

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 114
Week 48
29.11.04
Routine Phase

Prepared by: M. Walker (OPS-OFO)

LIST OF CONTENTS

1	General.....	3
2	Summary of Activities.....	3
3	Satellite Status.....	3
3.1	Platform	3
3.1.1	AOCS	3
3.1.2	Power	3
3.1.3	Thermal.....	4
3.1.4	OBDH.....	4
3.1.5	RFS	4
3.2	Payload	4
3.2.1	SPI	4
3.2.2	IBIS	4
3.2.3	JEM-X	5
3.2.4	OMC.....	6
3.2.5	IREM	6
4	Ground Facilities.....	6
4.1	Mission Operations Centre.....	6
4.2	Ground Stations & Network.....	6
4.3	Science Ground Segment.....	6
4.3.1	ISOC	6
4.3.2	ISDC.....	7
5	Special Events.....	7
6	Anomalies.....	7
7	Future Milestones	8
8	Appendix.....	9
8.1	Overview of Revolutions	9
8.2	Consumables	9
8.2.1	Detailed Fuel Book-keeping.....	9
8.3	Detailed Satellite Information	10
8.3.1	AOCS Summary Operations Report 20/11/2004-26/11/2004	10
8.3.2	SPI Operations.....	12
8.3.3	IBIS Operations.....	13
8.3.4	JEM-X Operations.....	17
8.3.5	OMC Operations	19
8.3.6	IREM Operations	20

DISTRIBUTION LIST

Addressees	Copy	Addressees	Copy
D/OPS		ESA HQ	
G. Winters D/OPS	1	D. Southwood D/SCI	1
W. Frank OPS-O	1		
A. Smith OPS-OF	1	ESTEC	
J. F. Kaufeler OPS-G	1	J. Louet SCI-P	1
N. Bobrinsky OPS-ON	1	A. Gimenez-Canete SCI-S	1
R. Münch OPS-GF	1		
		ESTEC / PG	
M. Schmidt	1	G. Sarri	1
R. Southworth	1		
F. Di Marco	1		
F. Cordero	1		
M. Walker	1		
M. Rezazad	1		
P. Lippi	1	ESTEC/RSSD	
R. Lemme	1	M. Kessler SCI-SD	1
S. Fahmy	1	C. Winkler	1
SPACONs	1	A. Parmar	1
O. Bergogne	1	L. Hansson	1
I. Bayliss	1	E. Kuulkers	1
G. Di Girolamo	1		
F. Dreger	1		
G. Gienger	1	ESTEC/SCI-A	
S. Pallaschke	1	Nicola Rando	1
W. Hell	1		
K. Capelle	1	ISDC	
M. Butkovic	1	T. Courvoisier	1
D. Heinzer	1	R. Walter	1
G. Servoz	1	N. Mowlavi	1
Shift - Coord	1	ISDC Shift Team	1
Scheduling Office	1	D. Texier	1
T. Beck	1		
B. Smeds		ALENIA	
S. Scaglioni	1	M. Montagna	1
J. Wardill	1	F. Ravera	1
M. Unal	1		
		PI / Instrument Teams	
Redu		J. P. Roques – SPI	1
B. Demellenne	1	G. La Rosa – IBIS	1
		S. Brandt – JEM X	1
		E. De Miguel - OMC	1
		W. Hajdas – IREM	1
		JPL / Goldstone	
		D. Holmes	1
		J. Valencia	1

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 20.11.04 until 26.11.04 (both dates inclusive) and covers the revolutions 257, 258 & 259.

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); Abell 2256 (RA 17:03:58.3; DEC +78:38:30.9) amalgamated with an observation of NGC 6251 and NGC 7172 (RA 22:02:01.7; DEC -31:52:18.0) amalgamated with an observation of PKS 2155-304. The activities consisted of GPS observations as well as hexagonal and raster 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.

The Eclipse season started with the first eclipse passage on 23/11/2004, DoY 328. The eclipse passage was nominal from an AOCS point of view.

Four slews (3 OSL, 1 CSL) were missed from the Timeline during this period:

- three slew (2 OSL and 1 CSL) were missed in revolution 257-258 due to a problem on the FDS;
- One slew was missed in revolution 258 due to a power problem at Redu station.

The fuel consumption over the period between 19/11/2004 and 26/11/2004 was 0.219 kg. The remaining propellant is in the order of 166.4724 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.

Eclipse Season preparation took place on 22/11/2004.

- FCP_EPS_1271 Select Full Charge Rate C/13, BCR1.
- FCP_EPS_1272 Select Full Charge Rate C/13, BCR2.

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.

Eclipse Season preparation took place on 22/11/2004.

- FCP_DHS_1232 Load OBM Entries for Eclipse Season.

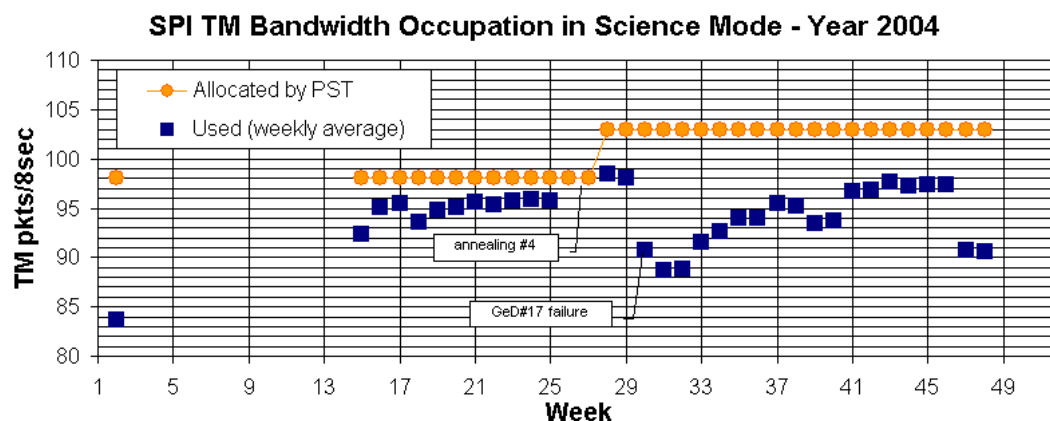
3.1.5 RFS

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 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 90.6 pkts/cycle average. The following plot shows the occupied bandwidth, since beginning of 2004.



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

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

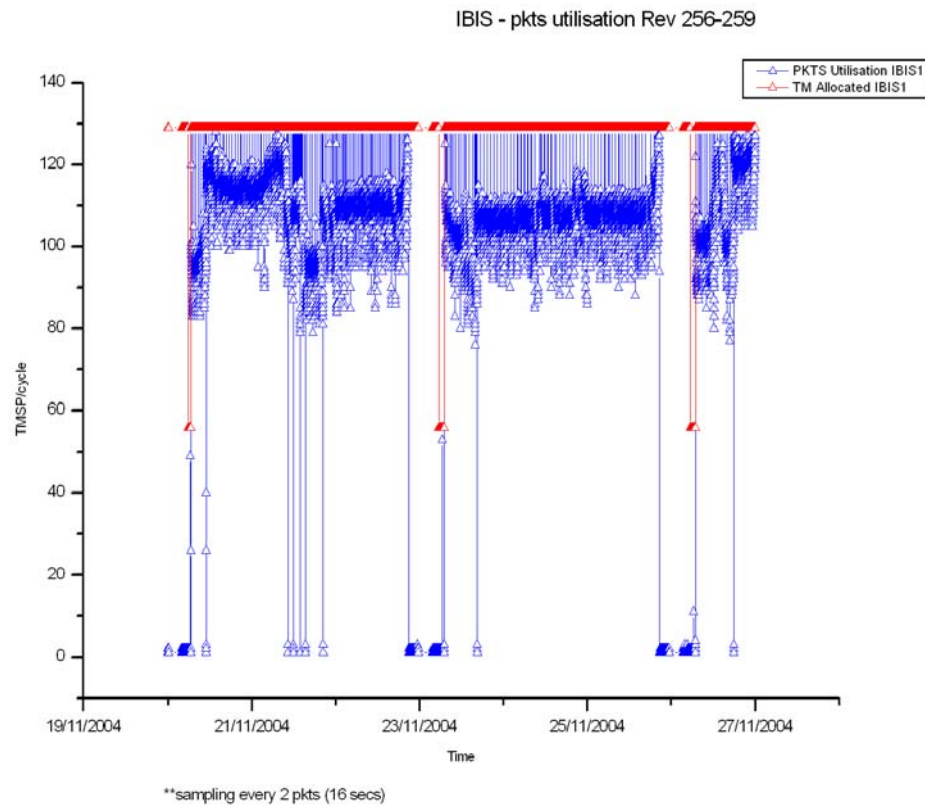
3.2.2 IBIS

The overall status of the unit is Nominal.

