

Mars Reconnaissance Orbiter

Mars Climate Sounder Reduced Data Record Software Interface Specification

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ACRONYMS AND ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
CODMAC	Committee on Data Management and Computation
EDR	Experiment Data Record
ICD	Interface Control Document
ISO	International Standards Organization
JPL	Jet Propulsion Laboratory
Kbyte	Kilobytes
LSB	Least Significant Byte
MB	Mega Bytes
MIPL	Multimission Image Processing Laboratory
MRO	Mars Reconnaissance Orbiter
MSB	Most Significant Byte
NASA	National Aeronautics and Space Administration
ODL	Object Description Language
PMIRR	Pressure Modulator Infrared Radiometer
PDS	Planetary Data System
RAM	Random Access Memory
RDR	Reduced Data Record
SFDU	Standard Formatted Data Unit
SIS	Software Interface Specification
TBD	To Be Determined
TDS	Telemetry Delivery Subsystem
URL	Universal Resource Locator

GLOSSARY

TERM	DEFINITION
Meta-Data	Selected or summary information about data. PDS catalog objects and data product labels are forms of meta-data for summarizing important aspects of data sets and data products.
Profile	The vertical distribution, as a function of atmospheric altitude, of some physical property, such as temperature or water vapor amount

1. INTRODUCTION

1.1 Purpose and Scope

The purpose of this data product Software Interface Specification (SIS) is to provide users of the Mars Climate Sounder (MCS) Reduced Data Record (RDR) with a detailed description of the product and a description of how it was generated, including data sources and destinations. The document is intended to provide enough information to enable users to understand the MCS RDR data product. The users for whom this document is intended are software developers of the programs used in generating the RDR products and scientists who will analyze the data, including those associated with the Mars Reconnaissance Orbiter (MRO) Project and those in the general planetary science community.

1.2 Contents

This data product SIS describes how the MRO MCS instrument acquires its data, and how the data are processed, formatted, labeled, and uniquely identified. This document discusses standards used in generating the product and software that may be used to access the product. The data product structure and organization is described in sufficient detail to enable a user to read the product. Finally, an example of a product label is provided.

1.3 Applicable Documents and Constraints

This data product SIS is responsive to the following MRO documents:

1. Mars Exploration Program Data Management Plan, R. E. Arvidson, S. Slavney and S. Nelson, Rev. 3, March 20, 2002.
2. Mars Reconnaissance Orbiter Project Data Archive Generation, Validation and Transfer Plan, R. E. Arvidson, S. Noland and S. Slavney, JPL D-22246, July 27, 2005.
3. Mars Climate Sounder Telemetry Dictionary, A. S. Mazer, JPL D-28436.

This SIS is also consistent with the following Planetary Data System documents:

4. Planetary Data System Archive Preparation Guide, Version .050503, JPL D-31224, May 3, 2005.
5. Planetary Data System Data Standards Reference, Version 3.6, JPL D-7669, Part 2, August 1, 2003.
6. Planetary Science Data Dictionary Document, JPL D-7116, August 28, 2002.
7. Mars Reconnaissance Orbiter Mars Climate Sounder (MCS) Science Team and PDS Atmospheres Node Interface Control Document (ICD), J. Murphy, April 30, 2004.

1.4 Relationships with Other Interfaces

The Reduced Data Record products described in this SIS are used in the production of other archived products of the Mars Reconnaissance Orbiter (MRO) mission, so that changes to their content and format may result in an interface impact. In particular, the MCS Derived Data Record (DDR) products take RDR products as their input data sets.

2. DATA PRODUCT CHARACTERISTICS AND ENVIRONMENT

2.1 Instrument Overview

The Mars Climate Sounder is a follow-on experiment to PMIRR, the Pressure Modulator Infrared Radiometer lost with the Mars Observer spacecraft, and to PMIRR2, lost with the Mars Climate Orbiter. MCS observes radiation with 21 detectors in each of nine spectral bands; eight thermal infrared channels are used to characterize atmospheric temperature, pressure, water vapor, and condensates, while the remaining spectral channel (operating in the visible and near infrared, 0.3-3.0 microns) is used primarily to understand the effects of solar radiation on the Martian energy budget

MCS looks near the horizon of Mars at the atmospheric limb to observe the atmosphere in 21 vertical samples simultaneously, with measurements centered approximately 5 kilometers (3 miles) through the atmosphere at the limb. From these observations vertical distributions (“profiles”) of temperature, pressure, water vapor, dust, and condensates are determined. . These profiles are combined into daily, three-dimensional global maps for both daytime and nighttime. . Analyzing these profiles and maps should lead to a better understanding of Martian weather and, eventually, of Martian climate.

2.2.1 Hardware Overview

The Mars Climate Sounder is a nine channel infrared radiometer employing filter radiometry. These channels are distributed between two identical, boresighted telescopes, and an articulated elevation/azimuth mount allows the telescopes to view the surface of Mars, the limb of Mars, space, and calibration targets. The instantaneous field-of-view (FOV) response of each channel is defined by a linear, 21-element, thermopile detector array at the telescope focal plane, and its spectral response is defined by a focal plane bandpass filter.

The MCS structure consists of an instrument optics bench assembly (OBA), an elevation/azimuth yoke, and an instrument mount. The OBA contains all of the instrument optical subassemblies, and is suspended from the yoke (Figure 3-1). Elevation and azimuth motors mounted on the yoke drive instrument articulation. The OBA is temperature controlled, and internal temperature gradients are minimized by design. Radiometric calibration is provided by views of blackbody

and solar targets mounted on the yoke. The electronics subassemblies control signal processing, instrument operation and articulation, command processing, and data processing and are distributed between the OBA and the yoke. Figure 1 shows a schematic of the mechanical configuration of the instrument with the major components indicated. Figure 2 gives a schematic representation of the optical layout.

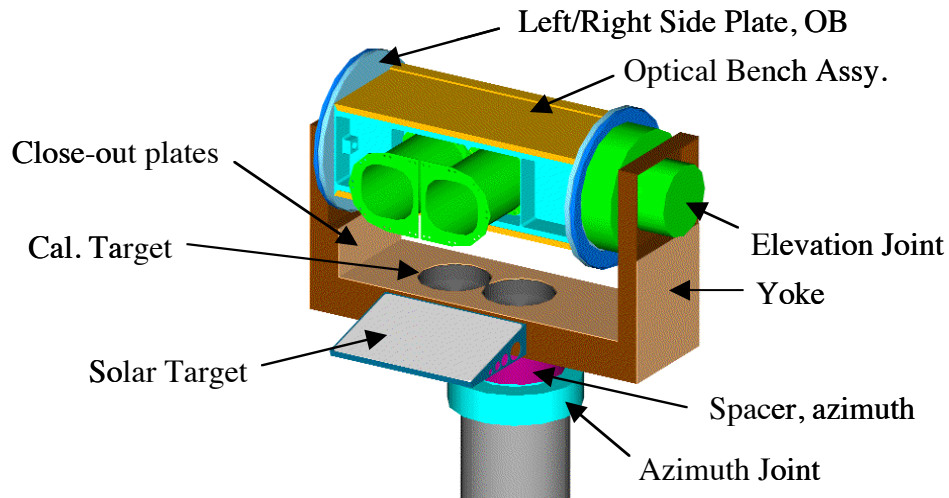
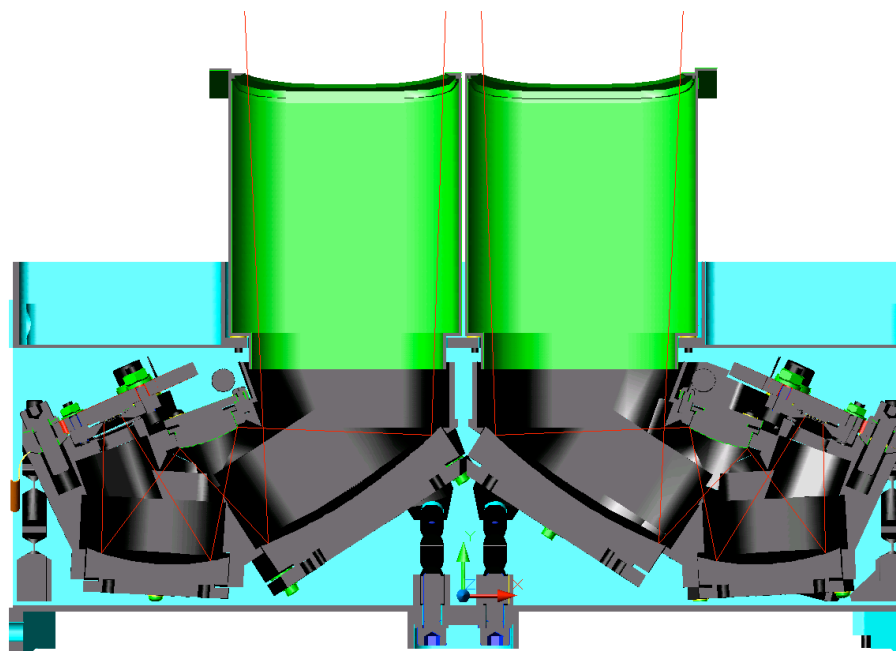


Figure 1 Instrument Configuration



Telescope/ Channel #	Bandpass cm ⁻¹	Band Center - μ m	Measurement Function (Reference Only)
A1	595 - 615	16.5	Temperature 20-40 km
A2	615 - 645	15.9	Temperature 40-80 km, Pressure
A3	635 - 665	15.4	Temperature 40-80 km, Pressure
A4	820 - 870	11.8	Dust & Condensate (D&C) extinction 0-80 km
A5	400 - 500	22.2	Temperature 0-20km, D&C extinction 0-80 km
A6	3300 - 33000	1.65	Polar Radiative Balance
B1	290 - 340	31.7	Temperature 0-20km, D&C extinction 0-80 km
B2	220 - 260	41.7	Water Vapor 0-40 km, D&C extinction 0-80 km
B3	230 - 245	42.1	Water Vapor 0-40 km, D&C extinction 0-80 km

Figure 3 MCS channel spectral characteristics

The detector arrays for channels A1 through A6 are located in the focal plane of telescope A. The detector arrays for channels B1 through B3 shall be located in the focal plane of telescope B.

Each MCS spectral channel has 21 FOVs defined by the individual detectors of the corresponding linear array. Individual detector FOV dimensions, linear array length and linear array spacing in both focal planes is specified in Figure 4.

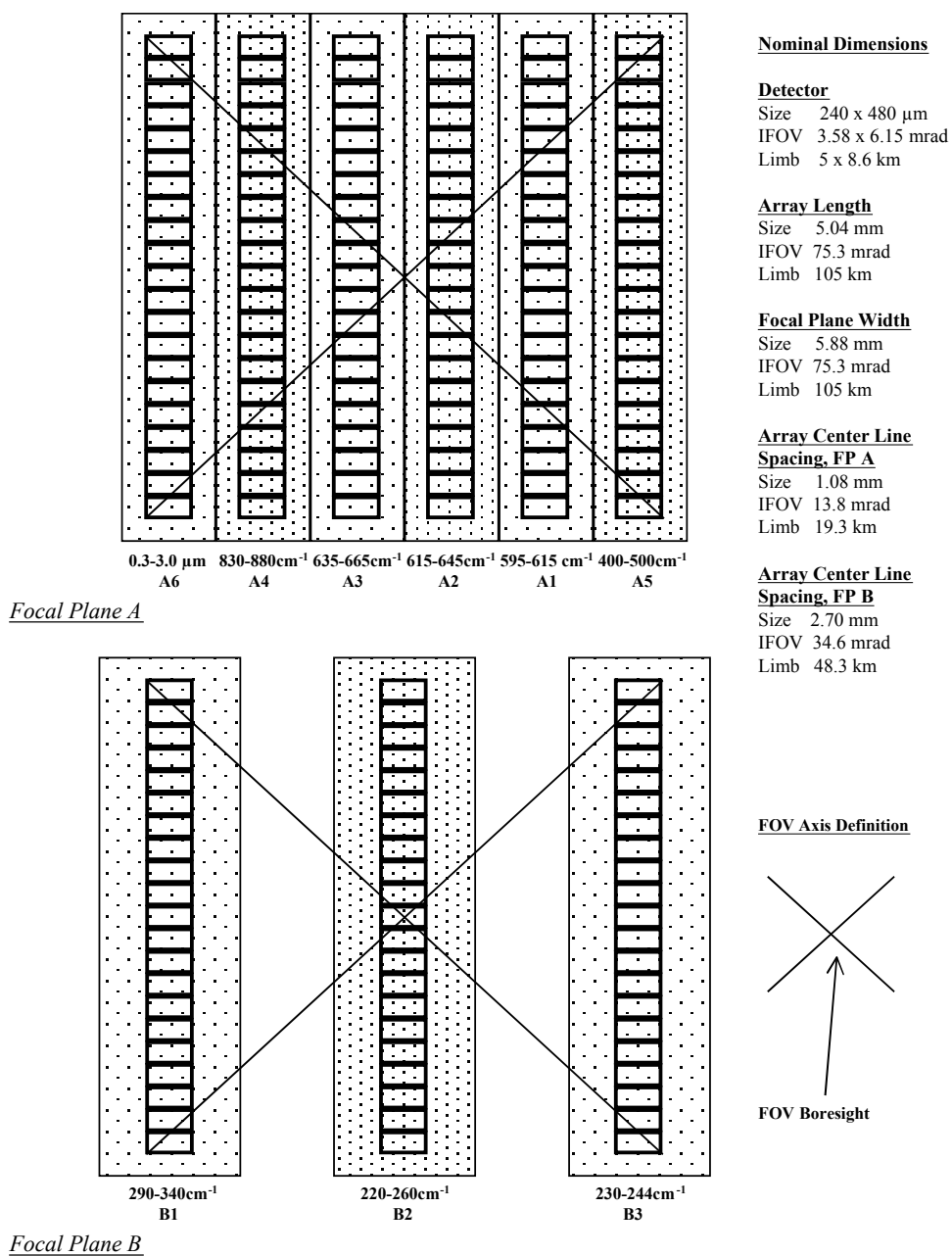


Figure 3-4. Detector and Filter Layout and Channel Assignments, Focal Planes A & B

Figure 4 Detector and Filter Layout

2.2 Data Product Overview

The MCS software collects 192 sixteen-bit science measurements from the focal plane interface electronics every 2.048 seconds, along with associated

instrument engineering and housekeeping measurements. The science and housekeeping data are organized into data packets that are transmitted to the spacecraft at the same 2.048-second spacing. The data packets are downlinked to the MRO Ground Data System (GDS) and placed into the Raw Science Data Server (RSDS). MCS software queries the data from the RSDS and assembles them into RDR data tables, each covering a 4 hour time period.

