

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-OPS-OF
No. 130
Week 11
21.03.05
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 12.03.05 until 18.03.05 (both dates inclusive) and covers the revolutions 295 & 296.

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 GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0); the galactic bulge region (RA 17:45:36.00; DEC -28:55:60.0); the Galactic Centre; GRO J1655-40 (RA 16:54:0.14; DEC -39:50:44.9) and a Galactic Center field (RA 17:45:40.00; DEC -29:00:28.0). The activities consisted of raster and hexagonal dithering as well as Galactic Latitude Scan 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.

2 slews (both CSLs) were missed from the Timeline during this period due a problem at DSS16.

The fuel consumption over the period between 10/03/2005 and 17/03/2005 was 0.0933 kg. The remaining propellant is in the order of 162.3375 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

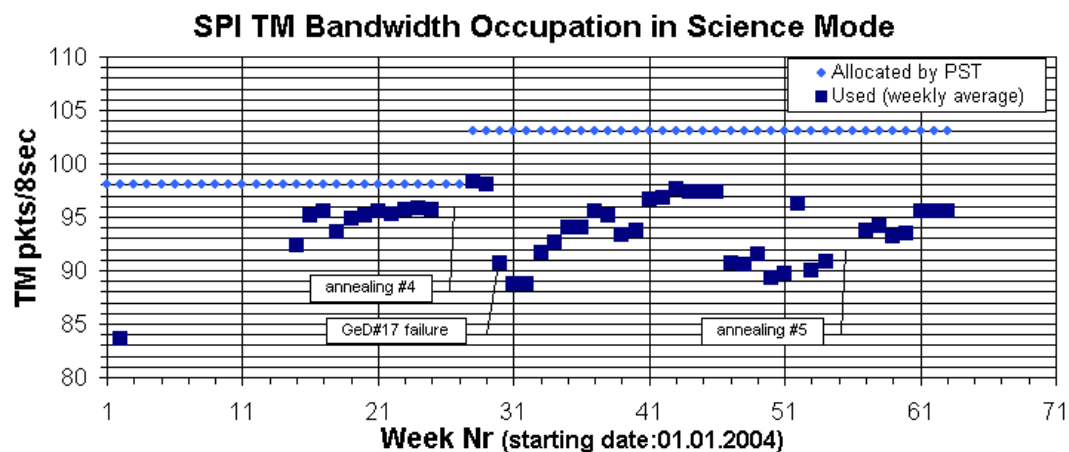
3.2.1 SPI

The overall status of the instrument in this week is nominal.

Following the execution of OCR#190 (PSD input channels #2 and #17 disable) on 1st March, the channel rates blocking malfunction (AR INT_SC-90) did not appear again. This setting will be therefore kept permanently.

OCR#191 was executed to temporary disable the transition to Photon inside the belts, in order to investigate the missed ACS HV anomaly (AR INT_SC-115). Since the implementation of the OCR, the anomaly did not occur again. The malfunction cause is still under investigation.

During the reporting period, the instrument has been kept in photon-by-photon mode, with spectra TM enabled, an assigned TM bandwidth in the science observation windows of 103 pkts/cycle and an actual occupation of 95.6 pkts/cycle average. The Stirling compressors are working well, maintaining the detector cold-plate 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.

During the reporting period the PST allocation to IBIS was most of the time 129 TMPS/cycle. The IBIS mean bandwidth utilisation during the observation period was 113.05 TMPS/cycle, up 1.25 on last week.

A plot of the IBIS TM utilisation during the observation period will be given next week.

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.

JEM-X1 made an autonomous transition to Safe mode, triggered by the unit's Software Trigger, in revolution 294, on 2005-03-12 at 20:12Z. This was ~16 hours before it had been planned to command JEM-X1 to Safe mode before radiation belt entry and, as the background radiation levels as measured by IREM were well within the safe thresholds for JEM-X1, JEM-X1 was recovered to Data Taking mode on 2005-03-12 by 22:33Z.

In addition, there were a few instances of the TM parameters K5119 SOFTWARE TRIGGER and K5136 BUFFER LOSS going out of limits on 2005-03-12 and 2005-03-16.

