

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 245
Week 22
04.06.07
Routine Phase

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1 General

The Flight Control Team at MOC has compiled this report with some input provided by the Flight Dynamics Team, ISOC and ISDC.

It addresses the activities from 26.05.07 until 01.06.07 (both dates inclusive) and covers the revolutions 564 and 565.

2 Summary of Activities

The operations were performed according to the planning inputs from ISOC combined with some manual commanding by MOC.

The targets of these revolutions consisted of a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), and a hexagonal dither of the object MCG -05-23-016 (RA 09:47:40.10, DEC -30:56:56.0).

Note: Some further information concerning the activities is provided in the Appendix.

3 Satellite Status

3.1 Platform

The performance of the platform was good. No new unexpected behaviour / malfunction was identified.

3.1.1 AOCS

The AOCS operations were performed from the timeline during this period.

Two slews were missed from TL during the observation period, due to lost guide stars.

The fuel consumption over the period between 26/05/2007 and 01/06/2007 was 0.0645 Kg. The remaining propellant is in the order of 146.2527 Kg.

Note: Some more information concerning the AOCS operations and the fuel budget is provided in the Appendix.

3.1.2 Power

The EPS is working nominally, available power from the arrays is of the order of 2100W.

3.1.3 Thermal

The thermal control of the satellite is working well. The temperatures are currently all within the specified operational limits.

3.1.4 OBDH

The OBDH subsystem is working flawlessly. No on-board communications problem has been identified.

3.1.5 RFS

The RF subsystem is working properly. The link margin is sufficient to ensure proper TM reception and execution of commands with the ranging channel enabled.

3.2 Payload

3.2.1 SPI

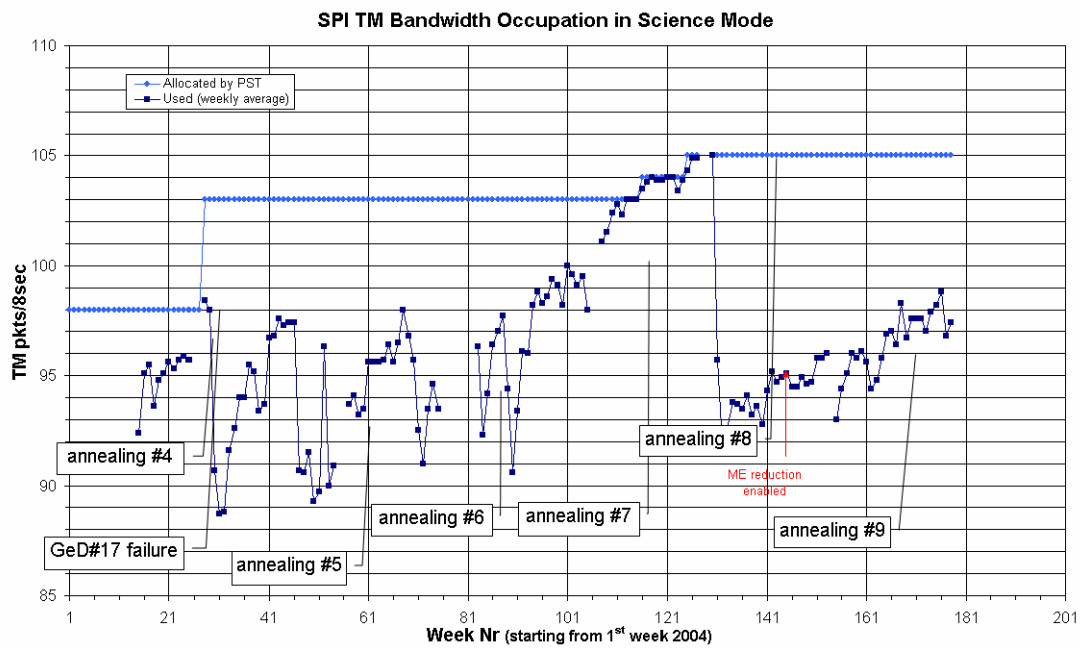
Following the 9th annealing, which ended on 22nd December, the overall status of the gamma-ray spectrometer is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and is therefore operating at a lower HV setting of 3.5kV (instead of 4kV). The energy resolution of GeD#4 was recovered with this last annealing. Detector #2 is failed since 06.12.2003 and detector #17 since 17.07.2004.

The Stirling compressors are working nominally, maintaining the Germanium detectors at 80 +/-1K, with the stroke of all four compressors remaining at 41 since 2007-05-10 at 07:33Z until 2007-05-29 at 22:47Z, when the operations to stop active cooling as part of the 10th SPI annealing were started. This annealing is progressing nominally. The summary annealing timeline is included in the future activities section of this report. The following table reports the major events/steps performed so far (i.e. up to 1st June) since the start of the annealing:

Date/Time	Activity
29/05/2007 22:16Z	Configure SPI for start of Annealing and stop SPI active cooling
29/05/2007 23:30Z	Annealing Heater Main ON
30/05/2007 01:30Z	Annealing Heater Redundant ON
31/05/2007 10:39Z	Cold plate temperature reached 373K (100degC)

During science operations, the instrument was kept in photon-by-photon mode with spectra TM enabled. The assigned TM bandwidth in the science observation windows was 105 packets/cycle. The average telemetry occupation when the TM allocation was 105 packets/cycle was 97.4 packets/cycle. From revolution 565 onwards, the assigned TM bandwidth was 46 packets/cycle and SPI was in CONF mode due to the annealing.

The following plot shows the assigned and the average occupation of the SPI TM bandwidth.



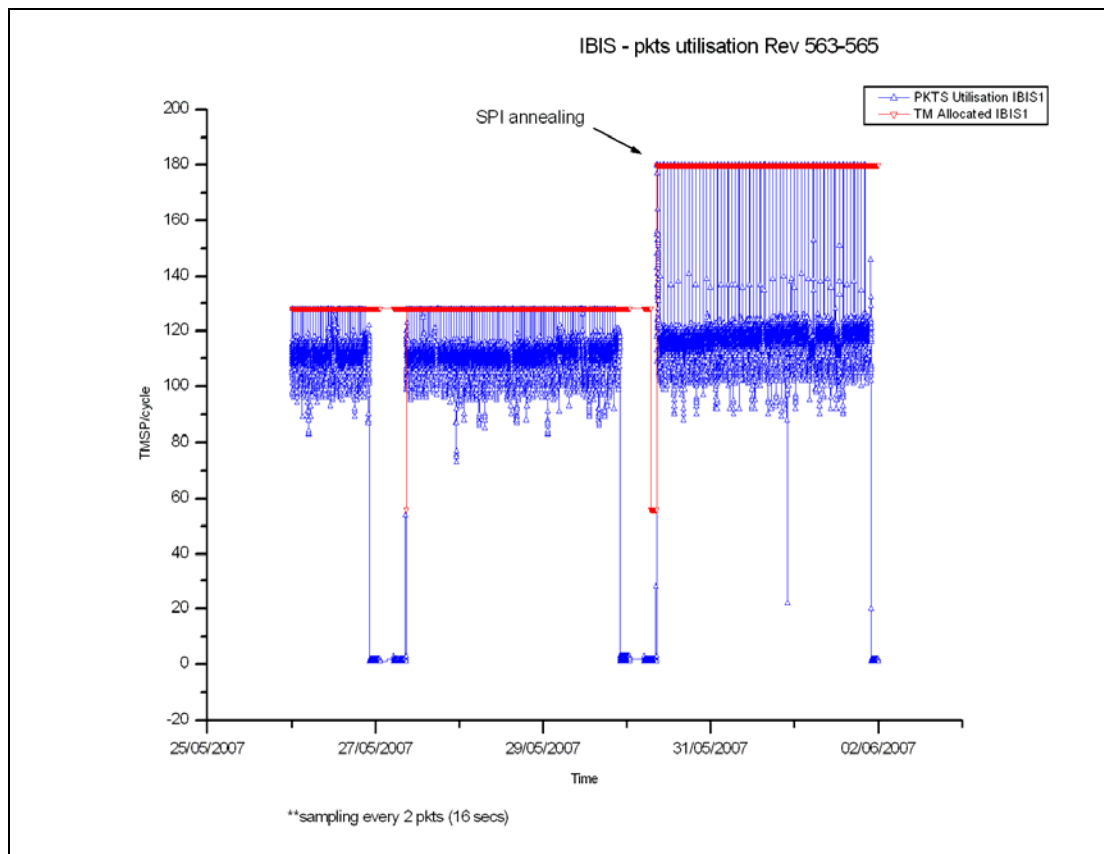
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

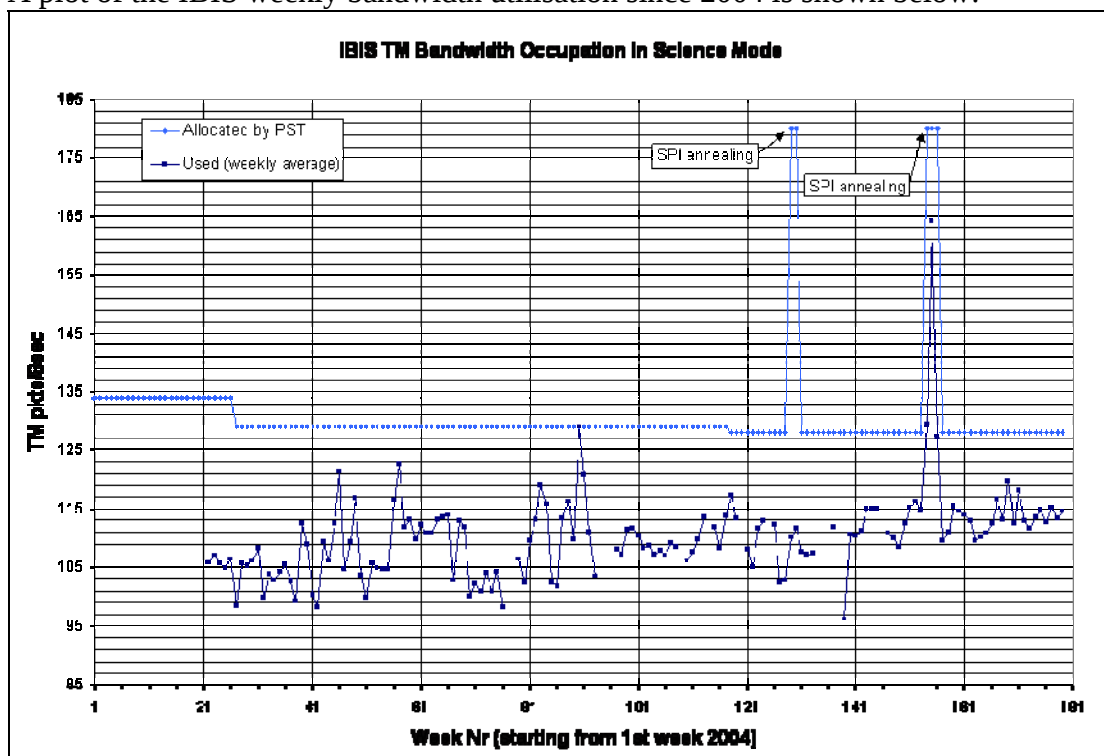
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. From beginning of revolution 565 on 30/05/2007, it was 180 TMPS/cycle due to SPI annealing. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 114.46 TMPS/cycle, up 1.16 on last week.

A plot of the IBIS TM utilisation during the observation period is shown below:



A plot of the IBIS weekly bandwidth utilisation since 2004 is shown below:



Note: Some more information concerning the IBIS operations is provided in the Appendix.

3.2.3 JEM-X

The status of both JEM-X units is nominal.

JEM-X operations were performed by the automatic Timeline.

JEM-X1 was operated in Data Taking mode with a TM allocation of 8 packets/cycle during science observations, until the start of Rev. 565 after which the TM allocation was 15 packets/cycle for the remainder of the reporting period (due to SPI annealing). JEM-X2 was dormant (DPE OFF) with no TM slots allocated.

Further information on the JEM-X operations can be found in the Appendix Section 8.3.4.

3.2.4 OMC

The status of OMC is nominal.

OMC operations were performed by the automatic Timeline. OMC was operated in Science Normal mode during science observations, with a TM allocation of 5 packets/cycle.

During this reporting period, 168 of the 169 planned science pointings for OMC were executed nominally, 1 was lost.

Note: Some more information concerning the OMC operations is provided in the Appendix Section 8.3.5.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity.

The sun was blank at the beginning of the observation period. On 30/05/2007 appeared new sunspot 958 that posed little threats for strong solar flares. It then decayed rapidly and posed no further threat until the end of the week.

However, 2 M-class solar flares have been emitted from the Sun on 01/06/2007 (see appendix: SEC-GOES Observed Particles Fluxes using SEIS/RAT tool). The consequent increase of the radiation level did not impact INTEGRAL.

Reference: www.spaceweather.com

Note: Some more information concerning the IREM operations is provided in the Appendix Section 8.3.6.

4 Ground Facilities

The Operational ground facilities performance was very good this week. No pointings were lost to ground problems. The overall performance was well over the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week. No problems were reported. The overall performance was well over the 95% requirement.

4.2 Ground Stations & Network

The performance of the ground stations and Network was very good this week. There were, however, 2 occasions of data drops from Redu, 3 occasions from DSS-24 and 1 from DSS27, all without impact. The overall performance was well over the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSFs are available up to revolution 573. Observations have been planned and send to MOC for revolutions 570 up to and including revolution 572.

TSFs up to revolution 567 have been received.

2. Observation status

ECS files have been received and processed up to revolution 558.

3. ISOC Science Data Archive

No news.

4. ISOC system

Version 15, supporting the immediate post-TAC work has been tested, preparing for a release in week 23.

5. Problems

The firewall migration of the whole system at ESAC is leading to various problems in file transfer with other sites.

4.3.2 ISDC

Status of ISDC observation processing on 04/06/2007:

- Latest Standard Analysis completed: observation 04200160003 (SGR1806-20, Revolution 547) on 20/05/2007.

- Latest products archived: observation 04200080003 (Orion OB1, Revolution 548 & 551) on 20/05/2007.

- Latest observation products sent to the observer: observation 04200340020 (GRS 1915+105, Revolution 551) on 18/05/2007.

5 Special Events

6 Anomalies

There were no problems reported this week that impacted operations.

