

**CALIBRATION DATA BASE
DATA DESIGN¹**

Version 6.0

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Abstract

This is the Data Design Document for CDBS. It is to be the single integrated source of all information regarding the relation design of the Calibration Data Base.

¹This is module DB.TEX in library tib!/lar/data1/so111 , printed April 2, 1996

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Chapter 1

Introduction

1.1 Scope

This is the primary reference document for the data base specification of the Calibration Data Base Software. It describes data base structure, use, conventions, and details of data used by the Calibration Data Base Software.

Chapter 1, “Introduction and CDBS Data Base Structure”, defines the purpose, scope and environment for the data base system, as well as discussing the general structure of the CDBS relational database. It introduces applicable terminology, and provides a summary of the contents of the document.

Chapter 2, “Data Dictionary”, describes the CDBS Data Dictionary design.

Chapter 3, “The CDBS-defined Relations”, describes data base relations defined specifically for CDBS. These include, among others, the Parameter Tables.

Chapter 4, “Basic Reference Data”, describes the nature of the files and tables that store the basic reference data.

1.2 Acronyms

CDBS	Calibration Data Base Software
CL	IRAF's Command Language
CM	Configuration Management
DBA	Data Base Administrator
DADS	Data Archive Distribution System
DMF	Data Management Facility
FITS	Flexible Image Transport System
FGS	Fine Guidance Sensor
FOC	Faint Object Camera
FOS	Faint Object Spectrograph
HRS	High Resolution Spectrograph
HSP	High-Speed Photometer
IRAF	Image Reduction Analysis Facility
ISB	Instrument Support Branch
NICMOS	Near Infrared Camera Multiple Object Spectrometer
PDB	Project Data Base
PMDB	Proposal Management Data Base
PODPS	Post Observation Data Processing System
RSDP	Routine Science Data Processing
SDAS	Scientific Data Analysis Software
STIS	Space Telescope Imaging Spectrometer
STSDAS	Space Telescope Scientific Data Analysis Software
SHP	Standard Header Packet
SQL	Standard Query Language
UDL	Unique Data Log
WFPC	Wide Field and Planetary Camera
WFPC2	Wide Field and Planetary Camera 2

1.3 Applicable Documents

Reference Number	Title	Date	Document Number
1	Sybase Transact SQL User's Guide	15 Dec 88	
2	Implementation of the Flexible Image Transport System (FITS)	6 Nov 91	NOST 100-0.3b
3	SDAS to PODPS ICD	Oct 91	ST-ICD-19
4	Vol 1, PORTS to PDB Tape	30 Apr 93	ST-ICD-26
5	Vol 2, PASS to PDB Tape	Apr 91	ST-ICD-26
6	Vol 3, SOGS to PDB	22 Mar 91	ST-ICD-26
7	Vol 4, ST Input to PDB	Feb 93	ST-ICD-26
8	Vol 5, PRS to PDB Tape	20 Aug 93	ST-ICD-26
9	CDBS to PODPS ICD	Sep 92	ST-ICD-47
10	STSDAS Users Guide	Nov 91	
11	STSDAS Calibration Guide	Nov 91	
12	The STDB Interface	Dec 90	

1.4 The SYBASE database system

The Calibration Database System generates SQL commands which are sent to the Sybase database. Sybase returns requested data, which is reformatted by the Calibration Database System into either SDAS tables or ASCII. There are two Sybase databases, both running on Sun Computers. The production database system runs on YODA and the development database runs on GROUCHO. Although the Calibration Database System can be used to access any database, its primary purpose is to access the calibration database. This database is named CDB1 on both GROUCHO and YODA. Sybase supplied programs can be used to access the calibration database instead of using the utilities in the Calibration Database System. See the Sybase documentation for further information on these programs.

1.5 Design Strategy

The database design objectives include:

- Facilitate data access by multiple users
- Provide data entry and maintenance procedures
- Protect privileged data from unauthorized access or modification
- Eliminate redundancy in data storage
- Standardize data representation and access methods
- Insure data integrity

1.5.1 Relation Creation, Maintenance and Documentation

Each database table is described by a .ddt file. This file is used both to create the SQL command files which create the table and the TeX files which create the documentation. Each .ddt file is divided into two parts: the header keywords and the column descriptions. Header keywords start with a pipe character (|) and must appear in the front of the file. Column descriptions begin with the column name. Fields within the column description are separated by pipe characters. Normally header keywords and column descriptions are contained in a single line of the file. However, they may be continued to another line if the last character on the line is a backslash (\).

Header parameters start with a pipe character followed by a parameter name. The value of the parameter follows the name, separated by whitespace. The parameter value may contain embedded white space. Parameters may occur in any order in the header. Header parameters are used to create the sql command file. Only six parameters are currently recognized. Other parameters will be ignored. The following table list these parameters and their meaning.

tabname	The CDBS database table name
tabdescrip	A brief description of the table
podpsname	The name the table is known by in PODPS
keywords	Keywords describing the table (rsdp image table data and none)
instruments	HST instruments using this table (fgs hsp wfpc foc fos hrs all)
tabtype	The type of database table (control master ordinary)

There are three types of database tables: control tables, which control the operations of CDBS, master tables, which contain information about each observation, and ordinary tables, which are used to hold information to be released to PODPS. The meaning of the keywords used by parameter keywords is given in the following table.

rsdp	Contents of the database table is used by PODPS
image	Table contains the names of images
table	Table contains the names of SDAS tables
data	Table contains data converted to SDAS tables by lodtab
and	Ignored, used to improve readability
none	None of the other keywords apply

There are six fields in the column description. These fields are separated by pipe characters. If the field has no value, it is left blank. The following table describes these six fields.

1	Column name
2	SQL datatype
3	Physical units of column
4	Display format
5	Database index name
6	Column description

There is a convention for naming indices in CDBS. All indices begin with the word "key" followed by a number. Key1 is the primary index, which must be unique. Columns which have index key3 form the observation mode.

Several programs are used to convert the .ddt file into SQL command files or TeX files. These programs are written in Perl, a programming language that is available for free on the internet. The command line arguments for all the programs work the same way. The first argument on the command line is the name of the command. Following this are the names of the input files. The last, optional, argument on the command line is the name of the output directory. The program determines the presence of this optional argument by checking to see if the last argument is a directory name. The program constructs an output file name from each input file by stripping of the directory name from the input file (if any), changing the extension, and adding the output directory name. If no output directory is given, the output files are written

to the current working directory. Command line options start with a dash and only apply to input files which follow them on the line.

DDT2SQL creates SQL command files from the database definition tables. Three files are created from each .ddt file: a .sql file, which creates the database table, a .dic file, which adds rows to the data dictionary tables cddrel and cddatt, and a .idx file, which creates the indices. The program creates three separate files so that these database operations can be performed separately. The commands in the .sql file first renames the database table if it already exists by changing the first letter in the database table name to "o". It then creates a new, empty database table and adds a record describing that table in cdparmmast. The example below shows the use of ddt2sql.

```
ddt2sql czccrar.ddt czccrbr.ddt ../sql
```

DDT2TEX creates a .tex file containing a Latex description of the database table. The file produced by this program is not a complete Latex file, it needs the usual Latex preamble and ending. All characters in the .ddt file which have special significance to Latex are escaped in the .tex file. The program can produce two different kinds of output files. The first is a description of the database table. It is selected with the -d option. The second is a description of the SDAS table produced from the database table. It is selected with the -t option. If neither option is used, the -d option is assumed. The following examples show how ddt2tex is used.

```
ddt2tex cyddtr.ddt ../temp
ddt2tex -t czcc*.dtt ../temp
```

DDT2UPD creates an SQL command file which copies rows from the old database table into the new database table. The new file has the extension .upd. Rows in the new table which did not exist in the old table are filled with zeros or blanks, depending on the data type of the column. The program assumes that columns which exist in both tables have the same name. Otherwise, the command file produced by this program will have to be edited by hand. The program requires two input files for each .upd file it produces. The first is the name of the new .ddt file, which is supplied as a command line argument. The second is the name of the old .ddt file, which must be the same as the name of the new file, except for the first letter of the file name root, which must be "o". For example, if the command line argument is cyddtr.ddt, the name of the old file must be oyddtr.ddt. The following steps show how ddt2sql is used.

```
cp cyddtr.ddt oyddtr.ddt
emacs cyddtr.ddt                      # edit the file
ddt2upd cyddtr.ddt ../temp
```

1.5.2 Table and Field Naming Conventions

Table and field names must be 17 characters or less, must start with a letter and must not be database keywords (such as “retrieve” or “append”). Letters, digits, and the underscore character may be used; all letters must be lower-case.

Table names in the Calibration Data Base System begin with a “c”. The second letter depends on the type of data the table contains:

- f FGS
- v HSP
- w WF/PC
- u WF/PC 2
- x FOC
- y FOS
- z HRS
- o OTA
- r Basic Reference Data
- d Data Base Control

1.6 Relation Design, General

There are several types of relations in CDBS: Control Tables, Master Tables, Parameter Tables, and Basic Reference Tables. The descriptions and layouts of these tables can be found in Chapters 3 and 4.

For ease of tracking, most of the Calibration Data Base tables are append-only and every table has a `row_no` field. The Data Management Facility (DMF) is updated before any data is released to PODPS by archiving with the user archive command.

Besides `row_no`, the Master Tables, the Parameter Tables and the Basic Reference Tables have some fields whose values are supplied by the system, rather than by the user. The Master Tables have a date/time stamp for each row indicating when that file was pre-processed and added to the Master Table. The Parameter Tables and the Reference Tables also have a date/time stamp.

Several fields in the parameter and reference tables are generated indirectly from the user’s input. These are the parameter version number, the SDAS table name, the useafter date, and the generation number. The version number increases by one each time a new set of data is added to the database table. The SDAS table name is the name of the table that the data set was read from. The useafter date and generation indicate the period of time over which the data is valid. The useafter date may be entered when the data is placed in the database, but if it is left blank it will be set to the latest useafter date already in the database. Reference files should only be used to process observations taken after the useafter date. If two reference files

have the same useafter date, the one with a higher generation number supersedes the one with a lower number.

Each parameter table will be created with a nonclustered unique index on `row_no` and a nonclustered nonunique index on `version`. Each master table will be created with a nonclustered unique index on `rootname`. The indexes on the control tables will vary according to the function of each table.

1.7 Database Interface

The Calibration Database System uses the stdbnet library to access the database. The stdbnet library is a subroutine library written at the Institute by the DMF group. The calling interface is identical to the stdb library. The stdb library was written to provide database system independence to software needing a database interface. The stdbnet library is written using the client server model. Programs are linked with the client side of the library which passes messages over the network to the server side, which runs on the database machine. This allows the Calibration Database System to be run on any computer with network access to the database machine.

1.8 User Access

There are several ways a user can access the contents of the Calibration data base tables:

1. The STSDAS task `QUERY` allows queries on one or more database tables with output to the screen, an ASCII file, or an SDAS table.
2. The STSDAS task inquiry allows the user to interactively view rows in a single database table by setting values in a form containing the database table fields. The output can optionally be sent to an SDAS table.
3. The STSDAS task `lodtab` creates an SDAS table containing the current reference files or data for each observation mode from a single database table.

The *CDBS System Software User's Guide* contains the details of user access.

1.9 Security

All users of CDBS have read access to the tables and views. Write access is limited to the CDBS operators and the CDBS administrator. Master Tables are automatically updated by the ingest program, which is maintained by the DMF group. Only the CDBS administrator has permission to change existing database tables or add new ones.

Chapter 2

Data Dictionary

The CDBS Data Dictionary is a reference tool which contains descriptions of all data items relating to the database system. It is primarily for use by the Data Base Administrator and the programmers, but is also a reference for users.

The dictionary is made up of a number of relations which are most useful when viewed through a single view. Two of the relations are CDBS data dictionary tables, the remaining relations exist for other purposes as well.

2.1 The Data Dictionary Relations—A Summary

Note: in the following table, the “Use” column indicates whether the relation is purely a data dictionary table (**ddic**), or a CDBS Control Table (**control**), or an Database System table (**system**).

<i>Relation</i>	<i>Use</i>	<i>Description</i>
CDPARMMAST	control	Calibration parameter descriptors. This is the master list which describes the format of each calibration parameter stored in the database. A detailed description of this table can be found in Chapter 3 of this document.
CRLOG	control	Basic Reference Data log. This is the list of parameter versions that have been verified. A detailed description of this table can be found in Chapter 4 of this document.
CDDREL	ddic	Data Dictionary relation table. Contains information about each CDBS table.
CDDATT	ddic	Data Dictionary attribute table. Contains information about each field in each CDBS table.

2.2 Relation Layouts

2.2.1 CDDREL: Data Dictionary Relation Table

This table contains an entry for each CDBS Relation.

Field Name	DATABASE Datatype	Description
relid	i2	Relation ID
ddtime	i4	Creation date:time stamp
instruments	c40	Instruments related to this table
description1	c78	description of table
description2	c78	description of table
description3	c78	description of table
description4	c78	description of table
description5	c78	description of table

2.2.2 CDDATT: Data Dictionary Attribute Table

This table contains an entry for each field in each CDBS table.

Field Name	DATABASE Datatype	Description
relid	i2	Relation ID
attid	i1	Attribute ID
units	c19	Storage units (if any) of this field
disply_fmt	c7	Fortran display format of this field
sdas_dtype	c6	SDAS data type of this field
description1	c78	description of field
description2	c78	description of field
description3	c78	description of field
description4	c78	description of field
description5	c78	description of field

Chapter 3

The CDBS-defined Database Relations

This chapter describes the Sybase relations defined for the Calibration Data Base System. It includes discussions of their content, format, and interrelationships.

3.1 The CDBS Relations—Major Subsections

1. CDBS System Control:
 - Tracking & History
 - Master List of Parameters
 - Verification
 - RSDP Storage Information:
 - What is to be released
 - What has been released
 - When was the pipeline initialized
 - Views of CDBS and RSDP data, for uniformity of Release
2. Generated Calibration Reference Files and Parameters
3. Basic Reference Data (see Chapter 4 for details)

3.2 The CDBS Relations—A Summary

Note: in the following table, the “Use” column indicates whether the relation is purely internal (**int**) to CDBS (control tables), or it is a Master Table (**mast**), or it contains a parameter (**par**) generated but not sent to RSDP, or it contains a parameter (**par-RSDP**) which is destined for RSDP.

<i>Relation</i>	<i>Use</i>	<i>Description</i>
CDPARMMAST	int	Calibration parameter descriptors. This is the master list which describes the format of each calibration parameter stored in the database.
CDVERIFIED	int	Calibration parameter verification table. This is the list of parameter versions that have been verified.
RELINFO_REF	int	Tracking reference file release to RSDP
RELINFO_SDAS	int	Tracking STSDAS table release to RSDP
CDACATALOG	int	Catalog of verified reference tables.
CDVCATALOG	int	Catalog of verified HSP reference tables.
CDWCATALOG	int	Catalog of verified WF/PC reference images.
CDXCATALOG	int	Catalog of verified FOC reference images.
CDYCATALOG	int	Catalog of verified FOS reference images.
CDZCATALOG	int	Catalog of verified HRS reference images.
CDUCATALOG	int	Catalog of verified WFPC2 reference images.

<i>Relation</i>	<i>Use</i>	<i>Description</i>
CWA2DR	par-RSDP	WF/PC analog to digital reference files
CWBASR	par-RSDP	WF/PC bias reference files
CWDRKR	par-RSDP	WF/PC dark reference files
CWFLTR	par-RSDP	WF/PC flattening reference files
CWMSKR	par-RSDP	WF/PC mask files
CWPRFR	par-RSDP	WF/PC preflash reference files
CWPURR	par-RSDP	WF/PC superpurge reference files
CWPHOTR	par-RSDP	WF/PC photometry group parameters
CWPSF	par	WF/PC PSF measurements and models.
CWDFLT	par	WF/PC delta flats reference files.
CUMSKR	par-RSDP	WFPC2 mask reference files.
CUA2DR	par-RSDP	WFPC2 analog to digital reference files.
CUBASR	par-RSDP	WFPC2 bias reference files.
CUDRKR	par-RSDP	WFPC2 dark reference files.
CUFLTR	par-RSDP	WFPC2 flat field reference files.
CUSHDR	par-RSDP	WFPC2 shutter reference files.
CUDISTORT	par	WFPC2 IDT distortion area map
CUIDTDRK	par	WFPC2 IDT superbias reference files
CUIDTBAS	par	WFPC2 IDT superdark reference files
CUIDTDELDRK	par	WFPC2 IDT delta dark reference files
CUPHOTR	par-RSDP	WFPC2 photometry group parameters
CXBACR	par-RSDP	FOC background (dark count) reference files.
CXBLMR	par-RSDP	FOC blemish reference files
CXSDER	par-RSDP	FOC spectrograph detective efficiency reference files.
CXUNIR	par-RSDP	FOC relative detective efficiency reference files.
CXGEOR	par-RSDP	FOC geometric distortion reference files.
CXITFR	par-RSDP	FOC intensity transfer function reference files.
CYBACR	par-RSDP	FOS background reference files
CYFLTR	par-RSDP	FOS flat field reference files
CYIVSR	par-RSDP	FOS inverse sensitivity reference files
CYRETR	par-RSDP	FOS retardation reference files
CYDDTR	par-RSDP	FOS disabled diode reference files
CYAISR	par-RSDP	FOS average inverse sensitivity reference files
CYQINR	par-RSDP	FOS quality initialization reference files
CYPSF	par	FOS point spread function files.
CYLSF	par	FOS line spread function files.
CYCCS0R	par-RSDP	FOS aperture parameters.
CYCCS1R	par-RSDP	FOS aperture position parameters.
CYCCS2R	par-RSDP	FOS emission lines.
CYCCS3R	par-RSDP	FOS detector parameters.
CYCCS4R	par-RSDP	FOS Wollaston/waveplate parameters.
CYCCS5R	par-RSDP	FOS sky shift parameters.
CYCCS6R	par-RSDP	FOS wavelength parameters.
CYCCS7R	par-RSDP	FOS Scale factors for FOS GIMP corrections.
CYCCS8R	par-RSDP	FOS predicted mean background count rates.
CYCCS9R	par-RSDP	FOS Scattered Light Correction Parameters
CYCCSAR	par-RSDP	FOS ota focus history
CYCCSBR	par-RSDP	FOS aperture throughput coefficients at nominal focus
CYCCSCR	par-RSDP	FOS aperture throughput coefficients versus focus
CYCCSDR	par-RSDP	FOS correction factors for changes in detector sensitivity

<i>Relation</i>	<i>Use</i>	<i>Description</i>
CZDIOR	par-RSDP	HRS diode response reference files.
CZPHCR	par-RSDP	HRS photocathode response reference files.
CZVIGR	par-RSDP	HRS vignetting reference files.
CZABSR	par-RSDP	HRS absolute sensitivity reference files.
CZNETR	par-RSDP	HRS wavelength net reference files.
CZQINR	par-RSDP	HRS data quality reference files.
CZCCR1R	par-RSDP	HRS line mapping parameters.
CZCCR2R	par-RSDP	HRS sample mapping parameters.
CZCCR3R	par-RSDP	HRS detector positions.
CZCCR4R	par-RSDP	HRS wavelength ranges.
CZCCR5R	par-RSDP	HRS spectral order constants.
CZCCR6R	par-RSDP	HRS dispersion constants.
CZCCR7R	par-RSDP	HRS thermal constants.
CZCCR8R	par-RSDP	HRS incidence angle constants.
CZCCR9R	par-RSDP	HRS echelle ripple interpolation constants.
CZCCRAR	par-RSDP	HRS echelle ripple non-interpolation constants.
CZCCRBR	par-RSDP	HRS scale factors for scattered light subtraction
CZCCRRCR	par-RSDP	HRS values for global coefficients solutions to determining the wavelength scale of an observation
CZCCRDR	par-RSDP	HRS relation containing the locations of photocathode blemishes.
CZPTNELINEC	par	HRS relation containing Pt-Ne lamp line list, corrected to vacuum wavelengths
CZCCOFFC	par	HRS relation containing coefficients to a fit of offsets between apertures SSA and SC1,SC2
COCCG2R	par-RSDP	Paired pulse parameters (HRS and FOS).
COSIAF	par	Science instrument aperture file parameter table

<i>Relation</i>	<i>Use</i>	<i>Description</i>
CFFGSTOST	par	Matrix for transformation from FGS frame to ST vehicle frame
CFLEVERARM	par	FGS star selector lever arm lengths
CFMAGVSPMT	par	FGS magnitude VS PMT counts
CFOPTCOF	par	FGS optical distortion coefficients in image space
CFOPTMAG	par	Optical magnification of HST as seen by each FGS
CFPHIT	par	FGS particle hit statistics and average PMT count rates
CFPMTDEADT	par	FGS PMT dead time
CFSSOFFSETS	par	FGS star selector offsets
CVAP3L	par	HSP center coordinate of a large aperture
CVAP3S	par	HSP center coordinate of a small aperture
CVAPER1	par	HSP aperture center
CVAPER2	par	HSP plate scales
CVASEN	par	HSP absolute sensitivity of each observation
CVCNTRTE	par	HSP count rate.
CVCCP0R	par-RSDP	HSP aperture names.
CVCCP1C	par	HSP high-voltage factor vs. temperature.
CVCCP1R	par-RSDP	HSP high-voltage polynomials.
CVCCP2C	par	HSP gain factor vs. temperature.
CVCCP2R	par-RSDP	HSP gain polynomials.
CVCCP3C	par	HSP pre-amp noise vs. temperature.
CVCCP3R	par-RSDP	HSP pre-amp polynomials.
CVCCP4C	par	HSP efficiency vs. temperature.
CVCCP4R	par-RSDP	HSP efficiency polynomials.
CVCCP5C	par	HSP dark count vs. temperature.
CVCCP5R	par-RSDP	HSP dark count polynomials.
CVCCP6R	par-RSDP	HSP time bias.
CVCCP7C	par	HSP CVC offset vs. temperature.
CVCCP7R	par-RSDP	HSP CVC offset polynomials.
CVCCP8R	par-RSDP	HSP paired pulse parameters
CVCCP9R	par-RSDP	HSP dark aperture translation table
CVDARKAPER	par	HSP dark aperture translation table
CVDISCR	par	HSP discriminator threshold optimum setting
CVGAIN	par	HSP gain factor of each observation
CVHVFAC	par	HSP high voltage factor of each observation
CVPOLEF	par	HSP polarization transmission coefficients
CVPOLPA	par	HSP polarization position angle offsets
CVPOLVF	par	HSP polarization verification
CVREFAPER	par	HSP reference aperture for a given filter
CVREFHV	par	HSP reference high voltage table
CVRSEN	par	HSP relative sensitivity of each observation

3.3 CDBS System Control Tables

The CDBS Control Tables are intended to keep track of the CDBS parameter tables in terms of data dictionary information, history, and verification. Table `CRL0G` is also a CDBS Control Table and is described in Chapter 4.

