

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 113
Week 47
22.11.04
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 13.11.04 until 19.11.04 (both dates inclusive) and covers the revolutions 255 & 256.

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 were the Galactic Plane; Cygnus X-1 (RA 19:58:21.68; DEC +35:12:05.7), GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0), Cygnus X (RA 20:33:10.00; DEC +41:12:00.0), 0919-54 + 0921-630 (RA 09:21:30.72; DEC -59:15:02.4) and NGC 3281 (RA 10:31:52.06; DEC -34:51:13.3). The activities consisted of GPS, raster and hexagonal dithering observations.

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.

As part of the periodic AOCS calibrations and in preparation for the winter eclipse season a calibration and health-check of IMU 1 and 2 units was performed on 16/11/2004. In parallel, RMU-B was switched on and its overall status was checked. The checks showed that IMU 1-2 as well as the redundant RMU are healthy.

The ACC IMU drift corrections were uplinked on 17/11/2004. Moreover, the onboard AMD thresholds were set to their eclipse season values on 19/11/2004.

Two slews (CSL) were missed from the Timeline during this period:

- One slew was missed in revolution 255 due to a delay in the station handover Goldstone (DSS24) to Redu;
- One slew was missed in revolution 256 due to a drop in the TM link at Redu station.

The fuel consumption over the period between 13/11/2004 and 19/11/2004 was 0.146 Kg. The remaining propellant is in the order of 166.6919 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 was identified.

3.1.5 RFS

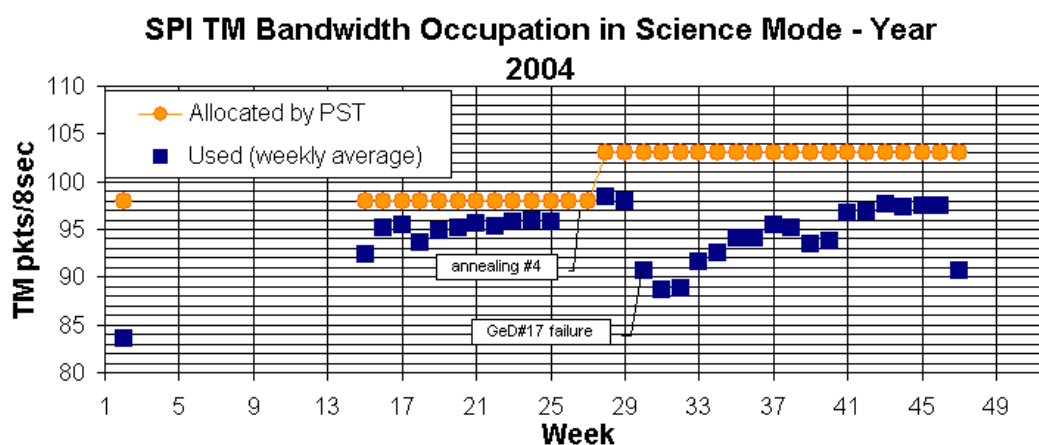
The RF subsystem is working properly. The link margin is sufficient to ensure proper TM reception and execution of commands with the ranging channel enabled.

3.2 Payload

3.2.1 SPI

The overall status of the instrument in this week is nominal, though the PSD (Pulse Shape Discriminator) still continues to randomly reproduce the malfunction of channels blocking; the abnormal solar activity was also the cause of a few other temporary alarms in the ACS (Anti-Coincidence System).

The instrument was however kept in photon-by-photon mode for the whole period, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle and an actual occupation of 90.7 pkts/cycle average. The following plot shows the occupied bandwidth, since beginning of 2004.



The cryo-cooler is working well, maintaining the temperature within 85+/-1K.

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

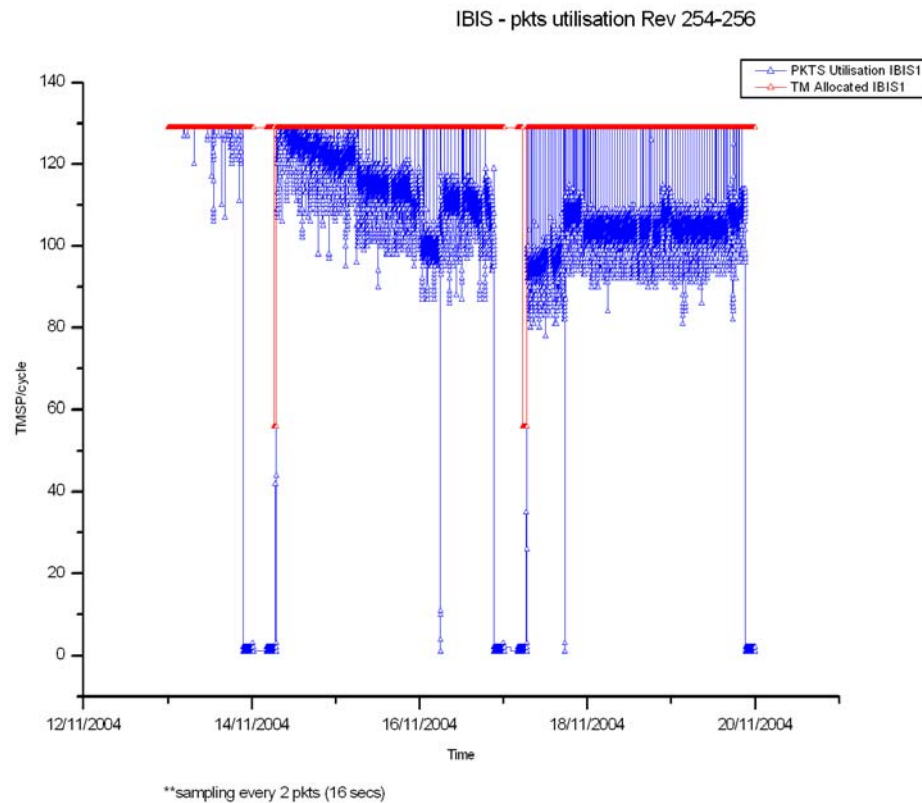
3.2.2 IBIS

The overall status of the unit is Nominal.

The week was characterised by moderate to low solar activity. During revolution 254 radiation levels returned to their nominal states after the high activity of week 46.

During the reporting period the PST allocation to IBIS was 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 104.7 TMPS/cycle, down 16.7 on last week.

A plot of the IBIS TM utilisation during the observation period 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 during science observations, with a TM allocation of 8 packets/cycle. JEM-X2 remained dormant (DFEE OFF) with a TM allocation of 1 packet/cycle.

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.

During the reporting period OMC operations were performed by the automatic timeline, with the TM allocation to OMC of 5 packets/cycle.

The reporting period was initially impacted with high radiation, during which the spacecraft was in SAFE mode and 10 pointings were lost, the remainder of the week was relatively quiet, with only 2 further pointings lost..

There were 155 OMC pointings executed nominally, 12 were 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 moderate solar activity. During revolution 254, the radiation returned to normal levels after the high activity of the previous week

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

4 Ground Facilities

The performance of the Operational ground facilities was very good this week, well above the system performance requirements, 2 pointing were lost due ground station problems.

4.1 Mission Operations Centre

The performance of the MOC was in general good in the reporting period, although there were problems with resource consumption on some machines, and a couple of times problems with the MOC-ISDC link.

4.2 Ground Stations & Network

The performance of the ground stations and Network was in general good this week. A pointing was lost due to a late handover from DSS-16 to Redu, also a TM drop from Redu led to the loss of another pointing. The overall performance though was well above the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

PSF's up to rev 263 received. Revolutions up to 260 planned. TSF's received up to rev 257. This week ISOC was forced to replan all revolutions produced i.e. 257 to 260. Some of them more than once. This is on MOC request since they could not find a suitable reaction wheel profile for all of these revolutions. The exact reason for this is not currently known but is assumed to be linked to the current eclipse season. After

experience from the first eclipse after launch, where there were similar problems, Flight Dynamics changed the limits. Since then there has been no problems similar to the one currently encountered. Investigations are on-going.

2. Observation status

ECS's up to revolution 245 has been received. Corresponding OCS's sent to ISDC. No extra time credited.

3. ISOC science data archive

Nothing to report

4. ISOC system

Version 10.6.2 is still in use. No problem detected.