The following anomaly report was entered into the ARTS system this week:

AR id	Date Created	Subject	Segment	Status
INT-2923	30/05/2007	MISC Packet TM causes problems in TDRS	IMCS	Pending

7 Future Milestones

The following activities are foreseen in the next few weeks.

- The 10th SPI annealing started on 29th May at radiation belt entry of revolution 564. A summary of the timeline of the planned annealing activities is given below:

10th SPI ANNEALING - revs 564-571																												
ID	Task Name	Duration	Start	Resource Names																								
2	Start SPI Annealing - Warm-up Phase	36.5 hrs	29 May 22:09	PST[20 pkts]	May 22:09																							
16	Annealing at 104degC	202 hrs	31 May 10:39	PST[20 pkts]	31 May 10:39																							
28	Stop SPI Annealing - Passive Cooling Phase	64.02 hrs	08 Jun 20:39	PST[20 pkts]																								
30	ACS Calibration	40.4 hrs	11 Jun 08:39	PST[20 pkts]																								
44	Start Cryocoolers - Active Cooling Phase	139 hrs	11 Jun 12:40	PST[20 pkts]																								
57	Camera Switch on & Performance Tests	11.3 hrs?	15 Jun 17:40	PST[105 pkts]																								
74	Test of OEM 243 generation and Single Event Filtering	11.2 hrs	16 Jun 04:58	PST[105 pkts]																								
96	Active Cooling Fine Tuning	61 hrs	17 Jun 07:40	PST[105 pkts]																								
99	Resume SPI POS Observations	61 hrs	17 Jun 07:22	PST[105 pkts]																								

- Periodic Thruster Torque rescaling 24th July 2007 Rev. 583
- On Board Clock wrap around due in Rev. 585.

Appendix

The appendix includes various detailed information.

7.1 Overview of Revolutions

Revolution 564

The observations in revolution 564 consisted entirely of a raster dither of the Galactic Plane Region 4 (RA 21:44:04.54, DEC +53:09:58.7), lasting ~56.4 hours.

Throughout these observations, all instruments were in their nominal science modes, except JEM-X2, which is switched off. The TM allocation was IBIS 128; SPI 105; JEM-X1 8; JEM-X2 0; OMC 5.

Revolution 565

The observations in revolution 565 consisted entirely of a hexagonal dither of the object MCG -05-23-016 (RA 09:47:40.10, DEC -30:56:56.0), lasting ~57.5 hours.

Throughout these observations, all instruments were in their nominal science modes, except JEM-X2, which is switched off and SPI, which is undergoing annealing. The TM allocation was IBIS 180; SPI 46; JEM-X1 15; JEM-X2 0; OMC 5.

7.2 Consumables

7.2.1 Detailed Fuel Book-keeping

2007-05-09T10:32:20.000Z	146.5987	F	Automatic TM processing.
2007-05-10T22:14:07.000Z	146.5616	F	Automatic TM processing.
2007-05-12T06:56:59.000Z	146.5438	F	Automatic TM processing.
2007-05-12T15:49:32.000Z	146.5271	F	Automatic TM processing.
2007-05-15T06:44:42.000Z	146.4902	F	Automatic TM processing.
2007-05-16T16:15:02.000Z	146.4690	F	Automatic TM processing.
2007-05-18T06:30:34.000Z	146.4543	F	Automatic TM processing.
2007-05-19T16:21:01.000Z	146.4186	F	Automatic TM processing.
2007-05-21T06:19:55.000Z	146.3921	F	Automatic TM processing.
2007-05-21T23:44:52.000Z	146.3551	F	Automatic TM processing.
2007-05-24T06:05:14.000Z	146.3398	F	Automatic TM processing.
2007-05-25T06:35:41.000Z	146.3172	F	Automatic TM processing.
2007-05-27T05:52:34.000Z	146.3022	F	Automatic TM processing.
2007-05-28T15:24:53.000Z	146.2570	F	Automatic TM processing.
2007-05-30T05:38:49.000Z	146.2527	F	Automatic TM processing.

This report was generated Fri Jun 1 08:00:21 GMT 2007

7.3 Detailed Satellite Information

This section contains some detailed information concerning the various subsystems of the satellite and instruments.

7.3.1 AOCS SUMMARY OPERATIONS REPORT, 26/05/2007 –01/06/2007

AOCS operations were executed from the Automatic Timeline.

During this period, 71 Open Loop Slews, 105 Closed Loop Slews and 4 Momentum Biases were executed.

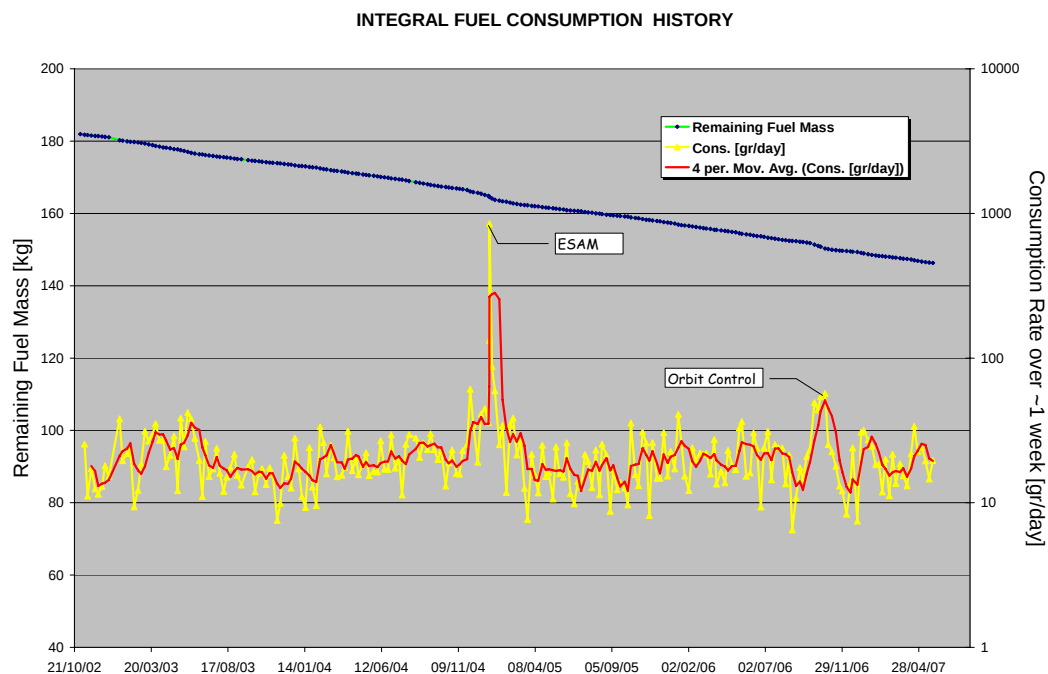
2 (CSL) slews were missed from TL, during the observation period, due to lost guide stars, slew IDs 05640037 & 05640069.

Orbit Control

No update.

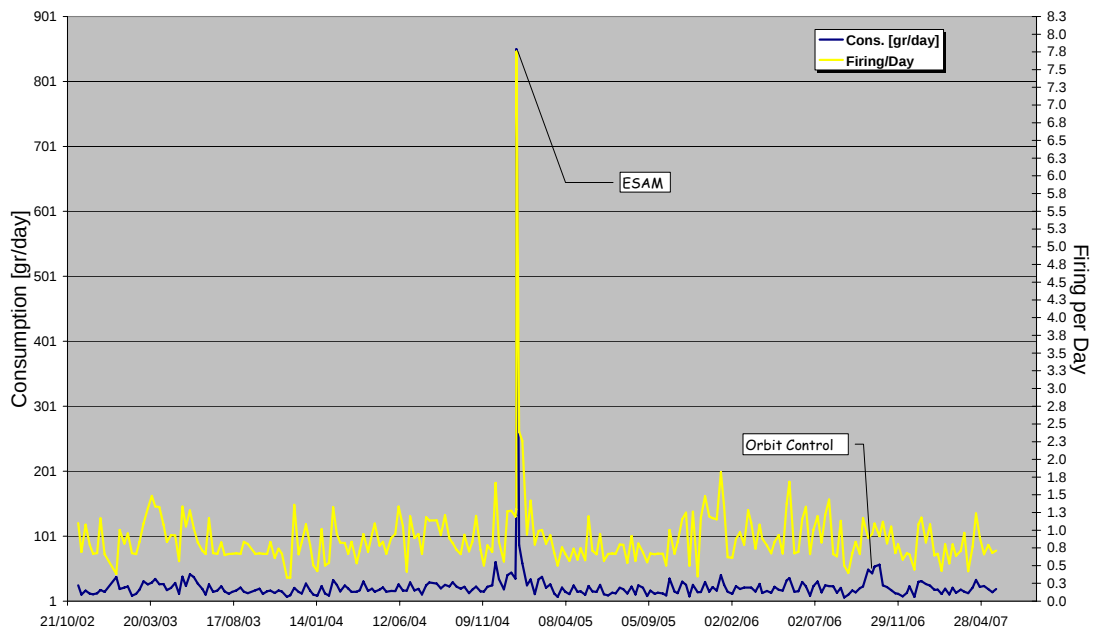
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 01/06/2007 is reported in the plot below.



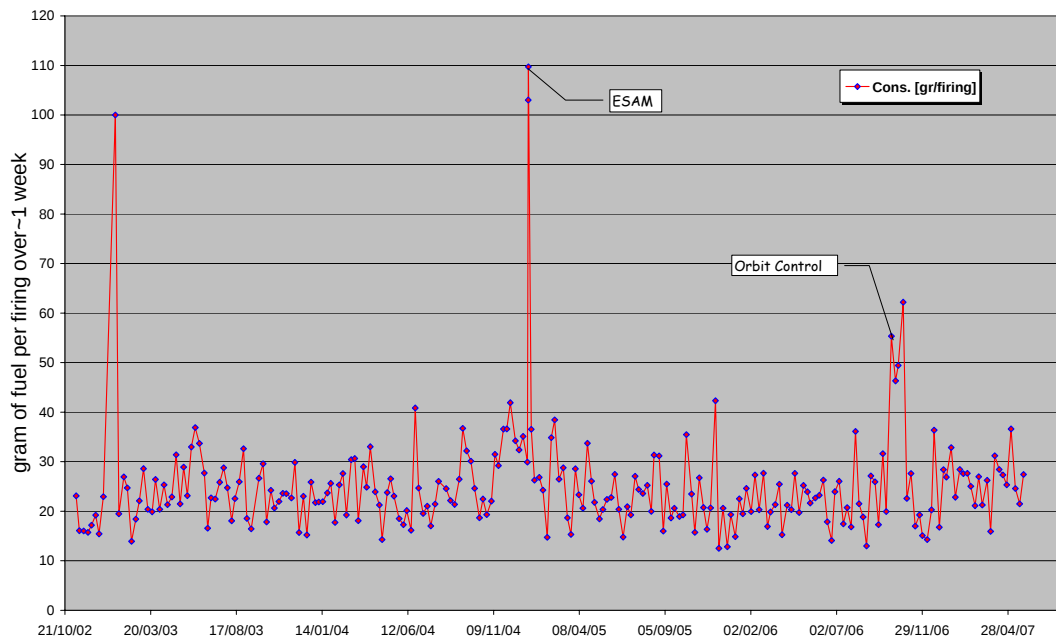
The firing per day over the period between 01/11/2002 and 01/06/2007 is reported in the plot below.

INTEGRAL FIRING PER DAY HISTORY



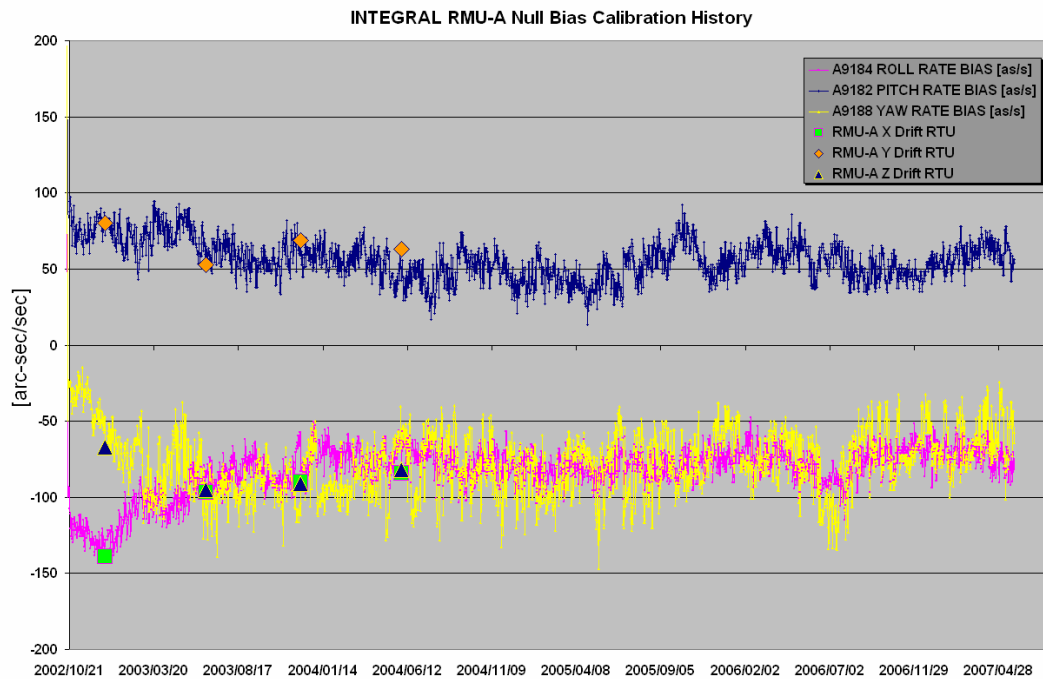
The fuel per firing over the period between 01/11/2002 and 01/06/2007 is reported in the plot below.

