBIT_DIRECTION
ORBITAL_ECCENTRICITY
ORBITAL_INCLINATION
ORBITAL_SEMIMAJOR_AXIS
PERIAPSIS_ARGUMENT_ANGLE
PLANET_DAY_NUMBER
POLE_RIGHT_ASCENSION
PRIMARY_BODY_NAME
REFERENCE_OBJECT_NAME
REFERENCE_TARGET_NAME
REGION_DESC
REGION_NAME
RETICLE_POINT_NUMBER
REVOLUTION_PERIOD
RING_SYSTEM_SUMMARY
ROTATION_DIRECTION
SCALED_IMAGE_HEIGHT
SCALED_IMAGE_WIDTH
SCALED_PIXEL_HEIGHT
SCALED_PIXEL_WIDTH

SIDEREAL_ROTATION_PERIOD
SLANT_DISTANCE
SOLAR_DISTANCE
SOLAR_LATITUDE
SOLAR_LONGITUDE
SPACECRAFT_ALTITUDE
SURFACE_CLARITY_PERCENTAGE
SURFACE_GRAVITY
SYNODIC_ROTATION_PERIOD
TARGET_CENTER_DISTANCE
TARGET_DESC
TARGET_NAME
TARGET_PARAMETER_EPOCH
TARGET_PARAMETER_NAME
TARGET_PARAMETER_UNCERTAINTY
TARGET_PARAMETER_VALUE
TARGET_TYPE

Time / Event / Observation Data Elements

COORDINATE_SYSTEM_REF_EPOCH
DATA_SET_COLLECTION_RELEASE_DT
DATA_SET_RELEASE_DATE
EARTH_RECEIVED_START_TIME
EARTH_RECEIVED_STOP_TIME
EARTH_RECEIVED_TIME
EVENT_NAME
EVENT_START_HOUR
EVENT_TYPE
EVENT_TYPE_DESC
FIRST_IMAGE_TIME
IMAGE_TIME
LAST_IMAGE_TIME
LOCAL_MEAN_SOLAR_TIME
LOCAL_TIME
MAGNETIC_MOMENT
MAXIMUM_LOCAL_TIME
MEAN_SOLAR_DAY
METHOD_DESC
MID_JULIAN_DATE_VALUE
MIDNIGHT_LONGITUDE
MINIMUM_LOCAL_TIME
MISSION_PHASE_START_TIME
MISSION_PHASE_STOP_TIME
MISSION_START_DATE
MISSION_STOP_DATE
MPF_LOCAL_TIME
NATIVE_START_TIME
NATIVE_STOP_TIME
NOTEBOOK_ENTRY_TIME
OBSERVATION_TIME
OBSERVATION_TYPE
PACKET_CREATION_SCLK
PASS_NUMBER
POSITION_TIME
PROCESSING_START_TIME
PROCESSING_STOP_TIME
PRODUCT_CREATION_TIME
PRODUCT_RELEASE_DATE
PUBLICATION_DATE
RATIONALE_DESC
RING_EVENT_START_TIME
RING_EVENT_STOP_TIME
RING_EVENT_TIME
SOFTWARE_RELEASE_DATE
SPACECRAFT_CLOCK_START_COUNT
SPACECRAFT_CLOCK_STOP_COUNT
START_JULIAN_DATE
START_JULIAN_DATE_VALUE
START_TIME
START_TIME_ET
START_TIME_FROM_CLOSEST_APRCH
STOP_JULIAN_DATE_VALUE
STOP_TIME
STOP_TIME_ET
STOP_TIME_FROM_CLOSEST_APRCH
TARGET_PARAMETER_EPOCH
TIME_FROM_CLOSEST_APPROACH
UNCORRECTED_START_TIME
UPLOAD_ID

Appendix G

SYSTEM-SPECIFIC CLASSIFIED LISTINGS

This section provides listings of elements by category to aid users in finding elements appropriate for a particular purpose. Elements found in this list may be further researched using the Index found at the end of this document.

This list is organized alphabetically according to the following classifications:

Clementine Catalog

Distributed Inventory System Data Elements

Integrated Software for Imagers and Spectrometers (ISIS) Dat

JPL AMMOS-Specific Data Elements

Mars Observer Catalog

Mars Reconnaissance Orbiter Catalog

Messenger Data Elements

PDS Engineering Node Data Elements

PDS Geosciences Node Magellan Catalog

PDS Geosciences Node Viking Lander Catalog

PDS Imaging Node Data Elements

PDS Imaging Node Galileo Catalog

PDS Mars Exploration Rover Operations Catalog

PDS Navigation and Ancillary Information Facility Node Data

PDS Planetary Plasma Node Data Elements

PDS Rings Node Data Elements

PDS Small Bodies Node Data Elements

SPICE Data Elements

Clementine Catalog

EDR_SOFTWARE_NAME

Distributed Inventory System Data Elements

ARCHIVE_STATUS
ARCHIVE_STATUS_DATE
ARCHIVE_STATUS_NOTE
CURATING_NODE_ID
DATA_ENGINEER_FULL_NAME
RESOURCE_ID
RESOURCE_KEYVALUE
RESOURCE_SIZE
RESOURCE_TYPE

Integrated Software for Imagers and Spectrometers (ISIS) Dat

BAND_BIN_CENTER
BAND_BIN_DETECTOR
BAND_BIN_GRATING_POSITION
BAND_BIN_ORIGINAL_BAND
BAND_BIN_STANDARD_DEVIATION
BAND_BIN_UNIT
BAND_BIN_WIDTH
CORE_BASE
CORE_HIGH_INSTR_SATURATION
CORE_HIGH_REPR_SATURATION
CORE_ITEM_BYTES
CORE_ITEM_TYPE
CORE_ITEMS
CORE_LOW_INSTR_SATURATION
CORE_LOW_REPR_SATURATION
CORE_MULTIPLIER
CORE_NAME
CORE_NULL
CORE_UNIT
CORE_VALID_MINIMUM
SUFFIX_BASE
SUFFIX_BYTES
SUFFIX_HIGH_INSTR_SAT
SUFFIX_HIGH_REPR_SAT
SUFFIX_ITEM_BYTES
SUFFIX_ITEM_TYPE
SUFFIX_ITEMS
SUFFIX_LOW_INSTR_SAT
SUFFIX_LOW_REPR_SAT
SUFFIX_MULTIPLIER
SUFFIX_NAME
SUFFIX_NULL
SUFFIX_UNIT
SUFFIX_VALID_MINIMUM

JPL AMMOS-Specific Data Elements

APPLICABLE_START_SCLK
APPLICABLE_START_TIME
APPLICABLE_STOP_SCLK
APPLICABLE_STOP_TIME
CCSDS_SPACECRAFT_NUMBER
DATA_STREAM_TYPE
DECAL_NAME
DSN_SPACECRAFT_NUM
EFFECTIVE_TIME
HOST_ID
JPL_PRESS_RELEASE_ID
MAP_SEQUENCE_NUMBER
MAPPING_START_TIME
MAPPING_STOP_TIME
MISSION_ID
NAV_UNIQUE_ID
ORBIT_START_NUMBER
ORBIT_START_TIME
ORBIT_STOP_NUMBER
ORBIT_STOP_TIME
PROCESS_TIME
SCET_START_TIME
SCET_STOP_TIME
SCLK_START_VALUE
SCLK_STOP_VALUE
SEF_CREATION_TIME
SEQ_ID
SITE_ID
SITE_NAME
SPACECRAFT_ID
TIME_RANGE_NUMBER
VERSION_ID
VERSION_NUMBER