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 218 OMC pointings executed nominally, 2 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 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, 218 pointings were executed correctly, 2 were lost due to ground problems.

4.1 Mission Operations Centre

The performance of the MOC was excellent this week, no pointings were lost or interrupted, however there were a couple of minor incidents with the communication with ISDC. There was also an incident where an old version of the POS was used to generate the EPOS, which was subsequently executed.

4.2 Ground Stations & Network

The performance of the ground stations and Network was also good this week. Two pointings were lost when the X-axis drive on DSS-16 malfunctioned, there was a hit on the line with Redu, and another incident when 140 bad frames arrived, also from Redu. The overall performance was well over the 95% requirement.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

This week planning up to revolution 299 has been performed and sent to MOC. No replanning or ToO received. PSF's up to rev 304 have been received. TSF for rev 297 was received. The rev 300 will be dedicated to instrument calibration using the CRAB.

2. Observation status

ECS's up to rev 280 have been received, except rev's 273 and 277. Corresponding OCS files have been sent to ISDC. No extra time credited.

3. ISOC science data archive

The ISDA installation is progressing. Ingest of "revision 2" data is now possible. Copying of the data over the internet started. Although not yet automatic it seems to work fine. Checking that all revision 1 data is available in the archive started.

4. ISOC system

A new version 10.8 of the ISOC system was installed this week. The main feature of this version is the introduction of different misalignment compensation dependent on the main instrument selected in the observation. This is necessary to support the upcoming CRAB calibration. It also supports suppression of misalignment compensation. This can then be used to support AOCS calibrations performed by MOC. Since shortly after launch, when misalignment compensation was introduced the system has always put the SPI in the centre.

5. ISOC move

A second batch of computers and office equipment was received in ESAC. Installation is in progress.

6. Problems

The problem reported last week with unavailable science staff in ISOC is still not yet formally resolved. However there is hope this issue gets resolved next week.

4.3.2 ISDC

Status of ISDC observation processing on 21/03/2005:

- Latest Standard Analysis completed: observation 02297000013 (CAS A, Revolution 261-269) on 20/03/2005
- Latest products archived: observation 02201460002 (3C273, Revolution 268) on 11/03/2005
- Latest observation products sent to the observer: observation 02297000015 (Abell 2256, Revolution 257) on 20/02/2005

5 Special Events

6 Anomalies

There were a number of problems that impacted the operations:

- On DoY 072, from 12:10 until 12:50, due to a problem with the DSS-16 X-axis tracking, TM & TC communications were intermittent. The corresponding DR# is G105408. The impact was the loss of pointings 02940101 and 02940102.
- On DoY 073, the loaded wheel profile plots were not complete, stopping at 14:00, the problem was later cleared, without impact.
- On DoY 074, from 02:04:39 to 02:04:48, there was no VC0 TM. Network reported a hit on the line. There was no impact.
- At 18:39, 140 bad frames were received from Redu. There was no impact.
- At 18:43, there was an error sending data to the isds. At 18:53, the ifrd and isds tasks were restarted, and TM flow was indicated, but the link to ifrd was still showing disconnected. At 18:56, the ifrd task on isds-a was again restarted, clearing the problem. There was no impact.
- On DoY 077, an incorrect POS version 0296_07 was used to generate the EPOS for revolution 296, instead of version 0296_10. This was caused when the new version arrived while the older one was being processed. See anomaly report for details.