INTEGRAL FUEL MASS PER FIRING HISTORY

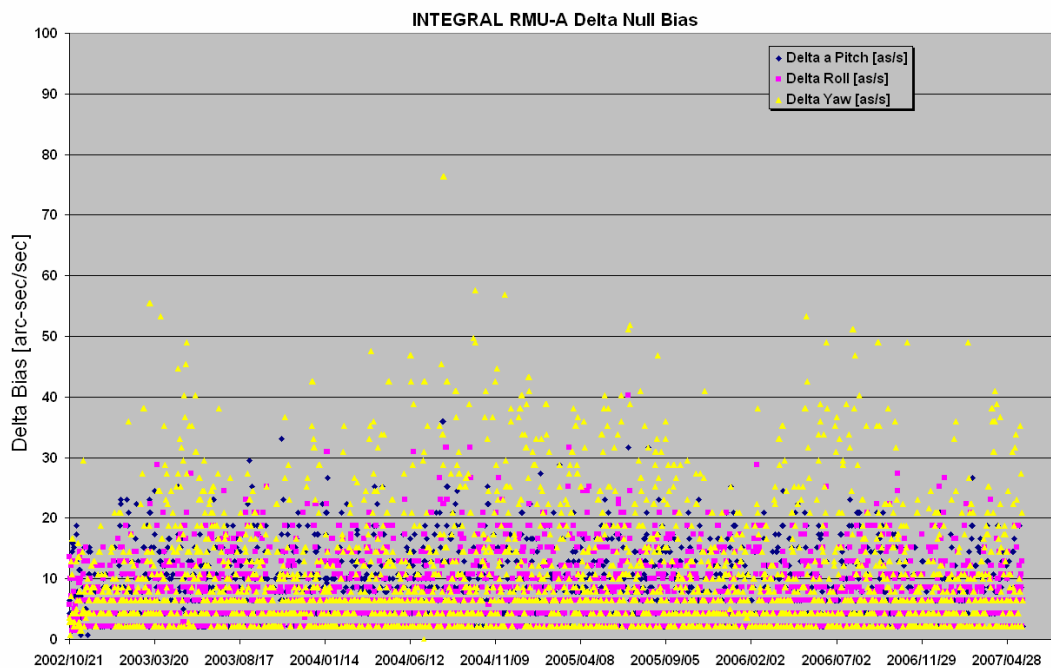


The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 01/06/2007 is reported in the plot below.



The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 01/06/2007 is reported in the plot below



26/05/2007 (Day of Year 146, Revolution 563)

Nothing to report

27/05/2007 (Day of Year 147, Revolution 563-564)

Guide Star Lost: At 17:38:37z, the loss of the guide star during pointing 05640013 caused IMU1 to switch on for 10 minutes. The guide star had magnitude 8.5, which

was on the limit for the settings used and had Star Tracker coordinates [+13477, +220225]. A manual mapping was carried out, and the next slew updated. There was no impact on the Timeline.

28/05/2007 (Day of Year 148, Revolution 564)

Slew Commands fail PTV check: At 10:47z the command A3189 (START GUIDE STAR) failed its PTV check. This was because at the time, there was no star in slot #2 for the change of guide star. Star Tracker mappings performed at 10:09z, 10:47z and 10:53z show no star in slot #2. However the mapping performed at 11:04z does show the star. A swap was performed and the Closed Loop Slew executed. The precise reason for the loss of the star is not known.

On attitude 05640036 the guide star was:

13 3619-01622-1 (10708.7: 3389.7) [125:165] 7.74 8

The expected slew star for CSL 05640037 / 05649501 was

14 3615-01344-1 (4230.2:-20048.6) [166: 19] 7.74 4

The impact was the loss of slew 05640037 (CSL).

29/05/2007 (Day of Year 149, Revolution 564)

Loss of Guide Star: At 10:38z, the Guide Star was lost, and the AOCS subsystem was disabled.

An investigation revealed the following.

The envisaged slew star 3969-03797-1 was present in TM during the mapping at 10:04:49z, but it had two dim close neighbours. This was the mapping on attitude 05640068 to update for slew 05640069. The TM around 10:41:00z does not show a star in slot 2. The envisaged slew star was present in TM during the mapping at 10:50:04z. This was the mapping on attitude 05640068 in the course of a recovery scenario (recovery slew ID 05649503 to the attitude of 05640069). The TM around 11:01:25z shows a star in slot 2, the envisaged slew star 3969-03797-1.:

2007-05-29T11:01:25.585Z

	Star-1	Star-2	Star-3	Star-4	Star-5	
Status	VALID/FULL	VALID/FULL	FREE	FREE	FREE	
Mag Status	VALID MAG	VALID MAG	INVALID MAG	INVALID MAG	INVALID MAG	
Magnitude	+0.8000E+01	+0.6300E+01	+0.8600E+01	+0.8600E+01	+0.8600E+01	Mi
Y coord	+9902	-15379	-1	-1	-1	um/7
Z coord	-9515	+18920	-1	-1	-1	um/7

2007-05-29T11:02:21.587Z

	Star-1	Star-2	Star-3	Star-4	Star-5	
Status	VALID/FULL	VALID/FULL	FREE	FREE	FREE	
Mag Status	VALID MAG	VALID MAG	INVALID MAG	INVALID MAG	INVALID MAG	
Magnitude	+0.6350E+01	+0.8050E+01	+0.8600E+01	+0.8600E+01	+0.8600E+01	Mi

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Y coord	-15378	+9899	-1	-1	-1	um/7
Z coord	+18924	-9512	-1	-1	-1	um/7

The star swap worked and the Close Loop Slew was performed.

The envisaged slew star for CSL 05640069 / 05649503 was

2 3969-03797-1 (-15358.8: 18941.9) [287:262] 6.21 1

A problem with the links with DSS-24 delayed the recovery slightly,

The impact was pointing ID 05640069 (CSL) was not executed from the Timeline.

30/05/2007 (Day of Year 150, Revolution 564-565)

ACC STR SEU Threshold Exceeded: During the perigee passage from Rev. 0564 to 0565 the Star Tracker SEU Filter was exceeded 3 times. The guide star at the time of the first event had Mi 6.95 at Star Tracker coordinates [-16340, -12015]. Then shortly before and shortly after the execution of a Reaction Wheel Bias, the guide star on this occasion was Mi 6.2 at Star Tracker coordinates [6695, -536].

There was no impact on the Timeline.

31/05/2007 (Day of Year 151, Revolution 565)

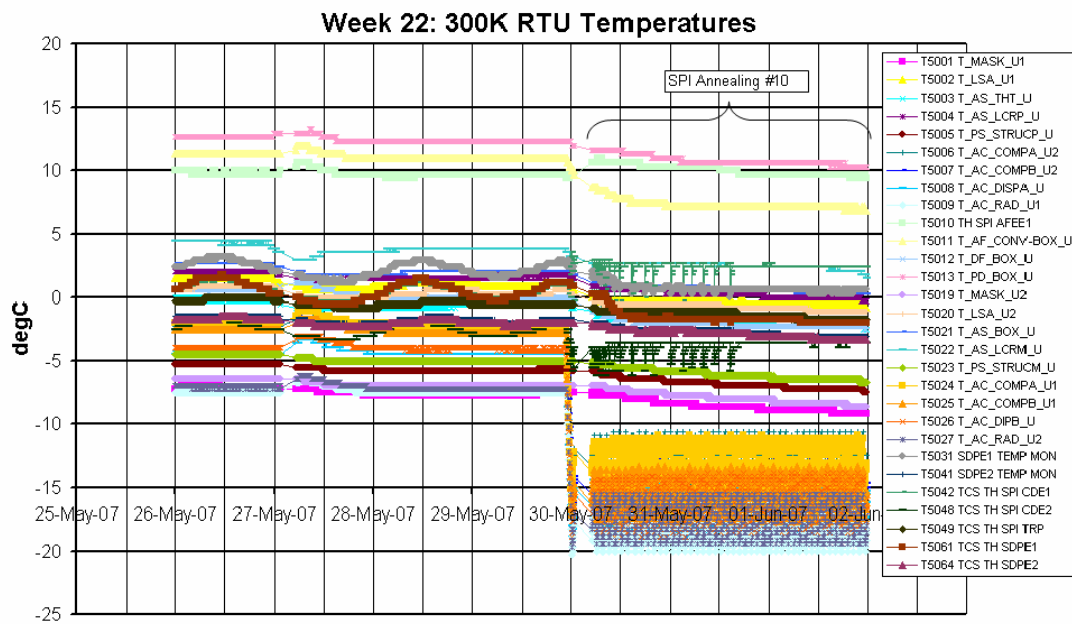
Nothing to report

01/06/2007 (Day of Year 152, Revolution 565)

Nothing to report

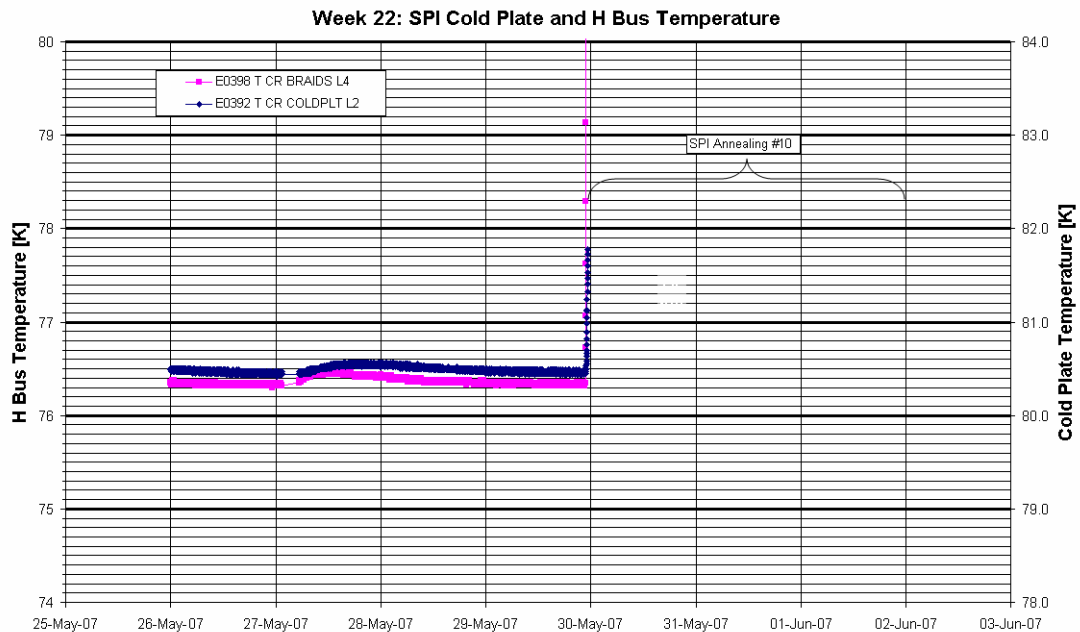
7.3.2 SPI Operations

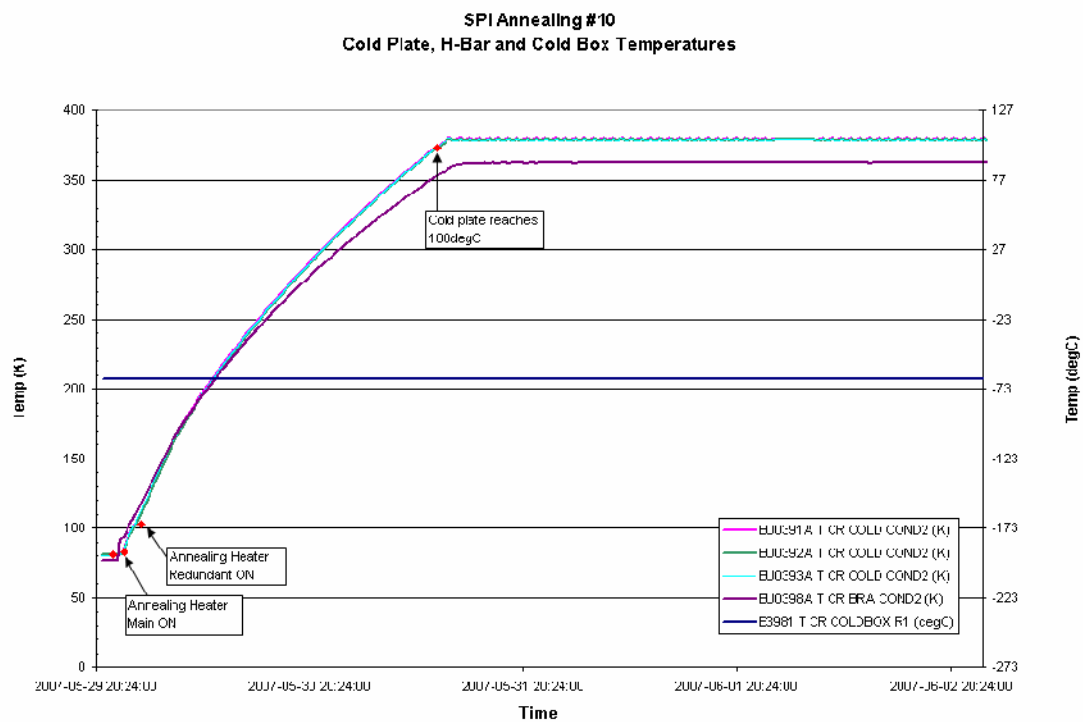
Unit Temperatures: All the equipment temperatures are inside the operational limits. The following plot shows their evolution during the reporting period:



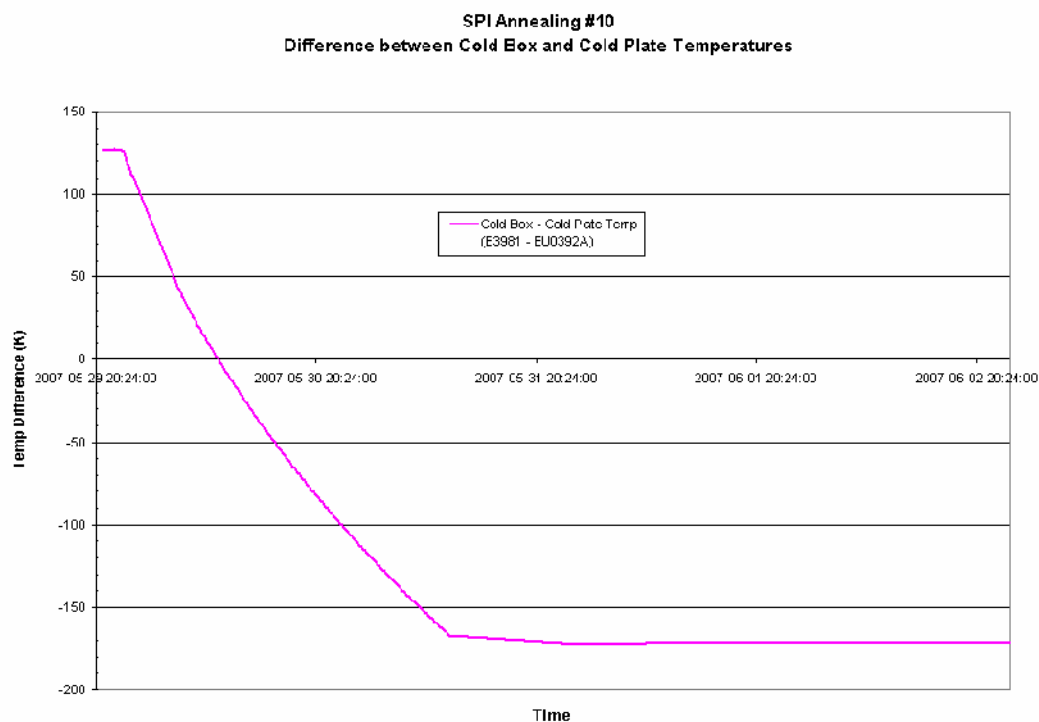
Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range 80K $\pm$ 1K until the start of the 10th annealing on the 29th May. The cold plate temperature reached 100degC on 31/05/2007 at 10:39Z.

