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

INTEGRAL
Mission Report

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

No. 263
Week 40

08.10.07

Routine Phase

Prepared by: M.J.H. Walker (OPS-OAI) and INTEGRAL FCT

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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 29.09.07 until 05.10.07 (both dates inclusive) and covers the revolutions 606, 607 and 608.

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 SGR1806-20 (RA 18:08:39.32, DEC -20:24:39.5), two hexagonal dithers of the Galactic bulge region (RA 17:45:36.00, DEC -28:56:00.0), a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), a Custom Pointing at the Galactic disk (RA 19:04:22.00, DEC +06:17:13.0), a raster dither of the Galactic Plane Region 1 (RA 18:04:41.75, DEC -05:04:48.4), and a raster dither of SS433 (RA 19:11:49.56, DEC +04:58:57.6)

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.

In preparation for the Winter 2007 Eclipse Season, the IMU 1 was health checked and the ACC IMU1 ROLL and YAW drifts evaluated during rev 607.

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

The fuel consumption over the period between 29/09/2007 and 05/10/2007 was 0.0851 Kg. The remaining propellant is in the order of 144.2660 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

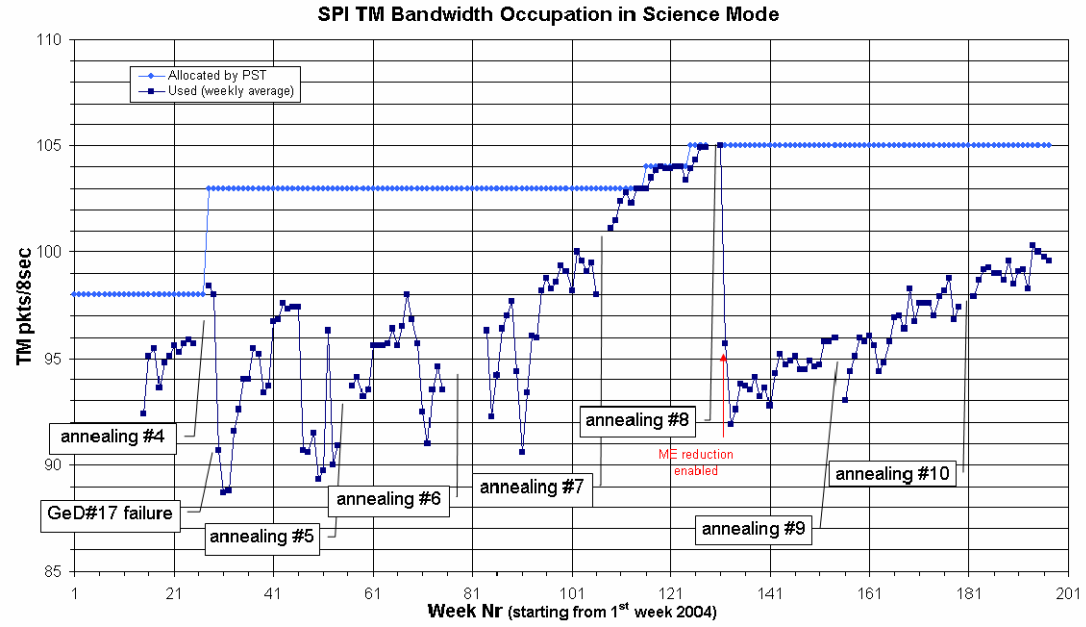
3.2.1 SPI

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. The average telemetry occupation when the TM allocation was 105 packets/cycle was 99.6 packets/cycle.

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



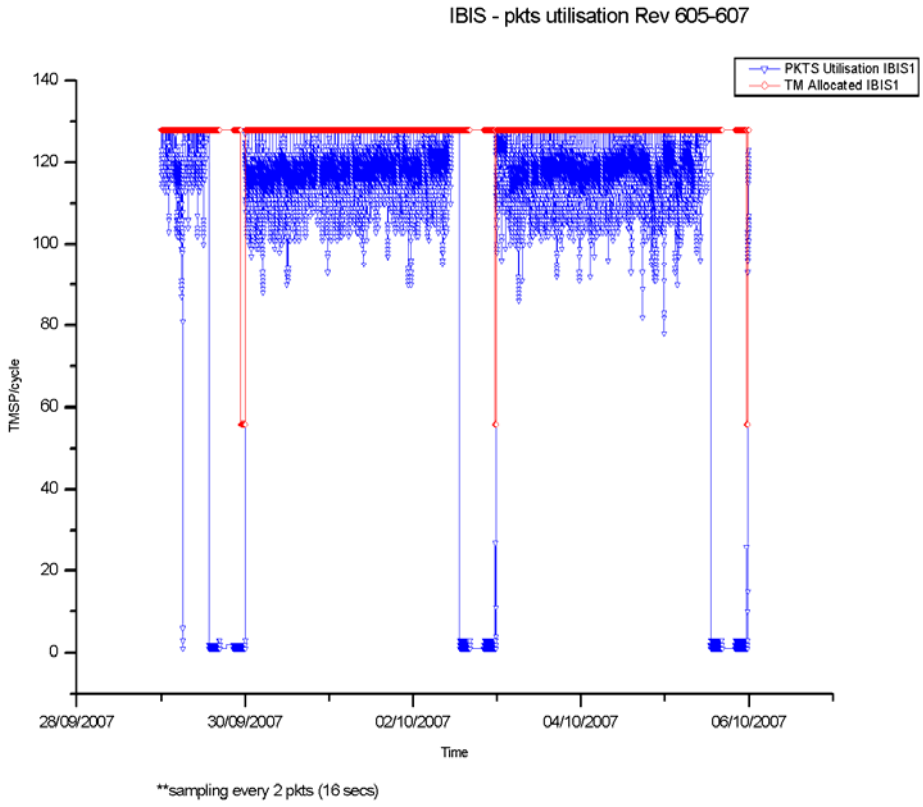
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

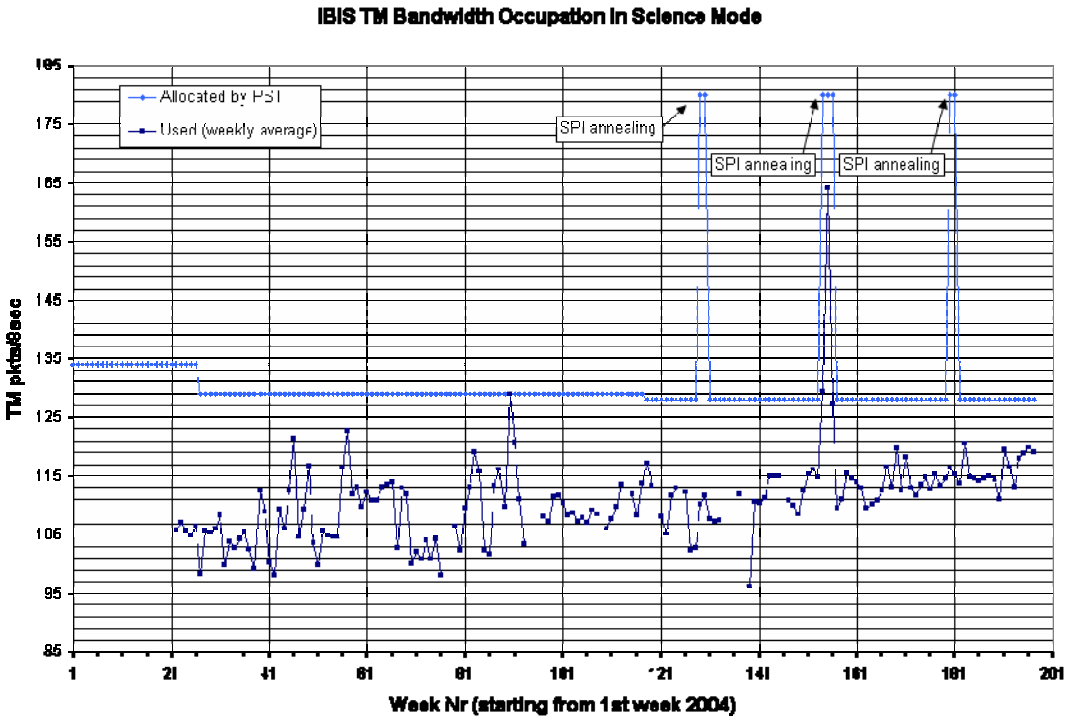
The overall status of the unit is nominal.

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 119.06 TMPS/cycle, down 0.94 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 605 JEM-X1 and JEM-X2 were operated in Data Taking mode with a TM allocation of 6 & 2 packets/cycle respectively. At the end of revolution 605, JEMX-2 was hibernated, and the allocation was 8 packets/cycle for JEM-X1 for the rest of the reporting period.

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, all of the 152 planned science pointings for OMC were executed nominally.

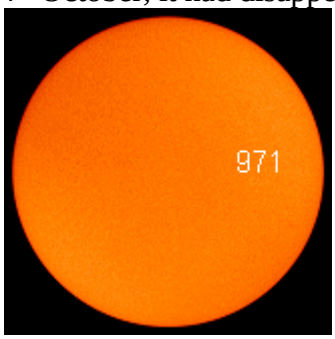
Note: Some more information concerning the OMC operations is provided in the Appendix.

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity. Sunspot 971 was almost invisibly small, by the 4th October, it had disappeared.



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 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, and 5 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

Updated PSFs for revolutions 611 and have been received, as well as the PSF for 615. No new observation planning has been done due to an issue with constraint checking that has not been fully resolved at the time of writing and a TOO request that was finally not granted.

The TSF for revolution 610 has been received this week.

2. Observation status

The ECS files for revolution 600 has been received and processed.

3. ISOC Science Data Archive

No news.

4. ISOC system

The release of Version 16.0 has been slightly delayed due to sick leave in the development team.

5. Problems

A problem with a constraint check that passed at ISOC and failed in Flight Dynamics at ESOC has been finally traced to different versions of some routines used in the tools. A mechanism to ensure cross-centre version control needs to be introduced.

4.3.2 ISDC

Status of ISDC observation processing on 08/10/2007:

- 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

There were no problems reported that impacted operations this week.

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

AR id	Date Created	Subject	Segment	Status
INT_SC-206	2007-10-10	IREM Anomaly: Reset of IREM_CSCI S/W #54, 14/09/2007	Payload	Pending
INT-2959	2007-10-08	HFA task on IMCA terminated	IMCS	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 606

The observations in revolution 606 consisted entirely of a hexagonal dither of SGR1806-20 (RA 18:08:39.32, DEC -20:24:39.5), lasting ~57.2 hours.

Revolution 607

The observations in revolution 607 began with a hexagonal dither of the Galactic bulge region (RA 17:45:36.00, DEC -28:56:00.0), lasting ~3.5 hours. They continued with a hexagonal dither of the Gamma Ray Source 1915+105 (RA 19:15:11.50, DEC +10:56:44.0), lasting ~5.6 hours. This was followed by a Custom Pointing at the Galactic disk (RA 19:04:22.00, DEC +06:17:13.0), lasting ~33.7 hours. They continued with a raster dither of the Galactic Plane Region 1 (RA 18:04:41.75, DEC -05:04:48.4), lasting ~8.0 hours. Finally, another hexagonal dither of the Galactic bulge region (RA 17:45:36.00, DEC -28:56:00.0), lasting ~3.5 hours, was performed, until the end of the revolution.

Revolution 608

The observations in revolution 608 consisted entirely of a raster dither of SS433 (RA 19:11:49.56, DEC +04:58:57.6), lasting ~57.0 hours.

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

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
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.
2007-09-29T21:11:34.000Z     144.3404    F   Automatic TM processing.
2007-10-01T06:44:42.000Z     144.3103    F   Automatic TM processing.
2007-10-02T20:58:30.000Z     144.2960    F   Automatic TM processing.
2007-10-04T06:22:41.000Z     144.2737    F   Automatic TM processing.

This report was generated  Fri Oct 5 08:00:22 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, 29/09/2007 – 05/10/2007

The AOCS operations were executed from the Automatic Timeline.

During this period, 61 Open Loop Slews, 110 Closed Loop Slews and 5 Momentum Biases were executed.