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

AR id	Date Created	Subject	Segment	Status
INT_SC-115	19/03/2005	SPI ACS HV switch off at belts entry not executed	Payload	Open
INT-2712	14/03/2005	TM VC0 link to drop due to overflow of TMP at VIL	ESA Stations	Pending
INT-2713	14/03/2005	FDS autom. task to produce TPF failed	FDS	Closed
INT-2714	15/03/2005	DSS-16 antenna failure	NASA Station	Closed
INT-2715	16/03/2005	Error sending data to ISDC - DOY 068, 069, 070	IMCS	Pending
INT-2716	16/03/2005	Error sending data to ISDC - IFRD/ISDS restarted	IMCS	Pending
INT-2717	16/03/2005	Error sending data to ISDC - IFRD/ISDS restarted	IMCS	Pending

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INT-2718	17/03/2005	Aux files were not send to ISDC	IMCS	Closed
INT-2719	18/03/2005	Incorrect POS version used in EPOS for revolution 296	FDS	Open

7 Future Milestones

Upgrade of the NCTRS (Network Controller and Telemetry Router System) for Integral to release 9.1.4. This will cure some known problems with the current release and is also compatible with TCP IP communications to ESA Stations as well as X25. The upgrade is currently planned to take place in April.

Upgrade of the IMCS, to use S2K release 3.1, a major update of the MCS is currently undergoing acceptance testing. A date for installation on the operational machines has not yet been decided.

Change of communication protocol to ESA Station from X25 to TCP IP, testing of this change will start in April. It will be used operationally only once testing is complete and the operational machines have been upgraded with the latest versions of the NCTRS and MCS.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 295

The activities in revolution 295 began with a hexagonal dithering observation of GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0) lasting ~28.5 hours, followed by a hexagonal dithering observation of the galactic bulge region (RA 17:45:36.00; DEC -28:55:60.0) lasting ~4 hours. A Galactic Latitude Scan observation was then performed for ~18.5 hours and then a raster dithering observation of GRO J1655-40 (RA 16:54:0.14; DEC -39:50:44.9) was performed for the remaining ~9 hours of observation time.

Revolution 296

The activities in revolution 296 began with a Galactic Latitude Scan lasting ~19 hours, followed by a hexagonal dithering observation of the galactic bulge region (RA 17:45:36.00; DEC -28:55:60.0) lasting ~3.5 hours. A raster dithering observation of GRO J1655-40 (RA 16:54:0.14; DEC -39:50:44.9) was then performed for ~20.5 hours, followed by a raster dithering observation of the Galactic Centre field (RA 17:45:40.00; DEC -29:00:28.0), performed for the remaining ~16.5 hours of observation time.

Throughout these observations all instruments were in their nominal science modes, except for 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

2005-03-01T16:38:04.000Z	162.6647	F	Automatic TM processing.
2005-03-01T21:48:45.000Z	162.6546	F	Automatic TM processing.
2005-03-03T08:12:40.000Z	162.6321	F	Automatic TM processing.
2005-03-04T21:21:48.000Z	162.6225	F	Automatic TM processing.
2005-03-04T22:50:37.000Z	162.5894	F	Automatic TM processing.
2005-03-04T23:52:13.000Z	162.5603	F	Automatic TM processing.
2005-03-05T06:17:25.000Z	162.5362	F	Automatic TM processing.
2005-03-06T07:28:00.000Z	162.5002	F	Automatic TM processing.
2005-03-07T21:12:36.000Z	162.4472	F	Automatic TM processing.
2005-03-10T21:01:24.000Z	162.4308	F	Automatic TM processing.
2005-03-12T07:19:36.000Z	162.4147	F	Automatic TM processing.
2005-03-13T14:33:39.000Z	162.4016	F	Automatic TM processing.
2005-03-13T20:48:36.000Z	162.3678	F	Automatic TM processing.
2005-03-16T20:35:23.000Z	162.3582	F	Automatic TM processing.
2005-03-18T06:41:35.000Z	162.3375	F	Automatic TM processing.

This report was generated Fri Mar 18 08:00:23 GMT 2005

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 12/03/2005-18/03/2005

AOCS operations were executed from the Automatic Timeline.

During this period, 78 Open Loop Slews, 157 Closed Loop Slews and 5 Momentum Bias were executed. 2 slews were lost due to problems at DSS16. This is equivalent to a ~ 0.85 % loss.

12/03/05 (Day of Year 071, Revolution 294)

Nothing to report.