5. Problems

none

4.3.2 ISDC

Status of ISDC observation processing on 22/11/2004:

- Latest Standard Analysis completed: observation 02201140003 (Sgr A*, Revolution 229) on 22/11/2004

- Latest products archived: observation 02200100003 (SGR1806-20, Revolution 225) on 05/11/2004

- Latest observation products sent to the observer: observation 02700020001 (3C 273, Revolutions 207) on 08/11/2004

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 319, at 04:45:14, the PingPong filter triggered, the impact was that slew 02550001, was missed, and manually recovered, no science was lost.
- On DoY 320, at 06:54, there was a VC0 TM data gap from Redu, there was no impact.
- Later, at 15:13, there was an error sending data to ISDC, at 15:39, CCC stopped and restarted ifrd on isds-a, at 15:53, the TM flow was re-established, there was no further impact.
- At 23:11, it was reported that the nctrs-a MMI had been in a yellow state on and off all evening. The event log had been consuming 84% of the cpu.
- On DoY 321, at 00:51, after the handover from DSS24 to Redu, the TC AD service was initiated, but then it dropped out delaying the handover. The timeline had to be stopped, and later recovered manually. The impact was pointing 02550048 was lost.

- On DoY 322, at 04:07, the AOCS Ping-Pong filter limit was again reached, there was no impact on the science return.
- At 14:20, a bad TM frame was received from Redu, there was no impact.
- On DoY 323, at 15:26, the TM & TC on nctrs-a dropped. The TM returned at 15:29, and the TC at 15:30, there was no impact.
- At 17:34, another dropped TM frame meant an AOCS command was unverified, which caused the loss of pointing 02560054.
- At 18:37, there was an error sending data to isds. At 18:44 CCC restarted the isds & ifrd on isds-a. At 18:57, it was reported that control of the machine had been lost. At 18:58, the machine was rebooted and at 19:03, TM was flowing once more.

The following new anomaly reports were entered into the ARTS system.

AR id	Date Created	Subject	Segment	Status
INT_SC-100	14/11/2004	Ping-Pong Filter of the ACC triggered due to high radiation background, 14/11/2004, Rev. 255	Spacecraft	Open
INT_SC-101	18/11/2004	IBIS VETO toggling of the PMT 28 V set by IASW	Payload	Open
INT-2673	19/11/2004	Problems finding valid wheel profile for revolutions 257 to 260		Pending
INT-2674	23/11/2004	Delayed station handover to REDU	ESA Station	Pending
INT-2675	23/11/2004	IFTS at ISDC not working after restart of ISDSA at ESOC	IMCS	Pending

7 Future Milestones

The Current eclipse season started on the 23rd November 2004, and continues until the 17th December 2004. There will be a total of 9 eclipses, with a maximum duration of 57 minutes 41 seconds on 8th December 2004.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 255

The observations in revolution 255 began with a hexagonal dithering observation of Cygnus X-1 (RA 19:58:21.68; DEC +35:12:05.7) lasting ~23 hours, followed by a hexagonal dithering observation of GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0) lasting ~29.5 hours. An amalgamated raster dithering observation of Cygnus X (RA 20:33:10.00; DEC +41:12:00.0) was then performed for the remaining ~7 hours of observation time.

Revolution 256

The observations in revolution 256 began with 15 pointings of a GPS lasting ~10 hours, followed by a raster dithering observation of 0919-54 + 0921-630 (RA 09:21:30.72; DEC -59:15:02.4) lasting ~5 hours. A raster dithering observation of NGC 3281 (RA 10:31:52.06; DEC -34:51:13.3) was then performed for the remaining ~45.5 hours of observation time.

Throughout these observations all instruments were in their nominal science modes, except JEM-X2 for which the DFEE remained off, and the TM allocation was IBIS 129; SPI 103; JEM-X1 8; JEM-X2 1; OMC 5.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2004-10-30T06:05:56.000Z	167.0501	F	Automatic TM processing.
2004-10-30T14:58:21.000Z	167.0200	F	Automatic TM processing.
2004-10-31T16:27:12.000Z	166.9899	F	Automatic TM processing.
2004-11-02T05:51:32.000Z	166.9730	F	Automatic TM processing.
2004-11-03T16:21:19.000Z	166.9442	F	Automatic TM processing.
2004-11-05T05:39:15.000Z	166.9323	F	Automatic TM processing.
2004-11-06T16:17:03.000Z	166.8958	F	Automatic TM processing.
2004-11-08T05:27:40.000Z	166.8846	F	Automatic TM processing.
2004-11-08T14:16:45.000Z	166.8589	F	Automatic TM processing.
2004-11-11T05:13:55.000Z	166.8379	F	Automatic TM processing.
2004-11-12T16:04:39.000Z	166.8172	F	Automatic TM processing.
2004-11-14T05:41:07.000Z	166.8056	F	Automatic TM processing.
2004-11-15T15:57:11.000Z	166.7520	F	Automatic TM processing.
2004-11-17T04:43:54.000Z	166.7411	F	Automatic TM processing.
2004-11-17T13:39:23.000Z	166.6919	F	Automatic TM processing.

This report was generated Fri Nov 19 08:00:20 GMT 2004

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 13/11/2004-19/11/2004

AOCS operations were executed from the Automatic Timeline.

During this period, 50 Open Loop Slews, 131 Closed Loop Slews and 4 Momentum Biases were executed. 2 slews were missed. This is equivalent to a 1.1% loss.

13/11/04 (Day of Year 318, Revolution 254)

Nothing to report.

14/11/04 (Day of Year 319, Revolution 254-255)

PP Filter threshold exceeded: at AOS TM (04:26:23z) the hard limit of the Ping-Pong Filter threshold was found exceeded. At 03:54:54z the Guide star was released when the number of detected False Events on the STR exceeded the STR SEU Filter. The IMU was switched on at 03:57:23z. From this time, the STR repeatedly lost/release the guide stars due to the impacting SEUs. At LOS the magnitude of the Guide star was 6.75 Mi. At 04:26:23z the hard limit of the Ping-Pong Filter threshold was found exceeded because of the many transitions of the control on Yaw between the STR and the IMU. The ACC invalidated the STR use and permanently put the yaw control on the IMU. At 04:56:39z the STR was put back in the control loop by ground as part of the recovery procedure. The IMU automatically switched off and a new guide star was picked and tracked by the STR.

Thanks to the quick reaction of the SPACON, the only effect was that the first RWB of the revolution needed to be performed manually with some delay. No slews were affected.

15/11/04 (Day of Year 320, Revolution 255)

Nothing to report.

16/11/04 (Day of Year 321, Revolution 255)

Slew missed from the Timeline due to delay in the station handover Goldstone to Redu: Due to a delay in the station handover Goldstone (DSS24) to Redu, the slew 02550048 (CSL) was missed from the Timeline. A manual slew was then performed to the attitude of PID 02550048. The next slew was manually updated and executed from the Timeline.

IMU 1-2 calibration/health-check and RMU-B health-check: In preparation for the winter eclipse season and as part of the periodic AOCS calibrations, a calibration and health-check of IMU 1 and 2 units was performed. In parallel, RMU-B was switched on and its overall status was checked. The checks showed that IMU 1-2 as well as the redundant RMU are healthy. The timeline of this operation as well as the obtained drift and noise levels of the selected IMU channels are presented in the following table:

Time z	IMU1 IMU2 Health-Check / Calibration and RMU-B Health Check 16/11/2004 (DoY 321)	
07:15		Step 1, IMU1