The week was characterised by low solar activity. Started the winter eclipse season on DoY 328 (23/11/04), no anomalous or unexpected behaviour reported.

During the reporting period the PST allocation to IBIS was 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 109.4 TMPS/cycle, up 4.7 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.

The JEM-X2 DFEE was erroneously switched on via the ED LECLEX01 in the Timeline at 2004-11-23T04:39:02Z (after the eclipse at the start of revolution 258). It was then switched back off at 2004-11-23T05:51:34Z.

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.

There were 182 OMC pointings executed nominally, 1 was lost.

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

3.2.5 IREM

The overall status of the unit is nominal.

Solar Activity

The observation period was characterised by low solar activity.

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 pointings were lost due ground station/link 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 TM gap from 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 complete up to revolution 264.

All revolutions up to 264 have been (re-)planned. The reaction-wheel-related problems reported last week, which had led to much re-planning by ISOC, have now been traced to the following circumstances: long slew, followed by GPS, and during

eclipse season. ISOC will bear this new constraint in mind during POS generation for the near future.

TSF complete up to revolution 259.

2. Observation status

ECS for revolutions 246, 247 and 248 have been received, ingested, and used to create corresponding OCS files for ISDC.

3. ISOC science data archive

ISOC are beginning to receive re-processed data from ISDC, which will be ingested shortly.

4. ISOC system

Version 10.6.2 is still operational. Testing of the ISOC system located in VILSPA has been completed, and a trial of parallel ESTEC/VILPSA operations is already taking place, even though the parallel operating should officially start only in the new year.

5. Problems

Nothing new to report.

4.3.2 ISDC

Status of ISDC observation processing on 29/11/2004:

- Latest Standard Analysis completed: observation 02200940001 (X0115+63, Revolution 238) on 29/11/2004
- Latest products archived: observation 02200100003 (SGR1806-20, Revolution 225) on 05/11/2004
- Latest observation products sent to the observer: observation 02200100003 (SGR1806-20, Revolutions 225) on 09/11/2004

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 325, at 00:00:00, there was an error message appeared from idda: EV:TCONmainRT/idda/ERROR/Software HFACTMrecord::store.link tom archive with stream 32504 not present, the analyst is investigating.
- On DoY 327, at 14:14, there was an error sending data to the isds, by 14:20, the problem seemed to clear itself. At 14:26, the link isds-ISDC disconnected, at 14:34, it was reconnected, at 14:49, till 15:05 it was disconnected again, and again from 15:11 till 15:17. There was no impact.

- On DoY 328, at 04:39, Jemx-2 DFEE was inadvertently switched on by the timeline. It was later switched off. There was no impact.
- At 05:04, the update of Slew 02580002 failed causing the loss of the slew. The Timeline was manually recovered to attitude 02580003. No science pointings were lost.
- At 06:43, the swap-space on imcb dropped to 0. It was stopped and restarted curing the problem. There was no impact.
- At 09:10, there was a drop in the data link to isds. At 09:58, the ifrd was stopped and restarted. At 10:02, the isds & ifrd tasks were stopped and restarted. At 10:10, the isds machine was rebooted, and the application on isds-a restarted. At 10:26, TM was flowing once more after the replacement of a faulty cable. There was no impact.
- On DoY 329, at 05:58, there were Data gaps in the VC0 TM from Redu. At this time bad frames arrived from the station. CCC reported seeing Reed Solomon alarms. There was no impact.
- At 09:55, there was another data gap on VC0 TM from Redu, this time an AOCS command was missed, leading to the loss of pointing 02580036.
- At 14:07, the TM link between idda and isds was broken due to the ongoing Relay lan maintenance. The data link was eventually restored at 16:36.
- On DoY 330, at 15:22, the link with isdc dropped during a firewall reboot. Data flow was restored at 16:11.
- At 22:30, sun 124 went yellow, with /home1/sun124 disk 99% full. At 23:50 the machine was rebooted.
- On DoY 331, at 13:15 to 13:33, the TC link with Redu was taken down for maintenance. There was no impact.

The following new anomaly report was entered into the ARTS system.

AR id	Date Created	Subject	Segment	Status
INT_SC-102	29/11/2004	IBIS\VETO TC rejected during the execution of VETO patch3.2	Spacecraft	Open
INT-2676	23/11/2004	Error sending data to ISDC	CCC	Closed
INT-2677	23/11/2004	JEM-X2 Erroneously Activated after Eclipse.	IMCS	Closed

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 257

The observations in revolution 257 began with 6 pointings of a GPS lasting ~3.6 hours, followed by a hexagonal dithering observation of Cygnus X-1 (RA 19:58:21.68; DEC +35:12:05.7) lasting ~22.2 hours. The observation continued with two pointings of a GPS lasting ~1.2 hours, followed by a calibration activity on Cygnus X-1 lasting ~2.7 hours and then again 6 pointings of a GPS lasting ~4.3 hours.

A group of raster dithering parallel observations of the diffuse source Abell 2256 (RA 17:03:58.3; DEC +78:38:30.9) and point source NGC 6251 were then performed for the remaining ~22 hours of observation time.

Revolution 258

The observations in revolution 258 started with 11 pointings of a GPS lasting in total ~6.7 hours, followed by a raster dithering parallel observation of the point source NGC 7172 (RA 22:02:01.7; DEC -31:52:18.0) and point source PKS 2155-304 for the remaining ~48.1 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

2004-11-06T16:17:03.000Z	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.
2004-11-20T04:49:06.000Z	166.6779	F	Automatic TM processing.
2004-11-21T14:49:33.000Z	166.6089	F	Automatic TM processing.
2004-11-23T05:16:09.000Z	166.5339	F	Automatic TM processing.
2004-11-24T14:51:41.000Z	166.5045	F	Automatic TM processing.
2004-11-25T23:14:00.000Z	166.4824	F	Automatic TM processing.
2004-11-26T05:15:05.000Z	166.4724	F	Automatic TM processing.

This report was generated Fri Nov 26 08:00:23 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 20/11/2004-26/11/2004

AOCS operations were executed from the Automatic Timeline.

During this period, 104 Open Loop Slews, 99 Closed Loop Slews and 7 Momentum Bias were scheduled. 4 slews were missed. This is equivalent to a ~2 %.