The following plots show the evolution of the cold plate and H bus temperatures during the reporting period.

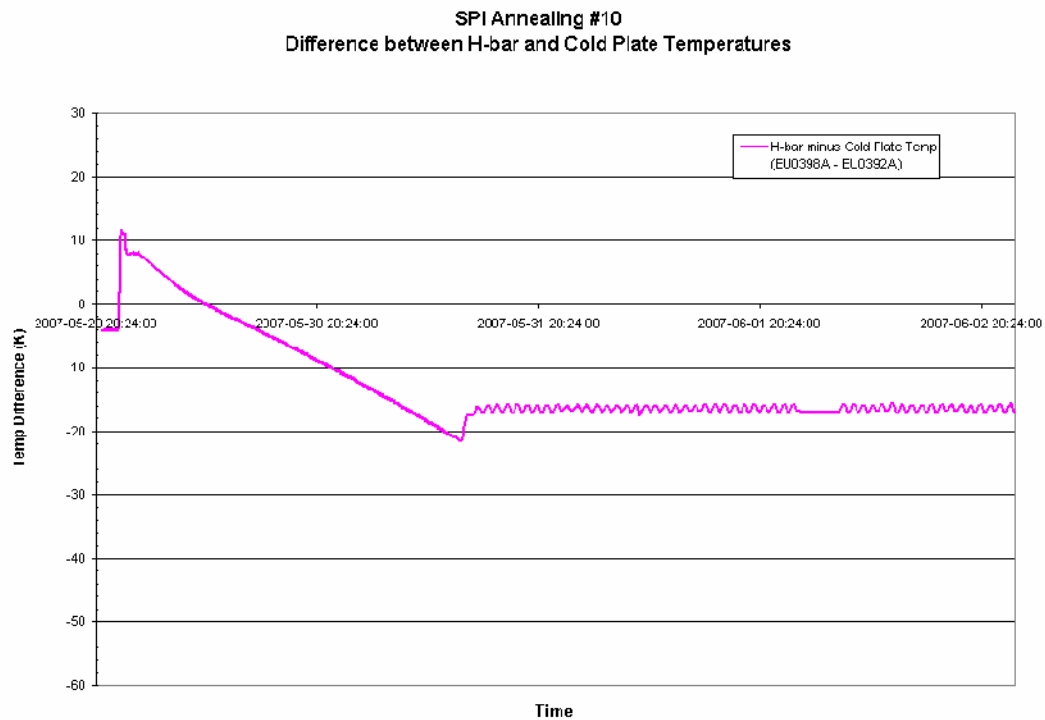




The following plot shows the difference between the cold box and cold plate temperatures since the start of annealing.



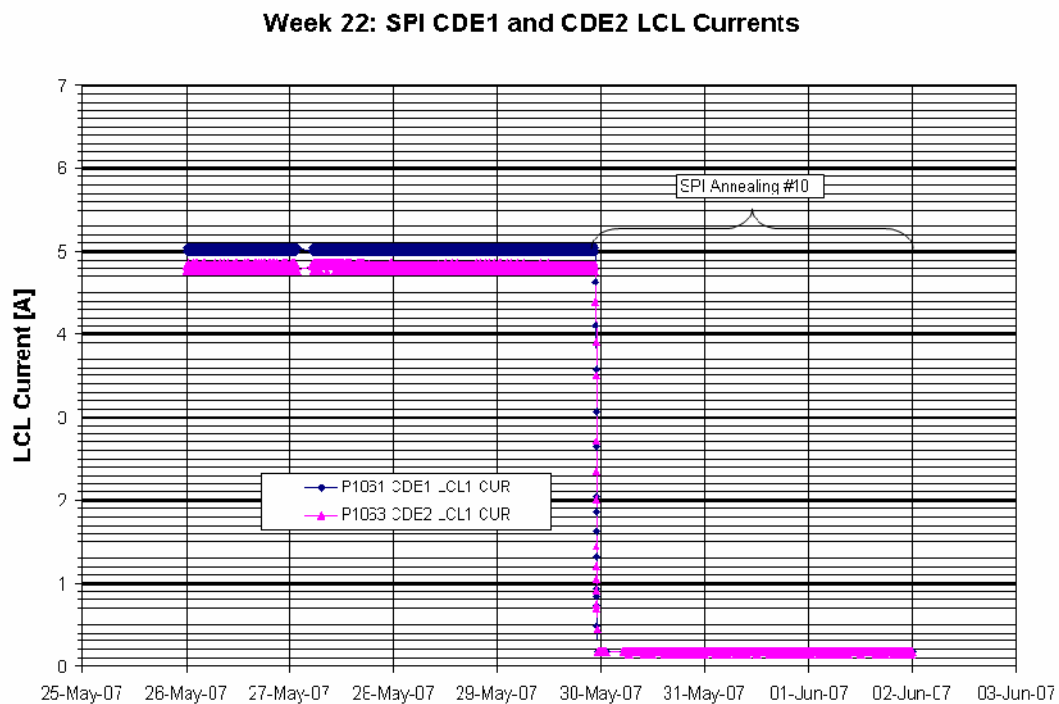
The following plot shows the difference between the H-bar and cold plate temperatures since the start of annealing.



Before the start of annealing operations, the stroke of all four compressors was set to 41 and the average LCL currents of the CDEs were:

- Average CDE1 LCL Current = 5.01A
- Average CDE2 LCL Current = 4.81A

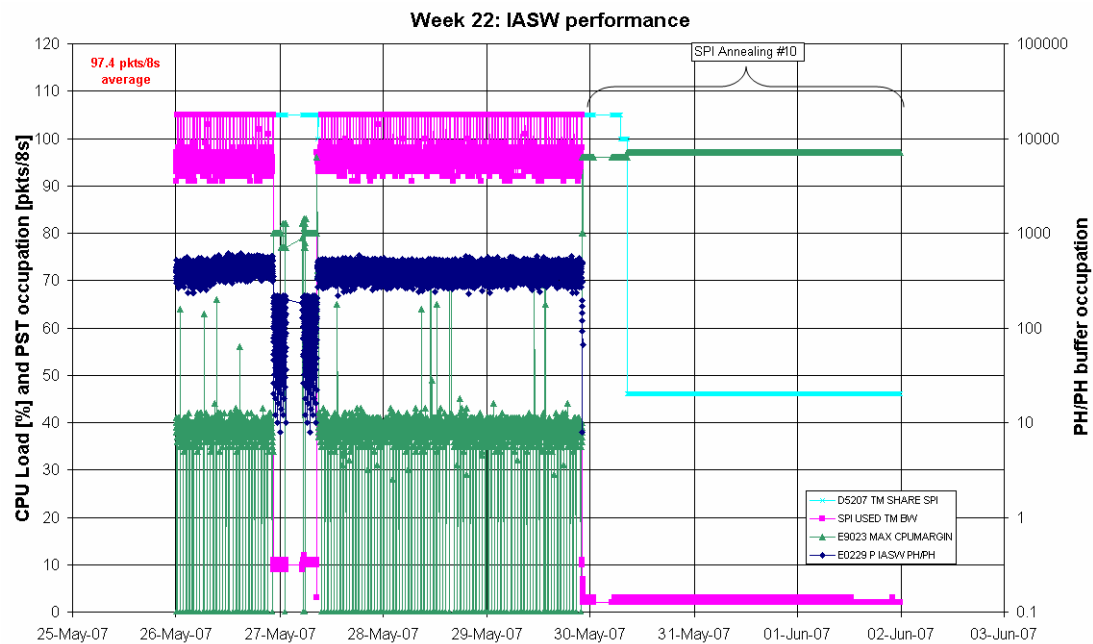
The following plot shows the evolution of the CDE currents during the reporting period.



DPE & IASW: The DPE health and IASW performance is nominal. The IASW version installed is v433 patch #1. The spectra scaling factor was set to 9/19 SE throughout the week.

The average TM bandwidth occupation of SPI was 97.4 packets/cycle over the science window, when the TM allocation was 105 packets/cycle. From revolution 565 onwards, the TM allocation was 46 packets/cycle and the IASW was in CONF mode due to the ongoing annealing.

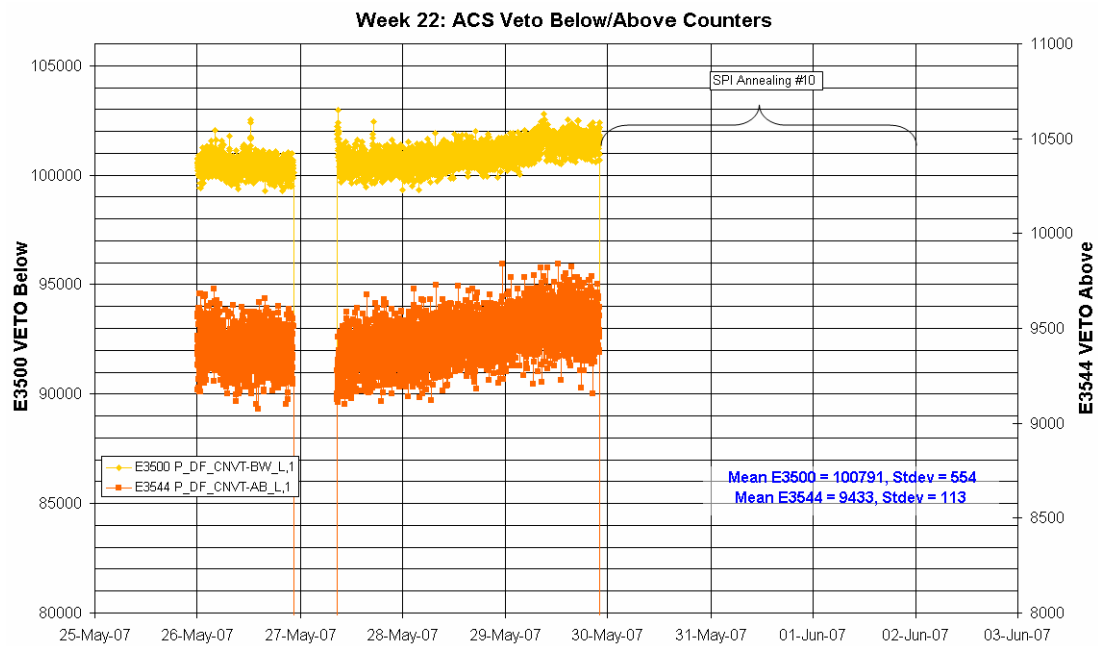
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS: The performance of the ACS is nominal, except for FEE 81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

For the 10th annealing operations, started on 29th May, the ACS HVPSs have been set to the minimum voltage (~980V) and the ACS is in CONF mode.

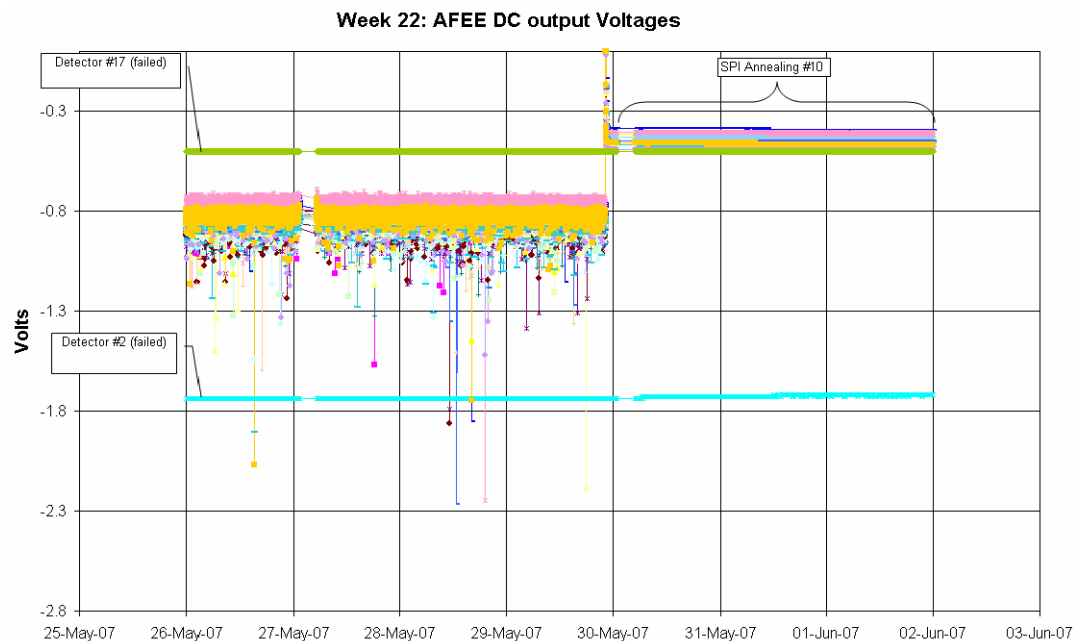
The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and therefore operated at 3.5kV. The energy resolution of GeD#4 was recovered with the last annealing.

