



Header Specifications

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Index Files, Versioning, Archiving

There shall be one .indx file per instrument. The names of the index files shall be caldbNnnnn.indx, where nnnn is a version number. In addition, there shall be a caldb.indx symbolic link to the most recent caldbNnnnn.indx (i.e., the one with the highest nnnn).

Every time a new ARD that is a CALDB member is ingested, new index files are created with the next higher version number and the symbolic links are moved, but no index files are deleted. The symbolic links ensure that by default the most recent version is used. The retention of previous versions of the index files not only allow access to those previous versions of the CALDB members but also ensure consistency between the various CALDB members.

All CALDB members will be identified by the CONTENT keyword in the header of their principal HDUs, which value will begin with "CDB_<instrument>_". The metadata kept on each file will include the values of the principal extension's CONTENT and CVSDnnnn keywords.

Directory Structure

```

$CALDB/data/chandra/
  pcf/
    acis/
      hrc/
      pcad/
      sim/
      tel/
        hrma/
        grating/ letg/
        hetg/
    acis/
      index/
      bcf/
        grade/
        badpix/
        gain/
        cti/
        evtsplt/
        qe/
        gtilim/
      cpf/
        detmap/
        ebounds/
        fefs/
          FP-90/
          FP-100/
          FP-110/
        rmf/
        arf/
        osip/
        rpsf/
        2dpsf/
    ephin/
      index/
      bcf/
        geom/
    hrc/
      index/
      bcf/
        badpix/
        gain/
        adc/
        degap/
        qe/
        hesf/
        fptest/
        eptest/
        satestest/
        gtilim/
        tapping/
      cpf/
        detmap/
        rmf/
        arf/
        rpsf/
        2dpsf/
    pcad/
      index/
      bcf/
        align/
        sfma/
        iru/
        ccd/
        image/
        cti/
        rws/
        fdc/
        badpix/
    sim/
      index/
      bcf/
        pos/
        poscorr/
    tel/
      index/

```

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bcf/	aimpts/ geom/ sky/ tdet/ otol/		
hrma/	bcf/	effarea/ vignet/	
	cpf/	wpsf/ rpsf/ 2dpsf/	
grating/	letg/	bcf/	greff/ lsf/ xdsf/ 2dpsf/ arf/ rmf/
	hetg/	bcf/	greff/ lsf/ xdsf/ 2dpsf/ arf/ rmf/
		cpf/	lsf/ xdsf/ 2dpsf/ arf/ rmf/

Structure changes as of 2000-01-05: hrma, letg, and hetg calibration files are now subsumed under the "tel" instrument specification. All of those files are to be indexed at the tel/index level, in the same file. The pcad directory has been added as of this date as well, including the nine subdirectories under bcf corresponding to each CCNM spec.

Filenames (2000/01/24):

All filenames are now set by this prescription. There is no uncertainty about this. If new conventions must be added, they will be.

General filename structure: <detnam>D<yyyy-mm-dd><ccnm>N<version>.fits

Exceptions:

1. DETNAM absent or 'NONE': Use INSTRUME value:
<instrument>D<yyyy-mm-dd><ccnm>N<version>.fits
2. DETNAM = 'GRATING' (Keyword GRATING must be set = HETG or LETG):
<grating>[<grattype><order>]D<yyyy-mm-dd><ccnm>N<version>.fits
3. Detector-specific grating functions:
<instrument><grattype><order>D<yyyy-mm-dd><ccnm>N<version>.fits

NOTE: Use no underscores or additional tags. Use no dashes excluding the date convention above. Here are the allowed values:

- <detnam> – acisi, aciss, acisn (n=0,9), hrci, hrcs, hrma, acap, acar, rwa, gyro, fssa, cssa (DO NOT USE "grating".)
- Exception 1 above: <instrument> – acis, pcad, hrc, sim (DO NOT USE "tel".)
- Exception 2 above:
<grating> – hetg, letg
<grattype> – heg, meg, leg (DO NOT USE "leg" with "letg")
<order> – [p|m|b]n (n=0,1,...); p(lus), m(inus), b(oth) not required for n=0
<effective date> – Observation date after which these data may be used. For BCF's this may not be trivial,

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requires CAL group input. NOTE: Effective date is NOT the file creation date in general!

<ccnm> – see table below for translation of CCNMmmmm keyword values to <ccnm>

<version> – this is determined by what is already in the CALDB for a given effective date. It is therefore set by the manager.

TABLE OF CCNM TRANSLATIONS		
CCNMmmmm	<ccnm>	Description
DET_POS	pos	SIM position file (OBISIM_ARD)
DET_POSCORR	poscorr	SIM delta (corrections) file (SIM_DELTA_ARD)
CTI	cti	CCD charge transfer inefficiency
EVTSPILT	evtsplt	Event and split thresholds
GRADE	grade	Detector grades
BADPIX	badpix	Detector bad pixel list
DET_GAIN	gain	Detector gain map
QE	qe	Mean quantum efficiency
QEU	qeu	QE Uniformity map
QEXYE	qexye	QE(x,y,E) local QE
EFTEST	eftest	Event flatness test coefficient table
FPTEST	fptest	Event hyperbolic test coefficient table
SATTEST	sattest	Event amp saturation test coefficient table
TAPRINGTEST	tapring	Event tap-ringing test coefficient table
GTI_LIM	gtilim	Parameter limits for GTI
DETMAP	detmap	Archived instrument maps
SPECRESP	arf	Ancillary response function, Aeff
MATRIX	rmf	Redistribution (and spectral response) matrix
IRM	irmf	Pulse-invariant rmf table
EBOUNDS	ebounds	Energy bounds bintable
RPSF	rpsf	Radial point spread function
REEF	reef	Radial encircled energy fraction
2D_PSF	2dpsf	2-dimensional point spread function
GMAP	gain	Detector gain map
ADC	adc	Detector ADC correction table
DEGAP	gap	Detector gap map (HRC)
HESF	hesf	High energy suppression filter
AXEFFA	axeffa	Axial effective area
EFFAREA	effa	Off-axis effective area
VIGNET	vignet	Vignetting function from effa
WPSF	wpsf	PSF width
FEF_PI	fefpi	Pulse-invariant FITS-embedded function
FEF_PHA	fefpha	PHA FITS-embedded function
GREFF	greff	Grating efficiency
LSF	lsf	Grating line spread function
XDSF	xdsf	Grating cross-dispersion function
GYRO_SFMA	sfma	PCAD GYRO scale factor misalignment matrix
IRU_CHAR	char	PCAD IRU characteristics
RWA_BSPD	bspd	PCAD RWA bad reaction wheel speeds
ALIGN	align	PCAD "CALALIGN" file
CCD_CHAR	ccd	ACA CCD characteristics
CTI	cti	ACA charge transfer inefficiency
FDC	fdc	ACA field distortion coefficients
CCD_RESP	resp	ACA response image
DARK_CURR	dark	ACA dark current image
GEOM	geom	Geometric factors/Detector geometry
AIMPTS	aimpts	Detector aimpoint positions
SKY	sky	Focal plane sky coordinate system
TDET	tdet	Tile detector coordinate system

Required Keywords

```
MISSION = 'AXAF'
TELESCOP= 'CHANDRA'
INSTRUME= 'ACIS'/'HRC'/'HRC-I'/'HRC-S'/'TEL'
DETNAM   = 'NONE'/'ACIS-n'/'HRC-I'/'HRC-S'/'HRMA'/'GRATING' / Default: NONE
FILTER   = 'NONE' / Default: NONE
GRATING  = 'NONE'/'LETG'/'HETG' / Default: NONE
EXTNAME
CONTENT
HDUCLASS
HDUCLAS1
HDUCLAS2
HDUCLAS3
CCLSmmmmm
CDTPmmmm
CCNMmmmm
CBDnmmmm / Default: no boundaries
CVSDmmmmm= 'yyyy-mm-ddThh:mm:ss' / Start date and time of validity in TT
CVSTmmmmm= 'hh:mm:ss' / Start time of validity in TT
CDESmmmmm
```

The CVSTmmmmm keyword is added to accommodate the HEASARC indexing software, which does not at this point use the FITS Y2K standard for the CVSDmmmmm keyword illustrated above. The hh:mm:ss are to be specified in *both* CVSD and CVST keywords, and must be identical.

TELESCOP is to be set to 'CHANDRA' for CALDB files until further notice. INSTRUME='HRC' is allowed and will be assumed to apply to both HRC-I and HRC-S.

For documentation on the CALDB required keywords, see [Required/Recommended FITS Keywords for Calibration Files](#).

Section 3 is especially important. It defines the syntax of the CBDnmmmm boundary keywords that specify the restrictions on applicability of the CALDB HDUs. Below, I have generally set CBDnmmmm='none', indicating that the files apply to the entire instrument or detector. However, individual HDUs in the files may be subject to restrictions and CBDnmmmm keywords should be added as appropriate. An example would be a PSF HDU that covers energies 1–8 keV and off-axis angles 0' – 10':

```
CBD10001= 'ENERG(1-8)keV'
CBD20001= 'THETA(0-10)arcmin'
```

If there are no boundaries, CBDnmmmm keywords should be omitted.