	Disable ACC Autonomous IMU Switch Off, FCP-AOC-1051	PID 02550054 Start at 07:08:49 End at 08:08:21
07:24:45 07:28:40	IMU1 Switch On, FCP-AOC-1600 RMU-B switch On, FCP-AOC-1902	
07:36 07:43	Set IMU Selection ACC: IMU1 on Roll, IMU1 on Yaw, FCP-AOC-1050 FDE: IMU1-X on Roll, IMU1-Z on Yaw, FCP-AOC-1218	
	IMU warm-up time (~54 minutes)	
08:17:22 08:22:16	Reset IAAD Accumulators, FCP-AOC-1210 Reset FCE RMU Integrators, FCP-AOC-1254 Perform IMU-1 Drift and Noise evaluation, FCP-AOC-0523 step 8	PID 02550055 Start at 08:10:17 End at 09:09:49
08:17:22 to 09:05:29	>40 minutes of data collection From TM: IMU1 Noise Roll = 0.1963 as/s IMU1 Drift Roll = 0.1875 as/s IMU1 Noise Yaw = 0.0518 as/s IMU1 Drift Yaw = 0.1184 as/s	Calculated by FD: => 0.1914 as/s => 0.1209 as/s Stable pointing: PID 02550055 Start of Slew 02550056: 09:05:29
09:19	Deselect IMU1 from ACC Word B, FCP-AOC-1050	PID 02550056 Start at 09:11:45 End at 10:11:17
09:26	Deselect IMU1 from FDE, FCP-AOC-1218	
09:29:55	Switch Off IMU1, FCP-AOC-1601	
09:34	Re-enable ACC Autonomous IMU Switch Off, FCP-AOC-0526	
09:36:58	RMU-B switch Off, FCP-AOC-1903	
Thermal stabilisation after IMU1 Switch Off (> 2 hours) PID 02550057-PID 02550058-PID 02550059 10:13:24 – 12:38:19		
12:47	Disable ACC Autonomous IMU Switch Off, FCP-AOC-1051	Step 2, IMU2 PID 02550060 Start at 12:40:01 End at 13:35:04
12:56:50	IMU2 Switch On, FCP-AOC-1602	
13:01 13:06	Set IMU Selection ACC: IMU2 on Roll, IMU2 on Yaw, FCP-AOC-1050 FDE: IMU2-X on Roll, IMU2-Z on Yaw, FCP-AOC-1218	
	IMU warm-up time (~47 minutes)	PID 02550061 Start at 13:37:06 End at 14:32:09
13:43:22	Reset IAAD Accumulators, FCP-AOC-1210 Perform IMU-2 Drift and Noise evaluation, FCP-AOC-1635 step 8	
13:43:22 to 14:27:49	>40 minutes of data collection From TM: IMU2 Noise Roll = 0.1987 as/s IMU2 Drift Roll = 0.2117 as/s IMU2 Noise Yaw = 0.0216 as/s IMU2 Drift Yaw = -0.0190 as/s	Calculated by FD: => 0.2011 as/s => -0.0166 as/s Stable pointing: PID 02550061 Start of Slew 02550062: 14:27:49
14:39	Deselect IMU2 from ACC Word B, FCP-AOC-1050	PID 02550062 Start at 14:34:11 End at 15:29:14
14:43	Deselect IMU2 from FDE, FCP-AOC-1218	
14:46:26	Switch Off IMU2, FCP-AOC-1603	
14:51	Re-enable ACC Autonomous IMU Switch Off, FCP-AOC-0526	

17/11/04 (Day of Year 322, Revolution 255-256)

PP Filter threshold exceeded: at AOS TM (04:07z) the hard limit of the Ping-Pong Filter threshold was found exceeded. Since 03:33z the Guide star was released when the number of detected False Events on the STR exceeded the STR SEU Filter. The IMU was switched on at 03:33:22z. From this time, the STR repeatedly lost/release the guide stars due to the impacting SEUs. At LOS the magnitude of the Guide star was 6.5 Mi. At AOS TM the hard limit of the Ping-Pong Filter threshold was found

exceeded because of the many transitions of the control on Yaw between the STR and the IMU. At 03:59z The ACC invalidated the STR use and permanently put the yaw control on the IMU. At 04:34z the STR was put back in the control loop by ground as part of the recovery procedure. The IMU automatically switched off (04:34:50z) and a new guide star was picked and tracked by the STR.

No slews were affected; the only effect was that the AOS checks needed to be performed with some delay.

Update of the ACC IMU drift corrections: Starting at 10:23z, the on-board ACC IMU drift corrections were updated with the results of the IMU calibration, which was performed on 16/11/2004. The uplinked values are shown below:

AEDRA_00 S

M F 12

2004-11-17T14:00:00Z

2004-11-17T14:00:00Z

AAAA1

IMU1_R_1 R 0.9279819E-06	r/s	D IMU 1 roll 1
IMU1_R_2 R 0.9279819E-06	r/s	D IMU 1 roll 2
IMU1_Y_1 R 0.5862609E-06	r/s	D IMU 1 yaw 1
IMU1_Y_2 R 0.5862609E-06	/s	D IMU 1 yaw 2
IMU2_R_1 R 0.9750864E-06	r/s	D IMU 2 roll 1
IMU2_R_2 R 0.9750864E-06	r/s	D IMU 2 roll 2
IMU2_Y_1 R -0.8076996E-07	r/s	D IMU 2 yaw 1
IMU2_Y_2 R -0.8076996E-07	r/s	D IMU 2 yaw 2
IMU3_Y_1 R 0.3186729E-06	r/s	D IMU 3 yaw 1
IMU3_Y_2 R 0.3186729E-06	r/s	D IMU 3 yaw
IMU4_R_1 R -0.3137714E-06	r/s	D IMU 4 roll 1
IMU4_R_2 R -0.3137714E-06	r/s	D IMU 4 roll 2

18/11/04 (Day of Year 323, Revolution 256)

Slew missed from the Timeline: At 17:34z, a drop in the TM link to the Redu ground station interrupted the sequence for slew 02560054 and resulted in the missing of the slew from the Timeline. The drop in TM link determined the failing of the IL and the following stop of the sequence. A manual slew was then performed to the attitude of PID 02560055. The next slew was manually updated and executed from the Timeline.

19/11/04 (Day of Year 324, Revolution 256)

Loading the Eclipse Season AMD thresholds: In preparation of the eclipse season and with the start of the first eclipse revolution of the season, the on-board AMD thresholds were set to their eclipse season values:

Thresholds from INT-MA-AI-0001, 5.3.2.4.2.2, and INT-PR-MMB-0005 page 5-9, modified as per new AMD Threshold agreement for the eclipse season.

01- Update of thresholds after uplink of new RW Inertias on 22/01/2004. 0155_0001_M.RWI

Wheel Inertia:

RW#1:	0.096000	Kgm**2
RW#2:	0.097650	Kgm**2
RW#3:	0.097272	Kgm**2

RW#4: 0.097649 Kgm**2

Eclipse Season:

	Subset 1		Subset 2		
WSMAX	39.5	Nms	35.9	Nms	
WSMIN	1.2	Nms	4.8	Nms	

	To Uplink:		In rpm:			
	X1	X2	X1	X2		
RW#1:	411.458333	rd/s	373.958333	rd/s	3929	3571
RW#2:	404.507960	rd/s	367.641411	rd/s	3863	3511
RW#3:	406.078637	rd/s	369.068939	rd/s	3878	3524
RW#4:	404.508374	rd/s	367.641788	rd/s	3863	3511

	To Uplink:		In rpm:			
	X1	X2	X1	X2		
RW#1:	12.500000	rd/s	50.000000	rd/s	119	477
RW#2:	12.288849	rd/s	49.155398	rd/s	117	469
RW#3:	12.336566	rd/s	49.346265	rd/s	118	471
RW#4:	12.288862	rd/s	49.155448	rd/s	117	469

The uplink was completed at 13:55z.