3.3.1 CDPARMMAST: Calibration Parameter Master

This is a file of descriptions of the calibration parameters, as opposed to specific instances of parameters and their values.

Calibration parameters come in many different shapes and sizes. We distinguish first between database-resident and computer-resident parameters, then further among the database-resident parameters by whether they are destined for RSDP. Large arrays of numbers will (usually) be VAX or SUN-resident files. The rest of the parameters are stored in a variety of relations.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number of this table
<code>objid</code>	int	Object ID assigned by the Database.
<code>parmid</code>	char(19)	Parameter table name
<code>keyword</code>	char(12)	RSDP file type or keyword
<code>file</code>	char(1)	File type (I=image, T=table, N=none)
<code>icode</code>	char(1)	Instrument code (F,V,W,U,X,Y,Z,M,T)
<code>rspd</code>	char(1)	Parameter is copied to RSDP (Y or N)
<code>data</code>	char(1)	SDAS table can be created from data (Y or N)
<code>override</code>	char(1)	New versions of data should override old (Y or N)
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Highest (last) version number
<code>nrows</code>	int	Number of rows in parameter table
<code>comment</code>	varchar(40)	User comment

3.3.2 CDVERIFIED: Calibration Parameter Verification Table

This table will keep track of the calibration parameter versions that have been verified. The RSDP indicator is present for ease of data transfer to RSDP.

Field Name	Datatype	Description
row_no	int	Row number
parmid	char(12)	Parameter table name
rmdp	char(1)	Y or N
version	int	Version number
timev	char(17)	Verify date:time stamp (YYYYMMDD:HHMMSSCC)
vuid	int	Verify user id
comment	varchar(40)	User comment
vlevel	smallint	Verification level, 0 to 10. 10 means quality is good enough to release to RSDP.
topvlevel	smallint	Verification level, 0 to 10. This field is protected to ensure that only authorized accounts may write a verification of 10.

3.3.3 RELINFO_REF: Tracking File Release to RSDP

Once data (or pointers) has been installed into the database, entries are added to RELINFO_REF with a date-time stamp in the STORE_TIME field. When this data is released to PODPS, the CDBS.RELTIME field is populated. Once PODPS has received and processed this data, a "feedback" file is sent to CDBS, release is run again and the PODPS_TIME field is populated.

Field Name	Datatype	Description
row_no	int	Row number
parmid	char(19)	Parameter table name
version	int	Version number
file_type	char(12)	RSDP file type
icode	char(1)	Instrument code (F,V,W,U,X,Y,Z,M,T)
store_time	char(17)	time and date stamp for storing this row (YYYYMMDD:HHMMSSCC)
cdbsruntime	char(17)	time and date stamp of CDBS release (YYYYMMDD:HHMMSSCC)
podps_time	char(17)	time and date stamp of PODPS release (GMT) (YYYYMMDD:HHMMSSCC)

3.3.4 RELINFO_SDAS: Tracking STSDAS Table Release to RSDP

Once data (or pointers) has been installed into the database, entries are added to RELINFO_SDAS with a date-time stamp in the STORE_TIME field. When this data is released to PODPS, the CDBS.RELTIME field is populated. Once PODPS has received and processed this data, a "feedback" file is sent to CDBS, release is run again and the PODPS_TIME field is populated.

Field Name	Datatype	Description
row_no	int	Row number
parmid	char(19)	Parameter table name
sdas_tab	char(40)	SDAS table name
directory	char(40)	Table directory
keyword	char(12)	RSDP keyword
icode	char(1)	instrument code (F,V,W,U,X,Y,Z,M,T)
store_time	char(17)	time and date stamp for storing this row (YYYYMMDD:HHMMSSCC)
cdbsruntime	char(17)	time and date stamp of CDBS release (YYYYMMDD:HHMMSSCC)
podps_time	char(17)	time and date stamp of PODPS release (GMT) (YYYYMMDD:HHMMSSCC)

3.3.5 CDACATALOG: Catalog of verified reference tables.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDACATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDACATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDACATALOG. CDACATALOG has entries for tables only, but all instruments.

Field Name	Datatype	Description
row_no	int	Row number
parmid	char(19)	Parameter table name
icode	char(1)	instrument code (F,V,W,U,X,Y,Z,M,T)
syb_useafter	datetime(8)	Useafter time in Sybase format
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
filename	char(40)	Reference table name

3.3.6 CDVCATALOG: Catalog of verified HSP reference tables.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDVCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDVCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDVCATALOG. CDVCATALOG has entries for HSP tables only.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>parmid</code>	char(19)	Parameter table name
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>syb_useafter</code>	datetime(8)	Useafter time in Sybase format
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>aper_name</code>	char(10)	Aperture name identifier
<code>det_num</code>	smallint	Detector number, 1-5
<code>type</code>	char(7)	ANALOG, DIGITAL
<code>mode</code>	char(4)	Instrument mode
<code>filename</code>	char(18)	Reference image name

3.3.7 CDWCATALOG: Catalog of verified WF/PC reference images.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDWCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDWCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDWCATALOG. CDWCATALOG has entries for WFPC reference images.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>parmid</code>	char(19)	Parameter table name
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>syb_useafter</code>	datetime(8)	Useafter time in Sybase format
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>camera</code>	char(2)	Which of the two cameras were in use: WF or PC
<code>mode</code>	char(4)	Image: FULL or AREA
<code>filter1</code>	smallint	Number of the first filter (0-48)
<code>filter2</code>	smallint	Number of the second filter (0-48)
<code>clock</code>	char(3)	Serial clock is ON or OFF
<code>shutter</code>	char(1)	Shutter used (A or B)
<code>filename</code>	char(18)	Reference image name

3.3.8 CDXCATALOG: Catalog of verified FOC reference images.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDXCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDXCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDXCATALOG. CDXCATALOG has entries for FOC reference images.

Field Name	Datatype	Description
row_no	int	Row number
parmid	char(19)	Parameter table name
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
syb_useafter	datetime(8)	Useafter time in Sybase format
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
pxformt	char(8)	Pixel format: NORMAL, ZOOM
cammode	char(8)	Coronographic apodizer mask
optcrly	char(8)	Optical relay
smmmode	char(8)	Spectrographic mirror mechanism
optelt1	smallint	Optical element, filter wheel 1: 0-7 (f48) or 0-11
optelt2	smallint	Optical element, filter wheel 2: 0-7 (f48) or 0-11
wavelength	int	Pivot wavelength in angstroms
samppln	smallint	Samples per line
linepfm	smallint	Lines per frame
sampoff	float	Sample offset
lineoff	float	Line offset
filename	char(18)	Reference image name

3.3.9 CDYCATALOG: Catalog of verified FOS reference images.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDYCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDYCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDYCATALOG. CDYCATALOG has entries for FOS reference images.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>parmid</code>	char(19)	Parameter table name
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>syb_useafter</code>	datetime(8)	Useafter time in Sybase format
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>detector</code>	char(5)	Digicon detector: AMBER, BLUE
<code>overscan</code>	int	Overscan number
<code>aper_pos</code>	char(6)	aperture position: UPPER, LOWER, SINGLE
<code>pass_dir</code>	smallint	polarization pass direction: 0,1,2
<code>aper_id</code>	char(3)	Entrance aperture: A-1 through C-4
<code>polar_id</code>	char(1)	Polarizer element: A, B, C
<code>fgwa_id</code>	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
<code>filename</code>	char(18)	Reference image name

3.3.10 CDZCATALOG: Catalog of verified HRS reference images.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDZCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDZCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDZCATALOG. CDZCATALOG has entries for HRS reference images.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>parmid</code>	char(19)	Parameter table name
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>syb_useafter</code>	datetime(8)	Useafter time in Sybase format
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>detector</code>	smallint	Digcon detector number: 1 or 2
<code>grating</code>	char(9)	Grating/echelle mode
<code>filename</code>	char(18)	Reference image name

3.3.11 CDUCATALOG: Catalog of verified WFPC2 reference images.

This relation is used in several IRAF tasks, specifically VERIFY, RELEASE and GETREFFILE. When VERIFY is run on a version of data, a row is written to CDUCATALOG for each row verified. The catalogs which are generated by RELEASE for PODPS come from CDUCATALOG in conjunction with the RELINFO* relations. The information generated by GETREFFILE also comes out of CDUCATALOG. CDUCATALOG has entries for WFPC2 reference images.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>parmid</code>	char(19)	Parameter table name
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>syb_useafter</code>	datetime(8)	Useafter time in Sybase format
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>atodgain</code>	int	A-to-D gain setting
<code>mode</code>	char(4)	Image: FULL or AREA
<code>filter1</code>	smallint	Number of the first filter (0-48)
<code>filter2</code>	smallint	Number of the second filter (0-48)
<code>serials</code>	char(3)	Serial clock is ON or OFF
<code>shutter</code>	char(1)	Shutter used (A or B)
<code>filename</code>	char(18)	Reference image name

3.4 The Parameter Tables

Following is the collection of relations constituting the actual calibration parameter data resident in the database. Some of the relations in this set have definitions determined the information needed by RSDP; some are defined by the CDBS group. The Basic Reference Data relations are also included in this group, however they are described in Chapter 3. The ones defined within the CDBS accommodate a wide variety of data formats.

In general there will be a different table for each calibration parameter.

The values of the fields `row_no`, `time`, `version`, and `sdas_tab` are supplied by the system. `sdas_tab` refers to the STSDAS table that was used to create the row in the relation.

For each parameter which is to be “released” to RSDP, a view of that parameter has been defined. The views are of two types: one for parameters which point to reference files.

Calibration parameters which point to reference files have views defined which only contain four fields: `version`, `key`, `header_file`, and `data_file`. The file names are obvious; the `version` corresponds to the CDBS version number. The `key` is a concatenation of all instrument configuration fields which RSDP uses as a key to select the proper calibration file. For example, FOC data quality masks are uniquely specified by the two fields `pxformt` and `optcrly`. The view of this parameter table has `key` defined as:

```
key = concat (c.pxformt, concat (" ", c.optcrly))
```

In each relation, the fields `useafter` and `generation` are used to specify a date in which a particular reference file or table is “good” for, that is, the file or table data is good for all observations taken on or after that date. The `generation` is used to differentiate data with the same `useafter` date.

3.4.1 WFPC Reference Files and Tables

CWA2DR: WF/PC Analog to Digital Reference Files

This table contains one row for every WF/PC A-to-D file. The A-to-D lookup table files are used to statistically correct the image data for a pattern introduced by the Analog to Digital converter electronics. This is done by replacing the short integer pixel values obtained from the WF/PC with floating point values that remove the systematic degradation introduced by this hardware problem.

The flags and indicators used to select the A-to-D reference files are: CAMERA. The A-to-D lookup table is not accompanied by a data quality file. The A-to-D lookup table temp (Bay 3) dependent; since that temp. was stable, only one lookup table was used. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
data_file	char(18)	Data file name
descrip	varchar(68)	User comment

CWBASR: WF/PC Bias Reference Files

These files are subtracted from the image to remove the structure of the electronic bias. The most notable component of this structure is a 0.6 DN even/odd column pattern.

The flags and indicators used to select the bias (BAS) reference files are: CAMERA and MODE. The bias reference must be accompanied by a data quality file. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CWDRKR: WF/PC Dark Reference Files

During exposures the WF/PC CCDs generate a thermally-induced signal known as *dark current*. This signal is a function of the time since the last erase command and the operating temperature of the CCD detectors, and varies from pixel to pixel. The dark reference file is scaled by the time since the last erase command and subtracted from the image.

The flags and indicators used to select the dark reference files are: CAMERA, MODE, SERIALS. The dark reference file must be accompanied by a data quality file. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
clock	char(3)	Serial clock is ON or OFF
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CWFTR: WF/PC Flatfield Reference Files

This table contains one row for every WF/PC Flatfield (Flat Field) Frame that has been made from the sets of earth-cal exposures from the WF/PC and is to be used by the pipeline. Every time a new Flat Field is delivered to CDB the information is put into a row in this table.

Variations in sensitivity between pixels in the CCD detectors are corrected by applying a flat field reference file. This file contains the normalized inverse sensitivity (gain) for each pixel in the detector. The image is multiplied by the flat field file after correction for additive effects (i.e., bias, preflash, superpurge, and dark).

The flags and indicators used to select the flat field reference files are: CAMERA, MODE, FILTNAM1, and FILTNAM2. There are 48 filter elements and two cameras and two modes possible for each element. In addition, some filter elements can be used in combination (e.g., the neutral density filter). Thus more than 200 flat field reference files are required.

The table is then used to load the RSDP table **CCAA_WFC_REF** used by the RSDP pipeline to find the current Flat Fields to apply in the routine pipeline calibrations.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
filter1	smallint	Number of the first filter (0-48)
filter2	smallint	Number of the second filter (0-48)
filtnam1	char(8)	ST ScI name for first filter
filtnam2	char(8)	ST ScI name for second filter
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CWMSKR: WF/PC Static Mask Reference Files

Formerly known as the data quality mask, this file flags those pixels that always contain degraded values (e.g., blocked columns, hot pixels, etc.). This mask is routinely incorporated into the DQF generated in the RSDP pipeline by CALWFP (the .c1h file).

The flags and indicators used to select the static mask reference files are: CAMERA and MODE. The static mask reference file is not accompanied by a data quality file. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
data_file	char(18)	Data file name
descrip	varchar(68)	User comment

CWPRFR: WF/PC Preflash Reference Files

These files are used to perform the preflash correction. The signal introduced by the use of the preflash lamp is removed by subtracting this reference file. The reference file is scaled by the preflash exposure time to allow for variation in the requested preflash exposure. The subtraction of the reference file corrects for the uneven illumination pattern of the preflash image. Because the preflash is obtained by illuminating the backside of the shutter with an internal lamp, the difference in reflectivity of the two shutter blades requires reference files specific to each shutter blade.

The flags and indicators used to select the preflash reference files are: CAMERA, MODE, SHUTTER, and the values of PREFTIME, PFILTER1, and PFILTER2. Only one set of filters is used for each camera in normal operation. Each shutter blade requires a separate preflash reference file. The preflash exposure time provided the basis for the selection of the Preflash reference file (PREFTIME > 0).

The preflash reference file must be accompanied by a data quality file. The first row of a preflash file contains the CTE correction applied when prefcorr = yes and preftime = 0, that is, when preflash was not done. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
shutter	char(1)	Shutter used (A or B)
filter1	smallint	Number of the first filter (0-48)
filter2	smallint	Number of the second filter (0-48)
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CWPURR: WF/PC Superpurge Reference Files

These files are used to remove residual images of highly overexposed sources. However, it creates a non-uniform residual image over the entire detector which decays over time. The level of this global residual image in a readout depends on both the time since the purge was performed and the time since the last erase prior to the readout. The superpurge reference file must be scaled and subtracted from all images obtained after a superpurge in which the residual is still significant.

The flags and indicators used to select the superpurge reference files are: CAMERA and MODE.

The superpurge reference file must be accompanied by a data quality file. The data in this table is destined for RSDP table CCAA_WFC_REF.

Note: The CWPURR files have never been implemented.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which camera was used: WF or PC
mode	char(4)	Image: FULL or AREA
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CWPHOTR: WF/PC Photometry Group Parameters

This table holds wfpc photometry parameters. The SDAS table produced from this table will be transferred to PODPS and will have the extension .CW0. A description of the table is included below. The data in this table is destined for RSDP table CCAA_WFC_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Camera in use (WF or PC)
detector	smallint	Chip number (WF: 1-4; PC: 5-8)
filtnam1	char(6)	Name of first filter
filtnam2	char(6)	Name of second filter
flatfield	char(3)	CAL indicates flt field has been applied, blank otherwise
photmode	char(48)	Photometry mode
photflam	float	Inverse sensitivity
photzpt	float	Zero point
photplam	float	Pivot wavelength
photbw	float	RMS bandwidth of the filter used
descrip	varchar(68)	User comment

CWPSF: WF/PC PSF Measurements and Models

CWPSF refers to a library of WFPC Point Spread Functions which were obtained from on-orbit observations. They can be used for deconvolution and throughput calculations.

These are not used in the RSDP pipeline.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
filtnam1	char(8)	First ST ScI filter name
filtnam2	char(8)	Second ST ScI filter name
camera	char(2)	WF or PC
mode	char(4)	FULL or AREA
detector	smallint	1-4 for WF, 5-8 for PC
rootname	char(18)	Root name of the PSF image
data_file	char(18)	File name of the PSF image header
targname	char(18)	Target name

Table CWPSF is continued on the next page.

Continuation of table CWPSF.

Field Name	Data Type	Description
<code>exptime</code>	float	Exposure time in seconds
<code>date_obs</code>	char(11)	UT date (e.g. 28-JAN-1991 UT)
<code>mjd</code>	float	modified Julian date (e.g. 48284.7591)
<code>spectral</code>	char(18)	Spectral type of source if known
<code>xcorner</code>	smallint	x pixel of (1,1) corner in PSF image
<code>ycorner</code>	smallint	y pixel of (1,1) corner
<code>xcenter</code>	float	x coordinate of PSF center
<code>ycenter</code>	float	y coordinate of PSF center
<code>calibrated</code>	char(1)	Has this image been calibrated (flat, bias etc.) (T or F)
<code>origin</code>	char(8)	Data source, e.g. HST, TIM, or other
<code>flatfile</code>	char(18)	name of flat-field image, (or INDEF)
<code>psfscale</code>	float	divisor used to normalize psf or 1
<code>obsmode</code>	char(64)	observing mode for synphot software
<code>refspec</code>	char(64)	reference spectrum
<code>actuator25</code>	smallint	Position of secondary mirror actuator 25
<code>actuator26</code>	smallint	Position of secondary mirror actuator 26
<code>actuator27</code>	smallint	Position of secondary mirror actuator 27
<code>actuator28</code>	smallint	Position of secondary mirror actuator 28
<code>actuator29</code>	smallint	Position of secondary mirror actuator 29
<code>actuator30</code>	smallint	Position of secondary mirror actuator 30
<code>descrip</code>	varchar(68)	User comment

CWDFLT: WF/PC delta flat reference files

Delta-flats allow for short term, but small percentage, variations in the WFPC flat fields mainly due to decontamination procedures. The flatfields are relatively stable between decontaminations, but since the procedure involves warming the detectors , the flats do undergo incremental changes due to decontaminations. The resulting corrections will be made available to observers to apply to their own data. They will select the most appropriate files based on the use date.

These files are not used on the RSDP pipeline.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
camera	char(2)	Which of the two cameras were in use: WF or PC
mode	char(4)	Image: FULL or AREA
filter1	smallint	Number of the first filter (0-48)
filter2	smallint	Number of the second filter (0-48)
filtnam1	char(8)	ST ScI name for first filter
filtnam2	char(8)	ST ScI name for second filter
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

3.4.2 WFPC 2 Reference Files and Tables

CUMSKR: WFPC2 mask reference files

Formerly known as the data quality mask, this file flags those pixels that always contain degraded values (e.g., blocked columns, hot pixels, etc.). This mask is routinely incorporated into the DQF generated in the RSDP pipeline by CALWFP2 (the .c1h file).

The flags and indicators used to select the static mask reference files is: MODE. The static mask reference file is not accompanied by a data quality file. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
mode	char(4)	Image: FULL or AREA
data_file	char(18)	Data file name
descrip	varchar(68)	User comment

CUA2DR: WFPC2 analog to digital reference files

The flags and indicators used to select the static mask reference files are: MODE and ATODGAIN. The static mask reference file is not accompanied by a data quality file. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
atodgain	int	A-to-D gain setting
mode	char(4)	Image (FULL or AREA)
data_file	char(18)	Data file name
descrip	varchar(68)	User comment

CUBASR: WFPC2 bias reference files

These files are subtracted from the image to remove the structure of the electronic bias.

The flags and indicators used to select the bias (BAS) reference files are: ATODGAIN and MODE. The bias reference must be accompanied by a data quality file. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
atodgain	int	A-to-D gain setting
mode	char(4)	Image (FULL or AREA)
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CUDRKR: WFPC2 dark reference files

The WF/PC2 CCDs generate a spurious signal during exposures known as *dark current*. This signal is a function of the time since the last erase command and the operating temperature of the CCD detectors, and varies from pixel to pixel. The dark reference file is scaled by the time since the last erase command and subtracted from the image.

The flags and indicators used to select the dark reference files are: ATODGAIN, MODE, SERIAL. The dark reference file must be accompanied by a data quality file. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
atodgain	int	A-to-D gain setting
mode	char(4)	Image (FULL or AREA)
serials	char(3)	Serial clock (ON or OFF)
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CUFLTR: WFPC2 flat reference files

This table contains one row for every WF/PC2 Flattening (Flat Field) Frame that has been made from the Flat Field exposures from the WF/PC2 and is to be used by the pipeline. Every time the Instrument Scientist makes a new Flat Field, it is put in a Flattening Reference File, and the information about it is put into a row in this table.

Variations in sensitivity between pixels in the CCD detectors are corrected by applying a flat field reference file. This file contains the normalized inverse sensitivity (gain) for each pixel in the detector. The image is multiplied by the flat field file after correction for additive effects (i.e., bias, and dark).

The flags and indicators used to select the flat field reference files are: MODE, FILTER1, and FILTER2. There are 67 filter elements and one camera and two modes possible for each element. In addition, some filter elements can be used in combination (e.g., the neutral density filter). Thus more than 200 flat field reference files are required.

The table is then used to load the RSDP table CCAU_WF2_REF used by the RSDP pipeline to find the current Flat Fields to apply in the routine pipeline calibrations.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
mode	char(4)	Image (FULL or AREA)
filter1	smallint	Number of the first filter (0-48)
filter2	smallint	Number of the second filter (0-48)
filtnam1	char(8)	ST ScI name for first filter
filtnam2	char(8)	ST ScI name for second filter
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CUSHDR: WFPC2 Shading Correction Reference files

The flags and indicators used to select the Shading Correction reference files are: MODE and SHUTTER. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
mode	char(4)	Image (FULL or AREA)
shutter	char(1)	Shutter used (A or B)
data_file	char(18)	Data file name
descrip	varchar(68)	User comment

CUPHOTR: WFPC2 reference table

The photometry parameters no longer flow through CDBS. The CALWFPC2 software computes "on the fly" and populates the values for each observation.