The Level 1B data will consist of the instrument science measurements correlated with the geometry information which locates observations in space and time.

Each MCS RDR data product will consist of three files. The first file is an ASCII formatted detached PDS label. The second file is the detached PDS format file. The third file is the ASCII data table file. These are described in Appendix A. Each MCS RDR data table will be approximately 24MB; volume of the RDR data product will be approximately 144MB per day.

2.3 Data Processing

2.3.1 Data Processing Level

This document uses the Committee on Data Management and Computation (CODMAC) data level numbering system to describe the processing level of the RDR data product. MCS RDR data products are considered CODMAC “Level 4”, equivalent to NASA level 1B. The RDR data files are generated from CODMAC Level 2 or “Edited Data”, which are the time-ordered instrument science data. Refer to Table 2 for a definition of the CODMAC and NASA data processing levels.

Table 2: Processing Levels for Science Data Sets

NASA	CODMAC	Description
Packet data	Raw – Level 1	Telemetry data stream as received at the ground station, with science and engineering data embedded.
Level-0	Edited – Level 2	Instrument science data (e.g., raw voltages, counts) at full resolution, time ordered, with duplicates and transmission errors removed.
Level 1A	Calibrated - Level 3	Level 0 data that have been located in space and may have been transformed (e.g., calibrated, rearranged) in a reversible manner and packaged with needed ancillary and auxiliary data (e.g., radiances with the calibration equations applied).
Level 1B	Resampled - Level 4	Irreversibly transformed (e.g., resampled, remapped, calibrated) values of the instrument measurements (e.g., radiances, magnetic field strength).

Level 2	Derived - Level 5	Geophysical parameters, generally derived from Level 1 data, and located in space and time commensurate with instrument location, pointing, and sampling.
Level 3	Derived - Level 5	Geophysical parameters mapped onto uniform space-time grids.

2.3.2 Data Product Generation

The MCS RDR data products will be generated by the MCS Instrument Team at JPL. The RDR data products will be generated from the EDR data products and formatted according to this RDR SIS..

2.3.3 Data Flow

MCS science and engineering telemetry are transferred to the MRO Project RSDS. Once transferred, the MCS software automatically processes the telemetry into Level 0 EDR data products. MCS software generates the Level 1B products from the Level 0 data. The MCS RDR data products are then archived locally at the MCS operation center.

After an initial data validation period, the MCS team will assemble the data products and ancillary files into archive volumes and will transfer the assembled volume to the Atmospheres Node. The MCS RDR archive will be made available via data releases scheduled at three month intervals as specified in the Mars Reconnaissance Orbiter Project Data Archive Generation, Validation and Transfer Plan (see Applicable document #2).

2.3.4 Labeling and Identification

The data set ID provided by the PDS for the MCS RDR data product is: MRO-M-MCS-4-RDR-V1.0. The version number is incremented should the entire RDR data set be revised. [Clarify major/minor versioning conventions.] The data set name is "MRO MARS CLIMATE SOUNDER LEVEL 4 RDR V1.0".

The file naming convention for the MCS data products will be in the form of an 8 digit date in the format YYYYMMDD, plus a two-digit hour, e.g. "2007070820_RDR.TAB"

Each MCS RDR data product has a detached PDS label in a separate file of the same name, extension .LBL: e.g. "2007070820_RDR.LBL". The PDS format file for each RDR data product will be MCS_RDR.FMT.

2.4 Standards Used in Generating Data Products

2.4.1 PDS Standards

The MCS RDR complies with Planetary Data System standards for file formats and directory names, PDS labels, as specified in the PDS Standards Reference [5] and the Planetary Science Data Dictionary Document [6].

2.4.2 Time Standards

The PDS label for an MCS RDR uses keywords denoting time values, such as start time, stop time, start spacecraft clock count, and stop spacecraft clock count. Each time value standard is defined according to the PDS keyword definition. See Appendix C.

In the data product label, Start Time and Stop Time values are stored in PDS compliant UTC date format, in the pattern YYYY-MM-DDTHH:MM:SS.SSS (four digit year, two digits for month, day, hour, minute and second, and three digits for decimal fractional second). Spacecraft clock start and stop count time values are stored in decimal seconds from the epoch 1980.

2.4.3 Coordinate Systems

All positions and vectors in the MCS RDR product files are specified in Areocentric spherical coordinates.

2.4.4 Data Storage Conventions

The MCS RDR data files are stored as fixed-length ASCII tables. The detached PDS labels for MCS RDR's are stored as ASCII text, as are the format files. Each record is terminated with a carriage return followed by a line feed.

2.5 Data Validation

MCS RDR products will be validated before being released to the PDS. Validation is accomplished in two parts: validation for scientific integrity and validation for compliance with PDS standards. MCS Team members are expected to conduct validation for scientific integrity in the course of their analysis of the products. Science validation is meant to ensure that data products contain the expected measurements and that they are otherwise suitable for analysis. The details of the science validation process are the responsibility of the MCS Team.

Validation for PDS compliance will be performed by the PDS Atmospheres Node and is meant to ensure that data products conform to PDS standards and to the specifications in this SIS.

A data set must also pass a peer review before it is accepted by PDS. The MCS Team and the PDS Atmospheres Node will convene a peer review committee made up of scientists and data engineers. The committee will examine the data

set to make sure it is complete and meets the product specifications as defined in the SIS. The committee will include a PDS representative to ensure that the data set is in compliance with PDS standards.

3. DETAILED DATA PRODUCT SPECIFICATIONS

3.1 Data Product Structure and Organization

The RDR data products will be located in the DATA directory of the RDR volume. The files will be grouped into directories with one directory per day. Each directory name will be in the format YYYYMMDD. Within each directory there will be 6 data product files and their labels. The labels will point to the corresponding data files, and contain pointers to format labels detailing the column layout of the data files. The data product file names will be in the format YYYYMMDDHH_RDR.TAB for the data tables, and YYYYMMDDHH_RDR.LBL for the labels.

3.2 Data Format Descriptions

The MCS RDR data product file is a fixed record-length ASCII table. Descriptions of the data contained within the table columns are provided below:

Table 1: MRO MCS Measurement Data Components

Column #	Name	Data Type	Length	Description
1	1	ASCII_INTEGER	1	A quality indicator: 0 means this record contains valid data
2	DATE	CHARACTER	14	Date of measurement (UTC)
3	UTC	CHARACTER	15	Time of measurement (UTC)
4	SCLK	ASCII_REAL	15	The MRO Spacecraft Clock, without partition, including decimal thousandths of a second
5	PKT_COUNT	ASCII_INTEGER	10	The packet count, including the current one, sent since bootup. Rolls over to 0 at 65536
6	LAST_AZ_CMD	ASCII_REAL	12	The last azimuth commanded, in degrees, which if the actuator isn't moving, is the same as the current azimuth.
7	LAST_EL_CMD	ASCII_REAL	12	The last elevation commanded, in degrees, which, if the actuator isn't moving, is the same as the current elevation.
8	GQUAL	ASCII_INTEGER	6	Geometry quality: 0 = good. 1 = good, Phobos in view 2 = good, Deimos in view 3 = undetermined attitude information 4 = Pointing is incorrect and geometry is not fixed 5 = Pointing may be incorrect and geometry is not fixed

				6 = Pointing is incorrect and geometry was fixed 7 = Pointing is incorrect and geometry is not fixed, Phobos in view 8 = Pointing may be incorrect and geometry is not fixed, Phobos in view 9 = Pointing is incorrect and geometry was fixed, Phobos in view 10 = Pointing is incorrect and geometry is not fixed, Deimos in view 11 = Pointing may be incorrect and geometry is not fixed, Deimos in view 12 = Pointing is incorrect and geometry was fixed, Deimos in view 13 = good, solar array in view 14 = Pointing is incorrect and geometry is not fixed, solar array in view 15 = Pointing may be incorrect and geometry is not fixed, solar array in view 16 = Pointing is incorrect and geometry is not fixed, solar array in view
9	SOLAR_LAT	ASCII_REAL	10	The Mars-centric north latitude of the Sun, in degrees
10	SOLAR_LON	ASCII_REAL	11	The Mars-centric east longitude of the Sun, in degrees
11	SOLAR_ZEN	ASCII_INTEGER	11	The angular separation, in degrees, between the vector from the center of Mars to the scene point (see below) and the vector from the center of Mars to the Sun
12	SC_LAT	ASCII_REAL	10	The Mars-centric north latitude of the MRO spacecraft, in degrees
13	SC_LON	ASCII_REAL	11	The Mars-centric east longitude of the MRO spacecraft, in degrees
14	SC_RAD	ASCII_REAL	9	The distance from the center of Mars to the MRO spacecraft, in kilometers
15	SCENE_LAT	ASCII_INTEGER	10	The Mars-centric north latitude, in degrees, of the scene point. When the look vector is calculated to intersect the surface of Mars, the scene point is defined as the intersection point. When the look vector is calculated to not intersect the surface of Mars, the scene point is defined as the point along the look vector which is nearest the triaxial ellipsoid Mars. Note that for views above the horizontal, the calculated scene point lies along the <u>_negative_</u> of the look vector.
16	SCENE_LON	ASCII_INTEGER	11	The Mars-centric east longitude, in degrees, of the scene point. When the look vector is calculated to intersect the surface of Mars, the scene point is defined as the intersection point. When the look vector is calculated to not intersect the surface of Mars, the scene point is defined as the point along the look vector which is nearest the triaxial ellipsoid Mars. Note that for views above the horizontal, the calculated scene point lies along the <u>_negative_</u> of the look vector.
17	SCENE_RAD	ASCII_INTEGER	10	The distance, in kilometers, from the center of Mars to the scene point. When the look vector is calculated to intersect the surface of Mars, the scene point is defined as the intersection point. When the look vector is calculated to not intersect the surface of Mars, the scene point is defined as the point along

				the look vector which is nearest the triaxial ellipsoid Mars. Note that for views above the horizontal, the calculated scene point lies along the <code>_negative_</code> of the look vector.
18	SCENE_ALT	ASCII_INTEGER	10	The distance, in kilometers, between the scene point and the triaxial ellipsoid surface of Mars. For look vectors which intersect the surface, this is zero. For look vectors which don't intersect the surface, this is the tangent height.
19	VERT_LAT	ASCII_INTEGER	10	The north latitude, in Mars-centric degrees, of the vector from detector A1-1 to detector A1-21
20	VERT_LON	ASCII_INTEGER	11	The east longitude, in Mars-centric degrees, of the vector from detector A1-1 to detector A1-21
21	LIMB_ANG	ASCII_INTEGER	11	The angle, in degrees, between the projection into the plane normal to the look vector at the scene point, of the local normal to the triaxial ellipsoid at the scene point and the vector from detector A1-1 to detector A1-21. The sign convention is such that positive angles mean that the detector upward direction is rotated clockwise relative to the local vertical, as seen from the spacecraft.
22	SAFING	ASCII_INTEGER	7	A 1-bit value indicating Safing; '1' indicates that the instrument had started moving to the stow position but hasn't yet finished. See column 23 for additional information
23	SAFED	ASCII_INTEGER	6	A 1-bit value indicating Safed; '1' indicates that the instrument was stowed during this observation. The stowed position is sun-safe and views the internal blackbody. Flight software will not move the actuators until a resume command has been received
24	FREEZING	ASCII_INTEGER	9	A 1-bit value indicating Freezing; '1' indicates that the instrument was moving to the frozen position during this observation. See the column 25 for additional information
25	FROZEN	ASCII_INTEGER	7	A 1-bit value indicating Frozen; '1' indicates that the instrument was frozen during this observation; flight software will not move the actuators (except to safe) until a free command has been received. While frozen, the instrument generally points at the limb for the duration of a high stability image
26	ROLLING	ASCII_INTEGER	8	A 1-bit value indicating Rolling; '1' indicates that the flight software is performing special scanning for sun safety during a large roll by the spacecraft for a targeted observation. It is enabled by a command and ends with a second command
27	DUMPING	ASCII_INTEGER	8	A 1-bit value indicating Dumping memory; '1' indicates that the packet contains dump data instead of science data. Enabled by command
28	MOVING	ASCII_INTEGER	7	A 1-bit value indicating Actuator motion; '1' indicates that an actuator moved during acquisition of the packet's science data
29	TEMP_FAULT	ASCII_INTEGER	11	A 1-bit value indicating stepper temperature fault; '1' indicates that an over-temperature condition was detected in the actuator-controlling chip

