EUROPEAN SPACE AGENCY
DIRECTORATE OF TECHNICAL & OPERATIONAL SUPPORT
MISSION OPERATIONS DEPARTMENT

INTEGRAL
Mission Report

INT-MOC-SYS-RP-1001-OPS-OAI

No. 262
Week 39

01.10.07

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 22.09.07 until 28.09.07 (both dates inclusive) and covers the revolutions 604 and 605.

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 hexagonal dither of the Galactic bulge region (RA 17:45:36.00, DEC -28:56:00.0), a raster dither of the Galactic centre (RA 17:45:40.00, DEC -29:00:29.0), and the Crab Calibration, a sequence of a raster followed by 3 staring observations of the Crab nebula at attitude (RA 05:34:31.90, DEC +22:00:52.0).

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.

No slews were missed from TL, during the observation period.

Crab Calibration was performed during rev 605. Impacts were reported on science calibration data, due to (different) communications problems affecting REDU and VIL2 stations.

The fuel consumption over the period between 21/09/2007 and 28/09/2007 was 0.1489 Kg. The remaining propellant is in the order of 144.3511 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

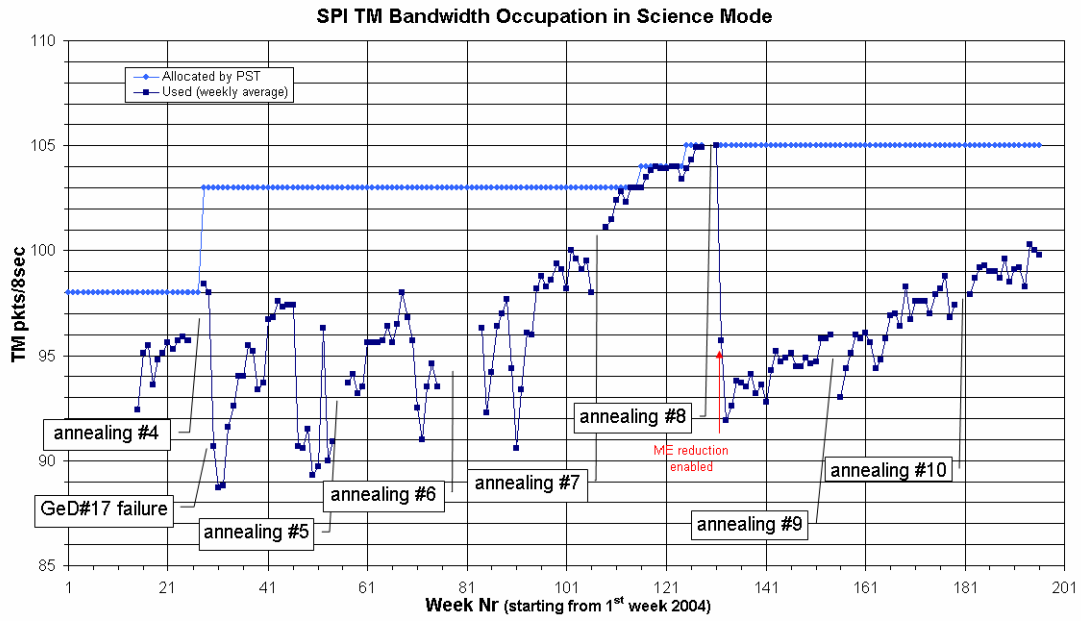
3.2.1 SPI

Following the 10th annealing, which ended on 17th June, 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). 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.

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 except from 2007-09-28T07:27:28Z to 2007-09-28T10:15:38Z when the TM allocation to SPI was 83 packets/cycle as additional TM bandwidth had been given to JEM-X for the JEM-X specific Crab Calibration observation. The average telemetry occupation when the TM allocation was 105 packets/cycle was 99.8 packets/cycle.

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



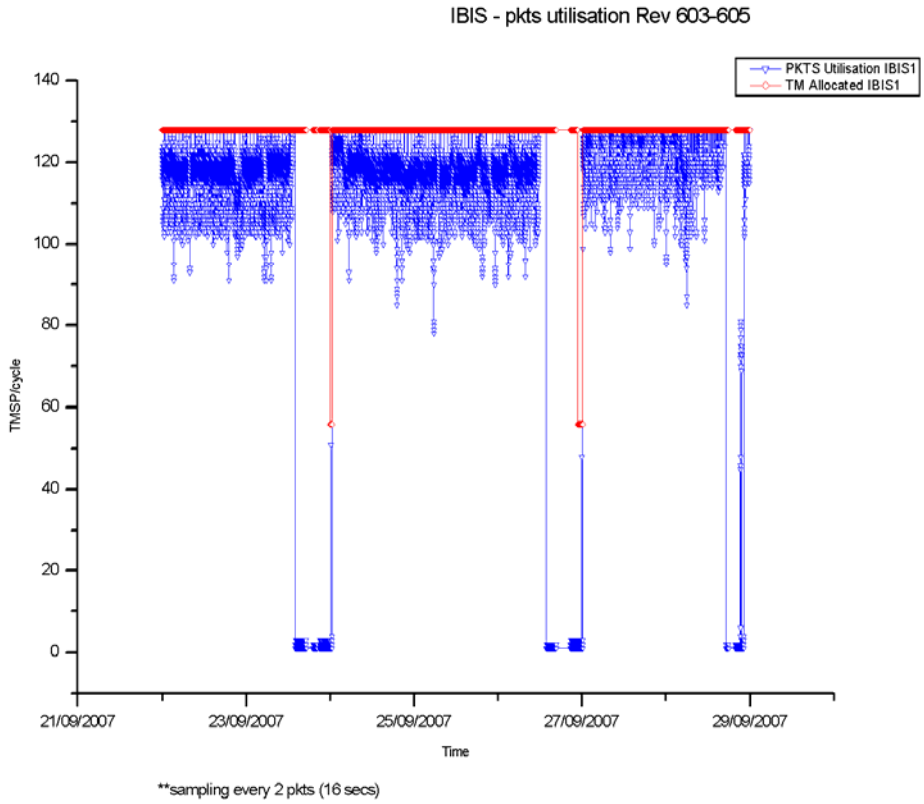
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

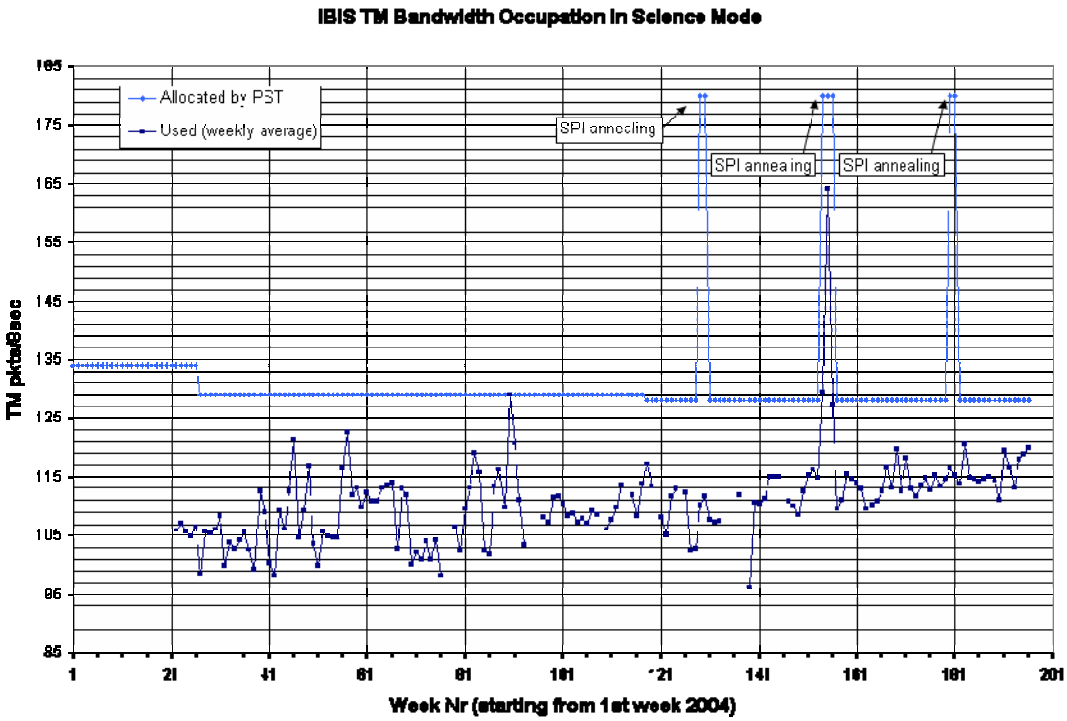
The overall status of the unit is nominal.

During the reporting period, the PST allocation to IBIS was 128 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period (when IBIS was in Science mode) was 120.00 TMPS/cycle, up 1.21 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.

Up to the end of revolution 604 JEM-X1 was operated in Data Taking mode with a TM allocation of 8 packets/cycle, with JEM-X2 dormant. At the end of that Revolution, JEM-X2 was reactivated, in the subsequent revolution the TM allocation was as follows: JEM-X1 6, JEM-X2 2. except from 2007-09-28T07:27:28Z to 2007-09- 28T10:15:38Z, when the allocation was 15 packets each.

Note: Some more information concerning the JEM-X operations is provided in the Appendix.

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, 148 of the 150 planned science pointings for OMC were executed nominally, 1 was lost, and another interrupted, and then 5 hours later resumed.

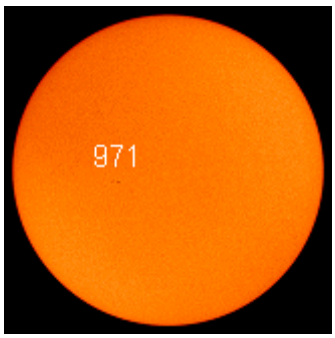
Note: Some more information concerning the OMC operations is provided in the Appendix.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity. A new sunspot provisionally numbered 971 emerged on Friday 28th September, breaking a 21-day string of blank suns.



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 good this week, no pointings were missed from the Timeline. The overall performance was well over the 95% requirement.

4.1 Mission Operations Centre

The performance of the MOC was very good this week. The overall performance was well over the 95% requirement.

4.2 Ground Stations & Network

The performance of the ground stations and Network was good this week. There were, however, 5 occasions of small TM drops from Redu, one of which led to the loss of OMC data for 1 pointing, and one occasion where the link to Redu was not available for the entire pass. VIL2 was also not operational, leading to the loss of about 5 hours of science data during the Crab calibration. There were also 2 occasions of errors sending data to the isds. The overall performance was well over the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSFs for revolutions 612-614 have been received.
Observations have been planned up to revolution 613.

TSFs have been received for revolutions 606-609 this week.

2. Observation status

ECS files for revolutions 591 & 596-599 have been received and processed. There is now no gap in the sequence.

3. ISOC Science Data Archive

No news.

4. ISOC system

Version 16.0 will be released on Monday 01 Oct.

5. Problems

None.

4.3.2 ISDC

Status of ISDC observation processing on 01/10/2007:

- Latest Standard Analysis completed: observation 05200010007 (Galactic Bulge region, Revolution 599) on 30/09/2007.

- Latest products archived: observation 05200280001 (Her X-1, Revolution 597-598) on 01/10/2007.

- Latest observation products sent to the observer: observation 05200280001 (Her X-1, Revolution 597-598) on 01/10/2007.