The flags and indicators used to select the WFPC 2 Photometry parameters are: DETECTOR, MODE, GAIN, BUNIT, FILTNAM1, and FILTNAM2. The data in this table is destined for RSDP table CCAU_WF2_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Chip number (1-4)
mode	char(4)	Image (FULL or AREA)
gain	char(5)	Analog to digital gain (A2DHI or A2DLO)
bunit	char(2)	Brightness unit (DN)
filtname1	char(8)	Name of first filter
filtname2	char(8)	Name of second filter
photmode	char(48)	Photometry mode
photflam	float	Inverse sensitivity
photzpt	float	Zero point
photplam	float	Pivot wavelength
photbw	float	RMS bandwidth of the filter used
descrip	varchar(68)	User comment

CUDISTORT: WFPC2 IDT distortion area map

When performing integrated photometry, users should be aware that WFPC2 has significant distortion which causes the pixel area to vary across the field. The application of flat-fields "corrects" for this and normalizes all pixels to have the same area. However, this renders integrated photometry incorrect, because all of the light falls on the distorted pixels and correcting for the pixel area changes the amount of total light.

Consequently if you are measuring integrated brightnesses (as opposed to surface brightnesses), you will want to put back the true relative pixel areas. Maps of these have been delivered by Jon Holtzman of the IDT. Multiply by these maps to put the relative areas back into the image. The maps are normalized to unity at (400,400) in each chip.

There are no data quality files for these images.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>data_file</code>	char(18)	Data file name
<code>descrip</code>	varchar(68)	User comment

CUIDTBAS: WFPC2 IDT superbias reference files

The WFPC2 IDT superbias reference files have been generated by the WFPC2 IDT group and the DEEP FIELD group, instead of the WFPC2 STSCI group. These differ from RSDP files (CUBASR), by the time periods each of each observation. A different philosophy was used in their generation (see the WFPC2 documentation Web page for additional information). Additional information may be found in the history records of each file header.

The flags and indicators used to select the IDT SUPERBIAS reference files is: ATODGAIN and MODE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
atodgain	int	A-to-D gain setting
mode	char(4)	Image (FULL or AREA)
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CUIDTDRK: WFPC2 superdark reference files

The WFPC2 IDT superdark reference files have been generated by the WFPC2 IDT group and the DEEP FIELD group, instead of the WFPC2 STSCI group. These differ from RSDP files (CUDRKR), by the time periods each of each observation. A different philosophy was used in their generation (see the WFPC2 documentation Web page for additional information). Additional information may be found in the history records of each file header.

The flags and indicators used to select the IDT DARK reference files is: ATODGAIN, MODE and SERIALS.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
atodgain	int	A-to-D gain setting
mode	char(4)	Image (FULL or AREA)
serials	char(3)	Serial clock (ON or OFF)
data_file	char(18)	Data file name
qual_file	char(18)	Quality file name
descrip	varchar(68)	User comment

CUIDTDELDRK: WFPC2 IDT delta dark reference files

The WFPC2 IDT delta superdark reference files have been generated by the WFPC2 IDT group and the DEEP FIELD group, instead of the WFPC2 STSCI group. These differ from RSDP files (CUDRKR) by the time periods of each observation. A different philosophy was used in their generation (see the WFPC2 documentation Web page for additional information).

Additional information may be found in the history records of each file header. Typically, these files are made from approximately 100 frames instead of 5-10, as with the RSDP darks. Hot pixels appear with time (between decontaminations), and these delta darks show these changes. Delta darks are made to be used in conjunction with superdarks, since the superdarks don't contain the time-dependent information that the RSDP darks have. Generally, some amount of deltadark processing will be required before using them.

The flags and indicators used to select the static mask reference files is: MODE, ATODGAIN, and SERIALS.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>atodgain</code>	int	A-to-D gain setting
<code>mode</code>	char(4)	Image (FULL or AREA)
<code>serials</code>	char(3)	Serial clock (ON or OFF)
<code>data_file</code>	char(18)	Data file name
<code>qual_file</code>	char(18)	Quality file name
<code>descrip</code>	varchar(68)	User comment

3.4.3 FOC Reference Files and Tables

CXBACR: FOC Background (Dark Count) Reference Files

For the FOC, there is only one RSDP table that contains the names of reference files: CCAB_FOC_REF. Each row of that table contains a “file type” which tells which kind of reference file the row describes. For ease of tracking, we have broken out the FOC reference files into separate calibration parameters, one per RSDP file-type. The FOC Reference tables described below contain data destined for the RSDP table.

The flags and indicators used to select the BAC reference files are: OPTCRLY, PXFORMT.

The background reference files, file type BAC in CCAB_FOC_REF, contain data used to subtract out the detector dark count in science images. (See section on D7ABAC in ST_ICD_47.)

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pxformt	char(8)	Pixel format: NORMAL, ZOOM
optcrlly	char(8)	Optical relay
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

CXSDER: FOC Spectrograph Detective Efficiency Reference Files

These reference images, file type SDE in CCAB_FOC_REF, are used to multiply spectrograph mode images to convert raw count pixel values into physical data units and the SDE file also applies the flat-field correction for spectrograph mode. (See section on D7FSDE in ST_ICD47.)

The flags and indicators used to select the SDE reference files are: PXFORMT, OPTELT1, OPTELT2.

The data in this table is destined for RSDP table CCAB_FOC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
pxformt	char(8)	Pixel format: NORMAL, ZOOM
optelt1	smallint	Optical element, filter wheel 1: 0-7 (f48) or 0-11
optelt2	smallint	Optical element, filter wheel 2: 0-7 (f48) or 0-11
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

CXUNIR: FOC Relative Detective Efficiency Reference Files

The uniform Detector Efficiency (DE) files—also known as *relative detector efficiency files*—contain data used to remove the FOC instrument's spatial nonuniformities from the FOC science data. The reference files, file type UNI in CCAB_FOC_REF, are used to multiply science images to remove photocathode non-uniformities. Each image will apply to a broad band of effective wavelengths as determined by the instrumental configuration. This step is known as the uniform DE calibration.

The FOC UNI files are treated differently than any other table or file in CDBS. On one hand, the original table (as delivered to CDBS) is installed into the database and its' associated files are delivered to PODPS as any other file is delivered, but the original table itself is also delivered to PODPS like a table containing just calibration data (instead of reference file pointers). This table has a CXU extension.

The flags and indicators used to select the uniform DE reference files are: OPTCRLY, CAM-MODE, OPTELT1, and OPTELT2, OPTELT3, and OPTELT4.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
optcrlly	char(8)	Optical relay
cammode	char(8)	Coronographic apodizer mask
wavelength	int	Pivot wavelength in angstroms
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

CXGEOR: FOC Geometric Distortion Reference Files

Geometric reference files, file type GEO in CCAB_FOC_REF, contain sets of positions in the uncorrected data frame and the corresponding positions in the geometrically corrected frame. These data points are used in the process of geometrically correcting science images for detector distortions. In the case of spectrograph mode images the correction process will produce an image with linear dispersion and dispersion axis aligned with the image axis. (See section on D7EGEO in ST_ICD47.)

The flags and indicators used to select the GEO reference files are: OPTCRLY, CAMMODE, PXFORMT, SMMMODE, SAMPOFF, LINEOFF, SAMPPLN, LINEPFM, OPTELT1, OPTELT2.

The data in this table is destined for RSDP table CCAB_FOC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pxformt	char(8)	Pixel format: NORMAL, ZOOM
cammode	char(8)	Coronographic apodizer mask
optcrlly	char(8)	Optical relay
smmmode	char(8)	Spectrographic mirror mechanism
opelt1	smallint	Optical element, filter wheel 1: 0-7 (f48) or 0-11
opelt2	smallint	Optical element, filter wheel 2: 0-7 (f48) or 0-11
samppln	smallint	Samples per line
linepfm	smallint	Lines per frame
samponff	float	Sample offset
lineoff	float	Line offset
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

CXITFR: FOC Intensity Transfer Function Reference Files

These reference files, file type ITF in CCAB_FOC_REF, were originally intended to be used in the process of correcting science images for detector photometric non-linearity. (See section on D7BITF in ST_ICD47.)

The flags and indicators used to select the ITF reference files are: OPTCRLY, PXFORMT, SAMPOFF, LINEOFF, SAMPPLN, LINEPFM.

The data in this table is destined for RSDP table CCAB_FOC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pxformt	char(8)	Pixel format: NORMAL, ZOOM
optcrlly	char(8)	Optical relay
samppln	smallint	Samples per line
linepfm	smallint	Lines per frame
samponff	float	Sample offset
lineoff	float	Line offset
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

CXBBLMR: FOC Blemish Reference Files

The FOC data quality initialization files contain a priori information about the effect of the FOC's photocathodes on the quality of output data values. The data quality initialization file is used in conjunction with relation CGQ1_FIL_MSK to construct the FOC data quality mask.

The flags and indicators used to select the BLM reference files are: OPTCRLY, PXFORMT. The data in this table is destined for RSDP table CCAB_FOC_REF.

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pxformt	char(8)	Pixel format: NORMAL, ZOOM
optcrl	char(8)	Optical relay
samppln	int	Samples per line
linepfm	int	Lines per frame
sampoff	float	Sample offset
lineoff	float	Line offset
header_file	char(18)	Name of generic header file
data_file	char(18)	Name of generic data file
descrip	varchar(68)	User comment

3.4.4 FOS Reference Files and Tables

CYBACR: FOS Background Reference Files

For the FOS, there is only one RSDP table that contains the names of reference files: **CCAC_FOS_REF**. Each row of that table contains a “file type” which tells which kind of reference file the row describes. For ease of tracking, we have broken out the FOS reference files into separate calibration parameters, one per RSDP file-type. The FOS Reference tables described below contain data destined for the RSDP table.

The FOS background reference files contain one group of data of length (nchnls+overscan-1)*nxsteps. They contain a default background to be used by RSDP when an observation contains no background measurement.

The flags and indicators used to select the BAC reference files are: DETECTOR and OVERSCAN.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
header_file	char(18)	Name of background header file
data_file	char(18)	Name of background data file
descrip	varchar(68)	User comment

CYFLTR: FOS Flat Field Reference Files

The FOS flat field reference files contain the diode and photocathode sensitivity data used by RSDP. The flat field data is stored in a single group for polarizer C (clear) or in groups corresponding to the pass direction for polarizers A and B. The pass direction has a value of 0 for polarizer C and 1 or 2 for polarizers A and B. Each group has a length of (nchnls+overscan-1)*nxsteps.

The flags and indicators used to select the FLT reference files are: DETECTOR, OVERSCAN, APER_ID, POLAR_ID, FGWA_ID, APER_POS, and PASS_DIR.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
aper_pos	char(6)	aperture position: UPPER, LOWER, SINGLE
pass_dir	smallint	polarization pass direction: 0,1,2
aper_id	char(3)	Entrance aperture: A-1 through C-4
polar_id	char(1)	Polarizer element: A, B, C
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
header_file	char(18)	Name of flat field header file
data_file	char(18)	Name of flat field data file
descrip	varchar(68)	User comment

CYIVSR: FOS Inverse Sensitivity Reference Files

The FOS inverse sensitivity reference files contain the sensitivity curve used by RSDP to convert FOS corrected count rates to absolute flux units. The data is stored in a single group for polarizer C (clear) or in groups corresponding to pass direction (1 or 2) for polarizers A and B.

The flags and indicators used to select the IVS reference files are: DETECTOR, OVERSCAN, APER_ID, POLAR_ID, FGWA_ID, APER_POS, and PASS_DIR.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
aper_pos	char(6)	aperture position: UPPER, LOWER, SINGLE
pass_dir	smallint	polarization pass direction: 0,1,2
aper_id	char(3)	Entrance aperture: A-1 through C-4
polar_id	char(1)	Polarizer element: A, B, C
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
header_file	char(18)	Name of inverse sensitivity header file
data_file	char(18)	Name of inverse sensitivity data file
descrip	varchar(68)	User comment

CYRETR: FOS Retardation Reference Files

The FOS retardation file contains values computed from the retardation of the waveplate used during spectropolarimetric calibration to create observation f(w) in RSDP. Retardation data are stored in separate groups corresponding to the pass direction (1 or 2) for polarizers A and B.

The flags and indicators used to select the RET reference files are: DETECTOR, OVERSCAN, POLAR_ID, and FGWA_ID.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
polar_id	char(1)	Polarizer element: A, B, C
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
header_file	char(18)	Name of waveplate retardation header file
data_file	char(18)	Name of waveplate retardation data file
descrip	varchar(68)	User comment

CYDDTR: FOS Disabled Diode Reference Files

The FOS disabled diode reference file contains a vector of 512 elements corresponding to the 512 diodes. Values of 0 indicate disabled diodes and 1 indicate enabled diodes. These files are used by RSDP for correcting the count rate for a data point when one or more disabled diodes were used in generating the data point.

The flags and indicators used to select the DDT reference files are: DETECTOR.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	char(5)	Digicon detector: AMBER, BLUE
<code>header_file</code>	char(18)	Name of disabled diode table header file
<code>data_file</code>	char(18)	Name of disabled diode table data file
<code>descrip</code>	varchar(68)	User comment

CYAIR: FOS Average Sensitivity Reference Files

The FOS quality initialization reference files contain information on the quality of each of the 512 diodes. Each file has one group of length 512 corresponding to the number of diodes. These files are used by RSDP to construct a data quality mask.

The flags and indicators used to select the AIS reference files are: DETECTOR, OVERSCAN, POLAR_ID, FGWA_ID, and PASS_DIR.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
aper_id	char(3)	Entrance aperture: A-1 through C-4
aper_pos	char(6)	Aperture position: UPPER, LOWER, SINGLE
fgwa_id	char(3)	Disperser: H13, H19, H27, H40, H57, H78, L15, L65, PRI
polar_id	char(1)	Polarizer element: A, B
pass_dir	smallint	Polarizer pass direction: 0, 1, 2
header_file	char(18)	Name of data quality header file
data_file	char(18)	Name of data quality data file
descrip	varchar(68)	User comment

CYQINR: FOS Quality Initialization Reference Files

The FOS quality initialization reference files contain information on the quality of each of the 512 diodes. Each file has one group of length 512 corresponding to the number of diodes. These files are used by RSDP to construct a data quality mask.

The flags and indicators used to select the QIN reference files are: DETECTOR, OVERSCAN, APER_ID, POLAR_ID, FGWA_ID, APER_POS, and PASS_DIR.

The data in this table is destined for RSDP table CCAC_FOS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Digicon detector: AMBER, BLUE
overscan	int	Overscan number
aper_id	char(3)	Entrance aperture: A-1 through C-4
aper_pos	char(6)	Aperture position: UPPER, LOWER, SINGLE
fgwa_id	char(3)	Disperser: H13, H19, H27, H40, H57, H78, L15, L65, PRI
polar_id	char(1)	Polarizer element: A, B
pass_dir	smallint	Polarizer pass direction: 0, 1, 2
header_file	char(18)	Name of data quality header file
data_file	char(18)	Name of data quality data file
descrip	varchar(68)	User comment

CYPSF: FOS Point Spread Function Reference Files

The FOS Point Spread Function reference files contain information on

The flags and indicators used to select the PSF reference files are: DETECTOR and WAVELENGTH.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
detector	char(5)	Digicon detector: AMBER, BLUE
wavelength	int	Monochromatic wavelength
header_file	char(18)	Name of point spread function header file
data_file	char(18)	Name of point spread function data file
descrip	varchar(68)	User comment

CYLSF: FOS Line Spread Function Reference Files

The FOS Point Spread Function reference files contain information on

The flags and indicators used to select the LSF reference files are: DETECTOR, WAVELENGTH and APER_ID.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	char(5)	Digicon detector: AMBER, BLUE
<code>aper_id</code>	char(3)	Entrance aperture: A-1 through C-4
<code>wavelength</code>	int	Monochromatic wavelength
<code>header_file</code>	char(18)	Name of point spread function header file
<code>data_file</code>	char(18)	Name of point spread function data file
<code>descrip</code>	varchar(68)	User comment

CYCCS0R: FOS Aperture Parameters

The FOS Aperture parameter table contains the areas of the FOS entrance apertures used by RSDP to scale the sky spectrum to the object spectrum. The appropriate entry is selected by DETECTOR, APER_ID, and APER_POS.

This table is associated with RSDP table CALTABLE, however, the Project Data Base provides the data for the RSDP table as well as this one. CDBS keeps track of all versions that come from the PDB. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
aper_name	char(10)	Aperture name, from PDB tape
aper_id	char(3)	Entrance aperture: A-1 through C-4
aper_pos	char(6)	Position in an aperture pair: UPPER, LOWER, SINGLE
aper_area	float	Aperture area associated with the aperture position
descrip	varchar(68)	User comment

CYCCS1R: FOS Aperture Position Parameters

The FOS aperture position parameter table is used by RSDP to determine which aperture (upper or lower) corresponds to a spectrum at a given y-position. The table entry is selected by DETECTOR and FGWA_ID.

This table is associated with RSDP table CALTABLE, however, the Project Data Base provides the data for the RSDP table as well as this one. CDBS keeps track of all versions that come from the PDB. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
yupper	float	Nominal upper aperture y position for the object spectrum
ylower	float	Nominal lower aperture y position for the object spectrum
descrip	varchar(68)	User comment

CYCCS2R: FOS Emission Lines

The FOS Emission Line table specifies spectral regions in a sky spectrum where emission lines are present. The data in this table is used by RSDP to specify regions of the sky spectrum where no smoothing is to be performed. A beginning and ending data point number of each emission line is specified. The appropriated table entries are selected by DETECTOR, FGWA_ID, FCHNL and NXSTEPS.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
fchnl	int	First channel to be processed
nxsteps	smallint	Number of x-substeps: 1,2,4,8,16
line_beg	float	Beginning emission line data point number
line_end	float	Ending emission line data point number
descrip	varchar(68)	User comment

CYCCS3R: FOS Detector Parameters

This table gives the mean and median filter widths used by RSDP for smoothing the background and sky spectra. The appropriate table entry is selected by DETECTOR.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
detector	char(5)	Detector ID: AMBER, BLUE
bck_md	smallint	Median filter length used for background spectra smoothing
bck_mn	smallint	Mean filter length used for background spectra smoothing
sky_md	smallint	Median filter length used for sky spectra smoothing
sky_mn	smallint	Mean filter length used for sky spectra smoothing
descrip	varchar(68)	User comment

CYCCS4R: FOS Wollaston/Waveplate Parameters

This table gives the angles of each of two pass directions with respect to the Q=1 coordinate axis of the polarization reference frame. The table is used by RSDP for reduction of polarimetry data. The appropriate table entry is selected by DETECTOR and POLAR_ID.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
fgwa_id	char(3)	Disperser: H13,H19,H27,H40,H57,H78, L15,L65, PRI
polar_id	char(1)	Polarizer element: A, B
alpha1	float	First pass direction angle
alpha2	float	Second pass direction angle
w1	float	Initial waveplate position angle
combpix	int	Pixel for wavelength offset determination
a	float	Pol angle correction amplitude coef 1
b	float	Pol angle correction amplitude coef 2
c1	float	Pol angle correction phase coef 1
c2	float	Pol angle correction phase coef 2
c3	float	Pol angle correction phase coef 3
c4	float	Pol angle correction phase coef 4
c5	float	Pol angle correction phase coef 5
descrip	varchar(68)	User comment

CYCCS5R: FOS Sky Shift Parameters

This table gives the shift (in data points) used by RSDP to align the sky spectrum with the object spectrum before subtracting. The correct table entry is selected by DETECTOR, APER_ID, APER_POS, FGWA_ID, and NXSTEPS.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
aper_id	char(3)	Entrance aperture: A-1 through C-4
aper_pos	char(6)	Position in an aperture pair: UPPER, LOWER, SINGLE
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
nxsteps	smallint	Number of x-substeps: 1,2,4,8,16
nshift	smallint	Smoothed sky spectrum wavelength offset
descrip	varchar(68)	User comment

CYCCS6R: FOS Wavelength Parameters

This table gives the dispersion relation used by RSDP to compute the wavelength of each data point from its diode position. The correct entry is selected by DETECTOR, FGWA_ID, APER_ID, APER_POS, POLAR_ID, and PASS_DIRECT.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
aper_id	char(3)	Entrance aperture: A-1 through C-4
aper_pos	char(6)	Position in an aperture pair: UPPER, LOWER, SINGLE
fgwa_id	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
polar_id	char(1)	Polarizer element: A, B, C
pass_dir	smallint	polarization pass direction
coeff_0	float	Zeroth order wavelength coefficient
coeff_1	float	First order wavelength coefficient
coeff_2	float	Second order wavelength coefficient
coeff_3	float	Third order wavelength coefficient
coeff_4	float	Fourth order wavelength coefficient
xzero	float	Wavelength coefficient for prisms
descrip	varchar(68)	User comment

CYCCS7R: FOS Scale Factors for GIMP corrections

CYCCS7R contains scale factors indexed on the FOS detector used for scaling the model geomagnetic field strength calculations in CALFOS. These calculations are used in correcting for the geomagnetically induced image motion problem (GIMP). The correct entry is selected by DETECTOR.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
x_factor	float	X scale factor (diodes)
y_factor	float	Y scale factor (ybase units)
descrip	varchar(68)	User comment

CYCCS8R: FOS mean background count rates.

FOS predicted mean background count rates are stored as a function of geomagnetic latitude and longitude and selected on the basis of detector. The mean background count rate at the time and position of the observation is interpolated from this table and used to scale the reference background during calibration.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
gm_lat	int	geomagnetic latitude (degrees)
gm_long	int	geomagnetic longitude (degrees)
back_rate	float	mean background count rate (counts/s)
descrip	varchar(68)	User comment

CYCCS9R: FOS Scattered Light Correction Parameters

The CYCCS9R table contains the beginning and ending diode range values that are used by the CALFOS scattered light correction routine. The reference table records are organized by detector and disperser, and records are also selected on the basis of detector and disperser. The beginning and ending diode range values define the region of the spectral data from which the amplitude of scattered light will be measured and correspond to spectral regions that have no sensitivity to dispersed light. Some detector/disperser combinations have no such spectral region and therefore contain values of zero for the range specification in the CYCCS9R table. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	char(5)	Detector ID: AMBER, BLUE
<code>fgwa_id</code>	char(3)	FGWA disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
<code>range_beg</code>	float	Beginning no-sensitivity range diode number
<code>range_end</code>	float	Ending no-sensitivity range diode number
<code>descrip</code>	varchar(68)	User comment

CYCCSAR: FOS OTA Focus History

The CYCCSAR relation contains the OTA focus position (relative to a nominal focus position) as a function of MJD and is used to correct FOS spectra for variations in aperture throughput as a function of focus.

Records of relative focus position are organized and selected on the basis of Modified Julian Date (MJD).

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
mjd	float	Modified Julian Date
focus	float	Focus error from nominal (microns)
descrip	varchar(68)	User comment

CYCCSBR: FOS Aperture Throughput Coefficients at Nominal Focus

The CYCCSBR relation contains aperture throughput coefficients for nominal OTA focus and are used to correct for the difference in aperture throughput relative to the aperture for which the inverse sensitivity curve applies.