30	MODE	CHARACTER	7	An 8-bit value indicating various conditions: Bit 0: RAM CRC calc disabled; Bit 1: Logging I/O transactions; Bit 2: Logging movements; Bit 3: Watchdog disabled; Bit 4: Debug telem mode; The science channels contain debug data, not science observations. Bit 5: Safing disabled; Bit 6: Sensor data synthesized; Temperature data in this packet is not real. Bit 7: Science data synthesized; Science observations in this packet are not real
31	OST_INDEX	ASCII_INTEGER	10	The current index into the Orbit Schedule Table. This is -1 at bootup, and then increments by one with each equator crossing, as announced by the spacecraft through the MCS_EQX command. After index 11, it wraps around to 0.
32	EST_INDEX	ASCII_INTEGER	10	The index of the current Event Schedule Table. EST indices come from the Orbit Schedule Table. The Event Schedule Table selected determines which Scan Sequence Tables execute.
33	ROT_INDEX	ASCII_INTEGER	10	The current index into the Radio-Occultation Table. The Radio-Occultation Table references Scan Sequence Tables to execute based on spacecraft time rather than orbit.
34	EOCT_INDEX	ASCII_INTEGER	11	The current index into the Eccentricity- Oblateness Correction Table. The EOCT contains elevation corrections to pointings, based on times since the last equator crossing.
35	SST_INDEX	ASCII_INTEGER	10	The current index into the current Scan Sequence Table, which determines the current pointing.
36	FPA_TEMP	ASCII_REAL	9	The temperature readout of the focal plane A temperature sensor, in Kelvins
37	FPB_TEMP	ASCII_REAL	9	The temperature readout of the focal plane B temperature sensor, in Kelvins
38	BAFFLE_A_TEMP	ASCII_REAL	14	The temperature readout of the baffle A temperature sensor, in Kelvins
39	BAFFLE_B_TEMP	ASCII_REAL	14	The temperature readout of the baffle B temperature sensor, in Kelvins
40	BB_1_TEMP	ASCII_REAL	10	The temperature readout of the blackbody temperature sensor 1, in Kelvins
41	OBA_1_TEMP	ASCII_REAL	11	The temperature readout of the optical bench assembly temperature sensor 1, in Kelvins
42	ERROR_TIME	ASCII_INTEGER	11	The MCS FSW-internal value of sc_time, at the time of the most recent error
43	ERROR_ID	ASCII_INTEGER	9	The error ID associated with the most recent error
44	ERROR_DETAIL	CHARACTER	15	Three bytes containing up to three additional bytes of information describing the most recent error condition
45	ERROR_COUNT	ASCII_INTEGER	12	The number of errors that have occurred since last reboot
46	COMMANDS_RECEIVED	ASCII_INTEGER	18	The number of commands received since bootup. Spacecraft time commands are only counted if rejected.
47	COMMANDS_EXECUTED	ASCII_INTEGER	18	The number of commands successfully executed since bootup. This plus the number of commands rejected should equal the number of commands received, unless one of the commands received is still executing.
48	COMMANDS_REJECTED	ASCII_INTEGER	18	The number of commands received but not successfully executed, since bootup. This plus the number of commands executed should equal the number of commands received.

49	LAST_COMMAND_REC	CHARACTER	21	The last command received, as an 8-byte descriptor. Commands are saved regardless of their validity.
50	CMD	ASCII_INTEGER	4	The first byte of LAST_COMMAND_REC, indicating which of the seven types of MCS command was last received.
51	REQ_ID	CHARACTER	9	The second byte of LAST_COMMAND_REC. For command type 3, MCS_REQUEST, this is the request ID.
52	LAST_TIME_COMMAND	ASCII_INTEGER	18	The spacecraft time when the last command was received, regardless of whether or not the command was valid.
53	LAST_EQX_PREDICTION	ASCII_INTEGER	20	The last equator crossing prediction received from the spacecraft. This time may not be the same as the time of the last equator crossing, if the spacecraft missed sending one or more.
54	HYBRID_TEMP	ASCII_INTEGER	12	The temperature readout of the hybrid electronics temperature sensor, in Kelvins.
55	FPA_TEMP_CYC	ASCII_INTEGER	13	The temperature readout of the cycling focal plane A temperature sensor, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 36, measured at a slightly different time.
56	FPB_TEMP_CYC	ASCII_REAL	13	The temperature readout of the cycling focal plane B temperature sensor, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 37, measured at a slightly different time.
57	BAFFLE_A_TEMP_CYC	ASCII_REAL	18	The temperature readout of the cycling baffle A temperature sensor, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 38, measured at a slightly different time.
58	BAFFLE_B_TEMP_CYC	ASCII_INTEGER	18	The temperature readout of the cycling baffle B temperature sensor, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 39, measured at a slightly different time.
59	OBA_1_TEMP_CYC	ASCII_INTEGER	15	The temperature readout of the cycling optical bench assembly temperature sensor 1, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 40, measured at a slightly different time.
60	OBA_2_TEMP	ASCII_INTEGER	11	The temperature readout of the cycling optical bench assembly temperature sensor 2, in Kelvins. This sensor uses narrow range Vishay calibration counts.
61	BB_1_TEMP_CYC	ASCII_INTEGER	14	The temperature readout of the cycling black body temperature sensor 1, in Kelvins. This sensor uses narrow range Vishay calibration counts. This is the same sensor as column 41, measured at a slightly different time.
62	BB_2_TEMP	ASCII_INTEGER	10	The temperature readout of the black body temperature sensor 2, in Kelvins. This sensor uses narrow range Vishay calibration counts.
63	SOLAR_TARGET_TEMP	ASCII_INTEGER	18	The temperature readout of the solar target temperature sensor, in Kelvins. This sensor uses wide range Vishay calibration counts.
64	YOKE_TEMP	ASCII_INTEGER	10	The temperature readout of the yoke temperature sensor, in Kelvins. This sensor uses wide range Vishay calibration counts.
65	EL_ACTUATOR_TEMP	ASCII_INTEGER	17	The temperature readout of the elevation actuator temperature sensor, in Kelvins. This sensor uses

				wide range Vishay calibration counts.
66	AZ_ACTUATOR_TEMP	ASCII_INTEGER	17	The temperature readout of the azimuth actuator temperature sensor, in Kelvins. This sensor uses wide range Vishay calibration counts.
67	-15V	ASCII_INTEGER	9	The voltage readout of the minus fifteen volt supply, in volts
68	+15V	ASCII_INTEGER	8	The voltage readout of the plus fifteen volt supply, in volts
69	SOLAR_BASE_TEMP	ASCII_INTEGER	16	The temperature readout of the solar target base temperature sensor, in Kelvins. This sensor uses wide range Vishay calibration counts.
70	+5V	ASCII_INTEGER	7	The voltage readout of the plus five volt supply, in volts
71	RQUAL	ASCII_INTEGER	6	Radiometric Quality. This is a bit field defined as follows (Not implemented yet): Bit Value Meaning 0 1 No previous space view 1 2 No following space view 2 4 Offset fit problem 3 8 Offset Time problem 4 16 No previous BB view 5 32 No following BB view 6 64 Gain fit problem 7 128 Time problem 8 256 Temperature problem
72	RAD_A1_01	ASCII_REAL	13	The radiance seen by detector A1-01, in units of milliWatts/m ² /sr/cm-1
73	RAD_A1_02	ASCII_REAL	13	The radiance seen by detector A1-02, in units of milliWatts/m ² /sr/cm-1
74	RAD_A1_03	ASCII_REAL	13	The radiance seen by detector A1-03, in units of milliWatts/m ² /sr/cm-1
75	RAD_A1_04	ASCII_REAL	13	The radiance seen by detector A1-04, in units of milliWatts/m ² /sr/cm-1
76	RAD_A1_05	ASCII_REAL	13	The radiance seen by detector A1-05, in units of milliWatts/m ² /sr/cm-1
77	RAD_A1_06	ASCII_REAL	13	The radiance seen by detector A1-06, in units of milliWatts/m ² /sr/cm-1
78	RAD_A1_07	ASCII_REAL	13	The radiance seen by detector A1-07, in units of milliWatts/m ² /sr/cm-1
79	RAD_A1_08	ASCII_REAL	13	The radiance seen by detector A1-08, in units of milliWatts/m ² /sr/cm-1
80	RAD_A1_09	ASCII_REAL	13	The radiance seen by detector A1-09, in units of milliWatts/m ² /sr/cm-1
81	RAD_A1_10	ASCII_REAL	13	The radiance seen by detector A1-10, in units of milliWatts/m ² /sr/cm-1
82	RAD_A1_11	ASCII_REAL	13	The radiance seen by detector A1-11, in units of milliWatts/m ² /sr/cm-1
83	RAD_A1_12	ASCII_REAL	13	The radiance seen by detector A1-12, in units of milliWatts/m ² /sr/cm-1
84	RAD_A1_13	ASCII_REAL	13	The radiance seen by detector A1-13, in units of milliWatts/m ² /sr/cm-1
85	RAD_A1_14	ASCII_REAL	13	The radiance seen by detector A1-14, in units of milliWatts/m ² /sr/cm-1
86	RAD_A1_15	ASCII_REAL	13	The radiance seen by detector A1-15, in units of milliWatts/m ² /sr/cm-1
87	RAD_A1_16	ASCII_REAL	13	The radiance seen by detector A1-16, in units of milliWatts/m ² /sr/cm-1
88	RAD_A1_17	ASCII_REAL	13	The radiance seen by detector A1-17, in units of milliWatts/m ² /sr/cm-1
89	RAD_A1_18	ASCII_REAL	13	The radiance seen by detector A1-18, in units of milliWatts/m ² /sr/cm-1
90	RAD_A1_19	ASCII_REAL	13	The radiance seen by detector A1-19, in units of milliWatts/m ² /sr/cm-1

91	RAD_A1_20	ASCII_REAL	13	The radiance seen by detector A1-20, in units of milliWatts/m ² /sr/cm-1
92	RAD_A1_21	ASCII_REAL	13	The radiance seen by detector A1-21, in units of milliWatts/m ² /sr/cm-1
93	RAD_A2_01	ASCII_REAL	13	The radiance seen by detector A2-01, in units of milliWatts/m ² /sr/cm-1
94	RAD_A2_02	ASCII_REAL	13	The radiance seen by detector A2-02, in units of milliWatts/m ² /sr/cm-1
95	RAD_A2_03	ASCII_REAL	13	The radiance seen by detector A2-03, in units of milliWatts/m ² /sr/cm-1
96	RAD_A2_04	ASCII_REAL	13	The radiance seen by detector A2-04, in units of milliWatts/m ² /sr/cm-1
97	RAD_A2_05	ASCII_REAL	13	The radiance seen by detector A2-05, in units of milliWatts/m ² /sr/cm-1
98	RAD_A2_06	ASCII_REAL	13	The radiance seen by detector A2-06, in units of milliWatts/m ² /sr/cm-1
99	RAD_A2_07	ASCII_REAL	13	The radiance seen by detector A2-07, in units of milliWatts/m ² /sr/cm-1
100	RAD_A2_08	ASCII_REAL	13	The radiance seen by detector A2-08, in units of milliWatts/m ² /sr/cm-1
101	RAD_A2_09	ASCII_REAL	13	The radiance seen by detector A2-09, in units of milliWatts/m ² /sr/cm-1
102	RAD_A2_10	ASCII_REAL	13	The radiance seen by detector A2-10, in units of milliWatts/m ² /sr/cm-1
103	RAD_A2_11	ASCII_REAL	13	The radiance seen by detector A2-11, in units of milliWatts/m ² /sr/cm-1
104	RAD_A2_12	ASCII_REAL	13	The radiance seen by detector A2-12, in units of milliWatts/m ² /sr/cm-1
105	RAD_A2_13	ASCII_REAL	13	The radiance seen by detector A2-13, in units of milliWatts/m ² /sr/cm-1
106	RAD_A2_14	ASCII_REAL	13	The radiance seen by detector A2-14, in units of milliWatts/m ² /sr/cm-1
107	RAD_A2_15	ASCII_REAL	13	The radiance seen by detector A2-15, in units of milliWatts/m ² /sr/cm-1
108	RAD_A2_16	ASCII_REAL	13	The radiance seen by detector A2-16, in units of milliWatts/m ² /sr/cm-1
109	RAD_A2_17	ASCII_REAL	13	The radiance seen by detector A2-17, in units of milliWatts/m ² /sr/cm-1
110	RAD_A2_18	ASCII_REAL	13	The radiance seen by detector A2-18, in units of milliWatts/m ² /sr/cm-1
111	RAD_A2_19	ASCII_REAL	13	The radiance seen by detector A2-19, in units of milliWatts/m ² /sr/cm-1
112	RAD_A2_20	ASCII_REAL	13	The radiance seen by detector A2-20, in units of milliWatts/m ² /sr/cm-1
113	RAD_A2_21	ASCII_REAL	13	The radiance seen by detector A2-21, in units of milliWatts/m ² /sr/cm-1
114	RAD_A3_01	ASCII_REAL	13	The radiance seen by detector A3-01, in units of milliWatts/m ² /sr/cm-1
115	RAD_A3_02	ASCII_REAL	13	The radiance seen by detector A3-02, in units of milliWatts/m ² /sr/cm-1
116	RAD_A3_03	ASCII_REAL	13	The radiance seen by detector A3-03, in units of milliWatts/m ² /sr/cm-1
117	RAD_A3_04	ASCII_REAL	13	The radiance seen by detector A3-04, in units of milliWatts/m ² /sr/cm-1
118	RAD_A3_05	ASCII_REAL	13	The radiance seen by detector A3-05, in units of milliWatts/m ² /sr/cm-1
119	RAD_A3_06	ASCII_REAL	13	The radiance seen by detector A3-06, in units of milliWatts/m ² /sr/cm-1
120	RAD_A3_07	ASCII_REAL	13	The radiance seen by detector A3-07, in units of milliWatts/m ² /sr/cm-1