The AOCS eclipse operations were completely nominal. For each revolution, the Eclipse Timers and the Time-Tagged sequence to re-enable the IMU Auto Switch-Off function of the ACC were loaded from the Timeline and the pre-eclipse IMU health checks were performed at the planned times. Some information regarding the eclipse times and IMU usage up to this stage of the eclipse season are provided below:

AOCS Eclipse Times																Summer 2004
Date	LOS	AOS	ACC Eclipse Imminent	Eclipse Start						Eclipse End						Eclipse Duration
				ACC	FDE	FCE	Penumbra	FSS Sun Out	Umbra	Umbra	FSS Sun In	Penumbra	FDE/FCE	ACC		
2004-11-23	23:46:27	03:45:40	03:06:49	03:48:50	03:58:42	03:59:26	04:06:29	04:09:59	04:12:20	04:14:57	04:17:09	04:21:06	04:26:02	04:30:49	0:14:37	

IMU Usage during Eclipse Season							Summer 2004
IMU On	IMU Off	From Health Check		From Auto Calibration	On Time	Accumulated On Time	
		Noise Roll [as/s]	Drift Roll [as/s]	Drift Roll [as/s]			
2004-11-22 20:56:00	2004-11-23 04:33:06	0.2117	0.1986	0.2548	7:37:06	7:37:06	

20/11/04 (Day of Year 325, Revolution 257)

PP Filter threshold exceeded: at AOS TM (03:55z) the hard limit of the Ping-Pong Filter threshold was found exceeded. Since 03:11z 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 03:11:57z. 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 7.65 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. The ACC invalidated the STR use and permanently put the yaw control on the IMU. At 04:30z the STR was put back in the control loop by ground as part of the recovery procedure. The IMU automatically switched off (04:30:47z) and a new guide star was picked and tracked by the STR. No slews were affected; the only impact was that the AOS checks needed to be performed with some delay.

Flickering of the pointing-bit due to pitch error: At 15:26:40Z an undetected false event on the star tracker caused a jump (~ 42 arcsec) in the position of the CCD image of the guide star. The error in pitch was more than the OTF threshold for this axis and resulted in the flickering of the pointing-bit. This was not seen at BCP level. The magnitude 8.3-guide star was picked by the ACC after an open loop slew at CCD location [9955, -709].

21/11/04 (Day of Year 326, Revolution 257)

Flickering of the Pointing-Bit at the end of open loop slew due to Roll Error: At the end of open loop slew 02570058 the error in roll with respect to the Sun-Steering-Law assumed roll angle 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 02580057. 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.

22/11/04 (Day of Year 327, Revolution 257)

Nothing to report.

23/11/04 (Day of Year 328, Revolution 257-258)

Slews missed from the Timeline due to problem on the FDS: Due to a problem in the FDS (delay of the TPF generation process), the slew 02580002 (OSL) was missed from the Timeline. A manual recovery was then performed to the attitude of PID 02580003 followed by the corrective close loop slew to the attitude of PID 02580004. The next slew (02580005) was manually updated and executed from the Timeline.

24/11/04 (Day of Year 329, Revolution 258)

Flickering of the Pointing-Bit at the end of open loop slew due to Roll Error: At the end of open loop slew 02580035 the error in roll with respect to the Sun-Steering-Law assumed roll angle was 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 02580034. 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.

Slew missed from the Timeline due to power problem in REDU station: At 09:55z, a power problem in the Redu ground station (AR#INT-2678) caused an interruption in the TM\TC links. The problem affected the sequence for slew 02580036 (failing of the PTV) and resulted in the missing of the slew from the Timeline. A manual slew was then performed to the attitude of PID 02580036. The next slew (02580037) was manually updated and executed from the Timeline.

Flickering of the pointing-bit due to pitch & yaw error: At 14:09:28Z an undetected false event on the star tracker caused a jump (~ 154 arcsec in pitch, 93 arcsec in yaw) in the position of the CCD image of the guide star. The error in pitch and yaw was more than the OTF threshold for these axes and resulted in the flickering

of the pointing-bit. This was not seen at BCP level. The magnitude 8.5-guide star was picked by the ACC after an open loop slew at CCD location [1347, -3994].

25/11/04 (Day of Year 330, Revolution 258)

Nothing to report.

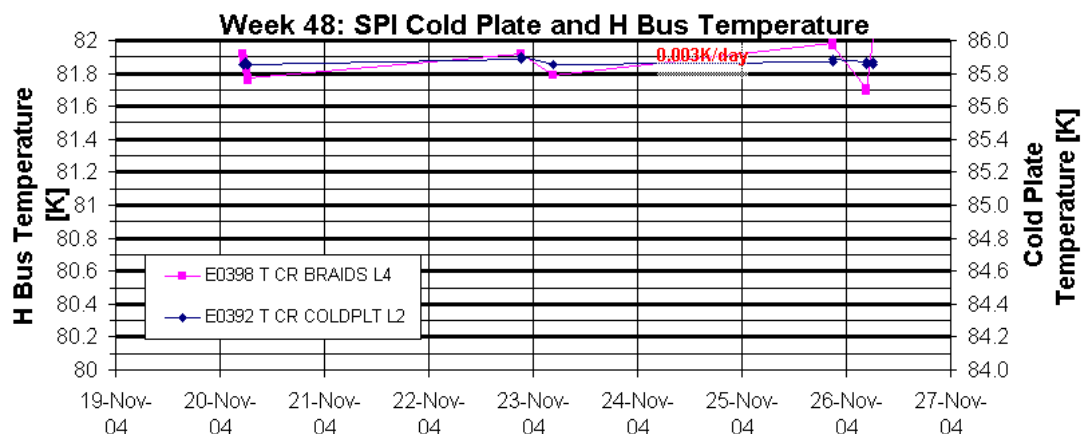
26/11/04 (Day of Year 331, Revolution 258-259)

Nothing to report.

8.3.2 SPI Operations

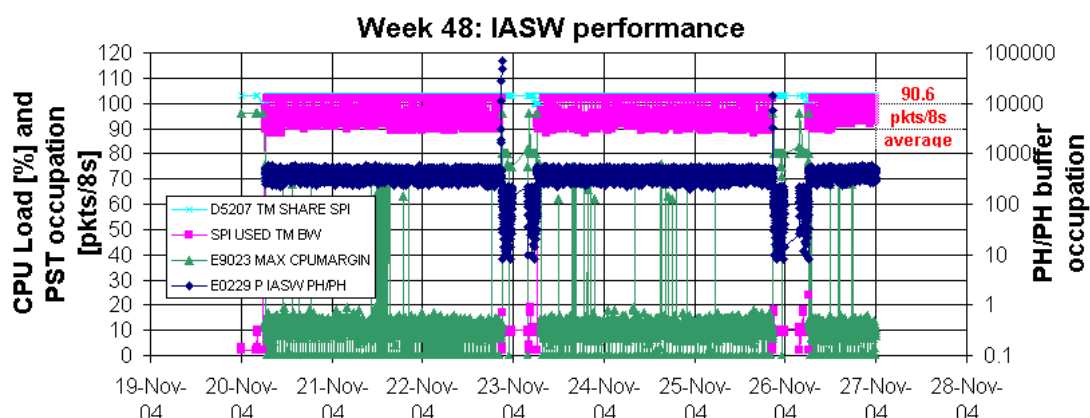
Cryo-cooler / Detector Cold-Plate:

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.



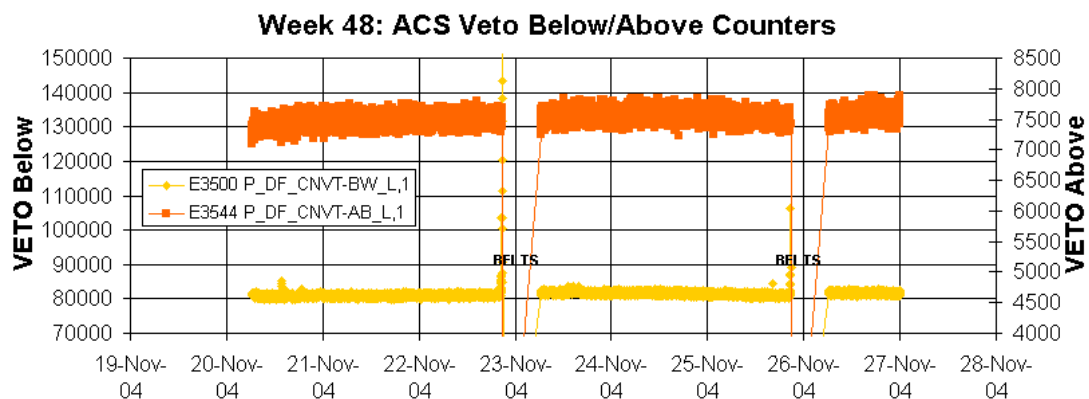
IASW/DPE:

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.