Records of throughput coefficients are organized and selected on the basis of detector, disperser, and aperture.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	char(5)	Detector ID: AMBER, BLUE
<code>fgwa_id</code>	char(3)	FGWA Disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
<code>aper_id</code>	char(3)	Aperture: A-1 through C-4
<code>aper_pos</code>	char(6)	Aperture position: SINGLE, LOWER, UPPER
<code>ref_aper</code>	char(3)	Reference aperture: A-1 through C-4
<code>wmin</code>	float	Minimum wavelength
<code>wmax</code>	float	Maximum wavelength
<code>c0</code>	float	Constant term
<code>c1</code>	float	Linear term
<code>c2</code>	float	Quadratic term
<code>num_avg</code>	int	Number of data sets used to compute the coefficients
<code>descrip</code>	varchar(68)	User comment

CYCCSCR: FOS Aperture Throughput Coefficients versus focus

The CYCCSCR relation contains aperture throughput values as a function of wavelength and focus deviation from nominal and are used to correct for variations in aperture throughput as a function of focus.

Records of aperture throughput are organized and selected on the basis of detector and aperture.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
aper_id	char(3)	Aperture: A-1 through C-4
wavelength	float	Wavelength (Angstroms)
focus	float	Focus error from nominal (microns)
throughput	float	Throughput relative to that at optimal focus
descrip	varchar(68)	User comment

CYCCSDR: FOS Correction Factors for Changes in Detector Sensitivity

The CYCCSDR relation contains correction factors for changes in detector sensitivity as a function of wavelength and time.

Records of sensitivity changes are organized and selected on the basis of detector and disperser.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	char(5)	Detector ID: AMBER, BLUE
fgwa_id	char(3)	FGWA Disperser: CAM, H13, H19, H27, H40, H57, H78, L15, L65, PRI
mjd	float	Modified Julian Date
wavelength	float	Wavelength (Angstroms)
correction	float	Sensitivity Correction Factor
descrip	varchar(68)	User comment

3.4.5 HRS Reference Files and Tables

CZDIOR: HRS Diode Response Reference Files

For the HRS, there is only one RSDP table that contains the names of reference files: CCAD_HRS_REF. Each row of that table contains a “file type” which tells which kind of reference file the row describes. For ease of tracking, we have broken out the HRS reference files into separate calibration parameters, one per RSDP file-type. The HRS Reference tables described below contain data destined for the RSDP table.

The HRS diode response reference files contain the diode responses used to correct the diode to diode non-uniformities by RSDP. Each file contains a single group of 512 responses corresponding to the 512 diodes.

The flags and indicators used to select the DIO reference files are: DETECTOR. The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Digcon detector number: 1 or 2
header_file	char(18)	Name of diode response header file
data_file	char(18)	Name of diode response data file
descrip	varchar(68)	User comment

CZPHCR: HRS Photocathode Response Reference Files

The HRS photocathode response files contain the photocathode responses used by RSDP to correct for photocathode granularity. Each file contains a single two dimensional array of responses for photocathode positions specified by keywords LINEBEG, LINEOFF, SAMPBEG, SAMPOFF. Bi-linear interpolation is used in this rectangular net of responses to compute the response for each data point in the science data at arbitrary line and sample positions.

The flags and indicators used to select the PHC reference files are: GRATING.

The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	smallint	Digcon detector number: 1 or 2
<code>grating</code>	char(9)	Grating/echelle mode
<code>header_file</code>	char(18)	Name of photocathode response header file
<code>data_file</code>	char(18)	Name of photocathode response data file
<code>descrip</code>	varchar(68)	User comment

CZVIGR: HRS Vignetting Reference Files

The HRS vignetting reference files contain data for removal of the vignetting and wavelength photocathode variations in RSDP. Each file contains multiple groups for different carousel positions parameterized by keywords CARBEG (beginning carousel position) and CARPOFF (increment in carousel positions between groups). Data in each group contain a two-dimensional array of data corresponding to photocathode line and sample positions. The line and sample positions of each group are specified by a group parameters containing the beginning line and sample position of the group and increments in the line and sample position.

The flags and indicators used to select the VIG reference files are: GRATING.

The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Digcon detector number: 1 or 2
grating	char(9)	Grating/echelle mode
header_file	char(18)	Name of vignetting header file
data_file	char(18)	Name of vignetting data file
descrip	varchar(68)	User comment

CZABSR: HRS Absolute Sensitivity Reference Files

The HRS absolute sensitivity reference file contains the sensitivity curve used in RSDP to convert corrected count rates to absolute flux units. Each file contains two groups of data corresponding to the large and small HRS science apertures. Each group contains sensitivity values for wavelengths stored in the HRS wavelength net reference files (CZNETR).

The flags and indicators used to select the ABS reference files are: GRATING.

The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	smallint	Digcon detector number: 1 or 2
<code>grating</code>	char(9)	Grating/echelle mode
<code>header_file</code>	char(18)	Name of absolute sensitivity header file
<code>data_file</code>	char(18)	Name of absolute sensitivity data file
<code>descrip</code>	varchar(68)	User comment

CZNETR: HRS Wavelength Net Reference Files

The HRS Wavelength Net Reference File is used in RSDP (with the HRS absolute sensitivity reference file, CZABSR) to convert corrected count rates to absolute flux units. Each file contains two groups of wavelengths (one for each science aperture) corresponding to the two groups in CZABSR.

The flags and indicators used to select the NET reference files are: GRATING.

The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>detector</code>	smallint	Digcon detector number: 1 or 2
<code>grating</code>	char(9)	Grating/echelle mode
<code>header_file</code>	char(18)	Name of wavelength net header file
<code>data_file</code>	char(18)	Name of wavelength net data file
<code>descrip</code>	varchar(68)	User comment

CZQINR: HRS Data Quality Reference Files

The HRS data quality reference files contain a single group of data of length 512 giving the quality of each diode. These files are used by RSDP to construct a data quality mask for the science data.

The flags and indicators used to select the QIN reference files are: DETECTOR.

The data in this table is destined for RSDP table CCAD_HRS_REF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Digcon detector number: 1 or 2
header_file	char(18)	Name of data quality header file
data_file	char(18)	Name of data quality data file
descrip	varchar(68)	User comment

CZCCR1R: HRS Line Mapping Parameters

This table gives the coefficients used by RSDP to compute the photocathode line position as a function of y-deflection. The y-deflection in the table is meaningless and is present only for conformity with the Sample mapping function. Error estimates in the table are for reference only and are not used by RSDP.

The correct table entry is selected by DETECTOR.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Detector number, 1-2
ydef	int	Y-deflection
l0	float	Zeroth order coefficient of the line mapping function
error_l0	float	Error associated with l0
a	float	First order coefficient of the line mapping function (dy)
error_a	float	Error associated with a
descrip	varchar(68)	User comment

CZCCR2R: HRS Sample Mapping Parameters

This table gives the coefficients used by RSDP to compute the photocathode sample position as a function of x-deflection and diode number. If no entries are present for a specified observation y-deflection, linear interpolation between y-deflections in the table is used. Error estimates in the table are for reference only and are not used by RSDP. The correct table entry is selected by DETECTOR.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	Detector number, 1-2
ydef	int	Y-deflection
s0	float	Zeroth order coefficient of the sample mapping function
error_s0	float	Error associated with s0
b	float	First order coefficient of the sample mapping function (dx)
error_b	float	Error associated with b
c	float	Second order coefficient of the sample mapping function (dx)
error_c	float	Error associated with c
e	float	First order coefficient of the sample mapping function (x)
error_e	float	Error associated with e
descrip	varchar(68)	User comment

CZCCR3R: HRS Detector Parameters

This table gives detector dependent parameters used by RSDP. The correct table entry is selected by DETECTOR.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	smallint	HRS digicon detector number, 1-2
dxnull	int	Position of null deflection in the x-direction
dynull	int	Position of null deflection in the y-direction
s0	smallint	Sample position at the center of the photocathode
c	float	Conversion factor from sample units to millimeters
nxscale	int	Scale factor for the x null-deflection component of the deflection calibration correction ZXDCAL
pxscale	int	Scale factor for the x proportional (plate scale) component of the deflection calibration correction ZXDCALP
c1	smallint	Diode position offset used to compute the effective channel number for background diodes to the left of the main diode array
c2	smallint	Diode position offset used to compute the effective channel number for background diodes to the right of the main diode array

Table CZCCR3R continues on next page.

Continuation of table CZCCR3R.

Field Name	Data Type	Description
sky_mnfwidth	smallint	Width of the mean filter used in smoothing background data obtained as sky from another aperture (diode number)
sky_mdfwidth	smallint	Width of the median filter used in smoothing background data obtained as sky from another aperture (diode number)
int_mnfwidth	smallint	Width of the mean filter used in smoothing background data obtained as interorder data (diode number)
int_mdfwidth	smallint	Width of the median filter used in smoothing background data obtained as interorder data (diode number)
ytol1	float	Y-deflection tolerance used to determine the bins associated with a gross spectrum
ytol2	float	Y-deflection tolerance used to associate a gross spectrum with an interorder spectrum
ytol3	float	Y-deflection tolerance used to associate a gross spectrum with the specified background diodes of an interorder spectrum
min_dio	float	Minimum diode response to be used in the DIO correction
min_phc	float	Minimum photocathode response to be used in the PHC correction
min_ech	float	Minimum normalized grating efficiency to be used in the ECH correction
min_abs	float	Minimum wavelength sensitivity to be used in the ABS correction
delta_t	float	Doppler update time interval in units of 125 milli-seconds
period	float	Orbital period in minutes
ap_ratio	float	Ratio of LSA size to SSA size
sky_order	smallint	Order for polynomial smoothing of background data obtained as sky obtained from another aperture
int_order	smallint	order for polynomial smoothing of background data obtained as interorder data
descrip	varchar(68)	User comment

CZCCR4R: HRS Wavelength Ranges

The data in this table is used by RSDP to specify wavelength ranges for each HRS grating mode. The appropriate entry is selected by GRATING/ECHELLE MODE.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode associated with the wavelength ranges
lower	float	Lower bound of a range of wavelengths
upper	float	Upper bound of a range of wavelengths
descrip	varchar(68)	User comment

CZCCR5R: HRS Spectral Order Constants

The data in this table is used by RSDP to determine the spectral order of an observation in the echelle mode. The order is determined from the carousel position and y-deflection using coefficients in the table. The correct table entry is selected by GRATING/ECHELLE MODE.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
cap_a	float	Constant A used to compute the spectral order
lit_a	float	Constant a used to compute the spectral order
cap_b	float	Constant B used to compute the spectral order
lit_b	float	Constant b used to compute the spectral order
cap_c	float	Constant C used to compute the spectral order
lit_d	float	Constant d used to compute the spectral order
descrip	varchar(68)	User comment

CZCCR6R: HRS Dispersion Constants

This table is used in RSDP to generate a thermally corrected wavelength for each data point in the spectrum. The correct table entry is selected by GRATING/ECHELLE MODE. If no carrousel position corresponding to the observation's carrousel position is present, linear interpolation between carrousel positions in the table is used. a0 through a6 give the dispersion coefficients giving photocathode sample position as a function of spectral order and wavelength. tcal is used (in combination with table CZCCR7R (HRS thermal constants) to correct the wavelengths for thermal motion.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
carpos	int	Carrousel position
zriuta	float	RIU A temperature, deg. C.
zriutb	float	RIU B temperature, deg. C.
zdett1	float	Detector 1 temperature, deg. C.
zdett2	float	Detector 2 temperature, deg. C.
zdebtf	float	DEB front post AMPS temperature, deg. C.

Table CZCCR6R is continued on the next page.

Continuation of table CZCCR6R.

Field Name	Data Type	Description
zdebtr	float	DEB rear post AMPS temperature, deg. C.
zpabt1	float	Detector 1 preamp assembly box temperature, deg. C.
zpabt2	float	Detector 1 preamp assembly box temperature, deg. C.
zmebt1	float	Main electronic box 1 temperature, deg. C.
zmebt2	float	Main electronic box 2 Temperature, deg. C.
zfiat	float	Fixture interface A temperature, deg. C.
zfibt	float	Fixture interface B temperature, deg. C.
zfict	float	Fixture interface C temperature, deg. C.
zcst	float	Carrousel stator temperature, deg. C.
zsct1	float	Detector 1 spectral calibrartion lamp temperature, deg. C.
zsct2	float	Detector 2 spectral calibrartion lamp temperature, deg. C.
zhvpst1	float	Detector 1 HVPS temperature, deg. C.
zhvpst2	float	Detector 2 HVPS temperature, deg. C.
zdt11	float	Detector 1 detector shield temperature, deg. C.
zdt12	float	Detector 2 detector shield temperature, deg. C.
zdrt	float	Digicon radiator temperature, deg. C.
zobbt	float	Optical bench bulkhead temperature, deg. C.
a0	float	Dispersion constant
a1	float	Dispersion constant
a2	float	Dispersion constant
a3	float	Dispersion constant
a4	float	Dispersion constant
a5	float	Dispersion constant
a6	float	Dispersion constant
a7	float	Dispersion constant
descrip	varchar(68)	User comment

CZCCR7R: HRS Thermal Constants

The data in this table is used by RSDP in conjunction with **ZCCR5R** (HRS dispersion coefficients) to correction wavelengths for thermal motion. The table specifies which thermistor was used (**tobs**) for measurement of **tcal** in table **ZCCR5R** and the thermal motion per degree in photo-cathode sample units. The correct table entry is selected on the basis of GRATING/ECHELLE MODE.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
tobs	char(8)	Observation temperature name to be used for thermal correction: ZRIUTA, ZRIUTB, etc.
tc	float	Temperature correction scaling factor (motion per degree, in sampling units)
tobs2	char(8)	Second observation temperature name to be used for thermal correction
tc2	float	Second temperature scaling factor
jd0	float	Zero point time for time motion correction
jd1	float	Max. time for time motion correction
dsdt	float	Scale factor for time motion correction
dtobs	char(8)	Obs. temp. name used for thermal motion correction
dtc	float	Scale factor for linear thermal motion correction
descrip	varchar(68)	User comment

CZCCR8R: HRS Incidence Angle Constants

The data in this table is used by RSDP to correct the wavelength scale for the offset for data taken in the large science aperture. Coefficients for computing the offset are selected by GRATING, CARROUSEL POSITION and SPECTRAL ORDER. If the observation's carrousel position is not present in the table then linear interpolation between carrousel positions is used.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aperture	char(3)	Aperture (SC1, SC2, or LSA)
grating	char(9)	Grating/echelle mode
carpos	int	Carrousel position
sporder	smallint	Spectral order associated with constants a and b
a	float	Constant a
b	float	Constant b
descrip	varchar(68)	User comment

CZCCR9R: HRS Echelle Ripple Interpolation Constants

This table gives coefficients for correcting for the echelle ripple in RSDP. Coefficients are selected by GRATING, CARROUSEL POSITION, and SPECTRAL ORDER. Linear interpolation between carrousel positions is used if required.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
carpos	int	Carrousel position
sporder	int	Spectral order associated with constants a and b
a	float	Constant a
b	float	Constant b
descrip	varchar(68)	User comment

CZCCRAR: HRS Echelle Ripple Non-Interpolation Constants

This table gives coefficients used by RSDP for the echelle ripple correction. Unlike the coefficients in CZCCR9R, these are selected by GRATING/ECHELLE MODE only.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
f	float	Focal length
beta	float	Echelle blaze angle
delta	float	Half-angle between collimator and cross-disperser
cpnorm	int	Echelle center carrousel position
r0	int	Constant used in the computation of angle THETA
descrip	varchar(68)	User comment

CZCCRBR: HRS Scale Factors for Scattered Light Subtraction

This table contains four scale factors used in computing and then subtracting the scattered light contribution from HRS spectra.

The correct table entry is selected on the basis of GRATING/ECHELLE MODE, SPORDER, and APERTURE.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aperture	char(3)	aperture (LSA or SSA)
grating	char(9)	Grating/echelle mode
sporder	smallint	Spectral order
a_scat	float	Scattered light scale factor a
b_scat	float	Scattered light scale factor b
c_scat	float	Scattered light scale factor c
d_scat	float	Scattered light scale factor d
descrip	varchar(68)	User comment

CZCCRCR: HRS Global Wavelength Coefficients

The CZCCRCR relation contains the values for the global coefficients solution to determining the wavelength scale of an observation. There is one set of global coefficients for each grating mode. The coefficients are used in a function of carrousel position which calculates the dispersion coefficients of the wavelength solution for that carrousel position. Also included are the zero-point temperatures of all the thermal monitors for the GHRS on which the global coefficients are based. These temperatures are used for later thermal motion correction to the dispersion coefficients.

Format: Records of global coefficients and temperatures are indexed by grating mode. Each record contains the necessary information to determine the dispersion coefficients used to calculate the wavelength solution for a given observation.

Selection Scheme: Records are selected base on grating mode. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating mode
mcenter	int	Central order of the grating
f00	float	Global coefficient
f01	float	Global coefficient
f02	float	Global coefficient
f10	float	Global coefficient
f11	float	Global coefficient
f12	float	Global coefficient
f20	float	Global coefficient
f21	float	Global coefficient

Table CZCCRCR is continued on the next page.

Continuation of table CZCCRCR.

Field Name	Data Type	Description
f22	float	Global coefficient
f30	float	Global coefficient
f31	float	Global coefficient
f32	float	Global coefficient
f40	float	Global coefficient
f41	float	Global coefficient
f42	float	Global coefficient
f50	float	Global coefficient
f51	float	Global coefficient
f52	float	Global coefficient
zriuta	float	RIU a temperature
zriutb	float	RIU b temperature
zdett1	float	Detector 1 temperature
zdett2	float	Detector 2 temperature
zdebtf	float	DEB front post amps temperature
zdebtr	float	DEB rear post amps temperature
zpabt1	float	Detector 1 preamp assembly box temperature
zpabt2	float	Detector 2 preamp assembly box temperature
zmebt1	float	Main electronic box 1 temperature
zmebt2	float	Main electronic box 2 temperature
zfiat	float	Fixture interface a temperature
zfibt	float	Fixture interface b temperature
zfict	float	Fixture interface c temperature
zcst	float	Carrousel stator temperature
zsct1	float	Detector 1 spectral cal-lamp temperature
zsct2	float	Detector 2 spectral cal-lamp temperature
zhvpst1	float	Detector 1 hvps temperature
zhvpst2	float	Detector 2 hvps temperature
zdt11	float	Detector 1 detector shield temperature
zdt12	float	Detector 2 detector shield temperature
zdrt	float	Digicon radiator temperature
zobbt	float	Optical bench bulkhead temperature
descrip	varchar(68)	User comment

CZCCRDR: HRS Photocathode Blemish Location table

CZCCRDR contains the locations of photocathode blemishes. The table is indexed by detector, line, and sample position. Each row defines the location of one blemish. Blemishes are marked by the rectangle defined by a lower and upper line coordinate and smaller to larger sample coordinate. Blemishes may overlap. The data quality flag that should be assigned to the calibrated spectra by calhrs is found in the column EPSILON. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
detector	int	The detector number.
line1	float	Starting lower line position of the blemish.
line2	float	Ending upper line position of the blemish.
sample1	float	Starting lower sample position of the blemish.
sample2	float	Ending upper sample position of the blemish.
epsilon	int	Data quality flag associated with the blemish.
depth	float	Maximum depth of blemish.
descrip	varchar(68)	User comment

CZPTNELINEC : HRS Pt-Ne Lamp Line list

This table contains the laboratory wavelengths for the spectral lines of a platinum hollow cathode lamp containing neon carrier gas as published in "Wavelengths and intensities of a platinum/neon hollow cathode lamp in the region 1100-4000 Å" by Reader, J., Acquista, N., Sansonetti, C.J., and Sansonetti, J. Astrophysical Journal Supplement Series, vol. 72, April 1990, p. 831-866. Please refer to this publication for a detailed explanation of the 'flag' and 'source' table entries.

We have modified this list to have all wavelengths above 2000 Angstroms converted to vacuum wavelengths using the following algorithm:

```
if (lambda > 2000.0)
    lambda * (1.0002735182+131.4182/lambda**2+2.76249e8 / lambda**4)
```

where lambda is the wavelength of the spectral line.

The table also differs from the published line list in that eight (8) wavelengths which had two entries for the same wavelength differing only by the Class field. In these cases the second line was deleted.

There are 2 Platinum-Neon (Pt-Ne) spectral calibration lamps in the Goddard High Resolution Spectrograph (GHRS) which are used to provide a wavelength standard for GHRS observations. This table is used by the 'wavecal' task to produce calibration reference tables containing dispersion coefficients for the GHRS as well as for the post-pipeline improvement of wavelengths by observers. The data in this table is destined for RSDP table CALTABLE.

Table CZPTNELINEC is continued on the next page.

Continuation of table CZPTNELINEC .

Field Name	Data Type	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
intensity	int	Relative line intensity
flag	char(1)	Data quality flag (C,D,H,L,P,S,U,W)
wavelength	float	Wavelength (Angstroms)
wnumber	float	Wavenumber (1/cm)
atom	char(10)	Atomic species
energy_level	char(15)	energy level designation for classified lines
reference	char(4)	Literature reference (A,B,C,D,E,F,G,H,I,J)
descrip	varchar(68)	User comment

CZSCOFFC : HRS Coefficients for Offset between small science aperture (SSA) and spectral calibration lamp aperture (SC1 and SC2)

The offset between spectra taken in the SSA and the two spectral cal apertures was measured before launch. The offsets in sample units (photocathode x-direction) between the set of spectra were fit as follows:

$$\text{DELTAS} = \text{cs0} + \text{cs1*C} * \text{cs2*S} + \text{cs3*C*S} + \text{cs4*C*C} + \text{cs5*M}$$

where:

DELTAS is the offset in sample units
C is the carrousel position
S is the photocathode sample position
M is the spectral order

The offsets in wavelength units between the set of spectra were fit as follows:

$$\text{DELTAMW} = \text{cw0} + \text{cw1*C} * \text{cw2*S} + \text{cw3*C*S} + \text{cw4*C*C} + \text{cw5*M}$$

where:

DELTAMW is the offset in wavelength (Angstroms) multiplied by spectral order.

C,S, and M are as defined above./pre

The set of 'cs' coefficients are used to convert dispersion coefficients calculated with a spectral cal lamp observation to the SSA reference aperture. The set of 'cw' coefficients are used to derive the incident angle corrections between SC1 and SC2 and the SSA.

The data in this table is destined for RSDP table CALTABLE.

Table CZSCOFFC is continued on the next page.

Continuation of table CZSCOFFC .

