



Burstcube

BurstCube archive

Version 1.

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1 Archive : Overview and Content

1.1 Introduction

The mission BurstCube (PI J.Perkins) was a 6U CubeSat with the primary objective to search localize and characterized sky events in the energy band 10 keV - 1 MeV, with emphasis to short Gamma-ray Burst. It was launched on March 21, 2024 with Space X commercial resupply mission to the International Space Station from where it was deployed in space on April 18, 2024. The instrument consists of four Cesium Iodide (CsI) scintillators (Fig 1) , each read out by 116 silicon photomultipliers (SiPMs). During operation BurstCube was to monitor the sky with its large Field of View ($\sim > 6$ sr) and sends down data in two modes. The Continuous Binned Data (CBD) mode has spectra binned in 16 channels (counted as 0-15) collected every N second where N is an adjustable value and a Time-Tagged Event (T3E) mode, where each event is time-tagged and a spectral channel within 1024 is assigned. Data in the two modes are collected by detector. The CBD mode data were always collected and sent on ground. Data in T3E are sent on ground if a transient event triggers on board or if requested from ground (RT3E). In addition, if the detector triggered on board Alert Trigger Data were planned to be sent on ground containing dynamically time-binned 16 energy channel spectra together with associated spacecraft position, pointing and other information.

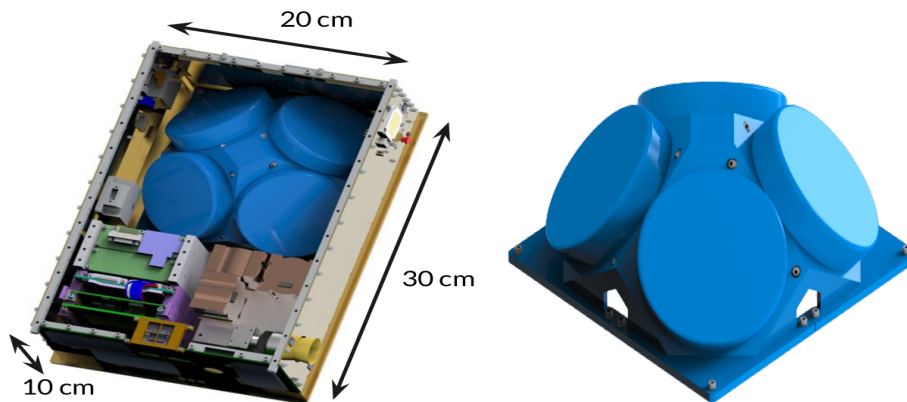


Fig 1. BurstCube assembled (left), detector (right)

The mission was set to operate for one year, however a number of challenges with the spacecraft (attitude control system sensors and GPS malfunctioning and one of the solar arrays did not deploy) shorten the mission lifetime as well as rearrange the planned mission operations. The science period started in late May and ended on Sep 14, 2025, due to the orbit decay. The instrument was not always operating and data were downloaded on ground for a subset of days during the science period (see Appendix 1).

The BurstCube archive includes the science and housekeeping data (all levels) and calibration files necessary to analyze the data. This document describes the BurstCube archive and includes: the data organization, archive structure and filename convention and the description of the science and housekeeping FITS file headers. The archive description reflects the actual post-operation final data, the planned archive was more complex and it is not reported here.

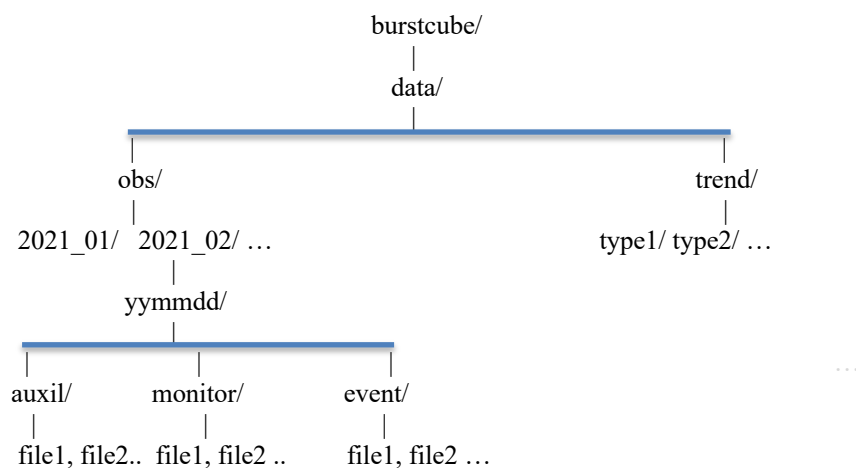
The BurstCube Science Mission Operating center (SMOC) is located at the Goddard Space Flight Center (GSFC). The data processing pipeline was at the SMOC and the data outputs are provided to the HEASARC for the final archive.

1.2 Observation Definition and Sequence Number

A BurstCube observation is defined as the data collected by the four units detectors on BurstCube over a period of 24 hours. Each observation is labeled with a unique number (or sequence number) set to a 6 digits number that specified year (2 digits), month (2 digits) and day (2 digits) in the following format YYMMDD. The sequence number is used to name the directory containing the science and HK files and it is embedded in the filename.

1.3 Directory structure

The BurstCube archive includes all original data from level 1 of all detectors and products. The top BurstCube data directory is divided in the following two directories: obs/ and trend/. The first contains the science and housekeeping data recorded by the satellite, the second contains different type of files relevant to the entire missions. The obs/ directory is organized in subdirectories named after the year and month (YYYY_MM). The science data files for each observation are within a sequence number (YYMMDD) located under the appropriate year/month directory. Each sequence is further subdivided in the subdirectories auxil/, monitor/ and events/. The trend directory is organized in subdirectories dedicated to a specific data type.



1.4 Data in the archive and Filename convention

BurstCube was set to operate mainly in two modes:

- Continuous Binned Data (CBD) were spectra binned in 16 channels are collected every N second where N is an adjustable value. This mode was planned to operate at all times (see timeline in Appendix A). The CBD data collected are stored in FITS file one for each detector. In total there are 45 observations with CBD data archived.
- Trigger Time-Tagged Event (T3E) or Requested Trigger Time Tagged RTTE): For on-board triggers (or requested) data are collected by events in 1024 energy channels and stored in a FITS file one for each detector. The T3E event file were planned to span a period from -10 sec up to 100 sec from the trigger time and the triggering disable for 10 min. During the mission event data were collected at specific time and there is not trigger associated. In total there are 45 observations with CBD data archived.

Additional file in the archive are orbit and housekeeping. Not attitude data are available because of malfunctioning of the attitude system. However, attitude solution was derived for three points in time (see trend).

The archival data associated to each BurstCube observation includes housekeeping data and data obtained with the CBD and Event modes for the four detectors. All files are in FITS format. The filename conventions for the obs/ files are:

bcYYMMDDiii_ mmmm_ ll.yyyy.gz	(science)
bcYYMMDDiii.yyyy.gz	(det HK)
bcYYMMDD.yyyy.gz	(general HK)

where the first 10 characters are bcYYMMDD to indicate the mission/instrument (bc) and the unique data identifier (YYMMDD).

The *iii* is assigned to the detector specification and defined as *csN* where *cs* is the short for the detector name and N is a detector number and ranges from 0-3. If a file is applicable to all detectors the *iii* is set to *csa*.

The ‘mmmm’ string is reserved to specify the data mode: ‘*Xcbd*’ for data taken in CBD mode , ‘*tte*’ for the T3E (or RTTE) event mode. The ‘X’ for the CBD mode is a single digit to identify the following integration time 0.064s (X= 1), 0.128s (X= 2), 0.256s (X= 3), 0.512s (X= 4), 1.024s (X= 5). During the mission the data were taken all with 0.256s integration. The ‘ll’ defines the data level and set to *uf* for unfiltered and *cl* for cleaned. The suffix *yyyy* defines the type of data and set to ‘hk’, for housekeeping, ‘evt’ for event file, ‘gti’ for good time interval, ‘cat’ for the catalog file and use ‘fits’ for files that are BINARY table containing the other science data.

1.5 List of data files within a sequence

Each observation includes the files listed in the table 1.1 and include filename and a description of the file content.

Table 1.1	
a)1st data set : daily observation data	
obs/	
Auxiliary filename	Description
auxil/	
bcYYMMDDcsa.hk	HK for the parameters of the detectors
bcYYMMDD.hk	HK for spacecraft including attitude and orbit
bcYYMMDD.cat	Catalog file (list all files with the observation)
Science Data	Description
monitor/	
bcYYMMDDcs0_3cbd_uf.fits	Unfiltered CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs1_3cbd_uf.fits	Unfiltered CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs2_3cbd_uf.fits	Unfiltered CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs3_3cbd_uf.fits	Unfiltered CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs0_3cbd_cl.fits	Cleaned CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs1_3cbd_cl.fits	Cleaned CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs2_3cbd_cl.fits	Cleaned CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs3_3cbd_cl.fits	Cleaned CBD 16 chan spectra binned 0.256s detector CS0
bcYYMMDDcs0_3cbd_plot.png	Different plots of the CS0 CBD 16 chan spectra binned 0.256s
bcYYMMDDcs1_3cbd_plot.png	Different plots of the CS1 CBD 16 chan spectra binned 0.256s
bcYYMMDDcs2_3cbd_plot.png	Different plots of the CS2 CBD 16 chan spectra binned 0.256s
bcYYMMDDcs3_3cbd_plot.png	Different plots of the CS3 CBD 16 chan spectra binned 0.256s
events/	Top directory for event files
bcYYMMDDcs0_tte_uf.evt	Event det cs0
bcYYMMDDcs0_tte_uf.evt	Event det cs1
bcYYMMDDcs2_tte_uf.evt	Event det cs2
bcYYMMDDcs3_tte_uf.evt	Event det cs3

1.6 List of data files in trend directory

The trend directory contains instead different type of data divided in subdirectory as listed in table 1.2 with comments on the content. All files are in FITS format unless specified.

Table 1.2	
filename	Description
attitude/	
bc_csa_att.fits	Attitude file the only three pointing reconstructed . The file contains time, quaternion and the pointing position (array of as RA Dec and Roll). Each are valid just around the time listed in the file
gti_binning/	
bc_cs0_bin0_256.gti	Time intervals where the binning is 0.256. Detector CS0
bc_cs1_bin0_256.gti	Time intervals where the binning is 0.256. Detector CS1
bc_cs2_bin0_256.gti	Time intervals where the binning is 0.256. Detector CS2
bc_cs3_bin0_256.gti	Time intervals where the binning is 0.256. Detector CS3
gti_poscounts/	
bc_cs0_poscounts.gti	Time interval were the counts are positive. Detector CS0
bc_cs1_poscounts.gti	Time interval were the counts are positive. Detector CS1
bc_cs2_poscounts.gti	Time interval were the counts are positive. Detector CS2
bc_cs3_poscounts.gti	Time interval were the counts are positive. Detector CS3
odd_cbd_counts_6jun.csv	Time interval with additional oddities for the counts manually identified. Provided as CSV file. This Time interval includes also time to when the detector was not collecting data
bc_csa_odd_interval_in.gti	Same as odd_cbd_counts_6jun.csv but in FITS format.
bc_csa_odd_interval_out.gti	Inverse of bc_csa_odd_interval_in.gti, e.g. time intervals that do not contains oddities in counts.
bc_csa_odd_interval_in_cl.gti	Same as bc_csa_odd_interval_in.gti where the time intervals when the instrument was not observing has been removed.
bc_csa_odd_interval_out_cl.gti	Inverse of bc_csa_odd_interval_in_cl.gti, e.g. time intervals that do not contains oddities in counts and the instrument was observing.
gti_saa/	
saa_entry_exit_6jun.csv	Time intervals with identified SAA manually. Provided as CSV file. Time when instrument was not working are also included.
bc_csa_saa_in.gti	Same as saa_entry_exit_6jun.csv but in FITS format
bc_csa_saa_out.gti	Inverse of bc_csa_saa_in.gti, e.g. time intervals that do not contains SAA.
bc_csa_saa_in_cl.gti	Same as bc_csa_saa_in.gti, where the time intervals when the instrument was not observing has been removed.
bc_csa_saa_out_cl.gti	Inverse of bc_csa_saa_in_cl.gti, e.g. time intervals that do not contains SAA and the instrument was observing.

timeline/	
20250606_timeline_final.csv	Timeline of the mission. CSV format

These gtis specifically bc_csa_saa_out_cl.gti , bc_csa_odd_interval_out_cl.gti bc_csN_bin0_256.gti and bc_csN_poscounts.gti, together with the gti included the CBD unfiltered data are used to derive the CBD cleaned data.