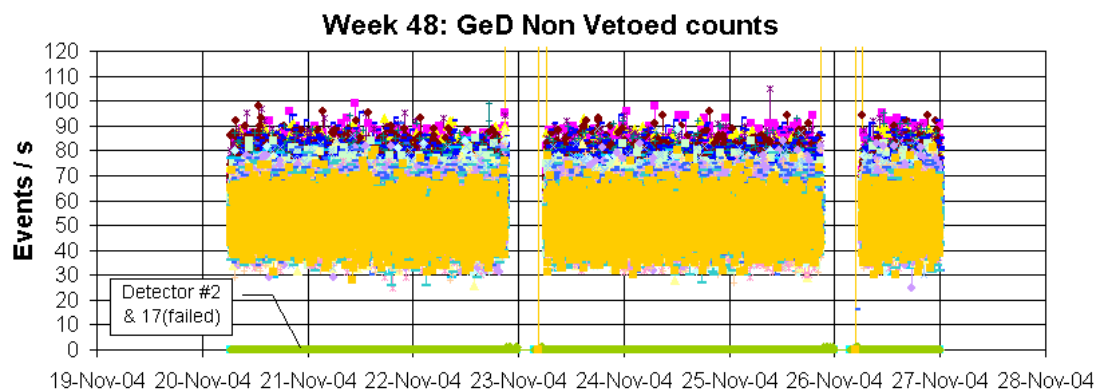


AFEE:

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 plot showing the AFEE dc output signals during the reporting period is not available.

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:

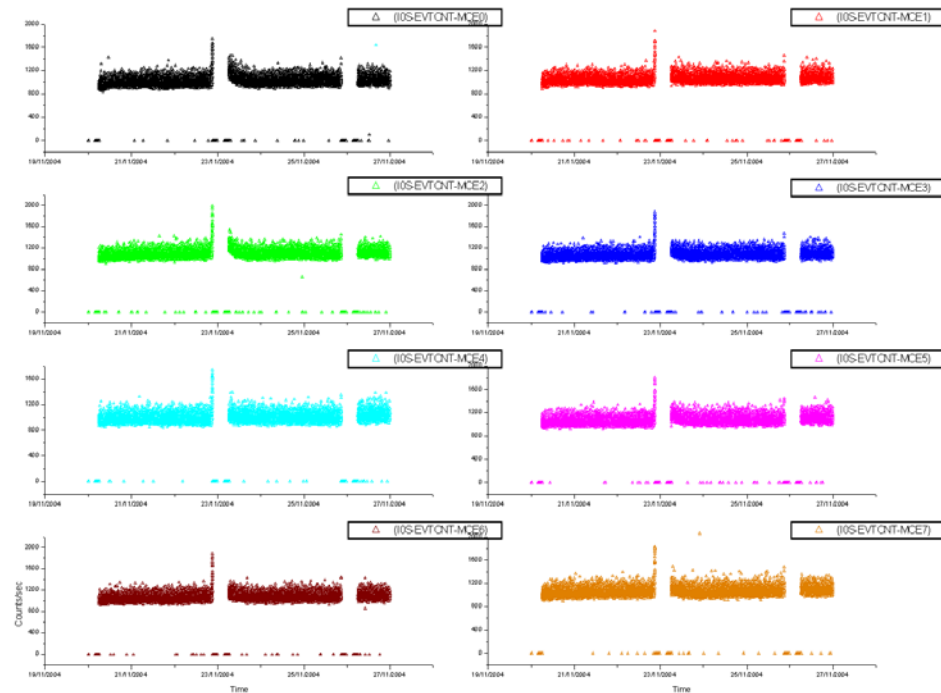
The performance of the unit is nominal, though the malfunction of the channel rates blanking reproduced itself also this week (see AR INT_SC-90 for a detailed description of the anomaly). An IASW patch is under delivery from Cessr to enable the Sci HK TM downlink inside the radiation belts. This would 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 plot showing the PSD channel rates during the reporting period is not available.

8.3.3 IBIS Operations

IBIS Event Counters Plots.

ISGRI Counters:

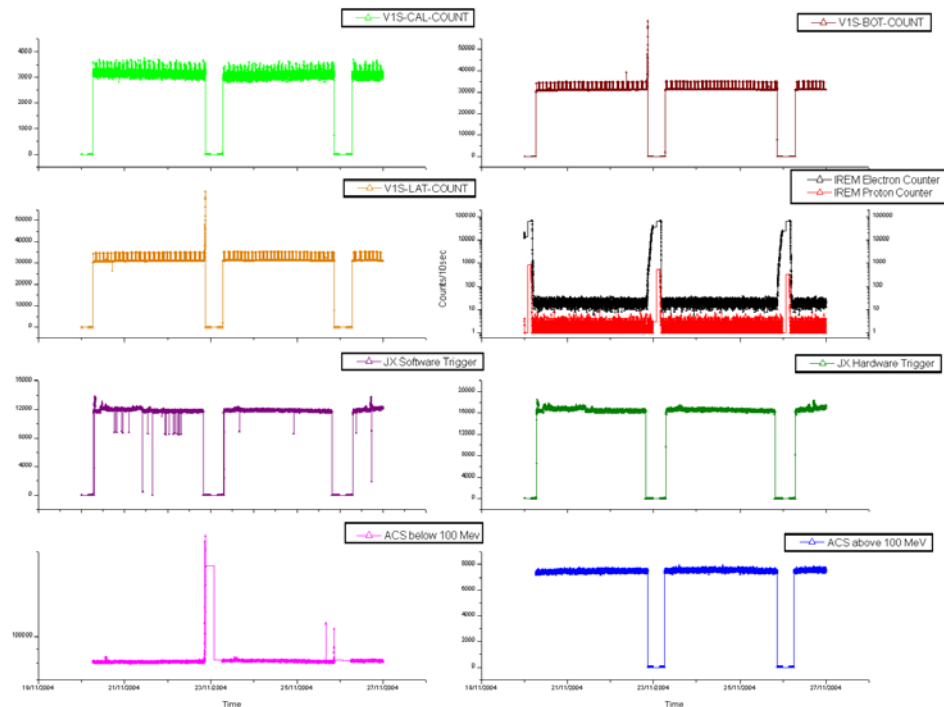
IBIS - ISGRI Counters Rev 256-259



**sampling every 4 pkts (32 secs)

VETO vs Payloads Counters

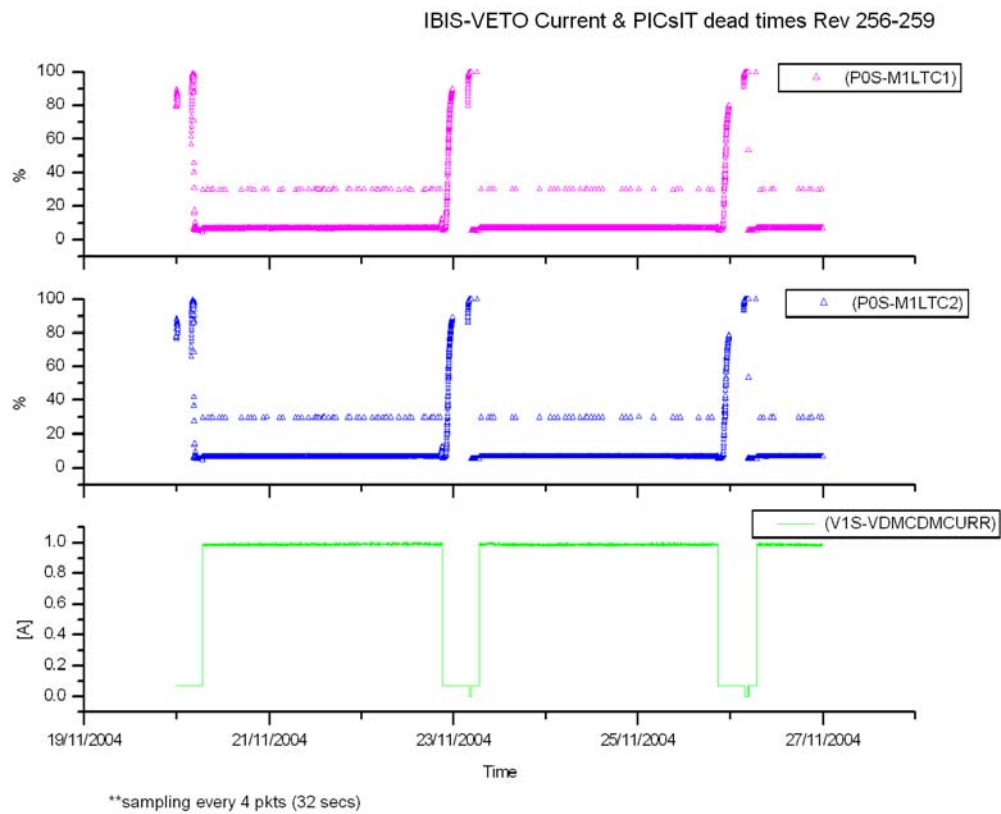
IBIS-VETO vs Payloads Counters Rev 256-259



