

V&V Summary Report

L2 ASCDS Version : 10.4.3.1

Observation 17146 - L2 Version 1
Chandra X-Ray Center

L2 Processing Date : May 11 2016

See [axaff17146N001_VV002_vvref2.pdf](#) for the full report

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|----------------------------|-----------------|
| V&V Scientist | Beth Sundheim |
| V&V Date (YYYY-MM-DD) | 2018.03.06 |
| V&V Edition | 2 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 25.081768101573 |

Comments

One optional chip was dropped.

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The focal plane temperature during part of this observation was warmer than the upper limit for optimum calibration of the ACIS gain and spectral resolution (i.e., -114.0 C for ACIS-I and -112.0 C for ACIS-S).

The Chandra calibration team calibrates the ACIS gain and spectral resolution using data from the external calibration source (ECS). ECS data show that the frontside-illuminated (FI) CCDs are more temperature sensitive than the backside-illuminated (BI) CCDs.

A summary of the current calibration status of the ACIS gain and spectral resolution can be found at:

http://asc.harvard.edu/cal/Acis/Cal_prods/Gain_and_Spectral_Resolution/A_CIS_response_summary.html

The main points are:

- 1) The gain on BI chips remains within 0.3% (i.e., the systematic uncertainty in the ACIS gain quoted on the Chandra Calibration Status Summary web page) at all measured temperatures.
- 2) The gain on FI chips remains within 0.3% below row 600 at all

measured temperatures.

3) The gain on FI chips above row 600 can be underestimated by as much as 1% for focal plane temperatures exceeding -116 C.

4) The spectral resolution (i.e., FWHM) on BI chips is insensitive to the focal plane temperature.

5) Warmer focal plane temperatures increase the FWHM on FI chips by up to 30 eV near row 512 and by up to 70 eV near the top of the chips.

In summary, the user should be cautious in the spectral analysis of high S/N emission lines detected on the top half of FI chips in this observation. Default processing with the current version of the CALDB will underestimate photon energies by up to 1% and broaden emission lines by up to 70 eV.

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|----------|---|---|
| seq_num | 703135 | Sequence number |
| obs_id | 17146 | Observation id |
| title | The Rise to Power: Half a Billion Years of Intense AGN Activity in the Merging Cluster Cygnus A | Proposal title |
| observer | Dr. Michael Wise | Principal investigator |
| object | Cygnus A - NW Subcluster | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 299.698333 | Observer's specified target RA [deg] |
| dec_targ | 40.893111 | Observer's specified target Dec [deg] |
| ra_nom | 299.691608521 | Nominal RA [deg] |
| dec_nom | 40.898104519041 | Nominal Dec [deg] |
| roll_nom | 115.21308624614 | Nominal Roll [deg] |
| revision | 1 | Processing version of data |
| ontime | 25081.768101573 | Sum of GTIs [s] |
| livetime | 24754.056336397 | Livetime [s] |
| ontime0 | 25072.222020626 | Sum of GTIs [s] |
| ontime1 | 25081.686021566 | Sum of GTIs [s] |
| ontime2 | 25078.586021423 | Sum of GTIs [s] |
| ontime3 | 25081.768101573 | Sum of GTIs [s] |
| l2events | 96776 | Number of level 2 events |