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

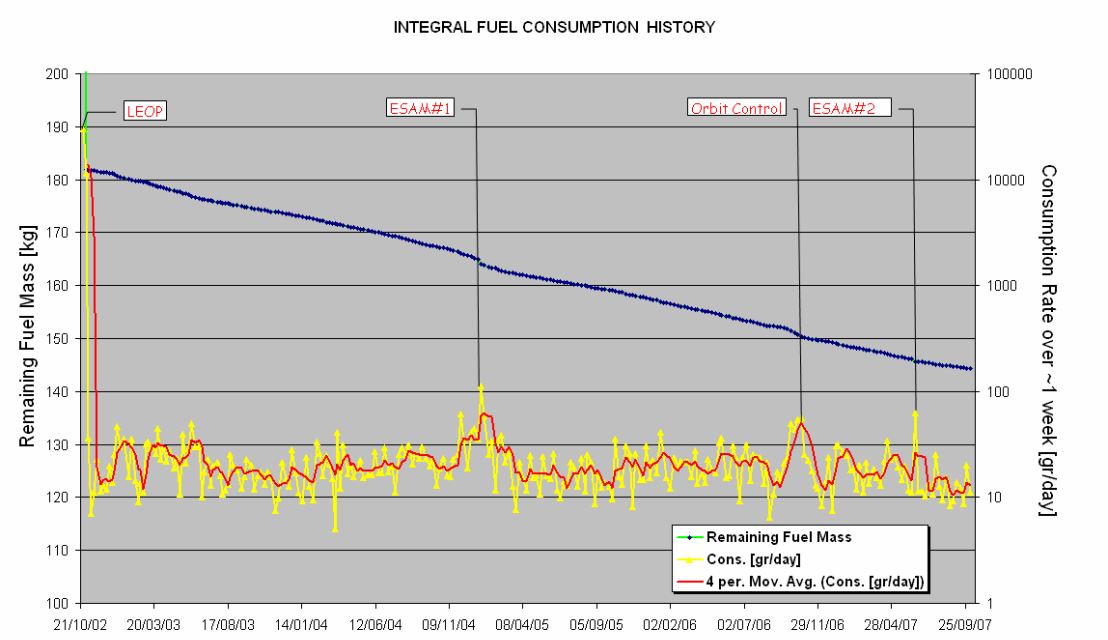
The OTF was not reached during PID 06060025.

Orbit Control

No update.

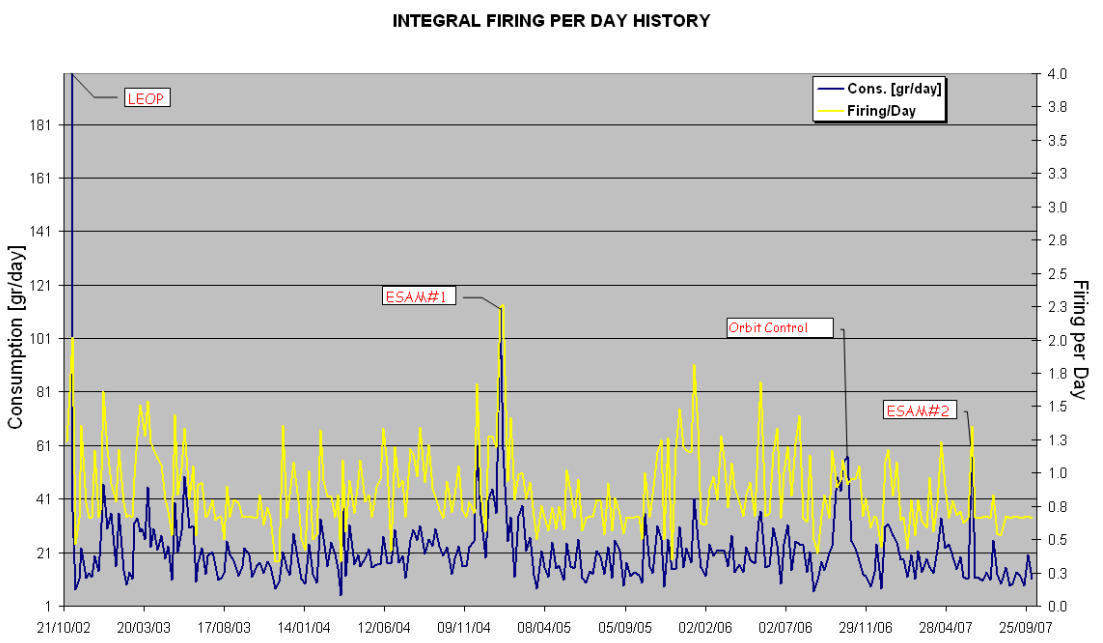
Fuel consumption

The fuel consumption (total, grams per day) over the period between 01/11/2002 and 05/10/2007 is reported in the plot below.



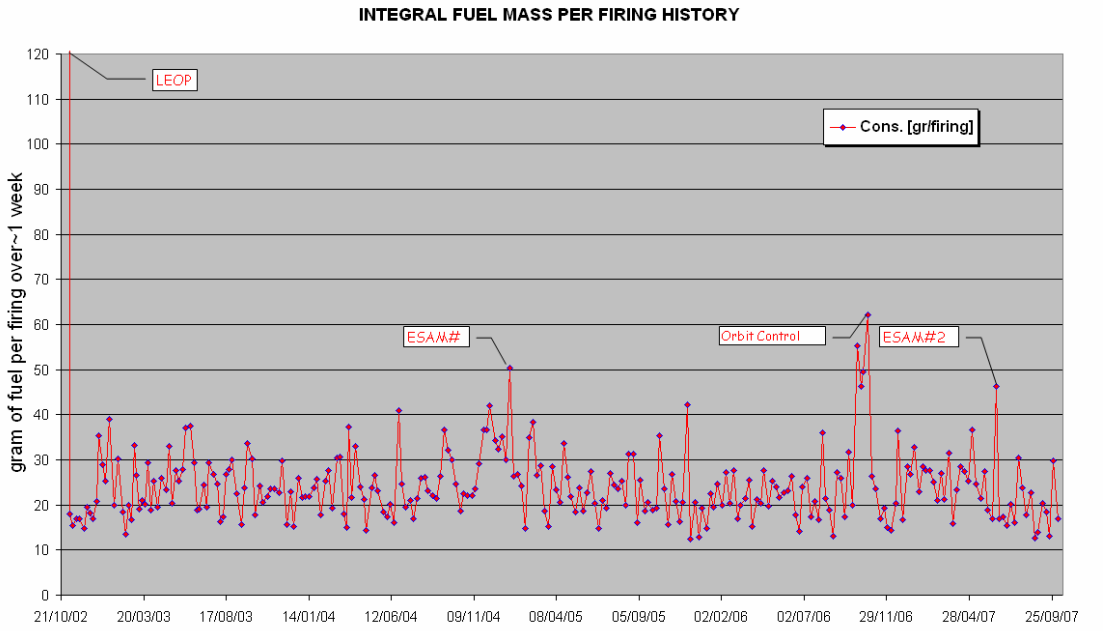
The plot above consider the ESAM fuel consumption spread over period of ~1 week.

The firing per day over the period between 01/11/2002 and 05/10/2007 is reported in the plot below.



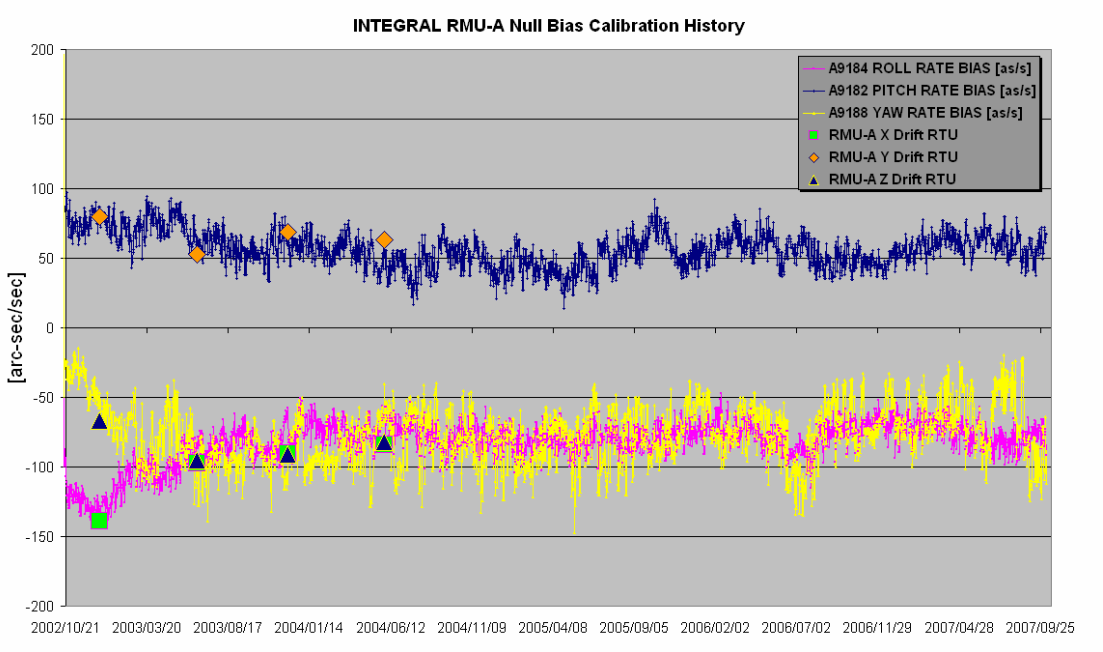
The plot above consider the ESAM fuel consumption spread over period of ~1 week.

The fuel per firing over the period between 01/11/2002 and 05/10/2007 is reported in the plot below.



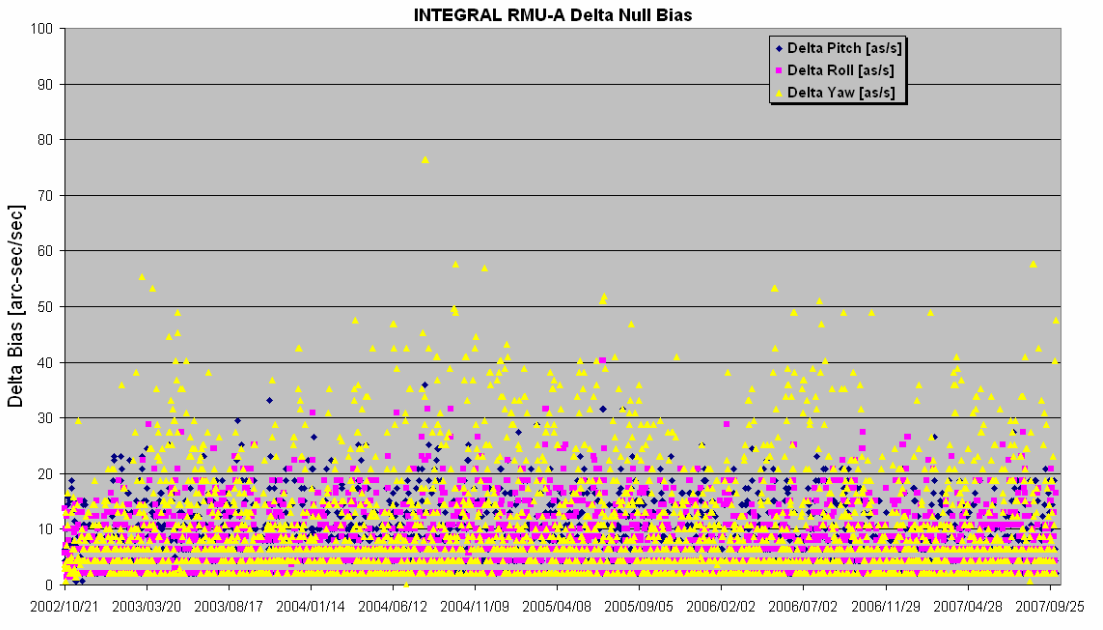
The RMU-A null bias calibration

The RMU-A null bias calibration history, on pitch, roll and yaw channel over the period between 01/11/2002 and 05/10/2007 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 05/10/2007 is reported in the plot below.