1.7 Database table

The **burchmastr** database table associated with the BurstCube archive records information related to each observation. Each entry in the database tables has a unique identifier, **YYMMDD**, that identifies the observation and other specification. The content of the **burchmastr** includes the following parameters:

- Unique identifier for the table. Taken from the OBS_ID, it is 6-digits number indicating the YYMMDD
- Start time of the observation provided as YYYY-MM-DD hh:mm:ss. Taken from the keyword DATE-OBS in the housekeeping file.
- Stop time of the observation provided as YYYY-MM-DD hh:mm:ss. Taken from the keyword DATE-OBS in the housekeeping file.
- Number of events. Record the number of event files considering all detectors that are in the archive. If event data are not present the number of events is set to zero.
- Exposure CS0 for the CBD data. Taken from the keyword ONTIME of the CBD data file.
- Exposure CS1 for the CBD data. Taken from the keyword ONTIME of the CBD data file.
- Exposure CS2 for the CBD data. Taken from the keyword ONTIME of the CBD data file.
- Exposure CS3 for the CBD data. Taken from the keyword ONTIME of the CBD data file.
- Temporal resolution CS0 for the CBD data. Taken from the keyword TIMEDEL of the CBD data file.
- Temporal resolution CS1 for the CBD data. Taken from the keyword TIMEDEL of the CBD data file.
- Temporal resolution CS2 for the CBD data. Taken from the keyword TIMEDEL of the CBD data file.
- Temporal resolution CS3 for the CBD data. Taken from the keyword TIMEDEL of the CBD data file.
- Average rates CS0 for the CBD data. Calculated using all data and the ONTIME keyword of the CBD data file. No filtering is applied.
- Average rates CS1 for the CBD data. Calculated using all data and the ONTIME keyword of the CBD data file. No filtering is applied.

- Average rates CS2 for the CBD data. Calculated using all data and the ONTIME keyword of the CBD data file. No filtering is applied.
- Average rates CS3 for the CBD data. Calculated using all data and the ONTIME keyword of the CBD data file. No filtering is applied.
- Processing version taken from PROCVER.
- Processing date (taken) from DATE.

2 Data format

The daily data include auxiliary files and science data.

2.1 Auxiliary files: Header Keywords

The keywords necessary in the primary header and extensions for all files are listed here for each file type. The specific values for keywords are listed at the end of the section.

a) Primary header (Auxiliary): The auxiliary files have a common primary header that contains the minimum header keywords to identify the data set and/or the instrument when necessary. Since the primary header do not contain data, no other keywords are necessary. With a small variation the keywords in table 6.1a are also for the primary header for the science files:

Table 6.1a		
Primary header for housekeeping		
Keyword	Value	Comment
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME*	'CSA'	/Instrument Name
OBS_ID	'YYMMDD'	/Observation ID
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
ORIGIN	'GSFC'	/Origin of the FITS file
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date
CREATOR	'string'	/Software that create 1 st the file

The values of the INSTRUME is set to 'CSA' for files that are applicable to all instruments and to 'CS0', 'CS1', 'CS2', 'CS3' for files applicable to the individual detectors. This primary Header is applicable to the table 6.1b and 6.1c. The detectors and spacecraft housekeeping have set INSTRUME to CS.

b) Header 1st and 2nd extensions of instrument housekeeping file in the auxil/ directory:

The structure of this file has a primary header and two extensions. The primary header is described in the 6.1a. The header for the 1st and 2nd extension is in table 6.1b. The extensions have different EXTNAME and TIMEDEL since parameters are collected with different timescale.

In both extensions have been added two columns to record the original time (ORIGINAL_TIME) and the systematic error on the TIME column (TIME_SYST_ERR).

Table 6.1b		
Housekeeping detector 1st extension: parameters relevant to the 1st collection cadence		
Keyword	Value	Comment
TTYPE1	'TIME '	/ Mission Time in sec since 01 Jan 2021 00:00:00
TFORM1	'ID '	/ data format of field
TUNIT1	's '	/physical unit of field
TTYPE2	'IDAB_BIAS_VOLT'	/IDAB bias voltage
TFORM2	'4E'	/ data format of field
TUNIT2	'V'	/ physical unit of field
TTYPE3	'IDAB_BIAS_CURR'	/IDAB bias current
TFORM3	'4E '	/ data format of field
TUNIT3	'uA '	/ physical unit of field
TTYPE4	'IDAB_TEMP'	/IDAB temperatures
TFORM4	'4E '	/ data format of field
TUNIT4	'Celsius '	/ physical unit of field
TTYPE5	'IDPU_TEMP'	/IDPU temperatures
TFORM5	'1E '	/ data format of field
TUNIT5	'Celsius '	/ physical unit of field
TTYPE6	'AVG_BIAS_VOLT'	/Conditional average IDAB bias monitors
TFORM6	'1E '	/ data format of field
TUNIT6	'V '	/ physical unit of field
TTYPE7	'AVG_IDAB_TEMP'	/Conditional average IDAB temperature
TFORM7	'1E '	/ data format of field
TUNIT7	'Celsius '	/ physical unit of field
TTYPE8	'BPSU_DAC'	/Output from bias controller to the BPSU DAC
TFORM8	'1E '	/ data format of field
TUNIT8	'V '	/ physical unit of field
TTYPE9	'BPSU_FLAG'	/Actual vs programmed status 1=on
TFORM9	'4I '	/ data format of field

TTYPE10	‘BPSU_RELAY_FLAG‘	/Actual vs programmed status 1=on
TFORM10	‘4I ’	/ data format of field
TTYPE11	‘OVERCURR‘	/Detector overcurrent condition
TFORM11	‘4I ’	/ data format of field
TTYPE12	‘BASELINE_MED‘	/Sampled median moving avg for pulse baseline
TFORM12	‘4E‘	/ data format of field
TUNIT12	‘V‘	/ physical unit of field
TTYPE13	‘I2C_TEMP_SETUP‘	/Setup for I2C temperature sensors
TFORM13	‘I ’	/ data format of field
TTYPE14	‘I2C_ADC_SETUP‘	/Setup for I2C bias voltage, current ADC
TFORM14	‘I ’	/ data format of field
TTYPE15	‘I2C_SETUP_ERR‘	/Error configuring the I2C devices
TFORM15	‘13I ’	/ data format of field
TTYPE16	‘I2C_TEMP_ST_ERR‘	/State error in I2C temperature logic
TFORM16	‘I ’	/ data format of field
TTYPE17	‘I2C_ADC_ST_ERR‘	/State error in I2C bias voltage, current ADC
TFORM17	‘I ’	/ data format of field
TTYPE18	‘I2C_AD_NOAK_ERR‘	/I2C failed to respond to its address
TFORM18	‘13I ’	/ data format of field
TTYPE19	‘I2C_DAT_NOAK_ERR‘	/I2C failed to acknowledge receipt of data
TFORM19	‘13I ’	/ data format of field
TTYPE20	‘I2C_SCL_STKL_ERR‘	/SCL stuck low condition was detected
TFORM20	‘13I ’	/ data format of field
TTYPE21	‘I2C_SCL_STKH_ERR‘	/SCL stuck high condition was detected
TFORM21	‘13I ’	/ data format of field
TTYPE22	‘I2C_SDA_STKL_ERR‘	/SDA stuck low condition was detected
TFORM22	‘13I ’	/ data format of field
TTYPE23	‘I2C_SDA_STKH_ERR‘	/SDA stuck high condition was detected
TFORM23	‘13I ’	/ data format of field
TTYPE24	‘RATE_COUNT‘	/Event rate previous PPS interval
TFORM24	‘4I ’	/ data format of field
TUNIT24	‘count‘	/ physical unit of field
TTYPE25	‘TIME_ROVER_FLAG‘	/10us counter rollover since PPS, every 1.31071s

TFORM25	‘1I ’	/ data format of field
TTYPE26	‘TIME_DEVIATION’	/Deviation of 10us counter and data timestamp
TFORM26	‘1E ’	/ data format of field
TUNIT26	‘ms’	/ physical unit of field
TTYPE27	‘TRIG_ENABLED ’	/ Flag trigger enabled [0=no 1=yes] per detector
TFORM27	‘4I ’	/ data format of field
TTYPE28	‘DET_ENABLED ’	/ Flag detector enabled [0=no 1=yes] per detector
TFORM28	‘4I ’	/ data format of field
TTYPE29	‘CBD_ENABLED ’	/Flag CBD data enabled [0=no 1=yes] per detector
TFORM29	‘4I ’	/ data format of field
TTYPE30	‘TTE_ENABLED ’	/Flag TTE data enabled [0=no 1=yes] per detector
TFORM30	‘4I ’	/ data format of field
TTYPE31	‘ORIGINAL_TIME’	/Original time
TFORM31	‘1D ’	/ data format of field
TUNIT31	‘s ’	/physical unit of field
TTYPE32	‘TIME_SYST_ERR ’	/Time systematic error
TFORM32	‘1D ’	/ data format of field
TUNIT32	‘s ’	/physical unit of field
EXTNAME	‘DETECTOR_HK1’	/ name of this HDU
TELESCOP	‘BURSTCUBE’	/Telescope mission name
INSTRUME*	‘CSA’	/Instrument name
OBS_ID	‘YYMMDD’	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.007407407407E-04	/MDJ reference (fraction of day)
TIMEREFF	‘LOCAL’	/Reference Frame
TASSIGN	‘SATELLITE’	/Time assigned
TIMESYS	‘TT’	/ Time System
TIMEUNIT	‘ s’	/Time unit for timing header keywords
TIMDEL	1	/Integration time
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	‘yyyy-mm-ddThh:mm:ss’	/Start Date
DATE-END	‘yyyy-mm-ddThh:mm:ss’	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time