13/03/05 (Day of Year 072, Revolution 294-295)

IMU switch on: From 00:38 to 00:48 the IMU was autonomously switched on. This was triggered by the lost of guide star at 00:38:51.927. The cause of the event is unclear. A possible explanation is a SEU. The magnitude 7.10 guide was at CCD location [11346, -768]. The guide star ID was 6811-01708-1. There was also no appreciable noise before the star was lost. After the event the STR picked a new guide star but the OTF was set low and the pointing ID 83 not reached.

Ground station problems lead to loss of pointings: From 12:10 until 12:50, due to a problem with the DSS-16 X-axis tracking, TM & TC communications became intermittent. The TC A3169 "STRT SMALL OFFST" at 12:10 failed, and the AOCS subsystem was disabled at 12:12. Communications were restored at 12:50. At 13:26 a manual slew to the PID 02940102 was executed, and the timeline re-enabled at 13:35. The impact was the loss of pointings 02940101 and 02940102.

14/03/05 (Day of Year 073, Revolution 295)

Nothing to report.

15/03/05 (Day of Year 074, Revolution 295)

Nothing to report.

16/03/05 (Day of Year 075, Revolution 295-296)

Nothing to report.

17/03/05 (Day of Year 076, Revolution 296)

Nothing to report.

18/03/05 (Day of Year 077, Revolution 296)

Nothing to report.

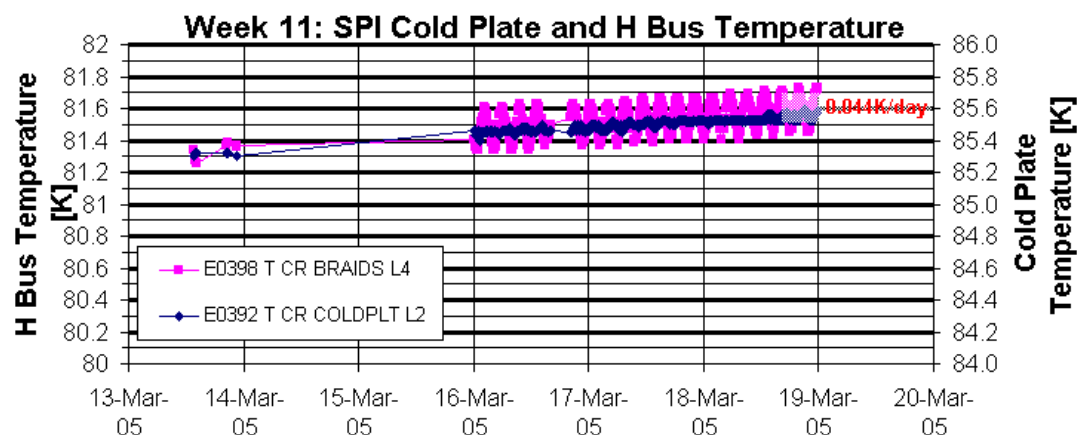
8.3.2 SPI Operations

Stirling compressors and Cryostat:

The performance of the compressors is nominal. The cold plate temperature was maintained at 85K $\pm$ 1K over the reporting period, showing a marked positive drift, expected after the annealing ended at the beginning of February.

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

NOTE: Long gaps are due to problems in the data retrieval.



DPE & IASW:

The IASW performance is nominal. The PST TM bandwidth allocation was 103 pkts/cycle in the science windows; the actual TM bandwidth usage is:

103 pkts/cycle peak;

95.6 pkts/cycle average in science mode.

As a temporary workaround to the TM leakage anomaly (INT_SC-107), the SPACON uploads at every beginning of rev. a new PST rearranged such to avoid the problem. Troubleshooting is on –going about the malfunction of the missed ACS HV switch off at belts entry (INT_SC-115). Ground tests could not reproduce the problem. The cause of the anomaly seems rooted in the timing of the sequence Go to Conf -> Switch off ACS HV -> Disable DFEE sci data -> Go to Oper, which appears too quick. An IASW patch is under study.