29/09/2007 (Day of Year 272, Revolution 605-606)

Nothing to report.

30/09/2007 (Day of Year 273, Revolution 606)

Loss of guide star: at 21:15:32z a loss of the selected guide star Mi 8.45 @ CCD location [2639, -2467], due to false event, occurred during the execution of PID 06060025.

As foreseen by the IPS logic, the ACC switched ON the IMU 1, a new automatic mapping was commanded and a new guide star, Mi 4.15 @ CCD location [19329, 14], picked.

A manual update of the next slew ID 06060026 was performed at 21:34z.

No impact on TL. The OTF was not reached during PID 06060025.

01/10/2007 (Day of Year 274, Revolution 606)

FDS not updating Reaction Wheels Plot: at 21:42z the FDS stopped updating the Reaction Wheels profiles plot with real-time S/C TM. The problem last until the morning after at 10:00z (02/10/2007), when the FD team restarted the task responsible for the plot generation. The Wheels profiles were checked wrt 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.

02/10/2007 (Day of Year 275, Revolution 606-607)

Loss of guide star: at 17:01:09z and 17:38:51z losses of the selected guide star, Mi 5.9 @ CCD location [-24043, 6056], due to false event, occurred during the perigee passage for rev 606.

As foreseen by the IPS logic, the ACC switched ON the IMU 1, a new automatic mapping was commanded and a new guide star, Mi 7.6 @ CCD location [845, 1143], picked.

No impact on TL.

03/10/2007 (Day of Year 276, Revolution 607)

Eclipse preparation: in preparation for the winter eclipse season starting on 11/10/2007 the ACC IMU 1 drifts (ROLL, PITCH) were evaluated during rev 607.

The calculated FD drifts (red) resulted consistent with the evaluation performed in parallel by FCT (blue) and with the drifts history.

Time(Z) 03/10/2007	**IMU 1 Health-Check / Calibration**	
08:20	*Verify the end of AOCS TL commanding* Disable ACC Autonomous IMU Switch Off, FCP-AOC-1051 *Remark for procedure AOC_1051:* *Step 2.2 the correct TC-parameters setting is A1379=INHIBIT, A1380=ENABLE,*	PID 06070015 Start at 08:11:53Z End at 08:55:12Z

	A1381=ENABLE *Load GRD AG1600 to visualize the IMUs temperatures*	
08:26:33	IMU1 Switch On, FCP-AOC-1600 *Remark for procedure AOC_1600:* *Step 4.2 for the SOE: remember to log the IMU time of activation in the IMU lifetime log*	T6009= 7.81 degC T6010= 5.94 degC T6011= 27.00 degC
	IMUs warm-up time (>30 minutes)	
08:33 08:40	Set IMU Selection ACC: Set IMU1 on Roll, IMU1 on Yaw, FCP-AOC-1050 FDE: Set IMU X=IMU1-X (on Roll), NOT SELECT on Pitch, IMU Z=IMU1-Z (on Yaw),FCP-AOC-1218	
09:08:00	*Verify the end of AOCS TL commanding* Reset IAAD Accumulators, FCP-AOC-1210 Perform IMU-1 Drift and Noise evaluation, FCP-AOC-1623	PID 06070016 Start at 09:01:27Z End at 09:45:43Z (AOCS TL commanding start)
09:08:00 to 09:45:00	>30 minutes of data collection Calculated by FCT: IMU1 Noise Roll = 0.2438 as/s IMU1 Drift Roll = 0.2598 as/s IMU1 Noise Yaw = 0.0618 as/s IMU1 Drift Yaw = 0.2966 as/s Calculated by FD: **=> 0.2677 as/s** **=> 0.2934 as/s**	Stable pointing: PID 06070016 T6009= 10.33degC T6010= 6.25 degC T6011= 28.50 degC Altitude 110TKm
10:23	**8.3.1.1 Verify the end of AOCS TL commanding** Deselect IMU1 from ACC Word B, FCP-AOC-1050 *Set NO IMU on Roll, NO IMU on Yaw*	PID 06070018 Start at 10:17:14Z End at 10:45:30Z (AOCS TL commanding start)
10:27	Deselect IMU1from FDE, FCP-AOC-1218 *Set NOT SELECT on Roll, NOT SELECT on Pitch, NOT SELECT on Yaw*	
10:29:53	Switch Off IMU1, FCP-AOC-1601 *Remark: report the IMU1 on-time in the log*	T6009=13.67 degC T6010= 7.50 degC T6011= 30.00 degC
10:32	Enable ACC Autonomous IMU Switch Off, FCP-AOC-1051 *Remark for procedure AOC_1051:* *Step 2.2 the correct TC-parameters setting is A1379=ENABLE, A1380=ENABLE, A1381=ENABLE*	

04/10/2007 (Day of Year 277, Revolution 607)

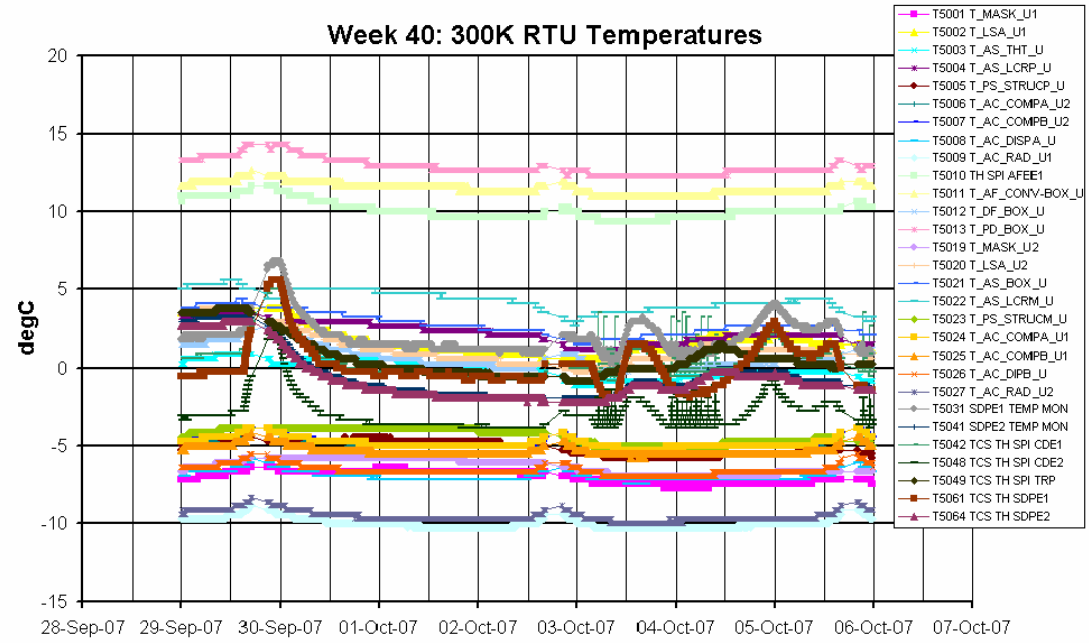
Nothing to report.

05/10/2007 (Day of Year 278, Revolution 607-608)

Nothing to report.

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.

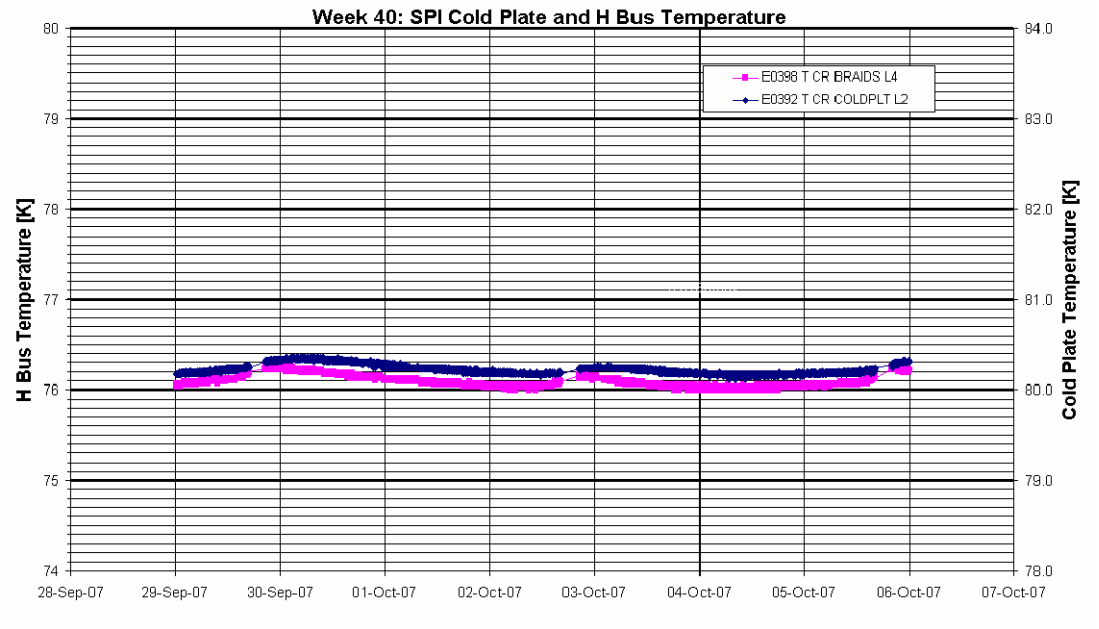


Stirling Compressors and Cryostat: The performance of the compressors is nominal. The cold plate temperature was maintained in the range 80K +/-1K.

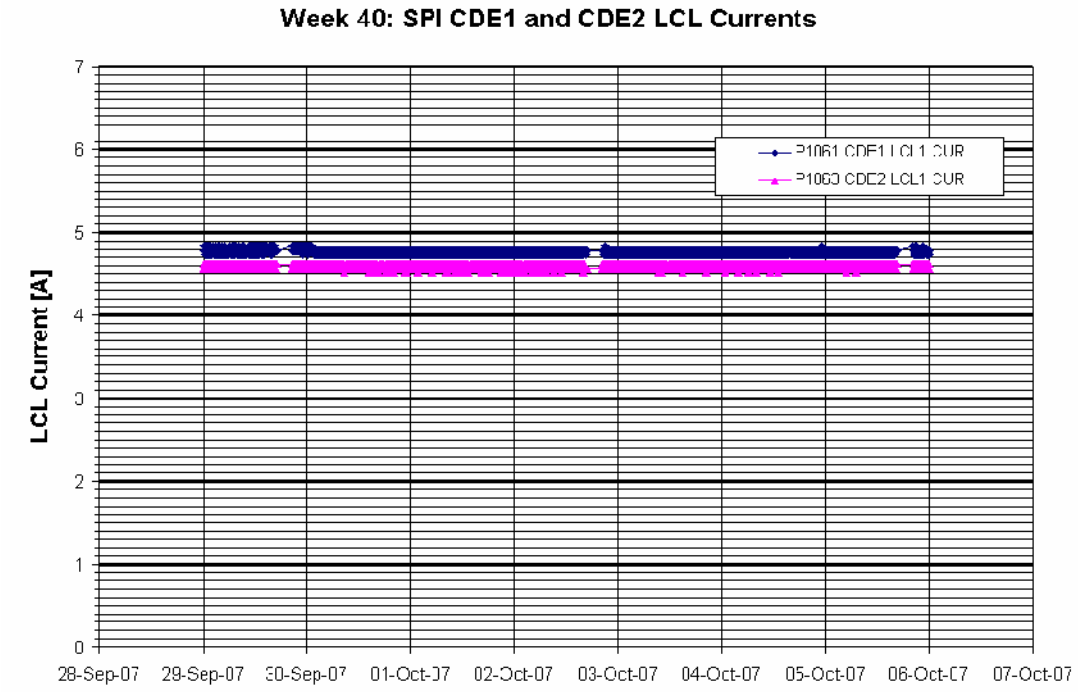
The stroke of all four compressors was set 40 throughout the week with the average CDE LCL currents as follows:

- 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.