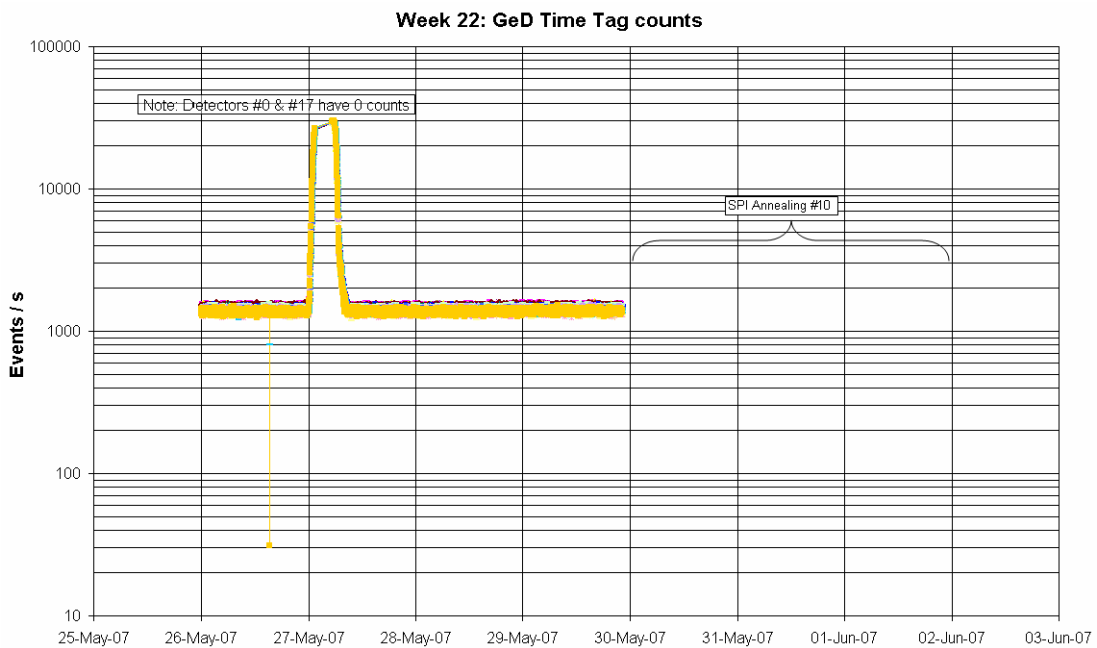
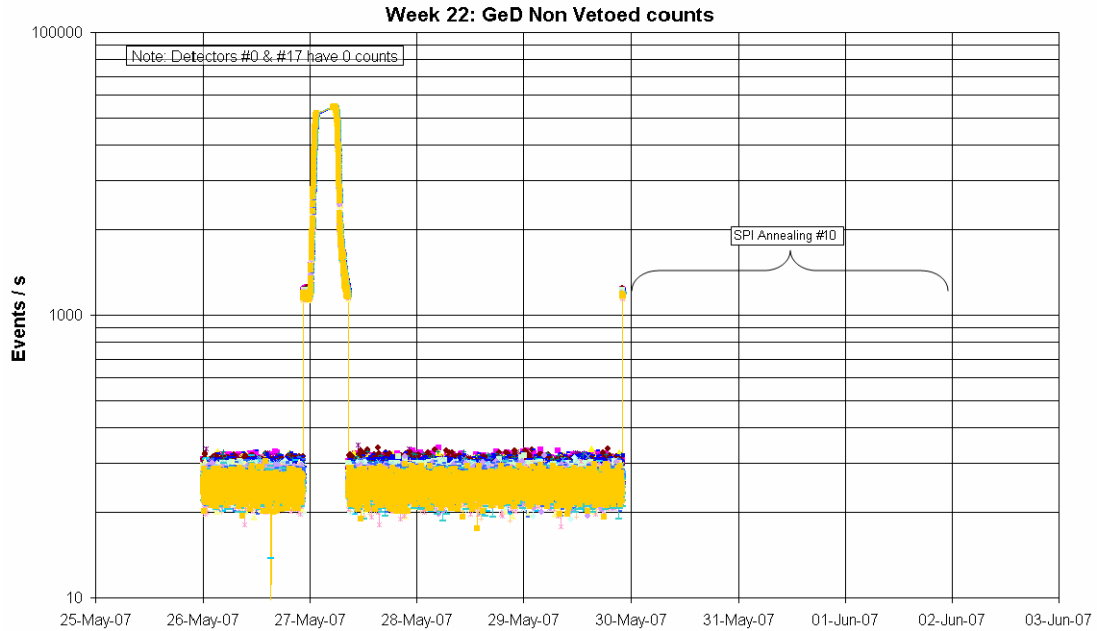
For the 10th annealing operations, started on 29th May, all detector HVPSs were switched off and only the LVPSs are left on.

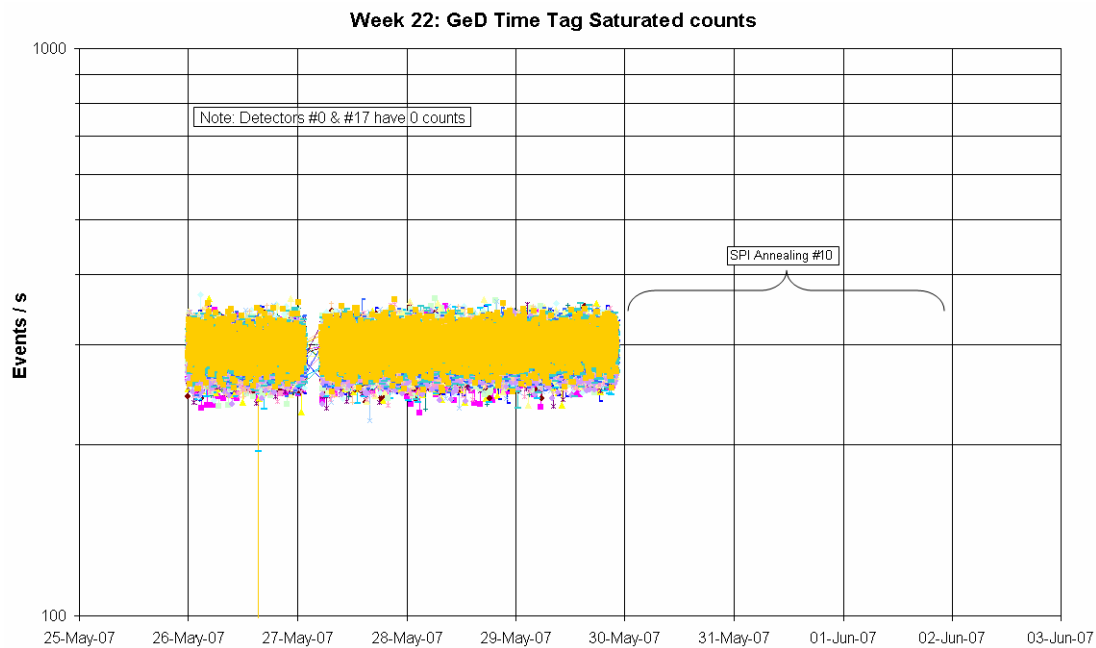
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004.



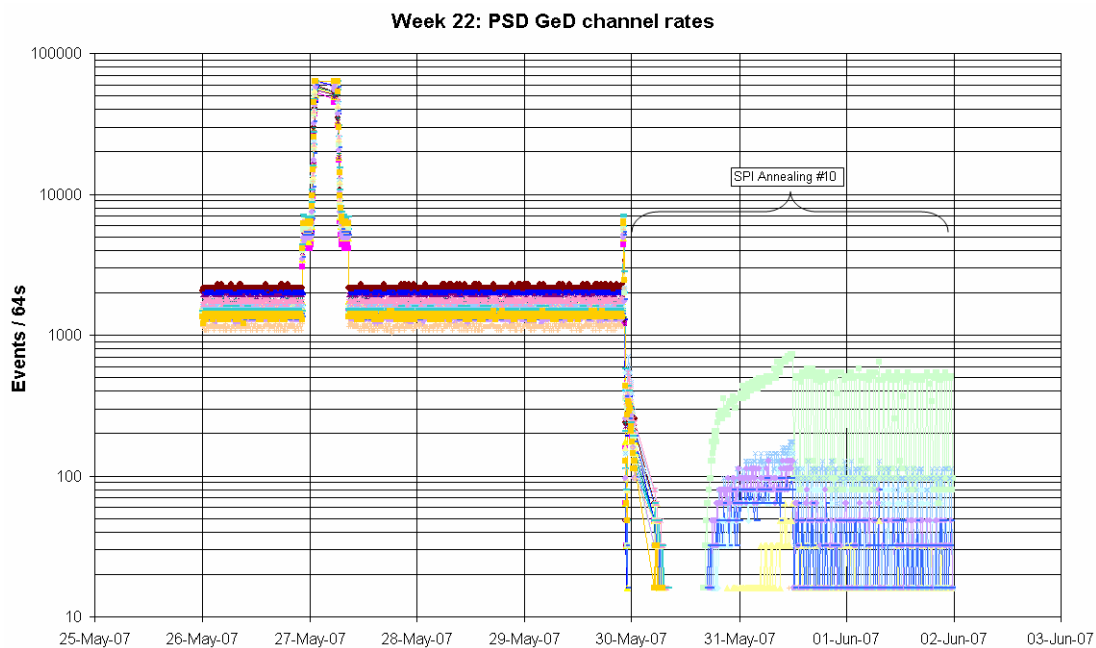
DFEE: The performance of the unit is nominal. For the 10th annealing operations, started on 29th May, the DFEE is in CONF mode.

The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.





PSD: The health of the unit is nominal. For the 10th annealing operations, started on 29th May, the PSD is in CONF mode. The following plot shows the PSD channel rates during the reporting period.



Event Log:

The following non-nominal events occurred on SPI during the reporting period:

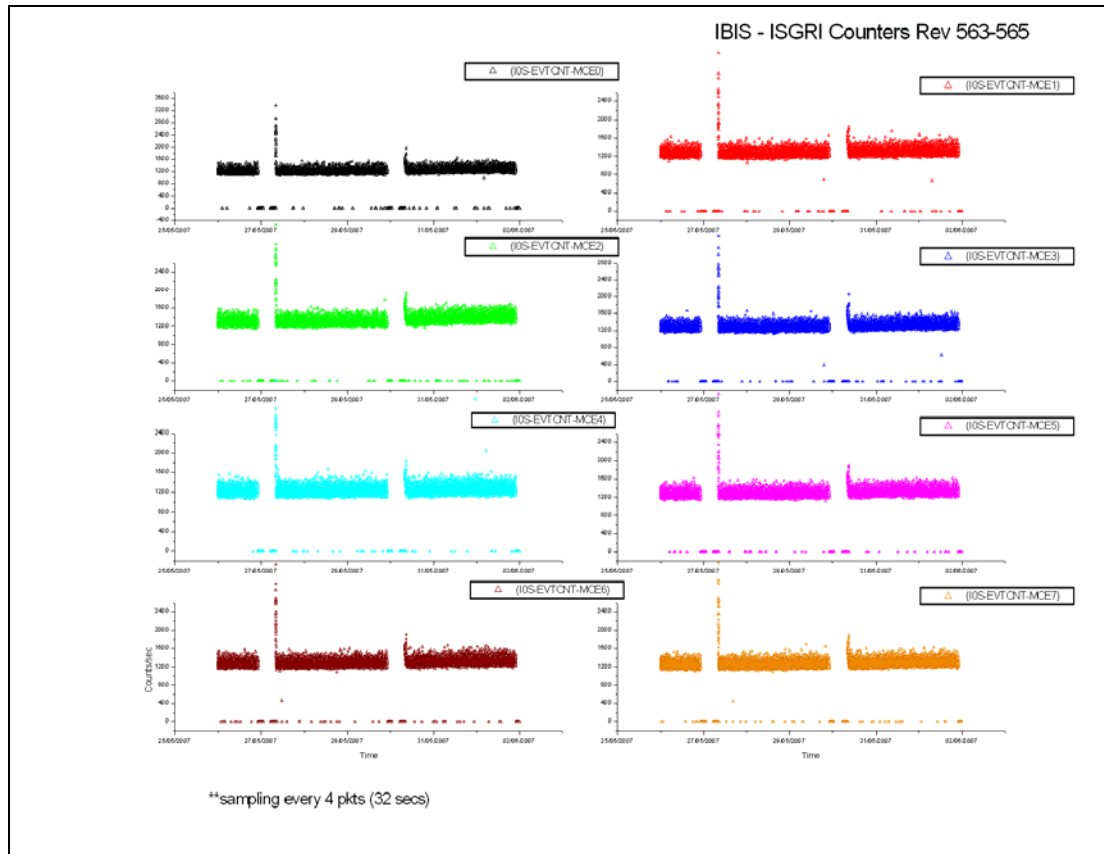
- On 2007-05-27 from 05:14:30Z to 05:57:40Z TM parameter E4009 toggled OOL High and back several times, indicating errors on the HSL. It returned within limits of its own accord and no action was taken.
- The TM parameter E2115 PSAC temperature toggled OOL Warning Low (value = -15.3812549degC) several times on 2007-05-30; 2007-05-31 and

2007-06-01. It returned within limits of its own accord and no action was taken.