ICD References

1. ARD for ACIS Level 1 & 2 Pipelines and Tools
2. ARD for Exposure Maps and Grating Levels 1.5–2 Pipelines
3. ARD for HRC Level 1 Pipelines
4. ARD for PSF Library

References are written as <document reference number>–<section number>.

Existing CALDB Coordinate Boundary Names

General:

RAWX
 RAWY
 DETX
 DETY
 PHYX
 PHYX
 THETA
 PHI
 ALPHA
 BETA
 CHAN
 ENERG
 HV
 MODE
 PANG
 PICH
 TEMP
 ECHO
 GRADE
 SPLIT

Mission-specific to AXAF:

FP_TEMP	ACIS focal plane temperature
CHANTYPE	PHA or PI
CHIPX	CHIP Pixel coordinate system, X
CHIPY	CHIP Pixel coordinate system, Y
GRATING	Grating related CALDB files, HETG or LETG
GRATTYPE	Grating CALDB files, HEG, MEG, or LEG
CCD_ID	ACIS chip number, 0-9
TG_M	Grating order
SHELL	HRMA shell
CD1_1	x PSF pixel size (PSF Library)
CD2_2	y PSF pixel size
MLAM_MIN	m*lambda_min, Product(order,minimum wavelength)
OBS_MODE	

Existing CALDB CCNMmmmm Values

RAW2PHY
 RAW2LIN
 LIN2EQU
 PHY2ECL
 LIN2XMA
 EQU2PHY
 ADC
 BADPIX
 CTI
 BKGRND_EVTS
 DEGAP
 DETEFF
 DETMSK
 DET_EFF
 DET_ENRES

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DET_GAIN
 DET_POS
 DET_POSCORR
 DET_POSRES
 EFFAREA
 EVSPLT
 FATOM
 FTRANS
 HKCONV
 IRM
 OBSCFACT
 TEMP
 TVIGNET
 VIGNET
 WATOM
 WTRANS
 XSECT
 EFTEST
 FPTEST
 SATTEST
 TAPRINGTEST
 GTI_LIM
 GEOM
 SKY
 AIMPTS
 TDET
 OTOL
 OTOL_SEC

 2D_PSF
 EEF
 ENERGY_GRID
 REEF
 RPSF
 WPSF

 DETMAP
 EBOUNDS
 MATRIX
 SPECRESP
 SPECRESP MATRIX
 FEF_PHA
 FEF_PI

 GYRO_SFMA
 IRU_CHAR
 RWA_BSPD
 ALIGN
 FID_POS
 CCD_CHAR
 FDC
 CCD_RESP
 DARK_CURR

Summary Table 1

INSTRUME	Reference	CCLS	CCNM	CDES
ACIS	1-4	BCF	GRADE	Detector grade table
ACIS	2-7	BCF	BADPIX	Detector bad pixel list

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ACIS	1-7	BCF	DET_GAIN	Detector gain table
ACIS	1-8	BCF	CTI	Charge Transfer correction
ACIS	1-9	BCF	EVSPLT	Event and Split Thresholds
ACIS	2-4	BCF	QE	Quantum Efficiency table
ACIS		BCF	GTI_LIM	Parameter limits for GTI
ACIS		CPF	DETMAP	Instrument map
ACIS		CPF	SPECRESP	Spectral response
ACIS		CPF	MATRIX	Redistribution and spectral response matrix
ACIS	2-8	CPF	IRM	Integrated redistribution matrix
ACIS	2-11	CPF	EBOUNDS	Energy bounds
ACIS	4-3	CPF	RPSF	Radial point spread function
ACIS	4-3	CPF	REEF	Radial encircled energy fraction
ACIS	4-3	CPF	2D_PSF	Two-dimensional point spread function
ACIS		CPF	FEF_PI	FEF for RMF's using MKRMF
ACIS		CPF	FEF_PHA	FEF for RMF's using MKRMF
HRC	3-7	BCF	BADPIX	Bad pixel list
HRC	3-4	BCF	GMAP	Detector gain correction map
HRC	3-5	BCF	ADC	Detector ADC correction table
HRC	3-6	BCF	DEGAP	Degap correction table
HRC	2-4	BCF	QE	Quantum Efficiency table
HRC	2-13	BCF	HESF	Drake flat High Energy Suppression Filter
HRC	3-8	BCF	FPTEST	Event hyperbolic test coefficient table
HRC	3-9	BCF	EFTEST	Event flatness test coefficient table
HRC	3-10	BCF	SATTEST	Event amp saturation test coefficient table
HRC	3-11	BCF	TAPRINGTEST	Event tap-ringing test coefficient table
HRC		BCF	GTI_LIM	Parameter limits for GTI
HRC		CPF	DETMAP	Instrument map
HRC		CPF	SPECRESP	Spectral response
HRC		CPF	MATRIX	Redistribution and spectral response matrix
HRC		CPF	RPSF	Radial point spread function
HRC		CPF	REEF	Radial encircled energy fraction
HRC		CPF	2D_PSF	Two-dimensional point spread function
TEL		BCF	AIMPTS	Detector aimpoint positions
TEL		BCF	GEOM	Detector geometry
TEL		BCF	SKY	Focal plane sky coordinate system
TEL		BCF	TDET	Tile detector coordinate system
TEL/HRMA	2-3	BCF	AXEFFA	Telescope on-axis effective area table
TEL/HRMA	2-4	BCF	EFFAREA	Telescope effective area map
TEL/HRMA	2-5	BCF	VIGNET	Telescope vignetting map
TEL/HRMA	2-7	CPF	WPSF	PSF widths
TEL/HRMA	4-3	CPF	RPSF	Radial point spread function
TEL/HRMA	4-3	CPF	REEF	Radial encircled energy fraction
TEL/HRMA	4-3	CPF	2D_PSF	Two-dimensional point spread function
TEL/HETG	2-9	BCF	GREFF	Grating efficiency
TEL/HETG		CPF	LSF	Point spread function along dispersion direction
TEL/HETG		CPF	XDSF	Point spread function across dispersion direction
TEL/HETG	4-3	CPF	2D_PSF	Two-dimensional point spread function
TEL/LETG	2-9	BCF	GREFF	Grating efficiency
TEL/LETG		CPF	LSF	Point spread function along dispersion direction
TEL/LETG		CPF	XDSF	Point spread function across dispersion direction
TEL/LETG	4-3	CPF	2D_PSF	Two-dimensional point spread function
PCAD		BCF	GYRO_SFMA	Gyro scale factor misalignment matrix
PCAD		BCF	IRU_CHAR	IRU characteristics
PCAD		BCF	ALIGN	Alignment matrix
PCAD		BCF	FID_POS	Fid light positions
PCAD		BCF	RWA_BSPD	Bad reaction wheel speeds
PCAD		BCF	CCD_CHAR	CCD characteristics
PCAD		BCF	CTI	CCD charge transfer inefficiency
PCAD		BCF	FDC	ACA field distortion coefficients
PCAD		BCF	CCD_RESP	CCD response image
PCAD		BCF	DARK_CURR	CCD dark current image
EPHIN		BCF	GEOM	Geometric factors