HDUCLASS	‘OGIP’	/ format conforms to OGIP standard
HDUCLAS1	‘TEMPORALDATA’	/hduclas1
HDUCLAS2	‘HKP’	/hduclas2
TLM2FITS	‘string’	/Software version telemetry to FITS
CREATOR	‘string’	/Software that create 1 st the file
PROCV	‘string’	/Processing version
CALDBVER	‘string’	/CALDB version
SEQPNUM	nn	/ Times the dataset has been processed
ORIGIN	‘GSFC ’	/Origin of the FITS files
DATE	‘yyyy-mm-ddThh:mm:ss’	/File creation date
CHECKSUM	‘value’	/ data unit checksum updated date
DATASUM	‘value’	/ HDU checksum updated date
Housekeeping detector 2nd extension : parameters relevant to the 2nd collection cadence		
Keyword	Value	Comment
TTYPER1	‘TIME ’	/ Mission Time in sec since 01 Jan 2021 00:00:00
TFORM1	‘ID ’	/ data format of field
TUNIT1	‘s ’	/physical unit of field
TTYPER2	‘OCURR_CTOF_ORIDE’	/ Overcurrent cutoff override bits
TFORM2	‘II ’	/ data format of field
TTYPER3	‘OCURR_CTOF_EN ’	/Overcurrent cutoff enable bits
TFORM3	‘II ’	/ data format of field
TTYPER4	‘BIAS_RELAY_EN’	/ Bias relay enable bits
TFORM4	‘II ’	/ data format of field
TTYPER5	‘IDAB_AMP_EN’	/ IDAB amplifier enable bits
TFORM5	‘II ’	/ data format of field
TTYPER6	‘BIAS_CMP_UPRT_DV’	/ IDAB_BIAS_CURR update rate temperature sensors
TFORM6	‘IE ’	/ data format of field
TUNIT6	‘Hz ’	/physical unit of field
TTYPER7	‘BIAS_HK_CLK_DV’	/ Clock rate for I2C bias state machine
TFORM7	‘IE ’	/ data format of field
TUNIT7	‘kHz ’	/physical unit of field
TTYPER8	‘TEMP_I2C_CLK_DV’	/I2C temperature clock rate sensor state machine
TFORM8	‘IE ’	/ data format of field
TUNIT8	‘kHz ’	/physical unit of field
TTYPER9	‘BIAS_DAC_CLK_DV’	/ Clock rate for SPI bias DAC state machine
TFORM9	‘IE ’	/ data format of field
TUNIT9	‘MHz ’	/physical unit of field
TTYPER10	‘TEMP_ERR_ORIDE’	/Exclusion of IDAB_TEMP from AVG IDAB_TEMP
TFORM10	‘II ’	/ data format of field

TTYPE11	‘BIAS_V_ERR_ORIDE‘	/Exclusion of IDAB_BIAS_VOLT from AVG_BIAS_VOLT
TFORM11	'II '	/ data format of field
TTYPE12	‘TEMP_AVG_SEL‘	/Select IDAB_TEMP for inclusion in AVG_IDAB_TEMP
TFORM12	'II '	/ data format of field
TTYPE13	‘BIAS_V_AVG_SEL‘	/Select IDAB_BIAS_VOLT to AVG_BIAS_VOLT inclusion
TFORM13	'II '	/ data format of field
TTYPE14	‘MIN_TEMP_LIM‘	/Minimum IDAB_TEMP for AVG_IDAB_TEMP
TFORM14	‘1E ’	/ data format of field
TUNIT14	'Celsius '	/ physical unit of field
TTYPE15	‘MAX_TEMP_LIM‘	/Maximum IDAB_TEMP for AVG_IDAB_TEMP
TFORM15	‘1E ’	/ data format of field
TUNIT15	'Celsius '	/ physical unit of field
TTYPE16	‘BIAS_CURR_LIM‘	/Maximum current limit IDAB_BIAS_CURR
TFORM16	‘4E ’	/ data format of field
TUNIT16	'mA '	/ physical unit of field
TTYPE17	‘DIRECT_BIAS_SET‘	/IDAB_BIAS_VOLT direct set point
TFORM17	‘1E ’	/ data format of field
TUNIT17	'V '	/ physical unit of field
TTYPE18	‘L_BIAS_CRTL_TEMP‘	/Lower temperature limit for bias compensation
TFORM18	‘1E ’	/ data format of field
TUNIT18	'Celsius '	/ physical unit of field
TTYPE19	‘U_BIAS_CRTL_TEMP‘	/Upper temperature limit for bias compensation
TFORM19	‘1E ’	/ data format of field
TUNIT19	'Celsius '	/ physical unit of field
TTYPE20	‘L_OLP_BIAS_CRTL‘	/L_BIAS_CRTL_TEMP for open loop compensation
TFORM20	‘1E ’	/ data format of field
TUNIT20	'V '	/ physical unit of field
TTYPE21	‘U_OLP_BIAS_CRTL‘	/U_BIAS_CRTL_TEMP for open loop compensation
TFORM21	‘1E ’	/ data format of field
TUNIT21	'V '	/ physical unit of field
TTYPE22	‘L_FBK_BIAS_CRTL‘	/L_BIAS_CRTL_TEMP for feedback compensation
TFORM22	‘1E ’	/ data format of field
TUNIT22	'V '	/ physical unit of field

TTYPE23	‘U_FBK_BIAS_CRTL‘	/U_BIAS_CRTL_TEMP for feedback compensation
TFORM23	‘1E ’	/ data format of field
TUNIT23	‘V ’	/ physical unit of field
TTYPE24	‘BIAS_SL_LIM‘	/Bias DAC max change per BIAS_CNTRLR_MODE update
TFORM24	‘1E ’	/ data format of field
TUNIT24	‘V ’	/ physical unit of field
TTYPE25	‘BIAS_CNTRLR_MODE‘	/Bias mode: off, direct, open, feedback
TFORM25	‘1I ’	/ data format of field
TTYPE26	‘BIAS_FBK_CTRL_GN‘	/Bias mode: off, direct, open, feedback
TFORM26	‘1E ’	/ data format of field
TTYPE27	‘BASE_SEL‘	/Constant Baseline value
TFORM27	‘4E ’	/ data format of field
TTYPE28	‘CON_BASE‘	/IDAB baseline median
TFORM28	‘4E ’	/ data format of field
TUNIT28	‘V ’	/ physical unit of field
TTYPE29	‘BASE_SMP_SKIP‘	/ Skip used ADC samples to compute BASELINE_MED
TFORM29	‘1I ’	/ data format of field
TTYPE30	‘XTRA_PR_MED_SMP‘	/Pairs of samples to include in BASELINE_MED
TFORM30	‘1I ’	/ data format of field
TTYPE31	‘MED_AVG_LPF_ORD‘	/Low pass filter order to compute BASELINE_MED
TFORM31	‘1E ’	/ data format of field
TTYPE32	‘PLS_PROC_LPF‘	/Low pass filter order IDAB pulse processing
TFORM32	‘4E ’	/ data format of field
TTYPE33	‘PHA_WIN‘	/Samples pre-post potential peak for IDAB events
TFORM33	‘4I ’	/ data format of field
TTYPE34	‘BASE_THRES‘	/Min lvl past baseline avg x valid IDAB peak
TFORM34	‘4E ’	/ data format of field
TUNIT34	‘mV ’	/ physical unit of field
TTYPE35	‘PEAK_THRES‘	/Min lvl past pre-post window x valid IDAB peak
TFORM35	‘4E ’	/ data format of field
TUNIT35	‘mV ’	/ physical unit of field
TTYPE36	‘ORIGINAL_TIME’	/Original time
TFORM36	‘1D ’	/ data format of field
TUNIT36	‘s ’	/physical unit of field
TTYPE37	‘TIME_SYST_ERR ’	/Time systematic error

TFORM37	'ID '	/ data format of field
TUNIT37	's '	/physical unit of field
EXTNAME	'DETECTOR HK2'	/ name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME	'CSA'	/Instrument name
OBS ID	'YYMMDD'	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMEREF	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/ Time System
TIMEUNIT	' s'	/Time unit for timing header keywords
TIMEDEL	60	/Integration time
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
HDUCLASS	'OGIP'	/ format conforms to OGIP standard
HDUCLAS1	'TEMPORALDATA'	/hduclass1
HDUCLAS2	'HKP'	/hduclas2
TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCVER	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/ Times the dataset has been processed
ORIGIN	'GSFC '	/Origin of the FITS files
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date

c) File structure of the spacecraft housekeeping file in the auxil/ directory:

The spacecraft housekeeping file contains parameter relative to the general spacecraft housekeeping as well as attitude and orbital information. The file structure, table 6.1c has an empty primary header and two extensions. The two extensions are :1) attitude housekeeping and 2) orbital housekeeping.

Table 6.1c		
1 st extension Spacecraft Housekeeping : Attitude		
Keyword	Value	Comment
TTYE1	'TIME '	/ Mission Time in sec since 01 Jan 2021 00:00:00

TFORM1	'1D '	/ data format of field
TUNIT1	's '	/physical unit of field
TTYTYPE2	'QPARAM '	/ Quaternion
TFORM2	'4D '	/ data format of field
TTYTYPE3	'POINTING '	/RA Dec Roll
TFORM3	'3D '	/ data format of field
TUNIT3	'deg '	/ physical unit of field
EXTNAME	'ATTITUDE'	/ Name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME	'CSA'	/Instrument name
OBS_ID	'YYMMDD'	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMEREF	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/ Time System
TIMEUNIT	' s'	/Time unit for timing header keywords
TIMEDEL	xxx	/Integration Time
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
HDUCLASS	'OGIP'	/ format conforms to OGIP standard
HDUCLAS1	'TEMPORALDATA'	/hduclas1
HDUCLAS2	'ATTITUDE'	/hduclas2
TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCVER	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/ Times the dataset has been processed
ORIGIN	'GSFC '	/Origin of the FITS files
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date
2nd extension Spacecraft Housekeeping : ORBIT		
Keyword	Value	Comment
TTYTYPE1	'TIME '	/ Mission Time in sec since 01 Jan 2021 00:00:00
TFORM1	'1D '	/ data format of field
TUNIT1	's '	/physical unit of field
TTYTYPE2	'X'	/ Orbit X position (J2000 ECI)
TFORM2	'1D '	/ data format of field

TUNIT2	'm'	/ physical unit of field
TTYPER3	'Y'	/ Orbit Y position (J2000 ECI)
TFORM3	'ID'	/ data format of field
TUNIT3	'm'	/ physical unit of field
TTYPER4	'Z'	/ Orbit Z position (J2000 ECI)
TFORM4	'ID'	/ data format of field
TUNIT4	'm'	/ physical unit of field
TTYPER5	'Vx'	/ Orbit X velocity (J2000 ECI)
TFORM5	'ID'	/ data format of field
TUNIT5	'm/s'	/ physical unit of field
TTYPER6	'Vy'	/ Orbit Y velocity (J2000 ECI)
TFORM6	'ID'	/ data format of field
TUNIT6	'm/s'	/ physical unit of field
TTYPER7	'Vz'	/ Orbit Z velocity (J2000 ECI)
TFORM7	'ID'	/ data format of field
TUNIT7	'm/s'	/ physical unit of field
EXTNAME	'ORBIT'	/ name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME	'CSA'	/Instrument name
OBS ID	'YYMMDD'	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMREF	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/ Time System
TIMEUNIT	's'	/Time unit for timing header keywords
TIMEDEL	xxx	/Integration time
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
HDUCLASS	'OGIP'	/ format conforms to OGIP standard
HDUCLAS1	'TEMPORALDATA'	/hduclas1
HDUCLAS2	'EPHEM'	/hduclas2
TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCVER	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/ Times the dataset has been processed
ORIGIN	'GSFC'	/Origin of the FITS files
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date

DATASUM	‘value’	/ HDU checksum updated date
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2.2 Science files: CBD and EVENT modes

The science data files for the daily data are in three data mode: Continuous Binned Data (CBD) , Event mode (Trigger Time-Tagged Event, T3E, or Requested Trigger Time Tagged, RTTE) and Alert Trigger Data (ATD).

a) Continuous Binned Data (CBD)

The Continuous Binned Data file format an empty primary header, data in the 1st extension and an optional GTI in the third extension. There is one file per instrument. The file structure is in table 6.2a.