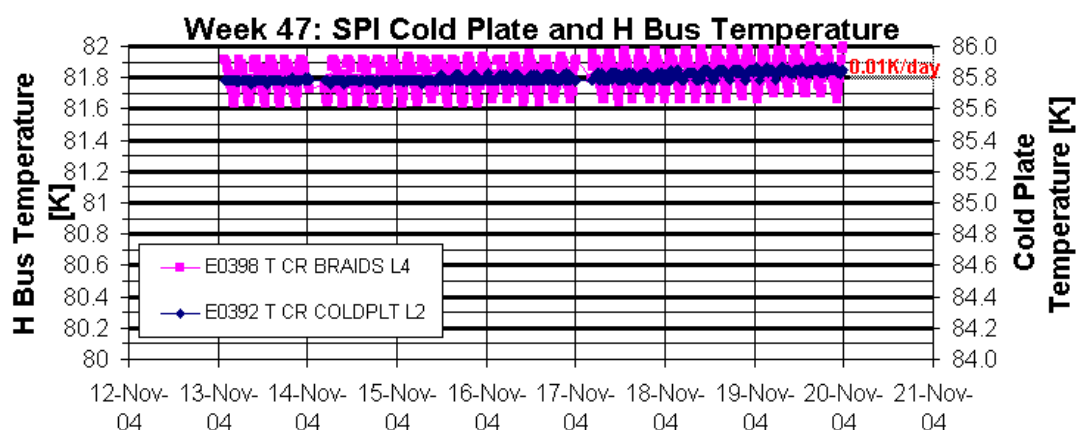
Flickering of the Pointing-Bit at the end of open loop slew due to Roll Error: At 23:13Z, at the end of open loop slew 02560089 the error in roll with respect to the Sun-Steering-Law assumed roll angle was ~ -130 arc-seconds. This is more than the OTF threshold for roll and resulted in the flickering of the Pointing-Bit, which was not seen at BCP level. This error already existed at the start of the slew and was introduced by the attitude reconstruction after open loop slew 02560088. The attitude determination was based on the first mapping after this slew, during which the SSL was enabled. The jitter caused by enabling of the SSL after the slew introduced the error in roll, which was propagated to the next slew by the slew update.

8.3.2 SPI Operations

Cryo-cooler / Detector Cold-Plate:

The performance of the cryo-cooler is nominal. The cold plate temperature was maintained at 85K $\pm$ 1K showing the expected small positive drift.

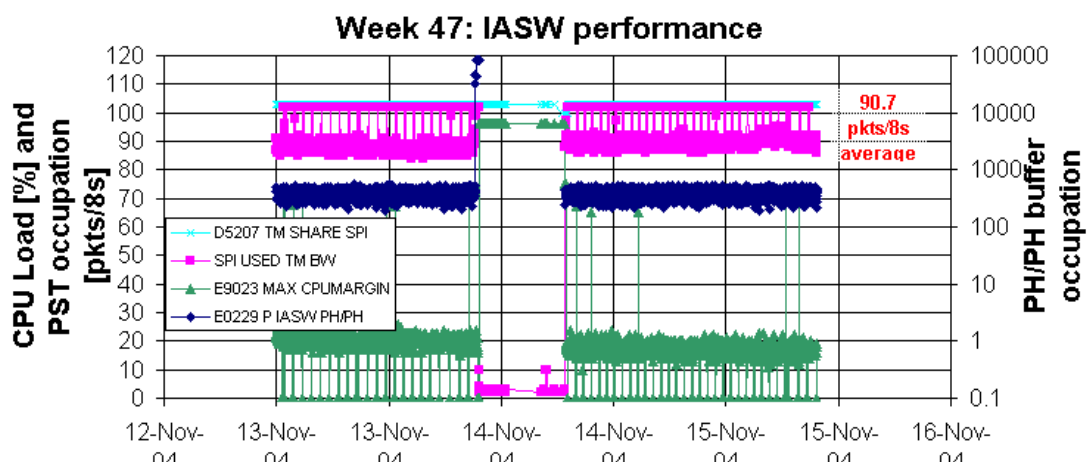
The following plot shows the evolution of the cold-plate and H bus temperatures during the reporting period.



IASW/DPE:

The performance of the IASW/DPE is nominal.

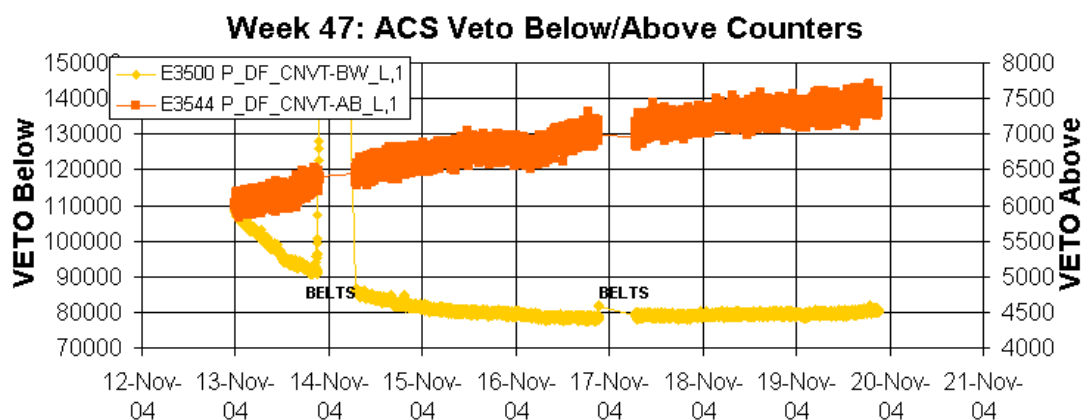
The following diagram shows the IASW performance in terms of TM bandwidth, event buffer occupation and DPE CPU load during the reporting period.



ACS:

The performance of the ACS is nominal.

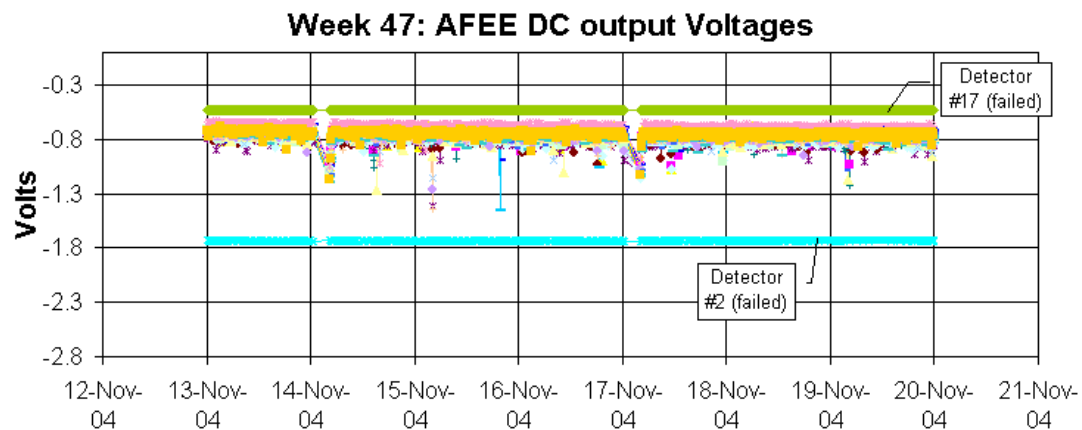
The following plot shows the ACS overall count rate evolution during the reporting period.



AFEE:

The performance of the detectors is nominal except for the detector #2, failed since 06.12.2003, and detector #17, failed since 17.07.2004.

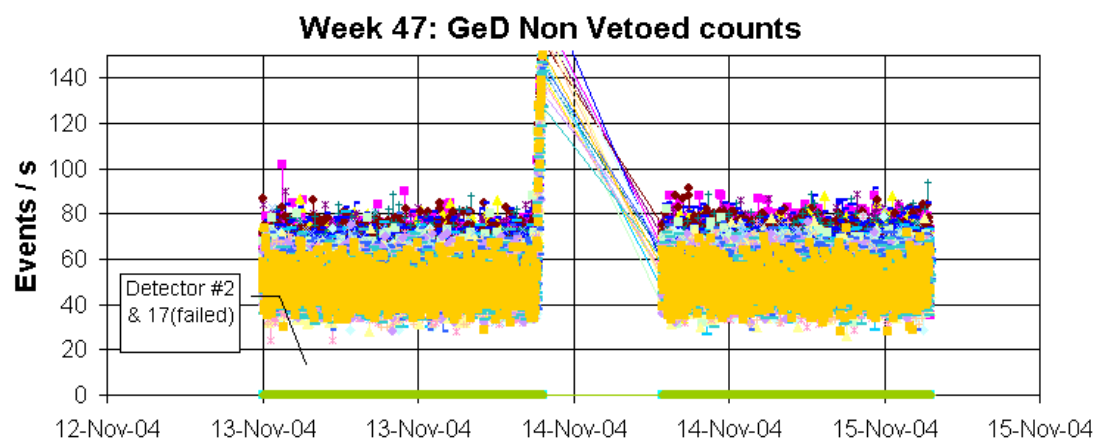
The following plot shows the AFEE dc output signals during the reporting period.



DFEE:

The performance of the unit is nominal.