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Summary Table 2

CONTENT	Reference	CCNM	HDUNAME	HDUCLASS	HDUCLAS1	HDUCLAS2	HDUCLAS3
CDB_ACIS_GRADE	1-4	GRADE	AXAF_GRADE	ASC	DETCHAR	GRADE	
CDB_ACIS_BADPIX	2-7	BADPIX	AXAF_BADPIX	ASC	REGION	STANDARD	BADPIX
CDB_ACIS_GAIN	1-7	DET_GAIN	AXAF_DET_GAIN	ASC	DETCHAR	DET_GAIN	
CDB_ACIS_CTI	1-8	CTI	AXAF_CTI	ASC	DETCHAR	CTI	
CDB_ACIS_EVTSPILT	1-9	EVTSPILT	AXAF_EVTSPILT	ASC	DETCHAR	EVTSPILT	
CDB_ACIS_QE	2-4	QE	AXAF_QE	ASC	DETCHAR	QE	MEAN
CDB_ACIS_QEU	2-4	QEU	AXAF_QEU	ASC	DETCHAR	QE	UNIF
CDB_ACIS_QEXYE	2-4	QEXYE	AXAF_QEXYE	ASC	DETCHAR	QE	XY_ENERGY
CDB_ACIS_GTILIM		GTI_LIM	AXAF_LIMITS	ASC	GTI	LIMITS	
CDB_ACIS_DETMAP		DETMAP	AXAF_DETMAP	OGIP	IMAGE	DETMAP	
CDB_ACIS_ARF		SPECRESP	AXAF_ARF	OGIP	RESPONSE	SPECRESP	
CDB_ACIS_RMF		MATRIX	AXAF_RMF	OGIP	RESPONSE	RSP_MATRIX	REDIST
CDB_ACIS_IRM	2-8	IRM	AXAF_IRM	ASC	RESPONSE	CCD	
CDB_ACIS_BOUNDS	2-11	EBOUNDS	AXAF_EBOUNDS	OGIP	RESPONSE	EBOUNDS	
CDB_ACIS_RPSF	4-3	RPSF	AXAF_RPSF	ASC	RESPONSE	PSF	RPSF
CDB_ACIS_REEF	4-3	REEF	AXAF_REEF	ASC	RESPONSE	PSF	REEF
CDB_ACIS_2DPSF	4-3	2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF
CDB_HRCI_BADPIX		BADPIX	AXAF_BADPIX	ASC	REGION	STANDARD	BADPIX
CDB_HRCS_BADPIX		BADPIX	AXAF_BADPIX	ASC	REGION	STANDARD	BADPIX
CDB_HRCI_GAIN	3-4	GMAP	AXAF_GAINMAP	ASC	IMAGE	GAINMAP	
CDB_HRCS_GAIN	3-4	GMAP	AXAF_GAINMAP	ASC	IMAGE	GAINMAP	
CDB_HRCI_ADC	3-5	ADC	AXAF_ADC	ASC	DETCHAR	ADC	
CDB_HRCS_ADC	3-5	ADC	AXAF_ADC	ASC	DETCHAR	ADC	
CDB_HRCI_DEGAP	3-6	DEGAP	AXAF_DEGAP	ASC	DETCHAR	DEGAP	
CDB_HRCS_DEGAP	3-6	DEGAP	AXAF_DEGAP	ASC	DETCHAR	DEGAP	
CDB_HRCI_QE	2-4	QE	AXAF_QE	ASC	DETCHAR	QE	MEAN
CDB_HRCI_QEU	2-4	QEU	AXAF_QEU	ASC	DETCHAR	QE	UNIF
CDB_HRCI_QEXYE	2-4	QEXYE	AXAF_QEXYE	ASC	DETCHAR	QE	XY_ENERGY
CDB_HRCS_QE	2-4	QE	AXAF_QE	ASC	DETCHAR	QE	MEAN
CDB_HRCS_QEU	2-4	QEU	AXAF_QEU	ASC	DETCHAR	QE	UNIF
CDB_HRCS_QEXYE	2-4	QEXYE	AXAF_QEXYE	ASC	DETCHAR	QE	XY_ENERGY
CDB_HRCI_HESF	2-10	HESF	AXAF_HESF	ASC	RESPONSE	FILTER	HESF
CDB_HRCS_HESF	2-10	HESF	AXAF_HESF	ASC	RESPONSE	FILTER	HESF
CDB_HRCI_GTILIM		GTI_LIM	AXAF_LIMITS	ASC	GTI	LIMITS	
CDB_HRCS_GTILIM		GTI_LIM	AXAF_LIMITS	ASC	GTI	LIMITS	
CDB_HRCI_EFTEST	3-8	EFTEST	AXAF_EFTEST	ASC	DETCHAR	EFTEST	
CDB_HRCS_EFTEST	3-8	EFTEST	AXAF_EFTEST	ASC	DETCHAR	EFTEST	
CDB_HRCI_FPTEST	3-9	FPTEST	AXAF_FPTEST	ASC	DETCHAR	FPTEST	
CDB_HRCS_FPTEST	3-9	FPTEST	AXAF_FPTEST	ASC	DETCHAR	FPTEST	
CDB_HRCI_SATTEST	3-10	SATTEST	AXAF_SATTEST	ASC	DETCHAR	SATTEST	
CDB_HRCS_SATTEST	3-10	SATTEST	AXAF_SATTEST	ASC	DETCHAR	SATTEST	
CDB_HRCI_TAPRINGTEST	3-11	TAPRINGTEST	AXAF_TAPRINGTEST	ASC	DETCHAR	TAPRINGTEST	
CDB_HRCS_TAPRINGTEST	3-11	TAPRINGTEST	AXAF_TAPRINGTEST	ASC	DETCHAR	TAPRINGTEST	
CDB_HRCI_DETMAP		DETMAP	AXAF_DETMAP	OGIP	IMAGE	DETMAP	
CDB_HRCS_DETMAP		DETMAP	AXAF_DETMAP	OGIP	IMAGE	DETMAP	
CDB_HRCI_ARF		SPECRESP	AXAF_ARF	OGIP	RESPONSE	SPECRESP	
CDB_HRCS_ARF		SPECRESP	AXAF_ARF	OGIP	RESPONSE	SPECRESP	
CDB_HRCI_RMF		MATRIX	AXAF_RMF	OGIP	RESPONSE	RSP_MATRIX	REDIST
CDB_HRCS_RMF		MATRIX	AXAF_RMF	OGIP	RESPONSE	RSP_MATRIX	REDIST
CDB_HRCI_RPSF	4-3	RPSF	AXAF_RPSF	ASC	RESPONSE	PSF	RPSF
CDB_HRCS_RPSF	4-3	RPSF	AXAF_RPSF	ASC	RESPONSE	PSF	RPSF
CDB_HRCI_REEF	4-3	REEF	AXAF_REEF	ASC	RESPONSE	PSF	REEF
CDB_HRCS_REEF	4-3	REEF	AXAF_REEF	ASC	RESPONSE	PSF	REEF
CDB_HRCI_2DPSF	4-3	2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF
CDB_HRCS_2DPSF	4-3	2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF

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CDB_HRMA_AXEFFA	2-3	AXEFFA	AXAF_AXEFFA	ASC	RESPONSE	EFF	AXEFFA
CDB_HRMA_EFFA	2-4	EFFAREA	AXAF_EFFAREA	ASC	IMAGE	EFFAREA	
CDB_HRMA_VIGNET	2-5	VIGNET	AXAF_VIGNET	ASC	IMAGE	VIGNETTING	
CDB_HRMA_WPSF	2-7	WPSF	AXAF_WPSF	ASC	RESPONSE	PSF	WPSF
CDB_HRMA_RPSF	4-3	RPSF	AXAF_RPSF	ASC	RESPONSE	PSF	RPSF
CDB_HRMA_REEF	4-3	REEF	AXAF_REEF	ASC	RESPONSE	PSF	REEF
CDB_HRMA_2DPSF	4-3	2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF
CDB_HETG_GREFF	2-9	GREFF	AXAF_GREFF	ASC	RESPONSE	EFF	GREFF
CDB_HETG_LSF		LSF	AXAF_LSF	ASC	RESPONSE	PSF	LSF
CDB_HETG_XDSF		XDSF	AXAF_XPSF	ASC	RESPONSE	PSF	XPSF
CDB_HETG_2DPSF		2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF
CDB_LETG_GREFF	2-9	GREFF	AXAF_GREFF	ASC	RESPONSE	EFF	GREFF
CDB_LETG_LSF		LSF	AXAF_LSF	ASC	RESPONSE	PSF	LSF
CDB_LETG_XDSF		XDSF	AXAF_XPSF	ASC	RESPONSE	PSF	XPSF
CDB_LETG_2DPSF		2D_PSF	AXAF_2DPSF	ASC	RESPONSE	PSF	2DPSF
CDB_DET_POS		DET_POS	OBISIM_ARD	ASC	CONFIG	POS	
CDB_DET_POSCORR		DET_POSCORR	SIM_DELTA_ARD	ASC	CONFIG	POSCORR	
CDB_GYRO_SFMA		GYRO_SFMA	CALSFMA	ASC	CONFIG	GYRO_SFMA	
CDB_IRU_CHAR		IRU_CHAR	CALIRU	ASC	CONFIG	IRU_CHAR	
CDB_RWA_BSPD		RWA_BSPD	CALRWS	ASC	CONFIG	RWA_BSPD	
CDB_PCAD_ALIGN		ALIGN	CALALIGN	ASC	CONFIG	ALIGN	
CDB_FID_POS		FID_POS	CALALIGN1	ASC	CONFIG	FID_POS	
CDB_ACA_CCD		CCD_CHAR	CALCCD	ASC	DETCHAR	CCD	
CDB_ACA_CTI		CTI	CALCTI	ASC	DETCHAR	CTI	
CDB_ACA_FDC		FDC	CALFDC	ASC	DETCHAR	FDC	
CDB_ACA_CCD_RESP		CCD_RESP	PRIMARY	ASC	RESPONSE	CCD	
CDB_ACA_DARK_CURR		DARK_CURR	PRIMARY	ASC	RESPONSE	DARK_CURR	
CDB_EPHIN_GEOM		GEOM	EPHGF_ARD	ASC	CHAR		
CDB_DET_AIMPOINTS		AIMPTS	AIMPOINTS	ASC	DETECTOR	AIMPOINTS	
CDB_DET_GEOMETRY		GEOM	GEOMETRY	ASC	DETCHAR	GEOMETRY	
CDB_FP_SKY_COORDS		SKY	FPSYS	ASC	COORDINATES	FOCAL_PLANE	
CDB_TDET_COORDS		TDET	TDET_INDEX	ASC	COORDINATES	TDET	

Individual Products

ACIS CALDB File Specifications

• ACIS Grade Table

```

Reference:      1-4

Directory:     $CALDB/data/chandra/acis/bcf/grade

File names:    acisDyyyy-mm-ddgradeN0000.fits

CALDB call:    quzCIF chandra acis - - grade yyyy-mm-dd hh:mm:ss\
               expr='MODE.eq.TIMED' or CONTINUOUS'
               (Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION       AXAF
TELESCOP     CHANDRA
INSTRUME     ACIS
DETNAM       <This keyword must not be specified>
FILTER       NONE
GRATING      NONE
EXTNAME      AXAF_GRADE
CONTENT      CDB_ACIS_GRADE
    
```

Header Specifications – CALDB 2

HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	GRADE
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GRADE
CBDlmmmm	MODE(TIMED) or MODE(CONTINUOUS)
CDESmmmmm	Detector grade table

• *ACIS Bad Pixel List*

A detailed bad pixel list is bundled with data products, based in part on the archive bad pixel list.

```
Reference:      2-7

Directory:     $CALDB/data/chandra/acis/bcf/badpix

File names:    acisDyyyy-mm-ddbadpixN0000.fits

CALDB call:    quzCIF chandra acis acis-n - badpix yyyy-mm-dd hh:mm:ss\
               expr='fp_temp.eq.xxx.xx'
               (Date and Time from *_evt2.fits DATE-OBS keyword.)
```

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_BADPIX
CONTENT	CDB_BADPIX
HUCLASS	ASC
HUCLAS1	REGION
HUCLAS2	BADPIX
HUCLAS3	STANDARD
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	BADPIX
CBDlmmmm	FP_TEMP(???.??-???.??)K
CDESmmmmm	ACIS Bad pixel list

• *ACIS Bias Map*

The most recent bias map(s) is(are) bundled with data products.