121	RAD_A3_08	ASCII_REAL	13	The radiance seen by detector A3-08, in units of milliWatts/m ² /sr/cm-1
122	RAD_A3_09	ASCII_REAL	13	The radiance seen by detector A3-09, in units of milliWatts/m ² /sr/cm-1
123	RAD_A3_10	ASCII_REAL	13	The radiance seen by detector A3-10, in units of milliWatts/m ² /sr/cm-1
124	RAD_A3_11	ASCII_REAL	13	The radiance seen by detector A3-11, in units of milliWatts/m ² /sr/cm-1
125	RAD_A3_12	ASCII_REAL	13	The radiance seen by detector A3-12, in units of milliWatts/m ² /sr/cm-1
126	RAD_A3_13	ASCII_REAL	13	The radiance seen by detector A3-13, in units of milliWatts/m ² /sr/cm-1
127	RAD_A3_14	ASCII_REAL	13	The radiance seen by detector A3-14, in units of milliWatts/m ² /sr/cm-1
128	RAD_A3_15	ASCII_REAL	13	The radiance seen by detector A3-15, in units of milliWatts/m ² /sr/cm-1
129	RAD_A3_16	ASCII_REAL	13	The radiance seen by detector A3-16, in units of milliWatts/m ² /sr/cm-1
130	RAD_A3_17	ASCII_REAL	13	The radiance seen by detector A3-17, in units of milliWatts/m ² /sr/cm-1
131	RAD_A3_18	ASCII_REAL	13	The radiance seen by detector A3-18, in units of milliWatts/m ² /sr/cm-1
132	RAD_A3_19	ASCII_REAL	13	The radiance seen by detector A3-19, in units of milliWatts/m ² /sr/cm-1
133	RAD_A3_20	ASCII_REAL	13	The radiance seen by detector A3-20, in units of milliWatts/m ² /sr/cm-1
134	RAD_A3_21	ASCII_REAL	13	The radiance seen by detector A3-21, in units of milliWatts/m ² /sr/cm-1
135	RAD_A4_01	ASCII_REAL	13	The radiance seen by detector A4-01, in units of milliWatts/m ² /sr/cm-1
136	RAD_A4_02	ASCII_REAL	13	The radiance seen by detector A4-02, in units of milliWatts/m ² /sr/cm-1
137	RAD_A4_03	ASCII_REAL	13	The radiance seen by detector A4-03, in units of milliWatts/m ² /sr/cm-1
138	RAD_A4_04	ASCII_REAL	13	The radiance seen by detector A4-04, in units of milliWatts/m ² /sr/cm-1
139	RAD_A4_05	ASCII_REAL	13	The radiance seen by detector A4-05, in units of milliWatts/m ² /sr/cm-1
140	RAD_A4_06	ASCII_REAL	13	The radiance seen by detector A4-06, in units of milliWatts/m ² /sr/cm-1
141	RAD_A4_07	ASCII_REAL	13	The radiance seen by detector A4-07, in units of milliWatts/m ² /sr/cm-1
142	RAD_A4_08	ASCII_REAL	13	The radiance seen by detector A4-08, in units of milliWatts/m ² /sr/cm-1
143	RAD_A4_09	ASCII_REAL	13	The radiance seen by detector A4-09, in units of milliWatts/m ² /sr/cm-1
144	RAD_A4_10	ASCII_REAL	13	The radiance seen by detector A4-10, in units of milliWatts/m ² /sr/cm-1
145	RAD_A4_11	ASCII_REAL	13	The radiance seen by detector A4-11, in units of milliWatts/m ² /sr/cm-1
146	RAD_A4_12	ASCII_REAL	13	The radiance seen by detector A4-12, in units of milliWatts/m ² /sr/cm-1
147	RAD_A4_13	ASCII_REAL	13	The radiance seen by detector A4-13, in units of milliWatts/m ² /sr/cm-1
148	RAD_A4_14	ASCII_REAL	13	The radiance seen by detector A4-14, in units of milliWatts/m ² /sr/cm-1
149	RAD_A4_15	ASCII_REAL	13	The radiance seen by detector A4-15, in units of milliWatts/m ² /sr/cm-1
150	RAD_A4_16	ASCII_REAL	13	The radiance seen by detector A4-16, in units of milliWatts/m ² /sr/cm-1

151	RAD_A4_17	ASCII_REAL	13	The radiance seen by detector A4-17, in units of milliWatts/m ² /sr/cm-1
152	RAD_A4_18	ASCII_REAL	13	The radiance seen by detector A4-18, in units of milliWatts/m ² /sr/cm-1
153	RAD_A4_19	ASCII_REAL	13	The radiance seen by detector A4-19, in units of milliWatts/m ² /sr/cm-1
154	RAD_A4_20	ASCII_REAL	13	The radiance seen by detector A4-20, in units of milliWatts/m ² /sr/cm-1
155	RAD_A4_21	ASCII_REAL	13	The radiance seen by detector A4-21, in units of milliWatts/m ² /sr/cm-1
156	RAD_A5_01	ASCII_REAL	13	The radiance seen by detector A5-01, in units of milliWatts/m ² /sr/cm-1
157	RAD_A5_02	ASCII_REAL	13	The radiance seen by detector A5-02, in units of milliWatts/m ² /sr/cm-1
158	RAD_A5_03	ASCII_REAL	13	The radiance seen by detector A5-03, in units of milliWatts/m ² /sr/cm-1
159	RAD_A5_04	ASCII_REAL	13	The radiance seen by detector A5-04, in units of milliWatts/m ² /sr/cm-1
160	RAD_A5_05	ASCII_REAL	13	The radiance seen by detector A5-05, in units of milliWatts/m ² /sr/cm-1
161	RAD_A5_06	ASCII_REAL	13	The radiance seen by detector A5-06, in units of milliWatts/m ² /sr/cm-1
162	RAD_A5_07	ASCII_REAL	13	The radiance seen by detector A5-07, in units of milliWatts/m ² /sr/cm-1
163	RAD_A5_08	ASCII_REAL	13	The radiance seen by detector A5-08, in units of milliWatts/m ² /sr/cm-1
164	RAD_A5_09	ASCII_REAL	13	The radiance seen by detector A5-09, in units of milliWatts/m ² /sr/cm-1
165	RAD_A5_10	ASCII_REAL	13	The radiance seen by detector A5-10, in units of milliWatts/m ² /sr/cm-1
166	RAD_A5_11	ASCII_REAL	13	The radiance seen by detector A5-11, in units of milliWatts/m ² /sr/cm-1
167	RAD_A5_12	ASCII_REAL	13	The radiance seen by detector A5-12, in units of milliWatts/m ² /sr/cm-1
168	RAD_A5_13	ASCII_REAL	13	The radiance seen by detector A5-13, in units of milliWatts/m ² /sr/cm-1
169	RAD_A5_14	ASCII_REAL	13	The radiance seen by detector A5-14, in units of milliWatts/m ² /sr/cm-1
170	RAD_A5_15	ASCII_REAL	13	The radiance seen by detector A5-15, in units of milliWatts/m ² /sr/cm-1
171	RAD_A5_16	ASCII_REAL	13	The radiance seen by detector A5-16, in units of milliWatts/m ² /sr/cm-1
172	RAD_A5_17	ASCII_REAL	13	The radiance seen by detector A5-17, in units of milliWatts/m ² /sr/cm-1
173	RAD_A5_18	ASCII_REAL	13	The radiance seen by detector A5-18, in units of milliWatts/m ² /sr/cm-1
174	RAD_A5_19	ASCII_REAL	13	The radiance seen by detector A5-19, in units of milliWatts/m ² /sr/cm-1
175	RAD_A5_20	ASCII_REAL	13	The radiance seen by detector A5-20, in units of milliWatts/m ² /sr/cm-1
176	RAD_A5_21	ASCII_REAL	13	The radiance seen by detector A5-21, in units of milliWatts/m ² /sr/cm-1
177	RAD_A6_01	ASCII_REAL	13	The band-averaged radiance seen by detector A6-01, in units of Watts/m ² /sr/micron
178	RAD_A6_02	ASCII_REAL	13	The band-averaged radiance seen by detector A6-02, in units of Watts/m ² /sr/micron
179	RAD_A6_03	ASCII_REAL	13	The band-averaged radiance seen by detector A6-03, in units of Watts/m ² /sr/micron
180	RAD_A6_04	ASCII_REAL	13	The band-averaged radiance seen by detector A6-04, in units of Watts/m ² /sr/micron

181	RAD_A6_05	ASCII_REAL	13	The band-averaged radiance seen by detector A6-05, in units of Watts/m ² /sr/micron
182	RAD_A6_06	ASCII_REAL	13	The band-averaged radiance seen by detector A6-06, in units of Watts/m ² /sr/micron
183	RAD_A6_07	ASCII_REAL	13	The band-averaged radiance seen by detector A6-07, in units of Watts/m ² /sr/micron
184	RAD_A6_08	ASCII_REAL	13	The band-averaged radiance seen by detector A6-08, in units of Watts/m ² /sr/micron
185	RAD_A6_09	ASCII_REAL	13	The band-averaged radiance seen by detector A6-09, in units of Watts/m ² /sr/micron
186	RAD_A6_10	ASCII_REAL	13	The band-averaged radiance seen by detector A6-10, in units of Watts/m ² /sr/micron
187	RAD_A6_11	ASCII_REAL	13	The band-averaged radiance seen by detector A6-11, in units of Watts/m ² /sr/micron
188	RAD_A6_12	ASCII_REAL	13	The band-averaged radiance seen by detector A6-12, in units of Watts/m ² /sr/micron
189	RAD_A6_13	ASCII_REAL	13	The band-averaged radiance seen by detector A6-13, in units of Watts/m ² /sr/micron
190	RAD_A6_14	ASCII_REAL	13	The band-averaged radiance seen by detector A6-14, in units of Watts/m ² /sr/micron
191	RAD_A6_15	ASCII_REAL	13	The band-averaged radiance seen by detector A6-15, in units of Watts/m ² /sr/micron
192	RAD_A6_16	ASCII_REAL	13	The band-averaged radiance seen by detector A6-16, in units of Watts/m ² /sr/micron
193	RAD_A6_17	ASCII_REAL	13	The band-averaged radiance seen by detector A6-17, in units of Watts/m ² /sr/micron
194	RAD_A6_18	ASCII_REAL	13	The band-averaged radiance seen by detector A6-18, in units of Watts/m ² /sr/micron
195	RAD_A6_19	ASCII_REAL	13	The band-averaged radiance seen by detector A6-19, in units of Watts/m ² /sr/micron
196	RAD_A6_20	ASCII_REAL	13	The band-averaged radiance seen by detector A6-20, in units of Watts/m ² /sr/micron
197	RAD_A6_21	ASCII_REAL	13	The band-averaged radiance seen by detector A6-21, in units of Watts/m ² /sr/micron
198	RAD_B1_01	ASCII_REAL	13	The radiance seen by detector B1-01, in units of milliWatts/m ² /sr/cm-1
199	RAD_B1_02	ASCII_REAL	13	The radiance seen by detector B1-02, in units of milliWatts/m ² /sr/cm-1
200	RAD_B1_03	ASCII_REAL	13	The radiance seen by detector B1-03, in units of milliWatts/m ² /sr/cm-1
201	RAD_B1_04	ASCII_REAL	13	The radiance seen by detector B1-04, in units of milliWatts/m ² /sr/cm-1
202	RAD_B1_05	ASCII_REAL	13	The radiance seen by detector B1-05, in units of milliWatts/m ² /sr/cm-1
203	RAD_B1_06	ASCII_REAL	13	The radiance seen by detector B1-06, in units of milliWatts/m ² /sr/cm-1
204	RAD_B1_07	ASCII_REAL	13	The radiance seen by detector B1-07, in units of milliWatts/m ² /sr/cm-1
205	RAD_B1_08	ASCII_REAL	13	The radiance seen by detector B1-08, in units of milliWatts/m ² /sr/cm-1
206	RAD_B1_09	ASCII_REAL	13	The radiance seen by detector B1-09, in units of milliWatts/m ² /sr/cm-1
207	RAD_B1_10	ASCII_REAL	13	The radiance seen by detector B1-10, in units of milliWatts/m ² /sr/cm-1
208	RAD_B1_11	ASCII_REAL	13	The radiance seen by detector B1-11, in units of milliWatts/m ² /sr/cm-1
209	RAD_B1_12	ASCII_REAL	13	The radiance seen by detector B1-12, in units of milliWatts/m ² /sr/cm-1
210	RAD_B1_13	ASCII_REAL	13	The radiance seen by detector B1-13, in units of milliWatts/m ² /sr/cm-1