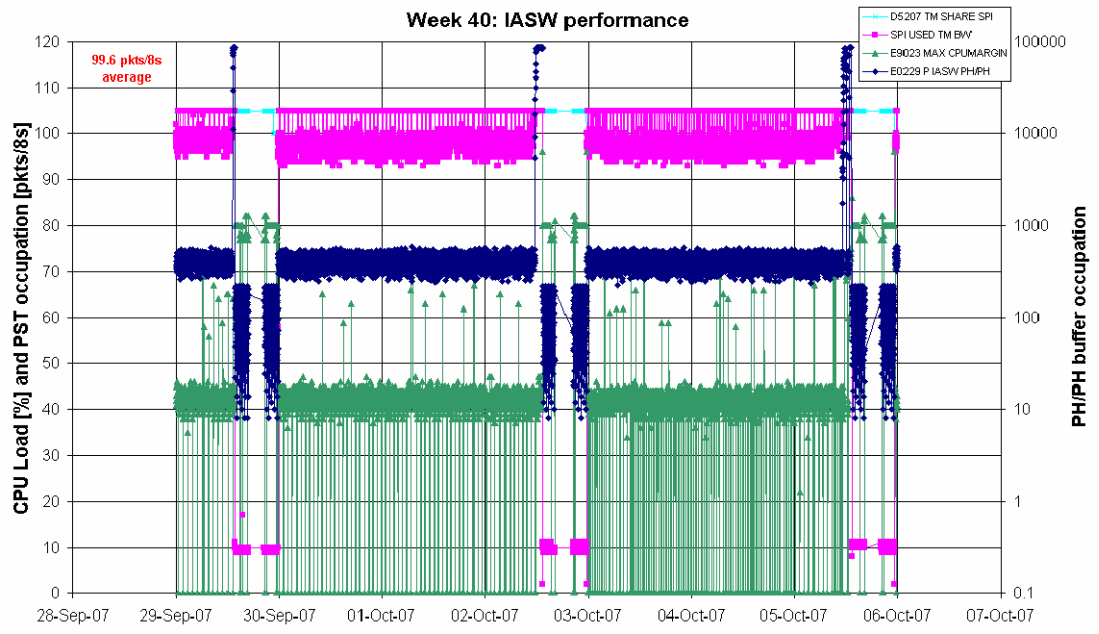


The following plot shows the evolution of the CDE currents during the reporting period.



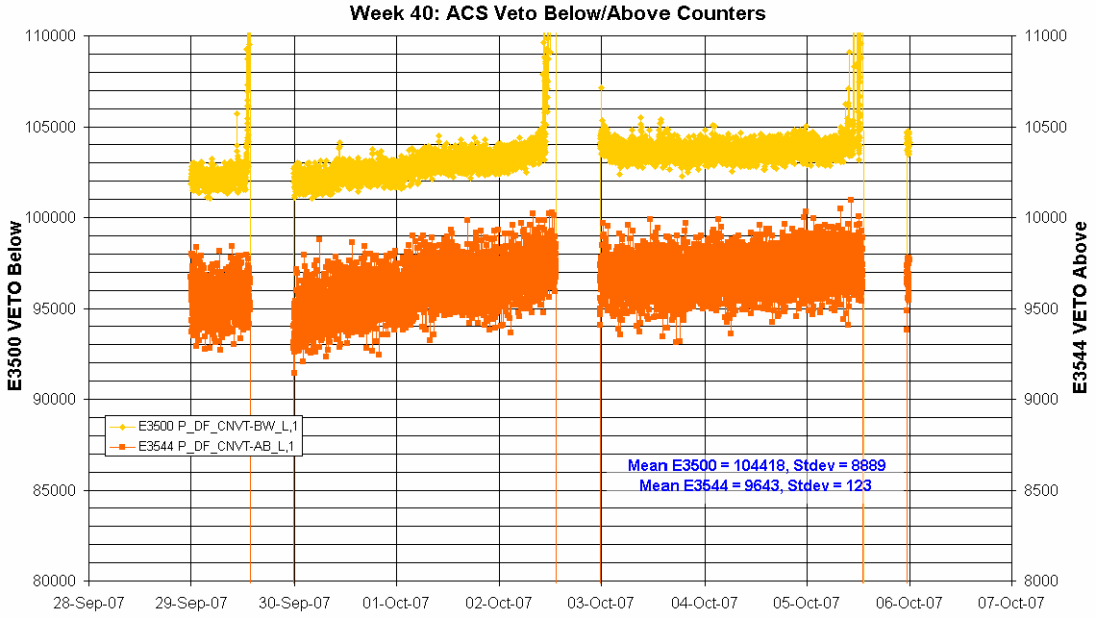
DPE & IASW: The DPE health and IASW performance is nominal. The IASW version installed is v433 patch #1 with the spectra scaling factor set to 8/19 SE. The average TM bandwidth occupation of SPI was 99.6 packets/cycle over the science window, when the TM allocation was 105 packets/cycle.

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



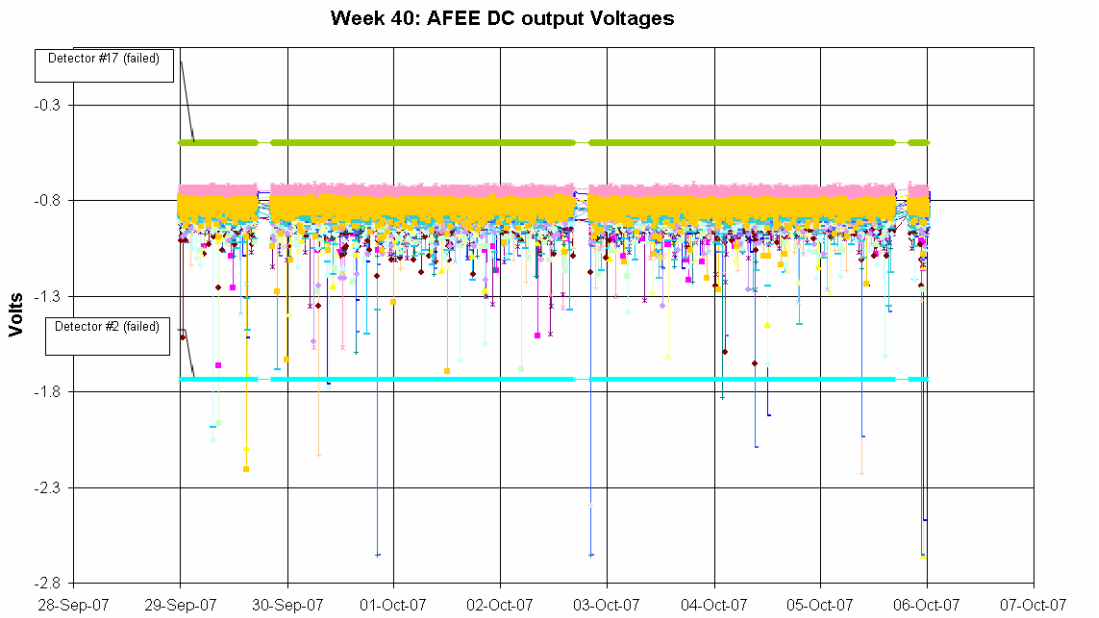
ACS: The performance of the ACS is nominal, except for FEE #81 which remains switched off since the anomaly on 29/10/2006 (INT_SC-162) and FEE #57 which is still OFF due to the anomaly on 5/8/2003 (INT_SC-61).

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

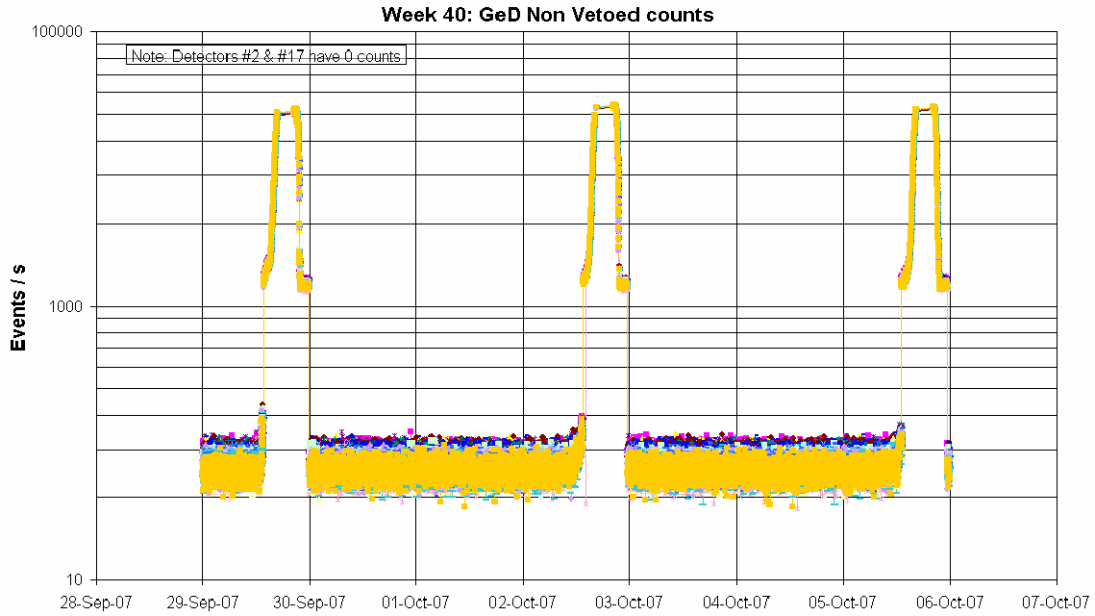


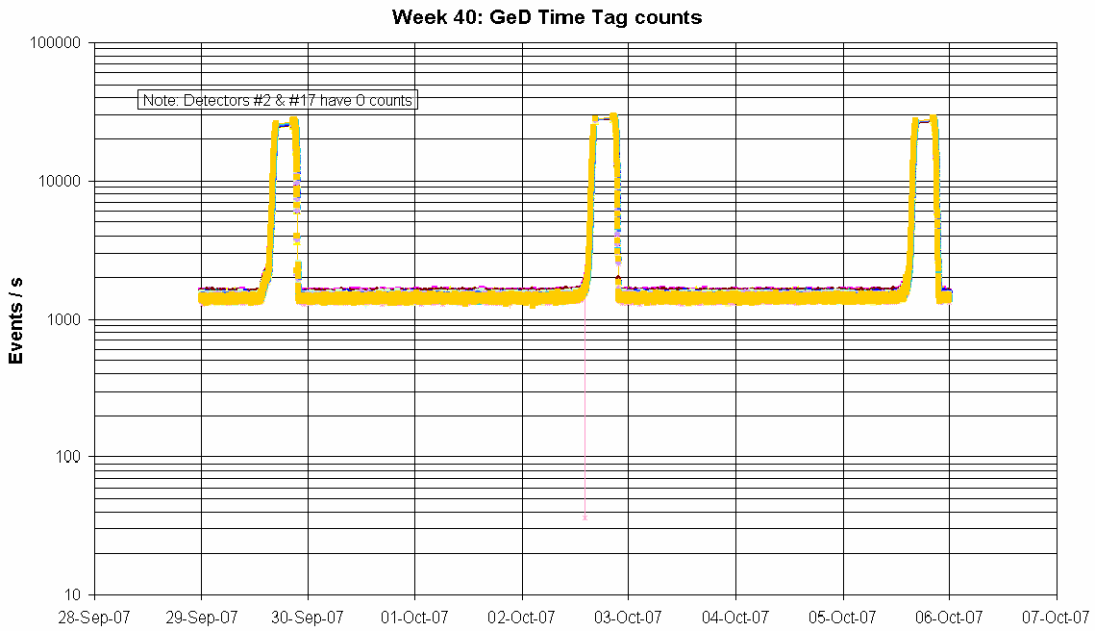
AFEE: The health of the AFEE is nominal. The performance of the AFEE and the detectors is nominal, except for the Ge detector #12 which is showing a slightly degraded energy resolution and is therefore operated at a lower HV setting of 3.5kV (instead of 4kV).