• *ACIS Gain Table*

```
Reference:      1-7

Directory:     $CALDB/data/chandra/acis/bcf/gain

File names:    acisDyyyy-mm-ddgainN0000.fits

CALDB call:    quzCIF chandra acis - - det_gain yyyy-mm-dd hh:mm:ss\
               expr='fp_temp.eq.xxx.xx'
               (Date and Time from *_evt2.fits DATE-OBS keyword.)
```

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	<This keyword must not be specified>
FILTER	NONE
GRATING	NONE

Header Specifications – CALDB 2

EXTNAME	AXAF_DETGAIN
CONTENT	CDB_ACIS_GAIN
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	DETGAIN
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	DET_GAIN
CBD1mmmm	FP_TEMP(???.??-???.??)K
CBD2mmmm	CCD_ID(0-9)
CDESmmmmm	Detector gain table

• ***ACIS CTI Table*** (not yet implemented)

Reference: 1-8

Directory: \$CALDB/data/chandra/acis/bcf/cti

File names: acisDyyyy-mm-ddctiN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_CTI
CONTENT	CDB_ACIS_CTI
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	CTI
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	CTI
CBDnmmmm	none
CDESmmmmm	Charge Transfer correction

• ***ACIS Event and Split Thresholds Table***

Reference: 1-9

Directory: \$CALDB/data/chandra/acis/bcf/evtsplt

File names: acisDyyyy-mm-ddevtspltN0000.fits

CALDB call: quzCIF chandra acis - - evtsplt yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	NONE
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_EVTSPILT
CONTENT	CDB_ACIS_EVTSPILT
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	EVTSPILT
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	EVTSPILT
CBDnmmmm	none

Header Specifications – CALDB 2

CDESmmmm Event and Split Thresholds

• *ACIS QE Table*

Three files: Mean QE, QE Uniformity, Discrete QE vs. Position and Energy

Reference: 2-2

Directory: \$CALDB/data/chandra/acis/bcf/qe

File names: acisDyyyy-mm-ddqeN0000.fits
 acisDyyyy-mm-ddqeuN0000.fits
 acisDyyyy-mm-ddqexyeN0000.fits

CALDB call: quzCIF chandra acis acis-n - qe yyyy-mm-dd hh:mm:ss -
 quzCIF chandra acis acis-n - qeu yyyy-mm-dd hh:mm:ss\
 expr='fp_temp.eq.xxx.xx'
 (Date and Time from *_evt2.fits DATE-OBS keyword.)
 qexye is not yet implemented

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_QE AXAF_QEU AXAF_QEXYE
CONTENT	CDB_ACIS_QE CDB_ACIS_QEU CDB_ACIS_QEXYE
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	QE
HDUCLAS3	MEAN, UNIF, XY_ENERGY
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	QE, QEU, QEXYE
CBD1mmmmmm	ENERG(???-???)keV
CBD2mmmmmm	FP_TEMP(???.??-???.??)K (QEU only)
CDESmmmmmm	Mean Quantum Efficiency Quantum Efficiency Uniformity Discrete Quantum Efficiency vs Position and Energy

• *ACIS GTI limits*

Reference: None

Directory: \$CALDB/data/chandra/acis/bcf/gtilim

File names: acisDyyyy-mm-ddgtilimN0000.fits

CALDB call: quzCIF chandra acis - - gti_lim yyyy-mm-dd hh:mm:ss -
 (Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	NONE
FILTER	NONE
GRATING	NONE
EXTNAME	LIMITS

Header Specifications – CALDB 2

CONTENT	CDB_ACIS_GTILIM
HDUCLASS	ASC
HDUCLAS1	GTI
HDUCLAS2	LIMITS
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GTI_LIM
CBDnmmmm	none
CDESmmmmm	Parameter limits for GTI

• *ACIS Exposure Map*

Bundled with data products, derived from instrument map (DETMAP).

• *ACIS Instrument Map* (not included in CALDB)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/detmap

File names: acisDyyyy-mm-dddetmapN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_DETMAP
CONTENT	CDB_ACIS_DETMAP
HDUCLASS	OGIP
HDUCLAS1	IMAGE
HDUCLAS2	DETMAP
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	DETMAP
CBDnmmmm	none
CDESmmmmm	ACIS Instrument map

• *ACIS AR* (not included in CALDB)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/arf

File names: acisDyyyy-mm-ddarfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_ARF
CONTENT	CDB_ACIS_ARF
HDUCLASS	OGIP
HDUCLAS1	RESPONSE
HDUCLAS2	SPECRESP
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	SPECRESP
CBDnmmmm	none
CDESmmmmm	Spectral response

Header Specifications – CALDB 2

- **ACIS Fits–embedded function** (for mkrmf)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/feFs/FP<tempC>

File names: acis<ccd_id>X<xrange>Y<yrange>Dyyyy-mm-ddfefpiN0000.fits
 acis<ccd_id>X<xrange>Y<yrange>Dyyyy-mm-ddfefphaN0000.fits

CALDB call: quzCIF chandra acis - - fef_pha/feF_pi yyyy-mm-dd hh:mm:ss\
 expr='fp_temp.eq.???.???'
 (Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	NONE
FILTER	NONE
GRATING	NONE
EXTNAME	FUNCTION
CONTENT	CDB_ACIS_FEF_PI/CDB_ACIS_FEF_PHA
HDUCLASS	ASC
HDUCLAS1	FUNCTION
HDUCLAS2	PI/PHA
CCLSmmmmm	CPF
CDTPmmmmmm	FEF
CCNMmmmmmm	FEF_PI/FEF_PHA
CBD1mmmmmm	CHIPX(1-1024)
CBD2mmmmmm	CHIPY(1-1024)
CBD3mmmmmm	FP_TEMP(???.??-???.??)K
CBD4mmmmmm	CHANTYPE(PHA or PI)
CBD5mmmmmm	CCD_ID(0-9)
CDESmmmmmm	'FEF for RMFs with mkrmf'

- **ACIS RMF (PHA)** (not included in CALDB)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/rmf

File names: acisDyyyy-mm-ddrmfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_RMF
CONTENT	CDB_ACIS_RMF
HDUCLASS	OGIP
HDUCLAS1	RESPONSE
HDUCLAS2	RSP_MATRIX
HDUCLAS3	REDIST
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	MATRIX
CBD1mmmmmm	Same as corresponding FEF
CBD2mmmmmm	Same as corresponding FEF
CBD3mmmmmm	Same as corresponding FEF
CDESmmmmmm	Redistribution and spectral response matrix

- **ACIS RMF (PI)** (not included in CALDB)

Header Specifications – CALDB 2

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/rmf

File names: acisDyyyy-mm-ddrmfpiN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_RMF
CONTENT	CDB_ACIS_RMF
HDUCLASS	OGIP
HDUCLAS1	RESPONSE
HDUCLAS2	PI_MATRIX
HDUCLAS3	REDIST
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	MATRIX
CBD1mmmm	Same as corresponding FEF
CBD2mmmm	Same as corresponding FEF
CBD3mmmm	Same as corresponding FEF
CDESmmmmm	Spectral redistribution matrix

• **ACIS IRMF**

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/rmf

File names: acisDyyyy-mm-ddirmN0000.fits

CALDB call: quzCIF chandra acis - - irm yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_IRM
CONTENT	CDB_ACIS_IRM
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	CCD
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	IRM
CBDmmmmmm	none
CDESmmmmm	ACIS Integrated redistribution matrix

• **ACIS OSIP** (replaces IRMF)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/osip

File names: acisDyyyy-mm-ddosipN0000.fits

CALDB call: quzCIF chandra acis - - osip yyyy-mm-dd hh:mm:ss\

Header Specifications – CALDB 2

expr='fp_temp.eq.xxx.xx'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	NONE
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_OSIP
CONTENT	CDB_ACIS_OSIP
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	CCD
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	OSIP
CBD1mmmmmm	FP_TEMP(???.??-???.??)K
CBD2mmmmmm	CCD_ID(0-9)
CDESmmmmm	ACIS order-sorting and integrated power table