The following plot shows the Non Vetoed event rates, processed by the DFEE during the reporting period. The count rate of each detector is within the expected range, except for the failed detector #2 and #17.

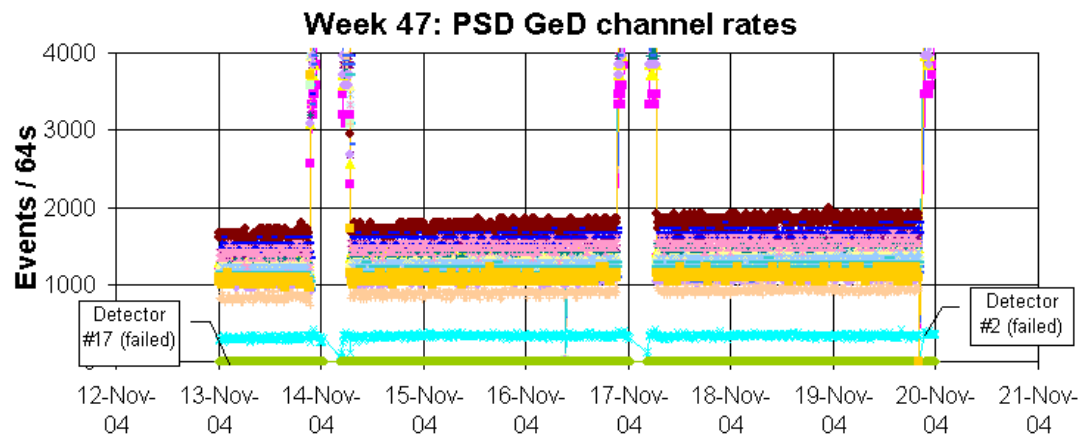


PSD:

The performance of the unit is nominal, though the malfunction of the channel rates blanking reproduced itself also this week (see AR INT_SC-90 for a detailed description of the anomaly).

An IASW patch is under delivery from Cestr to enable the Sci HK TM downlink inside the radiation belts. This would allow the deletion of the Out-Of-Limit currently defined for the PSD channel rates, thus removing the false alarms associated to the malfunction.

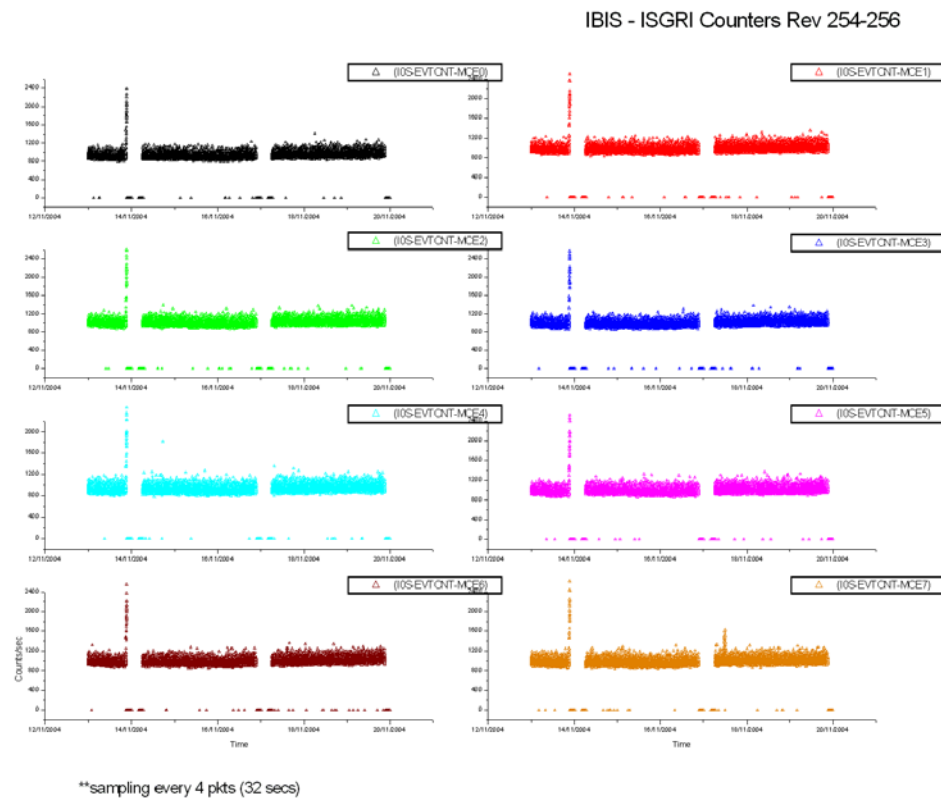
The following plot shows the PSD channel rates during the reporting period.



8.3.3 IBIS Operations

IBIS Event Counters Plots.

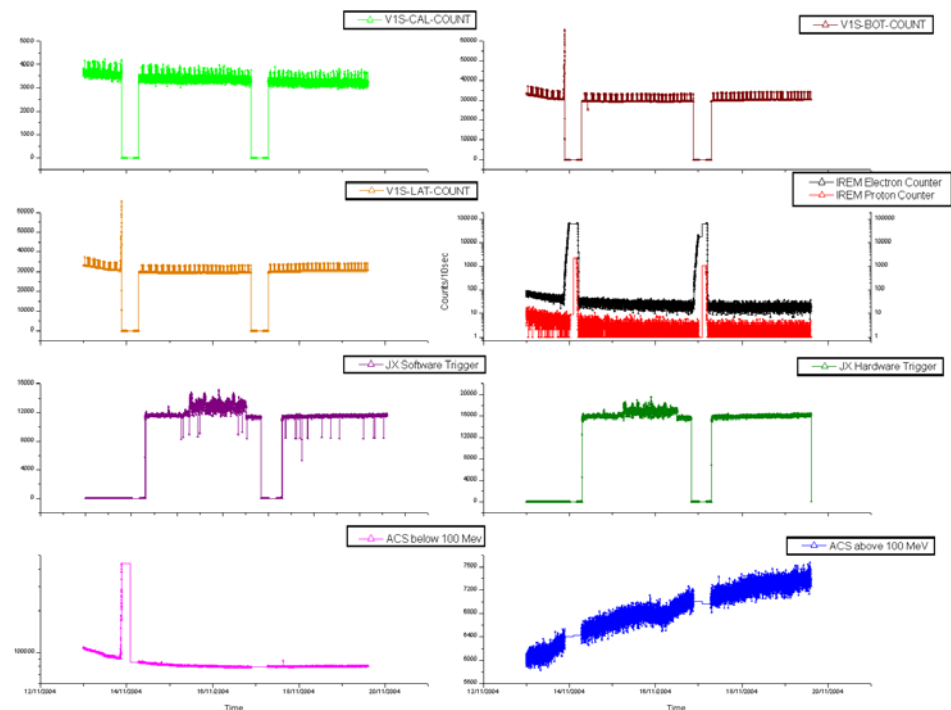
ISGRI Counters:



VETO vs Payloads Counters

The week was characterized by moderate to low solar activity. It can however be noticed that the end of revolution 254 still features a radiation background remaining from the high solar activity of last week.