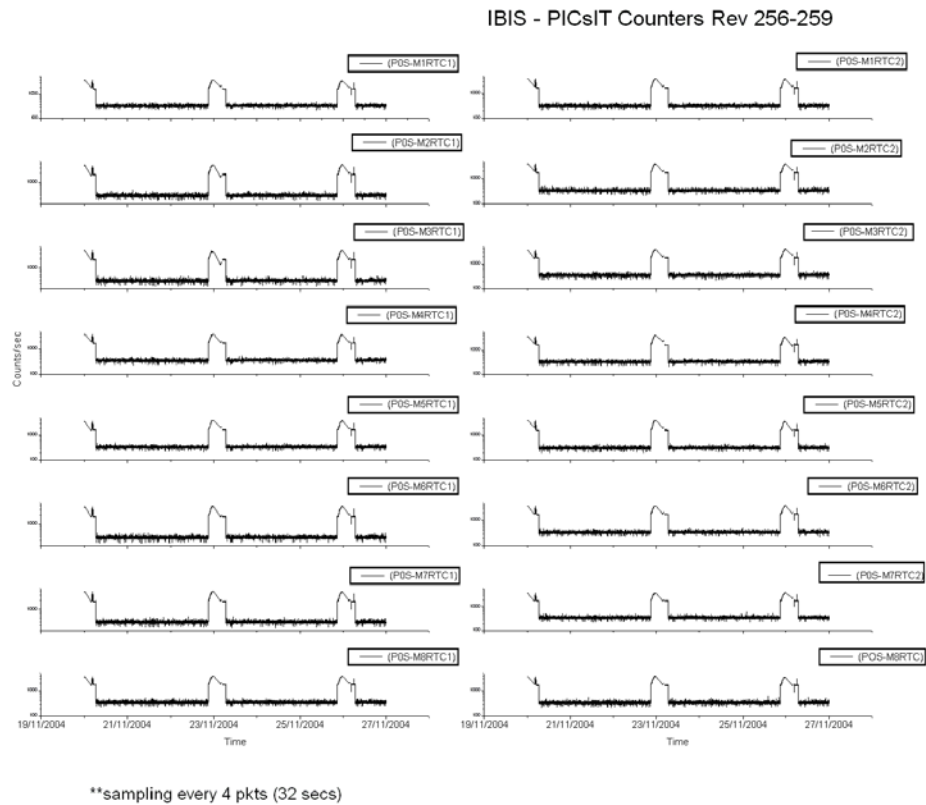
**with the exception of IREM counters (counts/10sec), all the plots are reporting counts/sec
 sampling every 5 pkts (40 sec)

The week was characterised by low solar activity.

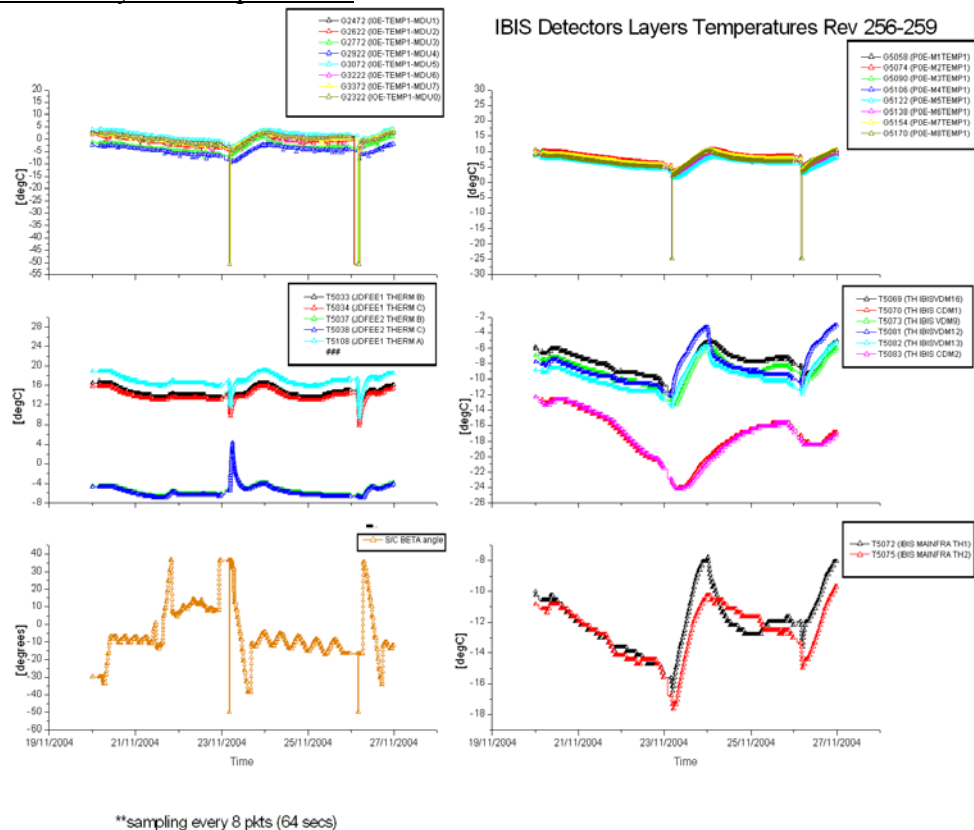
Veto Current:



Picsit Counters:



IBIS Detectors Layers Temperatures



IBIS daily report

DoY 2004.325 (20/11/2004)

At 05:50Z, the VETO 28V PMT set by IASW (G8015) was found to be OOL high. It returned within in limits at 06:37Z.

According to the Payload Recovery document, as this happened inside the Belts (as fixed in the timeline) and before the activation of the VETO HVs, no further action was taken. Investigations are on going at IBIS team to understand the origin of the behaviour.

DoY 2004.326 (21/11/2004)

At 13:40Z the IBIS histograms downloading process stopped. OR_109 was started at 13:55Z, and at 13:58Z IBIS was back in Scientific standard mode.

At 14:30Z IBIS histograms still did not appear normal. Due to timeline constraints (Reaction Wheel Bias on-going), no action was taken.

At 16:22Z IBIS histograms downloading process was working properly again. The stop of the Histograms generation process is due to the setting of the PDUR=850 during PID 02570041-50. ISOC agreed with IBIS team to keep the setting of the unit as for the nominal observation (Histogram Integration Time=1750 sec) and accepting the missing generation of the Histograms.

DoY 2004.327 (22/11/2004)

Nothing to report.

DoY 2004.328 (23/11/2004)

The first eclipse of the winter season 2004 commenced on this day, the peripheral context tables were correctly saved by the on-board automatism and the reconfiguration of the unit post-eclipse was nominal. The temperatures of the peripherals after Eclipse did not show any anomalous or unexpected behaviour. The uplink of the VETO patch was executed manually at 5:44z.