211	RAD_B1_14	ASCII_REAL	13	The radiance seen by detector B1-14, in units of milliWatts/m ² /sr/cm-1
212	RAD_B1_15	ASCII_REAL	13	The radiance seen by detector B1-15, in units of milliWatts/m ² /sr/cm-1
213	RAD_B1_16	ASCII_REAL	13	The radiance seen by detector B1-16, in units of milliWatts/m ² /sr/cm-1
214	RAD_B1_17	ASCII_REAL	13	The radiance seen by detector B1-17, in units of milliWatts/m ² /sr/cm-1
215	RAD_B1_18	ASCII_REAL	13	The radiance seen by detector B1-18, in units of milliWatts/m ² /sr/cm-1
216	RAD_B1_19	ASCII_REAL	13	The radiance seen by detector B1-19, in units of milliWatts/m ² /sr/cm-1
217	RAD_B1_20	ASCII_REAL	13	The radiance seen by detector B1-20, in units of milliWatts/m ² /sr/cm-1
218	RAD_B1_21	ASCII_REAL	13	The radiance seen by detector B1-21, in units of milliWatts/m ² /sr/cm-1
219	RAD_B2_01	ASCII_REAL	13	The radiance seen by detector B2-01, in units of milliWatts/m ² /sr/cm-1
220	RAD_B2_02	ASCII_REAL	13	The radiance seen by detector B2-02, in units of milliWatts/m ² /sr/cm-1
221	RAD_B2_03	ASCII_REAL	13	The radiance seen by detector B2-03, in units of milliWatts/m ² /sr/cm-1
222	RAD_B2_04	ASCII_REAL	13	The radiance seen by detector B2-04, in units of milliWatts/m ² /sr/cm-1
223	RAD_B2_05	ASCII_REAL	13	The radiance seen by detector B2-05, in units of milliWatts/m ² /sr/cm-1
224	RAD_B2_06	ASCII_REAL	13	The radiance seen by detector B2-06, in units of milliWatts/m ² /sr/cm-1
225	RAD_B2_07	ASCII_REAL	13	The radiance seen by detector B2-07, in units of milliWatts/m ² /sr/cm-1
226	RAD_B2_08	ASCII_REAL	13	The radiance seen by detector B2-08, in units of milliWatts/m ² /sr/cm-1
227	RAD_B2_09	ASCII_REAL	13	The radiance seen by detector B2-09, in units of milliWatts/m ² /sr/cm-1
228	RAD_B2_10	ASCII_REAL	13	The radiance seen by detector B2-10, in units of milliWatts/m ² /sr/cm-1
229	RAD_B2_11	ASCII_REAL	13	The radiance seen by detector B2-11, in units of milliWatts/m ² /sr/cm-1
230	RAD_B2_12	ASCII_REAL	13	The radiance seen by detector B2-12, in units of milliWatts/m ² /sr/cm-1
231	RAD_B2_13	ASCII_REAL	13	The radiance seen by detector B2-13, in units of milliWatts/m ² /sr/cm-1
232	RAD_B2_14	ASCII_REAL	13	The radiance seen by detector B2-14, in units of milliWatts/m ² /sr/cm-1
233	RAD_B2_15	ASCII_REAL	13	The radiance seen by detector B2-15, in units of milliWatts/m ² /sr/cm-1
234	RAD_B2_16	ASCII_REAL	13	The radiance seen by detector B2-16, in units of milliWatts/m ² /sr/cm-1
235	RAD_B2_17	ASCII_REAL	13	The radiance seen by detector B2-17, in units of milliWatts/m ² /sr/cm-1
236	RAD_B2_18	ASCII_REAL	13	The radiance seen by detector B2-18, in units of milliWatts/m ² /sr/cm-1
237	RAD_B2_19	ASCII_REAL	13	The radiance seen by detector B2-19, in units of milliWatts/m ² /sr/cm-1
238	RAD_B2_20	ASCII_REAL	13	The radiance seen by detector B2-20, in units of milliWatts/m ² /sr/cm-1
239	RAD_B2_21	ASCII_REAL	13	The radiance seen by detector B2-21, in units of milliWatts/m ² /sr/cm-1
240	RAD_B3_01	ASCII_REAL	13	The radiance seen by detector B3-01, in units of milliWatts/m ² /sr/cm-1

241	RAD_B3_02	ASCII_REAL	13	The radiance seen by detector B3-02, in units of milliWatts/m ² /sr/cm-1
242	RAD_B3_03	ASCII_REAL	13	The radiance seen by detector B3-03, in units of milliWatts/m ² /sr/cm-1
243	RAD_B3_04	ASCII_REAL	13	The radiance seen by detector B3-04, in units of milliWatts/m ² /sr/cm-1
244	RAD_B3_05	ASCII_REAL	13	The radiance seen by detector B3-05, in units of milliWatts/m ² /sr/cm-1
245	RAD_B3_06	ASCII_REAL	13	The radiance seen by detector B3-06, in units of milliWatts/m ² /sr/cm-1
246	RAD_B3_07	ASCII_REAL	13	The radiance seen by detector B3-07, in units of milliWatts/m ² /sr/cm-1
247	RAD_B3_08	ASCII_REAL	13	The radiance seen by detector B3-08, in units of milliWatts/m ² /sr/cm-1
248	RAD_B3_09	ASCII_REAL	13	The radiance seen by detector B3-09, in units of milliWatts/m ² /sr/cm-1
249	RAD_B3_10	ASCII_REAL	13	The radiance seen by detector B3-10, in units of milliWatts/m ² /sr/cm-1
250	RAD_B3_11	ASCII_REAL	13	The radiance seen by detector B3-11, in units of milliWatts/m ² /sr/cm-1
251	RAD_B3_12	ASCII_REAL	13	The radiance seen by detector B3-12, in units of milliWatts/m ² /sr/cm-1
252	RAD_B3_13	ASCII_REAL	13	The radiance seen by detector B3-13, in units of milliWatts/m ² /sr/cm-1
253	RAD_B3_14	ASCII_REAL	13	The radiance seen by detector B3-14, in units of milliWatts/m ² /sr/cm-1
254	RAD_B3_15	ASCII_REAL	13	The radiance seen by detector B3-15, in units of milliWatts/m ² /sr/cm-1
255	RAD_B3_16	ASCII_REAL	13	The radiance seen by detector B3-16, in units of milliWatts/m ² /sr/cm-1
256	RAD_B3_17	ASCII_REAL	13	The radiance seen by detector B3-17, in units of milliWatts/m ² /sr/cm-1
257	RAD_B3_18	ASCII_REAL	13	The radiance seen by detector B3-18, in units of milliWatts/m ² /sr/cm-1
258	RAD_B3_19	ASCII_REAL	13	The radiance seen by detector B3-19, in units of milliWatts/m ² /sr/cm-1
259	RAD_B3_20	ASCII_REAL	13	The radiance seen by detector B3-20, in units of milliWatts/m ² /sr/cm-1
260	RAD_B3_21	ASCII_REAL	12	The radiance seen by detector B3-21, in units of milliWatts/m ² /sr/cm-1

3.3 Label and Header Descriptions

Each MCS RDR data product is described by a detached PDS label in a separate file with the same name, extension “.LBL”. A label file is stored in the same directory as the data file it describes.

A PDS label is object-oriented and describes the objects in the data file. The PDS label contains keywords for product identification and for data object definitions. The label also contains descriptive information needed to interpret or process the data objects in the file.

PDS labels are written in Object Description Language (ODL) [7]. PDS label statements have the form of "keyword = value". Each label statement is terminated with a carriage return character (ASCII 13) and a line feed character (ASCII 10) sequence to allow the label to be read by many operating systems. Pointer statements with the following format are used to indicate the location of data objects in the file:

^TABLE = filename,location

where the caret character (^, also called a pointer) is followed by the name of the specific data object. The ‘location’ is the starting record number (counting from one) for the data within the file, e.g.

^TABLE = ("2005091216_RDR.TAB", 5)

The data files themselves will usually contain four rows of embedded headers, marked by the ‘#’ symbols, which are used for file comments.

The PDS label will also include a pointer to another file that contains the table column definitions, in order to avoid repeating the lengthy definitions in every label. The column definition file has the extension “.FMT” and is stored in the LABEL directory of the RDR archive.

An example of MCS RDR label is in Appendix A; an example format file is in Appendix B

4. APPLICABLE SOFTWARE

4.1 Utility Programs

Because the MCS RDR products are formatted as columnar ASCII data, they can be read and manipulated by standard, public-domain software. For this reason, no special utilities are provided.

4.2 Applicable PDS Software Tools

PDS-labeled tables can be viewed with the program NASAView, developed by the PDS and available for a variety of computer platforms from the PDS web site http://pds.nasa.gov/tools/software_download.cfm. There is no charge for NASAView.

4.3 Software Distribution and Update Procedures

None at this time.

APPENDIX A - EXAMPLE OF AN MCS RDR LABEL

```

PDS_VERSION_ID          = PDS3

RECORD_TYPE              = STREAM
RECORD_BYTES             = 3530
FILE_RECORDS             = 7053
DESCRIPTION              = "This table contains Level 1B data records from
                           the Mars Climate Sounder collected during the
                           orbital operations phase of the Mars
                           Reconnaissance Orbiter mission."

^TABLE                  = ("2006093000_RDR.TAB", 5058<BYTES>)
DATA_SET_ID              = "MRO-M-MCS-4-RDR-V1.0"
MISSION_NAME             = "MARS RECONNAISSANCE ORBITER"
INSTRUMENT_HOST_NAME     = "MARS RECONNAISSANCE ORBITER"
INSTRUMENT_NAME          = "MARS CLIMATE SOUNDER"
PRODUCT_NAME             = "MCS RDR"
PRODUCT_ID               = "2006093000_RDR.TAB"
TARGET_NAME              = "MARS"
START_TIME               = 2006-09-30T00:00:01.087
STOP_TIME                = 2006-09-30T03:59:58.449
SPACECRAFT_CLOCK_START_COUNT = 844041619.230
SPACECRAFT_CLOCK_STOP_COUNT = 844056017.066
PRODUCT_CREATION_TIME    = 2006-12-14T19:42:54
START_ORBIT_NUMBER       = 828
STOP_ORBIT_NUMBER        = 830
SOLAR_LONGITUDE          = 113.71

OBJECT                   = TABLE
  INTERCHANGE_FORMAT     = ASCII
  ROW_BYTES              = 3530
  ROWS                   = 7027
  COLUMNS               = 260
  ^STRUCTURE             = "MCS_RDR.FMT"
END_OBJECT              = TABLE

END

```

APPENDIX B - EXAMPLE OF AN MCS RDR FORMAT FILE

```

OBJECT                = COLUMN
  COLUMN_NUMBER       = 1
  NAME                = 1
  DATA_TYPE          = ASCII_INTEGER
  START_BYTE          = 1
  BYTES               = 1
  DESCRIPTION          = "A quality indicator: 0 means this record
                        contains valid data"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 2
  NAME                = DATE
  DATA_TYPE          = CHARACTER
  START_BYTE          = 3
  BYTES               = 14
  DESCRIPTION          = "Date of measurement (UTC)"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 3
  NAME                = UTC
  DATA_TYPE          = CHARACTER
  START_BYTE          = 18
  BYTES               = 15
  DESCRIPTION          = "Time of measurement (UTC)"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 4
  NAME                = SCLK
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 34
  BYTES               = 15
  DESCRIPTION          = "The MRO Spacecraft Clock, without partition,
                        including decimal thousandths of a second"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 5
  NAME                = PKT_COUNT
  DATA_TYPE          = ASCII_INTEGER
  START_BYTE          = 50
  BYTES               = 10
  DESCRIPTION          = "The packet count, including the current
                        one, sent since bootup. Rolls over to 0 at 65536"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 6
  NAME                = LAST_AZ_CMD
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 61
  BYTES               = 12
  DESCRIPTION          = "The last azimuth commanded, in degrees, which
                        if the actuator isn't moving, is the same as the current azimuth."
END_OBJECT            = COLUMN

OBJECT                = COLUMN

```

```

COLUMN_NUMBER      = 7
NAME               = LAST_EL_CMD
DATA_TYPE          = ASCII_REAL
START_BYTE         = 74
BYTES              = 12
DESCRIPTION        = "The last elevation commanded, in degrees,
                      which, if the actuator isn't moving, is the same as the current
                      elevation."
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 8
NAME               = GQUAL
DATA_TYPE          = ASCII_INTEGER
START_BYTE         = 87
BYTES              = 6
DESCRIPTION        = "Geometry quality:
0 = good.
1 = good, Phobos in view
2 = good, Deimos in view
3 = undetermined attitude information
4 = Pointing is incorrect and geometry is not fixed
5 = Pointing may be incorrect and geometry is not fixed
6 = Pointing is incorrect and geometry was fixed
7 = Pointing is incorrect and geometry is not fixed, Phobos in view
8 = Pointing may be incorrect and geometry is not fixed, Phobos in view
9 = Pointing is incorrect and geometry was fixed, Phobos in view
10 = Pointing is incorrect and geometry is not fixed, Deimos in view
11 = Pointing may be incorrect and geometry is not fixed, Deimos in view
12 = Pointing is incorrect and geometry was fixed, Deimos in view
13 = good, solar array in view
14 = Pointing is incorrect and geometry is not fixed, solar array in view
15 = Pointing may be incorrect and geometry is not fixed, solar array in
view
16 = Pointing is incorrect and geometry was fixed, solar array in view
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 9
NAME               = SOLAR_LAT
DATA_TYPE          = ASCII_REAL
START_BYTE         = 94
BYTES              = 10
DESCRIPTION        = "The Mars-centric north latitude of the Sun,
                      in degrees"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 10
NAME               = SOLAR_LON
DATA_TYPE          = ASCII_REAL
START_BYTE         = 105
BYTES              = 11
DESCRIPTION        = "The Mars-centric east longitude of the Sun,
                      in degrees"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 11
NAME               = SOLAR_ZEN
DATA_TYPE          = ASCII_INTEGER
START_BYTE         = 117
BYTES              = 11