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
grating	char(9)	Grating/echelle mode
ref_aperture	char(3)	Reference aperture
aperture	char(3)	Aperture
min_carpos	int	Minimum carrousel position used in fit
max_carpos	int	Maximum carrousel position used in fit
min_sporder	int	Minimum spectral order used in fit
max_sporder	int	Maximum spectral order used in fit
cs0	float	coefficient for sample offset fit
cs1	float	coefficient for sample offset fit
cs2	float	coefficient for sample offset fit
cs3	float	coefficient for sample offset fit
cs4	float	coefficient for sample offset fit
cs5	float	coefficient for sample offset fit
rms_s	float	rms for sample offset fit
cw0	float	coefficient for wavelength offset fit
cw1	float	coefficient for wavelength offset fit
cw2	float	coefficient for wavelength offset fit
cw3	float	coefficient for wavelength offset fit
cw4	float	coefficient for wavelength offset fit
cw5	float	coefficient for wavelength offset fit
rms_w	float	rms for wavelength offset fit
nfit	float	fit parameter
descrip	varchar(68)	User comment

3.4.6 Miscellaneous Data: Multiple Instruments, Aperture File

COCCG2R: Paired Pulse Parameters (HRS and FOS)

This table contains the paired pulse parameter(s) (dead time(s)) used to correct for non-linearity at high count rates for the FOS and the HRS.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
instrument	char(3)	Science instrument: HSP, FOS, HRS
	smallint	Detector number (1 - 5)
	float	Natural response time of the electronics
	float	Allowable error between registered and computed count rates
	float	Count rates below this threshold are not corrected
	float	Zero-th order constant used in the computation of tau2
	float	First order constant used in the computation of tau2
	float	Threshold used to compute the piecewise linear tau2
	float	5% correction uncertainty threshold
	float	20% correction uncertainty threshold
	float	50% correction uncertainty threshold
	smallint	Maximum number of iterations permitted in the solution of the non-linear equation relating registered to true counts
descrip	varchar(68)	User comment

COSIAF: Science Instrument Aperture File Parameter Table

This table contains information extracted from the Project Data Base (PDB) Science Instrument Aperture File (SIAF). The purpose of the table is to maintain a history of the various versions of the SIAF, and to merge the latest version and parameters generated by CDBS to create a new version in the PDB. The table has a unique index on the 'siap_id' and 'date' fields so that no two sets of information for a single aperture can be appended from the same version of the SIAF.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pdbdate	char(17)	PDB date
siap_id	char(10)	Science Instrument aperture ID
sics_v2	float	SICS V2 center
sics_v3	float	SICS V3 center
shape	char(4)	Aperture shape
maj_axis	float	Major axis dimension
macro_flg	char(1)	SI macro aperture flag
boa_flg	char(1)	Bright object alert flag
boa_thresh	float	Bright object alert threshold
macro_id	char(4)	SI macro aperture ID
min_axis	float	Minor axis dimension
plate_scale	float	Arcsecond per pixel
area	float	Area of SI aperture
rot_angle	float	Aperture rotation angle
sias_flg	char(1)	SIAS coordinate system flag
parity	int	Image parity
n_poly	int	Polynomial degree

Table COSIAF is continued on the next page.

Continuation of table COSIAF.

Field Name	Data Type	Description
sias_x	float	SIAS X center
sias_y	float	SIAS Y center
sics_x	float	SICS X center
sics_y	float	SICS Y center
vrt1_x	float	SICS vertex 1_X
vrt1_y	float	SICS vertex 1_Y
vrt2_x	float	SICS vertex 2_X
vrt2_y	float	SICS vertex 2_Y
vrt3_x	float	SICS vertex 3_X
vrt3_y	float	SICS vertex 3_Y
vrt4_x	float	SICS vertex 4_X
vrt4_y	float	SICS vertex 4_Y
in_rot_ang	float	Inner radius orientation angle
in_ang_ext	float	Angular extent of inner radius
out_rot_ang	float	Outer radius orientation angle
out_ang_ext	float	Angular extent of outer radius
a00	float	SIAS to SICS X transformation coefficient
b00	float	SIAS to SICS Y transformation coefficient
ac00	float	SICS to SIAS X transformation coefficient
bc00	float	SICS to SIAS Y transformation coefficient
a10	float	SIAS to SICS X transformation coefficient
b10	float	SIAS to SICS Y transformation coefficient
ac10	float	SICS to SIAS X transformation coefficient
bc10	float	SICS to SIAS Y transformation coefficient
a11	float	SIAS to SICS X transformation coefficient
b11	float	SIAS to SICS Y transformation coefficient

Table COSIAF is continued on the next page.

Continuation of table COSIAF.

Field Name	Data Type	Description
ac11	float	SICS to SIAS X transformation coefficient
bc11	float	SICS to SIAS Y transformation coefficient
a20	float	SIAS to SICS X transformation coefficient
b20	float	SIAS to SICS Y transformation coefficient
ac20	float	SICS to SIAS X transformation coefficient
bc20	float	SICS to SIAS Y transformation coefficient
a21	float	SIAS to SICS X transformation coefficient
b21	float	SIAS to SICS Y transformation coefficient
ac21	float	SICS to SIAS X transformation coefficient
bc21	float	SICS to SIAS Y transformation coefficient
a22	float	SIAS to SICS X transformation coefficient
b22	float	SIAS to SICS Y transformation coefficient
ac22	float	SICS to SIAS X transformation coefficient
bc22	float	SICS to SIAS Y transformation coefficient
a30	float	SIAS to SICS X transformation coefficient
b30	float	SIAS to SICS Y transformation coefficient
ac30	float	SICS to SIAS X transformation coefficient
bc30	float	SICS to SIAS Y transformation coefficient
a31	float	SIAS to SICS X transformation coefficient
b31	float	SIAS to SICS Y transformation coefficient
ac31	float	SICS to SIAS X transformation coefficient
bc31	float	SICS to SIAS Y transformation coefficient
a32	float	SIAS to SICS X transformation coefficient
b32	float	SIAS to SICS Y transformation coefficient
ac32	float	SICS to SIAS X transformation coefficient
bc32	float	SICS to SIAS Y transformation coefficient

Table COSIAF is continued on the next page.

Continuation of table COSIAF.

Field Name	Data Type	Description
a33	float	SIAS to SICS X transformation coefficient
b33	float	SIAS to SICS Y transformation coefficient
ac33	float	SICS to SIAS X transformation coefficient
bc33	float	SICS to SIAS Y transformation coefficient
a40	float	SIAS to SICS X transformation coefficient
b40	float	SIAS to SICS Y transformation coefficient
ac40	float	SICS to SIAS X transformation coefficient
bc40	float	SICS to SIAS Y transformation coefficient
a41	float	SIAS to SICS X transformation coefficient
b41	float	SIAS to SICS Y transformation coefficient
ac41	float	SICS to SIAS X transformation coefficient
bc41	float	SICS to SIAS Y transformation coefficient
a42	float	SIAS to SICS X transformation coefficient
b42	float	SIAS to SICS Y transformation coefficient
ac42	float	SICS to SIAS X transformation coefficient
bc42	float	SICS to SIAS Y transformation coefficient
a43	float	SIAS to SICS X transformation coefficient
b43	float	SIAS to SICS Y transformation coefficient
ac43	float	SICS to SIAS X transformation coefficient
bc43	float	SICS to SIAS Y transformation coefficient
a44	float	SIAS to SICS X transformation coefficient
b44	float	SIAS to SICS Y transformation coefficient
ac44	float	SICS to SIAS X transformation coefficient
bc44	float	SICS to SIAS Y transformation coefficient
a50	float	SIAS to SICS X transformation coefficient
b50	float	SIAS to SICS Y transformation coefficient

Table COSIAF is continued on the next page.

Continuation of table COSIAF.

Field Name	Data Type	Description
ac50	float	SICS to SIAS X transformation coefficient
bc50	float	SICS to SIAS Y transformation coefficient
a51	float	SIAS to SICS X transformation coefficient
b51	float	SIAS to SICS Y transformation coefficient
ac51	float	SICS to SIAS X transformation coefficient
bc51	float	SICS to SIAS Y transformation coefficient
a52	float	SIAS to SICS X transformation coefficient
b52	float	SIAS to SICS Y transformation coefficient
ac52	float	SICS to SIAS X transformation coefficient
bc52	float	SICS to SIAS Y transformation coefficient
a53	float	SIAS to SICS X transformation coefficient
b53	float	SIAS to SICS Y transformation coefficient
ac53	float	SICS to SIAS X transformation coefficient
bc53	float	SICS to SIAS Y transformation coefficient
a54	float	SIAS to SICS X transformation coefficient
b54	float	SIAS to SICS Y transformation coefficient
ac54	float	SICS to SIAS X transformation coefficient
bc54	float	SICS to SIAS Y transformation coefficient
a55	float	SIAS to SICS X transformation coefficient
b55	float	SIAS to SICS Y transformation coefficient
ac55	float	SICS to SIAS X transformation coefficient
bc55	float	SICS to SIAS Y transformation coefficient
disp_v2_ref	float	V2 coordinate of aperture reference point
disp_v3_ref	float	V3 coordinate of aperture reference point
disp_scale_x	float	First coordinate axis increment
disp_scale_y	float	Second coordinate axis increment
disp_beta_1	float	Angle of increasing first coordinate axis
disp_beta_2	float	Angle of increasing second coordinate axis
disp_x_ref	float	X reference
disp_y_ref	float	Y reference
descrip	varchar(68)	User comment

3.4.7 FGS Reference data

CFFGSTOST: Matrix for Transformation from FGS Frame to ST Vehicle Frame

This table contains information extracted from the Project Data Base (PDB).

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>pdbdate</code>	char(17)	PDB date
<code>tvs1</code>	float	Transformation coefficient 1(1,1)
<code>tvs2</code>	float	Transformation coefficient 1(2,1)
<code>tvs3</code>	float	Transformation coefficient 1(3,1)
<code>tvs4</code>	float	Transformation coefficient 1(1,2)
<code>tvs5</code>	float	Transformation coefficient 1(2,2)
<code>tvs6</code>	float	Transformation coefficient 1(3,2)
<code>tvs7</code>	float	Transformation coefficient 1(1,3)

Table CFFGSTOST is continued on the next page.

Continuation of table CFFGST0ST.

Field Name	Data Type	Description
tv\$8	float	Transformation coefficient 1(2,3)
tv\$9	float	Transformation coefficient 1(3,3)
tv\$10	float	Transformation coefficient 2(1,1)
tv\$11	float	Transformation coefficient 2(2,1)
tv\$12	float	Transformation coefficient 2(3,1)
tv\$13	float	Transformation coefficient 2(1,2)
tv\$14	float	Transformation coefficient 2(2,2)
tv\$15	float	Transformation coefficient 2(3,2)
tv\$16	float	Transformation coefficient 2(1,3)
tv\$17	float	Transformation coefficient 2(2,3)
tv\$18	float	Transformation coefficient 2(3,3)
tv\$19	float	Transformation coefficient 3(1,1)
tv\$20	float	Transformation coefficient 3(2,1)
tv\$21	float	Transformation coefficient 3(3,1)
tv\$22	float	Transformation coefficient 3(1,2)
tv\$23	float	Transformation coefficient 3(2,2)
tv\$24	float	Transformation coefficient 3(3,2)
tv\$25	float	Transformation coefficient 3(1,3)
tv\$26	float	Transformation coefficient 3(2,3)
tv\$27	float	Transformation coefficient 3(3,3)
descrip	varchar(68)	User comment

CFLEVERARM: FGS Star Selector Lever Arm Lengths

This table contains copies of the A and B lever arm length parameters for each FGS which are officially maintained in Project Data Base (PDB) file SCH as the ALEVER and BLEVER parameters. The three values of each parameter will be copied into this table whenever a new version of the PDB is released.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>pdbdate</code>	char(17)	PDB date
<code>alever1</code>	float	Lever arm A length for FGS 1
<code>alever2</code>	float	Lever arm A length for FGS 2
<code>alever3</code>	float	Lever arm A length for FGS 3
<code>blever1</code>	float	Lever arm B length for FGS 1
<code>blever2</code>	float	Lever arm B length for FGS 2
<code>blever3</code>	float	Lever arm B length for FGS 3
<code>descrip</code>	varchar(68)	User comment

CFMAGVSPMT: FGS Magnitude VS PMT Counts

This table contains information extracted from the Project Data Base (PDB).

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pdbdate	char(17)	PDB date
fgs	int	FGS number
fidfgs	float	FGS PMT count value
fidmag	float	FGS magnitude value
descrip	varchar(68)	User comment

CFOPTCOF: FGS Optical Distortion Coefficients in Image Space

This table contains information extracted from the Project Data Base (PDB).

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pdbdate	char(17)	PDB date
optcof1	float	Optical distortion coefficient 1(1,1)
optcof2	float	Optical distortion coefficient 1(2,1)
optcof3	float	Optical distortion coefficient 1(3,1)
optcof4	float	Optical distortion coefficient 1(4,1)
optcof5	float	Optical distortion coefficient 1(5,1)
optcof6	float	Optical distortion coefficient 1(6,1)

Table CFOPTCOF is continued on the next page.

Continuation of table CFOPTCOF.

Field Name	Data Type	Description
optcof7	float	Optical distortion coefficient 1(7,1)
optcof8	float	Optical distortion coefficient 1(8,1)
optcof9	float	Optical distortion coefficient 1(9,1)
optcof10	float	Optical distortion coefficient 1(10,1)
optcof11	float	Optical distortion coefficient 1(11,1)
optcof12	float	Optical distortion coefficient 1(1,2)
optcof13	float	Optical distortion coefficient 1(2,2)
optcof14	float	Optical distortion coefficient 1(3,2)
optcof15	float	Optical distortion coefficient 1(4,2)
optcof16	float	Optical distortion coefficient 1(5,2)
optcof17	float	Optical distortion coefficient 1(6,2)
optcof18	float	Optical distortion coefficient 1(7,2)
optcof19	float	Optical distortion coefficient 1(8,2)
optcof20	float	Optical distortion coefficient 1(9,2)
optcof21	float	Optical distortion coefficient 1(10,2)
optcof22	float	Optical distortion coefficient 1(11,2)
optcof23	float	Optical distortion coefficient 2(1,1)

Table CFOPTCOF is continued on the next page.

Continuation of table CFOPTCOF.

Field Name	Data Type	Description
optcof24	float	Optical distortion coefficient 2(2,1)
optcof25	float	Optical distortion coefficient 2(3,1)
optcof26	float	Optical distortion coefficient 2(4,1)
optcof27	float	Optical distortion coefficient 2(5,1)
optcof28	float	Optical distortion coefficient 2(6,1)
optcof29	float	Optical distortion coefficient 2(7,1)
optcof30	float	Optical distortion coefficient 2(8,1)
optcof31	float	Optical distortion coefficient 2(9,1)
optcof32	float	Optical distortion coefficient 2(10,1)
optcof33	float	Optical distortion coefficient 2(11,1)
optcof34	float	Optical distortion coefficient 2(1,2)
optcof35	float	Optical distortion coefficient 2(2,2)
optcof36	float	Optical distortion coefficient 2(3,2)
optcof37	float	Optical distortion coefficient 2(4,2)
optcof38	float	Optical distortion coefficient 2(5,2)
optcof39	float	Optical distortion coefficient 2(6,2)
optcof40	float	Optical distortion coefficient 2(7,2)

Table CFOPTCOF is continued on the next page.

Continuation of table **CFOPTC0F**.

Field Name	Data Type	Description
optcof41	float	Optical distortion coefficient 2(8,2)
optcof42	float	Optical distortion coefficient 2(9,2)
optcof43	float	Optical distortion coefficient 2(10,2)
optcof44	float	Optical distortion coefficient 2(11,2)
optcof45	float	Optical distortion coefficient 3(1,1)
optcof46	float	Optical distortion coefficient 3(2,1)
optcof47	float	Optical distortion coefficient 3(3,1)
optcof48	float	Optical distortion coefficient 3(4,1)
optcof49	float	Optical distortion coefficient 3(5,1)
optcof50	float	Optical distortion coefficient 3(6,1)
optcof51	float	Optical distortion coefficient 3(7,1)
optcof52	float	Optical distortion coefficient 3(8,1)
optcof53	float	Optical distortion coefficient 3(9,1)
optcof54	float	Optical distortion coefficient 3(10,1)
optcof55	float	Optical distortion coefficient 3(11,1)
optcof56	float	Optical distortion coefficient 3(1,2)
optcof57	float	Optical distortion coefficient 3(2,2)
optcof58	float	Optical distortion coefficient 3(3,2)
optcof59	float	Optical distortion coefficient 3(4,2)
optcof60	float	Optical distortion coefficient 3(5,2)
optcof61	float	Optical distortion coefficient 3(6,2)
optcof62	float	Optical distortion coefficient 3(7,2)
optcof63	float	Optical distortion coefficient 3(8,2)
optcof64	float	Optical distortion coefficient 3(9,2)
optcof65	float	Optical distortion coefficient 3(10,2)
optcof66	float	Optical distortion coefficient 3(11,2)
descrip	varchar(68)	User comment

CFOPTMAG: FGS - Optical Magnification of HST

This table contains copies of the optical magnification parameters for each FGS which are officially maintained in Project Data Base (PDB) file SCIF as the GM parameter. The three GM values will be copied into this table whenever a new version of the PDB is released.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pdbdate	char(17)	PDB date
gm1	float	Optical magnification for FGS 1
gm2	float	Optical magnification for FGS 2
gm3	float	Optical magnification for FGS 3
descrip	varchar(68)	User comment

CFPHIT: FGS Particle Hit Statistics and Average PMT Count Rates

This table contains FGS observation information from the FITS header as well as parameters calculated from the observation data, for one FGS. It contains the observation ID number, predicated and actual start time, astrometry mode, FGS ID, etc. It also contains the user entered particle removal criteria: the maximum number of iteration desired (field 'cycles' in table), and primary and subsequent thresholds of rejecting particle hit data points. The calculated calibration parameters of this observation are: average PMT count rates and their standard deviations of all 4 PMTs, particle hit count rates and their standard deviations, total number of particle hits and particle hit frequencies. Averages of readings of the two star selector encoders are included here for future reference.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
obsid	char(9)	Program ID, Observation set ID, Observation ID
fgsno	int	FGS identification number, 1, 2, or 3
pred_start	char(14)	Predicated observation start time
actual_start	char(14)	Actual observation start time
astmode	char(8)	Astrometry mode of this observation as in header
pmtxa	float	Average PMT count rate of X axis PMT A
pmtya	float	Average PMT count rate of Y axis PMT B
pmtxb	float	Average PMT count rate of X axis PMT A
pmtyb	float	Average PMT count rate of Y axis PMT B

Table CFP HIT is continued on the next page.

Continuation of table CFPHIT.

Field Name	Data Type	Description
pmtxa_std	float	Standard deviation of PMT count rate of X,A
pmtya_std	float	Standard deviation of PMT count rate of Y,A
pmtxb_std	float	Standard deviation of PMT count rate of X,B
pmtyb_std	float	Standard deviation of PMT count rate of Y,B
pmtxa_hit	float	Particle hit count rate of PMT X,A
pmtya_hit	float	Particle hit count rate of PMT Y,A
pmtxb_hit	float	Particle hit count rate of PMT X,B
pmtyb_hit	float	Particle hit count rate of PMT Y,B
pmtxa_hitf	float	Particle hit frequency (hits/second) of PMT X,A
pmtxb_hitf	float	Particle hit frequency (hits/second) of PMT X,B
pmtya_hitf	float	Particle hit frequency (hits/second) of PMT Y,A
pmtyb_hitf	float	Particle hit frequency (hits/second) of PMT Y,B
pmtxa_nohit	int	Number of particle hit in PMT X,A
pmtya_nohit	int	Number of particle hit in PMT Y,A
pmtxb_nohit	int	Number of particle hit in PMT X,B
pmtyb_nohit	int	Number of particle hit in PMT Y,B
angle_a	float	Average of star selector encoder A reading
angle_b	float	Average of star selector encoder B reading
std_a	float	Standard deviation of star selector A reading
std_b	float	Standard deviation of star selector B reading
prisigma	float	Primary threshold of rejecting particle hit
subsigma	float	Subsequent threshold of rejecting particle hit
cycles	int	desired iteration in rejecting particle hit
descrip	varchar(68)	User comment

CFPMTDEADT: FGS PMT Dead Time

This table contains deadtimes of the 4 PMTs in 3 FGSs in nanosecond unit, as provided by the Perkin-Elmer.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
dt1xa	float	Dead time of the PMT A on axis X of FGS in Bay 1
dt1ya	float	Dead time of the PMT A on axis Y of FGS in Bay 1
dt1xb	float	Dead time of the PMT B on axis X of FGS in Bay 1
dt1yb	float	Dead time of the PMT B on axis Y of FGS in Bay 1
dt2xa	float	Dead time of the PMT A on axis X of FGS in Bay 2
dt2ya	float	Dead time of the PMT A on axis Y of FGS in Bay 2
dt2xb	float	Dead time of the PMT B on axis X of FGS in Bay 2
dt2yb	float	Dead time of the PMT B on axis Y of FGS in Bay 2
dt3xa	float	Dead time of the PMT A on axis X of FGS in Bay 3
dt3ya	float	Dead time of the PMT A on axis Y of FGS in Bay 3
dt3xb	float	Dead time of the PMT B on axis X of FGS in Bay 3
dt3yb	float	Dead time of the PMT B on axis Y of FGS in Bay 3
descrip	varchar(68)	User comment

CFSSOFFSETS: FGS Star Selector Offsets

This table contains information extracted from the Project Data Base (PDB).