Mars Observer Catalog

DATA_RECORDS
FIRST_IMAGE_TIME
FIRST_PRODUCT_ID
LAST_IMAGE_TIME
LAST_PRODUCT_ID
LINE_EXPOSURE_DURATION

Mars Reconnaissance Orbiter Catalog

MRO:ACTIVITY_ID
MRO:ADC_TIMING_SETTINGS
MRO:ANALOG_POWER_START_COUNT
MRO:ANALOG_POWER_START_TIME
MRO:ATMO_CORRECTION_FLAG
MRO:AZIMUTH_SPACING_TYPE
MRO:BARREL_BAFFLE_TEMPERATURE

MRO:BINNING
MRO:CALIBRATION_LAMP_LEVEL
MRO:CALIBRATION_LAMP_STATUS
MRO:CALIBRATION_START_COUNT
MRO:CALIBRATION_START_TIME
MRO:CCD_FLAG
MRO:CHANNEL_NUMBER
MRO:CLOSED_LOOP_TRACKING_FLAG
MRO:COMMANDED_ID
MRO:COMPRESSION_SELECTION_FLAG
MRO:CPMM_NEGATIVE_5_CURRENT
MRO:CPMM_NEGATIVE_5_VOLTAGE
MRO:CPMM_NUMBER
MRO:CPMM_POSITIVE_10_CURRENT
MRO:CPMM_POSITIVE_10_VOLTAGE
MRO:CPMM_POSITIVE_1_8_CURRENT
MRO:CPMM_POSITIVE_1_8_VOLTAGE
MRO:CPMM_POSITIVE_29_CURRENT
MRO:CPMM_POSITIVE_29_VOLTAGE
MRO:CPMM_POSITIVE_2_5_CURRENT
MRO:CPMM_POSITIVE_2_5_VOLTAGE
MRO:CPMM_POSITIVE_3_3_CURRENT
MRO:CPMM_POSITIVE_3_3_VOLTAGE
MRO:CPMM_POSITIVE_5_CURRENT
MRO:CPMM_POSITIVE_5_VOLTAGE
MRO:CPMM_PWS_BOARD_TEMPERATURE
MRO:DELTA_LINE_TIMER_COUNT
MRO:DETECTOR_TEMPERATURE
MRO:DLL_FREQUENCY_CORRECT_COUNT
MRO:DLL_LOCKED_FLAG
MRO:DLL_LOCKED_ONCE_FLAG
MRO:DLL_RESET_COUNT
MRO:EXPOSURE_PARAMETER
MRO:FELICS_COMPRESSION_FLAG
MRO:FIELD_STOP_TEMPERATURE
MRO:FOCUS_MOTOR_TEMPERATURE
MRO:FOCUS_POSITION_COUNT
MRO:FPA_NEGATIVE_Y_TEMPERATURE
MRO:FPA_POSITIVE_Y_TEMPERATURE
MRO:FPE_TEMPERATURE
MRO:FRAME_RATE
MRO:HEATER_CONTROL_FLAG
MRO:HEATER_CONTROL_MODE
MRO:HEATER_CURRENT
MRO:IE_PWS_BOARD_TEMPERATURE
MRO:IEA_NEGATIVE_15_VOLTAGE
MRO:IEA_POSITIVE_15_VOLTAGE
MRO:IEA_POSITIVE_28_VOLTAGE
MRO:IEA_POSITIVE_5_VOLTAGE
MRO:IEA_TEMPERATURE
MRO:IMAGE_EXPOSURE_DURATION
MRO:INST_CONT_BOARD_TEMPERATURE
MRO:INST_CONT_FPGA_POS_2_5_VOLTAGE
MRO:INSTRUMENT_POINTING_MODE
MRO:INV_LOOKUP_TABLE_FILE_NAME
MRO:INVALID_PIXEL_LOCATION
MRO:LINE_EXPOSURE_DURATION
MRO:LOOKUP_CONVERSION_TABLE
MRO:LOOKUP_TABLE_FILE_NAME
MRO:LOOKUP_TABLE_K_VALUE
MRO:LOOKUP_TABLE_MAXIMUM
MRO:LOOKUP_TABLE_MEDIAN
MRO:LOOKUP_TABLE_MINIMUM
MRO:LOOKUP_TABLE_NUMBER
MRO:LOOKUP_TABLE_TYPE
MRO:MANUAL_GAIN_CONTROL
MRO:MAXIMUM_STRETCH
MRO:MEASUREMENT_ATM_COMPOSITION
MRO:MEASUREMENT_GEOMETRY_DESC
MRO:MEASUREMENT_GEOMETRY_TYPE
MRO:MEASUREMENT_MASS
MRO:MEASUREMENT_MAX_RESOLUTION
MRO:MEASUREMENT_MIN_RESOLUTION
MRO:MEASUREMENT_PRESSURE
MRO:MEASUREMENT_TEMPERATURE
MRO:MECH_TLM_BOARD_TEMPERATURE
MRO:MECH_TLM_FPGA_POS_2_5_VOLTAGE
MRO:MINIMUM_STRETCH
MRO:MS_TRUSS_LEG_0_A_TEMPERATURE
MRO:MS_TRUSS_LEG_0_B_TEMPERATURE
MRO:MS_TRUSS_LEG_120_A_TEMPERATURE
MRO:MS_TRUSS_LEG_120_B_TEMPERATURE
MRO:MS_TRUSS_LEG_240_A_TEMPERATURE
MRO:MS_TRUSS_LEG_240_B_TEMPERATURE
MRO:NOMINAL_ALONG_TRACK_RESOLUTION
MRO:NUMERICAL_FILTER_TYPE
MRO:OBSERVATION_NUMBER
MRO:OBSERVATION_START_COUNT
MRO:OBSERVATION_START_TIME
MRO:OPT_BNCH_BOX_BEAM_TEMPERATURE
MRO:OPT_BNCH_COVER_TEMPERATURE
MRO:OPT_BNCH_FLEXURE_TEMPERATURE
MRO:OPT_BNCH_FOLD_FLAT_TEMPERATURE
MRO:OPT_BNCH_FPA_TEMPERATURE
MRO:OPT_BNCH_FPE_TEMPERATURE
MRO:OPT_BNCH_LIVING_RM_TEMPERATURE
MRO:OPT_BNCH_MIRROR_TEMPERATURE
MRO:OPTICAL_BENCH_TEMPERATURE
MRO:PHASE_COMPENSATION_TYPE
MRO:PHASE_CORRECTION_TYPE
MRO:PHOTOCLIN_CORRECTION_FLAG
MRO:PIXEL_PROC_FILE_NAME
MRO:POWERED_CPMM_FLAG
MRO:PRIMARY_MIRROR_BAF_TEMPERATURE
MRO:PRIMARY_MIRROR_MNT_TEMPERATURE
MRO:PRIMARY_MIRROR_TEMPERATURE
MRO:PULSE_REPETITION_INTERVAL
MRO:RADARGRAM_RETURN_INTERVAL