• **ACIS Energy Bounds** (not indexed separately)

Reference: 2-11

Directory: \$CALDB/data/chandra/acis/cpf/ebounds

File names: acisDyyyy-mm-ddeboundsN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_EBOUNDS
CONTENT	CDB_ACIS_BNDS
HDUCLASS	OGIP
HDUCLAS1	RESPONSE
HDUCLAS2	EBOUNDS
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	EBOUNDS
CBDnmmmmmm	none
CDESmmmmm	ACIS Energy Bounds

• **ACIS RPSF** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/rpsf

File names: acisDyyyy-mm-ddrpsfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_RPSF
CONTENT	CDB_ACIS_RPSF
HDUCLASS	ASC

Header Specifications – CALDB 2

HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	RPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	RPSF
CBDnmmmm	none
CDESmmmm	Radial point spread function

• **ACIS REEF** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/reef

File names: acisDyyyy-mm-ddreefN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-n
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_REEF
CONTENT	CDB_ACIS_REEF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	REEF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	REEF
CBDnmmmm	none
CDESmmmm	Radial encircled energy function

• **ACIS 2DPSF**

Reference:

Directory: \$CALDB/data/chandra/acis/cpf/2dpsf

File names: acisDyyyy-mm-dd2dpsfnN0000.fits

CALDB call: quzCIF chandra acis acis-i - 2d_psf **yyyy-mm-dd hh:mm:ss** expr='cd1_1.eq.???'
quzCIF chandra acis acis-s - 2d_psf **yyyy-mm-dd hh:mm:ss** expr='cd1_1.eq.???'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-I / ACIS-S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_2DPSF
CONTENT	CDB_ACIS_2DPSF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	2DPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	2D_PSF
CBDlmmmm	SAOSAC_AZ(-??-??)arcmin

Header Specifications – CALDB 2

CBD2mmmm	SAOSAC_EL(-??-??)arcmin
CBD3mmmm	ENERG(?.???-?.??)keV
CBD4mmmm	DEFOCUS(0-0)um
CBD5mmmm	CD1_1(?.???)mm / X pixel size in mm
CBD6mmmm	CD2_2(?.???)mm / Y pixel size in mm
CDESmmmm	Two-dimensional point spread function

HRC CALDB File Specifications

• *HRC Bad Pixel Map*

Reference: 3-7

Directory: \$CALDB/data/chandra/hrc/bcf/badpix

File names: hrciDyyyy-mm-ddbadpixN0000.fits
hrCsDyyyy-mm-ddbadpixN0000.fits

CALDB call: quzCIF chandra hrc hrc-i/s - badpix yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION AXAF
TELESCOP CHANDRA
INSTRUME HRC-I/S
DETNAM HRC-I/S
FILTER NONE
GRATING NONE
EXTNAME AXAF_BADPIX
CONTENT CDB_HRCI_BADPIX
CDB_HRCS_BADPIX

HDUCLASS ASC
HDUCLAS1 REGION
HDUCLAS2 STANDARD
HDUCLAS3 BADPIX
CCLSmmmmm BCF
CDTPmmmm DATA
CCNMmmmm BADPIX
CBDnmmmm none
CDESmmmm Bad pixel list

• *HRC Gain Map*

Reference: 3-4

Directory: \$CALDB/data/chandra/hrc/bcf/gain

File names: hrciDyyyy-mm-ddgainN0000.fits
hrCsDyyyy-mm-ddgainN0000.fits

CALDB call: quzCIF chandra hrc hrc-i - gmap yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - gmap yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION AXAF
TELESCOP CHANDRA
INSTRUME HRC
DETNAM HRC-I/S
FILTER NONE
GRATING NONE

Header Specifications – CALDB 2

EXTNAME	AXAF_GAINMAP
CONTENT	CDB_HRCI_GAIN
	CDB_HRCS_GAIN
HUCLASS	ASC
HUCLAS1	IMAGE
HUCLAS2	GAINMAP
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GMAP
CBDnmmmm	none
CDESmmmmm	Detector gain correction map

• *HRC ADC correction table* (not yet implemented)

Reference: 3-5

Directory: \$CALDB/data/chandra/hrc/bcf/adc

File names: hrciDyyyy-mm-ddadcN0000.fits
hrscDyyyy-mm-ddadcN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_ADC
CONTENT	CDB_HRCI_ADC
	CDB_HRCS_ADC
HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	ADC
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	ADC
CBDnmmmm	none
CDESmmmmm	Detector ADC correction table

• *HRC Degap Correction Table*

Reference: 3-6

Directory: \$CALDB/data/chandra/hrc/bcf/degap

File names: hrciDyyyy-mm-ddgapN0000.fits
hrscDyyyy-mm-ddgapN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_DEGAP
CONTENT	CDB_HRCI_DEGAP
	CDB_HRCS_DEGAP
HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	DEGAP
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	DEGAP

Header Specifications – CALDB 2

CBDnmmmm none
 CDESmmmm Detector degap correction table

• *HRC QE Table*

Three pairs of files: Mean QE, QE Uniformity, and Discrete QE vs. Position and Energy.

Reference: 2-2

Directory: \$CALDB/data/chandra/hrc/bcf/qe

File names: hrciDyyyy-mm-ddqeN0000.fits
 hrCsDyyyy-mm-ddqeN0000.fits
 hrciDyyyy-mm-ddqeuN0000.fits
 hrCsDyyyy-mm-ddqeuN0000.fits
 hrciDyyyy-mm-ddqexyeN0000.fits
 hrCsDyyyy-mm-ddqexyeN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - qe/qeu yyyy-mm-dd hh:mm:ss -
 quzCIF chandra hrc hrc-sn - qe/qeu yyyy-mm-dd hh:mm:ss -
 n is 1, 2 (where n for the specific plate)
 (Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/Sn
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_QE AXAF_QEU AXAF_QEXYE
CONTENT	CDB_HRCI_QE / CDB_HRCS_QE CDB_HRCI_QEU / CDB_HRCS_QEU CDB_HRCI_QEXYE / CDB_HRCS_QUXYE
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	QE
HDUCLAS3	MEAN, UNIF, XY_ENERGY
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	QE, QEU, QEXYE
CBDnmmmm	ENERG(???-???)keV
CDESmmmm	Quantum efficiency table Quantum Efficiency Uniformity Discrete Quantum Efficiency vs Position and Energy

• *HRC High Energy Suppression Filter* (not yet implemented)

Reference: 2-13

Directory: \$CALDB/data/chandra/hrc/bcf/hesf

File names: hrciDyyyy-mm-ddhesfN0000.fits
 hrCsDyyyy-mm-ddhesfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	HESF
GRATING	NONE
EXTNAME	AXAF_HESF

Header Specifications – CALDB 2

CONTENT	CDB_HRCI_HESF CDB_HRCS_HESF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	FILTER
HDUCLAS3	HESF
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	HESF
CBDnmmmmmm	none
CDESmmmmmm	High Energy Suppression Filter (Drake Flat)

• *HRC Event Flatness Test Coefficients*

Reference: 3-9

Directory: \$CALDB/data/chandra/hrc/bcf/efctest

Filenames: hrciDyyyy-mm-ddefctestN0000.fits
hrscDyyyy-mm-ddefctestN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - efctest yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - efctest yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOPE	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_EFTEST
CONTENT	CDB_HRCI/S_EFTEST
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	EFTEST
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	EFTEST / Mission-specific to AXAF/HRC
CBDnmmmmmm	none
CDESmmmmmm	Event flatness test coefficient table

• *HRC Hyperbolic Test Coefficients*

Reference: 3-8

Directory: \$CALDB/data/chandra/hrc/bcf/fptest

Filenames: hrciDyyyy-mm-ddfptestN0000.fits
hrscDyyyy-mm-ddfptestN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - fptest yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - fptest yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOPE	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_FPTEST
CONTENT	CDB_HRCI/S_FPTEST

Header Specifications – CALDB 2

HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	FPTEST
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	FPTEST / Mission-specific to AXAF/HRC
CBDnmmmm	none
CDESmmmm	Event hyperbolic test coefficient table

• **HRC Amp Saturation Test Coefficients**

Reference: 3-10

Directory: \$CALDB/data/chandra/hrc/bcf/satatest

Filenames: hrciDyyyy-mm-ddsatatestN0000.fits
hrcsDyyyy-mm-ddsatatestN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - satatest yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - satatest yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOPE	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_SATTEST
CONTENT	CDB_HRCI/S_SATTEST
HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	SATTEST
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	SATTEST / Mission-specific to AXAF/HRC
CBDnmmmm	none
CDESmmmm	Event amp saturation test coefficient table

• **HRC Tap-ringing test coefficients**

Reference: 3-11

Directory: \$CALDB/data/chandra/hrc/bcf/tapring

Filenames: hrciD<yyyy-mm-dd>tapringN0000.fits
hrcsD<yyyy-mm-dd>tapringN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - tapringtest yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - tapringtest yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/HRC-S
GRATING	NONE
FILTER	NONE
EXTNAME	AXAF_TAPRINGTEST
CONTENT	CDB_HRCI_TAPRINGTEST/CDB_HRCS_TAPRINGTEST
HUCLASS	ASC
HUCLAS1	DETCHAR
HUCLAS2	TAPRINGTEST