Table 6.2a		
Primary Header		
Keyword	Value	Comment
TELESCOP	‘BURSTCUBE’	/Telescope mission Name
INSTRUME*	‘XXX’	/Instrument Name
DATAMODE	‘CBD’	/Datamode
OBS ID	‘YYMMDD’	/Observation ID
DATE-OBS	‘yyyy-mm-ddThh:mm:ss’	/Start Date
DATE-END	‘yyyy-mm-ddThh:mm:ss’	/Stop Date
ORIGIN	‘GSFC’	/Origin of the FITS file
DATE	‘yyyy-mm-ddThh:mm:ss’	/File creation date
CREATOR	‘string’	/Software that create 1 st the file
CHECKSUM	‘value’	/ data unit checksum updated date
DATASUM	‘value’	/ HDU checksum updated date
1 st Extension		
Structure for the CBD		
Keyword	Value	Comment
TTYPER1	‘TIME’	/Mission Time in sec since 01 Jan 2021 00:00:00
TFORM1	‘1D’	/data format of field
TUNIT1	‘s’	/physical unit of field
TTYPER2	‘COUNTS’	/Counts in PHA channels
TFORM2	‘16I’	/data format of field
TUNIT2	‘count’	/physical unit of field
1CDLT2	1	/Pixel increment along CTYP axis
1CDPX2	1	/reference pixel of the CTYP axis
1CRVL2	0	/Value of the CTYP axis reference pixel

1CUNI2	‘chan’	/ Unit of the pixel along the CTYP axis
1CTYP2	‘CHANNEL’	/CTYP axis name
TTYPE3	‘ORIGINAL TIME’	/Original time
TFORM3	‘1D ’	/ data format of field
TUNIT3	‘s ’	/physical unit of field
TTYPE4	‘TIME SYST ERR ’	/Time systematic error
TFORM4	‘1D ’	/ data format of field
TUNIT4	‘s ’	/physical unit of field
EXTNAME	‘CBD’	/name of this HDU
TELESCOP	‘BURSTCUBE’	/Telescope mission name
INSTRUME*	‘XXX’	/Instrument name
DATAMODE	‘CBD’	/Data mode
OBS ID	‘YYMMDD’	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMEREFF	‘LOCAL’	/Reference Frame
TASSIGN	‘SATELLITE’	/Time assigned
TIMESYS	‘TT’	/Time system
TIMEUNIT	‘ s’	/Time unit for timing header keywords
TIMEPIXR	1	/Time stamps refer to end of each bin
TIMEDEL*	xxx	/Integration time
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	‘yyyy-mm-ddThh:mm:ss’	/Start Date
DATE-END	‘yyyy-mm-ddThh:mm:ss’	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
DEADAPP	F	/if deadtime applied
TELAPSE	Value	/ TSTOP-TSTART in sec
ONTIME	Value	/Sum good time interval in sec
HDUCLASS	‘OGIP’	/ format conforms to OGIP standard
HDUCLAS1	‘ARRAY’	/hduclass1
HDUCLAS2	‘TOTAL’	/ hduclas2
ORIGIN	‘GSFC’	/Origin of the fits file
CREATOR	‘string’	/Software that create 1 st the file
PROCVER	‘string’	/Processing version
CALDBVER	‘string’	/CALDB version
SEQPNUM	nn	/Number of times the dataset has been processed
DATE	‘yyyy-mm-ddThh:mm:ss’	/File creation date
CHECKSUM	‘value’	/ data unit checksum updated date

DATASUM	'value'	/ HDU checksum updated date
2nd Extension		
Good Time Interval		
Keyword	Value	Comment
TTYPE1	'START'	/start time
TFORM1	'1D'	/data format of field
TUNIT1	's'	/physical unit of field
TTYPE2	'STOP'	/stop time
TFORM2	'1D'	/data format of field: 8-byte DOUBLE
TUNIT2	's'	/physical unit of field
TTYPE3	'START_ORIGINAL_TIME'	/start time
TFORM3	'1D'	/data format of field
TUNIT3	's'	/physical unit of field
TTYPE4	'START_TIME_SYST_ERROR'	/stop time
TFORM4	'1D'	/data format of field
TUNIT4	's'	/physical unit of field
TTYPE5	'STOP_ORIGINAL_TIME'	/start time
TFORM5	'1D'	/data format of field
TUNIT5	's'	/physical unit of field
TTYPE6	'STOP_TIME_SYST_ERROR'	/stop time
TFORM6	'1D'	/data format of field
TUNIT6	's'	/physical unit of field
EXTNAME	'STDGTI'	/name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME*	'XXX'	/Instrument name
DATAMODE	'CBD'	/Data mode
OBS_ID	'YYMMDD'	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMEREf	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/ Time System
TIMEUNIT	's'	/Time unit for timing header keywords
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
HDUCLASS	'OGIP'	/ format conforms to OGIP standard
HDUCLAS1	'GTI'	/hduclass1

TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCV	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/Number of times the dataset has been processed
ORIGIN	'GSFC'	/Origin of the FITS files
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date

The INSTRUME keyword is set to the instrument name for which the file is created for. The strings for the instrument name are 'CS0' or 'CS1' or 'CS2' or 'CS3'. The TIMEDEL is set to the time resolution, an adjustable value of 0.064s, 0.128s, 0.256s, 0.512s, and 1024s.

The final archive has data collected only with 0.256s resolution.

b) Event mode data

The event data format is described in table 6.2b and consists of an empty primary header and two extensions : the 1st is the EVENT extension, the second is the GTI extension. The event file is generated by individual detector.

Table 6.2b		
Primary Header		
Keyword	Value	Comment
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME*	'XXX'	/Instrument name
DATAMODE	'EVENT'	/Datamode
OBS ID	'YYMMDD'	/Observation ID
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
ORIGIN	'GSFC'	/Origin of the FITS file
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CREATOR	'string'	/Software that create 1 st the file
CHECKSUM	'value'	/Data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date
1 st Extension		
Structure if the Event data		
Keyword	Value	Comment
TTYPE1	'TIME'	/ Mission Time in sec since 01 Jan 2021 00:00:00
TFORM1	'1D'	/data format of field

TUNIT1	's'	/physical unit of field
TTYPER2	'PHA'	/ Pulse height amplitude
TFORM2	'1I'	/data format of field
TUNIT2	'chan'	/physical unit of field
TLMIN2	0	/ minimum legal value
TLMAX2	1023	/ maximum legal value
TTYPER3	'ORIGINAL TIME'	/Original time
TFORM3	'1D '	/ data format of field
TUNIT3	's '	/physical unit of field
TTYPER4	'TIME_SYST_ERR '	/Time systematic error
TFORM4	'1D '	/ data format of field
TUNIT4	's '	/physical unit of field
EXTNAME	'EVENTS'	/name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME	'XXX'	/Instrument name
DATAMODE	'EVENT'	/Data mode
OBS_ID	'YYMMDD'	/Observation ID
OBJECT	'string'	/Object name
RA_OBJ	value	/R.A. Object
DEC_OBJ	value	/Dec Object
POSFLAG		/Position FLAG 1=good 0=best effort -1=false
EQUINOX	2000.0	/Equinox
RADECSYS	'FK5'	/Coordinates Systems
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMREF	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/Time system
TIMEUNIT	' s'	/Time unit for timing header keywords
TIMEDEL	value	/Time resolution
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
TELAPSE	value	/ TSTOP-TSTART in sec
ONTIME	value	/ Sum good time interval in sec
EXPOSURE	value	/Exposure
DEADAPP	F	/if deadtime applied
EVTTYPE	'value'	/Event Type : T3E or RTTE

TRIG ID	'string'	/ trigger id
TRIGGER	value	/ Trigger number
TRIGTIME	Real value	/Trigger Time sec since 01 Jan 2021 00:00:00
TRIGUTC	'yyyy-mm-ddThh:mm:ss'	/TIME of Trigger Time in UTC
TRIGDET	value	/Trigger Detector 0=no 1=yes
TRIGSCAL	value	/[s] Trigger timescale
TRIGSIGN	value	/Trigger significance
TRIGEMIN	value	/ [keV] Trigger energy min
TRIGEMAX	value	/ [keV] Trigger energy max
HUCLASS	'OGIP'	/ format conforms to OGIP standard
HUCLAS1	'EVENT'	/<hduclass1>
HUCLAS2	'ALL'	/ <hduclas2>
ORIGIN	'GSFC'	/Origin of the fits file
TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCVER	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/Number of times the dataset has been processed
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date

2nd Extension

Good Time Interval

Keyword	Value	Comment
TTYPE1	'START'	/start time
TFORM1	'1D'	/data format of field
TUNIT1	's'	/physical unit of field
TTYPE2	'STOP'	/stop time
TFORM2	'1D'	/data format of field
TUNIT2	's'	/physical unit of field
TTYPE3	'START ORIGINAL TIME'	/start time
TFORM3	'1D'	/data format of field
TUNIT3	's'	/physical unit of field
TTYPE4	'START TIME SYST ERROR'	/stop time
TFORM4	'1D'	/data format of field
TUNIT4	's'	/physical unit of field
TTYPE5	'STOP ORIGINAL TIME'	/start time
TFORM5	'1D'	/data format of field
TUNIT5	's'	/physical unit of field
TTYPE6	'STOP TIME SYST ERROR'	/stop time

TFORM6	'1D'	/data format of field
TUNIT6	's'	/physical unit of field
EXTNAME	'STDGTI'	/name of this HDU
TELESCOP	'BURSTCUBE'	/Telescope mission name
INSTRUME*	'XXX'	/Instrument name
DATAMODE	'EVENT'	/Data mode
OBS_ID	'YYMMDD'	/Observation ID
MJDREFI	59215	/MJD reference day 01 Jan 2021 00:00:00
MJDREFF	8.0074074074074E-04	/MDJ reference (fraction of day)
TIMEREFF	'LOCAL'	/Reference Frame
TASSIGN	'SATELLITE'	/Time assigned
TIMESYS	'TT'	/ Time System
TIMEUNIT	' s'	/Time unit for timing header keywords
CLOCKAPP	F	/ If clock corrections are applied (T/F)
DATE-OBS	'yyyy-mm-ddThh:mm:ss'	/Start Date
DATE-END	'yyyy-mm-ddThh:mm:ss'	/Stop Date
TSTART	value	/Start time
TSTOP	value	/Start Time
HDUCLASS	'OGIP'	/ format conforms to OGIP standard
HDUCLAS1	'GTI'	/<hduclass1>
TLM2FITS	'string'	/Software version telemetry to FITS
CREATOR	'string'	/Software that create 1 st the file
PROCVER	'string'	/Processing version
CALDBVER	'string'	/CALDB version
SEQPNUM	nn	/Number of times the dataset has been processed
ORIGIN	'GSFC'	/Origin of the FITS file
DATE	'yyyy-mm-ddThh:mm:ss'	/File creation date
CHECKSUM	'value'	/ data unit checksum updated date
DATASUM	'value'	/ HDU checksum updated date

The INSTRUME keyword is set to the instrument name for which the file is created for. The strings for the instrument name are 'CS0' or 'CS1' or 'CS2' or 'CS3'.

The keyword EVTTYPE distinguishes if the event data are from an on-board trigger or a requested and it is set to 'T3E' for Trigger Time-Tagged Event or 'RTTE' for Requested Trigger Time Tagged, RTTE. However, even if the events are not for triggers, this keyword is set to T3E in the files that are in the archive.

The OBJECT, RA_OBJ and DEC_OBJ keyword contain the name of the object and the coordinates of the trigger respectively. If the trigger is a false trigger the OBJECT keyword is set to “FALSE” and the RA_OBJ and DEC_OBJ set to -999. If the trigger is caused by a solar flare the OBJECT is set to “SOLAR_FLARE” and the RA_OBJ and DEC_OBJ will correspond to the sun position at the time of the trigger. If the event could not be localized, the RA_OBJ and DEC_OBJ will be set to the best effort (or special value -2000, -2000). The POSFLAG keyword flag indicates whether the position has a good position determination or set to the best value (or special value). In the archived files the OBJECT is set to UNKNOWN.