MRO:READOUT_START_COUNT
MRO:READOUT_START_TIME
MRO:REFERENCE_FUNCTION_FILE_NAME
MRO:REPLACED_PIXEL_LOCATION
MRO:SCAN_EXPOSURE_DURATION
MRO:SEC_MIRROR_BAFFLE_TEMPERATURE
MRO:SEC_MIRROR_MTR_RNG_TEMPERATURE
MRO:SEC_MIRROR_TEMPERATURE
MRO:SENSOR_ID
MRO:SPATIAL_RESAMPLING_FILE
MRO:SPATIAL_RESAMPLING_FLAG
MRO:SPATIAL_RESCALING_FILE
MRO:SPATIAL_RESCALING_FLAG
MRO:SPECIAL_PROCESSING_FLAG
MRO:SPECIMEN_CLASS_NAME
MRO:SPECIMEN_COLLECT_LOCATION_DESC
MRO:SPECIMEN_CURRENT_LOCATION_NAME
MRO:SPECIMEN_DESC
MRO:SPECIMEN_LAST_OWNER_NAME
MRO:SPECIMEN_MAX_PARTICLE_SIZE
MRO:SPECIMEN_MIN_PARTICLE_SIZE
MRO:SPECIMEN_NAME
MRO:SPECTRAL_RESAMPLING_FILE
MRO:SPECTRAL_RESAMPLING_FLAG
MRO:SPECTROMETER_HOUSING_TEMP
MRO:SPHERE_TEMPERATURE
MRO:SPIDER_LEG_150_TEMPERATURE
MRO:SPIDER_LEG_270_TEMPERATURE
MRO:SPIDER_LEG_30_TEMPERATURE
MRO:START_SUB_SPACECRAFT_LATITUDE
MRO:START_SUB_SPACECRAFT_LONGITUDE
MRO:STIMULATION_LAMP_FLAG
MRO:STOP_SUB_SPACECRAFT_LATITUDE
MRO:STOP_SUB_SPACECRAFT_LONGITUDE
MRO:SUN_SHADE_TEMPERATURE
MRO:TDI
MRO:THERMAL_CORRECTION_MODE
MRO:TRIM_LINES
MRO:WAVELENGTH_FILE_NAME
MRO:WAVELENGTH_FILTER
MRO:WEIGHTING_FUNCTION_NAME

Messenger Data Elements

MESS:AEX_BACB
MESS:AEX_MAXE
MESS:AEX_MINE
MESS:AEX_STAT
MESS:AEX_STHR
MESS:AEX_TGTB
MESS:ATT_CLOCK_COUNT
MESS:ATT_FLAG
MESS:ATT_Q1
MESS:ATT_Q2
MESS:ATT_Q3
MESS:ATT_Q4
MESS:CAM_T1
MESS:CAM_T2
MESS:CCD_TEMP
MESS:COMP12_8
MESS:COMP_ALG
MESS:COMP_FST
MESS:CRITOPNV
MESS:DLNKPRIO
MESS:DPU_ID
MESS:EXP_MODE
MESS:EXPOSURE
MESS:FPU_BIN
MESS:FW_GOAL
MESS:FW_POS
MESS:FW_PV
MESS:FW_READ
MESS:FW_RV
MESS:IMAGER
MESS:JAILBARS
MESS:JB_SPACE
MESS:JB_X0
MESS:JB_X1
MESS:LATCH_UP
MESS:MET_EXP
MESS:PIV_CAL
MESS:PIV_GOAL
MESS:PIV_MPEN
MESS:PIV_POS
MESS:PIV_PV
MESS:PIV_READ
MESS:PIV_RV
MESS:PIV_STAT
MESS:PIXELBIN
MESS:SOURCE
MESS:SUBF_DX1
MESS:SUBF_DX2
MESS:SUBF_DX3
MESS:SUBF_DX4
MESS:SUBF_DX5
MESS:SUBF_DY1
MESS:SUBF_DY2
MESS:SUBF_DY3
MESS:SUBF_DY4
MESS:SUBF_DY5
MESS:SUBF_X1
MESS:SUBF_X2
MESS:SUBF_X3
MESS:SUBF_X4
MESS:SUBF_X5
MESS:SUBF_Y1
MESS:SUBF_Y2
MESS:SUBF_Y3

MESS:SUBF_Y4
MESS:SUBF_Y5
MESS:SUBFRAME
MESS:TIME_PLS
MESS:WVLRATIO

PDS Engineering Node Data Elements

ACCUMULATION_COUNT
AMBIENT_TEMPERATURE
ANTIBLOOMING_STATE_FLAG
APXS_COMMUNICATION_ERROR_COUNT
APXS_MECHANISM_ANGLE
AVAILABLE_VALUE_TYPE
BACKGROUND_SAMPLING_FREQUENCY
BACKGROUND_SAMPLING_MODE_ID
BIAS_STATE_ID
BIAS_STRIP_MEAN
BILLING_ADDRESS_LINE
BL_NAME
BL_SQL_FORMAT
BUFFER_MODE_ID
CALIBRATION_LAMP_STATE_FLAG
CLASSIFICATION_ID
CLUSTERED_KEY
COLUMN_DESCRIPTION
COLUMN_NAME
COLUMN_ORDER
COLUMN_VALUE
COLUMN_VALUE_NODE_ID
COLUMN_VALUE_TYPE
COMMAND_FILE_NAME
COMMENT_DATE
COMMENT_ID
COMMENT_TEXT
COMMITTEE_MEMBER_FULL_NAME
COMPRESSOR_ID
COMPUTER_VENDOR_NAME
CONVERTER_CURRENT_COUNT
CONVERTER_VOLTAGE_COUNT
COPIES
CORE_MINIMUM_DN
CREATE_DATE
CRITICALITY
DARK_CURRENT_CORRECTION_TYPE
DARK_LEVEL_CORRECTION
DARK_STRIP_MEAN
DATA_BUFFER_STATE_FLAG
DATA_CONVERSION_TYPE
DATA_PROVIDER_NAME
DATA_REGION
DATA_SET_CATALOG_FLAG
DATA_SET_COLL_OR_DATA_SET_ID
DATA_SET_TERSE_DESC
DD_VERSION_ID
DELAYED_READOUT_FLAG
DELIMITING_PARAMETER_NAME
DISPLAY_FORMAT
DISTRIBUTION_TYPE
EDIT_ROUTINE_NAME
ELECTRONICS_BIAS
EXPECTED_DATA_RECORDS
EXPECTED_MAXIMUM
FAST_HK_ITEM_NAME
FAST_HK_PICKUP_RATE
FILE_STATE
FILTER_TEMPERATURE
FLIGHT_SOFTWARE_VERSION_ID
FOOTPRINT_POINT_LATITUDE
FOOTPRINT_POINT_LONGITUDE
FORMATION_RULE_DESC
FRAME_PARAMETER
FRAME_PARAMETER_DESC
GENERAL_CLASSIFICATION_TYPE
HELP_ID
HELP_NAME
HELP_TEXT
HOUSEKEEPING_CLOCK_COUNT
IMAGE_MID_TIME
INDEX_TYPE
INDEXED_FILE_NAME
INST_CMPRS_TYPE
INSTRUMENT_DATA_RATE
INSTRUMENT_FORMATTED_DESC
INSTRUMENT_TEMPERATURE_POINT
INSTRUMENT_VOLTAGE
INSTRUMENT_VOLTAGE_POINT
INTEGRATION_DELAY_FLAG
INTERFRAME_DELAY
INTERFRAME_DELAY_DURATION
INTERLINE_DELAY_DURATION
INVENTORY_SPECIAL_ORDER_NOTE
KEYWORD_DEFAULT_VALUE
KEYWORD_VALUE_HELP_TEXT
MACROPIXEL_SIZE
MANDATORY_COLUMN
MAXIMUM_COLUMN_VALUE
MAXIMUM_LENGTH
MEASURED_QUANTITY_NAME
MEDIUM_DESC
MINIMUM_COLUMN_VALUE
MINIMUM_LENGTH
MISSING_FRAMES
MISSING_LINES
MISSING_PACKET_FLAG
MISSING_PIXELS
MPF_LOCAL_TIME
NAMESPACE_ID