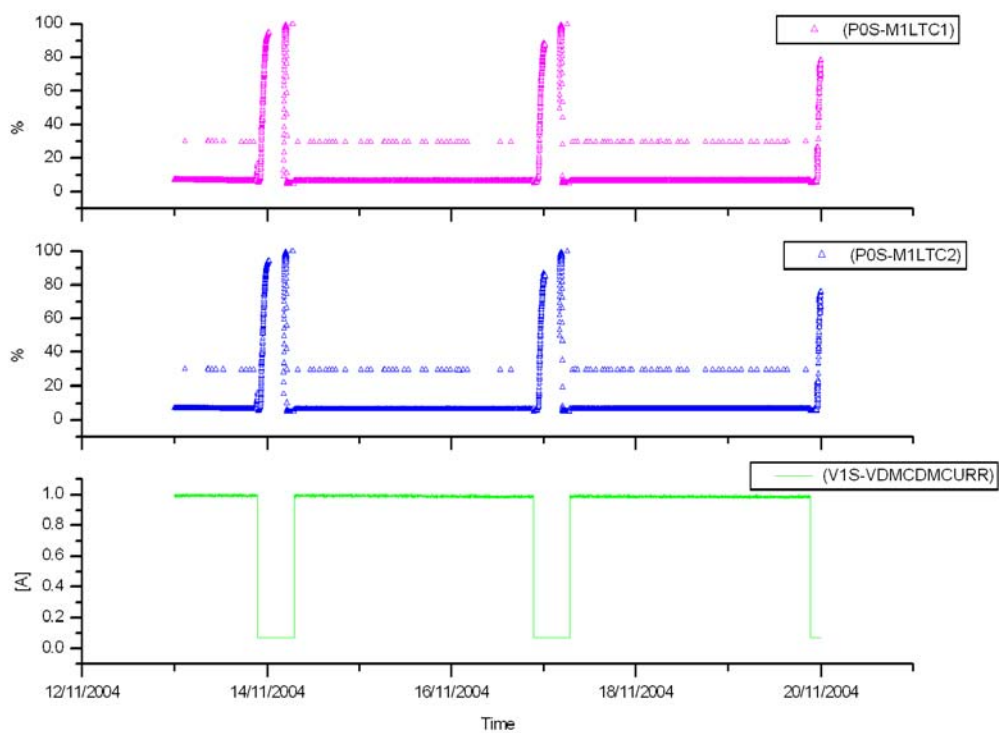
IBIS-VETO vs Payloads Counters Rev 254-256



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

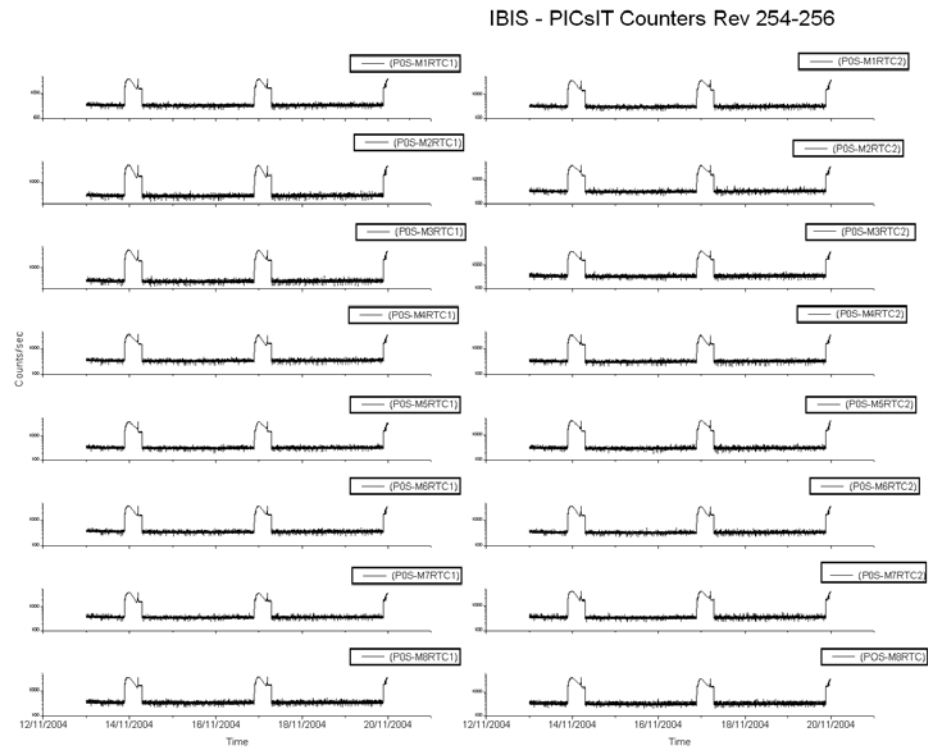
Veto Current:

IBIS-VETO Current & PICsIT dead times Rev 254-256



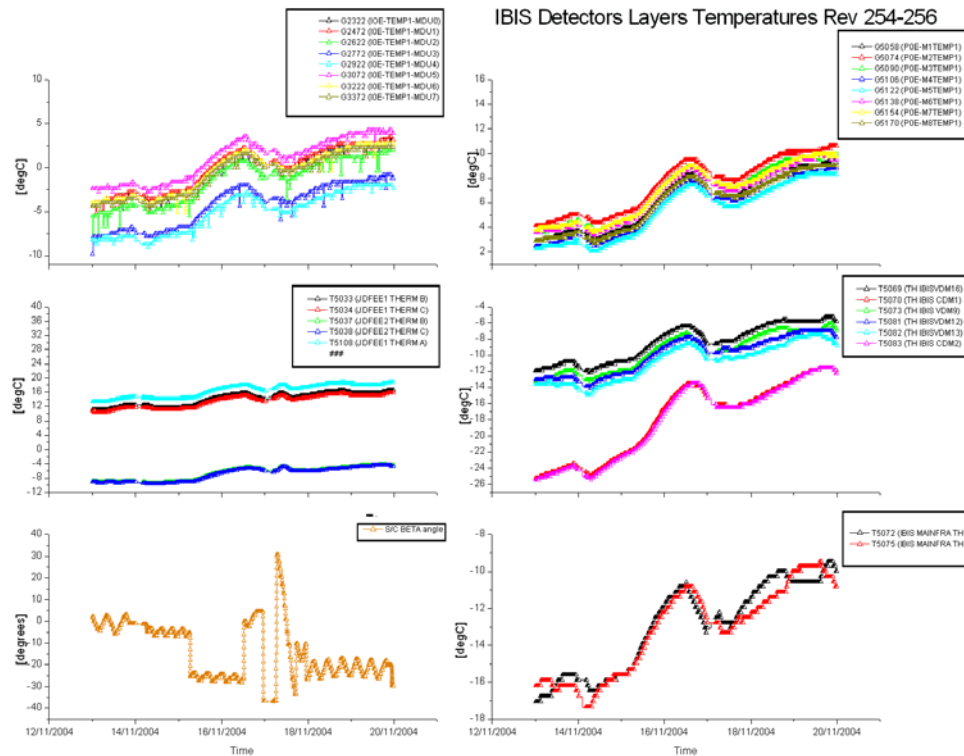
**sampling every 4 pkts (32 secs)

Picsit Counters:



**sampling every 4 pkts (32 secs)

IBIS Detectors Layers Temperatures



**sampling every 8 pkts (64 secs)

IBIS daily report

DoY 2004.318 (13/11/2004)

At 21:32z, an anticipated early Radiation Belts entry was reported, likely to be due to the modification on the Belts structure after the recent high solar activity. The entry preceded the time given in the BCPKT (21:38z) by a few minutes.

DoY 2004.319 (14/11/2004)

At 12:02Z the TM parameter G2056 (ISGRI Overflow of the noisy pixel address buffer in MCE4) was reported in OOL (SCC FAIL). No action was taken according to the Payload FDIR document.

DoY 2004.320 (15/11/2004)

Nothing to report.

DoY 2004.321 (16/11/2004)

At 04.00Z the IBIS histogram downloading process stopped. The anomaly condition was erroneously not flagged by the alarm parameter X7500, therefore according to OR_109 no action was taken.

At 06:05Z, considering the persistence of the anomaly condition on the Histograms not flagged by X7500 and after verification of the entry conditions of OR 109, the operator applied, properly, the suggested recovery (FCP_IBIS1_0312) forcing the downloading of the remaining histograms and set again IBIS in Standard Scientific mode at 06:06z.

The parameter X7500 has been updated accordingly, to correctly flag the anomaly condition reported above.

DoY 2004.322 (17/11/2004)

Nothing to report.

DoY 2004.323 (18/11/2004)

Nothing to report.

DoY 2004.324 (19/11/2004)

At 21:33Z, the VETO 28V PMT set by IASW (G8015) was continually toggling between nominal and warning high. Following the Payload Recovery document, as this happened inside Radiation Belts, no further action was taken. Investigations are on going at IBIS team in order to understand the origin of the behaviour.

8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

JEM-X count rates over the reporting period will be given in next week's report.

8.3.4.2 JEM-X Temperatures

JEM-X Detector and DFEE temperatures over the reporting period will be given in next week's report.

8.3.4.3 JEM-X Daily Report

2004-11-13 (DOY 318, Rev 254)

JEM-X1 remained in Safe mode due to high background radiation conditions.