2.3 Time column in all files

Due to the GPS malfunction the Time column is derived from the original time with an adjustment described in the caveats document. Therefore all science and housekeeping extension have added two columns ORIGINAL_TIME and TIME_SYST_ERR that report the original time and the systematic error on the TIME column. Similarly the GTI extensions have the original time stored in START_ORIGINAL_TIME and STOP_ORIGINAL_TIME and the systematic error in the START_TIME_SYST_ERR and STOP_TIME_SYST_ERR.

3 Calibration and Software

Calibration data are stored in CALDB. The list includes the library of response matrices, the channel to energy boundary convention, the channel rebinning, the south Atlantic Anomaly regions, the instruments coordinates/alignment definition and detector simulation count rate. The files are in FITS format containing special keywords to create an CALDB index. A separate document describes the format, filename conversion and other details.

The software to analyze the BurstCube data consist of a collection of tools (BCTools) that uses the Python GDT library. HEASARC have added the python interface heasoftpy to make the software available also as standalone FTOLS as well as Python tools.

4 Appendix : Timeline

The BurstCube timeline records operational events during relative to when data are science and housekeeping data are collected, major drift in the time and spacecraft reboots.

Mission elapse time	UTC	Event
106367555.3	2024-05-16T02:31:58.280	Spacecraft Reboot
106377027.3	2024-05-16T05:09:50.334	BurstCube Instrument (Housekeeping) Turned On
106382805.4	2024-05-16T06:46:08.369	BurstCube Instrument (Housekeeping) Turned Off
106526066.3	2024-05-17T22:33:49.270	Spacecraft Reboot
106870281.3	2024-05-21T22:10:44.280	Spacecraft Reboot
106887693.3	2024-05-22T03:00:56.281	Spacecraft Reboot
107036048.3	2024-05-23T20:13:31.340	BurstCube Instrument (Housekeeping) Turned On

107059512.4	2024-05-24T02:44:35.353	BurstCube Instrument (Housekeeping) Turned Off
107066342.3	2024-05-24T04:38:25.280	Spacecraft Reboot
107125012.3	2024-05-24T20:56:15.335	BurstCube Instrument (Housekeeping) Turned On
107148412.3	2024-05-25T03:26:15.335	BurstCube Instrument (Housekeeping) Turned Off
107156523.3	2024-05-25T05:41:26.280	Spacecraft Reboot
107208094.3	2024-05-25T20:00:57.339	BurstCube Instrument (Housekeeping) Turned On
107231464.3	2024-05-26T02:30:27.334	BurstCube Instrument (Housekeeping) Turned Off
107314484.3	2024-05-27T01:34:07.343	BurstCube Instrument (Housekeeping) Turned On
107336885.3	2024-05-27T07:47:28.280	Spacecraft Reboot
107336888.3	2024-05-27T07:47:31.339	BurstCube Instrument (Housekeeping) Turned Off
107569452.3	2024-05-30T00:23:35.334	BurstCube Instrument (Housekeeping) Turned On
107607352.3	2024-05-30T10:55:15.335	BurstCube Instrument (Housekeeping) Turned Off
107607360.3	2024-05-30T10:55:23.280	Spacecraft Reboot
107629133.3	2024-05-30T16:58:16.324	BurstCube Instrument (Housekeeping) Turned On
107629277.1	2024-05-30T17:00:40.116	Continuous Binned Data (CBD) Capture Turned On
107629367.1	2024-05-30T17:02:10.116	Time-Tagged Event (TTE) Capture Turned On
107629577.1	2024-05-30T17:05:40.116	Time-Tagged Event (TTE) Capture Turned Off
107697603.1	2024-05-31T11:59:26.116	Continuous Binned Data (CBD) Capture Turned Off
107697607.3	2024-05-31T11:59:30.280	Spacecraft Reboot
107697618.3	2024-05-31T11:59:41.334	BurstCube Instrument (Housekeeping) Turned Off
107717946.3	2024-05-31T17:38:29.349	BurstCube Instrument (Housekeeping) Turned On
107718129.1	2024-05-31T17:41:32.123	Continuous Binned Data (CBD) Capture Turned On
107726525.3	2024-05-31T20:01:28.335	BurstCube Instrument (Housekeeping) Turned Off
107726529.1	2024-05-31T20:01:32.115	Continuous Binned Data (CBD) Capture Turned Off
107884070.4	2024-06-02T15:47:13.351	BurstCube Instrument (Housekeeping) Turned On
107884360.1	2024-06-02T15:52:03.116	Time-Tagged Event (TTE) Capture Turned On
107884360.1	2024-06-02T15:52:03.116	Continuous Binned Data (CBD) Capture Turned On
107889910.1	2024-06-02T17:24:33.116	Time-Tagged Event (TTE) Capture Turned Off
107906864.1	2024-06-02T22:07:07.116	Continuous Binned Data (CBD) Capture Turned Off
108018612.1	2024-06-04T05:09:35.116	Continuous Binned Data (CBD) Capture Turned On
108056030.1	2024-06-04T15:33:13.106	Continuous Binned Data (CBD) Capture Turned Off
108056037.3	2024-06-04T15:33:20.349	BurstCube Instrument (Housekeeping) Turned Off
108057123.3	2024-06-04T15:51:26.280	Spacecraft Reboot
108399829.3	2024-06-08T15:03:12.282	Spacecraft Reboot
108497594.3	2024-06-09T18:12:37.280	Spacecraft Reboot
108497671.7	2024-06-09T18:13:54.719	Beginning of setting spacecraft time via ground command
108500106.3	2024-06-09T18:54:29.336	BurstCube Instrument (Housekeeping) Turned On
108500186.3	2024-06-09T18:55:49.333	BurstCube Instrument (Housekeeping) Turned Off
108506060.7	2024-06-09T20:33:43.680	Spacecraft Reboot

108654407.7	2024-06-11T13:46:10.680	Spacecraft Reboot
108665860.8	2024-06-11T16:57:03.756	BurstCube Instrument (Housekeeping) Turned On
108665901.5	2024-06-11T16:57:44.524	Continuous Binned Data (CBD) Capture Turned On
108676614.7	2024-06-11T19:56:17.725	BurstCube Instrument (Housekeeping) Turned Off
108676675.5	2024-06-11T19:57:18.526	Continuous Binned Data (CBD) Capture Turned Off
108760357	2024-06-12T19:12:00.048	BurstCube Instrument (Housekeeping) Turned On
108760367.8	2024-06-12T19:12:10.822	Continuous Binned Data (CBD) Capture Turned On
108760387	2024-06-12T19:12:30.048	BurstCube Instrument (Housekeeping) Turned Off
108760394.9	2024-06-12T19:12:37.931	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -4.97
108760397.8	2024-06-12T19:12:40.822	Continuous Binned Data (CBD) Capture Turned Off
108767817	2024-06-12T21:16:19.985	Spacecraft Reboot
108843259.7	2024-06-13T18:13:42.742	BurstCube Instrument (Housekeeping) Turned On
108843285.5	2024-06-13T18:14:08.516	Continuous Binned Data (CBD) Capture Turned On
108847237.1	2024-06-13T19:20:00.116	Continuous Binned Data (CBD) Capture Turned Off
108922612.1	2024-06-14T16:16:15.116	Continuous Binned Data (CBD) Capture Turned On
108922642.1	2024-06-14T16:16:45.116	Continuous Binned Data (CBD) Capture Turned Off
108922704.8	2024-06-14T16:17:47.816	Continuous Binned Data (CBD) Capture Turned On
108928176.3	2024-06-14T17:48:59.293	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
108928358.6	2024-06-14T17:52:01.564	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
108928485	2024-06-14T17:54:08.028	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
108928497.3	2024-06-14T17:54:20.316	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
108928946.1	2024-06-14T18:01:49.082	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
108929615.2	2024-06-14T18:12:58.219	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
108929894.8	2024-06-14T18:17:37.815	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
108929908.6	2024-06-14T18:17:51.639	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
108929961.6	2024-06-14T18:18:44.631	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
108930009.2	2024-06-14T18:19:32.247	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
108930061.5	2024-06-14T18:20:24.471	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
108930156.2	2024-06-14T18:21:59.191	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
108932435.4	2024-06-14T18:59:58.352	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.77
108946104	2024-06-14T22:47:47.035	BurstCube Instrument (Housekeeping) Turned Off
108946108.8	2024-06-14T22:47:51.816	Continuous Binned Data (CBD) Capture Turned Off
108946113	2024-06-14T22:47:55.980	Spacecraft Reboot
108997439.7	2024-06-15T13:03:22.744	BurstCube Instrument (Housekeeping) Turned On
108997462.5	2024-06-15T13:03:45.518	Continuous Binned Data (CBD) Capture Turned On
108997469.7	2024-06-15T13:03:52.744	BurstCube Instrument (Housekeeping) Turned Off
108997492.5	2024-06-15T13:04:15.518	Continuous Binned Data (CBD) Capture Turned Off
109009243.7	2024-06-15T16:20:06.670	Spacecraft Reboot
109099424	2024-06-16T17:23:06.980	Spacecraft Reboot

109157283.8	2024-06-17T09:27:26.775	BurstCube Instrument (Housekeeping) Turned On
109157286.5	2024-06-17T09:27:29.521	Continuous Binned Data (CBD) Capture Turned On
109189542.7	2024-06-17T18:25:05.734	BurstCube Instrument (Housekeeping) Turned Off
109189544.5	2024-06-17T18:25:07.515	Continuous Binned Data (CBD) Capture Turned Off
109189554.7	2024-06-17T18:25:17.680	Spacecraft Reboot
109251736.9	2024-06-18T11:41:39.879	BurstCube Instrument (Housekeeping) Turned On
109251762.7	2024-06-18T11:42:05.657	Continuous Binned Data (CBD) Capture Turned On
109251966.9	2024-06-18T11:45:29.867	BurstCube Instrument (Housekeeping) Turned Off
109252002.7	2024-06-18T11:46:05.653	Continuous Binned Data (CBD) Capture Turned Off
109269134.9	2024-06-18T16:31:37.872	BurstCube Instrument (Housekeeping) Turned On
109269226.7	2024-06-18T16:33:09.653	Continuous Binned Data (CBD) Capture Turned On
109279685.9	2024-06-18T19:27:28.880	BurstCube Instrument (Housekeeping) Turned Off
109279700.7	2024-06-18T19:27:43.652	Continuous Binned Data (CBD) Capture Turned Off
109279710.8	2024-06-18T19:27:53.817	Spacecraft Reboot
109355598.5	2024-06-19T16:32:41.485	Continuous Binned Data (CBD) Capture Turned On
109355637.7	2024-06-19T16:33:20.702	BurstCube Instrument (Housekeeping) Turned On
109394357.4	2024-06-20T03:18:40.443	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.13
109394360.7	2024-06-20T03:18:43.718	BurstCube Instrument (Housekeeping) Turned Off
109394366.5	2024-06-20T03:18:49.485	Continuous Binned Data (CBD) Capture Turned Off
109424624.6	2024-06-20T11:43:07.650	Spacecraft Reboot
109506100.4	2024-06-21T10:21:03.379	BurstCube Instrument (Housekeeping) Turned On
109506214.2	2024-06-21T10:22:57.163	Continuous Binned Data (CBD) Capture Turned On
109514768.2	2024-06-21T12:45:31.154	Continuous Binned Data (CBD) Capture Turned Off
109514782.3	2024-06-21T12:45:45.318	Spacecraft Reboot
109515027.5	2024-06-21T12:49:50.457	Continuous Binned Data (CBD) Capture Turned On
109530478.1	2024-06-21T17:07:21.135	Continuous Binned Data (CBD) Capture Turned Off
109535642.1	2024-06-21T18:33:25.145	Continuous Binned Data (CBD) Capture Turned On
109546022.1	2024-06-21T21:26:25.145	Continuous Binned Data (CBD) Capture Turned Off
109582244.1	2024-06-22T07:30:07.135	Continuous Binned Data (CBD) Capture Turned On
109588201.4	2024-06-22T09:09:24.368	BurstCube Instrument (Housekeeping) Turned Off
109588248.1	2024-06-22T09:10:11.082	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.08
109588274.1	2024-06-22T09:10:37.145	Continuous Binned Data (CBD) Capture Turned Off
109604937.3	2024-06-22T13:48:20.310	Spacecraft Reboot
109612107.7	2024-06-22T15:47:50.690	BurstCube Instrument (Housekeeping) Turned On
109612170.5	2024-06-22T15:48:53.463	Continuous Binned Data (CBD) Capture Turned On
109642894.4	2024-06-23T00:20:57.395	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -1.98
109646813.5	2024-06-23T01:26:16.543	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -5.14
109646828.5	2024-06-23T01:26:31.462	Continuous Binned Data (CBD) Capture Turned Off
109646839.7	2024-06-23T01:26:42.683	BurstCube Instrument (Housekeeping) Turned Off