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

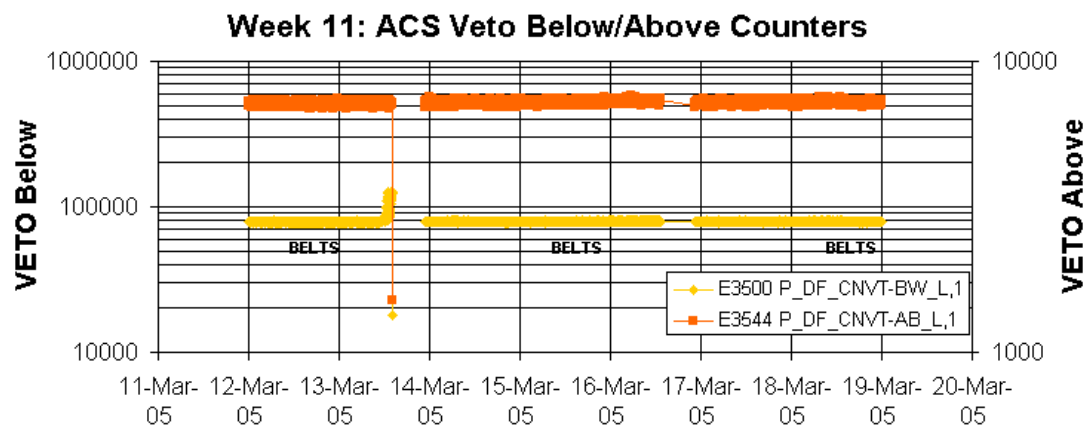
NOTE: Due to a problem in the data retrieval the plot does not cover the full week.



ACS:

The performance of the ACS is nominal.

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

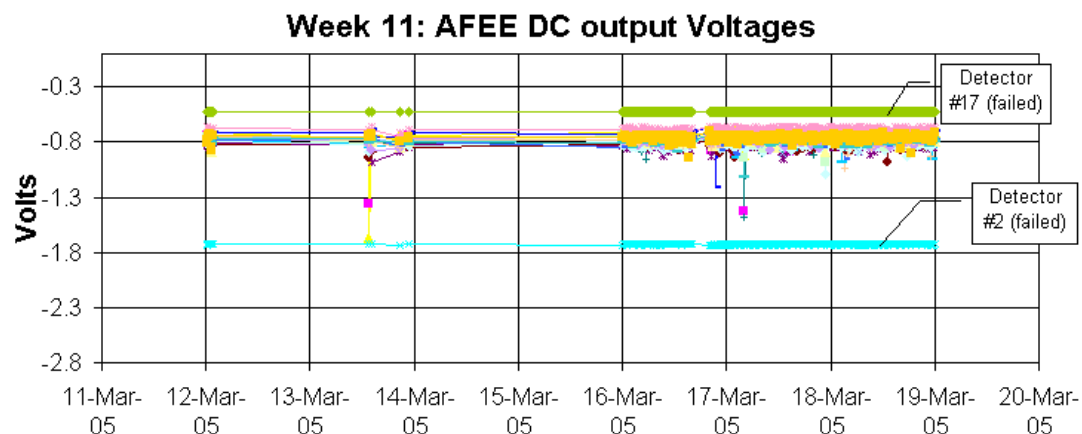


AFEE and Germanium Detectors:

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.

NOTE: Long gaps are due to problems in the data retrieval.