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
pdbdate	char(17)	PDB date
ssoffa1	float	Star Selector A offset for FGS 1
ssoffa2	float	Star Selector A offset for FGS 2
ssoffa3	float	Star Selector A offset for FGS 3
ssoffb1	float	Star Selector B offset for FGS 1
ssoffb2	float	Star Selector B offset for FGS 2
ssoffb3	float	Star Selector B offset for FGS 3
descrip	varchar(68)	User comment

3.4.8 HSP Reference Tables

CVAP3L: HSP Center Coordinate of a Large Aperture

This table contains the HSP center coordinates of a large aperture obtained from a phase III location calibration.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>x0</code>	float	V2 coordinate of the aperture center
<code>y0</code>	float	V3 coordinate of the aperture center
<code>sigma_x0</code>	float	Standard error of X0
<code>sigma_y0</code>	float	Standard error of Y0
<code>descrip</code>	varchar(68)	User comment

CVAP3S: HSP Center Coordinate of a Small Aperture

This table contains the HSP center coordinates of a small aperture obtained from a phase III location calibration. It is the output of task AP3S which uses data of a grid of different pointing to determine the edge contour of the circular aperture and then uses the contour edge data to fit a circle to find the center coordinates in V2 V3 coordinate system.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
x0	float	V2 coordinate of the aperture center
y0	float	V3 coordinate of the aperture center
radius	float	Radius of the aperture
sigma_x0	float	Standard error of X0
sigma_y0	float	Standard error of Y0
sigma_radius	float	Standard error of RADIUS
corr_x0_y0	float	Correlation between X0 and Y0
corr_x0_r	float	Correlation between X0 and RADIUS
corr_y0_r	float	Correlation between Y0 and RADIUS
chi_square	float	Chi-squared
tolerance	float	Convergence of sigma squared
weight_x	float	Weight scheme of X axis
weight_y	float	Weight scheme of Y axis
npoint	float	Number of data points
descrip	varchar(68)	User comment

CVAPER1: HSP Aperture Center

This table contains the HSP aperture center from the phase I location calibration. It is the output of task APER1 which uses the data of an area scan to determine the the edge contour of the circular aperture and then uses the contour edge data to fit a circle to find the center coordinates in deflection units.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
x0	float	X coordinate of the aperture center
y0	float	Y coordinate of the aperture center
radius	float	Radius of the aperture
sigma_x0	float	Standard error of X0
sigma_y0	float	Standard error of Y0
sigma_radius	float	Standard error of RADIUS
corr_x0_y0	float	Correlation between X0 and Y0
corr_x0_r	float	Correlation between X0 and RADIUS
corr_y0_r	float	Correlation between Y0 and RADIUS
chi_square	float	Chi-squared
tolerance	float	Convergence of sigma squared
weight_x	float	Weight scheme of X axis
weight_y	float	Weight scheme of Y axis
npoint	int	Number of data points
descrip	varchar(68)	User comment

CVAPER2: HSP Plate Scales

This table contains the HSP plate scales obtained from phase II aperture location calibration. It is the output of task APER2 which uses data of area scans obtained at a grid of different pointings. The highest NPEAK points are selected from each file and a centroid position is obtained for these NPEAK points. A lower limit is then obtained by multiplying the highest count of all measurements and a user specified fraction (LOW_LIMIT). If a file's highest count level is below this lower limit, its data are rejected. The remaining centroid positions are then used to determine the plate scales, the rotation angle between V2V3 and XY deflection coordinate systems.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
a	float	Plate scale of X axis relative to V2
b	float	Plate scale of Y axis relative to V3
theta	float	Rotation of X-Y relative to V2-V3 in degrees
v2trgt	float	V2 coordinate of the target
v3trgt	float	V3 coordinate of the target
npoint	int	Number of data points used to determine plate scale
npeak	int	Number of highest point selected in each area scan
low_limit	float	Fraction of the highest count level of all measurements, points below this level will be rejected
descrip	varchar(68)	User comment

CVASEN: HSP Absolute Sensitivity of Each Observation

This table contains the HSP absolute sensitivity of each individual observation. It is the output of task ASEN which calculates the absolute efficiency of each target from observed count rate (corrected for dark signal, high voltage factor, pre-amp noise, and relative sensitivity) of a standard target and the target's flux density (integrated over the specified filter's bandpass, and weighted by the filter's transmission curve). This task also checks the mode of each observation if it has a simultaneous sky measurement. If yes, the sky (which is also corrected for dark etc.) will be subtracted from the target measurement. Otherwise, the observed count rate of the target is not changed.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>trgtname</code>	char(20)	Target name
<code>aper_name</code>	char(10)	Aperture name
<code>sensitivity</code>	float	Digital absolute sensitivity
<code>det_temp</code>	float	Detector temperature
<code>epoch</code>	float	Epoch
<code>descrip</code>	varchar(68)	User comment

CVCNTRTE: HSP Average Count Rate

This table contains the average value(s) of count rate and/or analog measurement (DN) of one set of HSP science data file(s) with the same program ID, observation set, and observation ID. This average number is calculated with particle events removed but NO other corrections made. This information is used to generate data in the HSP Calibration tables.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
ppssoo	char(7)	Program ID, Observation set ID, Observation ID
dobj	float	Mean digital count rate of the object
dsky	float	Mean digital count rate of the sky
aobj	float	Mean analog reading of the object
asky	float	Mean analog reading of the sky
dobjsd	float	Standard deviation of the digital count rate of the object
dskysd	float	Standard deviation of the digital count rate of the sky
aobjsd	float	Standard deviation of the analog reading of the object
askysd	float	Standard deviation of the analog reading of the sky
remove	int	number of points been removed
scheme	char(12)	method of particle event removal
dthresh	float	if scheme = threshold, this equals the digital threshold level; if scheme = statistical, this equals the statistical criterion.
athresh	float	if scheme = threshold, this equals the analog threshold level; if scheme = statistical, this equals the statistical criterion.
obj inttm	float	integration time of the object in seconds
sky inttm	float	integration time of the sky in seconds
epoch	float	modified Julian date
descrip	varchar(68)	User comment
<hr/>		

CVCCP0R: HSP Aperture Names and Sizes

This table contains a list of all HSP aperture designations and their aperture sizes. The information is generated by the HSP instrument team from lab data. A copy should also be in the PDB.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Name of aperture (SOGS aperture naming convention)
pointer	smallint	Not used
aper_size	float	Aperture area, in square arc-seconds
descrip	varchar(68)	User comment

CVCCP1C: HSP High-Voltage Factor VS. Temperature

This table contains the HSP high voltage factor as a function of detector, high voltage setting, data type, and a third-order polynomial function of temperature. It is intermediate data used to populate the calibration table CVCCP1R.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
voltage	int	High voltage setting (command value)
type	char(7)	Type: ANALOG, DIGITAL
a0	float	0th coefficient of temperature dependence
a1	float	1st coefficient of temperature dependence
a2	float	2nd coefficient of temperature dependence
a3	float	3rd coefficient of temperature dependence
chisq	float	Chi-squared of the polynomial fit
base_temp	float	Base temperature for the characteristic scaling polynomial (deg C.)
tempmin	float	Lower limit of temperature (deg. C.)
tempmax	float	Upper limit of temperature (deg. C.)
epochmin	float	Lower limit of epoch (modified Julian date)
epochmax	float	Upper limit of epoch (modified Julian date)
epochave	float	Average epoch (modified Julian date)
descrip	varchar(68)	User comment

CVCCP1R: HSP High-Voltage Polynomials

This table contains the HSP high voltage factor as a function of detector, high voltage setting, data type, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
type	char(7)	ANALOG, DIGITAL
voltage	int	High voltage setting (command value)
pointer	smallint	Not used
base_value	float	Base value of the characteristic scaling polynomial
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C)
base_time	float	Base time of the characteristic scaling polynomial (modified Julian date)
a00	float	0,0th coefficient of the characteristic scaling polynomial
a01	float	0,1st coefficient of the characteristic scaling polynomial

Table CVCCP1R is continued on the next page.

Continuation of table CVCCP1R.

Field Name	Data Type	Description
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP2C: HSP Gain Factor VS. Temperature

This table contains the HSP analog gain factor as a function of detector, gain setting, and a third-order polynomial function of temperature. It is intermediate data used to populate the Calibration table CVCCP2R.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
vgaind	smallint	Gain setting: 0, 2, 3, 6, 7
a0	float	0th coefficient of temperature dependence
a1	float	1st coefficient of temperature dependence
a2	float	2nd coefficient of temperature dependence
a3	float	3rd coefficient of temperature dependence
chisq	float	Chi-squared of the polynomial fit
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C.)
tempmin	float	Lower limit of temperature (deg. C.)
tempmax	float	Upper limit of temperature (deg. C.)
epochmin	float	Lower limit of epoch (modified Julian date)
epochmax	float	Upper limit of epoch (modified Julian date)
epochave	float	Average epoch (modified Julian date)
descrip	varchar(68)	User comment

CVCCP2R: HSP Gain Polynomials

This table contains the HSP analog gain factor as a function of detector, gain setting, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
vgaind	smallint	Gain setting: 0, 2, 3, 6, 7
base_value	float	Base value for the characteristic
base_temp	float	Base temperature for the characteristic (deg. C.)
base_time	float	Base time for a characteristic (modified Julian date)
a00	float	0,0th coefficient of the characteristic scaling polynomial
a01	float	0,1st coefficient of the characteristic scaling polynomial
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP3C: HSP Pre-Amp Noise VS. Temperature

This table contains the HSP pre-amplifier electronic noise as a function of detector, data type, and a third-order polynomial function of temperature. It is intermediate data used to populate the Calibration table CVCCP3R.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>det_num</code>	smallint	Detector number, 1-5
<code>type</code>	char(7)	Type: ANALOG, DIGITAL
<code>a0</code>	float	0th coefficient of temperature dependence
<code>a1</code>	float	1st coefficient of temperature dependence
<code>a2</code>	float	2nd coefficient of temperature dependence
<code>a3</code>	float	3rd coefficient of temperature dependence
<code>chisq</code>	float	Chi-squared of the polynomial fit
<code>base_temp</code>	float	Base temperature of the characteristic scaling polynomial (deg. C.)
<code>tempmin</code>	float	Lower limit of temperature (deg. C.)
<code>tempmax</code>	float	Upper limit of temperature (deg. C.)
<code>epochmin</code>	float	Lower limit of epoch (modified Julian date)
<code>epochmax</code>	float	Upper limit of epoch (modified Julian date)
<code>epochave</code>	float	Average epoch (modified Julian date)
<code>descrip</code>	varchar(68)	User comment

CVCCP3R: HSP Pre-Amp Polynomials

This table contains the HSP pre-amplifier electronic noise as a function of detector, data type, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
type	char(7)	ANALOG, DIGITAL
base_value	float	Base value of the characteristic scaling polynomial
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C)
base_time	float	Base time of the characteristic scaling polynomial (modified Julian date)

Table CVCCP3R is continued on the next page.

Continuation of table CVCCP3R.

Field Name	Data Type	Description
a00	float	0,0th coefficient of the characteristic scaling polynomial
a01	float	0,1st coefficient of the characteristic scaling polynomial
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP4C: HSP Efficiency VS. Temperature

This table contains the HSP relative sensitivity as a function of aperture, data type, and a third-order polynomial function of temperature. It is intermediate data used to populate the Calibration table CVCCP4R.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
aper_name	char(10)	Aperture name
a0	float	0th coefficient of temperature dependence
a1	float	1st coefficient of temperature dependence
a2	float	2nd coefficient of temperature dependence
a3	float	3rd coefficient of temperature dependence
chisq	float	Chi-squared of the polynomial fit
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C.)
tempmin	float	Lower limit of temperature (deg. C.)
tempmax	float	Upper limit of temperature (deg. C.)
epochmin	float	Lower limit of epoch (modified Julian date)
epochmax	float	Upper limit of epoch (modified Julian date)
epochave	float	Average epoch (modified Julian date)
descrip	varchar(68)	User comment

CVCCP4R: HSP Efficiency Polynomials

This table contains the HSP relative sensitivity as a function of aperture, data type, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Aperture name identifier
det_num	smallint	Detector number, 1-5
base_value_p	float	Point source base value of the characteristic scaling polynomial
base_value_e	float	Extended source base value of the characteristic scaling polynomial
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C)
base_time	float	Base time of the characteristic scaling polynomial (modified Julian date)
a00	float	0,0th coefficient of the characteristic scaling polynomial

Table CVCCP4R is continued on the next page.

Continuation of table CVCCP4R.

Field Name	Data Type	Description
a01	float	0,1st coefficient of the characteristic scaling polynomial
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP5C: HSP Dark Count VS. Temperature

This table contains the HSP dark signal as a function of aperture, high voltage setting, data type, and a third-order polynomial function of temperature. It is intermediate data used to populate the Calibration table CVCCP5R.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Aperture name
voltage	int	High voltage setting (command value)
type	char(7)	Type: ANALOG, DIGITAL
a0	float	0th coefficient of temperature dependence
a1	float	1st coefficient of temperature dependence
a2	float	2nd coefficient of temperature dependence
a3	float	3rd coefficient of temperature dependence
chisq	float	Chi-squared of the polynomial fit
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C.)
tempmin	float	Lower limit of temperature (deg. C.)
tempmax	float	Upper limit of temperature (deg. C.)
epochmin	float	Lower limit of epoch (modified Julian date)
epochmax	float	Upper limit of epoch (modified Julian date)
epochave	float	Average epoch (modified Julian date)
descrip	varchar(68)	User comment

CVCCP5R: HSP Dark Count Polynomials

This table contains the HSP dark signal as a function of aperture, high voltage setting, data type, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Table CVCCP5R

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Aperture name identifier
type	char(7)	ANALOG, DIGITAL
voltage	int	High voltage setting (command value)
pointer	smallint	Not used
base_value	float	Base value of the characteristic scaling polynomial
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C)
base_time	float	Base time of the characteristic scaling polynomial (modified Julian date)

Table CVCCP5R is continued on the next page.

Continuation of table CVCCP5R.

Field Name	Data Type	Description
a00	float	0,0th coefficient of the characteristic scaling polynomial
a01	float	0,1st coefficient of the characteristic scaling polynomial
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP6R: HSP Time Bias

This table contains the internal instrument delay added to integration times. The data is generated by the HSP instrument team and is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
data_fmt	char(4)	Data format
mode	char(4)	Instrument mode
time_bias	int	Internal instrument delay added to integration times (in HSP clock counts)
descrip	varchar(68)	User comment

CVCCP7C: HSP CVC Offset VS. Temperature

This table contains the HSP analog CVC offset as a function of detector, gain setting, and a third-order polynomial function of temperature. It is intermediate data used to populate the Calibration table CVCCP7R.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
vgaind	smallint	Gain setting: 0, 2, 3, 6, 7
a0	float	0th coefficient of temperature dependence
a1	float	1st coefficient of temperature dependence
a2	float	2nd coefficient of temperature dependence
a3	float	3rd coefficient of temperature dependence
chisq	float	Chi-squared of the polynomial fit
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C.)
tempmin	float	Lower limit of temperature (deg. C.)
tempmax	float	Upper limit of temperature (deg. C.)
epochmin	float	Lower limit of epoch (modified Julian date)
epochmax	float	Upper limit of epoch (modified Julian date)
epochave	float	Average epoch (modified Julian date)
descrip	varchar(68)	User comment

CVCCP7R: HSP CVC Offset

This table contains the HSP analog CVC offset as a function of detector, gain setting, and a third-order polynomial function of temperature and epoch. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	smallint	Detector number, 1-5
vgaind	smallint	Gain setting: 0, 2, 3, 6, 7
base_value	float	Base value of the characteristic scaling polynomial
base_temp	float	Base temperature of the characteristic scaling polynomial (deg. C)
base_time	float	Base time of the characteristic scaling polynomial (modified Julian date)

Table CVCCP7R is continued on the next page.

Continuation of table CVCCP7R.

Field Name	Data Type	Description
a00	float	0,0th coefficient of the characteristic scaling polynomial
a01	float	0,1st coefficient of the characteristic scaling polynomial
a02	float	0,2nd coefficient of the characteristic scaling polynomial
a03	float	0,3rd coefficient of the characteristic scaling polynomial
a10	float	1,0th coefficient of the characteristic scaling polynomial
a11	float	1,1st coefficient of the characteristic scaling polynomial
a12	float	1,2nd coefficient of the characteristic scaling polynomial
a13	float	1,3rd coefficient of the characteristic scaling polynomial
a20	float	2,0th coefficient of the characteristic scaling polynomial
a21	float	2,1st coefficient of the characteristic scaling polynomial
a22	float	2,2nd coefficient of the characteristic scaling polynomial
a23	float	2,3rd coefficient of the characteristic scaling polynomial
a30	float	3,0th coefficient of the characteristic scaling polynomial
a31	float	3,1st coefficient of the characteristic scaling polynomial
a32	float	3,2nd coefficient of the characteristic scaling polynomial
a33	float	3,3rd coefficient of the characteristic scaling polynomial
descrip	varchar(68)	User comment

CVCCP8R: HSP Paired Pulse Parameters

This table contains the paired pulse parameter(s) (dead time(s)) used to correct for non-linearity at high count rates.

The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
det_num	int	Detector ID(1 - 5)
voltage	int	High voltage setting (command value)
thresh	int	PAD threshold setting (command value)
base_value	float	Base value of dead time in seconds
a1	float	dead time temperature dependence coefficient in second/deg
base_temp	float	temperature zero point used in temperature dependence, in deg Celsius
descrip	varchar(68)	User comment

CVCCP9R: HSP dark aperture translation table

HSP dark aperture translation table. There are three positions on the aperture plate which the beam is deflected to, and counts read out, thus a dark observation. The data in this table is destined for RSDP table CALTABLE.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	The regular aperture name
det_num	int	Detector ID
dark_aper	char(10)	The dark aperture name
descrip	varchar(68)	User comment

CVDARKAPER: HSP Dark Aperture Translation Table

This table lists dark aperture names corresponding to regular aperture names. This table is needed for the task CALIB.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	The regular aperture name
dark_aper	char(10)	The dark aperture name
descrip	varchar(68)	User comment

CVDISCR: HSP Discriminator Threshold Optimum Setting

This table is the output of task DISCR which fits a specified pulse height distribution function to observed digital data obtained for the same target but at different discriminator threshold settings. The measured count rate is the INTEGRATED pulse height distribution(IPHD) which is assumed to have the form:

$$\text{IPHD} = 0.5 * P * \text{SQRT}(2*\pi) * [1 - \text{erf}((x-Q)/(R*\text{SQRT}(2)))] + S * (\exp(-x/T)) + U$$

where erf is the error function. This is from the assumption that the pulse height distribution (PHD) has this form:

$$\text{PHD} = P/R * \exp(-(x-Q)^2/2*R^2) + S/T * \exp(-x/T)$$

A non-linear least square fitting algorithm is used to determine the fitting function. After a pulse height model is obtained, the task DISCR looks for an optimal discriminator setting according the specified scheme.

Table CVDISCR

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
best_thresh	float	Optimum discriminator setting
gauss_ampl	float	Height of the gaussian component (=P/R)
gauss_width	float	Half width of the gaussian component (=R)
gauss_center	float	Discriminator setting of the gaussian center (=Q)
exp_ampl	float	Height of the exponential component (=S/T)
exp_width	float	Width of the exponential component at which the exponential falls to 1/e (=T)
background	float	Constant term in the INTEGRATED PHD (=U)
chisq	float	Reduced chi-squared of the fit
scheme	char(16)	Scheme to determine the optimum discriminator setting
epochmin	float	Lower limit of epoch
epochmax	float	Upper limit of epoch
epochave	float	Average epoch
detectob	int	Detector ID
trgtnname	char(20)	Target name
voltage	float	High voltage setting
descrip	varchar(68)	User comment

CVGAIN: HSP Gain Factor of Each Observation

This table contains the HSP gain factor of each individual observation. It is the output of task GAIN.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
<hr/>		
det_num	int	Detector ID
vgaind	float	Gain setting
gainfact	float	Gain factor
gain_stnd	float	Gain factor standard deviation
det_temp	float	Detector temperature
epoch	float	Epoch of observation
descrip	varchar(68)	User comment

CVHVFAC: HSP High Voltage Factor of Each Observation

This table contains the HSP high voltage factor of each individual observation. It is the output of task HVFAC.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>type</code>	char(8)	Data type
<code>det_num</code>	int	Detector ID
<code>voltage</code>	float	High voltage setting
<code>hvfac</code>	float	High voltage factor
<code>hvfac_stnd</code>	float	High voltage factor standard deviation
<code>det_temp</code>	float	Detector temperature
<code>epoch</code>	float	Epoch
<code>descrip</code>	varchar(68)	User comment

CVPOLEF: HSP Polarization Transmission Coefficients

This table contains the HSP polarization transmission coefficients of each aperture at one (small span of) epoch. It is the output of task POLEF. The observed targets should be polarized standard stars.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Aperture name
pol_eff	float	Polarization efficiency
pos_ang_diff	float	(Observed - reference) position angle
intensity	float	Intensity of the target
trgtname	char(20)	Target name
tempave	float	Average temperature
epochave	float	Average epoch
descrip	varchar(68)	User comment

CVPOLPA: HSP Polarization Position Angle Offsets

This table contains the HSP polarization position angle offset of each filter at one (small span of) epoch. It is the output of task POLPA.

The position angle offset is determined from the reference position angle of the observed standard star in the equatorial coordinate system, the position angle of the same standard star as measured in the HSP coordinate system, and the (predicted) position angle of V3 axis in the equatorial coordinate system. The result offset is therefore the angle FROM V3 to the transmission axis of the 0 degree polarizer. The observed targets should be polarized standard stars.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
filter_name	char(4)	Filter name
polarization	float	Observed polarization in percent
angle_offset	float	Position angle offset in degrees
intensity	float	Intensity of the target
trgtnname	char(20)	Target name
tempave	float	Average temperature
epochave	float	Average epoch
descrip	varchar(68)	User comment

CVPOLVF: HSP Polarization Verification

This table contains the HSP polarization verification of each aperture at one (small span of) epoch. It is the output of task POLVF.

The polarization and its position angle of a target at a given aperture is calculated from measurements at three different roll angles.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>trgtnname</code>	char(20)	Target name
<code>aper_name</code>	char(10)	Aperture name
<code>polarization</code>	float	Observed polarization in PER CENT
<code>pos_ang</code>	float	Position angle in equatorial system, and in degrees
<code>intensity</code>	float	Intensity of the target
<code>tempave</code>	float	Average temperature
<code>epochave</code>	float	Average epoch
<code>descrip</code>	varchar(68)	User comment

CVREFAPER: HSP Reference Aperture for a Given Filter

This table lists which aperture is the nominal aperture for a specific filter name. It is needed in task RSEN.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>src</code>	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
<code>src_date1</code>	char(17)	Starting date for data computation
<code>src_date2</code>	char(17)	Ending date for data computation
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>filter_name</code>	char(4)	Filter name, e. g. F551
<code>ref_aper</code>	char(10)	The reference aperture name
<code>descrip</code>	varchar(68)	User comment

CVREFHV: HSP Reference High Voltage Table

This table contains the nominal voltage setting (i. e. the photo-current gain is one million at this high voltage setting) of each HSP detector. This table is needed for tasks HVFAC and GAIN.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
det_num	int	Detector ID
voltage	float	The reference high voltage
descrip	varchar(68)	User comment

CVRSEN: HSP Relative Sensitivity of Each Observation

This table contains the HSP relative sensitivity of each individual observation. It is the output of task RSEN which calculates the relative sensitivities of apertures with the same filter relative to the "reference aperture".