```

```

DESCRIPTION      = "The angular separation, in degrees, between
the vector from the center of Mars to the scene point (see below)
and the vector from the center of Mars to the Sun"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 12
NAME             = SC_LAT
DATA_TYPE        = ASCII_REAL
START_BYTE       = 129
BYTES            = 10
DESCRIPTION      = "The Mars-centric north latitude of the MRO
spacecraft, in degrees"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 13
NAME             = SC_LON
DATA_TYPE        = ASCII_REAL
START_BYTE       = 140
BYTES            = 11
DESCRIPTION      = "The Mars-centric east longitude of the MRO
spacecraft, in degrees"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 14
NAME             = SC_RAD
DATA_TYPE        = ASCII_REAL
START_BYTE       = 152
BYTES            = 9
DESCRIPTION      = "The distance from the center of Mars to the
MRO spacecraft, in kilometers"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 15
NAME             = SCENE_LAT
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 162
BYTES            = 10
DESCRIPTION      = "The Mars-centric north latitude, in degrees,
of the scene point. When the look vector is calculated to
intersect the surface of Mars, the scene point is defined as the
intersection point. When the look vector is calculated to not
intersect the surface of Mars, the scene point is defined as the
point along the look vector which is nearest the triaxial
ellipsoid Mars. Note that for views above the horizontal, the
calculated scene point lies along the _negative_ of the look
vector."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 16
NAME             = SCENE_LON
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 173
BYTES            = 11
DESCRIPTION      = "The Mars-centric east longitude, in degrees,
of the scene point. When the look vector is calculated to
intersect the surface of Mars, the scene point is defined as the
intersection point. When the look vector is calculated to not
intersect the surface of Mars, the scene point is defined as the

```

```

    point along the look vector which is nearest the triaxial
    ellipsoid Mars. Note that for views above the horizontal, the
    calculated scene point lies along the _negative_ of the look
    vector."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 17
  NAME               = SCENE_RAD
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 185
  BYTES             = 10
  DESCRIPTION        = "The distance, in kilometers, from the center
    of Mars to the scene point. When the look vector is calculated
    to intersect the surface of Mars, the scene point is defined as
    the intersection point. When the look vector is calculated to
    not intersect the surface of Mars, the scene point is defined as
    the point along the look vector which is nearest the triaxial
    ellipsoid Mars. Note that for views above the horizontal, the
    calculated scene point lies along the _negative_ of the look
    vector."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 18
  NAME               = SCENE_ALT
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 196
  BYTES             = 10
  DESCRIPTION        = "The distance, in kilometers, between the
    scene point and the triaxial ellipsoid surface of Mars. For
    look vectors which intersect the surface, this is zero. For
    look vectors which don't intersect the surface, this is the
    tangent height."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 19
  NAME               = VERT_LAT
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 207
  BYTES             = 10
  DESCRIPTION        = "The north latitude, in Mars-centric degrees,
    of the vector from detector A1-1 to detector A1-21"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 20
  NAME               = VERT_LON
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 218
  BYTES             = 11
  DESCRIPTION        = "The east longitude, in Mars-centric degrees,
    of the vector from detector A1-1 to detector A1-21"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 21
  NAME               = LIMB_ANG
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 230
  BYTES             = 11
  DESCRIPTION        = "The angle, in degrees, between the

```


projection into the plane normal to the look vector at the scene point, of the local normal to the triaxial ellipsoid at the scene point and the vector from detector A1-1 to detector A1-21. The sign convention is such that positive angles mean that the detector upward direction is rotated clockwise relative to the local vertical, as seen from the spacecraft."

```

END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 22
  NAME              = SAFING
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 242
  BYTES             = 7
  DESCRIPTION        = "A 1-bit value indicating Safing; '1'
    indicates that the instrument had started moving to the stow
    position but hasn't yet finished.  See column 23 for additional
    information"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 23
  NAME              = SAFED
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 250
  BYTES             = 6
  DESCRIPTION        = "A 1-bit value indicating Safed; '1'
    indicates that the instrument was stowed during this observation.
    The stowed position is sun-safe and views the internal blackbody.
    Flight software will not move the actuators until a resume
    command has been received"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 24
  NAME              = FREEZING
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 257
  BYTES             = 9
  DESCRIPTION        = "A 1-bit value indicating Freezing; '1'
    indicates that the instrument was moving to the frozen position
    during this observation.  See the column 25 for additional "
    information"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 25
  NAME              = FROZEN
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 267
  BYTES             = 7
  DESCRIPTION        = "A 1-bit value indicating Frozen; '1'
    indicates that the instrument was frozen during this observation;
    flight software will not move the actuators (except to safe) until
    a free command has been received.  While frozen, the instrument
    generally points at the limb for the duration of a high stability
    image"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 26
  NAME              = ROLLING
  DATA_TYPE        = ASCII_INTEGER

```

```

START_BYTE      = 275
BYTES           = 8
DESCRIPTION      = "A 1-bit value indicating Rolling; '1'
                   indicates that the flight software is performing special
                   scanning for sun safety during a large roll by the spacecraft
                   for a targeted observation. It is enabled by a command and ends
                   with a second command"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER    = 27
NAME             = DUMPING
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 284
BYTES            = 8
DESCRIPTION       = "A 1-bit value indicating Dumping memory; '1'
                   indicates that the packet contains dump data instead of science
                   data. Enabled by command"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER    = 28
NAME             = MOVING
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 293
BYTES            = 7
DESCRIPTION       = "A 1-bit value indicating Actuator motion; '1'
                   indicates that an actuator moved during acquisition of the
                   packet's science data"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER    = 29
NAME             = TEMP_FAULT
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 301
BYTES            = 11
DESCRIPTION       = "A 1-bit value indicating stepper temperature
                   fault; '1' indicates that an over-temperature condition was
                   detected in the actuator-controlling chip"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER    = 30
NAME             = MODE
DATA_TYPE        = CHARACTER
START_BYTE       = 313
BYTES            = 7
DESCRIPTION       = "An 8-bit value indicating various conditions:
                   Bit 0: RAM CRC calc disabled;
                   Bit 1: Logging I/O transactions;
                   Bit 2: Logging movements;
                   Bit 3: Watchdog disabled;
                   Bit 4: Debug telem mode;
                   The science channels contain debug
                   data, not science observations.
                   Bit 5: Safing disabled;
                   Bit 6: Sensor data synthesized;
                   Temperature data in this packet is
                   not real.
                   Bit 7: Science data synthesized;
                   Science observations in this packet
                   are not real"

```

```

END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 31
  NAME              = OST_INDEX
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 321
  BYTES             = 10
  DESCRIPTION       = "The current index into the Orbit Schedule
    Table. This is -1 at bootup, and then increments by one with each
    equator crossing, as announced by the spacecraft through the
    MCS_EQX command. After index 11, it wraps around to 0."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 32
  NAME              = EST_INDEX
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 332
  BYTES             = 10
  DESCRIPTION       = "The index of the current Event Schedule
    Table. EST indices come from the Orbit Schedule Table. The Event
    Schedule Table selected determines which Scan Sequence Tables
    execute."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 33
  NAME              = ROT_INDEX
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 343
  BYTES             = 10
  DESCRIPTION       = "The current index into the Radio-Occultation
    Table. The Radio-Occultation Table references Scan Sequence
    Tables to execute based on spacecraft time rather than orbit."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 34
  NAME              = EOCT_INDEX
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 354
  BYTES             = 11
  DESCRIPTION       = "The current index into the Eccentricity-
    Oblateness Correction Table. The EOCT contains elevation
    corrections to pointings, based on times since the last equator
    crossing."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 35
  NAME              = SST_INDEX
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 366
  BYTES             = 10
  DESCRIPTION       = "The current index into the current Scan
    Sequence Table, which determines the current pointing."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 36
  NAME              = FPA_TEMP
  DATA_TYPE        = ASCII_REAL

```

```

START_BYTE      = 377
BYTES           = 9
DESCRIPTION      = "The temperature readout of the focal plane A
                    temperature sensor, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 37
NAME             = FPB_TEMP
DATA_TYPE        = ASCII_REAL
START_BYTE       = 387
BYTES            = 9
DESCRIPTION       = "The temperature readout of the focal plane B
                    temperature sensor, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 38
NAME             = BAFFLE_A_TEMP
DATA_TYPE        = ASCII_REAL
START_BYTE       = 397
BYTES            = 14
DESCRIPTION       = "The temperature readout of the baffle A
                    temperature sensor, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 39
NAME             = BAFFLE_B_TEMP
DATA_TYPE        = ASCII_REAL
START_BYTE       = 412
BYTES            = 14
DESCRIPTION       = "The temperature readout of the baffle B
                    temperature sensor, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 40
NAME             = BB_1_TEMP
DATA_TYPE        = ASCII_REAL
START_BYTE       = 427
BYTES            = 10
DESCRIPTION       = "The temperature readout of the blackbody
                    temperature sensor 1, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 41
NAME             = OBA_1_TEMP
DATA_TYPE        = ASCII_REAL
START_BYTE       = 438
BYTES            = 11
DESCRIPTION       = "The temperature readout of the optical bench
                    assembly temperature sensor 1, in Kelvins"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 42
NAME             = ERROR_TIME
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 450
BYTES            = 11

```

```

        DESCRIPTION      = "The MCS FSW-internal value of sc_time, at the
        time of the most recent error"
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 43
    NAME                 = ERROR_ID
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE          = 462
    BYTES                = 9
    DESCRIPTION          = "The error ID associated with the most recent
        error."
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 44
    NAME                 = ERROR_DETAIL
    DATA_TYPE           = CHARACTER
    START_BYTE          = 472
    BYTES                = 15
    DESCRIPTION          = "Three bytes containing up to three additional
        bytes of information describing the most recent error condition."
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 45
    NAME                 = ERROR_COUNT
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE          = 488
    BYTES                = 12
    DESCRIPTION          = "The number of errors that have occurred since
        last reboot"
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 46
    NAME                 = COMMANDS_RECEIVED
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE          = 501
    BYTES                = 18
    DESCRIPTION          = "The number of commands received since bootup.
        Spacecraft time commands are only counted if rejected."
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 47
    NAME                 = COMMANDS_EXECUTED
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE          = 520
    BYTES                = 18
    DESCRIPTION          = "The number of commands successfully executed
        since bootup. This plus the number of commands rejected should
        equal the number of commands received, unless one of the commands
        received is still executing."
END_OBJECT              = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER       = 48
    NAME                 = COMMANDS_REJECTED
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE          = 539
    BYTES                = 18
    DESCRIPTION          = "The number of commands received but not