NON_CLUSTERED_KEY
NSSDC_DATA_SET_ID
OBJECT_CLASSIFICATION_TYPE
OBJECT_NAME
OBJECT_TYPE
OFFSET_FLAG
ON_LINE_IDENTIFICATION
ON_LINE_NAME
OPTICS_TEMPERATURE
OPTIONAL_ELEMENT_SET
OPTIONAL_OBJECT_SET
ORDER_DATE
ORDER_NUMBER
ORDER_STATUS
ORDER_STATUS_DATE
ORDER_STATUS_DESC
ORDER_STATUS_ID
ORDER_STATUS_TIME
ORDER_TYPE
OUTPUT_FLAG
OVERWRITTEN_CHANNEL_FLAG
PACKET_CREATION_SCLK
PACKING_FLAG
PARALLEL_CLOCK_VOLTAGE_INDEX
PARAMETER_NAME
PARAMETER_SEQUENCE_NUMBER
PARAMETER_SET_ID
PARAMETER_TYPE
PARENT_TEMPLATE
PDS_USER_ID
PDS_VERSION_ID
PEER_REVIEW_DATA_SET_STATUS
PEER_REVIEW_ID
PEER_REVIEW_RESULTS_DESC
PEER_REVIEW_ROLE
PEER_REVIEW_START_DATE
PEER_REVIEW_STOP_DATE
PERIAPSIS_ALTITUDE
PERIAPSIS_TIME
PERMISSION_FLAG
PIXEL_SUBSAMPLING_FLAG
POWER_STATE_FLAG
PREPARE_CYCLE_INDEX
PRIMARY_KEY
PROTOCOL_TYPE
RADIANCE_OFFSET
READOUT_CYCLE_INDEX
RECEIVED_DATA_RECORDS
RECEIVED_POLARIZATION_TYPE
REGISTRATION_DATE
REMOTE_NODE_PRIVILEGES_ID
REQUEST_DESC
REQUEST_TIME
REQUIRED_ELEMENT_SET
REQUIRED_FLAG
REQUIRED_OBJECT_SET
RESOLUTION_DESC
RESOLUTION_TIME
RESOURCE_CLASS
RESOURCE_LINK
RESOURCE_NAME
RESOURCE_STATUS
ROVER_HEADING
SAMPLING_MODE_ID
SCAN_PARAMETER
SCAN_PARAMETER_DESC
SELECTION_QUERY_DESC
SENSOR_HEAD_ELEC_TEMPERATURE
SHUTTER_STATE_FLAG
SHUTTER_STATE_ID
SIGNAL_CHAIN_ID
SNAPSHOT_MODE_FLAG
SOFTWARE_ACCESSIBILITY_DESC
SOFTWARE_TYPE
SOURCE_NAME
SPECIAL_INSTRUCTION_ID_NUMBER
SPECTRAL_EDITING_FLAG
SPECTRAL_ORDER_DESC
SPECTRAL_ORDER_ID
SPECTRAL_SUMMING_FLAG
SPECTROMETER_SCAN_MODE_ID
SQL_FORMAT
STANDARD_VALUE_NAME
STANDARD_VALUE_SET
STANDARD_VALUE_SET_DESC
STANDARD_VALUE_TYPE
START_DELIMITING_PARAMETER
START_ERROR_STATE
START_PAGE_NUMBER
START_PRIMARY_KEY
STATUS_NOTE
STATUS_TYPE
STOP_DELIMITING_PARAMETER
STOP_ERROR_STATE
STOP_PRIMARY_KEY
STORAGE_LEVEL_ID
STORAGE_LEVEL_NUMBER
STORAGE_LEVEL_TYPE
SUB_OBJECT_NAME
SUPPORT_REQUEST_DATE
SUPPORT_REQUEST_DESC
SUPPORT_REQUEST_NO
SUPPORT_RESOLUTION
SUPPORT_RESOLUTION_DATE
SUPPORT_STAFF_FULL_NAME
SURFACE_BASED_INST_AZIMUTH
SURFACE_BASED_INST_ELEVATION
SWATH_WIDTH

SYSTEM_BULLETIN_DATE
SYSTEM_BULLETIN_DESC
SYSTEM_BULLETIN_ID
SYSTEM_BULLETIN_TYPE
SYSTEM_CLASSIFICATION_ID
SYSTEM_EVENT_DATE
SYSTEM_EVENT_USER_NOTE
SYSTEM_EXPERTISE_LEVEL
TABLE_BL_NAME
TABLE_DESC
TABLE_NAME
TABLE_TYPE
TARGET_LIST
TELEMETRY_SOURCE_ID
TEMPLATE
TEMPLATE_BL_NAME
TEMPLATE_NAME
TEMPLATE_NOTE
TEMPLATE_REVISION_DATE
TEMPLATE_STATUS
TEMPLATE_TYPE
TEMPLATE_USE_INDICATOR
TERSE_NAME
TEXT_FLAG
THRESHOLD_COST
TRANSMITTED_POLARIZATION_TYPE
TUPLE_SEQUENCE_NUMBER
USAGE_NOTE
VAR_ITEM_BYTES
VAR_RECORD_TYPE
VOLUME_DESC
VOLUME_SETS
WIND_SENSOR_HIGH_POWER_DUR
WIND_SENSOR_LOW_POWER_DUR
WIND_SENSOR_POWER_TYPE
X_OFFSET
Y_OFFSET
Z_OFFSET