109689227.7	2024-06-23T13:13:10.681	BurstCube Instrument (Housekeeping) Turned On
109689349.5	2024-06-23T13:15:12.452	Continuous Binned Data (CBD) Capture Turned On
109689439.5	2024-06-23T13:16:42.450	Continuous Binned Data (CBD) Capture Turned Off
109689455.7	2024-06-23T13:16:58.687	BurstCube Instrument (Housekeeping) Turned Off
109689461.6	2024-06-23T13:17:04.624	Spacecraft Reboot
109689892.2	2024-06-23T13:24:15.240	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.93
109783574.8	2024-06-24T15:25:37.777	BurstCube Instrument (Housekeeping) Turned On
109783641.5	2024-06-24T15:26:44.516	Continuous Binned Data (CBD) Capture Turned On
109783701.5	2024-06-24T15:27:44.516	Continuous Binned Data (CBD) Capture Turned Off
109783702.7	2024-06-24T15:27:45.740	BurstCube Instrument (Housekeeping) Turned Off
109837349.7	2024-06-25T06:21:52.743	BurstCube Instrument (Housekeeping) Turned On
109837352.5	2024-06-25T06:21:55.516	Continuous Binned Data (CBD) Capture Turned On
109840524.1	2024-06-25T07:14:47.116	Continuous Binned Data (CBD) Capture Turned Off
109869970.1	2024-06-25T15:25:33.056	BurstCube Instrument (Housekeeping) Turned Off
109870226.8	2024-06-25T15:29:49.771	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.94
109870898.9	2024-06-25T15:41:01.855	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
109943651.7	2024-06-26T11:53:34.743	BurstCube Instrument (Housekeeping) Turned On
109943701.5	2024-06-26T11:54:24.516	Continuous Binned Data (CBD) Capture Turned On
109949191.5	2024-06-26T13:25:54.526	Continuous Binned Data (CBD) Capture Turned Off
109954351.5	2024-06-26T14:51:54.528	Continuous Binned Data (CBD) Capture Turned On
109955495.5	2024-06-26T15:10:58.515	Continuous Binned Data (CBD) Capture Turned Off
110091474.1	2024-06-28T04:57:17.107	Continuous Binned Data (CBD) Capture Turned On
110091504.1	2024-06-28T04:57:47.116	Time-Tagged Event (TTE) Capture Turned On
110091507.1	2024-06-28T04:57:50.130	Instrument Threshold Updates Higher Mission Thresholds
110091564.1	2024-06-28T04:58:47.126	Time-Tagged Event (TTE) Capture Turned Off
110096518.1	2024-06-28T06:21:21.116	Continuous Binned Data (CBD) Capture Turned Off
110218642.1	2024-06-29T16:16:45.116	Continuous Binned Data (CBD) Capture Turned On
110225962.1	2024-06-29T18:18:45.116	Continuous Binned Data (CBD) Capture Turned Off
110225967.3	2024-06-29T18:18:50.270	Spacecraft Reboot
110226155.9	2024-06-29T18:21:58.904	Instrument Threshold Returns to Mission Start Thresholds
110226215.9	2024-06-29T18:22:58.884	Continuous Binned Data (CBD) Capture Turned On
110262675.7	2024-06-30T04:30:38.654	Instrument Threshold Updates Higher Mission Thresholds
110299783.6	2024-06-30T14:49:06.603	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.08
110299803.9	2024-06-30T14:49:26.884	BurstCube Instrument (Housekeeping) Turned Off
110299850.7	2024-06-30T14:50:13.653	Continuous Binned Data (CBD) Capture Turned Off
110316098.8	2024-06-30T19:21:01.818	Spacecraft Reboot
110406279	2024-07-01T20:24:02.002	Spacecraft Reboot
110586638.6	2024-07-03T22:30:01.612	Spacecraft Reboot
110676818.9	2024-07-04T23:33:01.912	Spacecraft Reboot

110766998.2	2024-07-06T00:36:01.212	Spacecraft Reboot
110857178.5	2024-07-07T01:39:01.512	Spacecraft Reboot
110947358.8	2024-07-08T02:42:01.812	Spacecraft Reboot
111118094.5	2024-07-10T02:07:37.470	BurstCube Instrument (Housekeeping) Turned On
111118170.2	2024-07-10T02:08:53.248	Continuous Binned Data (CBD) Capture Turned On
111127639.5	2024-07-10T04:46:42.486	BurstCube Instrument (Housekeeping) Turned Off
111127715.3	2024-07-10T04:47:58.257	Continuous Binned Data (CBD) Capture Turned Off
111127719.4	2024-07-10T04:48:02.412	Spacecraft Reboot
111127879.3	2024-07-10T04:50:42.252	BurstCube Instrument (Housekeeping) Turned On
111127902	2024-07-10T04:51:05.045	Instrument Threshold Returns to Mission Start Thresholds
111127962	2024-07-10T04:52:05.033	Continuous Binned Data (CBD) Capture Turned On
111192354	2024-07-10T22:45:17.034	Continuous Binned Data (CBD) Capture Turned Off
111197728	2024-07-11T00:14:51.035	Continuous Binned Data (CBD) Capture Turned On
111217892	2024-07-11T05:50:55.036	Continuous Binned Data (CBD) Capture Turned Off
111217897.2	2024-07-11T05:51:00.208	Spacecraft Reboot
111218142.3	2024-07-11T05:55:05.336	Continuous Binned Data (CBD) Capture Turned On
111229980.6	2024-07-11T09:12:23.554	Instrument Threshold Updates Higher Mission Thresholds
111291767.6	2024-07-12T02:22:10.632	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
111291833.2	2024-07-12T02:23:16.168	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.51
111291854.4	2024-07-12T02:23:37.416	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
111291892.6	2024-07-12T02:24:15.560	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
111291916.4	2024-07-12T02:24:39.368	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
111291928.1	2024-07-12T02:24:51.144	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 1.02
111291937.9	2024-07-12T02:25:00.872	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 1.28
111291953.5	2024-07-12T02:25:16.488	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.51
111291962.4	2024-07-12T02:25:25.448	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.77
111291984.5	2024-07-12T02:25:47.464	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 2.05
111292003.3	2024-07-12T02:26:06.340	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 1.28
111292018.3	2024-07-12T02:26:21.256	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
111292035.3	2024-07-12T02:26:38.343	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 1.28
111292060.5	2024-07-12T02:27:03.496	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.0
111292076.9	2024-07-12T02:27:19.880	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.51
111292149.8	2024-07-12T02:28:32.840	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
111292981.8	2024-07-12T02:42:24.840	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.51
111293244.8	2024-07-12T02:46:47.752	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.51
111293458	2024-07-12T02:50:21.000	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
111307740.7	2024-07-12T06:48:23.746	BurstCube Instrument (Housekeeping) Turned Off
111307803.5	2024-07-12T06:49:26.509	Continuous Binned Data (CBD) Capture Turned Off
111307813.7	2024-07-12T06:49:36.690	Spacecraft Reboot

111307983.7	2024-07-12T06:52:26.689	BurstCube Instrument (Housekeeping) Turned On
111308058.5	2024-07-12T06:53:41.452	Continuous Binned Data (CBD) Capture Turned On
111349401.7	2024-07-12T18:22:44.686	BurstCube Instrument (Housekeeping) Turned Off
111349446.5	2024-07-12T18:23:29.520	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.03
111349467.5	2024-07-12T18:23:50.469	Continuous Binned Data (CBD) Capture Turned Off
111460859.7	2024-07-14T01:20:22.748	BurstCube Instrument (Housekeeping) Turned On
111460919.5	2024-07-14T01:21:22.508	Continuous Binned Data (CBD) Capture Turned On
111488107.5	2024-07-14T08:54:30.516	Continuous Binned Data (CBD) Capture Turned Off
111488125.7	2024-07-14T08:54:48.680	Spacecraft Reboot
111488308.1	2024-07-14T08:57:51.116	Continuous Binned Data (CBD) Capture Turned On
111488446.1	2024-07-14T09:00:09.123	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.93
111488458.1	2024-07-14T09:00:21.116	Continuous Binned Data (CBD) Capture Turned Off
111488461.3	2024-07-14T09:00:24.343	BurstCube Instrument (Housekeeping) Turned Off
111578242.3	2024-07-15T09:56:45.281	Spacecraft Reboot
111819710.7	2024-07-18T05:01:13.683	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.02
111892784.8	2024-07-19T01:19:07.779	Spacecraft Reboot
111908330.9	2024-07-19T05:38:13.865	BurstCube Instrument (Housekeeping) Turned On
111908449.6	2024-07-19T05:40:12.573	Continuous Binned Data (CBD) Capture Turned On
111910068.8	2024-07-19T06:07:11.795	BurstCube Instrument (Housekeeping) Turned Off
111910103.6	2024-07-19T06:07:46.563	Continuous Binned Data (CBD) Capture Turned Off
111958642.6	2024-07-19T19:36:45.582	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
111959294.7	2024-07-19T19:47:37.651	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.01
111966018.7	2024-07-19T21:39:41.665	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
111966329.6	2024-07-19T21:44:52.614	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.91
111966984.5	2024-07-19T21:55:47.538	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
111967399.6	2024-07-19T22:02:42.579	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.01
111973404.7	2024-07-19T23:42:47.736	Spacecraft Reboot
112056030.4	2024-07-20T22:39:53.419	Spacecraft Reboot
112138508.6	2024-07-21T21:34:31.567	BurstCube Instrument (Housekeeping) Turned On
112138615.3	2024-07-21T21:36:18.350	Continuous Binned Data (CBD) Capture Turned On
112139058.6	2024-07-21T21:43:41.561	BurstCube Instrument (Housekeeping) Turned Off
112139125.3	2024-07-21T21:44:48.341	Continuous Binned Data (CBD) Capture Turned Off
112139387.2	2024-07-21T21:49:10.248	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.07
112143825.4	2024-07-21T23:03:08.363	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
112144137.4	2024-07-21T23:08:20.409	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.07
112144788.2	2024-07-21T23:19:11.247	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.98
112146186.5	2024-07-21T23:42:29.503	Spacecraft Reboot
112146351.3	2024-07-21T23:45:14.282	BurstCube Instrument (Housekeeping) Turned On
112146431.1	2024-07-21T23:46:34.055	Continuous Binned Data (CBD) Capture Turned On