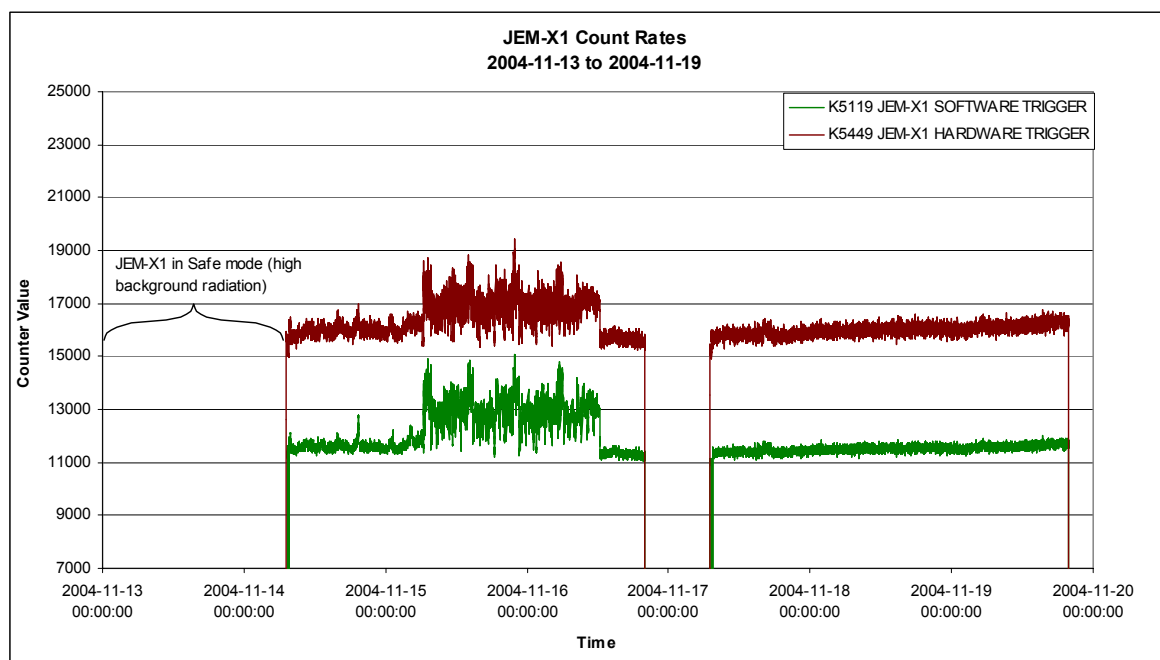
DoY 2004.329 (24/11/2004) to 2004.331 (26/11/2004)

Nothing to report.

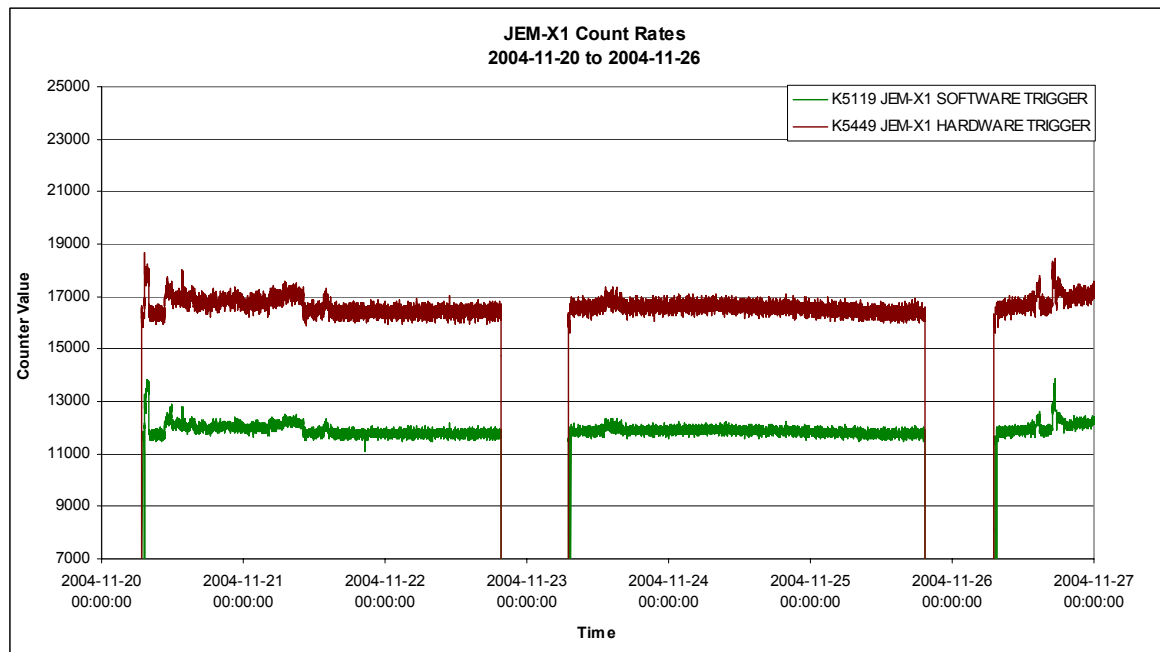
8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

JEM-X count rates over the previous and current reporting periods are displayed in the following graphs¹.

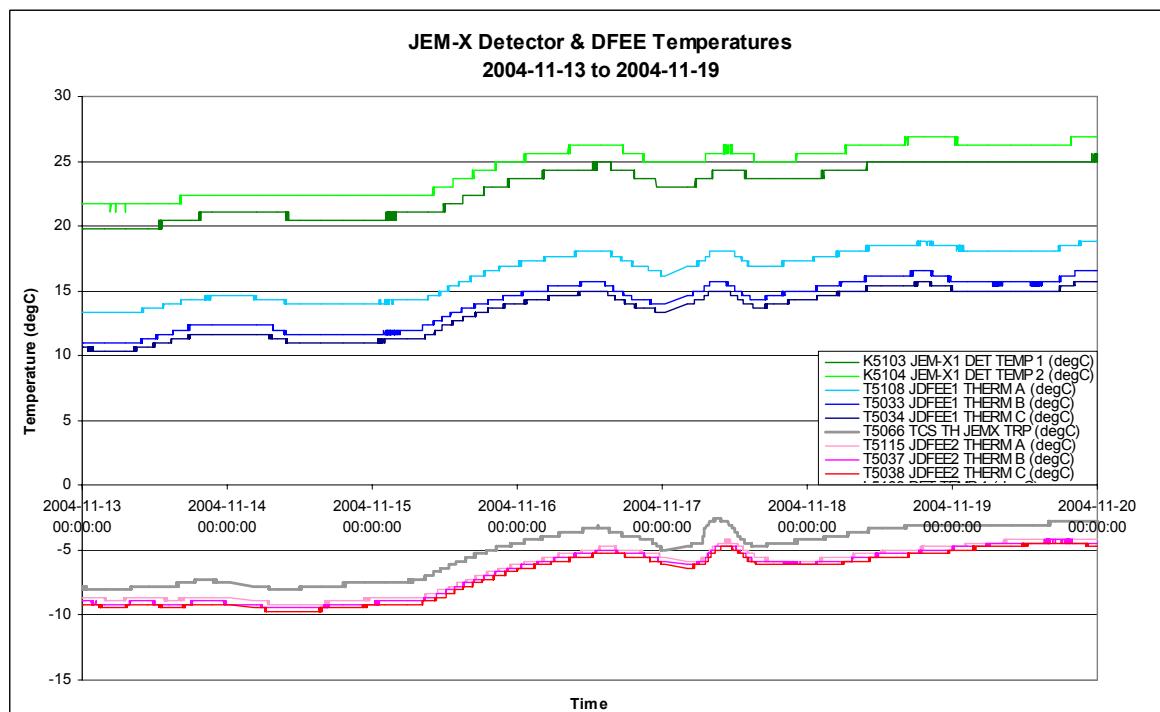


¹ Data sampled (1 frame in 4) and smoothed to remove spikes in S/W Trigger due to flushing of buffer after slews.