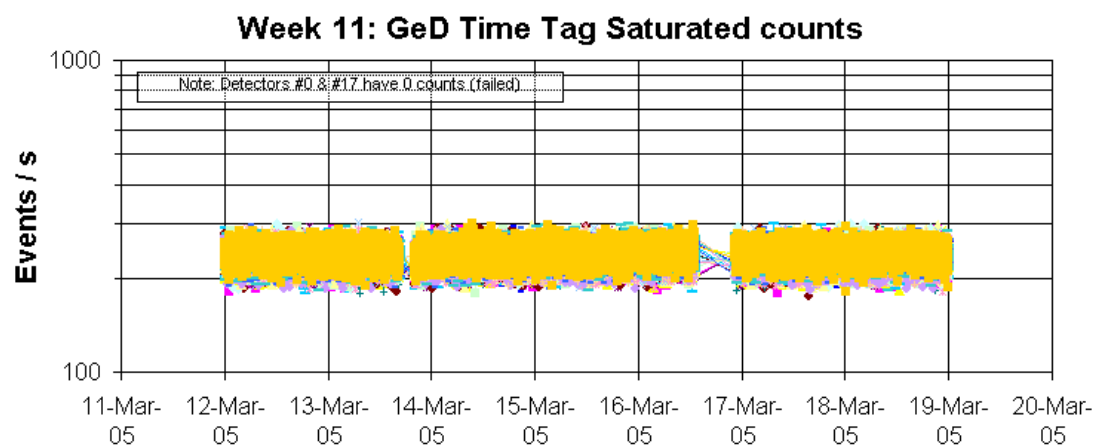
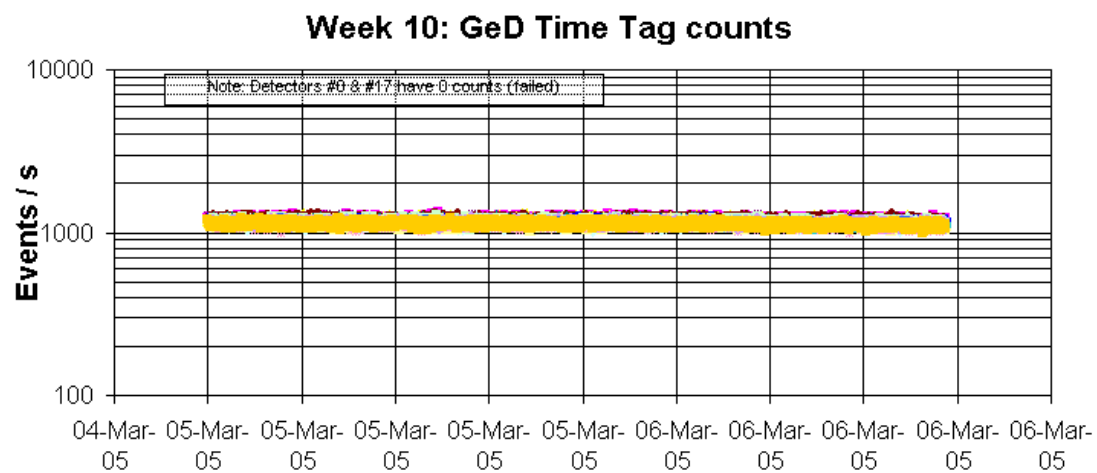
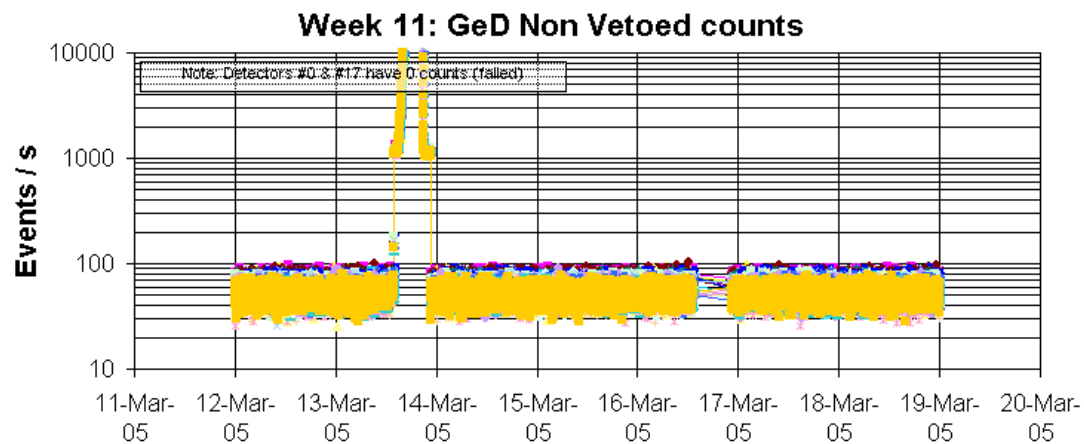


DFEE:

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.

NOTE: Due to a problem in the data retrieval some plot does not covers the full week.