112152111.3	2024-07-22T01:21:14.276	BurstCube Instrument (Housekeeping) Turned Off
112152161.1	2024-07-22T01:22:04.057	Continuous Binned Data (CBD) Capture Turned Off
112152420	2024-07-22T01:26:22.965	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.93
112155652.7	2024-07-22T02:20:15.651	BurstCube Instrument (Housekeeping) Turned On
112155682.7	2024-07-22T02:20:45.651	BurstCube Instrument (Housekeeping) Turned Off
112155741.3	2024-07-22T02:21:44.329	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 154.32
112155771.4	2024-07-22T02:22:14.420	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.16
112238295.8	2024-07-23T01:17:38.819	Spacecraft Reboot
112309139	2024-07-23T20:58:22.019	Spacecraft Reboot
112399294.5	2024-07-24T22:00:57.524	Spacecraft Reboot
112408954.9	2024-07-25T00:41:57.885	BurstCube Instrument (Housekeeping) Turned On
112409049.7	2024-07-25T00:43:32.662	Continuous Binned Data (CBD) Capture Turned On
112409089.9	2024-07-25T00:44:12.878	BurstCube Instrument (Housekeeping) Turned Off
112409139.7	2024-07-25T00:45:02.660	Continuous Binned Data (CBD) Capture Turned Off
112414779.8	2024-07-25T02:19:02.814	Spacecraft Reboot
112504958.5	2024-07-26T03:22:01.542	Spacecraft Reboot
112595140.3	2024-07-27T04:25:03.323	Spacecraft Reboot
112685318.3	2024-07-28T05:28:01.250	Spacecraft Reboot
112775378.6	2024-07-29T06:29:01.592	Spacecraft Reboot
112865556.6	2024-07-30T07:31:59.620	Spacecraft Reboot
112955688.7	2024-07-31T08:34:11.680	Spacecraft Reboot
113045844.4	2024-08-01T09:36:47.355	Spacecraft Reboot
113067927.3	2024-08-01T15:44:50.313	Spacecraft Reboot
113068005.6	2024-08-01T15:46:08.610	Enabled automated on-board GPS synchronization.
113150234.5	2024-08-02T14:36:37.524	Spacecraft Reboot
113155690.7	2024-08-02T16:07:33.663	BurstCube Instrument (Housekeeping) Turned On
113155731.4	2024-08-02T16:08:14.443	Continuous Binned Data (CBD) Capture Turned On
113156584.6	2024-08-02T16:22:27.583	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
113156740	2024-08-02T16:25:02.975	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
113156788.9	2024-08-02T16:25:51.871	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
113156797.6	2024-08-02T16:26:00.575	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.26
113156808.8	2024-08-02T16:26:11.839	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.77
113156822.7	2024-08-02T16:26:25.663	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 1.02
113156844.7	2024-08-02T16:26:47.679	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -0.0
113156860.3	2024-08-02T16:27:03.295	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: 0.26
113157619.7	2024-08-02T16:39:42.674	BurstCube Instrument (Housekeeping) Turned Off
113157680.5	2024-08-02T16:40:43.519	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
113157681.4	2024-08-02T16:40:44.431	Continuous Binned Data (CBD) Capture Turned Off
113173591.4	2024-08-02T21:05:54.387	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.54

113173990.6	2024-08-02T21:12:33.573	BurstCube Instrument (Housekeeping) Turned On
113173998.4	2024-08-02T21:12:41.365	Instrument Thresholds Briefly Defaults for 20.22 seconds
113178708.3	2024-08-02T22:31:11.310	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -27.91
113178723.6	2024-08-02T22:31:26.578	BurstCube Instrument (Housekeeping) Turned Off
113240390.5	2024-08-03T15:39:13.519	Spacecraft Reboot
113330583.7	2024-08-04T16:42:26.670	Spacecraft Reboot
113420703	2024-08-05T17:44:26.029	Spacecraft Reboot
113437137.3	2024-08-05T22:18:20.340	Instrument Thresholds Briefly Defaults for 20.22 seconds
113437164.6	2024-08-05T22:18:47.595	BurstCube Instrument (Housekeeping) Turned On
113437187.4	2024-08-05T22:19:10.385	Instrument Thresholds Briefly Defaults for 20.22 seconds
113437243.4	2024-08-05T22:20:06.356	Continuous Binned Data (CBD) Capture Turned On
113450576.6	2024-08-06T02:02:19.587	BurstCube Instrument (Housekeeping) Turned Off
113450583.3	2024-08-06T02:02:26.262	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -5.25
113450593.4	2024-08-06T02:02:36.364	Continuous Binned Data (CBD) Capture Turned Off
113490547.6	2024-08-06T13:08:30.583	BurstCube Instrument (Housekeeping) Turned On
113490592.4	2024-08-06T13:09:15.354	Continuous Binned Data (CBD) Capture Turned On
113490652.4	2024-08-06T13:10:15.369	On-board Trigger Turned On
113495992.4	2024-08-06T14:39:15.366	On-board Trigger Turned Off
113496416.2	2024-08-06T14:46:19.232	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
113496685.3	2024-08-06T14:50:48.304	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.03
113498057.3	2024-08-06T15:13:40.291	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
113498062.4	2024-08-06T15:13:45.367	Continuous Binned Data (CBD) Capture Turned Off
113498067.6	2024-08-06T15:13:50.594	BurstCube Instrument (Housekeeping) Turned Off
113510859.5	2024-08-06T18:47:02.529	Spacecraft Reboot
113519328.9	2024-08-06T21:08:11.941	BurstCube Instrument (Housekeeping) Turned On
113519385.7	2024-08-06T21:09:08.668	Continuous Binned Data (CBD) Capture Turned On
113555993.7	2024-08-07T07:19:16.664	Continuous Binned Data (CBD) Capture Turned Off
113561487.7	2024-08-07T08:50:50.665	Continuous Binned Data (CBD) Capture Turned On
113561689.6	2024-08-07T08:54:12.570	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.05
113566249.2	2024-08-07T10:10:12.229	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
113566257.2	2024-08-07T10:10:20.230	Continuous Binned Data (CBD) Capture Turned Off
113566267.4	2024-08-07T10:10:30.448	BurstCube Instrument (Housekeeping) Turned Off
113578451.5	2024-08-07T13:33:34.463	BurstCube Instrument (Housekeeping) Turned On
113578470.2	2024-08-07T13:33:53.231	Continuous Binned Data (CBD) Capture Turned On
113586993.4	2024-08-07T15:55:56.449	BurstCube Instrument (Housekeeping) Turned Off
113587010.2	2024-08-07T15:56:13.231	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -5.31
113587020.2	2024-08-07T15:56:23.231	Continuous Binned Data (CBD) Capture Turned Off
113601015.4	2024-08-07T19:49:38.394	Spacecraft Reboot
113601683.8	2024-08-07T20:00:46.753	BurstCube Instrument (Housekeeping) Turned On

113601770.5	2024-08-07T20:02:13.532	Continuous Binned Data (CBD) Capture Turned On
113629997	2024-08-08T03:52:39.961	BurstCube Instrument (Housekeeping) Turned Off
113630031.7	2024-08-08T03:53:14.738	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.98
113630033.7	2024-08-08T03:53:16.736	Continuous Binned Data (CBD) Capture Turned Off
113691170.9	2024-08-08T20:52:13.901	Spacecraft Reboot
113830862.6	2024-08-10T11:40:25.629	Spacecraft Reboot
113853727.6	2024-08-10T18:01:30.566	BurstCube Instrument (Housekeeping) Turned On
113853821.4	2024-08-10T18:03:04.366	On-board Trigger Turned On
113853821.4	2024-08-10T18:03:04.366	Continuous Binned Data (CBD) Capture Turned On
113853894.4	2024-08-10T18:04:17.371	Trigger Threshold Change: Update from threshold set A to B
113854050.6	2024-08-10T18:06:53.589	BurstCube Instrument (Housekeeping) Turned Off
113854055.4	2024-08-10T18:06:58.363	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
113854061.4	2024-08-10T18:07:04.355	On-board Trigger Turned Off
113854061.4	2024-08-10T18:07:04.355	Continuous Binned Data (CBD) Capture Turned Off
113918352.6	2024-08-11T11:58:35.572	BurstCube Instrument (Housekeeping) Turned On
113918452.4	2024-08-11T12:00:15.356	Continuous Binned Data (CBD) Capture Turned On
113918542.4	2024-08-11T12:01:45.357	On-board Trigger Turned On
113921002.4	2024-08-11T12:42:45.354	On-board Trigger Turned Off
113921002.4	2024-08-11T12:42:45.354	Continuous Binned Data (CBD) Capture Turned Off
113921017.5	2024-08-11T12:43:00.518	Spacecraft Reboot
113921202.7	2024-08-11T12:46:05.673	Trigger Threshold Change: Update from threshold set B to A
113921262.7	2024-08-11T12:47:05.659	Continuous Binned Data (CBD) Capture Turned On
113922717	2024-08-11T13:11:20.022	BurstCube Instrument (Housekeeping) Turned Off
113922782.7	2024-08-11T13:12:25.680	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.94
113922790.8	2024-08-11T13:12:33.801	Continuous Binned Data (CBD) Capture Turned Off
113941435.1	2024-08-11T18:23:18.055	BurstCube Instrument (Housekeeping) Turned On
113941541.8	2024-08-11T18:25:04.801	Continuous Binned Data (CBD) Capture Turned On
113941565.1	2024-08-11T18:25:28.069	BurstCube Instrument (Housekeeping) Turned Off
113941620.7	2024-08-11T18:26:23.692	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
113941631.8	2024-08-11T18:26:34.799	Continuous Binned Data (CBD) Capture Turned Off
114006215	2024-08-12T12:22:58.027	BurstCube Instrument (Housekeeping) Turned On
114006259.8	2024-08-12T12:23:42.810	Continuous Binned Data (CBD) Capture Turned On
114006379.8	2024-08-12T12:25:42.791	On-board Trigger Turned On
114006401.8	2024-08-12T12:26:04.810	Trigger Threshold Change: Update from threshold set A to C
114011149.8	2024-08-12T13:45:12.790	On-board Trigger Turned Off
114011173	2024-08-12T13:45:35.964	Spacecraft Reboot
114011179.8	2024-08-12T13:45:42.801	Continuous Binned Data (CBD) Capture Turned Off
114011357.1	2024-08-12T13:48:40.118	Trigger Threshold Change: Update from threshold set C to A
114011418.1	2024-08-12T13:49:41.102	Continuous Binned Data (CBD) Capture Turned On