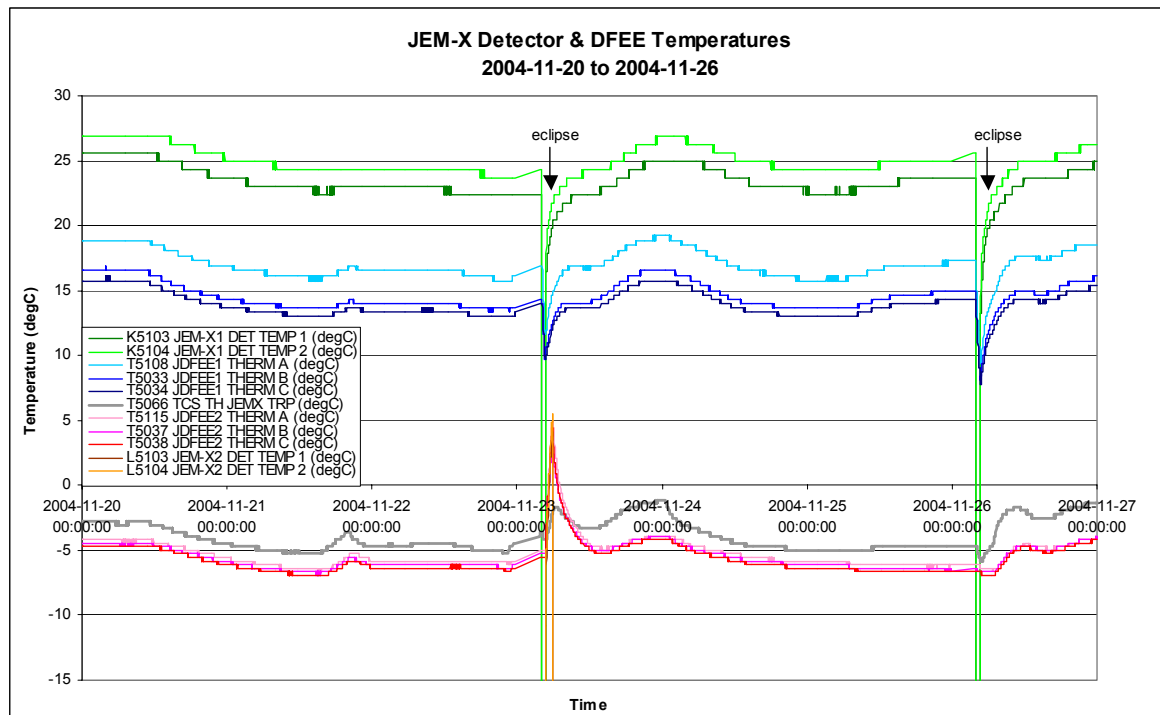


8.3.4.2 JEM-X Temperatures

JEM-X Detector and DFEE temperatures, along with the temperature on the detector bench between the two units, over the previous and current reporting periods are displayed in the following graphs².



² Data sampled (1 frame in 8)



8.3.4.3 JEM-X Daily Report

2004-11-20 (DOY 325, Rev 256-257) to 2004-11-22 (DOY 327, Rev 257)

Nothing to report

2004-11-23 (DOY 328, Rev 257-258)

Following the first eclipse in this (5th) eclipse season, the JEM-X2 DFEE was switched on at 04:39:02Z due to the erroneous inclusion of the ED LECLEX01 in the Timeline. This is recorded in Anomaly Report INT-2677. At 05:41:40Z FCP_JEM2_9010 was started to switch the JEM-X2 DFEE back off again and at 05:51:34Z the JEM-X2 DFEE was switched off. The Timeline configuration was corrected for future revolutions to exclude the ED LECLEX01.

2004-11-24 (DOY 329, Rev 258) to 2004-11-26 (DOY 331, Rev 258-259)

Nothing to report

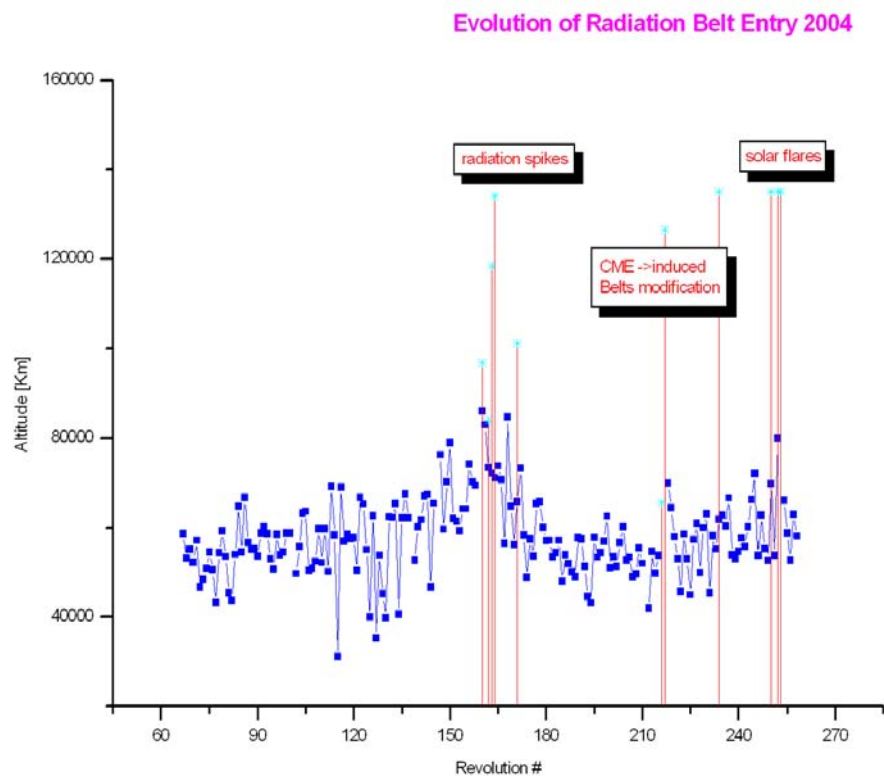
8.3.5 OMC Operations

On DoY 329, At 09:55, a data gap in the TM, caused an AOCS command to be missed, leading to the loss of pointing 02580036.

On DoY 327 at 21:04:12 and DoY 330 at 20:52:05, 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]
257	RAD_EXIT R 2004-11-20T06:24:29Z	2004-11-20 05:08:15	26527.6	2004-11-20 05:10:49	28226.65
257	RAD_ENTR R 2004-11-22T21:03:58Z	2004-11-22 20:39:51	62951.5	2004-11-22 21:50:24	53977.23
258	RAD_EXIT R 2004-11-23T06:14:14Z	2004-11-23 04:36:07	<24870.7	2004-11-23 05:00:24	28051.79
258	RAD_ENTR R 2004-11-25T20:51:47Z	2004-11-25 21:01:03	>58076.7	2004-11-25 21:40:24	53957.07
259	RAD_EXIT R 2004-11-26T06:02:52Z	2004-11-26 04:47:11	28175.2	2004-11-26 04:50:24	27989.08

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
257	PROTON_RAD_EXT	Not available in RadMon
257	PROTON_RAD_ENTR	Not available in RadMon

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

As for the 2 previous weeks, the flux of protons >8MEV computed by RadMon, did not exceed the threshold. Therefore, no predicted proton cut-off is provided for this week either.