```

```

        successfully executed, since bootup. This plus the number of
        commands executed should equal the number of commands received."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 49
NAME            = LAST_COMMAND_REC
DATA_TYPE       = CHARACTER
START_BYTE      = 558
BYTES           = 21
DESCRIPTION     = "The last command received, as an 8-byte
        descriptor.  Commands are saved regardless of their validity."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 50
NAME            = CMD
DATA_TYPE       = ASCII_INTEGER
START_BYTE      = 580
BYTES           = 4
DESCRIPTION     = "The first byte of LAST_COMMAND_REC,
        indicating which of the seven types of MCS command was last
        received."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 51
NAME            = REQ_ID
DATA_TYPE       = CHARACTER
START_BYTE      = 585
BYTES           = 9
DESCRIPTION     = "The second byte of LAST_COMMAND_REC.  For
        command type 3, MCS_REQUEST, this is the request ID."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 52
NAME            = LAST_TIME_COMMAND
DATA_TYPE       = ASCII_INTEGER
START_BYTE      = 595
BYTES           = 18
DESCRIPTION     = "The spacecraft time when the last command was
        received, regardless of whether or not the command was valid."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 53
NAME            = LAST_EQX_PREDICTION
DATA_TYPE       = ASCII_INTEGER
START_BYTE      = 614
BYTES           = 20
DESCRIPTION     = "The last equator crossing prediction received
        from the spacecraft.  This time may not be the same as the time
        of the last equator crossing, if the spacecraft missed sending
        one or more."
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 54
NAME            = HYBRID_TEMP
DATA_TYPE       = ASCII_INTEGER
START_BYTE      = 635
BYTES           = 12

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DESCRIPTION      = "The temperature readout of the hybrid
                    electronics temperature sensor, in Kelvins."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 55
NAME             = FPA_TEMP_CYC
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 648
BYTES            = 13
DESCRIPTION      = "The temperature readout of the cycling focal
                    plane A temperature sensor, in Kelvins.  This sensor uses
                    narrow range Vishay calibration counts. This is the same
                    sensor as column 36, measured at a slightly different time."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 56
NAME             = FPB_TEMP_CYC
DATA_TYPE        = ASCII_REAL
START_BYTE       = 662
BYTES            = 13
DESCRIPTION      = "The temperature readout of the cycling focal
                    plane B temperature sensor, in Kelvins.  This sensor uses
                    narrow range Vishay calibration counts. This is the same
                    sensor as column 37, measured at a slightly different time."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 57
NAME             = BAFFLE_A_TEMP_CYC
DATA_TYPE        = ASCII_REAL
START_BYTE       = 676
BYTES            = 18
DESCRIPTION      = "The temperature readout of the cycling
                    baffle A temperature sensor, in Kelvins.  This sensor uses
                    narrow range Vishay calibration counts. This is the same
                    sensor as column 38, measured at a slightly different time."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 58
NAME             = BAFFLE_B_TEMP_CYC
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 695
BYTES            = 18
DESCRIPTION      = "The temperature readout of the cycling
                    baffle B temperature sensor, in Kelvins.  This sensor uses
                    narrow range Vishay calibration counts. This is the same
                    sensor as column 39, measured at a slightly different time."
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 59
NAME             = OBA_1_TEMP_CYC
DATA_TYPE        = ASCII_INTEGER
START_BYTE       = 714
BYTES            = 15
DESCRIPTION      = "The temperature readout of the cycling
                    optical bench assembly temperature sensor 1, in Kelvins.
                    This sensor uses narrow range Vishay calibration counts.
                    This is the same sensor as column 40, measured at a slightly
                    different time."

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END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 60
  NAME              = OBA_2_TEMP
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 730
  BYTES             = 11
  DESCRIPTION       = "The temperature readout of the cycling
    optical bench assembly temperature sensor 2, in Kelvins.
    This sensor uses narrow range Vishay calibration counts."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 61
  NAME              = BB_1_TEMP_CYC
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 742
  BYTES             = 14
  DESCRIPTION       = "The temperature readout of the cycling black
    body temperature sensor 1, in Kelvins. This sensor uses
    narrow range Vishay calibration counts. This is the same sensor
    as column 41, measured at a slightly different time."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 62
  NAME              = BB_2_TEMP
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 757
  BYTES             = 10
  DESCRIPTION       = "The temperature readout of the black
    body temperature sensor 2, in Kelvins. This sensor uses
    narrow range Vishay calibration counts."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 63
  NAME              = SOLAR_TARGET_TEMP
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 768
  BYTES             = 18
  DESCRIPTION       = "The temperature readout of the solar target
    temperature sensor, in Kelvins. This sensor uses wide range
    Vishay calibration counts."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 64
  NAME              = YOKE_TEMP
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 787
  BYTES             = 10
  DESCRIPTION       = "The temperature readout of the yoke
    temperature sensor, in Kelvins. This sensor uses wide
    range Vishay calibration counts."
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 65
  NAME              = EL_ACTUATOR_TEMP
  DATA_TYPE        = ASCII_INTEGER
  START_BYTE        = 798

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    BYTES                = 17
    DESCRIPTION          = "The temperature readout of the elevation
        actuator temperature sensor, in Kelvins.  This sensor uses
        wide range Vishay calibration counts."
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 66
    NAME                 = AZ_ACTUATOR_TEMP
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 816
    BYTES                = 17
    DESCRIPTION          = "The temperature readout of the azimuth
        actuator temperature sensor, in Kelvins.  This sensor uses
        wide range Vishay calibration counts."
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 67
    NAME                 = "-15V"
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 834
    BYTES                = 9
    DESCRIPTION          = "The voltage readout of the minus fifteen volt
        supply, in volts"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 68
    NAME                 = "+15V"
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 844
    BYTES                = 8
    DESCRIPTION          = "The voltage readout of the plus fifteen volt
        supply, in volts"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 69
    NAME                 = SOLAR_BASE_TEMP
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 853
    BYTES                = 16
    DESCRIPTION          = "The temperature readout of the solar target
        base temperature sensor, in Kelvins.  This sensor uses wide range
        Vishay calibration counts."
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 70
    NAME                 = "+5V"
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 870
    BYTES                = 7
    DESCRIPTION          = "The voltage readout of the plus five volt
        supply, in volts"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 71
    NAME                 = RQUAL
    DATA_TYPE           = ASCII_INTEGER
    START_BYTE           = 878

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BYTES = 6
 DESCRIPTION = "Radiometric Quality. This is a bit field
 defined as follows (Not implemented yet):

Bit	Value	Meaning
0	1	No previous space view
1	2	No following space view
2	4	Offset fit problem
3	8	Offset Time problem
4	16	No previous BB view
5	32	No following BB view
6	64	Gain fit problem
7	128	Time problem
8	256	Temperature problem"

END_OBJECT = COLUMN

OBJECT = COLUMN
 COLUMN_NUMBER = 72
 NAME = RAD_A1_01
 DATA_TYPE = ASCII_REAL
 START_BYTE = 885
 BYTES = 13
 DESCRIPTION = "The radiance seen by detector A1-01, in units
 of milliWatts/m²/sr/cm-1"
 END_OBJECT = COLUMN

OBJECT = COLUMN
 COLUMN_NUMBER = 73
 NAME = RAD_A1_02
 DATA_TYPE = ASCII_REAL
 START_BYTE = 899
 BYTES = 13
 DESCRIPTION = "The radiance seen by detector A1-02, in units
 of milliWatts/m²/sr/cm-1"
 END_OBJECT = COLUMN

OBJECT = COLUMN
 COLUMN_NUMBER = 74
 NAME = RAD_A1_03
 DATA_TYPE = ASCII_REAL
 START_BYTE = 913
 BYTES = 13
 DESCRIPTION = "The radiance seen by detector A1-03, in units
 of milliWatts/m²/sr/cm-1"
 END_OBJECT = COLUMN

OBJECT = COLUMN
 COLUMN_NUMBER = 75
 NAME = RAD_A1_04
 DATA_TYPE = ASCII_REAL
 START_BYTE = 927
 BYTES = 13
 DESCRIPTION = "The radiance seen by detector A1-04, in units
 of milliWatts/m²/sr/cm-1"
 END_OBJECT = COLUMN

OBJECT = COLUMN
 COLUMN_NUMBER = 76
 NAME = RAD_A1_05
 DATA_TYPE = ASCII_REAL
 START_BYTE = 941

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      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-05, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 77
      NAME                 = RAD_A1_06
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 955
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-06, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 78
      NAME                 = RAD_A1_07
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 969
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-07, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 79
      NAME                 = RAD_A1_08
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 983
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-08, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 80
      NAME                 = RAD_A1_09
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 997
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-09, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 81
      NAME                 = RAD_A1_10
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 1011
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-10, in units
        of milliWatts/m^2/sr/cm-1"
      END_OBJECT           = COLUMN

      OBJECT               = COLUMN
      COLUMN_NUMBER        = 82
      NAME                 = RAD_A1_11
      DATA_TYPE           = ASCII_REAL
      START_BYTE           = 1025
      BYTES                = 13
      DESCRIPTION          = "The radiance seen by detector A1-11, in units
        of milliWatts/m^2/sr/cm-1"

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END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 83
  NAME              = RAD_A1_12
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1039
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 84
  NAME              = RAD_A1_13
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1053
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-13, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 85
  NAME              = RAD_A1_14
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1067
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 86
  NAME              = RAD_A1_15
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1081
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 87
  NAME              = RAD_A1_16
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1095
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 88
  NAME              = RAD_A1_17
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1109
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A1-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN

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COLUMN_NUMBER      = 89
NAME               = RAD_A1_18
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1123
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A1-18, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 90
NAME               = RAD_A1_19
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1137
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A1-19, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 91
NAME               = RAD_A1_20
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1151
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A1-20, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 92
NAME               = RAD_A1_21
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1165
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A1-21, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 93
NAME               = RAD_A2_01
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1179
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A2-01, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 94
NAME               = RAD_A2_02
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1193
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A2-02, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 95
NAME               = RAD_A2_03
DATA_TYPE          = ASCII_REAL

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START_BYTE      = 1207
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-03, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 96
NAME            = RAD_A2_04
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1221
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-04, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 97
NAME            = RAD_A2_05
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1235
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-05, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 98
NAME            = RAD_A2_06
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1249
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-06, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 99
NAME            = RAD_A2_07
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1263
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-07, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 100
NAME            = RAD_A2_08
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1277
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-08, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 101
NAME            = RAD_A2_09
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1291
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A2-09, in units

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      of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 102
  NAME          = RAD_A2_10
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1305
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-10, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 103
  NAME          = RAD_A2_11
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1319
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-11, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 104
  NAME          = RAD_A2_12
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1333
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 105
  NAME          = RAD_A2_13
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1347
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-13, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 106
  NAME          = RAD_A2_14
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1361
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 107
  NAME          = RAD_A2_15
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1375
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A2-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

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OBJECT                = COLUMN
  COLUMN_NUMBER       = 108
  NAME                = RAD_A2_16
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1389
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 109
  NAME                = RAD_A2_17
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1403
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 110
  NAME                = RAD_A2_18
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1417
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 111
  NAME                = RAD_A2_19
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1431
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 112
  NAME                = RAD_A2_20
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1445
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 113
  NAME                = RAD_A2_21
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1459
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A2-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 114
  NAME                = RAD_A3_01

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DATA_TYPE      = ASCII_REAL
START_BYTE     = 1473
BYTES          = 13
DESCRIPTION    = "The radiance seen by detector A3-01, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 115
NAME           = RAD_A3_02
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1487
BYTES         = 13
DESCRIPTION    = "The radiance seen by detector A3-02, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 116
NAME           = RAD_A3_03
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1501
BYTES         = 13
DESCRIPTION    = "The radiance seen by detector A3-03, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 117
NAME           = RAD_A3_04
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1515
BYTES         = 13
DESCRIPTION    = "The radiance seen by detector A3-04, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 118
NAME           = RAD_A3_05
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1529
BYTES         = 13
DESCRIPTION    = "The radiance seen by detector A3-05, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 119
NAME           = RAD_A3_06
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1543
BYTES         = 13
DESCRIPTION    = "The radiance seen by detector A3-06, in units
                  of milliWatts/m^2/sr/cm-1"
END_OBJECT     = COLUMN

OBJECT         = COLUMN
COLUMN_NUMBER  = 120
NAME           = RAD_A3_07
DATA_TYPE     = ASCII_REAL
START_BYTE    = 1557
BYTES         = 13

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      DESCRIPTION      = "The radiance seen by detector A3-07, in units
        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 121
  NAME                 = RAD_A3_08
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1571
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-08, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 122
  NAME                 = RAD_A3_09
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1585
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-09, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 123
  NAME                 = RAD_A3_10
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1599
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-10, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 124
  NAME                 = RAD_A3_11
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1613
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-11, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 125
  NAME                 = RAD_A3_12
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1627
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 126
  NAME                 = RAD_A3_13
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 1641
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A3-13, in units
    of milliWatts/m^2/sr/cm-1"

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END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 127
  NAME              = RAD_A3_14
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1655
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 128
  NAME              = RAD_A3_15
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1669
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 129
  NAME              = RAD_A3_16
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1683
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 130
  NAME              = RAD_A3_17
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1697
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 131
  NAME              = RAD_A3_18
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1711
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 132
  NAME              = RAD_A3_19
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 1725
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector A3-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN

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COLUMN_NUMBER      = 133
NAME               = RAD_A3_20
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1739
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A3-20, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 134
NAME               = RAD_A3_21
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1753
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A3-21, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 135
NAME               = RAD_A4_01
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1767
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A4-01, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 136
NAME               = RAD_A4_02
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1781
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A4-02, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 137
NAME               = RAD_A4_03
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1795
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A4-03, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 138
NAME               = RAD_A4_04
DATA_TYPE          = ASCII_REAL
START_BYTE         = 1809
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector A4-04, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 139
NAME               = RAD_A4_05
DATA_TYPE          = ASCII_REAL

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START_BYTE      = 1823
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-05, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 140
NAME            = RAD_A4_06
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1837
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-06, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 141
NAME            = RAD_A4_07
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1851
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-07, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 142
NAME            = RAD_A4_08
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1865
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-08, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 143
NAME            = RAD_A4_09
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1879
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-09, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 144
NAME            = RAD_A4_10
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1893
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-10, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
COLUMN_NUMBER   = 145
NAME            = RAD_A4_11
DATA_TYPE       = ASCII_REAL
START_BYTE      = 1907
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector A4-11, in units

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      of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 146
  NAME          = RAD_A4_12
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1921
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 147
  NAME          = RAD_A4_13
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1935
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-13, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 148
  NAME          = RAD_A4_14
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1949
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 149
  NAME          = RAD_A4_15
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1963
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 150
  NAME          = RAD_A4_16
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1977
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 151
  NAME          = RAD_A4_17
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 1991
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A4-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

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OBJECT                = COLUMN
  COLUMN_NUMBER       = 152
  NAME                = RAD_A4_18
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2005
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A4-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 153
  NAME                = RAD_A4_19
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2019
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A4-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 154
  NAME                = RAD_A4_20
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2033
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A4-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 155
  NAME                = RAD_A4_21
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2047
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A4-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 156
  NAME                = RAD_A5_01
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2061
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A5-01, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 157
  NAME                = RAD_A5_02
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2075
  BYTES               = 13
  DESCRIPTION         = "The radiance seen by detector A5-02, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 158
  NAME                = RAD_A5_03

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DATA_TYPE           = ASCII_REAL
START_BYTE          = 2089
BYTES               = 13
DESCRIPTION          = "The radiance seen by detector A5-03, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 159
NAME                 = RAD_A5_04
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2103
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector A5-04, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 160
NAME                 = RAD_A5_05
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2117
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector A5-05, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 161
NAME                 = RAD_A5_06
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2131
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector A5-06, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 162
NAME                 = RAD_A5_07
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2145
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector A5-07, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 163
NAME                 = RAD_A5_08
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2159
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector A5-08, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT           = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 164
NAME                 = RAD_A5_09
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2173
BYTES                = 13

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      DESCRIPTION      = "The radiance seen by detector A5-09, in units
        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 165
  NAME                 = RAD_A5_10
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2187
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-10, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 166
  NAME                 = RAD_A5_11
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2201
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-11, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 167
  NAME                 = RAD_A5_12
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2215
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 168
  NAME                 = RAD_A5_13
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2229
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-13, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 169
  NAME                 = RAD_A5_14
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2243
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 170
  NAME                 = RAD_A5_15
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 2257
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector A5-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

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OBJECT          = COLUMN
  COLUMN_NUMBER = 171
  NAME          = RAD_A5_16
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2271
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 172
  NAME          = RAD_A5_17
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2285
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 173
  NAME          = RAD_A5_18
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2299
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 174
  NAME          = RAD_A5_19
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2313
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 175
  NAME          = RAD_A5_20
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2327
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 176
  NAME          = RAD_A5_21
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2341
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector A5-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 177

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NAME                = RAD_A6_01
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2355
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-01, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 178
NAME                = RAD_A6_02
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2369
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-02, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 179
NAME                = RAD_A6_03
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2383
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-03, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 180
NAME                = RAD_A6_04
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2397
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-04, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 181
NAME                = RAD_A6_05
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2411
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-05, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 182
NAME                = RAD_A6_06
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2425
BYTES               = 13
DESCRIPTION          = "The band-averaged radiance seen by detector A6-06, in
                        units of Watts/m^2/sr/micron"
END_OBJECT           = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER        = 183
NAME                = RAD_A6_07
DATA_TYPE           = ASCII_REAL
START_BYTE          = 2439

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    BYTES                = 13
    DESCRIPTION          = "The band-averaged radiance seen by detector A6-07, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 184
    NAME                  = RAD_A6_08
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2453
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-08, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 185
    NAME                  = RAD_A6_09
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2467
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-09, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 186
    NAME                  = RAD_A6_10
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2481
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-10, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 187
    NAME                  = RAD_A6_11
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2495
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-11, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 188
    NAME                  = RAD_A6_12
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2509
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-12, in
        units of Watts/m^2/sr/micron"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
    COLUMN_NUMBER        = 189
    NAME                  = RAD_A6_13
    DATA_TYPE            = ASCII_REAL
    START_BYTE            = 2523
    BYTES                 = 13
    DESCRIPTION           = "The band-averaged radiance seen by detector A6-13, in
        units of Watts/m^2/sr/micron"

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END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 190
  NAME              = RAD_A6_14
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2537
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-14, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 191
  NAME              = RAD_A6_15
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2551
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-15, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 192
  NAME              = RAD_A6_16
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2565
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-16, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 193
  NAME              = RAD_A6_17
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2579
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-17, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 194
  NAME              = RAD_A6_18
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2593
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-18, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 195
  NAME              = RAD_A6_19
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 2607
  BYTES              = 13
  DESCRIPTION        = "The band-averaged radiance seen by detector A6-19, in
                        units of Watts/m^2/sr/micron"
END_OBJECT          = COLUMN

OBJECT              = COLUMN

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COLUMN_NUMBER      = 196
NAME               = RAD_A6_20
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2621
BYTES              = 13
DESCRIPTION        = "The band-averaged radiance seen by detector A6-20, in
                      units of Watts/m^2/sr/micron"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 197
NAME               = RAD_A6_21
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2635
BYTES              = 13
DESCRIPTION        = "The band-averaged radiance seen by detector A6-21, in
                      units of Watts/m^2/sr/micron"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 198
NAME               = RAD_B1_01
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2649
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector B1-01, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 199
NAME               = RAD_B1_02
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2663
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector B1-02, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 200
NAME               = RAD_B1_03
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2677
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector B1-03, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 201
NAME               = RAD_B1_04
DATA_TYPE          = ASCII_REAL
START_BYTE         = 2691
BYTES              = 13
DESCRIPTION        = "The radiance seen by detector B1-04, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT             = COLUMN
COLUMN_NUMBER      = 202
NAME               = RAD_B1_05
DATA_TYPE          = ASCII_REAL

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START_BYTE      = 2705
BYTES           = 13
DESCRIPTION      = "The radiance seen by detector B1-05, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 203
NAME             = RAD_B1_06
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2719
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-06, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 204
NAME             = RAD_B1_07
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2733
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-07, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 205
NAME             = RAD_B1_08
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2747
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-08, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 206
NAME             = RAD_B1_09
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2761
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-09, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 207
NAME             = RAD_B1_10
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2775
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-10, in units
of milliWatts/m^2/sr/cm-1"
END_OBJECT       = COLUMN

OBJECT           = COLUMN
COLUMN_NUMBER    = 208
NAME             = RAD_B1_11
DATA_TYPE        = ASCII_REAL
START_BYTE       = 2789
BYTES            = 13
DESCRIPTION       = "The radiance seen by detector B1-11, in units

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      of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 209
  NAME          = RAD_B1_12
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2803
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-12, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 210
  NAME          = RAD_B1_13
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2817
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-13, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 211
  NAME          = RAD_B1_14

  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2831
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 212
  NAME          = RAD_B1_15
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2845
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 213
  NAME          = RAD_B1_16
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2859
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 214
  NAME          = RAD_B1_17
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2873
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

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OBJECT          = COLUMN
  COLUMN_NUMBER = 215
  NAME          = RAD_B1_18
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2887
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 216
  NAME          = RAD_B1_19
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2901
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 217
  NAME          = RAD_B1_20
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2915
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 218
  NAME          = RAD_B1_21
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2929
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B1-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 219
  NAME          = RAD_B2_01
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2943
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B2-01, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 220
  NAME          = RAD_B2_02
  DATA_TYPE    = ASCII_REAL
  START_BYTE    = 2957
  BYTES         = 13
  DESCRIPTION    = "The radiance seen by detector B2-02, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT      = COLUMN

OBJECT          = COLUMN
  COLUMN_NUMBER = 221

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NAME                = RAD_B2_03
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2971
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-03, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 222
NAME                 = RAD_B2_04
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2985
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-04, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 223
NAME                 = RAD_B2_05
DATA_TYPE            = ASCII_REAL
START_BYTE           = 2999
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-05, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 224
NAME                 = RAD_B2_06
DATA_TYPE            = ASCII_REAL
START_BYTE           = 3013
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-06, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 225
NAME                 = RAD_B2_07
DATA_TYPE            = ASCII_REAL
START_BYTE           = 3027
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-07, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 226
NAME                 = RAD_B2_08
DATA_TYPE            = ASCII_REAL
START_BYTE           = 3041
BYTES                = 13
DESCRIPTION           = "The radiance seen by detector B2-08, in units
                        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT               = COLUMN
COLUMN_NUMBER        = 227
NAME                 = RAD_B2_09
DATA_TYPE            = ASCII_REAL
START_BYTE           = 3055

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    BYTES                = 13
    DESCRIPTION          = "The radiance seen by detector B2-09, in units
      of milliWatts/m^2/sr/cm-1"
    END_OBJECT           = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 228
  NAME                  = RAD_B2_10
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3069
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-10, in units
    of milliWatts/m^2/sr/cm-1"
  END_OBJECT            = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 229
  NAME                  = RAD_B2_11
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3083
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-11, in units
    of milliWatts/m^2/sr/cm-1"
  END_OBJECT            = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 230
  NAME                  = RAD_B2_12
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3097
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-12, in units
    of milliWatts/m^2/sr/cm-1"
  END_OBJECT            = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 231
  NAME                  = RAD_B2_13
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3111
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-13, in units
    of milliWatts/m^2/sr/cm-1"
  END_OBJECT            = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 232
  NAME                  = RAD_B2_14
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3125
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-14, in units
    of milliWatts/m^2/sr/cm-1"
  END_OBJECT            = COLUMN

OBJECT                  = COLUMN
  COLUMN_NUMBER         = 233
  NAME                  = RAD_B2_15
  DATA_TYPE            = ASCII_REAL
  START_BYTE            = 3139
  BYTES                 = 13
  DESCRIPTION           = "The radiance seen by detector B2-15, in units
    of milliWatts/m^2/sr/cm-1"

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END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 234
  NAME              = RAD_B2_16
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3153
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 235
  NAME              = RAD_B2_17
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3167
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 236
  NAME              = RAD_B2_18
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3181
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 237
  NAME              = RAD_B2_19
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3195
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 238
  NAME              = RAD_B2_20
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3209
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

OBJECT              = COLUMN
  COLUMN_NUMBER     = 239
  NAME              = RAD_B2_21
  DATA_TYPE        = ASCII_REAL
  START_BYTE        = 3223
  BYTES              = 13
  DESCRIPTION        = "The radiance seen by detector B2-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT          = COLUMN

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```

OBJECT                = COLUMN
  COLUMN_NUMBER       = 240
  NAME                 = RAD_B3_01
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3237
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-01, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 241
  NAME                 = RAD_B3_02
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3251
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-02, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 242
  NAME                 = RAD_B3_03
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3265
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-03, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 243
  NAME                 = RAD_B3_04
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3279
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-04, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 244
  NAME                 = RAD_B3_05
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3293
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-05, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 245
  NAME                 = RAD_B3_06
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3307
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-06, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT             = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 246
  NAME                 = RAD_B3_07

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DATA_TYPE          = ASCII_REAL
START_BYTE         = 3321
BYTES              = 13
DESCRIPTION         = "The radiance seen by detector B3-07, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 247
NAME                = RAD_B3_08
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3335
BYTES               = 13
DESCRIPTION         = "The radiance seen by detector B3-08, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 248
NAME                = RAD_B3_09
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3349
BYTES               = 13
DESCRIPTION         = "The radiance seen by detector B3-09, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 249
NAME                = RAD_B3_10
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3363
BYTES               = 13
DESCRIPTION         = "The radiance seen by detector B3-10, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 250
NAME                = RAD_B3_11
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3377
BYTES               = 13
DESCRIPTION         = "The radiance seen by detector B3-11, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 251
NAME                = RAD_B3_12
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3391
BYTES               = 13
DESCRIPTION         = "The radiance seen by detector B3-12, in units
                      of milliWatts/m^2/sr/cm-1"
END_OBJECT         = COLUMN

OBJECT              = COLUMN
COLUMN_NUMBER       = 252
NAME                = RAD_B3_13
DATA_TYPE           = ASCII_REAL
START_BYTE          = 3405
BYTES               = 13