5 Special Events

6 Anomalies

The following problems wer reported that impacted operations:

- On DoY 270, at 20:57, during a Slew, there was a drop in TM from Redu. This caused the OMC commands for that pointing to fail. The impact was the loss of OMC data for pointing 06050039.
- On DoY 271, at 15:00, GFCC reported problems connecting to Redu. At 15:27, a handover was commenced from DSS27 to VIL2. At 16:12 intermittent TM drops started occurring, which prevented commanding. At 17:07, it was decided to put the instruments to SAFE due to the instability in the links. At 21:22, a handover was successfully performed, back to DSS27, and an instrument recovery performed. The impact was the loss of about 5 hours of science data from pointing 06050058.

The following anomaly reports were entered into the ARTS system this week.

AR id	Date Created	Subject	Segment	Status
INT-2956	2007-09-27	Incorrect value for JEMX2 CPU mode set and Energy Linearization Table omitted		Open
INT-2957	2007-09-28	Communications problem at REDU station	ESA Stations	Pending
INT-2958	2007-09-28	Reduced bandwidth on links from VIL2 caused by DDOR retrievals	COMMS	Pending

7 Future Milestones

The following activities are foreseen in the next few weeks.

- Eclipse season begins on 11th October 2007, at the beginning of revolution 610.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 604

The observations in revolution 604 began with a hexagonal dither of the Galactic bulge region (RA 17:45:36.00, DEC -28:56:00.0), lasting ~3.5 hours. This was followed by a raster dither of the Galactic Centre (RA 17:45:40.00, DEC -29:00:29.0), lasting ~53.2 hours, until the end of the revolution.

Revolution 605

The observations in revolution 605 were devoted to the Crab Calibration, all with attitude (RA 05:34:31.90, DEC +22:00:52.0). They began with a raster dither for SPI, lasting ~27.8 hours. They continued with a staring observation for IBIS, lasting ~0.5 hours. This was followed by another staring, this time for JEM-X, lasting ~2.8 hours. Finally, there was a continuation of the IBIS staring observation for another ~27.2 hours, which lasted until the end of the revolution.

Throughout these observations, all instruments were in their nominal science modes. The TM allocation in this revolution was IBIS 128; SPI 105; JEM-X1 6; JEM-X2 2; OMC 5. At 2007-09-28T07:27:28Z it changed to IBIS 128; SPI 83; JEM-X1 15; JEM-X2 15; OMC 5. At 2007-09-28T10:15:38Z it changed back to IBIS 128; SPI 105; JEM-X1 6; JEM-X2 2; OMC 5 until the end of the revolution.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
2007-09-07T08:44:11.000Z     144.6440    F   Automatic TM processing.
2007-09-08T22:55:43.000Z     144.6280    F   Automatic TM processing.
2007-09-09T07:31:28.000Z     144.5960    F   Automatic TM processing.
2007-09-11T22:58:39.000Z     144.5837    F   Automatic TM processing.
2007-09-14T17:34:14.000Z     144.5585    F   Automatic TM processing.
2007-09-14T22:12:55.000Z     144.5521    F   Automatic TM processing.
2007-09-16T07:40:58.000Z     144.5361    F   Automatic TM processing.
2007-09-17T22:01:10.000Z     144.5282    F   Automatic TM processing.
2007-09-19T07:50:26.000Z     144.5111    F   Automatic TM processing.
2007-09-20T21:49:58.000Z     144.5000    F   Automatic TM processing.
2007-09-22T08:04:02.000Z     144.4776    F   Automatic TM processing.
2007-09-23T21:37:18.000Z     144.4676    F   Automatic TM processing.
2007-09-25T07:25:21.000Z     144.4222    F   Automatic TM processing.
2007-09-26T21:26:30.000Z     144.4106    F   Automatic TM processing.
2007-09-28T06:54:50.000Z     144.3511    F   Automatic TM processing.