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
src	char(12)	Data source (DUMMY, MODEL, GROUND, INFLIGHT)
src_date1	char(17)	Starting date for data computation
src_date2	char(17)	Ending date for data computation
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
aper_name	char(10)	Aperture name
sensitivity	float	Relative sensitivity
stnd_dev	float	Standard deviation of the sensitivity
det_temp	float	Detector temperature
epoch	float	Epoch
descrip	varchar(68)	User comment

Chapter 4

Basic Reference Data

4.1 Introduction

CDBS maintains an archive of Basic Reference Data which is needed for calibration purposes at STScI. This data is maintained in database relations or in STSDAS formatted data files on an on-line magnetic disk. STScI computer users have read access to any data in this archive. Because of the limited disk space available for this on-line archive, data to be stored in the Basic Reference Data base should meet the following criteria:

1. The data are frequently needed for calibration activities (typically more than once a week). Data that are not accessed very often should be stored in the offline tape (or optical disk) archive.
2. The data represent relatively stable parameters which do not require frequent updates (typically not more than twice a year). Calibration parameters which vary more rapidly should be stored in the main CDBS data base as described in Chapter 3 of this document.

This chapter describes the main types of data which are currently contained in the Basic Reference Data base. It is expected that this data base will grow with time; additions to the data base will be described in future releases of this document.

4.2 Database-Resident Basic Reference Data - A Summary

This is a summary of the Database relations which store Basic Reference Data:

<i>Relation</i>	<i>Description</i>
CRLOG	Basic Reference Data log table. (CDBS control table)
CRALIAS	Cross reference for calibration target names.
CRTARGETUSE	Keeps track of what instruments use a given target.
CRTARGETS	Flux calibration target master table.
CRPHOTOBS	Photometric observations of calibration targets.
CRTARFLDS	Optical calibration target master table for fields.
CRPICFLDS	Index of CCD pictures of optical calibration fields
CRPH0FLDS	Index of CCD photometric observations of optical calibration fields
CRSPEC0BS	Index of spectrophotometric observations of calibration targets.
CRSPECTRUM	Index of final flux distributions of calibration targets.
CRTHROUGHPUT	Index of optical component throughput tables.
CRGRAPH	Index of graph link tables.
CRCOMPLIST	Index of component list tables.
CRPOLAROBS	Ground based photo-polarimetric observations of polarization standards
CRSTANDPOL	Index of final standard polarization and position angle wavelength data
CRPOLPARAM	Model parameters for each polarization standard
CRCLUSTERPOS	Astrometric position data for the HST astrometric standard targets
CRWAVECAL	Index of line profile observations for HRS wavelength calibrations

The first four fields of each table (except **CRLOG**) are CDBS control fields: the row_no is used to keep track of the entries in the table, the entry creation time stamp, the entry version number, and the name of the STSDAS table used to input the entry. The values of these fields are supplied by the CDBS utility which appends rows into the tables.

New rows of data are appended to the these tables as required. Existing rows are neither deleted nor replaced.

4.2.1 CRLOG: Basic Reference Data Log Table

This table contains an entry for each Basic Reference Data file delivered to CDBS.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
lognum	int	Log number of this delivery
req_date	char(17)	Date of installation request (YYYYMMDD:HHMMSSCC)
requestor	char(20)	Name of the person requesting the installation
descrip	varchar(68)	Short description of installed data
filename	char(40)	Logical directory and filename of installed data (directory:filename)

4.2.2 CRALIAS: Cross Reference for Calibration Target Names

This table provides a cross reference of calibration target names. There may be many entries for a single target ID, but the {targetid, alias} pair will be unique.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
alias	char(18)	Alternate name used to identify calibration target
descrip	varchar(68)	User comment

4.2.3 CRTARGETUSE: Table of Target Use

This table keeps track of which instruments use a given target.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
fgs	char(1)	Can FGS use target for calibration? (Y or N)
hsp	char(1)	Can HSP use target for calibration? (Y or N)
wfc	char(1)	Can WFC use target for calibration? (Y or N)
foc	char(1)	Can FOC use target for calibration? (Y or N)
fos	char(1)	Can FOS use target for calibration? (Y or N)
hrs	char(1)	Can HRS use target for calibration? (Y or N)
sv_fgs	char(1)	FGS proposing to use target during SV? (Y or N)
sv_hsp	char(1)	HSP proposing to use target during SV? (Y or N)
sv_wfc	char(1)	WFC proposing to use target during SV? (Y or N)
sv_foc	char(1)	FOC proposing to use target during SV? (Y or N)
sv_fos	char(1)	FOS proposing to use target during SV? (Y or N)
sv_hrs	char(1)	HRS proposing to use target during SV? (Y or N)
descrip	varchar(68)	User comment

4.2.4 CRTARGETS: UV and Optical Calibration Target Master Table

This table contains basic reference information about each of the photometric calibration targets.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
ra2000	float	Right ascension
e_ra	float	Error for right ascension
dec2000	float	Declination
e_dec	float	Error for declination
sou_radec	char(40)	Source of position measurement
epoch	float	Epoch of position measurement
prop_mo	float	Total proper motion at equinox 2000
e_prop_mo	float	Error for total proper motion at equinox 2000
pos_angle	float	Position angle of proper motion at equinox 2000
e_pos_angle	float	Error for position angle of proper motion at equinox 2000
sou_prop_mo	char(40)	Source of total proper motion at equinox 2000
parallax	float	Parallax

Table CRTARGETS is continued on the next page.

Continuation of table **CRTARGETS**.

Field Name	Data Type	Description
e_parallax	float	Error for parallax
sou_parallax	char(40)	Source of parallax
rad_vel	float	Radial velocity
qual_rad_vel	char(10)	Quality level for radial velocity
sou_rad_vel	char(40)	Source of radial velocity
spec_type	char(18)	Spectral type
sou_spec	char(40)	Source of spectral type
comment_spec	char(68)	Comment on any spectral type ambiguities
v_mag	float	Johnson V magnitude
bmv_mag	float	Johnson B-V color
e_bmv_mag	float	Johnson B-V color excess
sou_e_bmv	char(40)	Source of E(B-V)
ecliptic_lat	float	Ecliptic latitude of target
galactic_lat	float	Galactic latitude of target
galactic_lon	float	Galactic longitude of target
modulus	float	Target distance
vsini	float	Projected rotational velocity
descrip	varchar(68)	User comment

4.2.5 CRPHOTOBS: Photometric Observations of UV and Optical Calibration Targets

This table contains the photometric observations of HST UV and optical calibration targets.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
obsmode	char(68)	String of keywords defining filter bandpass
datum	float	Measurement of target
error	float	Error of the target measurement
form	char(8)	Form of the target measurement
airmass	float	Mean airmass of the observation (if available)
obstime	char(17)	Start time of the observation
deldate	char(17)	Date that the measurement was delivered to STScI (YYYYMMDD:HHMMSSCC)
reference	char(40)	Reference for target measurement
descrip	varchar(68)	Comment

In this table **form** is the units of the measurement for that row. **form** may be any one of the following:

FNU	$S_\nu(\lambda)$ (erg s ⁻¹ cm ⁻² Hz ⁻¹)
FLAM	$S_\lambda(\lambda)$ (erg s ⁻¹ cm ⁻² Å ⁻¹)
PHOTNU	$N_\nu(\lambda)$ (photons s ⁻¹ cm ⁻² Hz ⁻¹)
PHOTLAM	$N_\lambda(\lambda)$ (photons s ⁻¹ cm ⁻² Å ⁻¹)
PHOTPIX	$N_{pixel}(\lambda)$ (photons s ⁻¹ cm ⁻² pixel ⁻¹)
ABMAG	$AB_\nu(\lambda) = -2.5 \log_{10}(S_\nu(\lambda)) - 48.60$
STMAG	$ST_\lambda(\lambda) = -2.5 \log_{10}(S_\lambda(\lambda)) - 21.10$
VEGAMAG	$VE(\lambda) = -2.5 \log_{10}(S(\lambda)/S^{Vega}(\lambda))$
JY	$S_{Jy}(\lambda)$ (10 ²⁶ erg s ⁻¹ cm ⁻² Hz ⁻¹)
MJY	$S_{mJy}(\lambda)$ (10 ²³ erg s ⁻¹ cm ⁻² Hz ⁻¹)
BAUMAG	Instrumental magnitude by BAUM

4.2.6 CRTARFLDS: Optical Calibration Target Master Table for Fields

This table contains basic information about each of the photometric calibration fields.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
fld_name	char(18)	Standard STScI name of calibration field
ra2000	float	Right ascension of field center
e_ra	float	Error for right ascension
dec2000	float	Declination of field center
e_dec	float	Error for declination
sou_radec	char(40)	Source of position measurement
epoch	float	Epoch of position measurement
delta_ra	float	Nominal width of the field in R.A.
delta_dec	float	Nominal width of the field in Declination
rad_vel	float	Radial velocity of cluster

Table CRTARFLDS is continued on the next page.

Continuation of table **CRTARFLDS**.

Field Name	Data Type	Description
qual_rad_vel	char(10)	Quality level for radial velocity
sou_rad_vel	char(40)	Source of radial velocity
type	char(18)	Type of field (Globular Cluster, Open Cluster, Field Stars)
comment_type	char(68)	Comment on type of field
v_mag	float	Johnson <i>V</i> magnitude for main blue star
bmv_mag	float	Johnson <i>B</i> – <i>V</i> magnitude for main blue star
e_bmv_mag	float	Johnson <i>B</i> – <i>V</i> color excess for main blue star
sou_e_bmv	char(40)	Source of $E(B - V)$ for main blue star
ecliptic_lat	float	Ecliptic latitude of field center
galactic_lat	float	Galactic latitude of field center
galactic_lon	float	Galactic longitude of field center
modulus	float	Target distance
sou_modulus	char(40)	Source of distance modulus
metal	float	Metallicity of cluster
sou_metal	char(40)	Source for Metallicity
descrip	varchar(68)	General comments about field

4.2.7 CRPICFLDS: Index of CCD Pictures of Optical Calibration Fields

This table contains the names of the data files containing the CCD pictures of the HST optical calibration fields.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>fld_name</code>	char(18)	Standard STScI name of calibration field
<code>obsmode</code>	char(68)	String of keywords defining filter bandpass
<code>pictype</code>	char(40)	Type of picture (TBD)
<code>filename</code>	char(40)	Filename of CCD picture in archive
<code>airmass</code>	float	Mean airmass of the observation (if available)
<code>obstime</code>	char(17)	Start time of the observation
<code>deldate</code>	char(17)	Date the measurement was delivered to STScI (YYYYMMDD:HHMMSSCC)
<code>reference</code>	char(40)	Reference for the target measurement
<code>descrip</code>	varchar(68)	Comment

4.2.8 CRPHOFLDS: Index of CCD Photometric Observations of Optical Calibration Fields

This table contains the names of the data files containing the CCD photometric observations of the HST optical calibration fields.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
fld_name	char(18)	Standard STScI name of calibration field
observer	char(68)	Observer ID
filename	char(40)	Logical directory and filename of table (directory\$filename)
airmass	float	Mean airmass of the observation (if available)
recobstm	char(17)	Latest observation start time in SDAS table
deldate	char(17)	Date the measurement was delivered to STScI (YYYYMMDD:HHMMSSCC)
descrip	varchar(68)	Comment

4.2.9 CRSPECOBS: Index of Spectrophotometric Observations of UV and Optical Calibration Targets

This table contains the names of the data files containing spectrophotometric observations of the HST photometric targets.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
obsmode	char(68)	String of keywords defining filter bandpass
filename	char(40)	Logical directory and filename of spectrum (directory\$filename)
airmass	float	Mean airmass of the observation (if available)
obstime	char(17)	Start time of the observation (YYYYMMDD:HHMMSSCC) (if available)
deldate	char(17)	Date that the magnitude was delivered to STScI (YYYYMMDD:HHMMSSCC)
reference	char(40)	Reference for the measurement
descrip	varchar(68)	Comment

4.2.10 CRSPECTRUM: Index of Standard Flux Distribution of Calibration Targets

This table contains the names of the data files containing final flux distribution of the HST photometric targets.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
filename	char(40)	Logical directory and filename of spectrum (directory\$filename)
descrip	varchar(68)	Comment

4.2.11 CRTHROUGHPUT: Index of Optical Component Throughput Tables

This table contains the list of the component transmission throughput tables.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
compname	char(18)	Unique STScI mnemonic of this component
filename	char(40)	Throughput table pathname (directory\$filename)
descrip	varchar(68)	Comment

4.2.12 CRGRAPH: Index of Graph Link Tables

This table contains the names of the tables containing the list of graph links for each instrument.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
instrument	char(10)	Instrument described by the tables (FOS, OTA, HST)
filename	char(40)	Logical directory and filename of graph table (directory:filename)
descrip	varchar(68)	Comment

4.2.13 CRCOMPLIST: Index of Component List Tables

This table contains the names of the tables containing the optical components for each instrument.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>instrument</code>	char(10)	Instrument described by the tables (FOS, OTA, HST)
<code>filename</code>	char(40)	Logical directory and filename of component table (directory:filename)
<code>descrip</code>	varchar(68)	Comment

4.2.14 CRPOLAROBS: Ground-based Photo-Polarimetric Observations of Polarization Standards

This table will store only ground-based photo-polarimetric observations of the HST calibration targets. In the case of extended targets, such as the reflection nebulae, the average polarization over a specified region will be stored in this table. The region will be uniquely identified in the name of the target.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	STScI Name of standard target
polmod	char(12)	Keyword for lin/circ, unpol/pol polarization
obsmode	char(68)	Keyword for filter bandpass
eff_wav	float	Effective wavelength of bandpass
polar	float	Percent polarization
e_polar	float	Error in polarization
pos_ang	float	Position angle (equatorial)
e_pos_ang	float	Error in the position angle
epoch_pa	float	Epoch of position angle (Julian Date)
obstime	char(17)	Start time of observation (YYYYMMDD:HHMMSSCC)
deldate	char(17)	Date of delivery of data (YYYYMMDD:HHMMSSCC)
reference	char(20)	Reference for measurement
descrip	varchar(68)	Comment

4.2.15 CRSTANDPOL: Index of Final Standard Polarization and Position Angle Wavelength Data

This table will contain *pointers* to the polarization, position angle, and errors tabulated at TBD wavelength intervals throughout the UV (extrapolated) and optical region.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>targetid</code>	char(18)	STScI Name of standard target
<code>polmod</code>	char(12)	Keyword for lin/circ,unpol/pol polarization
<code>wave_1</code>	float	Lower bound of spectral range of data set
<code>wave_2</code>	float	Upper bound of spectral range of data set
<code>wavestep</code>	float	Step size between entries
<code>n_obs</code>	smallint	Number of measurements used
<code>epochcal</code>	float	DAY & Epoch for calibration use (Julian date)
<code>filename</code>	char(40)	Dir/file of polarization spectrum
<code>descrip</code>	varchar(68)	Comment

4.2.16 CRPOLPARAM: Model Parameters for each Polarization Standard

This intermediate products table will hold the semi-empirical fit parameters, derived from the data in CRPOLAROBS, which will be used to create the final polarization table, CRSTAND-POL.

Field Name	Datatype	Description
<code>row_no</code>	int	Row number
<code>time</code>	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
<code>version</code>	int	Version number
<code>useafter</code>	char(17)	Use for observations after date
<code>generation</code>	int	Generation number for useafter date
<code>sdas_tab</code>	char(18)	SDAS table name
<code>targetid</code>	char(18)	STScI Name of standard target
<code>pol_type</code>	char(12)	Keyword describing physical model for pol fit
<code>pa_type</code>	char(12)	Keyword describing physical model for pa fit
<code>pol_fit</code>	char(12)	Keyword containing type of fit to pol data
<code>pa_fit</code>	char(12)	Keyword containing type of fit to pa data
<code>polparam_1</code>	float	Coeff 1 to polarization fit
<code>polparam_2</code>	float	Coeff 2 to polarization fit
<code>polparam_3</code>	float	Coeff 3 to polarization fit
<code>paparam_1</code>	float	Coeff 1 to position angle fit
<code>paparam_2</code>	float	Coeff 2 to position angle fit
<code>paparam_3</code>	float	Coeff 3 to position angle fit
<code>e_pol_12</code>	float	Correlation coeff 1,2
<code>e_pol_13</code>	float	Correlation coeff 1,3
<code>e_pol_23</code>	float	Correlation coeff 2,3
<code>e_pa_12</code>	float	Correlation coeff 1,2
<code>e_pa_13</code>	float	Correlation coeff 1,3
<code>e_pa_23</code>	float	Correlation coeff 2,3
<code>descrip</code>	varchar(68)	Comment

4.2.17 CRCLUSTERPOS: Astrometric Position Data for the HST Astrometric Standard Targets

This table contains astrometric measurements of stars in each of several clusters which will be used for various HST alignment, optical distortion, astrometric, and SI calibration activities.

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Internal id number
vid	char(8)	Observer star id
deldate	char(17)	Date of delivery to STScI (YYYYMMDD:HHMMSSCC)
reference	char(20)	Source of data
epoch	float	Epoch of plate
equinox	float	Equinox
v_mag	float	Visual (V) magnitude
bmv_mag	float	B-V color
ra	float	RA in decimal hours
e_ra	float	Error in RA
pmx	float	Proper motion in ra dir
e_pmx	float	Error in proper motion
dec	float	Declination
e_dec	float	Error in dec
pmy	float	Proper motion in dec
e_pmy	float	Error in proper motion
membership	float	Probability of cluster membership
descrip	varchar(68)	Comments to include type of error

4.2.18 CRWAVECAL: Index of line profile observations for HRS wavelength calibrations

Field Name	Datatype	Description
row_no	int	Row number
time	char(17)	Creation date:time stamp (YYYYMMDD:HHMMSSCC)
version	int	Version number
useafter	char(17)	Use for observations after date
generation	int	Generation number for useafter date
sdas_tab	char(18)	SDAS table name
targetid	char(18)	Standard STScI name of calibration target
lineid	char(68)	String defining line ID
restwave	float	Rest wavelength of observation
obstype	char(1)	Broadened (B) or Raw (R) profile?
filename	char(40)	logical directory and filename of profile (directory\$filename)
airmass	float	Mean airmass of the observation (if available)
obstime	char(17)	Start time of the observation (YYYYMMDD:HHMMSSCC)(if available)
deldate	char(17)	Date that the observation was delivered to STScI (YYYYMMDD:HHMMSSCC)
reference	char(40)	Reference for the measurement
descrip	varchar(68)	Comment

4.3 STSDAS-Formatted Basic Reference Data: A Summary

This section summarizes the directory structure and contents of the Basic Reference Data maintained on an on-line magnetic disk accessible by the STScI computer users.

4.3.1 Directory Structure – VMS Environment

The following table outlines the directory structure and the types of files to be contained in each subdirectory. Also shown is the logical name which can be used to refer to each subdirectory.

Directory Name	Logical Name	Contents
[CDBSDATA.REFER]	CRREFER:	files containing the lists of valid target IDs, component names, and field names
[CDBSDATA.REFER.CALOBS]	CRCALOBS:	spectrophotometric observations of calibration targets (4.4.1)
[CDBSDATA.REFER.CALSPEC]	CRCALSPEC:	calibration target spectra (4.4.2)
[CDBSDATA.REFER.COMP]	CRCOMP:	component graph table (4.4.5) and component list table (4.4.6)
[CDBSDATA.REFER.COMP.OTA]	CROTACOMP:	OTA component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.FGS]	CRFGSCOMP:	FGS component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.HSP]	CRHSPCOMP:	HSP component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.FOS]	CRFOSCOMP:	FOS component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.HRS]	CRHRSCOMP:	HRS component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.FOC]	CRFOCCOMP:	FOC component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.WFPC]	CRWFPCCOMP:	WF/PC component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.WFPC2]	CRWFPC2COMP:	WF 2 component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.NICMOS]	CRNICMOSCOMP:	NICMOS component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.STIS]	CRSTISCOMP:	STIS component throughput tables (4.4.4)
[CDBSDATA.REFER.COMP.NONHST]	CRNONHSTCOMP:	NONHST component throughput tables (4.4.4)

Table Directory Structure is continued on the next page.

Continuation of table Directory Structure

Directory Name	Logical Name	Contents
[.CDBSDATA.REFER.CALOBS]	CRCALOBS:	UV and Optical Spectral Standards(4.4.4)
[.CDBSDATA.REFER.CALSPEC]	CRCALSPEC:	Current Composite UV and Optical Absolute Calibrated Reference Spectra(4.4.4)
[.CDBSDATA.REFER.OLD_CALSPEC]	CROLDICALSPEC:	Composite UV and Optical Absolute Calibrated Spectra(4.4.4)
[CDBSDATA.REFER.FIELDS]	CRFIELDS:	Basic Reference Data pertaining to Calibration target fields (4.4.3)
[CDBSDATA.REFER.CRWAVE]	CRWAVE:	Basic Reference Data pertaining to the Index of line profile observations for HRS wavelength (4.4.3)
[.CDBSDATA.REFER.GRID.BKMODELS]	CRGRIDBK:	Contains grids of spectral energy distributions from (Kurucz ApJ Supp 40,1.)
[.CDBSDATA.REFER.GRID.BPGS]	CRGRIDBPGS:	Contains grids of spectral energy distributions from (Bruzual-Persson-Gunn-Stryker Bruzual,Persoon 1989 priv.comm.)
[.CDBSDATA.REFER.GRID.BZ77]	CRGRIDBZ77:	Contains grids of spectral energy distributions from (Bruzual 1977)
[.CDBSDATA.REFER.GRID.GUNNSTRYKER]	CRGRIDGS:	Contains grids of spectral energy distributions from (Gunn-Stryker 1982 ApJ Supp 52,121.)
[.CDBSDATA.REFER.GRID.JACOBI]	CRGRIDJAC:	Contains grids of spectral energy distributions from (Jacoby-Hunter-Christian 1984 ApJ Supp 56,257.)
[.CDBSDATA.REFER.GRID.K93MODELS]	CRGRIDK93:	Contains 7600 stellar atmosphere models covering a wide range of metalicites, effective temperatures, and gravities.

4.3.2 Directory Structure – UNIX Environment

Directory Name	Contents
/tib/cdbs/calobs/	UV and Optical Spectral Standards(4.4.4)
/tib/cdbs/calspec/	Current Composite UV and Optical Absolute Calibrated Reference Spectra(4.4.4)
/tib/cdbs/oldcalspec/	Composite UV and Optical Absolute Calibrated Spectra(4.4.4)
/tib/cdbs/comp/ota	OTA component throughput tables (4.4.4)
/tib/cdbs/comp/fgs	FGS component throughput tables (4.4.4)
/tib/cdbs/comp/hsp	HSP component throughput tables (4.4.4)
/tib/cdbs/comp/fos	FOS component throughput tables (4.4.4)
/tib/cdbs/comp/hrs	HRS component throughput tables (4.4.4)
/tib/cdbs/comp/foc	FOC component throughput tables (4.4.4)
/tib/cdbs/comp/wfpc	WF/PC component throughput tables (4.4.4)
/tib/cdbs/comp/wfpc2	WF 2 component throughput tables (4.4.4)
/tib/cdbs/comp/nicmos	nicmos component throughput tables (4.4.4)
/tib/cdbs/comp/stis	stis component throughput tables (4.4.4)
/tib/cdbs/comp/nonhstcomp	nonhstcomp component throughput tables (4.4.4)
/tib/cdbs/fields	Basic Reference Data pertaining to Calibration target fields (4.4.3)
/tib/cdbs/crwave	Basic Reference Data pertaining to the Index of line profile observations for HRS wavelength (4.4.3)
/tib/cdbs/grid/bkmodels/	Contains grids of spectral energy distributions from (Kurucz ApJ Supp 40,1.)
/tib/cdbs/grid/bpgs/	Contains grids of spectral energy distributions from (Bruzual-Persson-Gunn-Stryker Bruzual,Persoon 1989 priv.comm.)
/tib/cdbs/grid/bz77/	Contains grids of spectral energy distributions from (Bruzual 1977)
/tib/cdbs/grid/gunnstryker/	Contains grids of spectral energy distributions from (Gunn-Stryker 1982 ApJ Supp 52,121.)