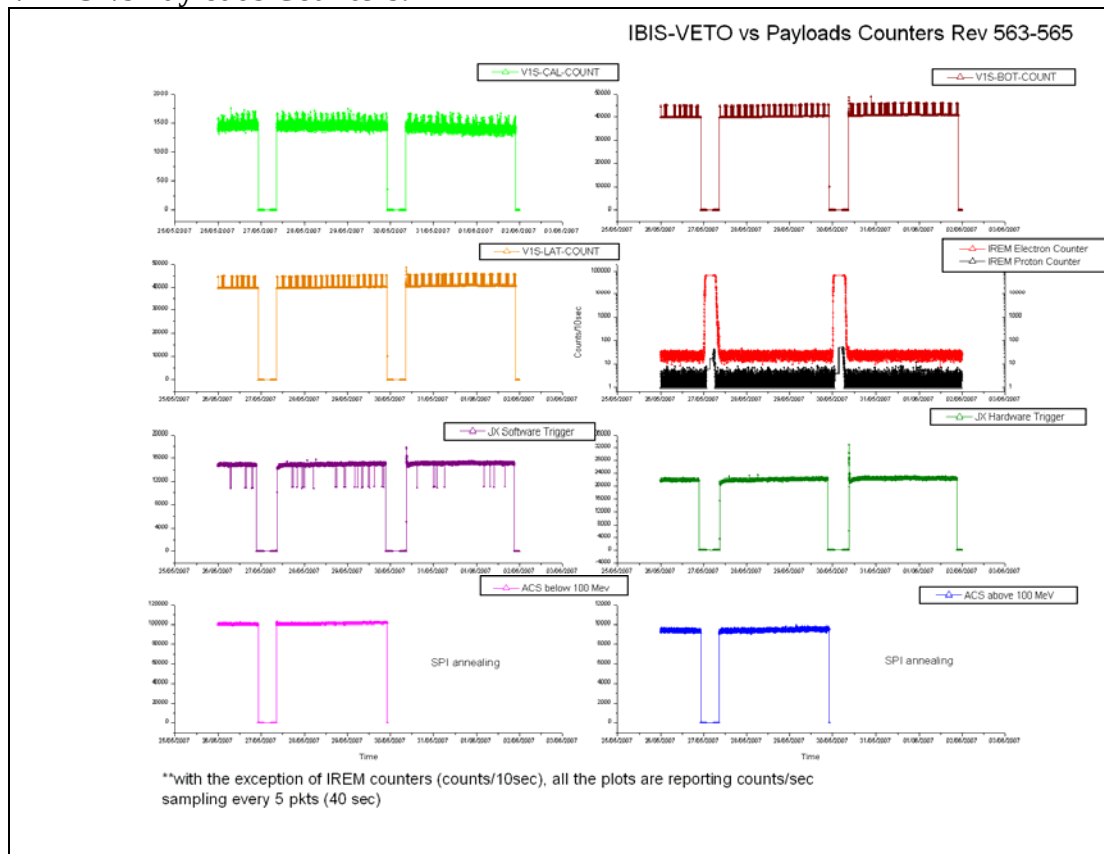
7.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

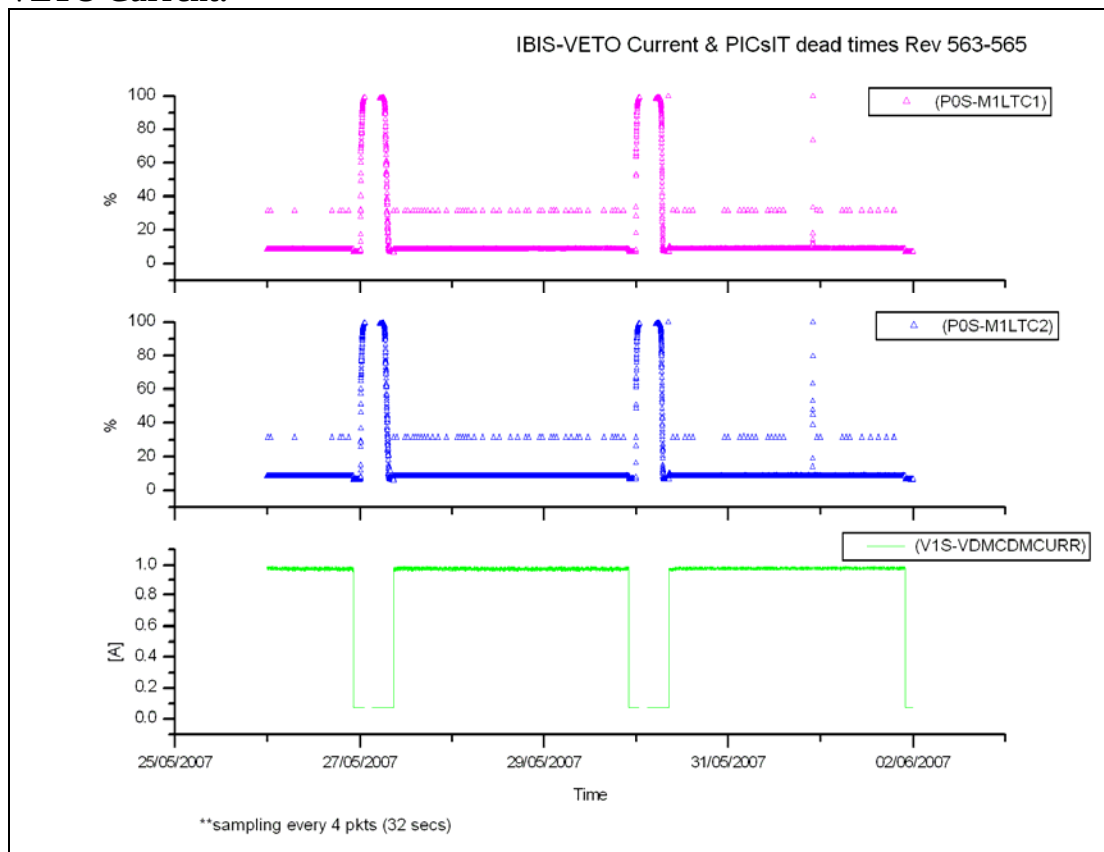


VETO vs Payloads Counters:

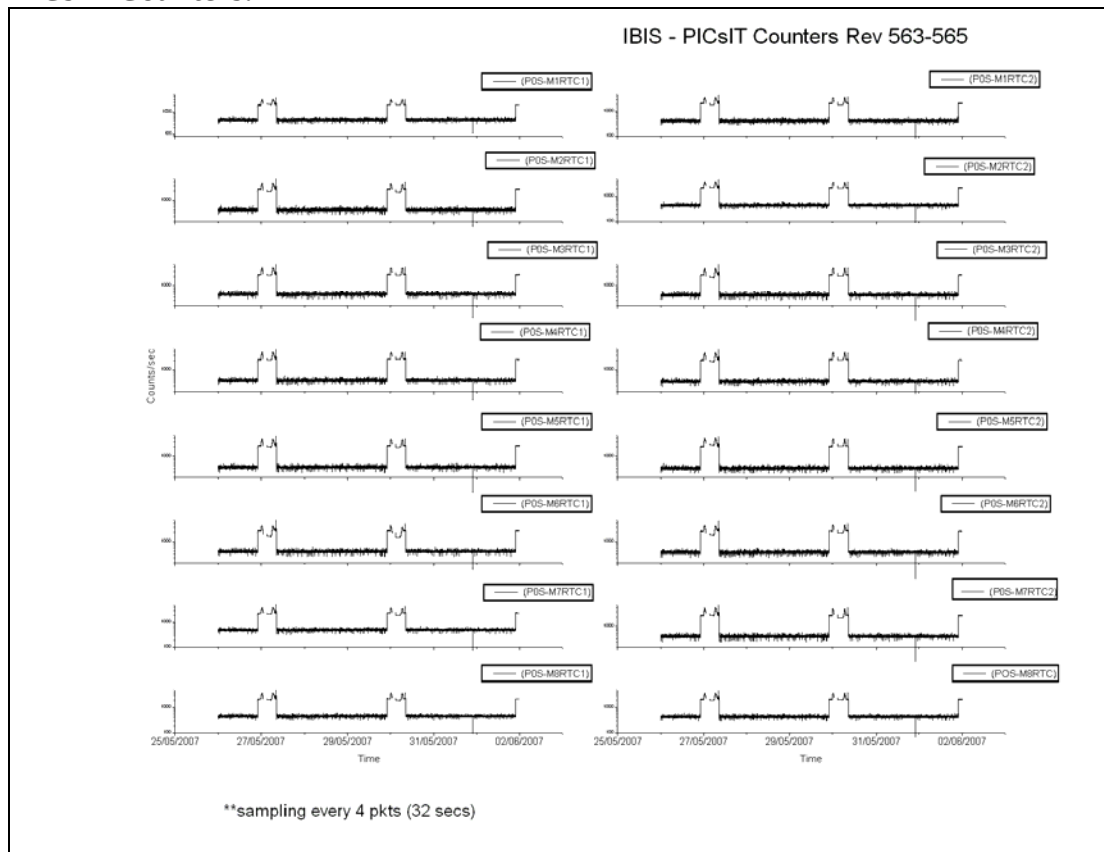


The week was characterised by low radiation.

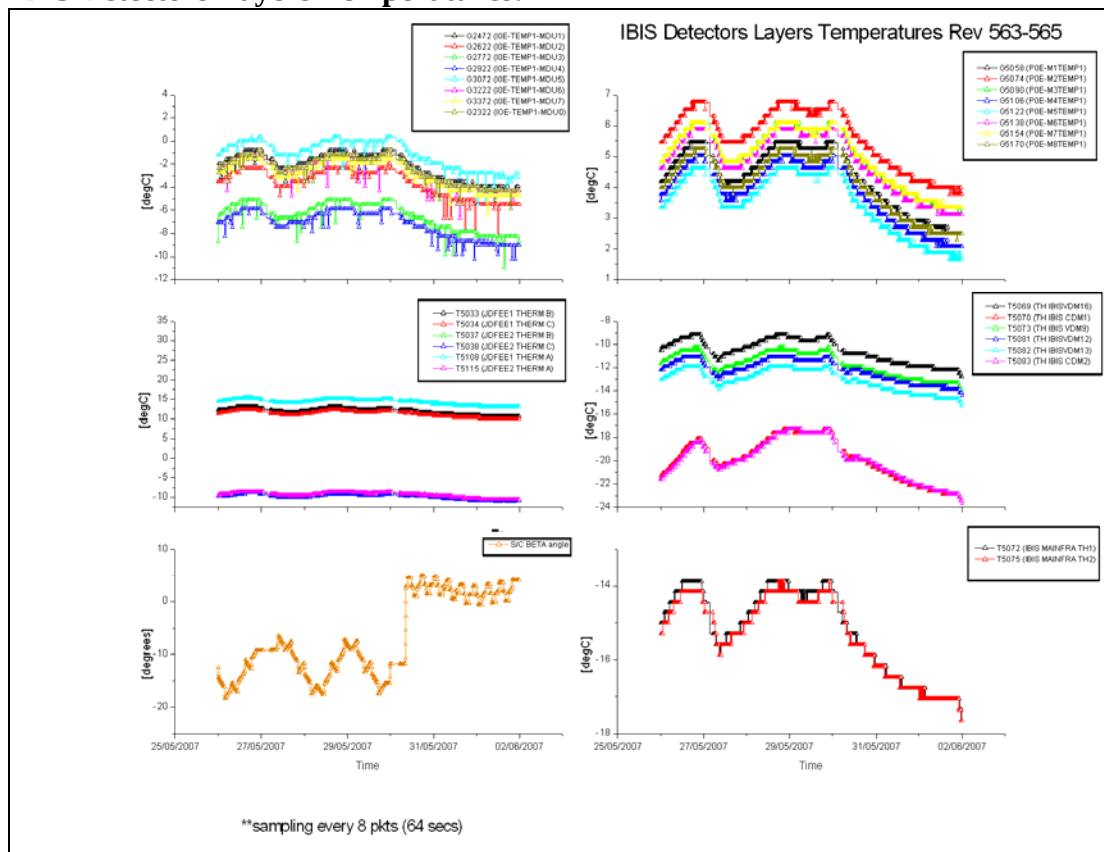
VETO Current:



PICsIT Counters:



IBIS Detectors Layers Temperatures:



IBIS daily report:

The usual Out Of Limits on TM parameter G8015 (S1E-A2_PMT_V), families G5002 (P0S-Mi_RTC1) and G5003 (P0S-Mi_RTC2), families G2014 (I0E-OVFWPXADD-Mi) were reported at Radiation Belts passage.

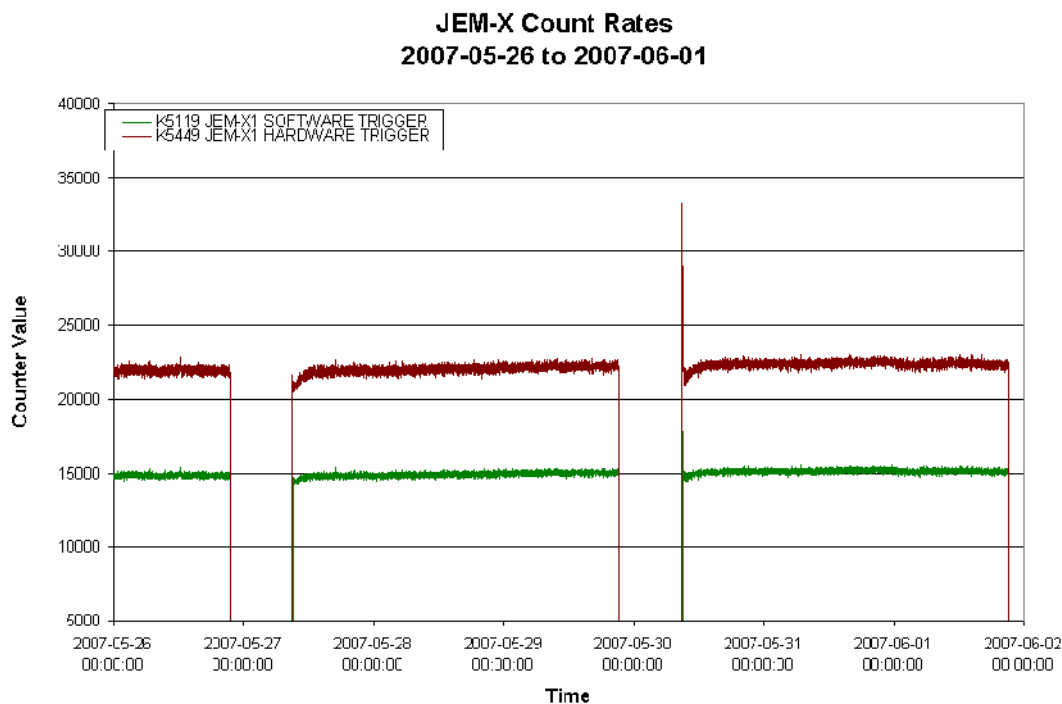
DoY 2007.151 (31/05/2007):

At 22:02Z, TM families G5068 and G5072 (P0S-MiF1 & 2 ERRF) failed SCC. At 22:05Z, TM families G5002 and G5003 (P0S-MiRTC1 & 2) were reported OOL Low-Low. At 22:08Z, the OEM APID 1280, ID 132, "IASW HEPI RESYNCHRONISED" was reported. According to FDIR, the coincidence of these 3 events flag an automatism on-board to resynchronised HEPI and the detectors. No action is required.

7.3.4 JEM-X Operations

JEM-X Count Rates

JEM-X count rates over the reporting period are displayed in the following graph¹.