This report was generated  Fri Sep 28 08:00:16 GMT 2007
```

8.3 Detailed Satellite Information

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

8.3.1 AOCS SUMMARY OPERATIONS REPORT, 22/09/2007 – 28/09/2007

The AOCS operations were executed from the Automatic Timeline.

During this period, 90 Open Loop Slews, 69 Closed Loop Slews and 5 Momentum Biases were executed.

No slews were missed from TL, during the observation period.

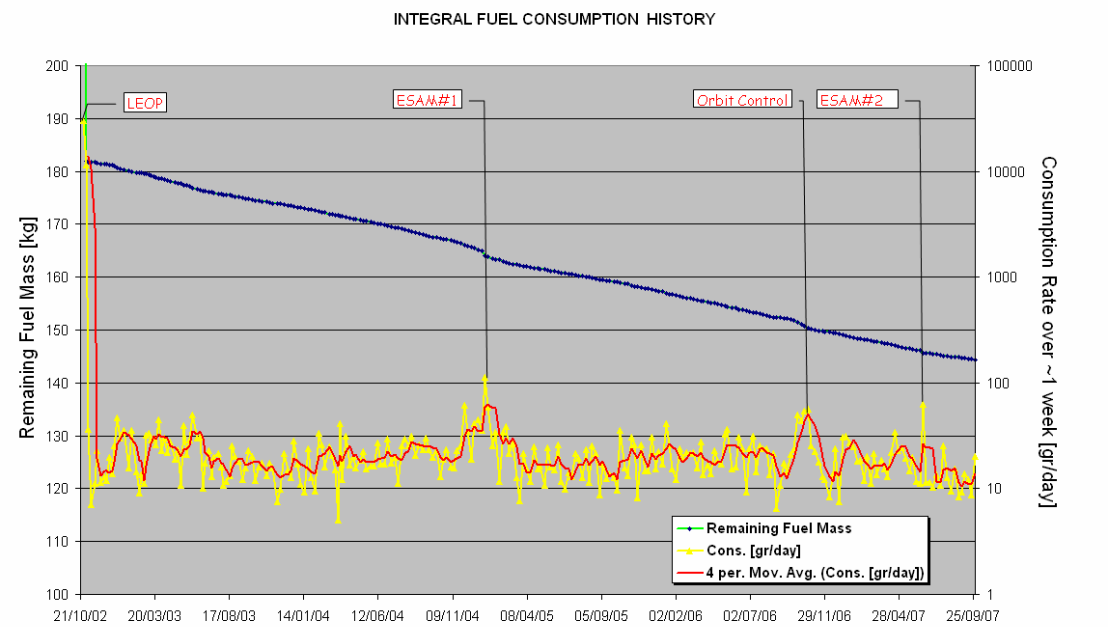
Impacts were reported on science calibration data, still to be assessed, due to communications problems on REDU and VIL2 stations, during the execution of PID 06050058.

Orbit Control

No update.

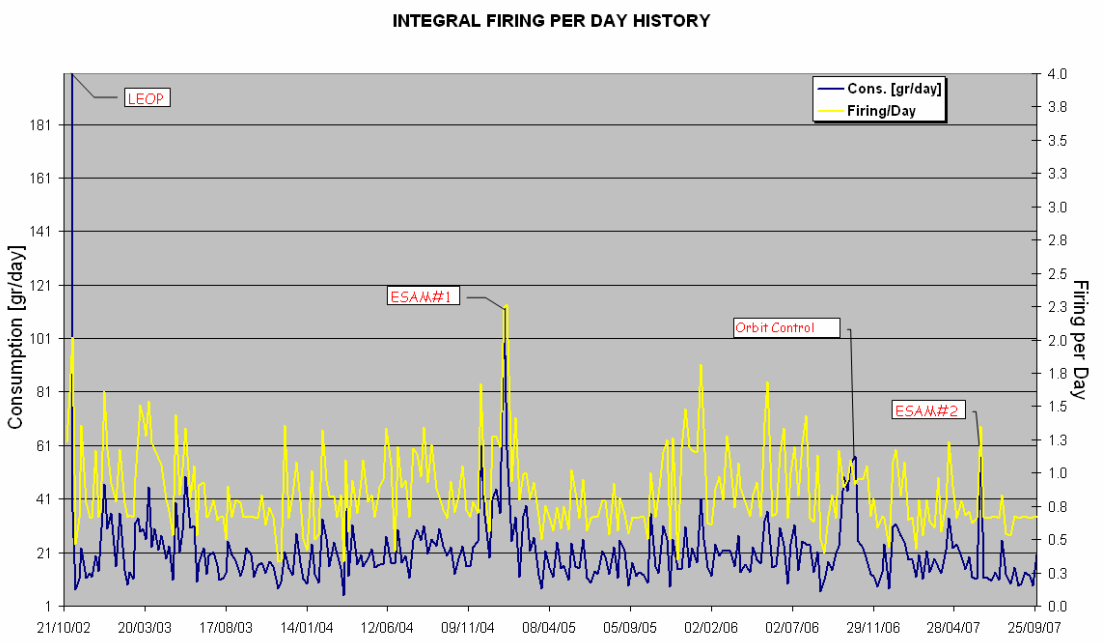
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 28/09/2007 is reported in the plot below.



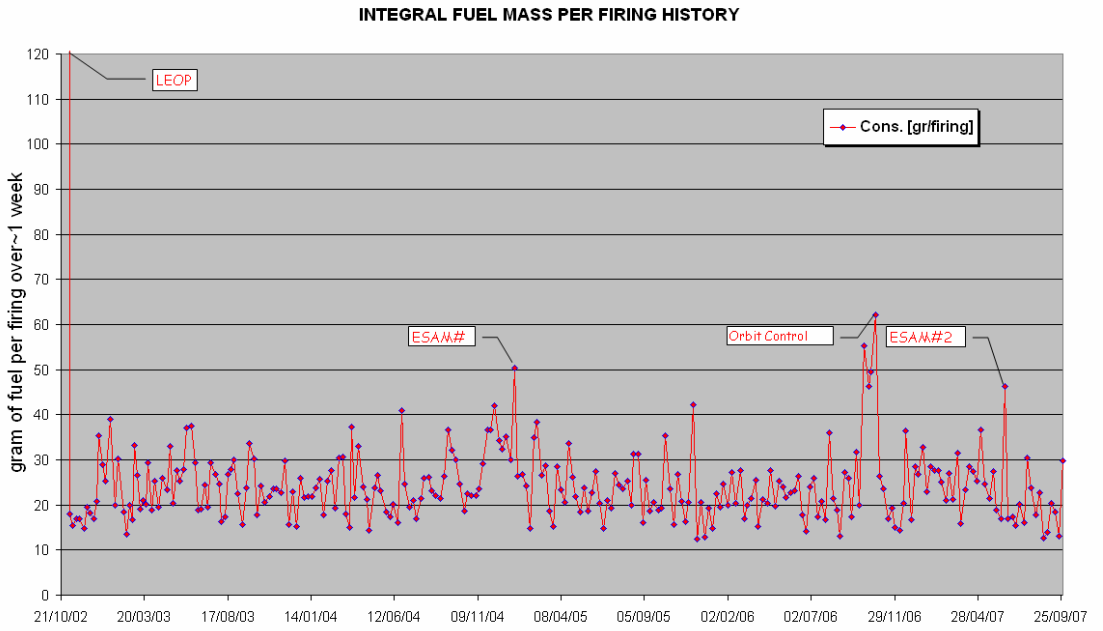
The above plot considers the ESAM fuel consumption spread over period of ~1 week.

The firing per day over the period between 01/11/2002 and 28/09/2007 is reported in the plot below.



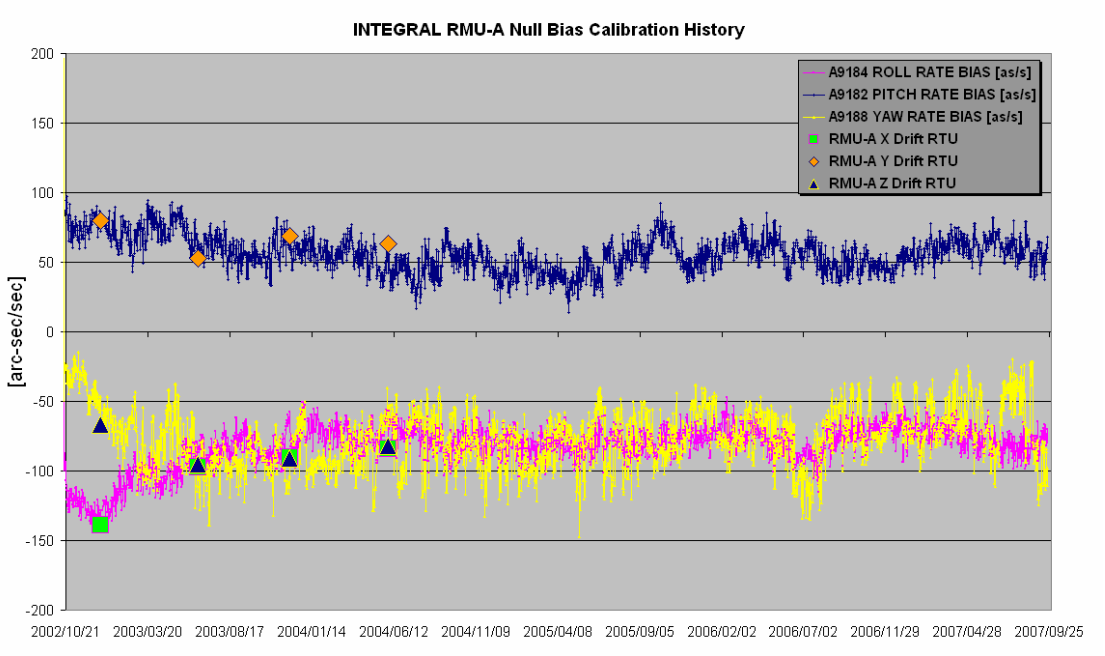
The plot above consider the ESAM fuel consumption spread over period of ~1 week.

The fuel per firing over the period between 01/11/2002 and 28/09/2007 is reported in the plot below.



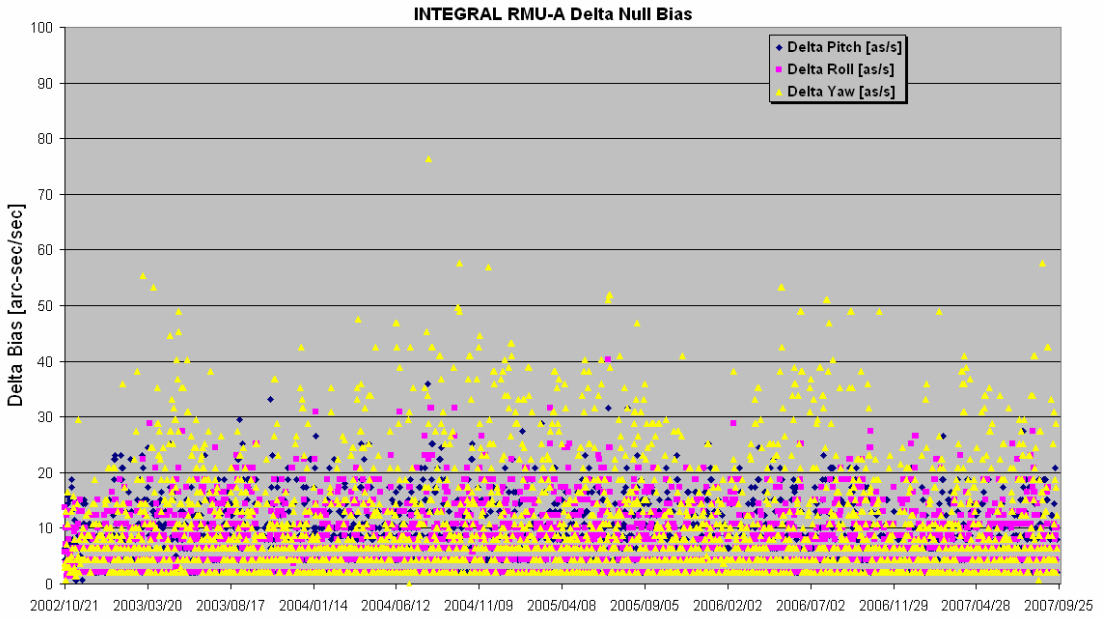
The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 21/09/2007 is reported in the plot below.



The evolution of the drift on yaw channel is under constant monitoring.

The RMU-A delta null bias calibration history, on pitch, roll and yaw channel over period between 01/11/2002 and 21/09/2007 is reported in the plot below.



22/09/2007 (Day of Year 265, Revolution 603)

Nothing to report.

23/09/2007 (Day of Year 266, Revolution 603-604)

Nothing to report.

24/09/2007 (Day of Year 267, Revolution 604)

Nothing to report.

25/09/2007 (Day of Year 268, Revolution 604)

FDS not updating Reaction Wheels Plot: at 23:00z the FDS stopped updating the Reaction Wheels profiles plot with real-time S/C TM. The problem lasted until the morning, when FD restarted the task responsible for the plot generation. The Wheels profiles were checked against the predicted values, at the end of each slew, manually by using the table reported in the Epos Summary (ESM) file.

No impact on TL.

26/09/2007 (Day of Year 269, Revolution 604-605)

IMCS HFA task problem: at 15:43z the HFA (History File Archive) task on IMCS-A stopped, causing no TM distribution to the FDS and the failing of update process for the next Change of Guide Star (CGS).

A manual recovery was performed at 15:53z and the CGS manually updated in TL.

No impact on TL.

27/09/2007 (Day of Year 270, Revolution 605)

Nothing to report.

28/09/2007 (Day of Year 271, Revolution 605)

Communications problem at REDU and VIL2 station: at 15:00z ESTRACK reported problem in connection to REDU station, in preparation for station Handover DSS27->REDU, expected at 15:02z.

To recover the problem were performed several attempts in different areas: NCTRS-A re-started, ISDN backup link brought up, links connected to different TMPs (1-2). As all the attempts were not successful was requested by FCT, as contingency, the support of VIL2 station, available for INTEGRAL operations from 15:27->17:56z.