PDS Geosciences Node Magellan Catalog

ALT_ALONG_TRACK_FOOTPRINT_SIZE
ALT_COARSE_RESOLUTION
ALT_CROSS_TRACK_FOOTPRINT_SIZE
ALT_FLAG2_GROUP
ALT_FLAG_GROUP
ALT_FOOTPRINT_LATITUDE
ALT_FOOTPRINT_LONGITUDE
ALT_FOOTPRINTS
ALT_GAIN_FACTOR
ALT_PARTIALS_GROUP
ALT_SKIP_FACTOR
ALT_SPACECRAFT_POSITION_VECTOR
ALT_SPACECRAFT_VELOCITY_VECTOR
ALTIMETRY_FOOTPRINT_TDB_TIME
ASSUMED_WARM_SKY_TEMPERATURE
ATMOS_CORRECTION_TO_DISTANCE
AVERAGE_ASC_NODE_LONGITUDE
AVERAGE_ECCENTRICITY
AVERAGE_INCLINATION
AVERAGE_ORBIT_PERI_TDB_TIME
AVERAGE_PERIAPSIS_ARGUMENT
AVERAGE_PLANETARY_RADIUS
AVERAGE_SEMIMAJOR_AXIS
BEST_NON_RANGE_SHARP_MODEL_TPT
BEST_RANGE_SHARP_MODEL_TMPLT
BRIGHTNESS_TEMPERATURE
DERIVED_FRESNEL_REFLECT_CORR
DERIVED_FRESNEL_REFLECTIVITY
DERIVED_PLANETARY_RADIUS
DERIVED_PLANETARY_THRESH_RADI
DERIVED_RMS_SURFACE_SLOPE
DERIVED_THRESH_DETECTOR_INDEX
EPHEMERIS_LATITUDE_CORRECTION
EPHEMERIS_LONGITUDE_CORRECTION
EPHEMERIS_RADIUS_CORRECTION
FIRST_ALT_FOOTPRINT_TDB_TIME
FIRST_RAD_FOOTPRINT_TDB_TIME
FOOTPRINT_NUMBER
FORMAL_CORRELATIONS_GROUP
FORMAL_ERRORS_GROUP
LAST_ALT_FOOTPRINT_TDB_TIME
LAST_RAD_FOOTPRINT_TDB_TIME
MULT_PEAK_FRESNEL_REFLECT_CORR
NON_RANGE_PROF_CORRS_INDEX
NON_RANGE_SHARP_ECHO_PROF
NON_RANGE_SHARP_FIT
NON_RANGE_SHARP_LOOKS
PLANET_READING_SYSTEM_TEMP
RAD_ALONG_TRACK_FOOTPRINT_SIZE
RAD_CROSS_TRACK_FOOTPRINT_SIZE
RAD_EMISSIVITY_PARTIAL
RAD_FLAG2_GROUP
RAD_FLAG_GROUP
RAD_FOOTPRINT_LATITUDE
RAD_FOOTPRINT_LONGITUDE
RAD_FOOTPRINTS
RAD_NUMBER
RAD_PARTIALS_GROUP
RAD_RECEIVER_SYSTEM_TEMP
RAD_SPACECRAFT_EPOCH_TDB_TIME
RAD_SPACECRAFT_POSITION_VECTOR
RAD_SPACECRAFT_VELOCITY_VECTOR
RANGE_SHARP_ECHO_PROFILE
RANGE_SHARP_FIT
RANGE_SHARP_LOOKS
RANGE_SHARP_PROF_CORRS_INDEX
RANGE_SHARP_SCALING_FACTOR

RAW_RAD_ANTENNA_POWER
RAW_RAD_LOAD_POWER
RECEIVER_NOISE_CALIBRATION
SAR_AVERAGE_BACKSCATTER
SAR_FOOTPRINT_SIZE
SFDU_LABEL_AND_LENGTH
SIGNAL_QUALITY_INDICATOR
SURFACE_EMISSION_TEMPERATURE
SURFACE_EMISSIVITY
SURFACE_TEMPERATURE
UNCORRECTED_DISTANCE_TO_NADIR

PDS Geosciences Node Viking Lander Catalog

CENTER_ELEVATION
DETECTOR_TEMPERATURE
DUST_FLAG
GAIN_NUMBER
MISSING_SCAN_LINES
OFFSET_NUMBER
SCAN_RATE
START_AZIMUTH
START_RESCAN_NUMBER
STOP_AZIMUTH
TOTAL_RESCAN_NUMBER

PDS Imaging Node Data Elements

AZIMUTH_MOTOR_CLICKS
CROSSTRACK_SUMMING
DOWNTRACK_SUMMING
LOCAL_MEAN_SOLAR_TIME

PDS Imaging Node Galileo Catalog

CMPRS_QUANTZ_TBL_ID
COMPRESSION_TYPE
CUT_OUT_WINDOW
ENCODING_MAX_COMPRESSION_RATIO
ENCODING_MIN_COMPRESSION_RATIO
HUFFMAN_TABLE_TYPE
ICT_DESPIKE_THRESHOLD
ICT_QUANTIZATION_STEP_SIZE
ICT_ZIGZAG_PATTERN
INTERCEPT_POINT_LATITUDE
INTERCEPT_POINT_LINE
INTERCEPT_POINT_LINE_SAMPLE
INTERCEPT_POINT_LONGITUDE
NTV_SAT_TIME_FROM_CLOSEST_APRH
NTV_TIME_FROM_CLOSEST_APPROACH
ON_CHIP_MOSAIC_FLAG
SPACECRAFT_CLOCK_CNT_PARTITION
SPICE_FILE_NAME
STAR_WINDOW
STAR_WINDOW_COUNT
TRUTH_WINDOW

PDS Mars Exploration Rover Operations Catalog

ANGULAR_DISTANCE
ANGULAR_DISTANCE_NAME
ANGULAR_VELOCITY
APPLICATION_PROCESS_ID
APPLICATION_PROCESS_NAME
APPLICATION_PROCESS_SUBTYPE_ID
ARTICULATION_DEV_INSTRUMENT_ID
ARTICULATION_DEV_POSITION
ARTICULATION_DEV_POSITION_ID
ARTICULATION_DEV_POSITION_NAME
ARTICULATION_DEV_VECTOR
ARTICULATION_DEV_VECTOR_NAME
ARTICULATION_DEVICE_ANGLE
ARTICULATION_DEVICE_ANGLE_NAME
ARTICULATION_DEVICE_ID
ARTICULATION_DEVICE_MODE
ARTICULATION_DEVICE_NAME
ARTICULATION_DEVICE_TEMP
ARTICULATION_DEVICE_TEMP_NAME
AUTO_EXPOSURE_PERCENT
BAD_PIXEL_REPLACEMENT_ID
CALIBRATION_SOURCE_ID
CAMERA_LOCATION_ID
CLEARANCE_DISTANCE
COMMAND_INSTRUMENT_ID
COMMAND_OPCODE
CONFIGURATION_BAND_ID
CONTACT_SENSOR_STATE
CONTACT_SENSOR_STATE_NAME
COORDINATE_SYSTEM_INDEX
COORDINATE_SYSTEM_INDEX_NAME
DERIVED_IMAGE_TYPE
DETECTOR_ERASE_COUNT
DETECTOR_FIRST_LINE
DETECTOR_LINES
DETECTOR_TO_IMAGE_ROTATION
DOWNLOAD_PRIORITY
DOWNSAMPLE_METHOD
EARLY_IMAGE_RETURN_FLAG
EARLY_PIXEL_SCALE_FLAG
ERROR_CONDITION
ERROR_MASK
ERROR_STATE
EXPOSURE_DURATION_COUNT
EXPOSURE_SCALE_FACTOR
EXPOSURE_TABLE_ID
EXPOSURE_TBL_UPDATE_FLAG
FLAT_FIELD_CORRECTION_PARM
FRAME_TYPE