114019881.4	2024-08-12T16:10:44.382	BurstCube Instrument (Housekeeping) Turned Off
114019901.1	2024-08-12T16:11:04.128	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.94
114019907.2	2024-08-12T16:11:10.159	Continuous Binned Data (CBD) Capture Turned Off
114111427.9	2024-08-13T17:36:30.885	BurstCube Instrument (Housekeeping) Turned On
114111444.7	2024-08-13T17:36:47.655	Continuous Binned Data (CBD) Capture Turned On
114111504.7	2024-08-13T17:37:47.662	On-board Trigger Turned On
114111534.7	2024-08-13T17:38:17.652	Time-Tagged Event (TTE) Capture Turned On
114111543.7	2024-08-13T17:38:26.676	Trigger Threshold Change: Update from threshold set A to B
114117054.7	2024-08-13T19:10:17.666	On-board Trigger Turned Off
114117054.7	2024-08-13T19:10:17.666	Time-Tagged Event (TTE) Capture Turned Off
114117434.7	2024-08-13T19:16:37.732	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
114117940.9	2024-08-13T19:25:03.882	BurstCube Instrument (Housekeeping) Turned Off
114117942.7	2024-08-13T19:25:05.713	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114117954.7	2024-08-13T19:25:17.662	Continuous Binned Data (CBD) Capture Turned Off
114118038.7	2024-08-13T19:26:41.680	Instrument Thresholds Briefly Defaults for 43.52 seconds
114175986.7	2024-08-14T11:32:29.690	BurstCube Instrument (Housekeeping) Turned On
114175989.5	2024-08-14T11:32:32.472	Instrument Thresholds Briefly Defaults for 43.52 seconds
114175989.5	2024-08-14T11:32:32.472	Trigger Threshold Change: Update from threshold set B to A
114176047.5	2024-08-14T11:33:30.461	Instrument Thresholds Briefly Defaults for 43.52 seconds
114176088.5	2024-08-14T11:34:11.460	Continuous Binned Data (CBD) Capture Turned On
114178518.5	2024-08-14T12:14:41.461	Continuous Binned Data (CBD) Capture Turned Off
114194811.5	2024-08-14T16:46:14.459	Continuous Binned Data (CBD) Capture Turned On
114198955.5	2024-08-14T17:55:18.460	On-board Trigger Turned On
114198955.5	2024-08-14T17:55:18.460	Time-Tagged Event (TTE) Capture Turned On
114199041.5	2024-08-14T17:56:44.477	Trigger Threshold Change: Update from threshold set A to B
114199726.5	2024-08-14T18:08:09.454	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.98
114205473.5	2024-08-14T19:43:56.475	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114205785.6	2024-08-14T19:49:08.557	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.29
114208354.3	2024-08-14T20:31:57.340	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114210177.4	2024-08-14T21:02:20.353	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114210884.5	2024-08-14T21:14:07.500	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114211595.5	2024-08-14T21:25:58.487	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114212300.3	2024-08-14T21:37:43.327	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114213008.5	2024-08-14T21:49:31.470	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114213721.5	2024-08-14T22:01:24.473	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114214429.4	2024-08-14T22:13:12.359	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114214468.5	2024-08-14T22:13:51.459	On-board Trigger Turned Off
114214468.5	2024-08-14T22:13:51.459	Time-Tagged Event (TTE) Capture Turned Off
114214468.5	2024-08-14T22:13:51.459	Continuous Binned Data (CBD) Capture Turned Off

114263839.2	2024-08-15T11:56:42.203	Trigger Threshold Change: Update from threshold set B to A
114263854.2	2024-08-15T11:56:57.186	Continuous Binned Data (CBD) Capture Turned On
114265395.2	2024-08-15T12:22:38.224	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114271392.1	2024-08-15T14:02:35.097	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114271405.4	2024-08-15T14:02:48.398	BurstCube Instrument (Housekeeping) Turned Off
114271414.2	2024-08-15T14:02:57.197	Continuous Binned Data (CBD) Capture Turned Off
114271491.2	2024-08-15T14:04:14.202	Instrument Thresholds Briefly Defaults for 7.42 seconds
114345785.2	2024-08-16T10:42:28.235	BurstCube Instrument (Housekeeping) Turned On
114345806.9	2024-08-16T10:42:49.949	Instrument Thresholds Briefly Defaults for 7.42 seconds
114345871.9	2024-08-16T10:43:54.937	Continuous Binned Data (CBD) Capture Turned On
114345961.9	2024-08-16T10:45:24.938	Continuous Binned Data (CBD) Capture Turned Off
114345966.1	2024-08-16T10:45:29.100	Spacecraft Reboot
114351616.1	2024-08-16T12:19:39.116	Continuous Binned Data (CBD) Capture Turned On
114351625.2	2024-08-16T12:19:48.178	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.94
114354351.3	2024-08-16T13:05:14.336	BurstCube Instrument (Housekeeping) Turned Off
114354401.2	2024-08-16T13:06:04.226	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
114354406.1	2024-08-16T13:06:09.118	Continuous Binned Data (CBD) Capture Turned Off
114363050.6	2024-08-16T15:30:13.581	BurstCube Instrument (Housekeeping) Turned On
114363077.4	2024-08-16T15:30:40.359	Continuous Binned Data (CBD) Capture Turned On
114363137.3	2024-08-16T15:31:40.350	Time-Tagged Event (TTE) Capture Turned On
114363770.4	2024-08-16T15:42:13.395	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114364082.4	2024-08-16T15:47:25.443	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.32
114365535.3	2024-08-16T16:11:38.289	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114366279.3	2024-08-16T16:24:02.270	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114366985.4	2024-08-16T16:35:48.395	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114367716.3	2024-08-16T16:47:59.311	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.01
114368422.4	2024-08-16T16:59:45.442	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114369124.5	2024-08-16T17:11:27.461	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114369836.5	2024-08-16T17:23:19.474	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
114370539.2	2024-08-16T17:35:02.241	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114371251.5	2024-08-16T17:46:54.478	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114371965.3	2024-08-16T17:58:48.284	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.99
114372676.2	2024-08-16T18:10:39.241	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.0
114373384.4	2024-08-16T18:22:27.410	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114373579.6	2024-08-16T18:25:42.587	BurstCube Instrument (Housekeeping) Turned Off
114373666.1	2024-08-16T18:27:09.117	Time-Tagged Event (TTE) Capture Turned Off
114373666.1	2024-08-16T18:27:09.117	Continuous Binned Data (CBD) Capture Turned Off
114399317.8	2024-08-17T01:34:40.824	Spacecraft Reboot
114515283.3	2024-08-18T09:47:26.267	BurstCube Instrument (Housekeeping) Turned On

114515315.1	2024-08-18T09:47:58.050	Trigger Threshold Change: Update from threshold set A to B
114515335	2024-08-18T09:48:18.038	On-board Trigger Turned On
114515335	2024-08-18T09:48:18.038	Time-Tagged Event (TTE) Capture Turned On
114515335	2024-08-18T09:48:18.038	Continuous Binned Data (CBD) Capture Turned On
114515517.3	2024-08-18T09:51:20.253	BurstCube Instrument (Housekeeping) Turned Off
114515575	2024-08-18T09:52:18.035	On-board Trigger Turned Off
114515575	2024-08-18T09:52:18.035	Time-Tagged Event (TTE) Capture Turned Off
114515575	2024-08-18T09:52:18.035	Continuous Binned Data (CBD) Capture Turned Off
114515579	2024-08-18T09:52:21.952	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.01
114532592.8	2024-08-18T14:35:55.763	BurstCube Instrument (Housekeeping) Turned On
114532622.8	2024-08-18T14:36:25.763	BurstCube Instrument (Housekeeping) Turned Off
114532646.5	2024-08-18T14:36:49.536	Continuous Binned Data (CBD) Capture Turned On
114532676.5	2024-08-18T14:37:19.535	On-board Trigger Turned On
114532676.5	2024-08-18T14:37:19.535	Time-Tagged Event (TTE) Capture Turned On
114532692.6	2024-08-18T14:37:35.641	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114532706.5	2024-08-18T14:37:49.535	On-board Trigger Turned Off
114532706.5	2024-08-18T14:37:49.535	Time-Tagged Event (TTE) Capture Turned Off
114532706.5	2024-08-18T14:37:49.535	Continuous Binned Data (CBD) Capture Turned Off
114538193.8	2024-08-18T16:09:16.772	BurstCube Instrument (Housekeeping) Turned On
114538285.5	2024-08-18T16:10:48.535	On-board Trigger Turned On
114538285.5	2024-08-18T16:10:48.535	Time-Tagged Event (TTE) Capture Turned On
114538285.5	2024-08-18T16:10:48.535	Continuous Binned Data (CBD) Capture Turned On
114541059.6	2024-08-18T16:57:02.593	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114542146.8	2024-08-18T17:15:09.764	BurstCube Instrument (Housekeeping) Turned Off
114542189.5	2024-08-18T17:15:52.535	On-board Trigger Turned Off
114542189.5	2024-08-18T17:15:52.535	Time-Tagged Event (TTE) Capture Turned Off
114542189.5	2024-08-18T17:15:52.535	Continuous Binned Data (CBD) Capture Turned Off
114542189.7	2024-08-18T17:15:52.652	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114546673.7	2024-08-18T18:30:36.699	Spacecraft Reboot
114597001	2024-08-19T08:29:24.003	Time-Tagged Event (TTE) Capture Turned On
114597032.2	2024-08-19T08:29:55.236	BurstCube Instrument (Housekeeping) Turned On
114597061	2024-08-19T08:30:24.002	On-board Trigger Turned On
114597091	2024-08-19T08:30:54.001	Continuous Binned Data (CBD) Capture Turned On
114599671	2024-08-19T09:13:54.001	On-board Trigger Turned Off
114599671	2024-08-19T09:13:54.001	Time-Tagged Event (TTE) Capture Turned Off
114599671	2024-08-19T09:13:54.001	Continuous Binned Data (CBD) Capture Turned Off
114599672.1	2024-08-19T09:13:55.097	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -2.02
114599696.2	2024-08-19T09:14:19.230	BurstCube Instrument (Housekeeping) Turned Off
114602880.1	2024-08-19T10:07:23.070	Time-Tagged Event (TTE) Capture Turned On

114602960.2	2024-08-19T10:08:43.222	BurstCube Instrument (Housekeeping) Turned On
114602970	2024-08-19T10:08:53.001	On-board Trigger Turned On
114602970	2024-08-19T10:08:53.001	Continuous Binned Data (CBD) Capture Turned On
114613982.2	2024-08-19T13:12:25.229	BurstCube Instrument (Housekeeping) Turned Off
114614014	2024-08-19T13:12:57.012	On-board Trigger Turned Off
114614014	2024-08-19T13:12:57.012	Time-Tagged Event (TTE) Capture Turned Off
114614014	2024-08-19T13:12:57.012	Continuous Binned Data (CBD) Capture Turned Off
114614014	2024-08-19T13:12:57.016	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -5.37
114614104	2024-08-19T13:14:27.001	Time-Tagged Event (TTE) Capture Turned On
114614134	2024-08-19T13:14:57.001	Time-Tagged Event (TTE) Capture Turned Off
114620102	2024-08-19T14:54:25.003	Time-Tagged Event (TTE) Capture Turned On
114620151.2	2024-08-19T14:55:14.225	BurstCube Instrument (Housekeeping) Turned On
114620192	2024-08-19T14:55:54.993	Continuous Binned Data (CBD) Capture Turned On
114620222	2024-08-19T14:56:25.001	On-board Trigger Turned On
114623800.2	2024-08-19T15:56:03.236	BurstCube Instrument (Housekeeping) Turned Off
114623837	2024-08-19T15:56:40.000	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -5.3
114623852	2024-08-19T15:56:55.001	On-board Trigger Turned Off
114623852	2024-08-19T15:56:55.001	Time-Tagged Event (TTE) Capture Turned Off
114623852	2024-08-19T15:56:55.001	Continuous Binned Data (CBD) Capture Turned Off
114625871.2	2024-08-19T16:30:34.224	BurstCube Instrument (Housekeeping) Turned On
114625922	2024-08-19T16:31:24.991	On-board Trigger Turned On
114625922	2024-08-19T16:31:24.991	Time-Tagged Event (TTE) Capture Turned On
114625922	2024-08-19T16:31:24.991	Continuous Binned Data (CBD) Capture Turned On
114629028.2	2024-08-19T17:23:11.237	BurstCube Instrument (Housekeeping) Turned Off
114629046	2024-08-19T17:23:29.001	On-board Trigger Turned Off
114629046	2024-08-19T17:23:29.001	Time-Tagged Event (TTE) Capture Turned Off
114629046	2024-08-19T17:23:29.001	Continuous Binned Data (CBD) Capture Turned Off
114629048.9	2024-08-19T17:23:31.884	CBD Data Timestamp Drift (GPS Reboot). Unaccounted absolute time drift: -3.0
114636830.2	2024-08-19T19:33:13.165	Spacecraft Reboot
114679201.7	2024-08-20T07:19:24.735	Spacecraft Reboot