During the VIL2 support a different problem was observed: several drops (intermittent) were reported in TM links (VC0, VC7) impacting TC commanding from TL.

Nevertheless, the REDU station was requested to maintain tracking on INTEGRAL in order to continue to record science data on station, minimizing the impact on the planned scientific calibration (Crab observation long staring) along rev 605.

From 16:00z onwards, investigations were carried out at ESOC, on the links to VIL2 in collaboration with the operators in VILSPA: a problem on limited bandwidth on the TM links due to concurrent DDOR activities (from VILSPA) was identified. The

DDOR retrieval was stopped and the station declared GREEN again. Further check on the links was carried out to verify the stability of the links (TM/TC).

From 16:00z onwards, parallel investigations were carried out at ESOC, by COMMS engineers, also on the links to REDU in collaboration with the operators in REDU.

From 17:56z ->19:50z the INTEGRAL operations could not be carried out due to the station outage caused by the problem on REDU.
In order to protect the payloads during the long station outage, the instruments were configured in SAFE mode at 17:10z and resumed from SAFE at ~20:50z. In this period the science data was not produced.

At 19:50z the AOS from VIL2 was performed nominally.

At 22:42z COMMS engineers performed several tests by using the INTEGRAL B-chain connected to REDU. At 22:54z a problem on the frame relay of the router in REDU was identified, fixed (details from investigation still TBP) and the station declared GREEN again.

Further check was carried out from (DoY 272) 00:33z onwards to verify the stability of the links (TM/TC).

At 01:14z the REDU station was finally validated by FCT and ready for the following station H/O.

At 04:38z the H/O DSS27->REDU was performed nominally.

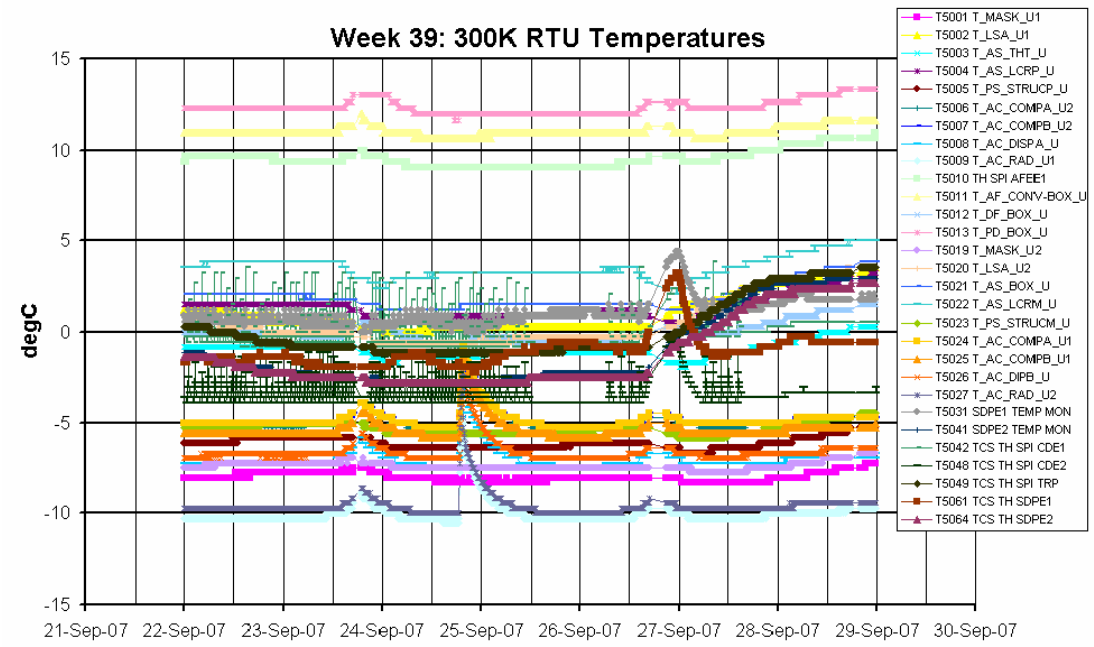
During the mentioned period commanding for updating the on-board Sun Steering Law (SSL) during PID 06050058 was missed, due to the not stable TM link on VIL2. A manual recovery was then performed at 22:07 in order to regenerate the missed SSL by executing a corrective close loop slew (CSL) to the same attitude.

Limited impact on TL commanding because the events occurred during the execution of PID 06050058, a long staring (~98 ksec) requested for scientific calibration (Crab calibration).
Impact on science calibration data still TBD, due to the instable TM links (VC0, VC7) and station outage from 17:56z ->19:50z.

These anomalies are described in AR INT_2957 and INT_2958.

8.3.2 SPI Operations

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

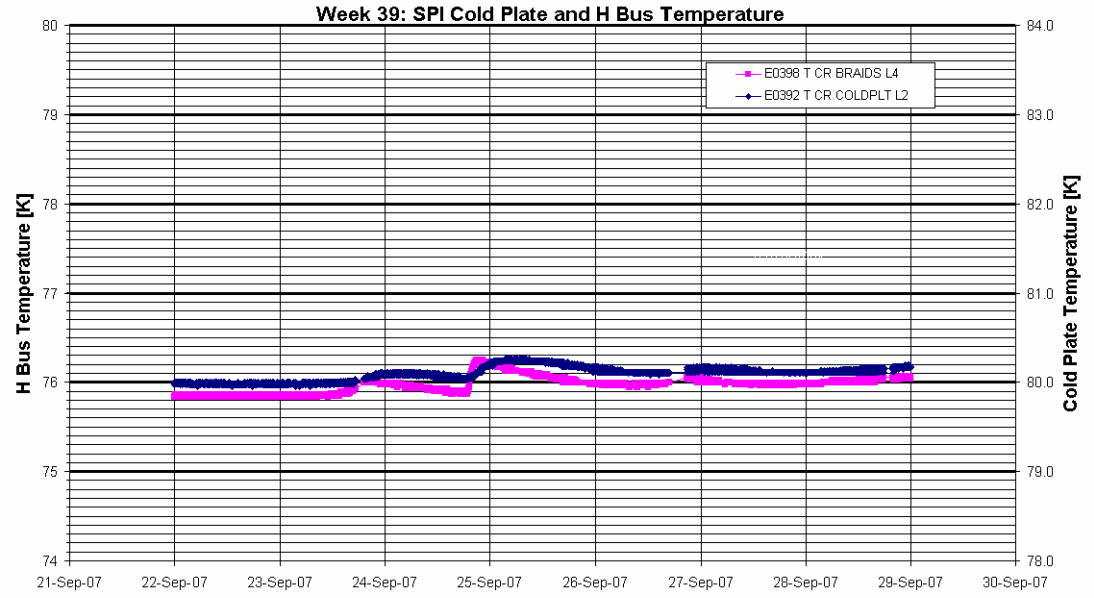


Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range 80K +/-1K.

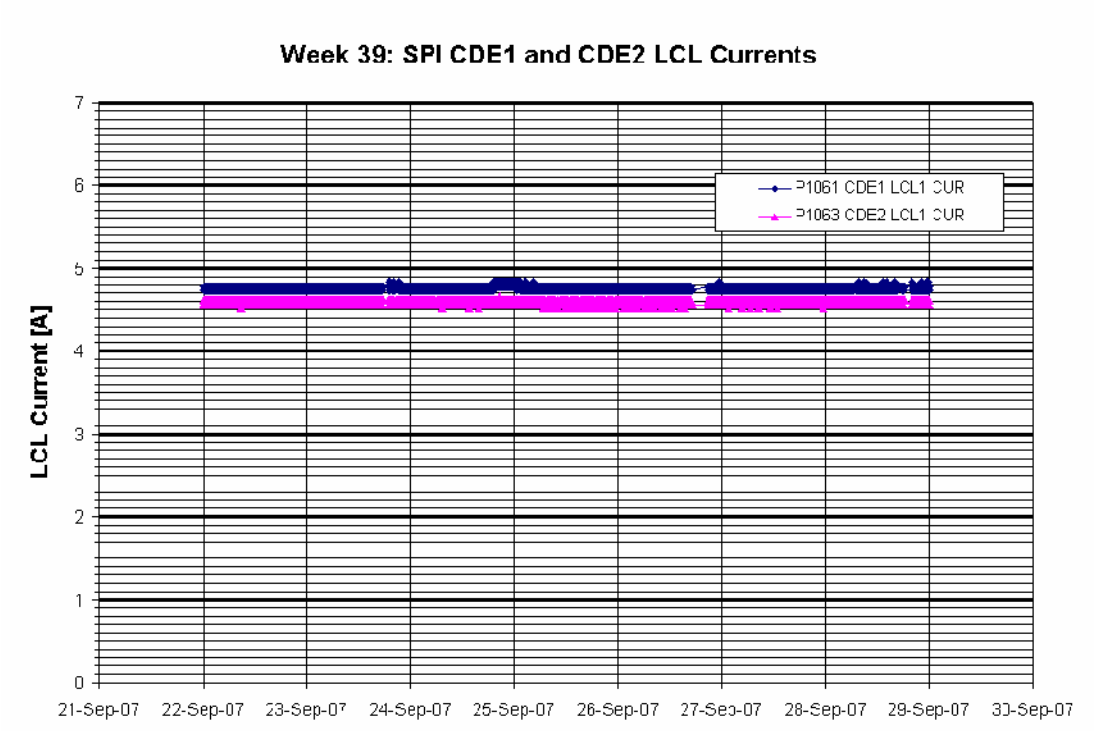
The stroke of all four compressors was set 40 throughout the week with the average CDE LCL currents as follows:

- CDE1 LCL Current = 4.77A
- CDE2 LCL Current = 4.57A

The following plot shows the evolution of the cold plate and H bus temperatures during the reporting period.



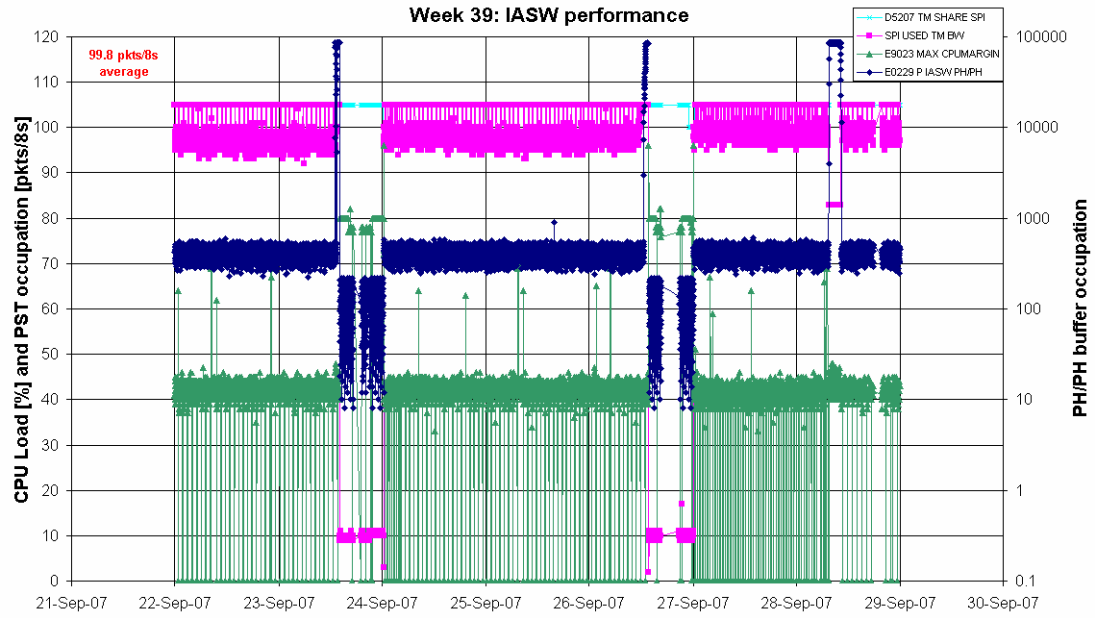
The following plot shows the evolution of the CDE currents during the reporting period.



DPE & IASW: The DPE health and IASW performance is nominal. The IASW version installed is v433 patch #1 with the spectra scaling factor set to 8/19 SE. The average TM bandwidth occupation of SPI was 99.8 packets/cycle over the science window, when the TM allocation was 105 packets/cycle.