GEOMETRY_PROJECTION_TYPE
GROUP_APPLICABILITY_FLAG
GROUP_ID
IMAGE_TYPE
INST_CMD_CAL_CO_ADD
INST_CMD_CAL_DWELL
INST_CMD_CAL_FREQUENCY
INST_CMD_CENTER_AZIMUTH
INST_CMD_CENTER_ELEVATION
INST_CMD_CO_ADD
INST_CMD_COLUMNS
INST_CMD_DWELL
INST_CMD_HIGH_CHANNEL
INST_CMD_HORIZONTAL_SPACE
INST_CMD_LOW_CHANNEL
INST_CMD_PHASE_ALGORITHM_NAME
INST_CMD_ROWS
INST_CMD_VERTICAL_SPACE
INST_CMPRS_DESC
INST_CMPRS_FILTER
INST_CMPRS_SEG_FIRST_LINE
INST_CMPRS_SEG_FIRST_LINE_SAMP
INST_CMPRS_SEG_LINES
INST_CMPRS_SEG_MISSING_PIXELS
INST_CMPRS_SEG_SAMPLES
INST_CMPRS_SEGMENT_QUALITY
INST_CMPRS_SEGMENT_STATUS
INST_CMPRS_SEGMENTS
INST_CMPRS_STAGES
INST_DECOMP_STAGES
INST_FIELD_OF_VIEW
INST_GAIN_STATE
INST_LASER_1_STATUS_FLAG
INST_LASER_2_STATUS_FLAG
INST_LASER_HEATER_STATUS_FLAG
INST_LINEAR_MOTOR_STATUS_FLAG
INST_OPTICAL_SWITCH_STATE
INST_SPARE_BIT_FLAG
INSTRUMENT_AZIMUTH
INSTRUMENT_BAND_ID
INSTRUMENT_BORESIGHT_ID
INSTRUMENT_COORDINATE
INSTRUMENT_COORDINATE_ID
INSTRUMENT_COORDINATE_NAME
INSTRUMENT_ELEVATION
INSTRUMENT_IDLE_TIMEOUT
INSTRUMENT_TEMPERATURE_NAME
INSTRUMENT_VERSION_ID
LIGHT_SOURCE_TYPE
LINE_CAMERA_MODEL_OFFSET
LINE_PREFIX_MEAN
LINE_SUFFIX_MEAN
LOCAL_TRUE_SOLAR_TIME
MAGNET_ID
MAX_AUTO_EXPOS_ITERATION_COUNT
MAXIMUM_ANGULAR_VELOCITY
MAXIMUM_CURRENT_PERSISTENCE
MAXIMUM_ELEVATION
MAXIMUM_TRAVEL_DISTANCE
MODEL_COMPONENT_1
MODEL_COMPONENT_2
MODEL_COMPONENT_3
MODEL_COMPONENT_4
MODEL_COMPONENT_5
MODEL_COMPONENT_6
MODEL_COMPONENT_7
MODEL_COMPONENT_8
MODEL_COMPONENT_9
MODEL_COMPONENT_ID
MODEL_COMPONENT_NAME
MODEL_COMPONENT_UNIT
MODEL_DESC
MODEL_NAME
MODEL_RANKING
MODEL_TYPE
ORIGIN_ROTATION_QUATERNION
PACKET_MAP_MASK
PIXEL_DOWNSAMPLE_OPTION
POSITIVE_AZIMUTH_DIRECTION
PRESSURE
PROJECTION_AZIMUTH
PROJECTION_ELEVATION
PROJECTION_ELEVATION_LINE
PROJECTION_ORIGIN_VECTOR
QUATERNION_MEASUREMENT_METHOD
RADIOMETRIC_CORRECTION_TYPE
REFERENCE_AZIMUTH
REFERENCE_COORD_SYSTEM_INDEX
REFERENCE_COORD_SYSTEM_NAME
ROTATION_NOLOAD_CURRENT
ROTATION_TORQUE_PARAMETER
ROTATION_VOLTAGE
ROTATION_VOLTAGE_NAME
ROVER_MOTION_COUNTER
ROVER_MOTION_COUNTER_NAME
SAMPLE_BIT_METHOD
SAMPLE_BIT_MODE_ID
SAMPLE_CAMERA_MODEL_OFFSET
SAMPLING_COUNT
SEQUENCE_ID
SEQUENCE_VERSION_ID
SHUTTER_CORRECT_THRESH_COUNT
SHUTTER_CORRECTION_MODE_ID
SOFTWARE_NAME
SOLAR_AZIMUTH
SOLAR_ELEVATION
SOURCE_ID
SPICE_FILE_ID

SUBFRAME_TYPE
SUN_FIND_FLAG
SUN_FIND_PARM
SUN_FIND_PARM_NAME
SUN_LINE
SUN_LINE_SAMPLE
SUN_VIEW_DIRECTION
SUN_VIEW_POSITION
SURFACE_GROUND_LOCATION
SURFACE_MODEL_TYPE
SURFACE_NORMAL_VECTOR
TARGET_DISTANCE
TELEMETRY_FMT_EXTENSION_TYPE
TELEMETRY_PROVIDER_ID
TELEMETRY_PROVIDER_TYPE
TELEMETRY_SOURCE_NAME
TELEMETRY_SOURCE_TYPE
TEST_PHASE_NAME
TIMEOUT_PARAMETER
TLM_INST_DATA_HEADER_ID
TORQUE_CONSTANT
TORQUE_GAIN
TORQUE_GAIN_NAME
X_AXIS_MAXIMUM
X_AXIS_MINIMUM
Y_AXIS_MAXIMUM
Y_AXIS_MINIMUM
Z_AXIS_DISTANCE
Z_AXIS_POSITION
Z_AXIS_STEP_SIZE
Z_AXIS_VELOCITY
Z_AXIS_VELOCITY_NAME
ZERO_ELEVATION_LINE

PDS Navigation and Ancillary Information Facility Node Data

KERNEL_TYPE_ID
NAIF_INSTRUMENT_ID

PDS Planetary Plasma Node Data Elements

DATA_LINES
PASS_NUMBER

PDS Rings Node Data Elements

B1950_DECLINATION
B1950_RIGHT_ASCENSION
B1950_RING_LONGITUDE
DIFFRACTION_CORRECTED_FLAG
EARTH_RECEIVED_START_TIME
EARTH_RECEIVED_STOP_TIME
HIGHEST_DETECTABLE_OPACITY
LOWEST_DETECTABLE_OPACITY
MAXIMUM_B1950_RING_LONGITUDE
MAXIMUM_RADIAL_RESOLUTION
MAXIMUM_RADIAL_SAMPLING_INTERV
MAXIMUM_RING_LONGITUDE
MAXIMUM_RING_RADIUS
MINIMUM_B1950_RING_LONGITUDE
MINIMUM_RADIAL_RESOLUTION
MINIMUM_RADIAL_SAMPLING_INTERV
MINIMUM_RING_LONGITUDE
MINIMUM_RING_RADIUS
NODAL_REGRESSION_RATE
NOISE_TYPE
OCCULTATION_TYPE
PERICENTER_PRECESSION_RATE
PHASE_INFORMATION_FLAG
PLANETARY_OCCULTATION_FLAG
PROJECTED_STAR_DIAMETER
RADIAL_RESOLUTION
RADIAL_SAMPLING_INTERVAL
RECEIVER_DESCRIPTION
RECEIVER_ID
RECEIVER_NAME
REFERENCE_RADIAL_RESOLUTION
REFERENCE_TIME
RING_ASCENDING_NODE_LONGITUDE
RING_ECCENTRICITY
RING_EVENT_START_TIME
RING_EVENT_STOP_TIME
RING_EVENT_TIME
RING_INCLINATION
RING_LONGITUDE
RING_OBSERVATION_ID
RING_OCCULTATION_DIRECTION
RING_PERICENTER_LONGITUDE
RING_RADIAL_MODE
RING_RADIAL_MODE_AMPLITUDE
RING_RADIAL_MODE_FREQUENCY
RING_RADIAL_MODE_PHASE
RING_RADIUS
RING_SEMIMAJOR_AXIS
SCALED_NOISE_LEVEL
STAR_DESCRIPTION
STAR_DIAMETER
STAR_NAME
TELESCOPE_LATITUDE
TELESCOPE_LONGITUDE
TELESCOPE_SITE_RADIUS
WAVELENGTH