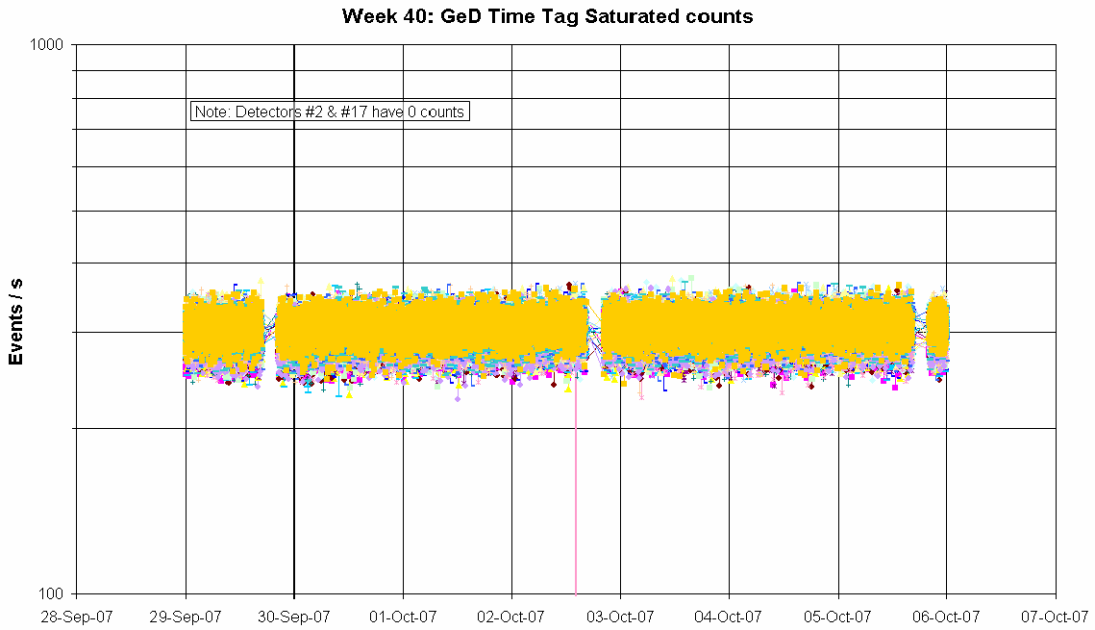
The following plot shows the dc voltage offset of the detector channels during the reporting period. The values are nominal. Detector #2 is failed since 06.12.2003 and detector #17 is failed since 17.07.2004.



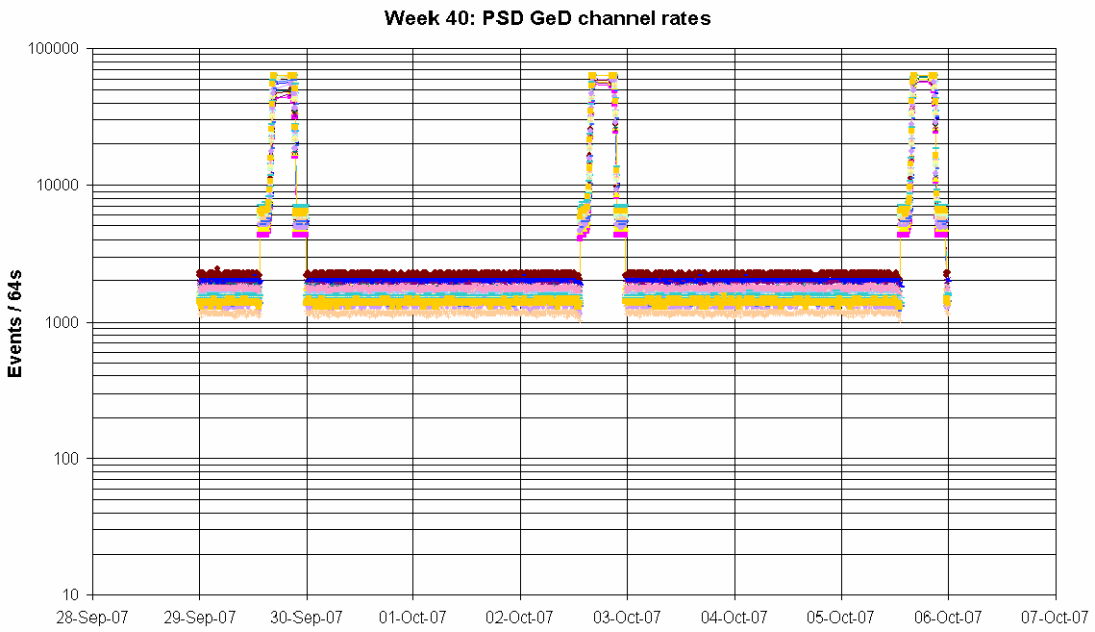
DFEE: The performance of the unit is nominal. The following plots show the Non Vetoed, Time Tag and Time Tag Saturated Event Count Rates during the reporting period.







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:

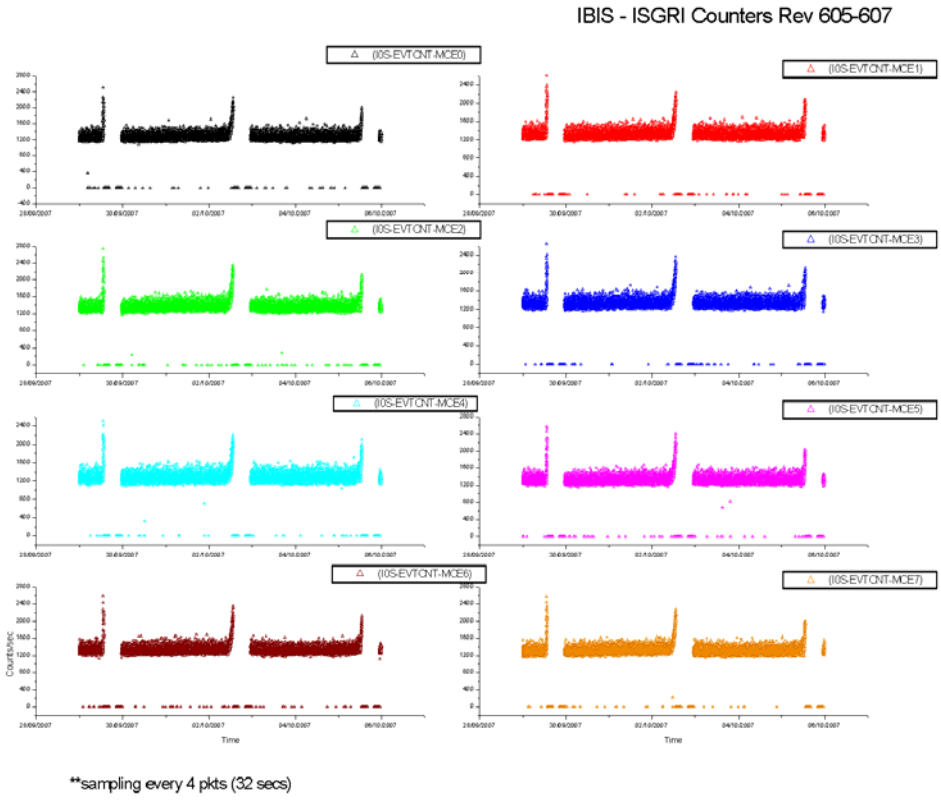
- 5 occurrences of OEM APID 1024 ID 243 EXCEPTION SPI1 SPECTRA BUILDING NOT COMPLETED were received during the week. As they were each single occurrences, no action was taken.
- On 2007-09-29 at 13:09:36Z TM parameter E3500 (ACS Veto Below Counter) started toggling OOL High. This was ~30 minutes before the expected radiation belt entry of revolution 605 and therefore no action was taken.
- On 2007-09-30 at 16:29:45Z TM parameter E2151 went OOL (value = PARAM > SPEC). This is the ACS FEE digital status 5 V #1. As it returned within limits when the next packet was received at 16:40:25Z no action was taken.
- On 2007-10-01 at 10:16:25Z TM parameter E2284 went OOL (value = PARAM > SPEC). This is the ACS FEE analogue status 5 V #34. As it returned within limits when the next packet was received at 10:27:05Z no action was taken.
- On 2007-10-02 at 11:36:00Z TM parameter E3500 (ACS Veto Below Counter) started toggling OOL High. This was ~2 hours before the expected radiation belt entry of revolution 606 and therefore no action was taken.
- On 2007-10-02 at 16:07:16Z, during the radiation belt passage of revolution 606-607, TM parameter E3824 went OOL High (value = 5.1548V). This is the PSD + 5V digital voltage. It returned within limits when the next packet was received at 16:08:20Z and no action was taken.
- On 2007-10-02 starting at 20:19:23Z TM parameter E4009 S DF HSLERR L toggled in and out of limits until 20:56:11Z, indicating errors on the HSL during this time. This was before radiation belt exit of revolution 607 and was probably due to high count rates. As it returned stably within limits of its own accord, no action was taken.

- On 2007-10-05 at 11:01:44Z TM parameter E3500 (ACS Veto Below Counter) started toggling OOL High. This was ~2 hours before the expected radiation belt entry of revolution 607 and therefore no action was taken.

8.3.3 IBIS Operations

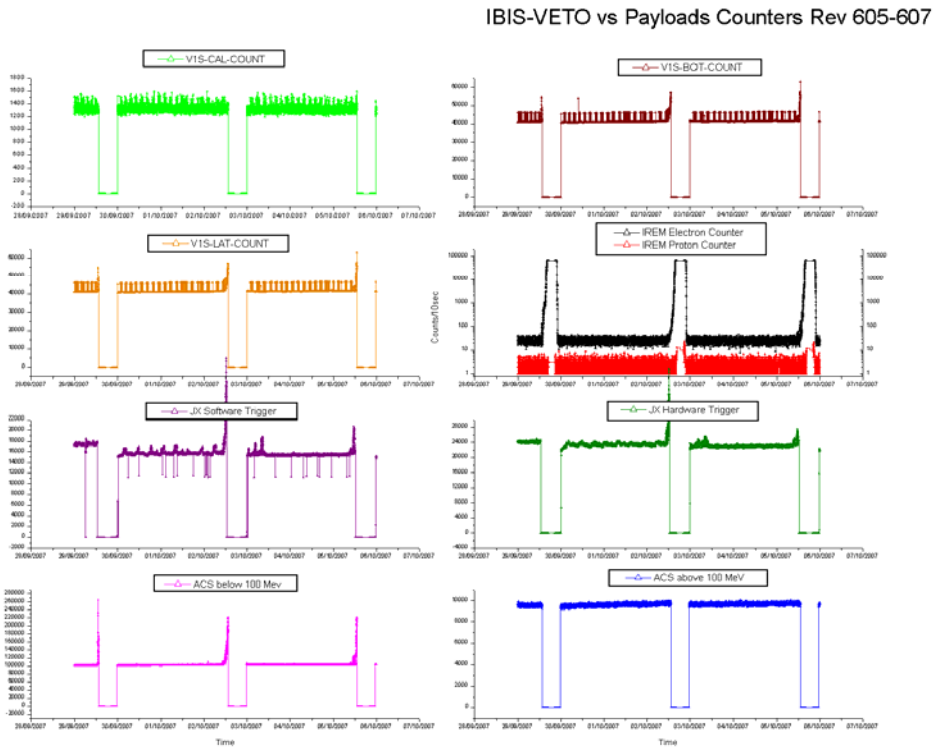
IBIS Event Counters Plots

ISGRI Counters:



**sampling every 4 pkts (32 secs)

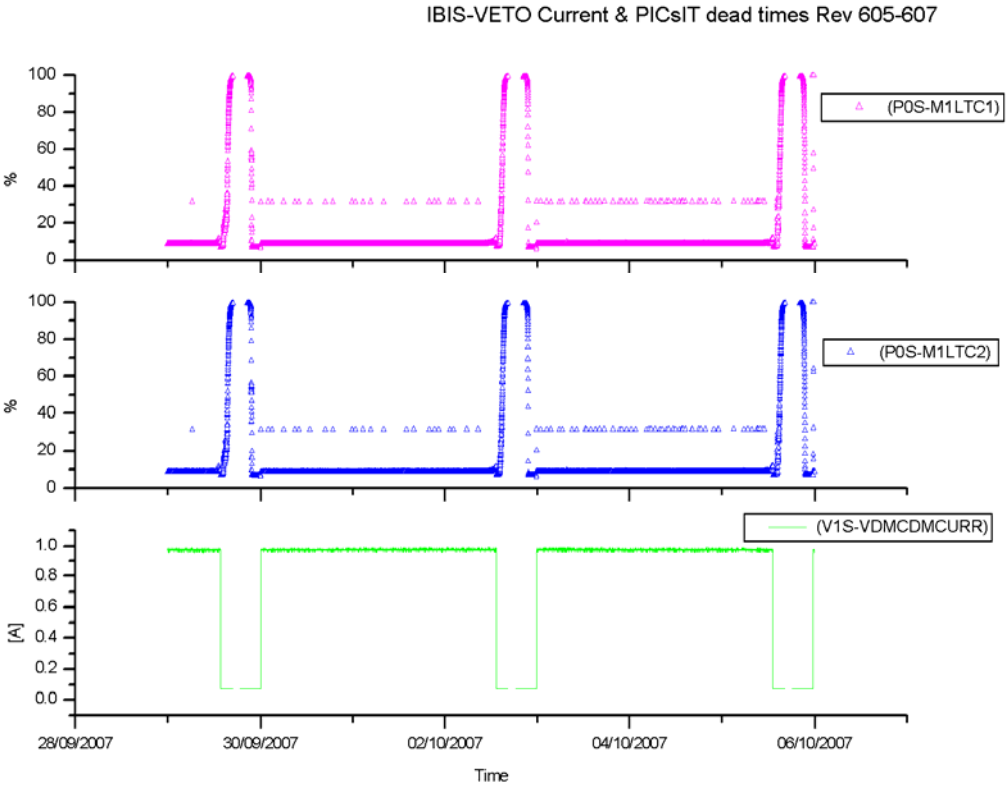
VETO vs Payloads Counters:



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

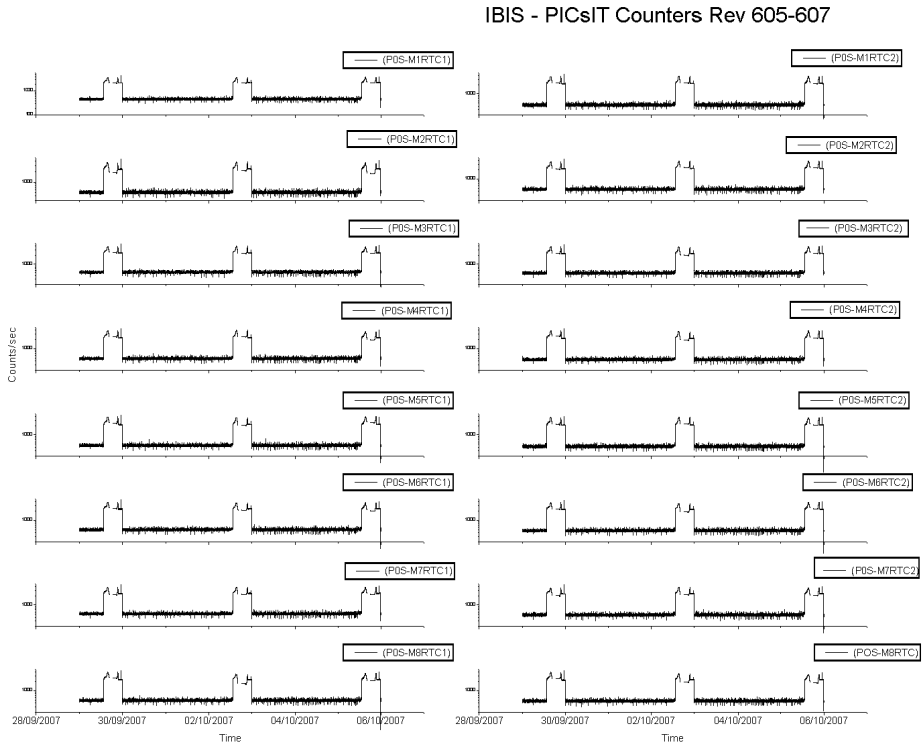
The week was characterised by slightly high radiation before the expected radiation belt entry of revolutions 605-607 as reported by the payload. Note that the plot of the ACS Below 100MeV count rates have a smaller scale than usual in order to show these peaks before radiation belt entry.

VETO Current:



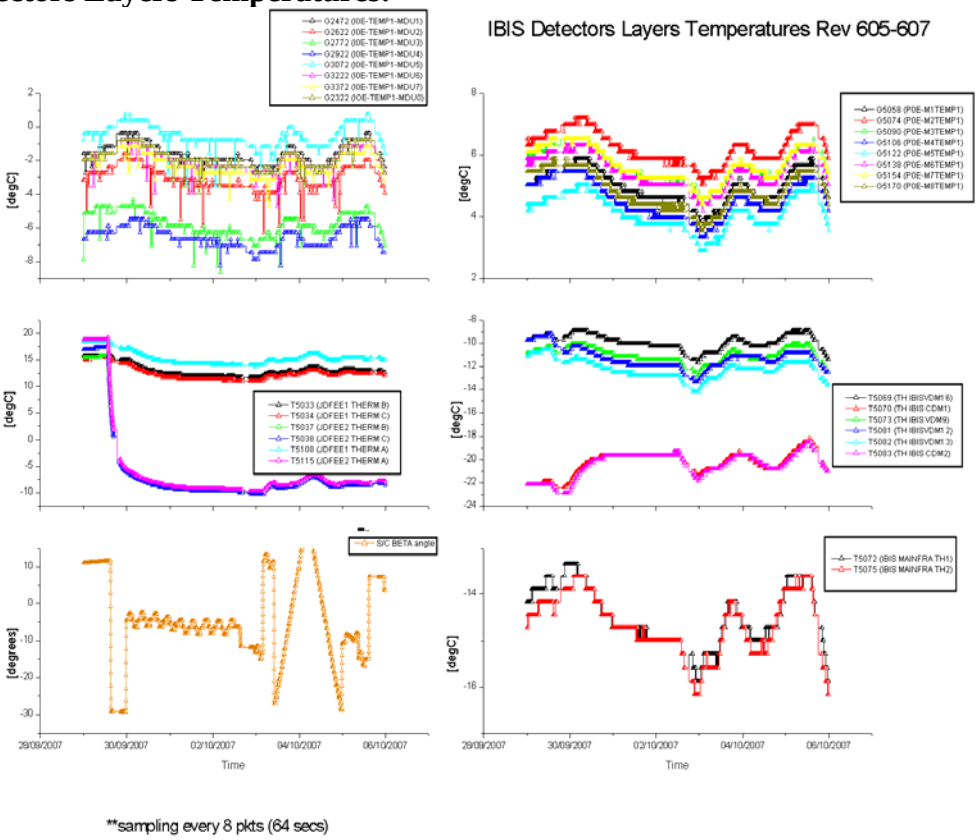
**sampling every 4 pkts (32 secs)

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.

2007-09-29 (DOY 272, Rev 605-606)

At 04:50Z, after a ground station handover, TM parameter X7500 went OOL, indicating that the histogram accumulation and download process had stopped. At 05:36Z CCCFs were enabled such that the CCCF_ED GESTAN02 scheduled in the Timeline at 06:14:50Z would be executed. Following this, the histogram process resumed and X7500 returned within limits.

At 13:05:47Z, ~30 minutes before radiation belt entry of revolution 605, TM parameters G6062 and G6063 started toggling OOL High. These are the VETO bottom and lateral counters respectively. In addition, at 13:24:59Z the G2013 family (number of events triggering the MCEs per second) started toggling OOL. As this was just before radiation belt entry, no action was taken. All these parameters continued to toggle OOL until radiation belt entry at 13:38:38Z.

2007-09-30 (DOY 273, Rev 606) to 2007-10-01 (DOY 274, Rev 606)

IBIS operations executed nominally.

2007-10-02 (DOY 275, Rev 606-607)

Due to high background radiation before the expected radiation belt entry of revolution 606, from 11:34:11Z to 11:36:11Z TM parameter G8080 (Valid event rate on HBRA) toggled OOL High.

In addition, at 12:58:59Z, ~30 minutes before radiation belt entry of revolution 606, TM parameters G6062 and G6063 started toggling OOL High. These are the VETO bottom and lateral counters respectively. At 13:10:11Z the G2013 family (number of events triggering the MCEs per second) also started toggling OOL. All these parameters continued to toggle OOL until radiation belt entry at 13:24:07Z.

2007-10-03 (DOY 276, Rev 607) to 2007-10-04 (DOY 277, Rev 607)

IBIS operations executed nominally.

2007-10-05 (DOY 278, Rev 607-608)

Due to high background radiation before the expected radiation belt entry of revolution 607, from 10:54:27Z to 12:31:15Z TM parameter G8080 (Valid event rate on HBRA) toggled OOL High. In addition, at 12:42:51Z TM parameters G6062 and G6063 started toggling OOL High. These are the VETO bottom and lateral counters respectively. As this was ~30 minutes before radiation belt entry of revolution 607, no action was taken. These parameters continued to toggle OOL until radiation belt entry at 13:10:22Z.

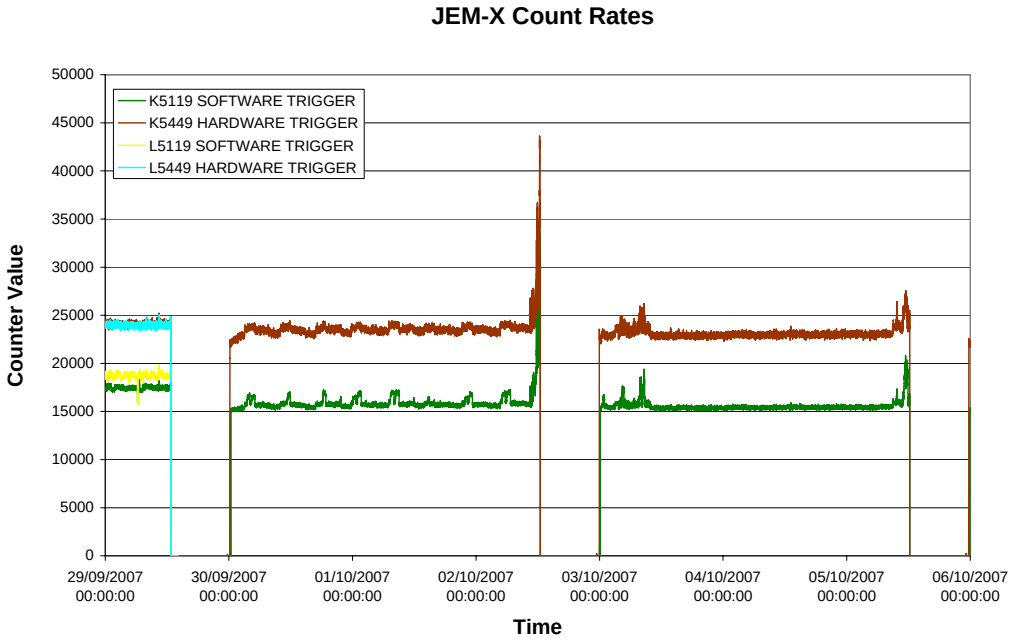
At 23:39:20Z, just after radiation belt exit of revolution 608, the TM parameter families G5068 and G5072 failed status consistency check (value = TRUE). These are the PDM semimodule FIFO error flags. At 23:41:23Z the TM parameters families G5002 and G5003 for the PDM semimodule counters also went OOL (value = 0). As these were followed at 23:44:55Z by OEM APID 1280 ID 132 EVENT IBIS1 IASW HEPI RESYNCHRONIZED, indicating that HEPI resynchronised autonomously, by which time all the above parameters had returned within limits, no action was taken.