```

```

      DESCRIPTION      = "The radiance seen by detector B3-13, in units
        of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 253
  NAME                 = RAD_B3_14
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3419
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-14, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 254
  NAME                 = RAD_B3_15
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3433
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-15, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 255
  NAME                 = RAD_B3_16
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3447
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-16, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 256
  NAME                 = RAD_B3_17
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3461
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-17, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 257
  NAME                 = RAD_B3_18
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3475
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-18, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 258
  NAME                 = RAD_B3_19
  DATA_TYPE           = ASCII_REAL
  START_BYTE          = 3489
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-19, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

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```
OBJECT                = COLUMN
  COLUMN_NUMBER       = 259
  NAME                 = RAD_B3_20
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3503
  BYTES                = 13
  DESCRIPTION          = "The radiance seen by detector B3-20, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN

OBJECT                = COLUMN
  COLUMN_NUMBER       = 260
  NAME                 = RAD_B3_21
  DATA_TYPE          = ASCII_REAL
  START_BYTE          = 3517
  BYTES                = 12
  DESCRIPTION          = "The radiance seen by detector B3-21, in units
    of milliWatts/m^2/sr/cm-1"
END_OBJECT            = COLUMN
```


APPENDIX C – MCS LABEL KEYWORD DEFINITIONS

Keyword	Description
RECORD_TYPE	The record_type element indicates the record format of a file.
RECORD_BYTES	The record_bytes element indicates the number of bytes in a physical file record, including record terminators and separators.
FILE_RECORDS	The file_records element indicates the number of physical file records, including both label records and data records.
DESCRIPTION	The description element provides a free-form, unlimited-length character string that represents or gives an account of something.
^TABLE	Pointer to the RDR data product file.
DATA_SET_ID	The data_set_id element is a unique alphanumeric identifier for a data set or a data product.
MISSION_NAME	The mission_name element identifies a major planetary mission or project.
INSTRUMENT_HOST_NAME	The instrument_host_name element provides the full name of the host on which an instrument is based.
INSTRUMENT_NAME	The instrument_name element provides the full name of an instrument.
PRODUCT_NAME	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_ID	The product_id data element represents a permanent, unique identifier assigned to a data product by its producer.
TARGET_NAME	The target_name element identifies a target.
START_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 system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]
STOP_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 system format. Formation rule: YYYY-MM-DDThh:mm:ss[.fff]
SPACECRAFT_CLOCK_START_COUNT	The spacecraft_clock_start_count element provides the value of the spacecraft clock at the beginning of a time period of interest.
SPACECRAFT_CLOCK_STOP_COUNT	The spacecraft_clock_stop_count element provides the value of the spacecraft clock at the end of a time period of interest.
PRODUCT_CREATION_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]
INTERCHANGE_FORMAT	The interchange_format element represents the manner in which data items are stored. Example values: BINARY, ASCII.

ROW_BYTES	The row_bytes element represents the maximum number of bytes in each data object row.
ROWS	The rows element represents the number of rows in a data object.
COLUMNS	The columns element represents the number of columns in each row of a data object.