IREM daily report

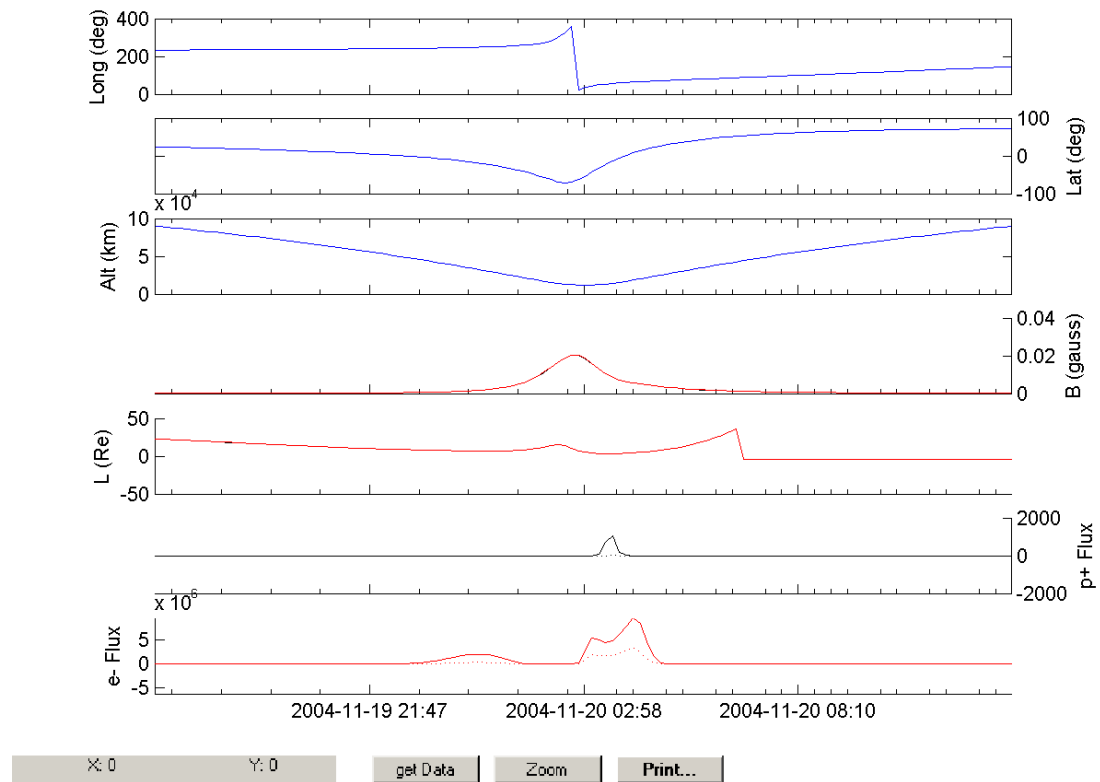
Nothing to report.

IREM radiation counters

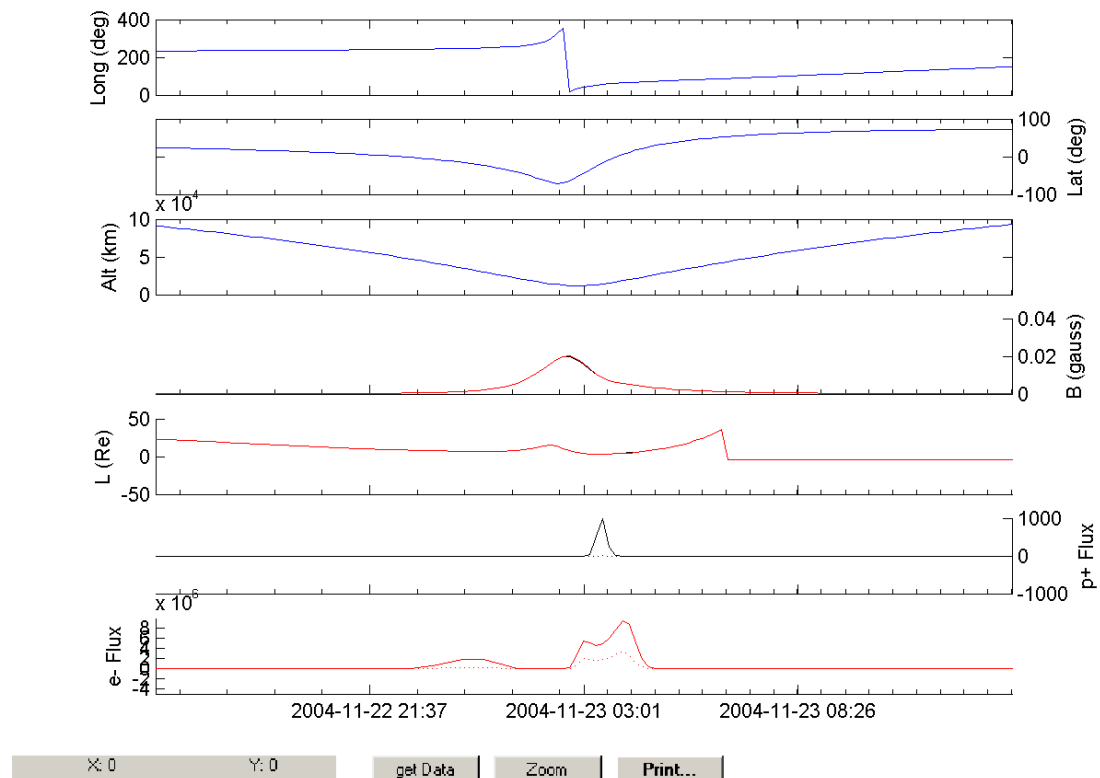
Due to problems on the TM distributor machine, IREM radiation counters data, acquired by IREM ECOE, are not available for the perigee passages of revolutions 256, 257 and 258. Moreover due to problems on the network, the telemetry link to ISDS was interrupted on the 24th of November (revolution 258).

IREM Predicted Radiation Belt Passages.

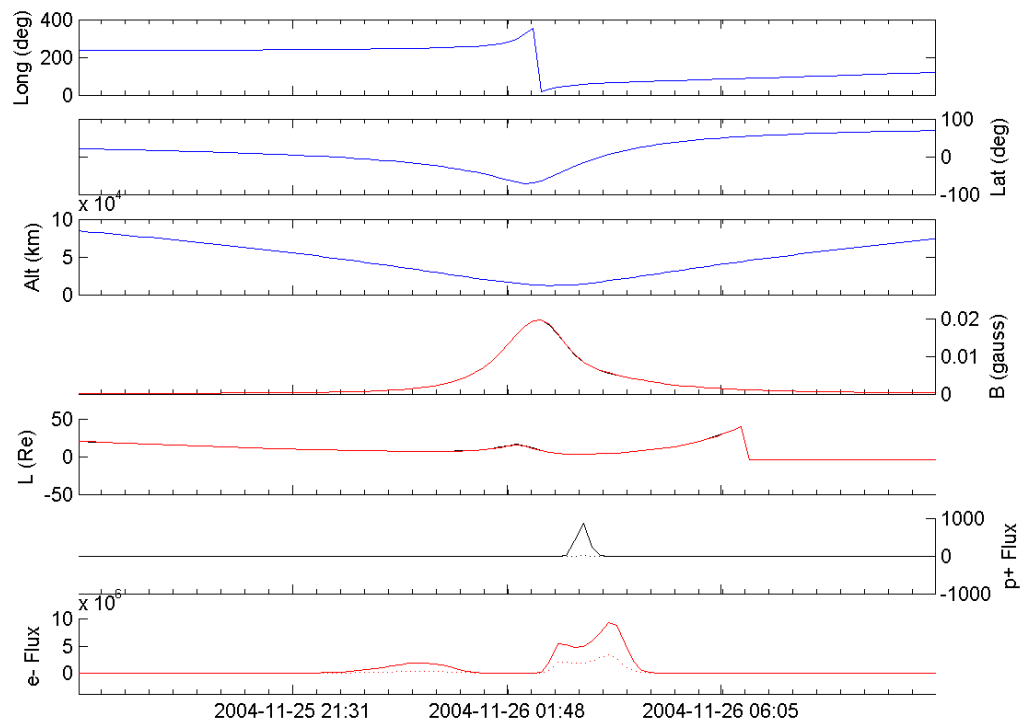
Rev 256



Rev 257



Rev 258



SEC-GOES Observed Particles Fluxes.