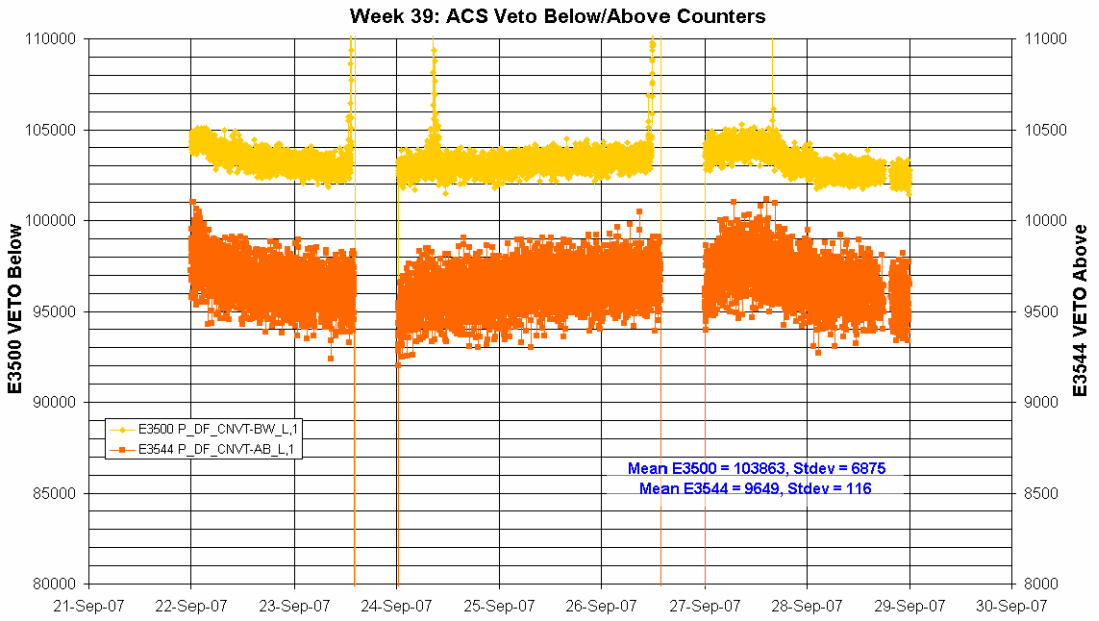
The following plot shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.

Note that between 2007-09-28T07:27:28Z and 2007-09-28T10:15:38Z the TM allocation to SPI was 83 packets/cycle as additional TM bandwidth had been given to JEM-X for the JEM-X specific Crab Calibration observation.



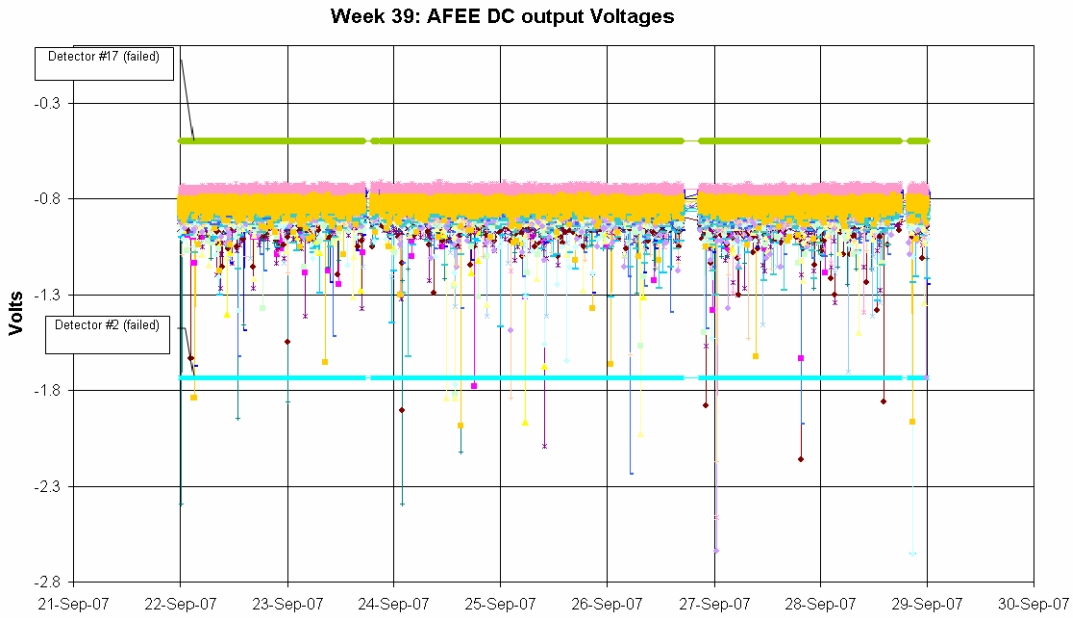
ACS: The performance of the ACS is nominal, except for FEE #81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

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

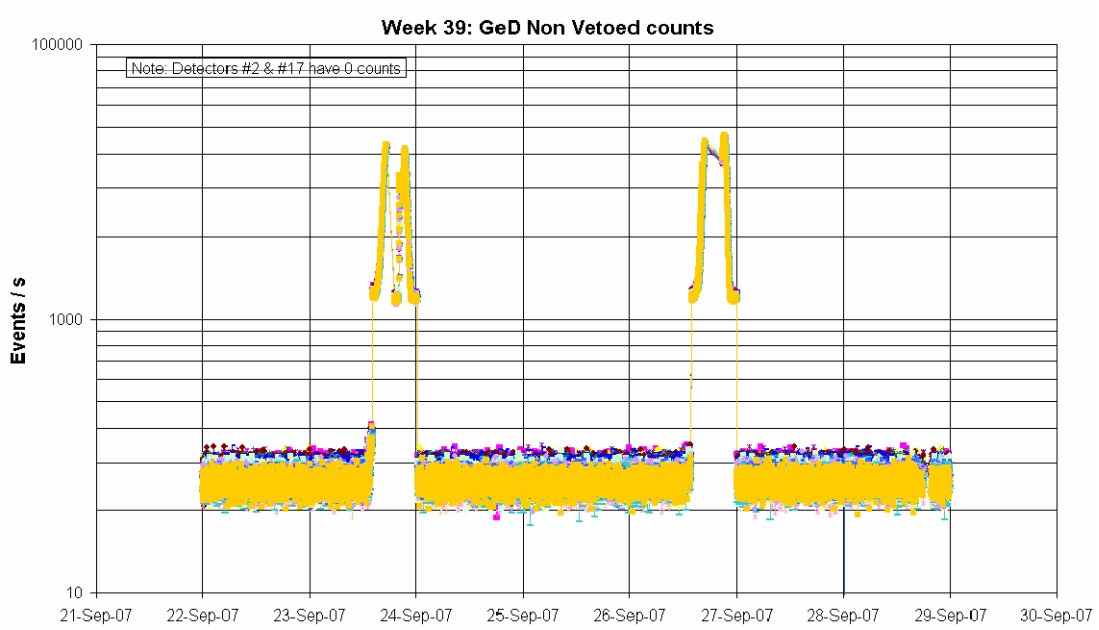


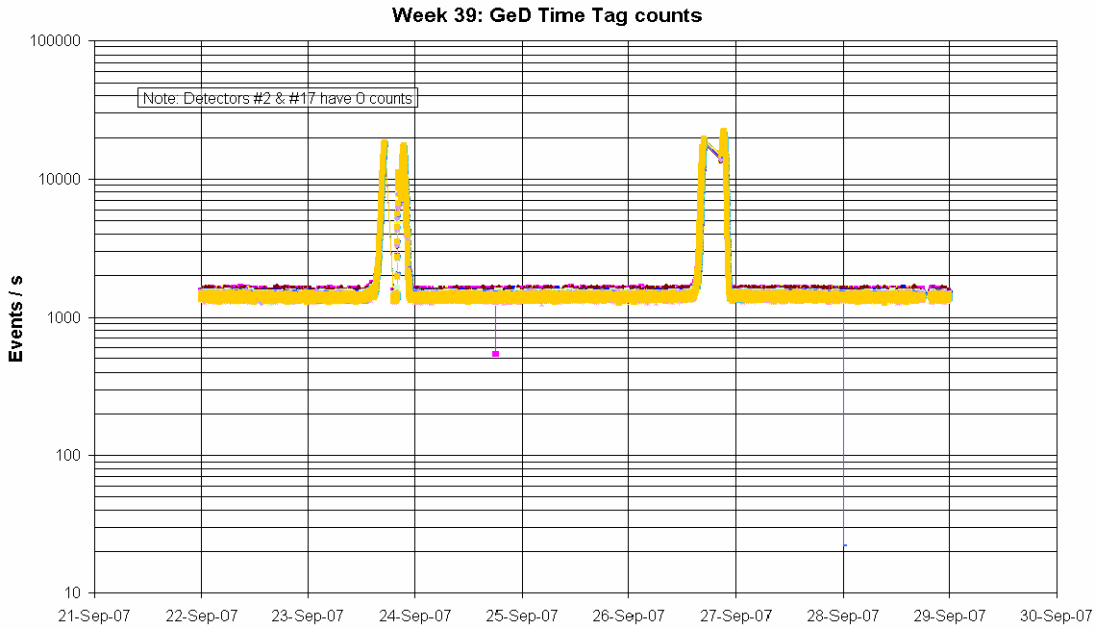
AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and is therefore operated at a lower HV setting of 3.5kV (instead of 4kV).

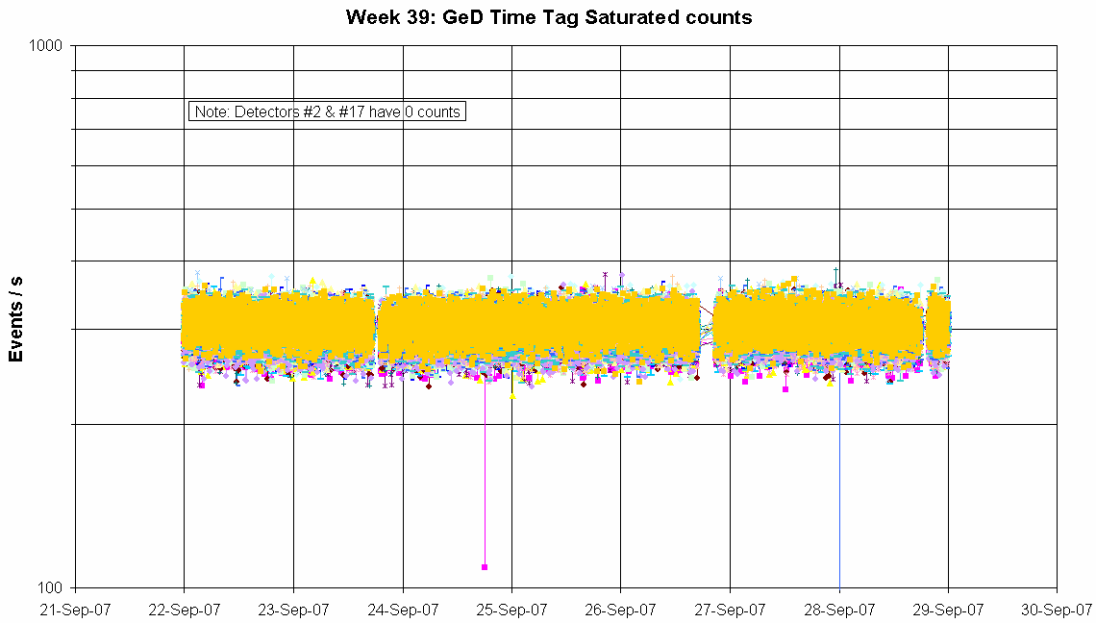
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004.



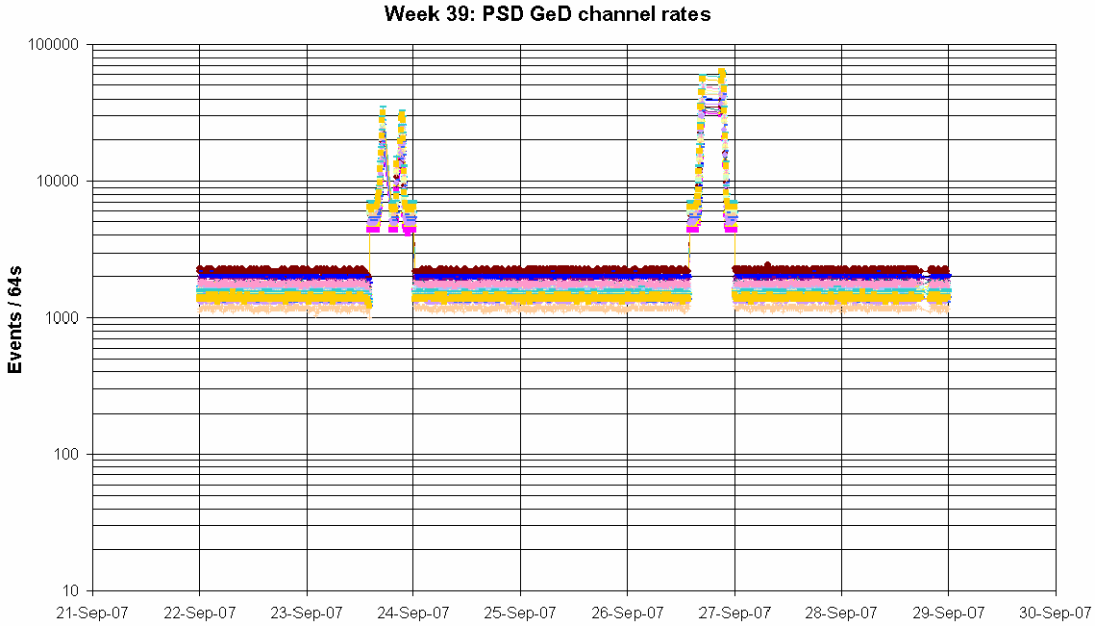
DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.







PSD: The health of the unit is nominal. 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:

- 5 occurrences of OEM APID 1024 ID 243 EXCEPTION SPI1 SPECTRA BUILDING NOT COMPLETED were received during the week. As they were each single occurrences, no action was taken.
- On 2007-09-23 at 13:28:48Z TM parameter E3500 (ACS Veto Below Counter) went OOL High. This was ~30 minutes before the expected radiation belt entry of revolution 603 and therefore no action was taken.
- On 2007-09-26 at 12:02:56Z TM parameter E3500 (ACS Veto Below Counter) went OOL High. This was ~2 hours before the expected radiation belt entry of revolution 604 and no action was taken.

- On 2007-09-26 at 21:12:06Z OEM APID 1024 ID 1 EXCEPTION SPI1 FIXED POINT OVERFLOW was received. This was during the AOS_CHK window of revolution 605, when the time verification TC was sent. This OEM is sometimes received when this TC is sent and no action was taken.
- On 2007-09-26 at 21:36:52Z, soon after AOS of revolution 605, TM parameter E3825 went OOL High (value = 5.194V). This is the PSD + 5V analogue voltage. It returned within limits when the next packet was received at 21:37:56Z.
- On 2007-09-27 at 00:05:08Z, during the reconfiguration of SPI at radiation belt exit of revolution 605, TM parameters E3825; E3826 and E3828- E3831 all went OOL with value 0. These are the PSD +/-5V analogue and some PSD board temperatures. They returned within limits when the next packet was received at 00:06:12Z.
- On 2007-09-28 from 10:37:37Z to 10:43:51Z, 17 occurrences of OEM APID 1024 ID 245 EXCEPTION SPI1 SPECTRA COMPRESSION OVERFLOW were received (one for each GeD), followed at 10:43:51Z by OEM APID 1024 ID 244 EXCEPTION SPI1 SPECTRA COMPRESSION NOT COMPLETED. This was about 20 minutes after the TM allocation to SPI was changed back from 83packets/cycle to 105packets/cycle. These OEMs, indicating problems with the spectra compression due to insufficient bandwidth, are nominal following periods of low TM allocation to SPI. They stopped of their own accord and SPI operations continued nominally.
- TM parameter E2115 fluctuated in and out of limits Warning Low several times throughout the week. This is the Plastic Scintillator temperature. As these were small fluctuations about the limit, with on each occasion the parameter returning within limits after a short time, no action was taken.