2004-11-14 (DOY 319, Rev 254-255)

Nothing to report. JEM-X1 activation operations were executed nominally at the start of revolution 255.

2004-11-15 (DOY 320, Rev 255) to 2004-11-19 (DOY 324, Rev 256)

Nothing to report

8.3.5 OMC Operations

On DoY 318, at 08:59, OMC was commanded back into stand-by after being in SAFE for most of the week, due to the high radiation. The impact was pointings 02540044 through to 002540053 were lost.

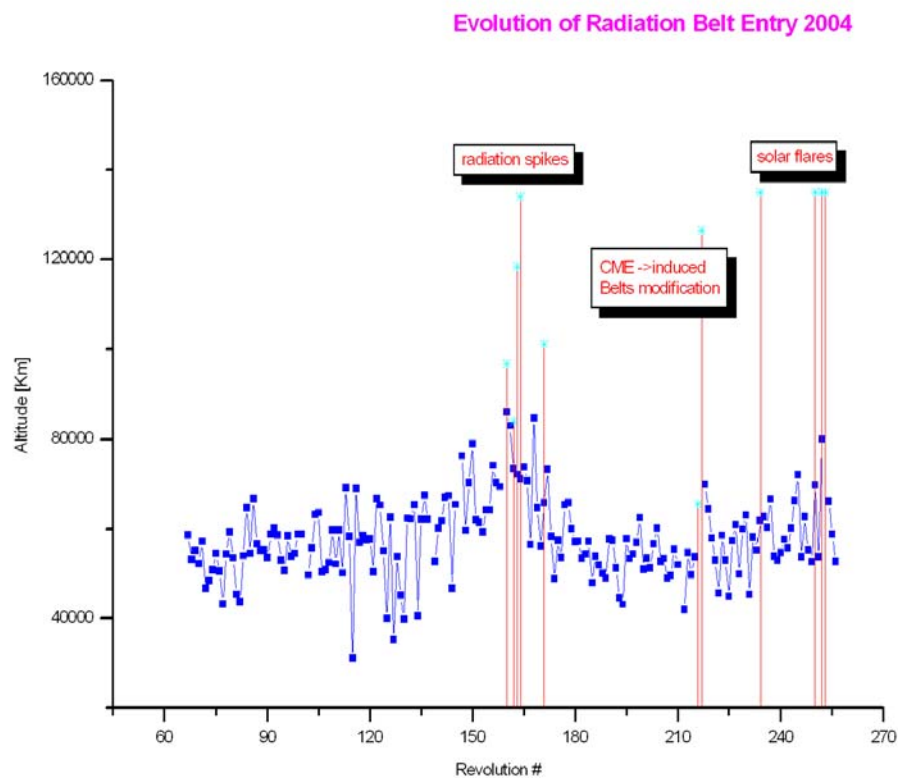
On DoY 321, at 00:51, due to TC problems after a ground station handover pointing 02550048 was lost.

On DoY 323, at 17:34, a dropped TM frame led to the loss of pointing 02560054.

On DoY 318 at 21:39:03, DoY 321 at 21:25:52 and DoY 324 at 21:14:51, OMC was switched by the Timeline to SAFE mode, at the nominal times.

8.3.6 IREM Operations

Radiation Belts Entry



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]
254	RAD_ENTR R 2004-11-13T21:38:42Z	2004-11-13 20:47:19	66153.3	2004-11-13 22:27:49	53639.85
255	RAD_EXIT R 2004-11-14T06:49:08Z	2004-11-14 05:10:39	<24373.4	2004-11-14 05:37:49	28428.5

255	RAD ENTR R 2004-11-16T21:25:32Z	2004-11-16 21:35:43	58808.3	2004-11-16 22:17:55	53053.42
256	RAD EXIT R 2004-11-17T06:35:40Z	2004-11-17 04:55:43	23220.2	2004-11-17 05:17:55	27552.464
256	RAD ENTR R 2004-11-19T21:14:38Z	2004-11-19 22:12:47	52715.1	2004-11-19 22:07:55	52993.57

Reference

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)