PDS Small Bodies Node Data Elements

AIRMASS
APERTURE_TYPE

DATA_SET_LOCAL_ID
DISPERSION_MODE_ID
INTENSITY_TRANSFER_FUNCTION_ID
IRAS_CLOCK_ANGLE
IRAS_CLOCK_ANGLE_RANGE
IRAS_CLOCK_ANGLE_RATE
IRAS_CLOCK_ANGLE_RATE_SIGMA
IRAS_HCON
LANDER_SURFACE_QUATERNION
OBSERVER_FULL_NAME
PRODUCT_NAME
SLIT_POSITION_ANGLE
SOLAR_ELONGATION
SOLAR_ELONGATION_SIGMA

SPICE Data Elements

KERNEL_TYPE

Appendix H

ELEMENT NAME COMPONENT WORDS

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
acceptance	descriptor	accept	
acceptance_detector	descriptor	ad	
acceptance_information	descriptor	ai	
accessibility	descriptor	access	
account	descriptor	acct	
address	descriptor	addr	
affiliation	descriptor	affil	
albedo	descriptor	alb	
algorithm	descriptor	alg	
alias	descriptor	alias	
altitude	descriptor	alt	
angle	descriptor	ang	
anomaly	descriptor	anom	
antecedent	descriptor	ant	
approach	descriptor	apr	
area	descriptor	area	
argument	descriptor	arg	
ascending	descriptor	asc	
aspect	descriptor	aspect	
associated	descriptor	assoc	
atmosphere	descriptor	atm	
attribute	descriptor	attr	
author	descriptor	auth	
authority	descriptor	authy	
availability	descriptor	avail	avl
available	descriptor	avail	avl
average	descriptor	avg	
axis	descriptor	axis	ax
azimuth	descriptor	az	
band	descriptor	band	bnd
bandwidth	descriptor	bandwidth	
base	descriptor	base	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
bill	descriptor	bill	
billing	descriptor	bill	
bin	descriptor	bin	
bit	descriptor	bit	
blname	descriptor	blname	
body	descriptor	body	
bond	descriptor	bond	
brief	descriptor	brief	b
brightness	descriptor	brite	
browse	descriptor	browse	
byte	descriptor	byte	
calibration	descriptor	calbrt	calib
campaign	descriptor	campaign	
caption	descriptor	capt	
carrier	descriptor	carrier	carr
catalog	descriptor	cat	
category	descriptor	catgy	
center	descriptor	ctr	
characteristic	descriptor	chr	
channel	descriptor	chnl	
clarity	descriptor	clar	
clock	descriptor	clk	
closest	descriptor	cls	
code	descriptor	code	
cognizant	descriptor	cog	
column	descriptor	col	
comment	descriptor	cmt	
community	descriptor	comty	
component	descriptor	comp	
compromises	descriptor	compromises	
computer	descriptor	cpu	
condition	descriptor	cond	
cone	descriptor	cone	con
confidence	descriptor	conf	
considerations	descriptor	consid	
consumption	descriptor	cnsmp	
contact	descriptor	ctc	
contamination	descriptor	contam	
continuation	descriptor	cont	
contrast	descriptor	contr	
control	descriptor	ctl	
conversion	descriptor	conv	
coordinate	descriptor	crd	
coordinator	descriptor	crd	
cost	descriptor	cost	
count	class	cnt	
coverage	descriptor	cvg	
create	descriptor	create	
criticality	descriptor	critical	
cross	descriptor	crs	
customer	descriptor	cust	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
cycle	descriptor	cycle	cyc
data	descriptor	data	
data_administrator	descriptor	da	
data_dictionary	descriptor	dd	
dataset	descriptor	ds	
date	class	date	dt
declination	descriptor	declination	decl
default	descriptor	default	d
defining	descriptor	def	
definition	descriptor	defn	
delimited	descriptor	delim	
delimiting	descriptor	delim	
density	descriptor	density	
derived	descriptor	drv	
description	class	desc	d
detailed	descriptor	detail	
detector	descriptor	det	
diameter	descriptor	diam	
direction	descriptor	dir	
discipline	descriptor	disc	
display	descriptor	dsp	
distance	descriptor	dist	
distribution	descriptor	dstn	
distributor	descriptor	dstr	
document	descriptor	doc	
duration	descriptor	dur	
dynamic	descriptor	dyn	
earth	descriptor	earth	
earth_base	descriptor	eb	
eccentricity	descriptor	ecc	
edit	descriptor	edit	
electronic	descriptor	elec	
electronics	descriptor	elecs	
elevation	descriptor	elevation	
emission	descriptor	emiss	
energy	descriptor	energy	
entry	descriptor	entry	
environment	descriptor	env	
ephemeris	descriptor	eph	
epoch	descriptor	epoch	
equatorial	descriptor	equat	
error	descriptor	err	
event	descriptor	evt	
experimenter	descriptor	exprmtr	
expertise	descriptor	exprt	
exposure	descriptor	expos	
facility	descriptor	fac	
factor	descriptor	fact	
feature	descriptor	feat	
field	descriptor	fld	
filter	descriptor	filt	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
first	descriptor	first	
flag	class	flag	flg
flattening	descriptor	flattening	
flood	descriptor	fld	
focal	descriptor	foc	
format	descriptor	fmt	
fov	descriptor	fov	
frame	descriptor	frame	fram
frequency	descriptor	freq	
fts	descriptor	fts	
full	descriptor	full	f
function	descriptor	func	
funding	descriptor	fund	
gain	descriptor	gain	
geometric	descriptor	geom	
granularity	descriptor	gran	
granule	descriptor	gran	
gravity	descriptor	grav	
group	class	grp	
guidance	descriptor	guid	
hardware	descriptor	hw	
height	descriptor	height	ht
help	descriptor	help	
hierarchy	descriptor	hier	
history	descriptor	hist	
home	descriptor	home	
horizontal	descriptor	horz	
host	descriptor	host	
hour	descriptor	hour	
hourly	descriptor	hrly	
identification	class	id	
initial	descriptor	init	
image	descriptor	image	
implementation	descriptor	impl	
important	descriptor	imp	
incidence	descriptor	incid	
inclination	descriptor	incln	
indicator	descriptor	ind	
information	descriptor	info	inf
inner	descriptor	in	
input	descriptor	ipt	
institution	descriptor	instn	
instructions	descriptor	instrc	ins
instrument	descriptor	inst	
integrated	descriptor	intg	
integration	descriptor	intg	
interval	descriptor	iv	
inventory	descriptor	inv	
item	descriptor	itm	
journal	descriptor	journal	
julian	descriptor	jul	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
kernel	descriptor	knl	
key	descriptor	key	
keyword	descriptor	kwd	
laboratory	descriptor	lab	
language	descriptor	lang	
last	descriptor	last	
latitude	descriptor	lat	
launch	descriptor	launch	
lecp	descriptor	lecp	lc
length	descriptor	length	len
level	descriptor	lvl	
light	descriptor	lite	
limb	descriptor	limb	
line	descriptor	line	
list	descriptor	list	
load	descriptor	lod	
local	descriptor	local	
location	descriptor	loc	
longitude	descriptor	lon	
mag	descriptor	mag	
magnetic	descriptor	mag	
mail	descriptor	mail	
mailing	descriptor	mail	
major	descriptor	maj	
manager	descriptor	mgr	
mandatory	descriptor	mandatory	
manufacturer	descriptor	mfg	
map	descriptor	map	
mask	class	mask	
mass	descriptor	mass	
maximum	descriptor	max	
mean	descriptor	mean	
measured	descriptor	meas	
measurement	descriptor	meas	
media	descriptor	media	
memory	descriptor	mem	
menu	descriptor	menu	
method	descriptor	method	
middle	descriptor	mid	
midnight	descriptor	midnight	
midsequence	descriptor	midseq	
minimum	descriptor	min	
mission	descriptor	msn	
mode	descriptor	mode	md
model	descriptor	mdl	
moment	descriptor	moment	
mosaic	descriptor	mosaic	
motion	descriptor	motn	
mount	descriptor	mount	mnt
mounting	descriptor	mount	
name	class	name	nm