Header Specifications – CALDB 2

CCLS0001	BCF
CDTP0001	DATA
CCNM0001	TAPRINGTEST
CBDn0001	none
CDES0001	'Event tap ringing test coefficient table'

• *HRC-S/LETG Bowtie Region*

Reference:

Directory: \$CALDB/data/chandra/hrc/bcf/tgmask2

Filename: letgDyyyy-mm-ddregN0000.fits

CALDB call: quzCIF chandra hrc hrc-s - tgmask2 yyyy-dd-mm hh:mm:ss expr='grating.eq.letg
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-S
FILTER	NONE
GRATING	LETG
EXTNAME	REGION
CONTENT	CDB_HRCS_LETG_TGMASK2
HDUCLASS	ASC
HDUCLAS1	TG
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	TGMASK2
CBD10001	GRATING(LETG)
CDES0001	LETGS spectral region filter

• *HRC GTI limits*

Reference: None

Directory: \$CALDB/data/chandra/hrc/bcf/gtilim

File names: hrciDyyyy-mm-ddgtilimN0000.fits
hrCsDyyyy-mm-ddgtilimN0000.fits

CALDB calls: quzCIF chandra hrc hrc-i - gti_lim yyyy-mm-dd hh:mm:ss -
quzCIF chandra hrc hrc-s - gti_lim yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	LIMITS
CONTENT	CDB_HRCI_GTILIM CDB_HRCS_GTILIM
HDUCLASS	ASC
HDUCLAS1	GTI
HDUCLAS2	LIMITS
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GTI_LIM
CBDnmmmm	none
CDESmmmm	Parameter limits for GTI

Header Specifications – CALDB 2

- **HRC Exposure Map**

Bundled with data products, derived from instrument map (DETMAP).

- **HRC Instrument Map** (not included in CALDB)

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/detmap

File names: hrciDyyyy-mm-dddetmapN0000.fits
 hrCsDyyyy-mm-dddetmapN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_DETMAP
CONTENT	CDB_HRCI_DETMAP CDB_HRCS_DETMAP
HDUCLASS	OGIP
HDUCLAS1	IMAGE
HDUCLAS2	DETMAP
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	DETMAP
CBDnmmmmmm	none
CDESmmmmmm	HRC Instrument map

- **HRC ARF** (not included in CALDB)

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/arf

File names: hrciDyyyy-mm-ddarfN0000.fits
 hrCsDyyyy-mm-ddarfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_ARF
CONTENT	CDB_HRCI_ARF CDB_HRCS_ARF
HDUCLASS	OGIP
HDUCLAS1	RESPONSE
HDUCLAS2	SPECRESP
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	SPECRESP
CBDnmmmmmm	none
CDESmmmmmm	Spectral response

- **HRC RMF** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/rmf

Header Specifications – CALDB 2

File names: hrciDyyyy-mm-ddrmfN0000.fits
hrCsDyyyy-mm-ddrmfN0000.fits

MISSION AXAF
TELESCOP CHANDRA
INSTRUME HRC
DETNAM HRC-I/S
FILTER NONE
GRATING NONE
EXTNAME AXAF_RMF
CONTENT CDB_HRCI_RMF
CDB_HRCS_RMF
HDUCLASS OGIP
HDUCLAS1 RESPONSE
HDUCLAS2 RSP_MATRIX
HDUCLAS3 REDIST
CCLSmmmmm CPF
CDTPmmmm DATA
CCNMmmmm MATRIX
CBDnmmmm none
CDESmmmmm Redistribution and spectral response matrix

• **HRC RPSF** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/rpsf

File names: hrciDyyyy-mm-ddrpsfN0000.fits
hrCsDyyyy-mm-ddrpsfN0000.fits

MISSION AXAF
TELESCOP CHANDRA
INSTRUME HRC
DETNAM HRC-I/S
FILTER NONE
GRATING NONE
EXTNAME AXAF_RPSF
CONTENT CDB_HRCI_RPSF
CDB_HRCS_RPSF
HDUCLASS ASC
HDUCLAS1 RESPONSE
HDUCLAS2 PSF
HDUCLAS3 RPSF
CCLSmmmmm CPF
CDTPmmmm DATA
CCNMmmmm RPSF
CBDnmmmm none
CDESmmmmm Radial point spread function

• **HRC REEF** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/rpsf

File names: hrciDyyyy-mm-ddreefN0000.fits
hrCsDyyyy-mm-ddreefN0000.fits

MISSION AXAF
TELESCOP CHANDRA
INSTRUME HRC

Header Specifications – CALDB 2

DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_REEF
CONTENT	CDB_HRCI_REEF CDB_HRCS_REEF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	REEF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	REEF
CBDnmmmm	none
CDESmmmm	Radial encircled energy fraction

• **HRC 2DPSF**

Reference:

Directory: \$CALDB/data/chandra/hrc/cpf/2dpsf

File names: hrciDyyyy-mm-dd2dpsf<n>N0000.fits
hrscDyyyy-mm-dd2dpsf<n>N0000.fits

CALDB call: quzCIF chandra hrc hrc-i - 2d_psf **yyyy-mm-dd hh:mm:ss** expr='cd1_1.eq.???'
quzCIF chandra hrc hrc-s - 2d_psf **yyyy-mm-dd hh:mm:ss** expr='cd1_1.eq.???'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-I/S
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_2DPSF
CONTENT	CDB_HRCI_2DPSF CDB_HRCS_2DPSF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	2DPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	2D_PSF
CBDnmmmm	none
CDESmmmm	Two-dimensional point spread function

HRMA CALDB File Specifications

• **HRMA On-axis Effective Area**

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/bcf/effarea

File names: hrmaDyyyy-mm-ddaxeffaN0000.fits

CALDB call: quzCIF chandra tel hrma - axeffa **yyyy-mm-dd hh:mm:ss** expr='shell.eq.???'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

Header Specifications – CALDB 2

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_AXEFFA
CONTENT	CDB_HRMA_AXEFFA
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	EFF
HDUCLAS3	AXEFFA
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	AXEFFA
CBD1mmmm	ENERG_LO(?-?)keV
CBD2mmmm	THETA(0)arcmin / Axial effective area only
CBD3mmmm	PHI(0)arcmin / Axial effective area only
CBD4mmmm	SHELL(????)
CBD5mmmm	ENERG_HI(?-?)keV
CDESmmmmm	Telescope on-axis effective area table

• *HRMA Effective Area* (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/bcf/effarea

File names: hrmaDyyyy-mm-ddeffaN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_EFFAREA
CONTENT	CDB_HRMA_EFFA
HDUCLASS	ASC
HDUCLAS1	IMAGE
HDUCLAS2	EFFAREA
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	EFFAREA
CBDnmmmm	none
CDESmmmmm	Telescope effective area map

• *HRMA Vignetting*

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/bcf/vignet

File names: hrmaDyyyy-mm-ddvignetN0000.fits

CALDB call: quzCIF chandra tel hrma - vignet yyyy-mm-dd hh:mm:ss expr='SHELL.eq.????'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA

Header Specifications – CALDB 2

FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_VIGNET
CONTENT	CDB_HRMA_VIGNET
HUCLASS	ASC
HUCLAS1	IMAGE
HUCLAS2	VIGNETTING
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	VIGNET
CBD1mmmmmm	ENERG_LO(?-?)keV
CBD2mmmmmm	THETA(0.00-??)arcmin
CBD3mmmmmm	PHI(0.00-??)arcmin
CBD4mmmmmm	SHELL(????)
CBD5mmmmmm	ENERG_HI(?-?)keV
CDESmmmmm	Telescope vignetting map

• **HRMA PSF Widths**

Reference: 2-10

Directory: \$CALDB/data/chandra/tel/hrma/cpf/wpsf

File names: hrmaDyyyy-mm-ddwpsfN0000.fits

CALDB call: quzCIF chandra tel hrma - wpsf yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_WPSF
CONTENT	CDB_HRMA_WPSF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	WPSF
CCLSmmmmm	CPF
CDTPmmmmmm	DATA
CCNMmmmmmm	WPSF
CBDnmmmmmm	none
CDESmmmmm	Radial point spread function widths

• **HRMA RPSF**

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/cpf/rpsf

File names: hrmaDyyyy-mm-ddrpsfN0000.fits

CALDB call: quzCIF chandra tel hrma - rpsf yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE

Header Specifications – CALDB 2

EXTNAME	AXAF_RPSF
CONTENT	CDB_HRMA_RPSF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	PSF
HDUCLAS3	RPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	RPSF
CBDnmmmm	none
CDESmmmm	Radial point spread function

• *HRMA REEF* (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/cpf/rpsf

File names: hrmaDyyyy-mm-ddreefN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_REEF
CONTENT	CDB_HRMA_REEF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	PSF
HDUCLAS3	REEF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	RPSF
CBDnmmmm	none
CDESmmmm	Radial encircled energy fraction

• *HRMA 2DPSF* (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/hrma/cpf/2dpsf