Radiation Spike

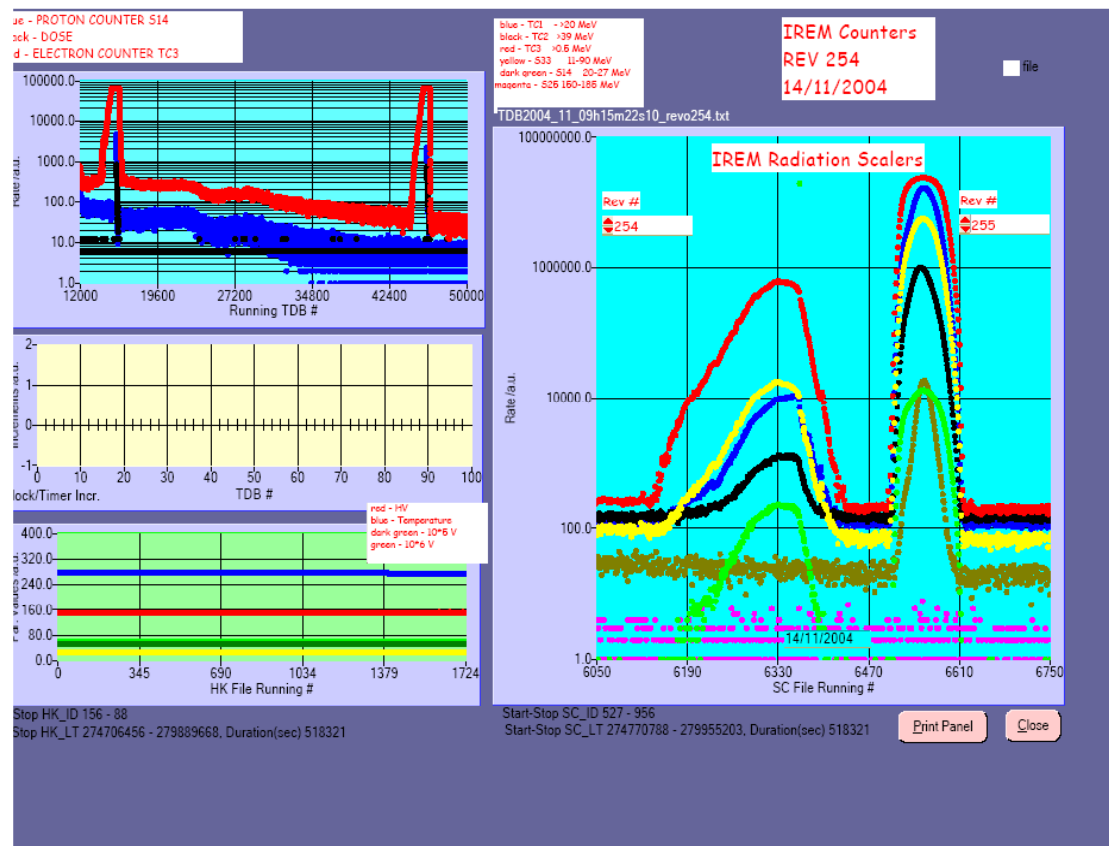
Proton Belts

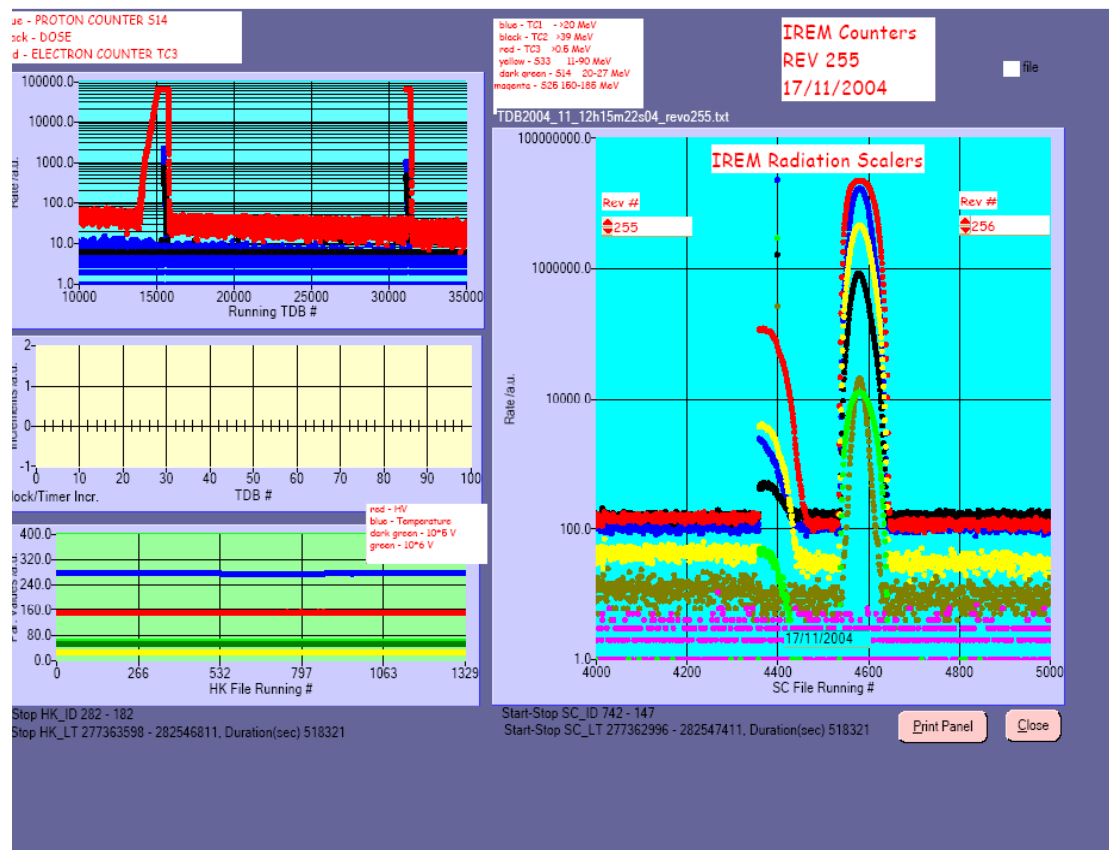
REV		Proton CUT-OFF Predicted Entry/Exit	ALT[Km] predicted
254	PROTON_RAD_ENTR	Not available in RadMon	-
255	PROTON_RAD_EXT	Not available in RadMon	-
255	PROTON_RAD_ENTR	Not available in RadMon	-
256	PROTON_RAD_EXT	Not available in RadMon	-
256	PROTON_RAD_ENTR	Not available in RadMon	-

IREM daily report

Nothing to report.

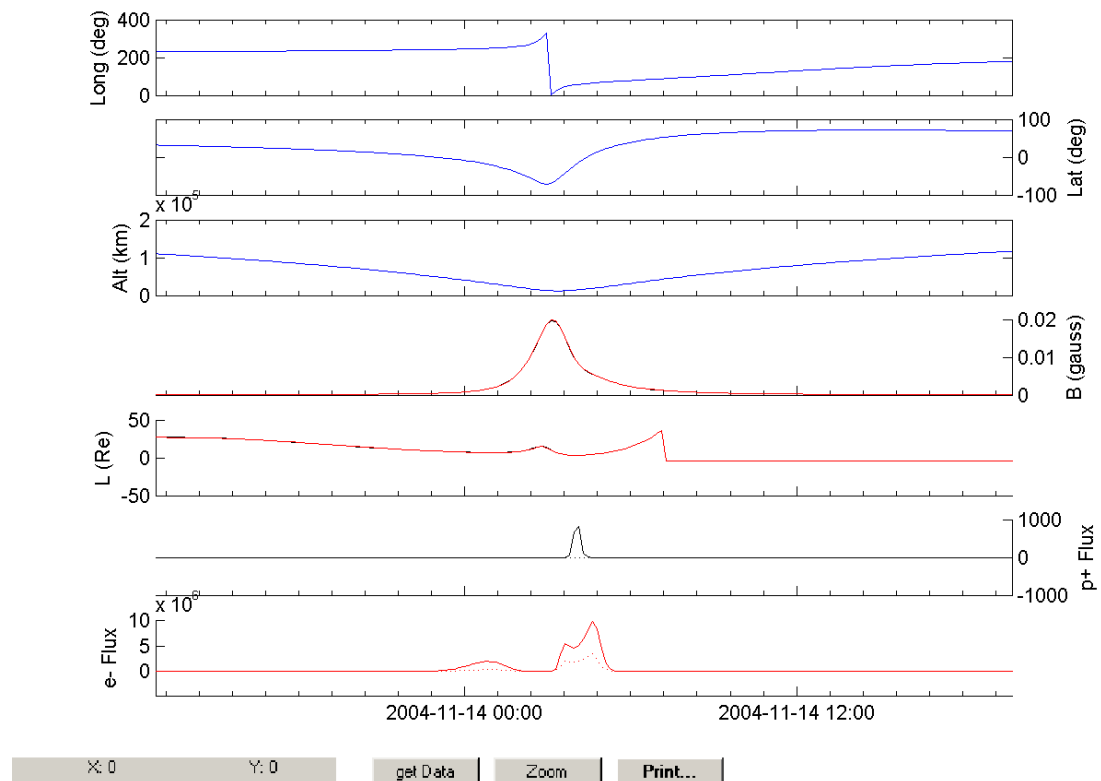
IREM radiation counters



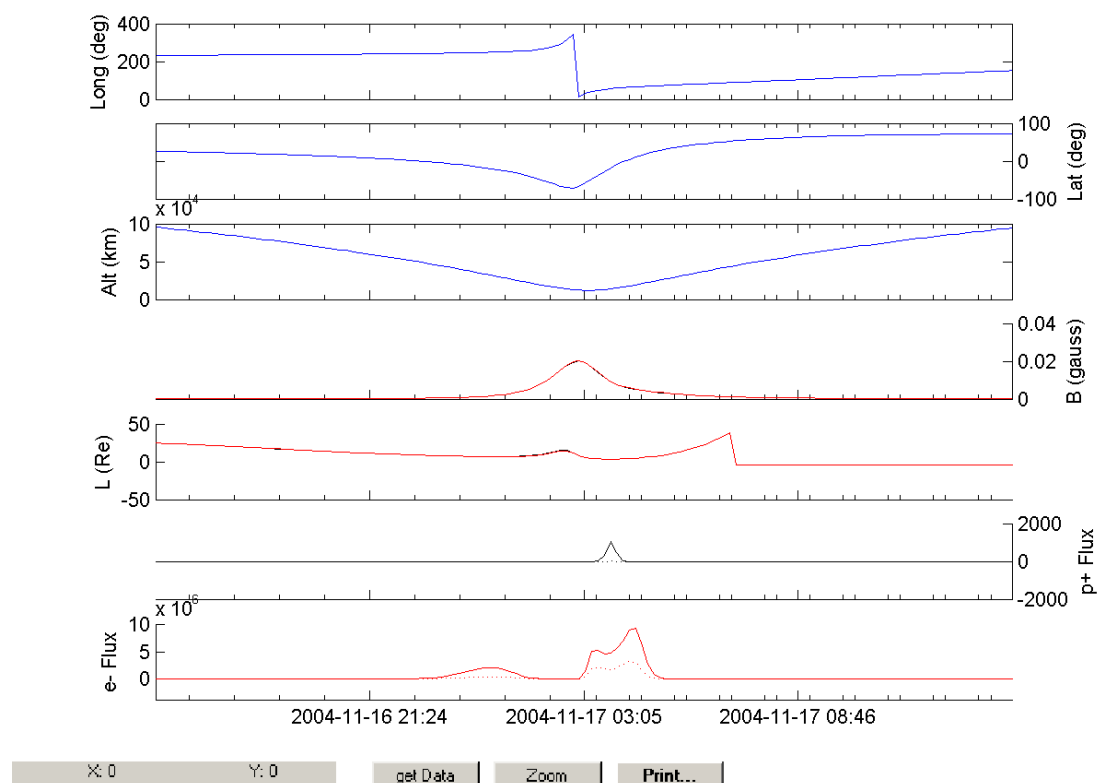


Due to problems on the TM distributor machine, IREM radiation counters data, as acquired by IREM ECOE, are not complete for the perigee passage of revolution 255.

IREM Predicted Radiation Belt Passages. Rev 254



Rev 255



SEC-GOES Observed Particles Fluxes.