8.3.4 JEM-X Operations

JEM-X Count Rates

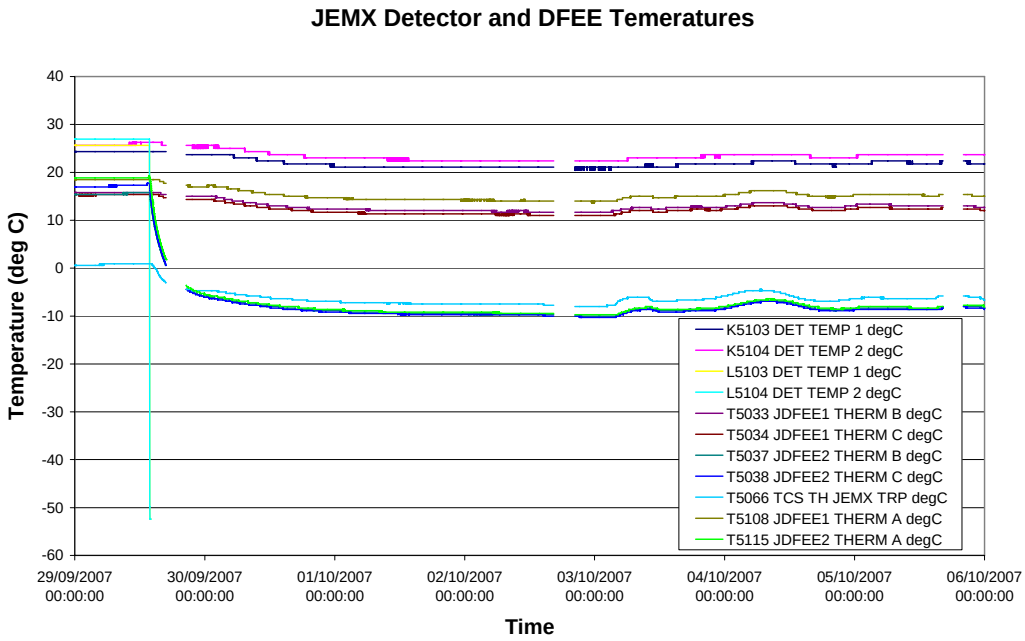
JEM-X count rates over the reporting period are displayed in the following graph[1].

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



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].



[2] Data sampled (1 frame in 8)

JEM-X Daily Report

2007-09-29 (DoY 272, Rev 605)

At 13.44, Operations to re-hibernate JEMX-2 after the Crab calibration were commenced. The procedures executed were:

- FCP_JEM2_0120 SET BCP OVERIDES
- FCP_JEM2_9010 JEMX2 DFEE SWITCH OFF
- FCP_JEM2_0120 SET BCP OVERIDES
- FCP_JEM2_9001 JEMX2 DISABLE BCP DISTRIBUTION
- FCP_JEM2_9000 JEMX2 DPE SWITCH OFF

These operations were successfully terminated at 14:04.

2007-09-30 (DoY 273, Rev 606)

At 15:42, the following 7 On-Event-Messages were received. As before, no action was taken, and there was no impact.

```
2007.273.15.42.44.698   2007.273.15.42.47.419   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.273.15.42.44.698   2007.273.15.42.47.471   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.273.15.42.44.698   2007.273.15.42.47.473   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.273.15.42.44.698   2007.273.15.42.47.476   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.273.15.42.44.698   2007.273.15.42.47.478   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.273.15.42.44.698   2007.273.15.42.47.480   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                          0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
```

```
2007.273.15.42.44.698   2007.273.15.42.47.482   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              5336
```

2007-10-01 (DoY 274, Rev 606) to 2007-10-04 (DoY 277, Rev 607)

JEM-X1 operations executed nominally

2007-10-05 (DoY 278, Rev 608)

At 05:55, the following 7 On-Event-Messages were received. As before, no action was taken, and there was no impact.

```
2007.278.05.55.00.932   2007.278.05.55.04.324   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.401   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.405   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.407   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.409   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.412   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
    K9080          MESS ID                      5
    K9074          TASK ID 16                   12
    K9067          LOGICAL ADDRESS              4989
2007.278.05.55.00.932   2007.278.05.55.04.415   1536   RealTime   5       ANOMALY
JEM-X1 CSSW INT ER EXCEPTIO                             0       0    65535   PR    N
E   E
    FIX6                                        0
    K9079          MESS CLASS                   2
```

```
K9080          MESS ID                    5
K9074          TASK ID 16                 12
K9067          LOGICAL ADDRESS            5336
```

8.3.5 OMC Operations

2007-09-29 (DoY 272, Rev 605)

At 06:16:29, OMC was re-commanded to Science mode after the CCCFs were enabled due to a problem with IBIS histogram downloads.

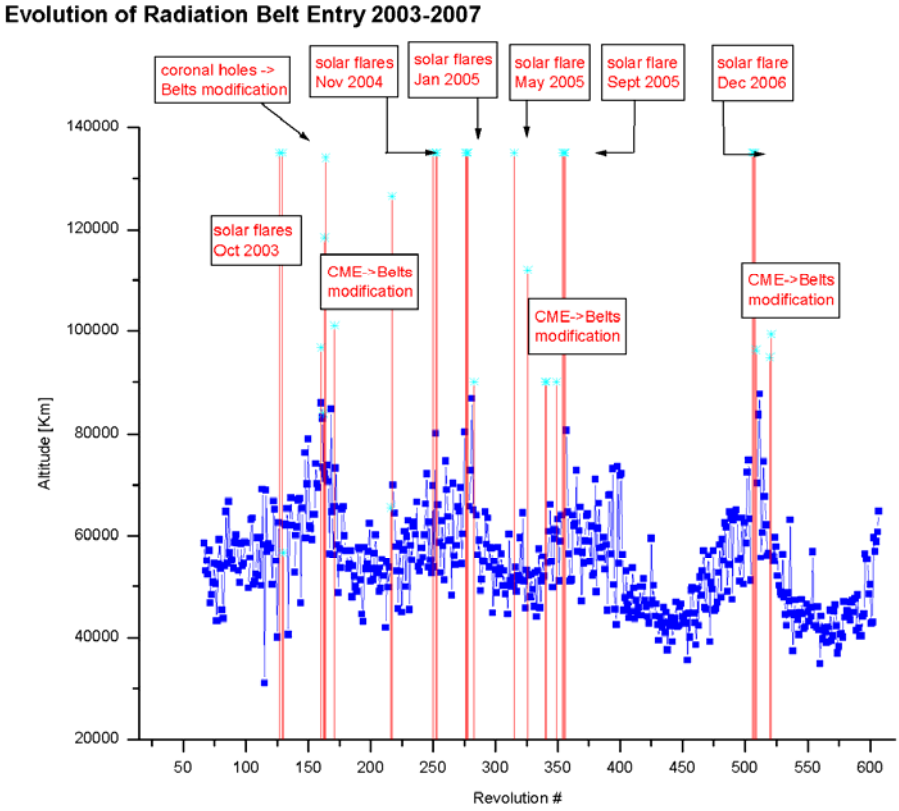
2007-09-30 (DoY 273, Rev 606) to 2007-10-05 (DoY 278, Rev 608)

Nothing to Report.

On DoY 272 at 13:38:38, DoY 275 at 13:24:06 and DoY 278 at 13:10:22 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