File names: hrmaDyyyy-mm-dd2dpsfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	HRMA
FILTER	NONE
GRATING	NONE
EXTNAME	AXAF_2DPSF
CONTENT	CDB_HRMA_2DPSF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	PSF
HDUCLAS3	2DPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	2D_PSF
CBDnmmmm	none
CDESmmmm	Two-dimensional point spread function

Grating CALDB File Specifications

• *LETG Efficiency*

Reference: 2-12

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/greff

File names: letgDyyyy-mm-ddgreffN0000.fits

CALDB call: quzCIF chandra tel grating - greff yyyy-mm-dd hh:mm:ss expr='GRATING.eq.LETG.'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	LETG
EXTNAME	AXAF_GREFF
CONTENT	CDB_LETG_GREFF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	EFF
HDUCLAS3	GREFF
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GREFF
CBDnmmmm	none
CDESmmmm	Grating efficiency

• *HETG Efficiency*

Reference: 2-12

Directory: \$CALDB/data/chandra/tel/grating/hetg/cpf/greff

File names: hetgDyyyy-mm-ddgreffN0000.fits

CALDB call: quzCIF chandra tel grating - greff yyyy-mm-dd hh:mm:ss expr='GRATING.eq.HETG.'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	HETG
EXTNAME	AXAF_GREFF
CONTENT	CDB_HETG_GREFF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	EFF
HDUCLAS3	GREFF
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GREFF
CBDnmmmm	none
CDESmmmm	Grating efficiency

Header Specifications – CALDB 2

• *LETG/HRC–S Grating RMF*

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/rmf

File name: hrcleg#yyyy-mm-ddrmfN0000.fits
is the grating order

CALDB call: quzCIF chandra hrc hrc-s - matrix yyyy-mm-dd hh:mm:ss expr='GRATING.eq.LETG.and.TG_M
(Date and Time from *_evt2.fits DATE-OBS keyword.)
NOTE: This file is stored in TEL branch, indexed in HRC branch.

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	HRC
DETNAM	HRC-S
FILTER	NONE
GRATING	LETG
GRATTYPE	LEG
TG_M	?
MLAM_MIN	?
CONTENT	CDB_HRCS_LETG_RMF
EXTNAME	AXAF_RMF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	RSP_MATRIX
HDUCLAS3	REDIST
CCLSmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	MATRIX
CBD1mmmm	THETA(0.0-?.??)arcmin
CBD2mmmm	ENERG_LO(?.???-?.???)keV
CBD3mmmm	GRATING(LETG)
CBD4mmmm	GRATTYPE(LEG)
CBD5mmmm	TG_M(?)
CBD6mmmm	MLAM_MIN(?.?)angstrom
CDESmmmm	Grating redistribution matrix

• *LETG/ACIS–S Grating RMF*

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/rmf

File name: acisleg#yyyy-mm-ddrmfN0000.fits
is the grating order

CALDB call: quzCIF chandra acis acis-456789 - matrix yyyy-mm-dd hh:mm:ss expr='GRATING.eq.LETG.a
(Date and Time from *_evt2.fits DATE-OBS keyword.)
NOTE: This file is stored in TEL branch, indexed in ACIS branch.

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-456789
FILTER	NONE
GRATING	LETG
GRATTYPE	LEG
TG_M	?
MLAM_MIN	?
CONTENT	CDB_ACIS_LETG_RMF

Header Specifications – CALDB 2

EXTNAME	AXAF_RMF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	RSP_MATRIX
HUCLAS3	REDIST
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	MATRIX
CBD1mmmm	THETA(0.0-?.??)arcmin
CBD2mmmm	ENERG_LO(?.???-?.???)keV
CBD3mmmm	GRATING(LETG)
CBD4mmmm	GRATTYPE(LEG)
CBD5mmmm	TG_M(?)
CBD6mmmm	MLAM_MIN(?.?)angstrom
CDESmmmm	Grating redistribution matrix

• **HETG/ACIS-S Grating RMF**

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/rmf

File name: acissheg#yyyy-mm-ddrmfN0000.fits
 acissmeg#yyyy-mm-ddrmfN0000.fits
 # is the grating order

CALDB call: quzcif chandra acis acis-456789 - matrix yyyy-mm-dd hh:mm:ss expr='GRATTYPE.e
 (Date and Time from *_evt2.fits DATE-OBS keyword.)
 NOTE: This file is stored in TEL branch, indexed in ACIS branch.

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	ACIS
DETNAM	ACIS-456789
FILTER	NONE
GRATING	HETG
GRATTYPE	HEG / MEG
TG_M	?
MLAM_MIN	?
CONTENT	CDB_ACISS_LETG_RMF
EXTNAME	AXAF_RMF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	RSP_MATRIX
HUCLAS3	REDIST
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	MATRIX
CBD1mmmm	THETA(0.0-?.??)arcmin
CBD2mmmm	ENERG_LO(?.???-?.???)keV
CBD3mmmm	GRATING(HETG)
CBD4mmmm	GRATTYPE(???)
CBD5mmmm	TG_M(?)
CBD6mmmm	MLAM_MIN(?.?)angstrom
CDESmmmm	Grating redistribution matrix

• **LETG Point Spread Function along Dispersion Direction** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/lsf

File names: letgDyyyy-mm-ddlsfN0000.fits

Header Specifications – CALDB 2

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	LETG
EXTNAME	AXAF_LSF
CONTENT	CDB_LETG_LSF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	PSF
HDUCLAS3	LSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	LSF
CBDnmmmm	none
CDESmmmmm	Point spread function along dispersion direction

• ***LETG Point Spread Function across Dispersion Direction*** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/xdsf

File names: letgDyyyy-mm-ddxdsfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	LETG
EXTNAME	AXAF_XPSF
CONTENT	CDB_LETG_XDSF
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	PSF
HDUCLAS3	XPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	XDSF
CBDnmmmm	none
CDESmmmmm	Point spread function across dispersion direction

• ***LETG Two-dimensional Point Spread Function*** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/grating/letg/cpf/2dpsf

File names: letgDyyyy-mm-dd2dpsfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	LETG
EXTNAME	AXAF_2DPSF
CONTENT	CDB_LETG_2DPSF
HDUCLASS	ASC
HDUCLAS1	RESPONSE

Header Specifications – CALDB 2

HUCLAS2	PSF
HUCLAS3	2DPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	2D_PSF
CBDnmmmm	none
CDESmmmm	Two-dimensional point spread function

• ***HETG Point Spread Function along Dispersion Direction*** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/grating/hetg/cpf/lst

File names: hetgDyyyy-mm-ddlstN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	HETG
EXTNAME	AXAF_LSF
CONTENT	CDB_HETG_LSF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	LSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	LSF
CBDnmmmm	none
CDESmmmm	Point spread function along dispersion direction

• ***HETG Point Spread Function across Dispersion Direction*** (not yet implemented)

Reference:

Directory: \$CALDB/data/chandra/tel/grating/hetg/cpf/xdsf

File names: hetgDyyyy-mm-ddxdsfN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	GRATING
FILTER	NONE
GRATING	HETG
EXTNAME	AXAF_XPSF
CONTENT	CDB_HETG_XDSF
HUCLASS	ASC
HUCLAS1	RESPONSE
HUCLAS2	PSF
HUCLAS3	XPSF
CCLSmmmmm	CPF
CDTPmmmm	DATA
CCNMmmmm	XDSF
CBDnmmmm	none
CDESmmmm	Point spread function across dispersion direction

• ***HETG Two-dimensional Point Spread Function*** (not yet implemented)

Reference:

Header Specifications – CALDB 2

Directory: \$CALDB/data/chandra/tel/grating/hetg/cpf/2dpsf

File names: hetgDyyyy-mm-dd2dpsfN0000.fits

MISSION AXAF

TELESCOP CHANDRA

INSTRUME TEL

DETNAM GRATING

FILTER NONE

GRATING HETG

EXTNAME AXAF_2DPSF

CONTENT CDB_HETG_2DPSF

HDUCLASS ASC

HDUCLAS1 RESPONSE

HDUCLAS2 PSF

HDUCLAS3 2DPSF

CCLSmmmmm CPF

CDTPmmmmm DATA

CCNMmmmmm 2D_PSF

CBDnmmmm none

CDESmmmmm Two-dimensional point spread function

SIM CALDB File Specifications

• *SIM Focus Position File*

Reference:

Directory: \$CALDB/data/chandra/sim/bcf/pos

Filename: simD<yyyy-mm-dd>posN0000.fits

MISSION AXAF

TELESCOP CHANDRA

INSTRUME SIM

DETNAM <This keyword must be excluded.>

FILTER NONE

GRATING NONE

EXTNAME OBISIM_ARD

CONTENT CDB_DET_POS

HDUCLASS ASC

HDUCLAS1 CONFIG

HDUCLAS2 POS

CCLSmmmmm BCF

CDTPmmmmm DATA

CCNMmmmmm DET_POS

CBDnmmmm none

CDESmmmmm Default in-focus positions

• *SIM Detector Position Correction File*

Reference:

Directory: \$CALDB/data/chandra/sim/bcf/pos

Filename: simD<yyyy-mm-dd>poscorrN0000.fits

MISSION AXAF

TELESCOP CHANDRA

INSTRUME SIM

Header Specifications – CALDB 2

DETNAM	<This keyword must be excluded.>
FILTER	NONE
GRATING	NONE
EXTNAME	SIM_DELTA_ARD
CONTENT	CDB_DET_POSCORR
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	POSCORR
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	DET_POSCORR
CBDnmmmm	none
CDESmmmmm	Detector position corrections

PCAD CALDB File Specifications

• *PCAD Gyro Scale Factor Misalignment Matrix*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/sfma

Filenames: gyroDyyyy-mm-ddsfmaN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	GYRO
FILTER	NONE
GRATING	NONE
EXTNAME	CALSFMA
CONTENT	CDB_GYRO_SFMA
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	GYRO_SFMA
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	GYRO_SFMA
CBDnmmmm	none
CDESmmmmm	Gyro scale factor misalignment matrix

• *PCAD IRU Characteristics*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/iru

Filenames: iruDyyyy-mm-ddcharN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	IRU
FILTER	NONE
GRATING	NONE
EXTNAME	CALIRU
CONTENT	CDB_IRU_CHAR
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	IRU_CHAR

Header Specifications – CALDB 2

CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	IRU_CHAR
CBDnmmmmmm	none
CDESmmmmmm	PCAD IRU characteristics

• *PCAD Bad Reaction Wheel Speeds*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/rws

File names: rwaDyyyy-mm-ddbspdN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	RWA
FILTER	NONE
GRATING	NONE
EXTNAME	CALRWS
CONTENT	CDB_RWA_BSPD
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	RWA_BSPD
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	RWA_BSPD
CBDnmmmmmm	none
CDESmmmmmm	Bad reaction wheel speeds

• *PCAD ACA Alignment Matrix*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/align

File names: pcadDyyyy-mm-ddalignDN0000.fits

EXTENSION: CALALIGN

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	<This keyword must be excluded.>
FILTER	NONE
GRATING	NONE
EXTNAME	CALALIGN
CONTENT	CDB_PCAD_ALIGN
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	ALIGN
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	ALIGN
CBDnmmmmmm	none
CDESmmmmmm	Alignment matrix

EXTENSION: CALALIGN1

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD

Header Specifications – CALDB 2

DETNAM	<This keyword must be excluded.>
FILTER	NONE
GRATING	NONE
EXTNAME	CALALIGN1
CONTENT	CDB_FID_POS
HDUCLASS	ASC
HDUCLAS1	CONFIG
HDUCLAS2	FID_POS
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	FID_POS
CBDnmmmm	none
CDESmmmmm	Fid light positions

• **PCAD ACA CCD Characteristics**

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/ccd

FileNames: acapDyyyy-mm-ddccdN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	ACA-P
FILTER	NONE
GRATING	NONE
EXTNAME	CALCCD
CONTENT	CDB_ACA_CCD
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	CCD
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	CCD_CHAR
CBDnmmmm	none
CDESmmmmm	CCD characteristics

• **PCAD ACA CCD Charge Transfer Inefficiency**

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/cti

FileNames: acapDyyyy-mm-ddctiN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	ACA-P
FILTER	NONE
GRATING	NONE
EXTNAME	CALCTI
CONTENT	CDB_ACA_CTI
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	CTI
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	CTI
CBDnmmmm	none
CDESmmmmm	ACA charge transfer inefficiency

Header Specifications – CALDB 2

• *PCAD ACA Field Distortion Coefficients*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/fdc

Filenames: acapDyyyy-mm-ddfdcN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	ACA-P
FILTER	NONE
GRATING	NONE
EXTNAME	CALFDC
CONTENT	CDB_ACA_FDC
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	FDC
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	FDC
CBDnmmmm	none
CDESmmmm	ACA field distortion coefficients

• *PCAD ACA CCD Response Image*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/image

Filenames: acapDyyyy-mm-ddrespN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	ACA-P
FILTER	NONE
GRATING	NONE
EXTNAME	PRIMARY
CONTENT	CDB_ACA_CCD_RESP
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	CCD
CCLSmmmmm	BCF
CDTPmmmm	DATA
CCNMmmmm	CCD_RESP
CBDnmmmm	none
CDESmmmm	ACA response image

• *PCAD ACA CCD Dark Current Image*

Reference: http://hea-www.harvard.edu/asclocal/doss/docs/aldcroft_02-Jul-97.ps

Directory: \$CALDB/data/chandra/pcad/bcf/image

Filenames: acapDyyyy-mm-dddarkN0000.fits

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	PCAD
DETNAM	ACA-P
FILTER	NONE

Header Specifications – CALDB 2

GRATING	NONE
EXTNAME	PRIMARY
CONTENT	CDB_ACA_DARK_CURR
HDUCLASS	ASC
HDUCLAS1	RESPONSE
HDUCLAS2	DARK_CURR
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	DARK_CURR
CBDnmmmmmm	none
CDESmmmmmm	ACA dark current image

EPHIN CALDB File Specifications

• *EPHIN Geometric Factors*

Reference:

Directory: \$CALDB/data/chandra/ephin/bcf/geom

Filename: ephinD<yyyy-mm-dd>geomN0000.fits

CALDB call: quzCIF chandra ephin - - geom yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	EPHIN
DETNAM	<This keyword must be excluded.>
FILTER	NONE
GRATING	NONE
EXTNAME	EPHGF_ARD
CONTENT	CDB_EPHIN_GEOM
HDUCLASS	ASC
HDUCLAS1	CHAR
CCLSmmmmm	BCF
CDTPmmmmmm	DATA
CCNMmmmmmm	GEOM
CBDnmmmmmm	none
CDESmmmmmm	Geometric factors

PIXLIB Coordinate Library CALDB File Specifications

• *PIXLIB Aimpoint Positions*

Reference:

Directory: \$CALDB/data/chandra/tel/bcf/aimpts

Filename: telD<yyyy-mm-dd>aimptsN0000.fits

CALDB call: quzCIF chandra tel - - aimpts yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL

Header Specifications – CALDB 2

DETNAM	NONE
FILTER	NONE
GRATING	NONE
CONTENT	CDB_DET_AIMPOINTS
EXTNAME	AIMPOINTS
HDUCLASS	ASC
HDUCLAS1	DETECTOR
HDUCLAS2	AIMPOINTS
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	AIMPTS
CBDn0001	none
CDES0001	'Detector aimpoint positions'

• *PIXLIB Geometry*

Reference:

Directory: \$CALDB/data/chandra/tel/bcf/geom

Filename: telD<yyyy-mm-dd>geomN0000.fits

CALDB call: quzCIF chandra tel - - geom yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	NONE
FILTER	NONE
GRATING	NONE
CONTENT	CDB_DET_GEOMETRY
EXTNAME	INSTRUMENTS
HDUCLASS	ASC
HDUCLAS1	DETCHAR
HDUCLAS2	GEOMETRY
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	GEOM
CBDn0001	none
CDES0001	'Detector geometry'

• *PIXLIB Sky Coordinates*

Reference:

Directory: \$CALDB/data/chandra/tel/bcf/sky

Filename: telD<yyyy-mm-dd>skyN0000.fits

CALDB call: quzCIF chandra tel - - sky yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAM	NONE
FILTER	NONE
GRATING	NONE
CONTENT	CDB_FP_SKY_COORDS
EXTNAME	FPSYS
HDUCLASS	ASC
HDUCLAS1	COORDINATES

Header Specifications – CALDB 2

HUCLAS2	FOCAL_PLANE
HUCLAS3	SKY
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	SKY
CBDn0001	none
CDES0001	'Focal plane sky coordinate system'

• *PIXLIB Tile Detector Coordinates*

Reference:

Directory: \$CALDB/data/chandra/tel/bcf/tdet

Filename: telD<yyyy-mm-dd>tdetN0000.fits

CALDB call: quzCIF chandra tel - - tdet yyyy-mm-dd hh:mm:ss -
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAME	NONE
FILTER	NONE
GRATING	NONE
CONTENT	CDB_TDET_COORDS
EXTNAME	TDET_INDEX
HUCLASS	ASC
HUCLAS1	COORDINATES
HUCLAS2	TDET
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	TDET
CBDn0001	none
CDES0001	'Tile detector coordinate system'

• *OBIDET Tolerances* (implementation in progress)

Reference:

Directory: \$CALDB/data/chandra/tel/bcf/otol

File name: telDyyyy-mm-ddotolN0000.fits

CALDB call: quzCIF chandra tel - - otol yyyy-mm-dd hh:mm:ss expr='OBS_MODE.eq.???'
(Date and Time from *_evt2.fits DATE-OBS keyword.)

MISSION	AXAF
TELESCOP	CHANDRA
INSTRUME	TEL
DETNAME	NONE
FILTER	NONE
GRATING	NONE
CONTENT	CDB_OBI_TOLERANCES
EXTNAME	OBI_TOLERANCES
HUCLASS	ASC
HUCLAS1	OBIDET
HUCLAS2	TOLERANCES
CCLS0001	BCF
CDTP0001	DATA
CCNM0001	OTOL
CBD10001	OBS_MODE(???, ???, ???, ...)
CDES0001	'Observation interval mode tolerances'

Header Specifications – CALDB 2

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URL:
http://cxc.harvard.edu/caldb/documents/header_specs.html
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