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
native	descriptor	native	
navigation	descriptor	nav	
node	descriptor	node	nd
noise	descriptor	noise	
nominal	descriptor	nom	
north	descriptor	north	
note	descriptor	note	nt
notebook	descriptor	note	
number	class	num	
object	descriptor	obj	
objective	descriptor	obj	
objectives	descriptor	obj	
obliquity	descriptor	obliquity	
observation	descriptor	obs	
observatory	descriptor	obsvty	
offset	descriptor	off	
operating	descriptor	oper	
operating_system	descriptor	os	
operation	descriptor	oprtn	
operational	descriptor	oper	
operations	descriptor	oper	
optics	descriptor	optics	optc
orbit	descriptor	orb	
orbital	descriptor	orb	
orbiter	descriptor	orbtr	
order	descriptor	ord	
orientation	descriptor	orient	
outer	descriptor	out	ot
output	descriptor	opt	
page	descriptor	page	
parameter	descriptor	parm	prm
parent	descriptor	parent	
particle	descriptor	part	
particle_multiple_parameters	descriptor	pmp	
password	descriptor	psw	
path	descriptor	path	
peak	descriptor	peak	
peer	descriptor	peer	
percentage	descriptor	pct	
periapsis	descriptor	peri	
period	descriptor	per	
personnel	descriptor	pers	
phase	descriptor	phs	
physical	descriptor	phys	phy
pin	descriptor	pin	
pixel	descriptor	pix	
planet	descriptor	planet	
platform	descriptor	plat	
pls	descriptor	pls	
point	descriptor	point	
pointing	descriptor	pntg	

COMPONENT TERMS (formal data object)	**TERM TYPE**	**TERSE #1**	**#2**
pole	descriptor	pole	
position	descriptor	position	pos
power	descriptor	pwr	
precession	descriptor	precess	
preference	descriptor	preference	
pressure	descriptor	pres	
primary	descriptor	prim	
prime	descriptor	prime	
principal_investigator	descriptor	pi	
privilege	descriptor	priv	
privileges	descriptor	prv	
process	descriptor	proc	
processing	descriptor	proc	
product	descriptor	prod	
producer	descriptor	prod	
production	descriptor	prd	
profile	descriptor	prof	
programming	descriptor	pgm	
projection	descriptor	proj	
publication	descriptor	publ	
pws	descriptor	pws	
quality	descriptor	qual	
quantity	descriptor	qty	
quantization	descriptor	quantz	quant
query	descriptor	query	qry
quotient	descriptor	q	
radiance	descriptor	rdnc	
radius	descriptor	radius	radi
range	descriptor	rng	
rate	descriptor	rate	
ratio	class	rto	
rationale	descriptor	ratl	
received	descriptor	rcvd	
record	descriptor	rec	
reference	descriptor	ref	
reflected	descriptor	rel	
region	descriptor	region	
registration	descriptor	reg	
related	descriptor	rel	
release	descriptor	release	
remote	descriptor	rem	
request	descriptor	request	rqst
required	descriptor	req	
requirement	descriptor	req	
research	descriptor	rsch	
resolution	descriptor	res	
resonance	descriptor	reson	
responsibility	descriptor	resp	
result	descriptor	rslt	
reticle	descriptor	ret	
review	descriptor	revw	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
revolution	descriptor	rev	
right_ascension	descriptor	ra	
ring	descriptor	ring	
role	descriptor	role	
rotation	descriptor	rot	
routine	descriptor	rtn	
row	descriptor	row	
sample	descriptor	samp	
sampling	descriptor	samp	
satellite	descriptor	sat	
scale	descriptor	scale	
scaled	descriptor	scale	
scan	descriptor	scan	
schedule	descriptor	sched	
scheme	descriptor	sch	
science	descriptor	sci	
scientific	descriptor	sci	
scientist	descriptor	sci	
screen	descriptor	screen	
sdif	descriptor	sdif	
secondary	descriptor	sec	
section	descriptor	sect	
selection	descriptor	selc	
semi	descriptor	semi	
sensitivity	descriptor	sens	
sequence	descriptor	seq	
serial	descriptor	serl	
series	descriptor	ser	
set	descriptor	set	
shape	descriptor	shape	
sheet	descriptor	sheet	sht
ship	descriptor	shp	
shipping	descriptor	shp	
shutter	descriptor	shut	
sidereal	descriptor	sid	
size	descriptor	size	
slant	descriptor	slant	
software	descriptor	sw	
solar	descriptor	sol	
source	descriptor	source	src
spacecraft	descriptor	sc	
spacecraft_clock	descriptor	sclk	
spatial	descriptor	spatial	
special	descriptor	spcl	spc
specialty	descriptor	spcl	
species	descriptor	specs	
spectral	descriptor	spec	
spectrum	descriptor	spec	
spin	descriptor	spin	
sql	descriptor	sql	
stabilization	descriptor	stbl	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
staff	descriptor	staff	
standard	descriptor	std	
start	descriptor	strt	
state	descriptor	state	st
status	descriptor	status	sts
stop	descriptor	stop	
storage	descriptor	stor	
string	descriptor	str	
sub	descriptor	sub	
submission	descriptor	subm	
subsystem	descriptor	ss	
summary	class	smy	
supplier	descriptor	suplr	
suppliment	descriptor	suplmt	
support	descriptor	sup	
surface	descriptor	surf	
synodic	descriptor	syn	
system	descriptor	sys	
table	descriptor	tbl	
tae	descriptor	tae	
target	descriptor	targ	tg
task	descriptor	task	
telephone	descriptor	telephone	
telescope	descriptor	tlscp	
temperature	descriptor	temp	
template	descriptor	tmplt	
temporal	descriptor	temporal	temp
terse	descriptor	terse	ters
threshold	descriptor	thrshld	
time	class	time	tm
title	descriptor	title	
topic	descriptor	topic	
total	descriptor	tot	
triaxial	descriptor	triaxl	
translation	descriptor	trans	
transmittance	descriptor	xmit	
true	descriptor	true	
tuple	descriptor	tup	
twist	descriptor	twist	
type	class	type	typ
uncertainty	descriptor	unct	
unit	descriptor	unit	
usage	descriptor	usg	
user	descriptor	user	
userview	descriptor	uv	
validity	descriptor	vldty	
value	class	val	
vector	descriptor	vect	
vendor	descriptor	vend	
version	descriptor	ver	
vertical	descriptor	vert	

COMPONENT TERMS (formal data object)	TERM TYPE	TERSE #1	#2
wavelength	descriptor	wave	wv
weight	descriptor	wt	
width	descriptor	width	wd
window	descriptor	window	
znumber	descriptor	z	