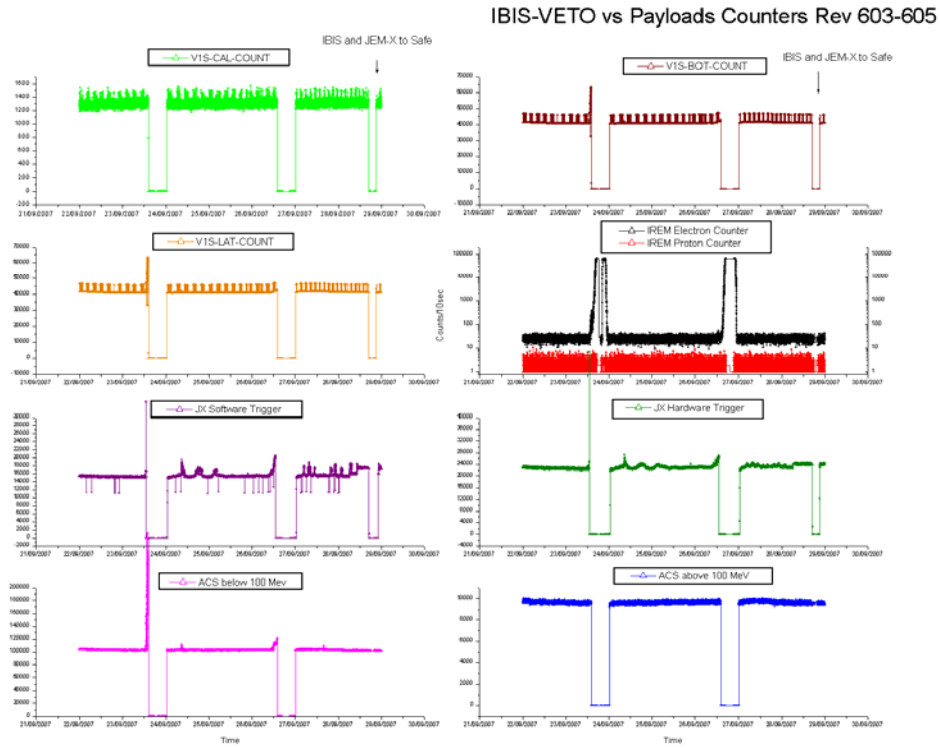
8.3.3 IBIS Operations

IBIS Event Counters Plots

ISGRI Counters:

**sampling every 4 pkts (32 secs)

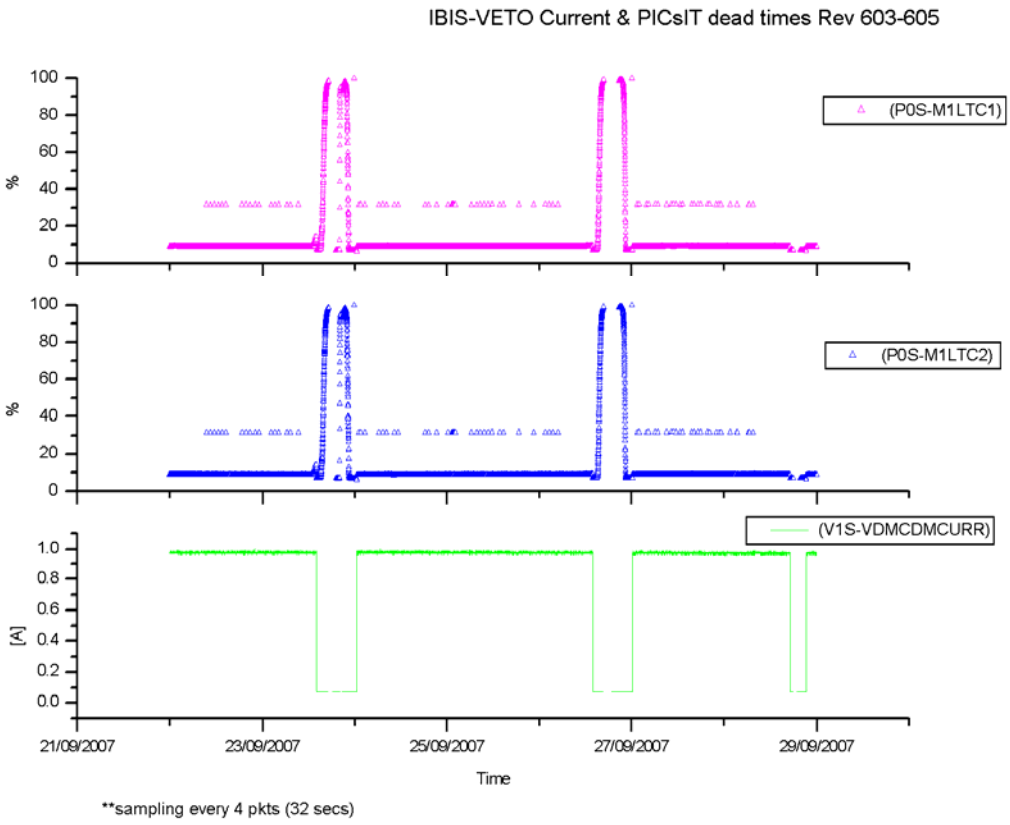
VETO vs Payloads Counters:



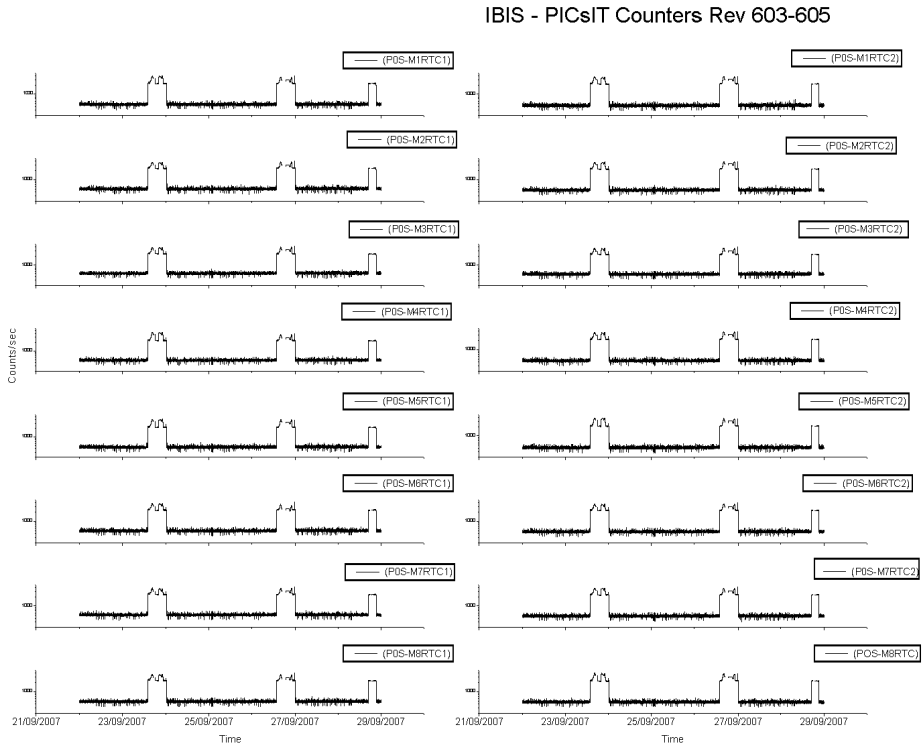
**with the exception of IREM counters (counts/10sec), all the plots are reporting counts/sec
sampling every 5 pkts (40 sec)

The week was characterised by slightly high radiation before the expected radiation belt entry of revolution 603 as reported by the payload. Note that the plots of the JEM-X count rates and the ACS Below 100MeV count rates have a smaller scale than usual in order to show these peaks before radiation belt entry of revolution 603.

VETO Current:

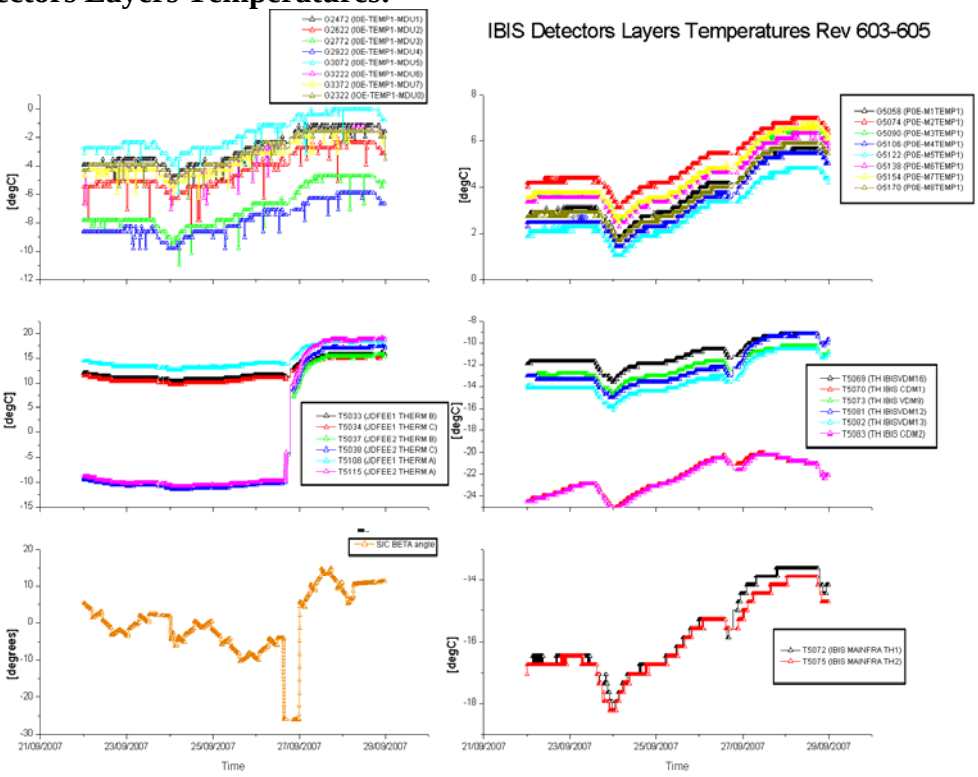


PICsIT Counters:



**sampling every 4 pkts (32 secs)

IBIS Detectors Layers Temperatures:



**sampling every 8 pkts (64 secs)

IBIS daily report:

The usual Out Of Limits on TM parameter G8015 (S1E-A2_PMT_V), G5002 (P0S-Mi_RTC1) and G5003 (P0S-Mi_RTC2) families and G2000 family (I0E-OVFWPXADD-Mi) were received during the radiation belt passages.

2007-09-22 (DOY 265, Rev 603)

IBIS operations executed nominally

2007-09-23 (DOY 266, Rev 603-604)

At 13:27:55Z TM parameters G6062 and G6063 started toggling OOL High. These are the VETO bottom and lateral counters respectively. In addition, at 13:42:03Z the G2013 family (number of events triggering the MCEs per second) started toggling OOL High. As this was ~30 minutes before radiation belt entry, no action was taken. All these parameters continued to toggle OOL High until radiation belt entry at 14:06:30Z.

At 20:07:04Z, during the radiation belt passage of revolution 603-604, TM parameter G5079 went OOL High (value = 2.60509804). This is the PDM2 +2.5V voltage. It returned within limits of its own accord at 20:07:36Z and therefore no action was taken.

At 23:58:19Z, during the execution of the ISGRI Calibration ED GEISCL03, TM parameter G2097 (Number of events triggering the MCE6 per second) went OOL Low (value = 0). It returned within limits at 23:59:47Z and therefore no action was taken.

2007-09-24 (DOY 267, Rev 604) to 2007-09-27 (DOY 270, Rev 605)

IBIS operations executed nominally

2007-09-28 (DOY 271, Rev 605)

Due to problems with the ground stations REDU and VIL2, resulting in an unplanned outage of which the eventual duration was unknown (see Anomaly Reports INT-2957 and INT-2958), IBIS was commanded to Safe mode via FCP_IBIS1_0801 at 17:07:28Z. Once stable ground station coverage was obtained again, IBIS was recovered to Science Standard mode as follows:

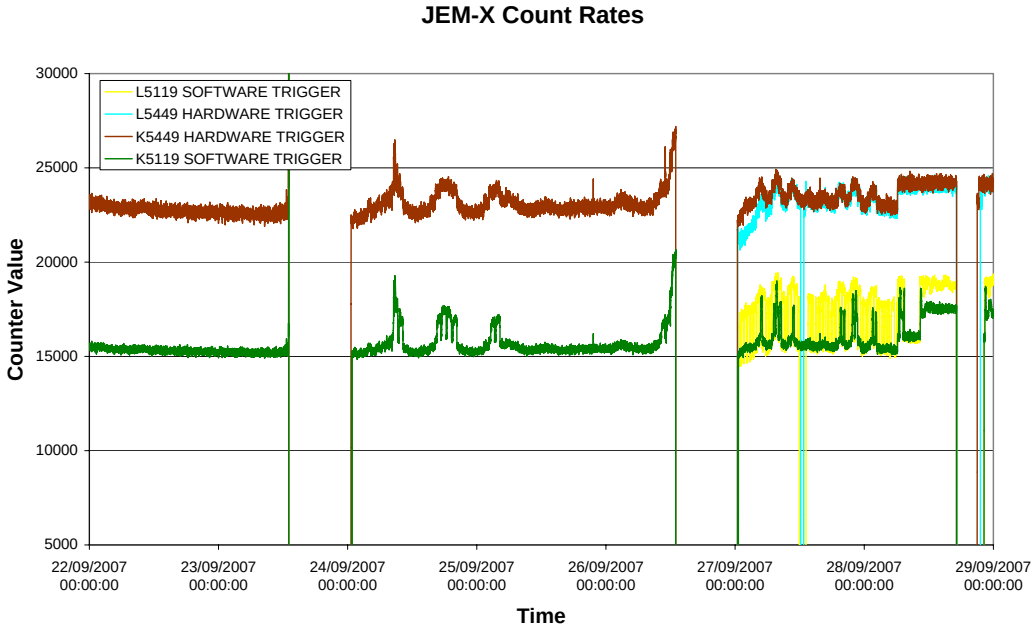
- At 21:01:00Z FCP_IBIS1_0803 executed
- At 22:14:50Z CCCF ED GESTAN02 uplinked from the Timeline.

IBIS operations continued nominally.

8.3.4 JEM-X Operations

JEM-X Count Rates

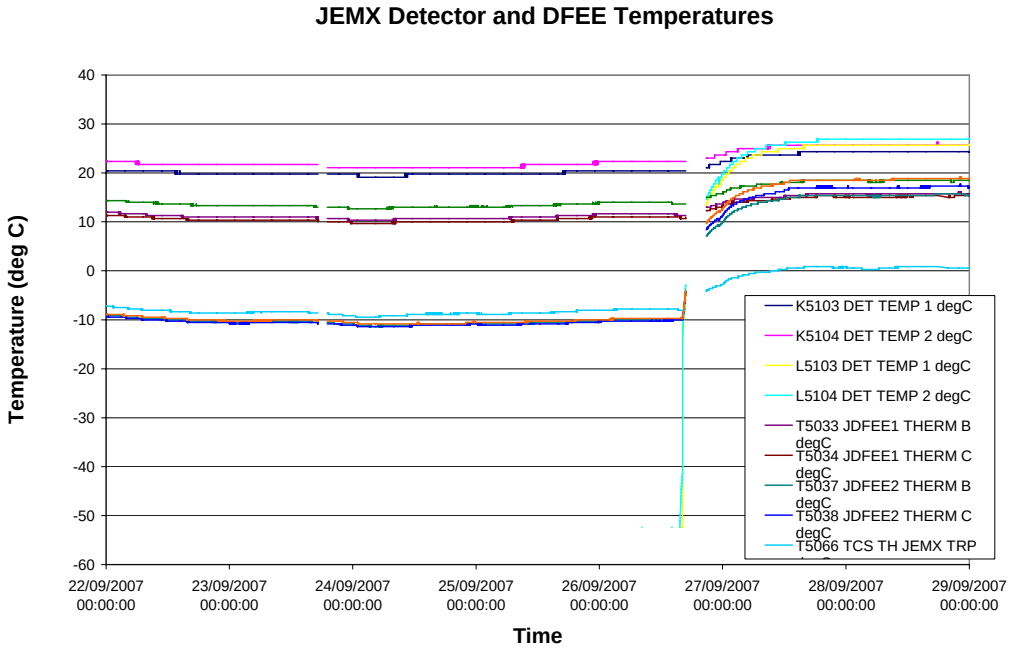
JEM-X count rates over the reporting period are displayed in the following graph[1].



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 graph[2].

[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

2007-09-22 (DoY 265, Rev 603)

JEM-X1 operations executed nominally

2007-09-23 (DoY 266, Rev 603)

On this day, the following OEM was received:

```
2007.266.13.11.22.708   2007.266.13.11.26.354   1536   RealTime   254     EVENT
ERROR OFF                                                 0       0    65535   PR    N
E   E
    FIX6                                              0
    K9079          MESS CLASS                         0
    K9080          MESS ID                            254
    K5408          ERROR OFF                          CYCLE COUNT
    FIX16                                             0
```

The parameter "`CYLCLE COUNT`" is incorrect, and should read "`DFEE state now as expected`" A database update will be requested.

2007-09-24 (DoY 267, Rev 604) to 2007-09-25 (DoY 268, Rev 604)

JEM-X1 operations executed nominally

2007-09-26 (DoY 269, Rev 604)

At 14.04.31, Operations to reactivate JEMX-2 for the upcoming Crab calibration were commenced. The procedures executed were:

- ED DEBWHI00 to assign bandwidth to JEM-X2
- FCP_JEM2_0010 JEMX2 DPE AND CSSW ACTIVATION
- FCP_JEM2_0011 JEMX2 IASW DPE PATCH FOR BCP PID INTERPRETATION

- FCP_JEM2_0015 JEMX2 IASW ACTIVATION
- FCP_JEM2_0016 JEMX2 ENABLE BCP DISTRIBUTION
- FCP_JEM2_0017 JEMX IASW EXTENDED TM CHECK
- FCP_JEM2_0020 JEMX2 DFEE 1ST ACTIVATION AFTER DPE SWITCH ON.
- FCP_JEM2_0040 JEMX2 TRANSITION TO SAFE

These operations were terminated at 16:40, shortly before LOS. At 20:48, after AOS, it was noticed that the CPU mode was 8 instead of the expected 16. From 22:49:47 to 23:25:23 a power cycle of the DFEE2 was performed, correcting the problem. This was completed before the belts exit at 00:04:53Z the following day.

2007-09-27 (DoY 270, Rev 604)

At 11:55, it was noticed that an incorrect Energy Linearization table was loaded in JEMX DFEE2. This was corrected at 12:39, after executing procedure FCP_JEM2_0060.

2007-09-28 (DoY 271, Rev 605)

JEM-X1 operations executed nominally

8.3.5 OMC Operations

2007-09-22 (DoY 265, Rev 603) to 2007-09-26 (DoY 269, Rev 605)

Nothing to report.

2007-09-27 (DoY 270, Rev 605)

At 20:57, during a Slew, there was a drop in TM. This caused the OMC commands for that pointing to fail. The impact was the loss of pointing 06050039. It was at this time the following command was rejected:

```
2007.270.20.57.34.042   2007.270.20.57.43.583   1792   RealTime   133     TC REJECT
REJECTED TC3                                              0       0    65535   PR    N
E   E
```

This corresponds to the MU1323 (IMAGING B3 for ISOC) command for that pointing.

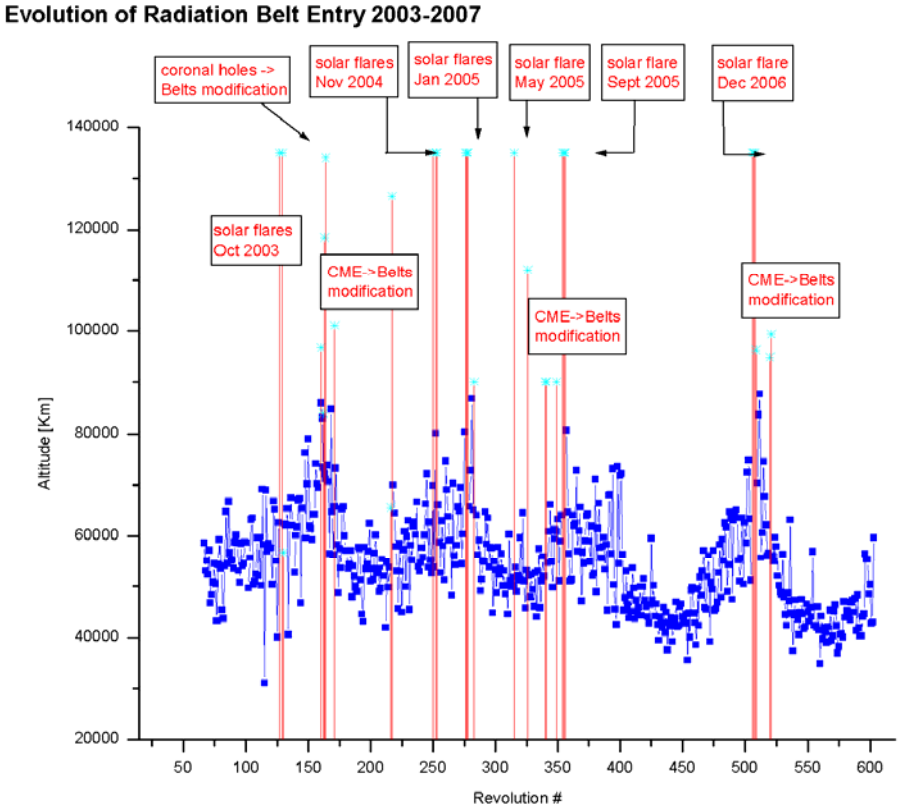
2007-09-28 (DoY 271, Rev 605)

At 17:11, due to problems at both the primary and redundant ground stations, OMC was put manually to SAFE mode as a precaution. At 20:53, after recovering the signal, a manual recovery was executed, followed at 21:59, by a re-enabling of the CCCF commands. Thus OMC was then returned to Science mode by the Timeline at 22:16. The impact was a reduction in the length of pointing 06050058 from a scheduled 98767 to approximately 80500 seconds.

On DoY 266 at 14:06:21 and DoY 269 at 13:53:25 OMC went to SAFE mode nominally, at the radiation belt entry time as set in the Broadcast Packet.

8.3.6 IREM Operations

Radiation Belts Entry



IREM daily report

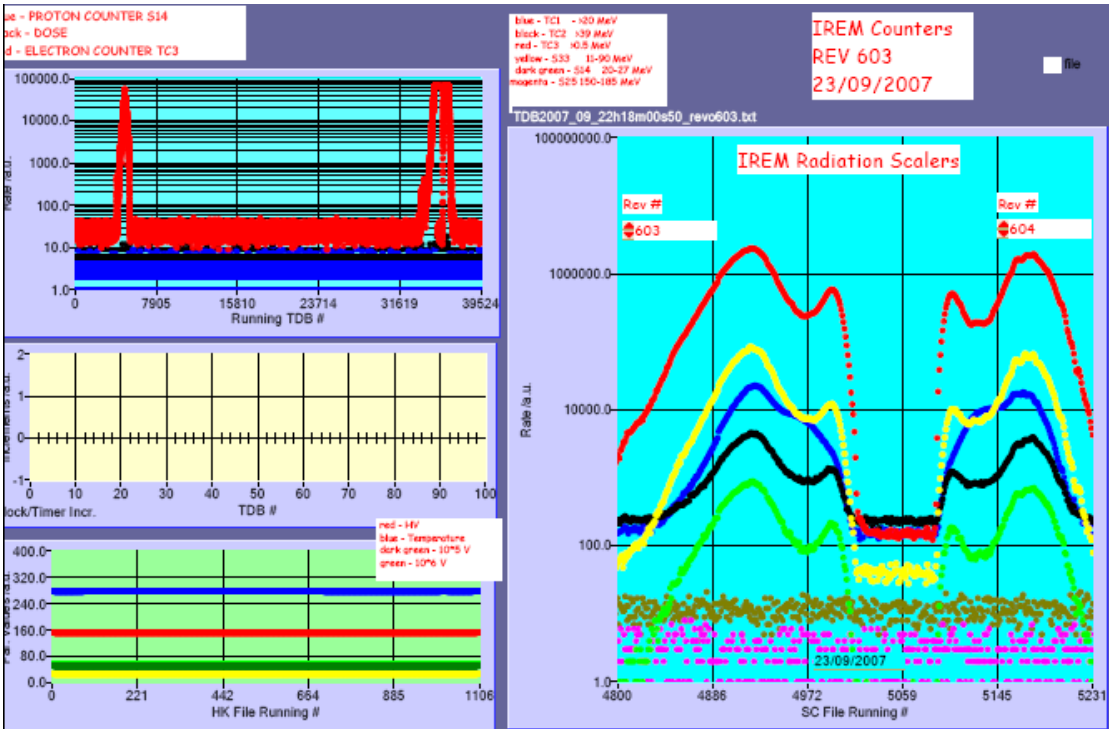
Nothing to Report

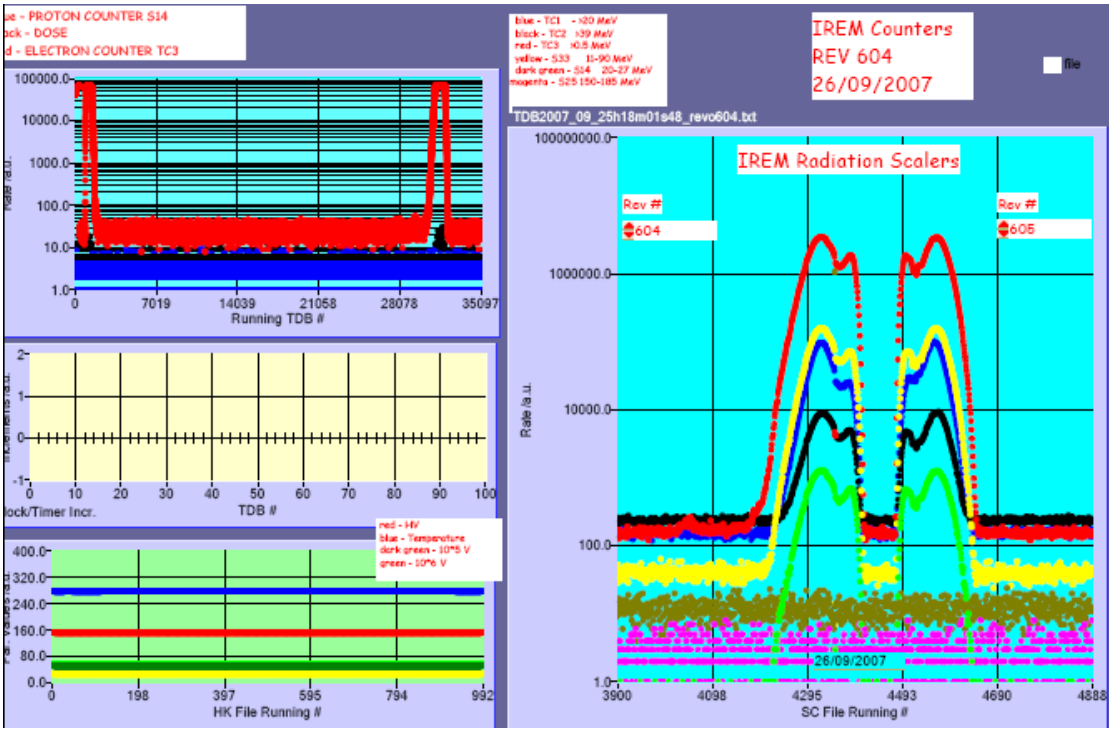
Electron Belts

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]
603	RAD_ENTR R 2007-09-23T14:06:18Z	23/09/2007 13:42:53	59691.2	23-Sep-2007 15:21:41	45459.27
604	RAD_EXIT R 2007-09-24T00:16:52Z	23/09/2007 23:09:26	>>31434.8	23-Sep-2007 23:11:41	43770.93
604	RAD_ENTR R 2007-09-26T13:53:25Z	26/09/2007 14:48:21	57014.2	26-Sep-2007 15:13:41	44932.27
605	RAD_EXIT R 2007-09-27T00:04:53Z	26/09/2007 22:51:10	>>31418.1	26-Sep-2007 23:03:41	44179.33

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)

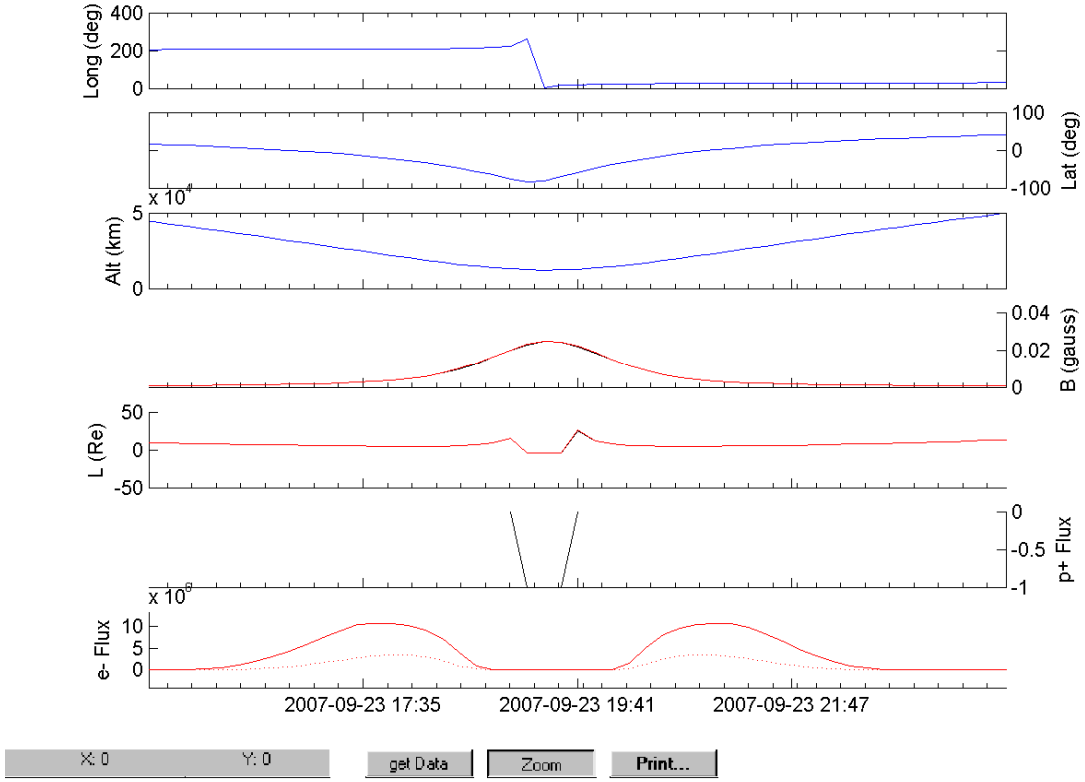
IREM radiation counters:



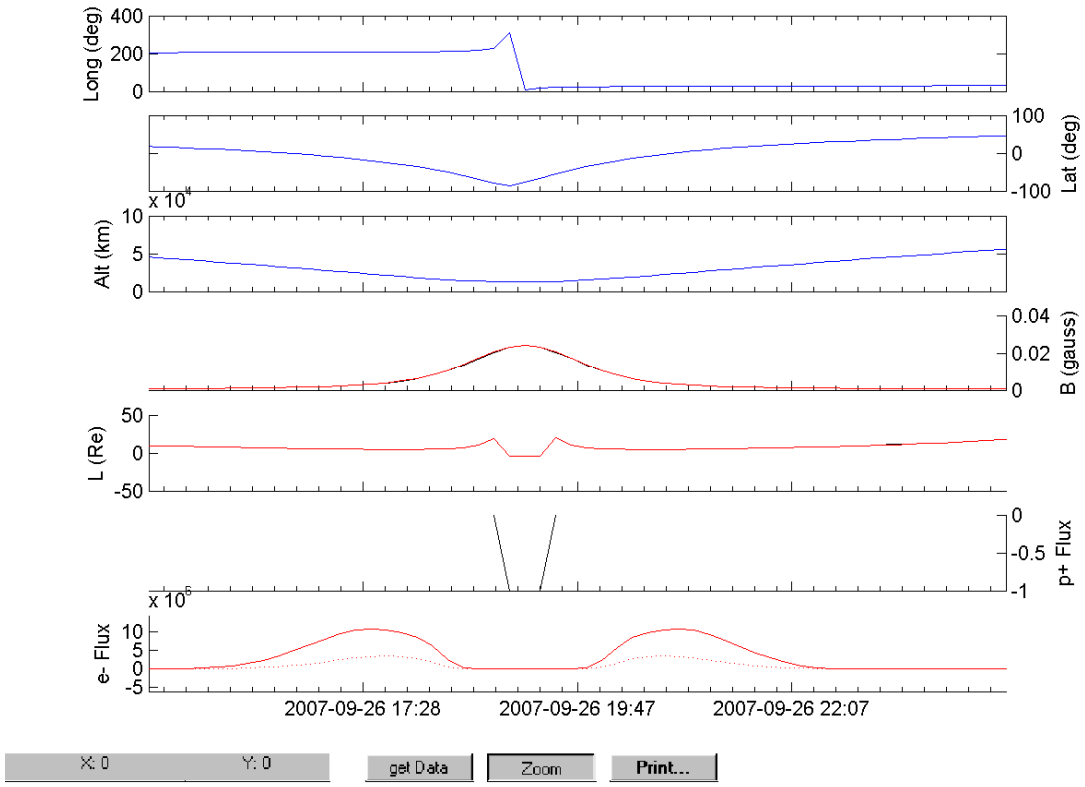


IREM Predicted Radiation Belt Passages

Rev 603



Rev 604



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

Due to a problem on the SEISOP server, no data are available this week. However, the week was very quiet and no radiation was reported.