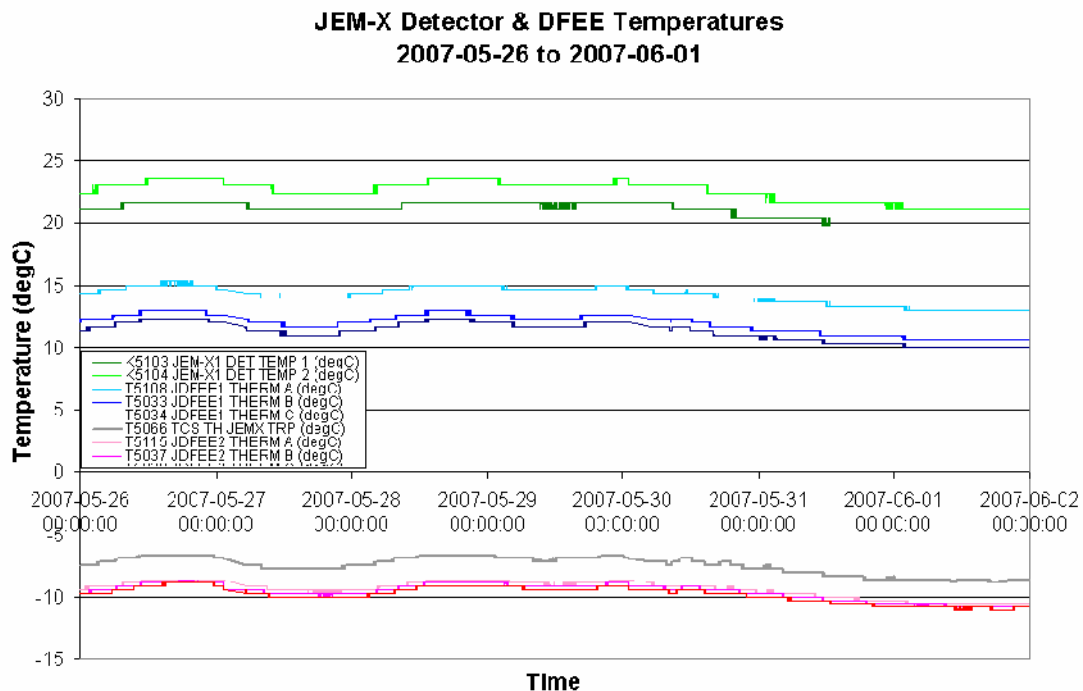


JEM-X Temperatures

JEM-X Detector and DFEE temperatures, along with the temperature on the detector bench between the two units, over the reporting period are displayed in the following graph².

¹ Data sampled (1 frame in 4) and smoothed to remove spikes in S/W Trigger due to flushing of buffer after slews.

² Data sampled (1 frame in 8)



JEM-X Daily Report

2007-05-26 (DOY 146, Rev 563) to 2007-05-29 (DOY 149, Rev 564)

JEM-X1 operations executed nominally.

2007-05-30 (DOY 150, Rev 564-565)

Due to continuing high background radiation conditions after the expected radiation belt exit of revolution 565, at 08:46:13Z K5449 HARDWARE TRIGGER went OOL Warning High, returning within limits at 08:47:49Z. In addition, during the execution of the JEM-X1 activation ED KEHVAC01 from the Timeline, after the TC K0013 STATE DIAGNOSTIC was uplinked at 08:47:44Z, the following OEM was received:

08:48:01Z OEM 189 JEM-X1 PROB DFEE 9 (Unexpected DFEE state reported in HK)

as the TM parameter K5462 DFEE STATE IASW was reporting state DATA DUMP while K5022 DFEE STATUS was SETUP. This was because the DFEE output FIFO buffer was over half full at the time of termination of the diagnostic data collection (K5135 FIFO FULL LOSS = 516 at 08:47:41Z) and thus the IASW did not recognise the autonomous transition of the DFEE back to SETUP (see JEM-X User Manual Section 3.7.5.2.3.6). The situation rectified itself when the next TC of the ED, TC K0009 STATE SETUP, was sent at 08:52:44Z, after which both TM parameters K5462 and K5022 reported SETUP and the following OEM was received:

08:52:56Z OEM 254 ERROR OFF.

JEM-X1 operations continued nominally.

2007-05-31 (DOY 151, Rev 565) to 2007-06-01 (DOY 152, Rev 565)

JEM-X1 operations executed nominally.

7.3.5 OMC Operations

2007-05-26 (DOY 146, Rev 563) to 2007-05-27 (DOY 147, Rev 564)

Nothing to report.

2007-05-28 (DOY 148, Rev 564)

At 10:47, the loss of a guide star caused the suspension of the Timeline, a recovery was performed, which was completed at 11:20. The impact was the loss of pointing 05640037. It was at this time the following commands were rejected:

2007.148.10.50.32.121	2007.148.10.50.41.366	1792	RealTime	131	TC REJECT		
REJECTED TC1			0	0	65535	PR	N
E	E						
2007.148.10.50.38.496	2007.148.10.50.49.352	1792	RealTime	131	TC REJECT		
REJECTED TC1			0	0	65535	PR	N
E	E						

These correspond to the M1130 (RESET IM) and MU1310 (IMAGING-A) commands for that pointing.

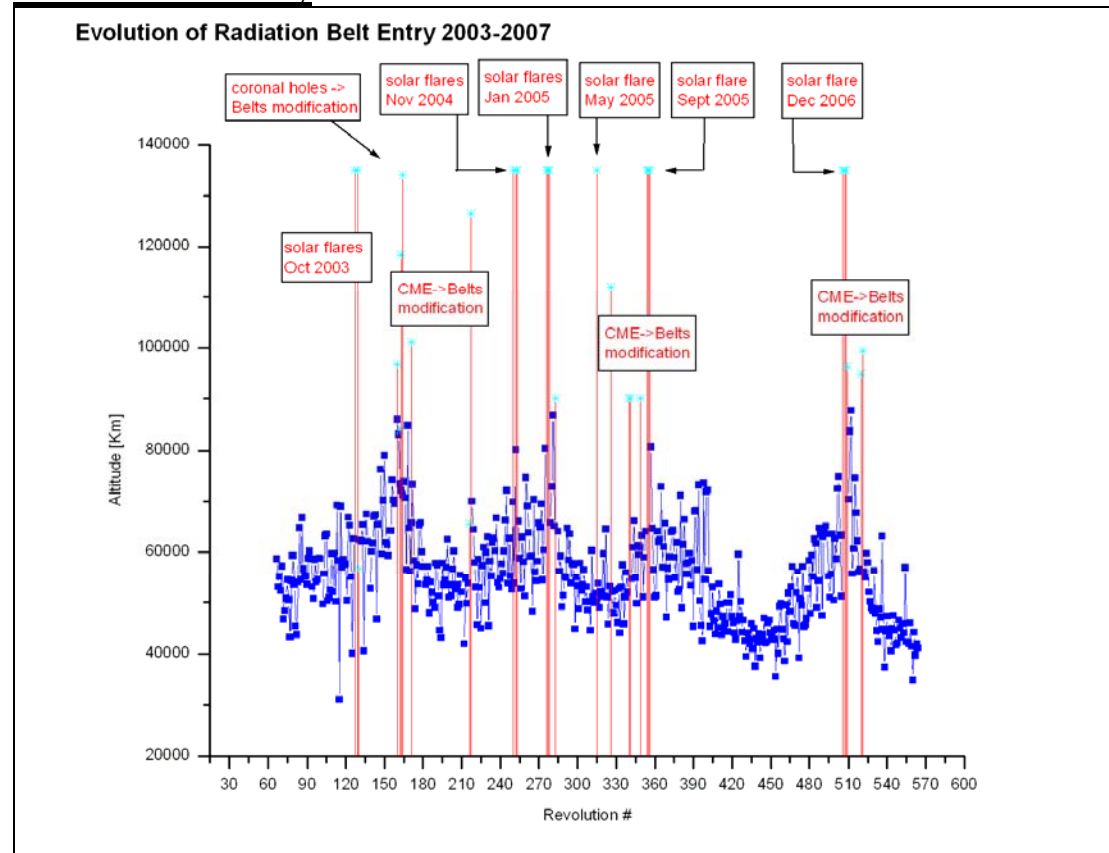
2007-05-29 (DOY 149, Rev 564) to 2007-06-01 (DOY 152, Rev 565)

Nothing to report.

On DoY 146 at 22:21:27, DoY 149 at 22:09:19 and DoY 152 at 21:58:31 OMC went to SAFE mode nominally, at the radiation belt entry time as set in the Broadcast Packet.

7.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

Nothing to report.

Electron Belts

REV	S/C BCPKT (electron)	Electron CUT-OFF Observed Entry/Exit	Observed Entry/Exit Altitude [Km]	Electron CUT-OFF Predicted Entry/Exit	Predicted Entry/Exit Altitude [Km]
563	RAD_ENTR R 2007-05-26T22:21:20Z	2007-05-27 00:03:01	41841.9	2007-05-26 23:28:12	46883
564	RAD_EXIT R 2007-05-27T08:36:33Z	2007-05-27 08:31:25	<<54938.8	2007-05-27 07:28:12	43307
564	RAD_ENTR R 2007-05-29T22:09:12Z	2007-05-29 23:52:05	41106.5	2007-05-29 23:23:44	45875
565	RAD_EXIT R 2007-05-30T08:23:53Z	2007-05-30 08:41:17	55144.0	2007-05-30 07:13:44	42958

Reference

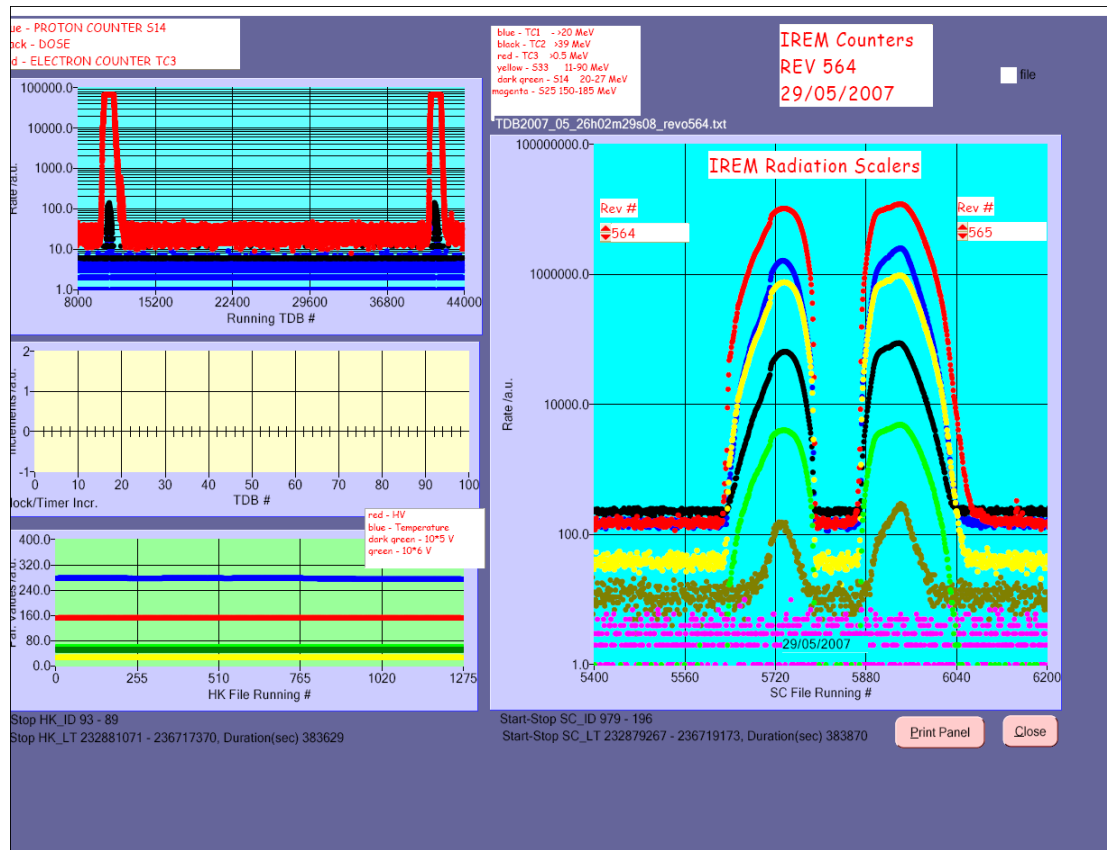
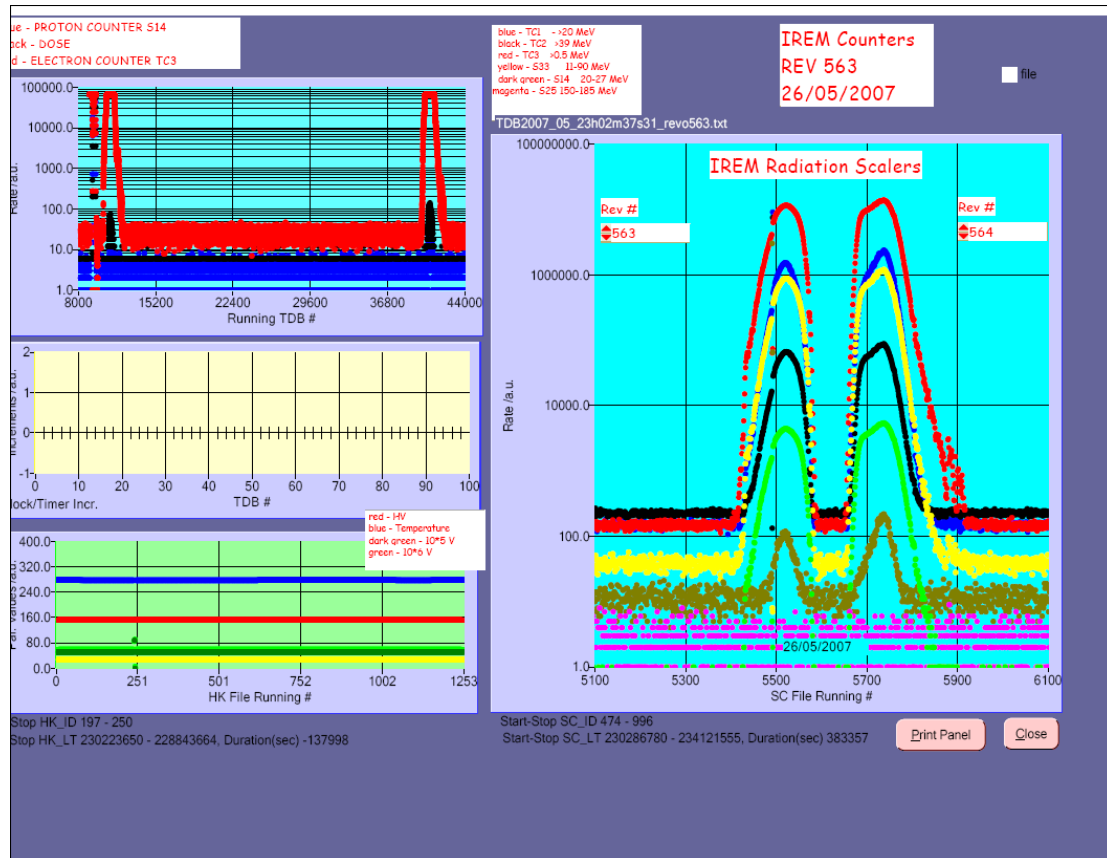
High radiation

Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

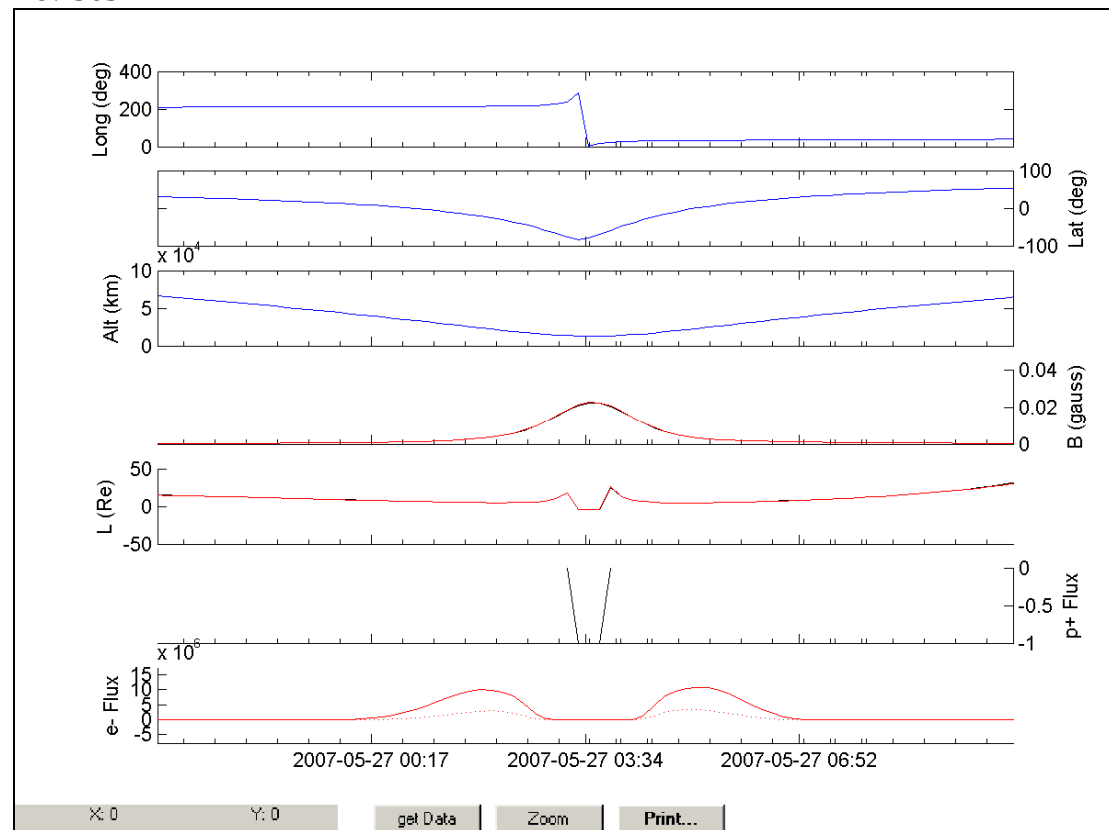
Large error vs reference (more than 30 minutes)

IREM radiation counters:

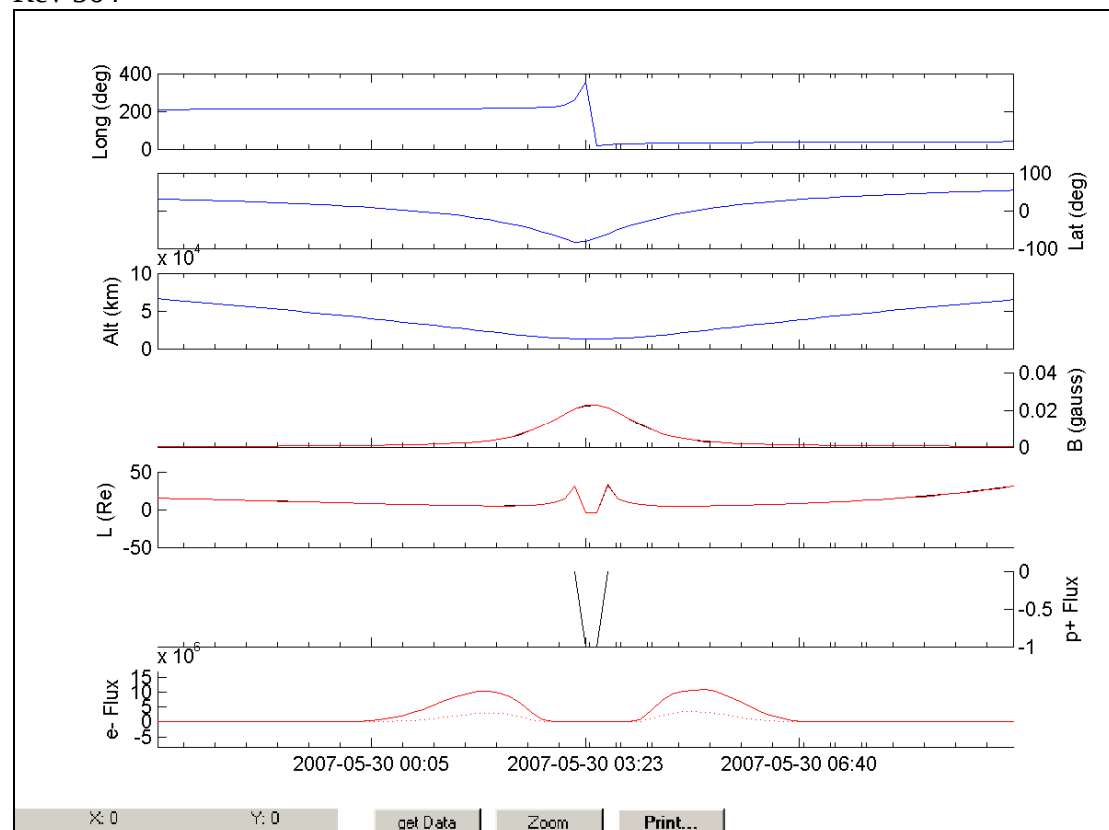


IREM Predicted Radiation Belt Passages

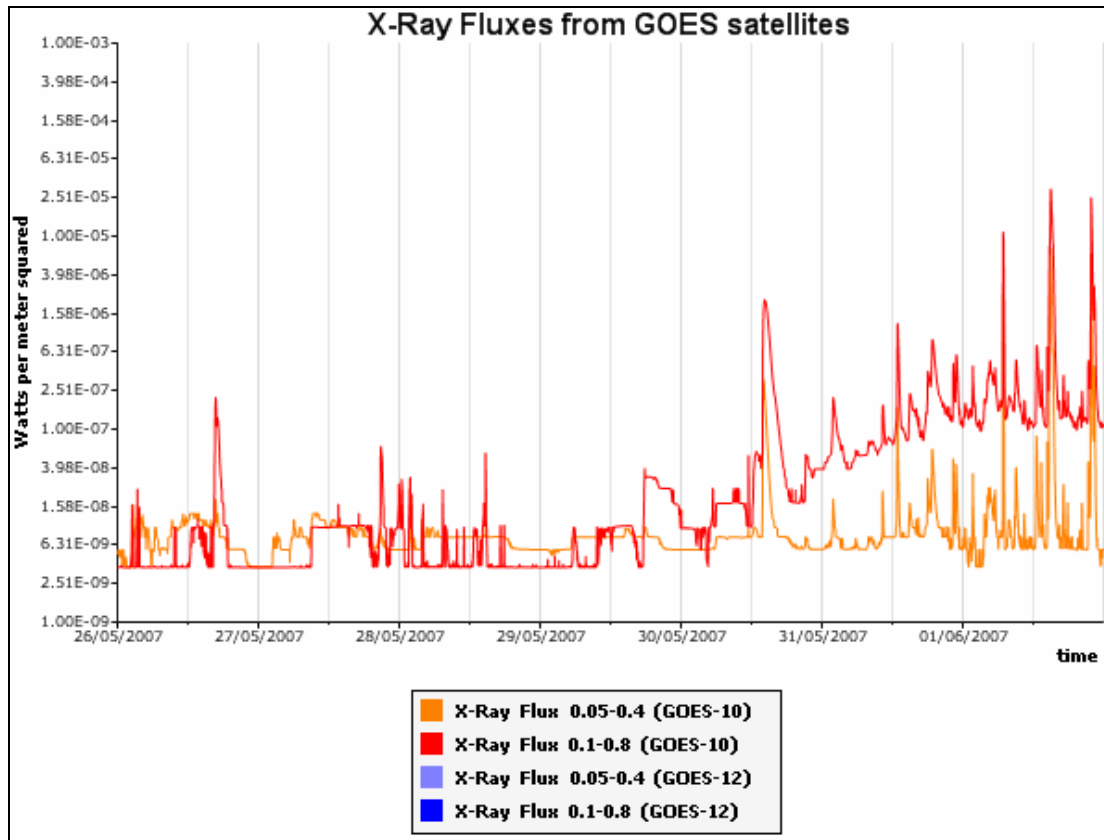
Rev 563



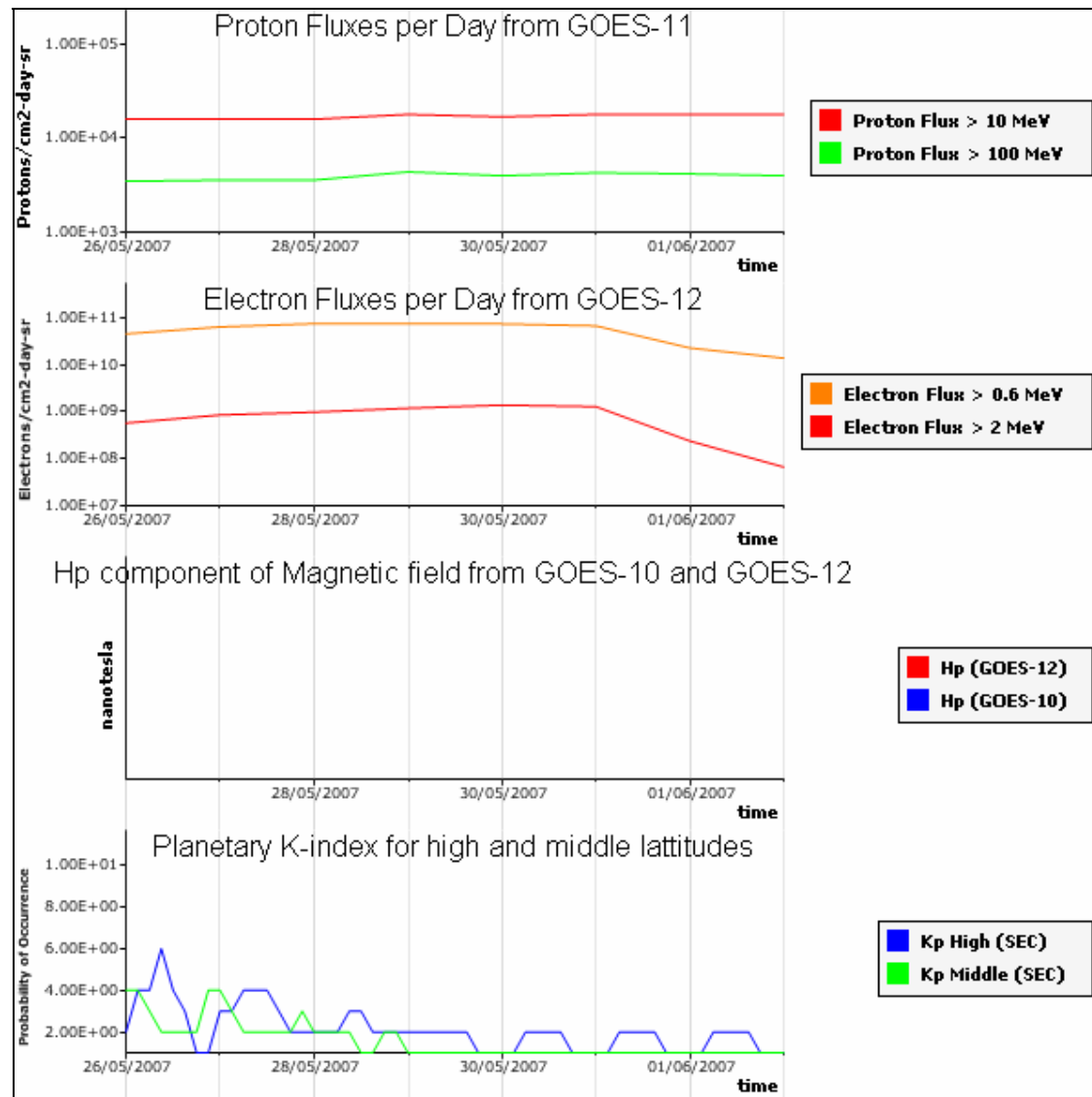
Rev 564



SEC-GOES Observed Particles Fluxes (using SEIS/RAT tool):



X-Ray fluxes start to be significant over 10^{-5} W/m^2 (corresponding to M-class flares). Above 10^{-4} W/m^2 , they correspond to strong X-class flares.



Proton and electron flux are reporting low radiation background this week. Hp component of the Geomagnetic Field is essentially parallel to the Earth's rotation axis. A drop near 0 nT is associated with a significant variation in the magnetic field. Kp index is based on ground magnetometers. Kp ≥ 5 features storm-level geomagnetic activity.