4.3.3 Data File Naming Conventions

In order to keep track of the large number of data files that are maintained in this data base, the file naming convention described here must be followed.

An IRAF task, *uniqfile* names files automatically. This task uses the HST instrument name and the current time to rename a file so that it will be unique over the telescope's lifetime. The file name root has the format 'YMDHHMMMSI' where:

- Y denotes the year (where 1981 = 1)
- M denotes the month of the year (where January = 1)
- D denotes the day (where first day of month = 1)
- HH denotes the hour (00-23)
- MM denotes the minutes (00-59)
- S denotes (seconds/2)
- I denotes the instrument (f=FGS, v=HSP, w=WFPC, x=FOC, y=FOS, z=HRS, m=multiple)

The extensions for each reference file or reference table are added manually and are defined on the next page.

Instrument	Data Type	Extensions	Instrument	Data Type	Extensions
hsp	cvcvp0r	.CV0	wfpc	cwmskr	.R0H
hsp	cvcvp1r	.CV1	wfpc	cwa2dr	.R1H
hsp	cvcvp2r	.CV2	wfpc	cwbasr	.R2H
hsp	cvcvp3r	.CV3	wfpc	cwprrfr	.R3H
hsp	cvcvp4r	.CV4	wfpc	cwpurr	.R4H
hsp	cvcvp5r	.CV5	wfpc	cwdrkr	.R5H
hsp	cvcvp6r	.CV6	wfpc	cwftr	.R6H
hsp	cvcvp7r	.CV7	wfpc	cwpst	.R7H
hsp	cvcvp8r	.CV8	wfpc	cwdflt	.R8H
hsp	cvcvp9r	.CV9	wfpc	cwphotr	.CW0
fos	cycs0r	.CY0	hrs	czccr1r	.CZ1
fos	cycs1r	.CY1	hrs	czccr2r	.CZ2
fos	cycs2r	.CY2	hrs	czccr3r	.CZ3
fos	cycs3r	.CY3	hrs	czccr4r	.CZ4
fos	cycs4r	.CY4	hrs	czccr5r	.CZ5
fos	cycs5r	.CY5	hrs	czccr6r	.CZ6
fos	cycs6r	.CY6	hrs	czccr7r	.CZ7
fos	cycs7r	.CY7	hrs	czccr8r	.CZ8
fos	cycs8r	.CY8	hrs	czccr9r	.CZ9
fos	cycs9r	.CY9	hrs	czccrar	.CZA
fos	cycsar	.CYA	hrs	czccrbr	.CZB
fos	cycsbr	.CYB	hrs	czccrcr	.CZC
fos	cycscr	.CYC	hrs	czccrdr	.CZD
fos	cycsdr	.CYD	hrs	czptnelinec	.CZY
fos	coccg2r	.CMG	hrs	czscoffc	.CZZ
fos	cybacr	.R0H	hrs	coccg2r	.CMG
fos	cyfltr	.R1H	hrs	czdior	.R0H
fos	cyivsr	.R2H	hrs	czphcr	.R1H
fos	cyretr	.R3H	hrs	czvigr	.R2H
fos	cyddtr	.R4H	hrs	czabsr	.R3H
fos	cyqinr	.R5H	hrs	cznetr	.R4H
fos	cypsf	.R6H	hrs	czqinr	.R5H
fos	cylsf	.R7H	wfpc2	cumskr	.R0H
foc	cxunir	.CXU	wfpc2	cua2dr	.R1H
foc	graph tab	.TMG	wfpc2	cubasr	.R2H
foc	comp tab	.TMC	wfpc2	cudrkr	.R3H
foc	cxbacr	.R0H	wfpc2	cuftr	.R4H
foc	cxitfr	.R1H	wfpc2	cushdr	.R5H
foc	cxunir	.R2H	wfpc2	cuphotr	.CU0
foc	cxdsder	.R3H	wfpc2	cudistort	.R9H
foc	cxgeor	.R5H	wfpc2	cuidtbas	.R2H
foc	cxblmr	.R7H	wfpc2	cuidtdrk	.R3H
			wfpc2	cuidtdeldrk	.R3H

4.3.4 Data Header Keyword Standards

Each CDBS data file, whether it is an STSDAS table or an STSDAS format FITS image, has associated header keywords. Files are delivered to CDBS via the *CDBS data delivery form*. The form contains some information about the data, but the header keywords will contain the specific details. In addition to the required keywords listed with each table below, COMMENT, HISTORY, DESCRIPT, and DBTABLE are expected. One or more COMMENT records should give a lengthy description of the data in general, while HISTORY records provide a concise but full pedigree of the table data. The keyword DESCRIPT is a single record description that is extracted from the file and put into the database table CRLOG as well as into the comment field of the basic reference database table being updated. DBTABLE gives the name of the database table from this chapter that should point to the file.

4.4 STSDAS-Formatted Basic Reference Data Specifications

The following types of data files are currently maintained in the CDBS Basic Reference Data base.

4.4.1 Spectrophotometric Observations of Calibration Targets

These tables contain spectrophotometric observations of HST calibration targets. These observations may come from ground based or from space telescopes such as IUE or HST. In general there will be more than one table for each target. These tables are used as input to calculate the Calibration Target Spectrum Tables defined below.

The CDBS relation CRSPECOPS contains pointers to these tables which reside in logical directory CRCALOBS. Unique file names for the tables are constructed during the delivery procedure by appending an underscore followed by a three digit version number to the target ID string (*e.g.* ALPHA.LEO.001.TAB). The list of valid target IDs is contained in CRREFER:CDBSID.DAT.

These tables are in STSDAS table format and contain the following mandatory columns containing the reduced ('publication') data (the order of the columns is not significant):

Column Name	DT	Units	Description
WAVELENGTH	R	ANGSTROMS	Central wavelength
FLUX	R	fluxunits	Measurement at this wavelength
STATError	R	fluxunits	Statistical error of the measurement
SYSERROR	R	fluxunits	Systematic error of the measurement
FWHM	R	ANGSTROMS	FWHM spectral resolution

In addition to the above columns, the IUE data files also contain the following:

Column Name	DT	Units	Description
DATAQUAL	R		IUE Data Quality (epsilon) flag
GROSS	R	FN	Gross spectrum
BKG	R	FN	Background spectrum
NETRATE	R	FN/SEC	Net spectrum
TOTEXP	R	SEC	Total exposure time

The units for every column must be specified in the file. *fluxunits* must be one of the following:

FNU	$S_\nu(\lambda)$ (erg s ⁻¹ cm ⁻² Hz ⁻¹)
FLAM	$S_\lambda(\lambda)$ (erg s ⁻¹ cm ⁻² Å ⁻¹)
PHOTNU	$N_\nu(\lambda)$ (photons s ⁻¹ cm ⁻² Hz ⁻¹)
PHOTLAM	$N_\lambda(\lambda)$ (photons s ⁻¹ cm ⁻² Å ⁻¹)
PHOTPIX	$N_{pixel}(\lambda)$ (photons s ⁻¹ cm ⁻² pixel ⁻¹)
ABMAG	$AB_\nu(\lambda) = -2.5 \log_{10}(S_\nu(\lambda)) - 48.60$
STMAG	$ST_\lambda(\lambda) = -2.5 \log_{10}(S_\lambda(\lambda)) - 21.10$
VEGAMAG	$VE(\lambda) = -2.5 \log_{10}(S(\lambda)/S^{Vega}(\lambda))$
JY	$S_{Jy}(\lambda)$ (10 ²⁶ erg s ⁻¹ cm ⁻² Hz ⁻¹)
MJY	$S_{mJy}(\lambda)$ (10 ²³ erg s ⁻¹ cm ⁻² Hz ⁻¹)

There may be an arbitrary number of rows in each table; the only restriction is that the wavelength must consistently increase from top to bottom in the table. The flux does not need to be tabulated at equal wavelength intervals, and the covered wavelength range may be different for different targets.

The header keywords must include the following:

```

DESCRIP =                               / short description of the data for CRLOG
DBTABLE ='CRSPEC0BS'                   / database table that points to this file
TARGETID='name'                         / standard STScI name for this object
OBSMODE ='string'                       / string defining instrument configuration
SOURCE  ='string'                       / reference
. . .
. . .
COMMENT =                               / lengthy description of the data
COMMENT =                               (one or more records)
. . .
HISTORY =                               / a concise but full pedigree of the data
HISTORY =                               (one or more records)
. . .

```

The following keywords are optional :

```

AIRMASS =           / mean airmass of the observation (if there
                     is no value for this keyword, -1 will
                     be stored in CRSPECTOBS for this field)
OBSTIME ='YYYYMMDD:HHMMSSCC' / start time of the observation(
DELDATE ='YYYYMMDD:HHMMSSCC' / date the data was delivered to STScI
SOURCE  =           / reference
TARCHIVE=           / tape archive number

```

The IUE data tables must contain the following keywords as well:

```

WMIN   =           /Minimum Wavelength (R)
WMAX   =           /Maximum Wavelength (R)
WMERGE =           /Merge point where SWP and LW are joined (R)
NSPECSW =          /Number of SWP spectra averaged (I)
NSPECLW =          /Number of LW spectra averaged (I)
MAXEXPSW=          /Maximum exposure time for SWP in sec (R)
MAXEXPLW=          /Maximum exposure time for LW in sec (R)

```

4.4.2 Calibration Target Spectrum

A table of the final flux distribution as a function of wavelength will be constructed for each standard target by combining individual photometric and spectrophotometric observations. It is expected that the knowledge of the target spectra will improve with time as new observations are made, consequently, new versions of the target spectrum will occasionally be added to this data base.

The CDBS relation CRSPECTRUM contains pointers to these tables which reside in logical directory CRCALSPEC. Unique file names for the tables are constructed during the delivery procedure by appending an underscore followed by a three digit version number to the target ID string (*e.g.* ALPHA.LEO_001.TAB). The list of valid target IDs is contained in CRREFER:CDBSID.DAT.

The tables are in STSDAS table format and contain the following columns (the order of the columns is not significant):

Column Name	DT	Units	Description
WAVELENGTH	R	ANGSTROMS	Central wavelength
FLUX	R	STMAG	Flux at this wavelength
STATError	R	STMAG	Statistical error of the flux measurement
SYSERROR	R	STMAG	Systemic error of the flux measurement
FWHM	R	ANGSTROMS	FWHM spectral resolution

There may be an arbitrary number of rows in each table; the only restriction is that the wavelength must consistently increase from top to bottom in the table. The flux does not need to be tabulated at equal wavelength intervals, and the covered wavelength range may be different for different targets.

The header keywords for this table must include the following:

```

DESCRIP =                               / short description of the data for CRL0G
DBTABLE ='CRSPECTRUM'                  / database table that points to this file
TARGETID='name'                         / standard STScI name for this object
. . .
. . .
COMMENT =                               / lengthy description of the data
COMMENT =                               (one or more records)
. . .
HISTORY =                               / a concise but full pedigree of the data
HISTORY =                               (one or more records)
. . .

```

The following keyword is optional:

```
TARCHIVE=                                / tape archive number
```

4.4.3 CCD Photometric Observations of Calibration Fields

These tables contain the photometric observations of HST calibration targets in fields. This information does not need to be resident on the database, at least not initially.

The CDBS relation CRPHOFLDS contains pointers to these tables which reside in logical directory CRFIELDS. Unique file names for the tables are constructed during the delivery procedure by appending an underscore followed by a three digit version number to the field name string (*e.g.* [TBD]) The list of valid field names is contained in CRREFER:CDBSFLDS.DAT.

The tables are in STSDAS table format and contain the following columns (the order of the columns is not significant):

Column Name	DT	Units	Description
TARGETID	CH*17		Name of target in field (Name designation: OHHMMSSCC±DDMMSSC)*
RA2000	D	DEG	Right ascension of target
E_RA	R	DEG	Error for right ascension
DEC2000	D	DEG	Declination of target
E_DEC	R	DEG	Error for declination
OBSMODE	CH*68		String of keywords defining filter bandpass
DATUM	R		Measurement of target
ERROR	R		Error of target measurement
FORM	CH*8		Form of target measurement
QUAL	CH*5		Data quality indicator
OUSEFLG	CH*1		Observer recommends use for calibration? (Y or N)
IUSEFLG	CH*1		Institute recommends use for calibration? (Y or N)
OBSTIME	CH*17		Start time of the observation (YYYYMMDD:HHMMSSCC) (if available)
COMMENT	CH*68		Comment

* O is the first letter of the Principal Investigator's last name.

There may be an arbitrary number of rows in each table.

The header keywords for this table must include the following:

```

DESCRIP =           / short description of the table for CRLOG
                     and CRPHOFLDS; it is recommended that
                     the different OBSMODEs contained in the
                     table should be listed in this description
DBTABLE ='CRPHOFLDS' / database table that points to this file
FLD_NAME='name'       / standard STScI name for this field
OBSERVER=            / observer ID
SOURADEC=            / source of positional measurement
EPOCH=               / epoch of positional measurement
AIRMASS =             / mean airmass of the observation (if there
                     is no value for this keyword, -1 will
                     be stored in CRPHOFLDS for this field)
RECOBSTM='YYYYMMDD:HHMMSSCC' / latest observation start time in table
DELDATE ='YYYYMMDD:HHMMSSCC' / date the data was delivered to STScI
SOURCE  =             / reference
. . .
. . .
COMMENT =            / lengthy description of the data
COMMENT =            (one or more records)

```

```

. . .
HISTORY =           / a concise but full pedigree of the data
HISTORY =           (one or more records)
. . .

```

The following keyword is optional:

```
TARCHIVE=           / tape archive number
```

4.4.4 Throughput Tables

These tables contain the throughput as a function of wavelength for every optical component.

The CDBS relation CRTHROUGHPUT contains pointers to these tables. The tables reside in logical directory CRxxxCOMP where xxx is the symbol for the instrument. Unique file names for the tables are constructed during the delivery procedure by appending an underscore followed by a three digit version number to the component name string (*e.g.* [TBD]). The list of valid component names is contained in CRREFER:CDBSCOMP.DAT.

The tables are in STSDAS table format and contain the following columns (the order of the columns is not significant):

Column Name	DT	Units	Description
WAVELENGTH	R	ANGSTROMS	Central wavelength
THROUGHPUT	R	<i>colunits</i>	(output)/(input) at this wavelength
ERROR	R	<i>colunits</i>	Error on the throughput measurement

The units for every column must be specified in the file. *colunits* must be one of the following:

TRANSMISSION	If output and input have same dimension (filters, gratings etc.)
QE	PMT's etc. (count/photon)
DN/PHOTON	Digital number (ADC-out/photon)

There may be an arbitrary number of rows in each table; the only restriction is that the wavelength must consistently increase from top to bottom in the table. The throughput does not need to be tabulated at equal wavelength intervals, and the covered wavelength range may be different for different components.

The header keywords for this table must include the following:

```

DESCRIP =           / short description of the data for CRLOG
DBTABLE ='CRTHROUGHPUT'   / database table that points to this file
COMPNAME='name'        / Standard STScI mnemonic for this component

```

```

INSTRUME='name'           / Instrument which contains this component
. . .
. . .
COMMENT =                 / lengthy description of the data
COMMENT =                   (one or more records)
. . .
HISTORY =                 / a concise but full pedigree of the data
HISTORY =                   (one or more records)
. . .

```

The following keyword is optional:

```
TARCHIVE=                  / tape archive number
```

4.4.5 Component Graph Tables

A component graph table defines how each component of an instrument is connected to other components. The graph may be visualized as a set of nodes that are connected together by a network of links where each link represents an optical component in the instrument. This table then defines for each component the input and output nodes that it connects and a keyword used to refer to the component. There may be more than one keyword for each component so there may be more than one row per component in the table.

Pointers to these tables are contained in the relation CRGRAPH. The tables reside in logical directory CRCOMP.

The tables are in STSDAS table format and contain the following columns (the order of the columns is not significant):

Column Name	DT	Units	Description
COMPNAME	CH*18		Unique STScI mnemonic of this component
KEYWORD	CH*12		Keyword which refers to this component
INNODE	I		Input node number connected to this component
OUTNODE	I		Output node number connected to this component
COMMENT	CH*68		Comment

The header keywords for this table must include the following:

```

DESCRIP =                  / short description of the data for CRLOG
DBTABLE ='CRGRAPH'         / database table that points to this file
INSTRUME='name'             / Instrument which contains this component
. . .

```

```

. . .
COMMENT =           / lengthy description of the data
COMMENT =           (one or more records)

. . .
HISTORY =          / a concise but full pedigree of the data
HISTORY =          (one or more records)

. . .

```

The following keyword is optional:

```
TARCHIVE=           / tape archive number
```

4.4.6 Component List Lookup Tables

This table contains the name of the latest version of all the component transmission throughput tables. There will be one row in this table for every optical component. This table is generated by extracting the latest version of the throughput table names from the relation CRTCROUROUGHPUT.

Pointers to these tables can be found in the relation CRCOMPLIST. The tables reside in logical directory CRCOMP.

The tables are in STSDAS table format and contain the following columns (the order of the columns is not significant):

Column Name	DT	Units	Description
COMPNAME	CH*18		Unique STScI mnemonic of this component
FILENAME	CH*40		Logical directory and file name of throughput table
COMMENT	CH*68		Comment

The header keywords for this table must include the following:

```

DESCRIP =           / short description of the data for CRLOG
DBTABLE ='CRCOMPLIST'      / database table that points to this file
INSTRUME='name'        / Instrument which contains this component
. . .
. . .
COMMENT =           / lengthy description of the data
COMMENT =           (one or more records)

. . .
HISTORY =          / a concise but full pedigree of the data
HISTORY =          (one or more records)

. . .

```

The following keyword is optional:

TARCHIVE= / tape archive number

4.4.7 Polarization/Position Angle Distribution Tables

These tables will contain the final polarization/position angle distribution with wavelength.

The CDBS relation CRSTANDPOL contains pointers to these tables.

The tables are in STSDAS format and contain the following columns:

Column Name	DT	Units	Description
WAVELENGTH	R	ANGSTROMS	Central wavelength of interval
POLARIZATION	R	PERCENT	Percent polarization
POLSTATERR	R	PERCENT	Statistical Error of POL
POLSYSERR	R	PERCENT	Systematic Error of POL
POS_ANGLE	R	DEG	Position Angle (equatorial)
PA_STATERR	R	DEG	Statistical Error of PA
PA_SYSERR	R	DEG	Systematic Error of PA

For this table there may be an arbitrary number of rows and the wavelength intervals need not be regular. The wavelength must increase consistently from top to bottom in the table.

The file must contain the following keywords:

```

DESCRIP =           / short description of the data for CRLOG
DBTABLE ='CRSTANDPOL' / database table that points to this file
TARGETID='name'       / standard STScI name for this object
POLMOD =             / keyword for lin/circ,unpol/pol polarization
WAVE_1 =              / lower bound of spectral range of data set (ANGSTROMS)
WAVE_2 =              / upper bound of spectral range of data set (ANGSTROMS)
WAVESTEP=            / step size between entries (ANGSTROMS)
N_OBS =               / number of measurements used
EPOCHCAL=            / epoch for calibration use (Julian date)
. . .
. . .
COMMENT =           / lengthy description of the data
COMMENT =           (one or more records)
. . .
HISTORY =            / a concise but full pedigree of the data
HISTORY =            (one or more records)
. . .

```

The following keyword is optional:

```
TARCHIVE=           / tape archive number
```

4.4.8 FOS Spectropolarimetric Tables

These tables contain reduced FOS Spectropolarimetric observations.

Pointers to these tables are contained in the CDBS database relation CRPOLDIM.

The tables are in STSDAS format and contain the following columns:

Column Name	DT	Units	Description
WAVELENGTH	R	ANGSTROMS	Central wavelength of interval
I_STOKE	R		Intensity (Stokes I)
Q_STOKE	R	PERCENT	q stokes - uncalibrated
Q_ERR	R	PERCENT	q error
U_STOKE	R	PERCENT	u stokes - uncalibrated
U_ERR	R	PERCENT	u error
V_STOKE	R	PERCENT	v-Stokes - uncalibrated
V_ERR	R	PERCENT	v-error
POLARIZATION	R	PERCENT	Polarization - calibrated
POLERR	R	PERCENT	Error in Pol
POS_ANGLE	R	DEG	Position Angle (equatorial)
PA_ERR	R	DEG	Error of PA

For this table there may be an arbitrary number of rows and the wavelength intervals need not be regular. The wavelength must increase monotonically from top to bottom in the table.

The header keywords must include the following:

```
. . .           / Optional keywords here  
. . .  
COMMENT =      / lengthy description of the data  
COMMENT =          (one or more records)  
. . .  
HISTORY =     / a concise but full pedigree of the data  
HISTORY =          (one or more records)  
. . .
```

The following keyword is optional:

```
TARCHIVE=      / tape archive number
```

4.4.9 FGS Star Selector Encoder Low Order Error Tables

This table contains the star selector encoder 7-bit low order errors of encoder position, in LSB unit. There are 128 (0-127) errors, one for each encoder low order bit position, in 6 encoders for 3 FGSSs in Bay 1, 2, and 3. For each telemetered encoder reading, the calibration software extracts the low 7 bits from a 21 or 24 bits data to obtain the low order data (encoder position in LSB), then subtracts the corresponding error (in this table) at that encoder position. The errors are originally provided by the Perkin-Elmer in arcsecond units.

This table resides in logical directory CRFGS.

Column Name	DT	Units	Description
bitpos	I		Star selector encoder low order positions (0-127)
fgs1a	I		Low order error of encoder A in FGS1
fgs1b	I		Low order error of encoder B in FGS1
fgs2a	I		Low order error of encoder A in FGS2
fgs2b	I		Low order error of encoder B in FGS2
fgs3a	I		Low order error of encoder A in FGS3
fgs3b	I		Low order error of encoder B in FGS3

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