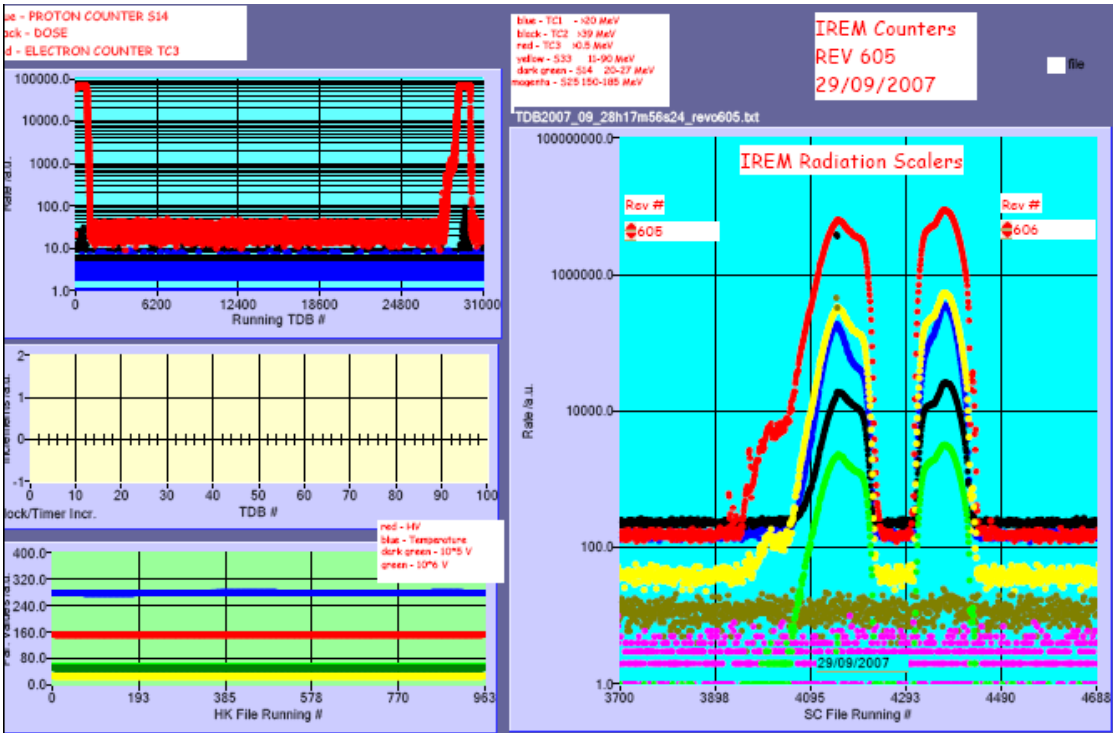
Nothing to Report

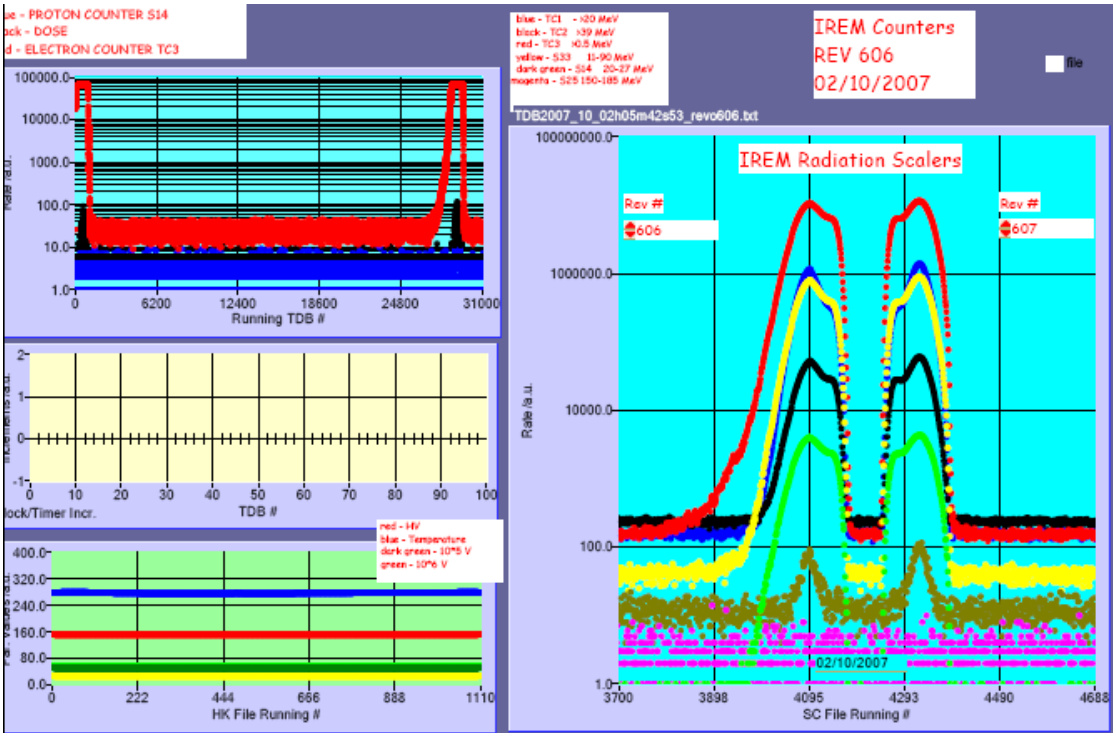
Electron Belts

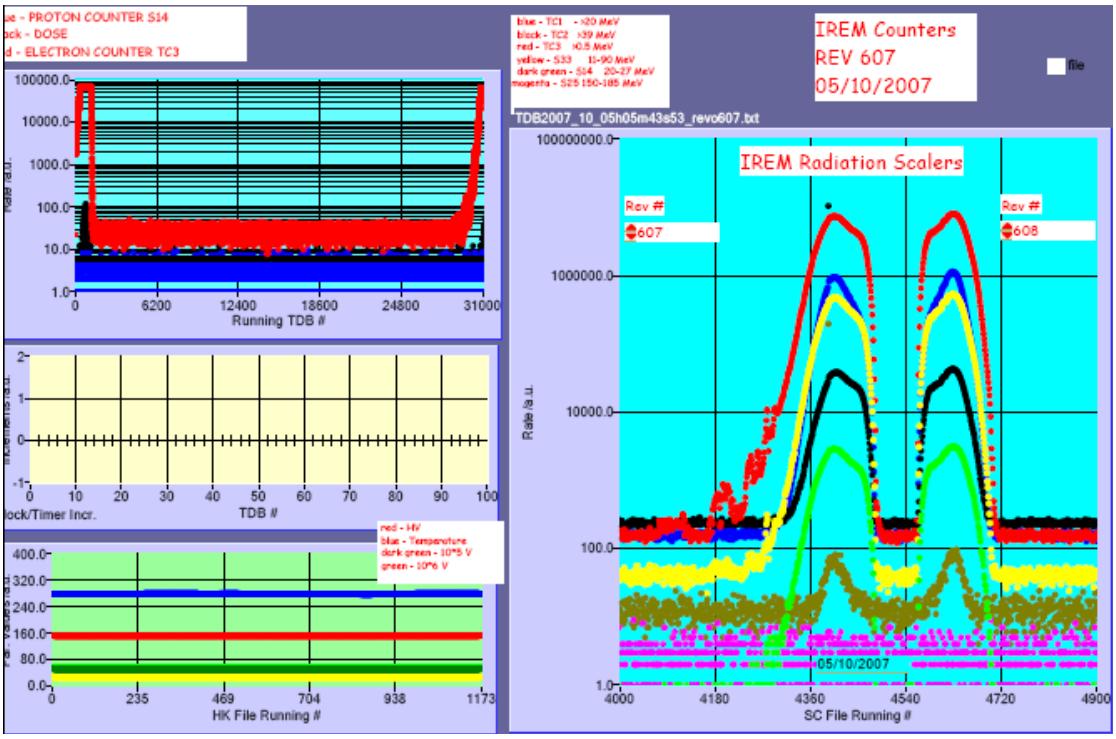
REV	S/C BCPKT (electron)	Electron CUT-OFF Observed Entry/Exit	Observed Entry/Exit Altitude [Km]	Electron CUT-OFF Predicted Entry/Exit	Predicted Entry/Exit Altitude [Km]
605	RAD_ENTR R 2007-09-29T13:38:30Z	29/09/2007 13:22:38	58907.7	29-Sep-2007 14:55:43	45260.61
606	RAD_EXIT R 2007-09-29T23:50:28Z	29/09/2007 22:09:10	>>31409.0	29-Sep-2007 22:45:43	43828.5
606	RAD_ENTR R 2007-10-02T13:24:00Z	02/10/2007 12:54:54	60868.3	02-Oct-2007 14:39:31	45437.82
607	RAD_EXIT R 2007-10-02T23:35:26Z	02/10/2007 22:01:26	>>31418.8	02-Oct-2007 22:29:31	43714.1
607	RAD_ENTR R 2007-10-05T13:10:15Z	05/10/2007 12:01:02	64906.9	05-Oct-2007 14:29:31	44927.6
608	RAD_EXIT R 2007-10-05T23:21:38Z	05/10/2007 21:53:42	>>31420.5	05-Oct-2007 22:19:31	44236.91

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:

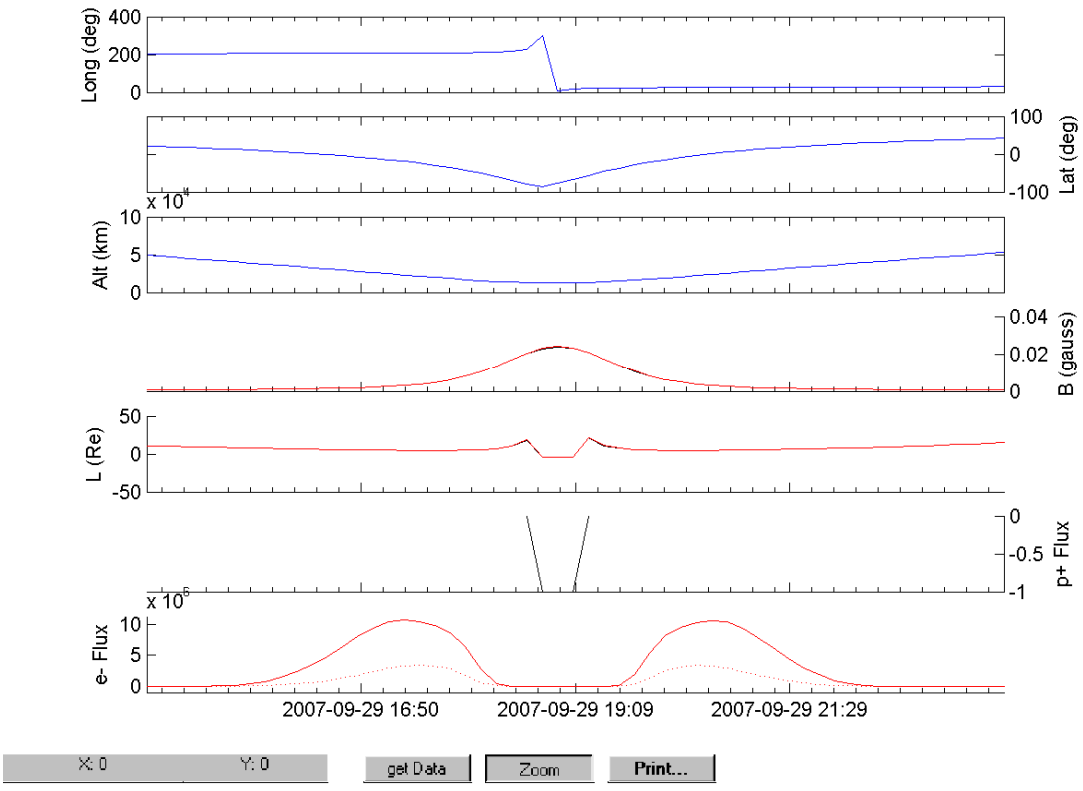




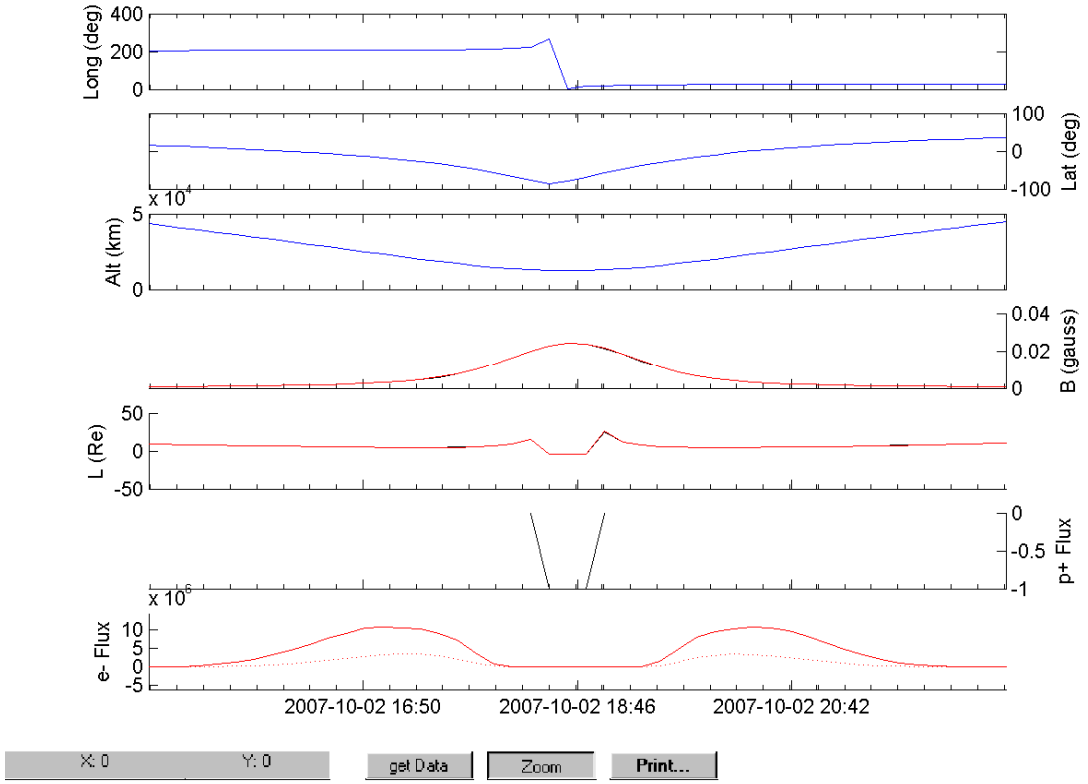


IREM Predicted Radiation Belt Passages

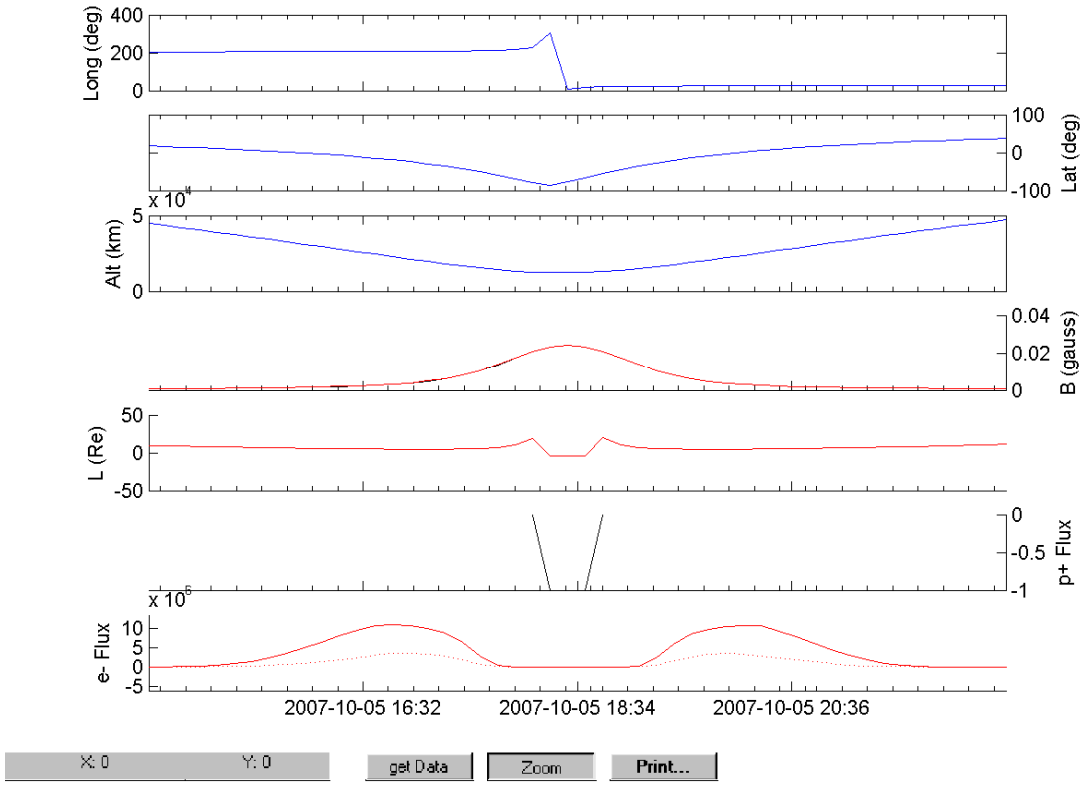
Rev 605



Rev 606



Rev 607



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.