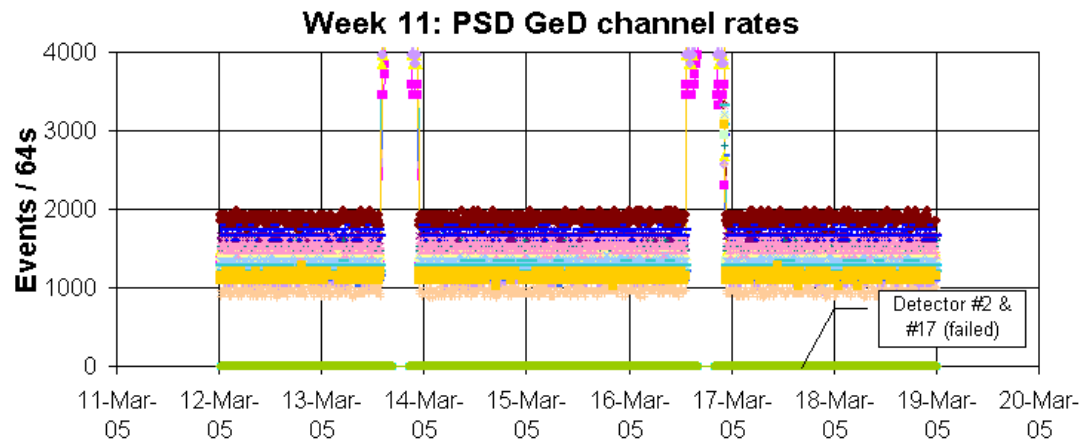


PSD:

The performance of the unit is nominal.

Following the execution of OCR#191 (PSD input channels #2 and #17 disable), executed at belts entry of rev.290), the channel rates blocking malfunction did not reappear. It was therefore decided to keep this setting.

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



SPI EVENTS LOG

NOTE: The events log is extracted from the revolution pass summary (courtesy of the Integral Analysts).

DOY Time	Event
069 / 20:49-on	TM P2017 "LCL CUR AF2 DT A" toggling OOL High and back into limits several time. / Problem caused by SPI detector power consumption slightly increased during Radiation Belts passage like in this case or during high radiation phase. / This problem is occurring only from time to time
069 / 20:57	TM E2116 "T AS PSAC L2" OOL Low.
069 / 22:48	Rad. Belts exit
069 / 23:43	Execution of OR 0190 "Update PST Manually"
070 / 03:39	Execution of OR 0190 "Update PST Manually"
072 / 13:28	Rad. Belts entry
072 / 13:35	Seq. EEORTM01 "SPIALLTMREP" uplinked manually because it was lost from the T/L.
072 / 13:51	Execution of INT_OR_199 "SPI Monitoring at Belt Entry" IAW FCP SPI1 1700, TPF version "6".
072 / 13:51	Execution of INT_OR_199 "SPI Monitoring at Belt Entry" IAW FCP_SPI1_1700, TPF version "9". / Seq. EEORTM01 "SPIALLTMREP" uplinked.

8.3.3 IBIS Operations

IBIS Events Counters Plots.

The plots of the IBIS events counters will be given next week.

IBIS daily report:

DoY 2005.077 (18/03/2005)

At 19:06Z, the following OEM APID 1280 ID 133 CLASS 2 was reported:

"IBIS1 IASW LSL TRANSFER FAILED (LOW LEVEL) "

together with OEM APID 1280 ID 131 CLASS 2:

"IBIS1 IASW LSL TRANSFER FAIL REPORT FOR HIGH-LEVEL MODULE RESET"

These 2 OEMs were followed after few seconds by OEM APID 1280 ID 230 CLASS 3:

"IBIS1 MCE3 TIME OUT".

(the numbering system of OEM starting from 0 to 7, this OEM indeed concerns HW MCE4)

This anomaly is similar to the one that occurred in MCE4 on DoY 2004.017, in MCE6 on DoY 2004.027, MCE4 on DoY 2004.153 and MCE5 on 2005.041 at 21:57Z

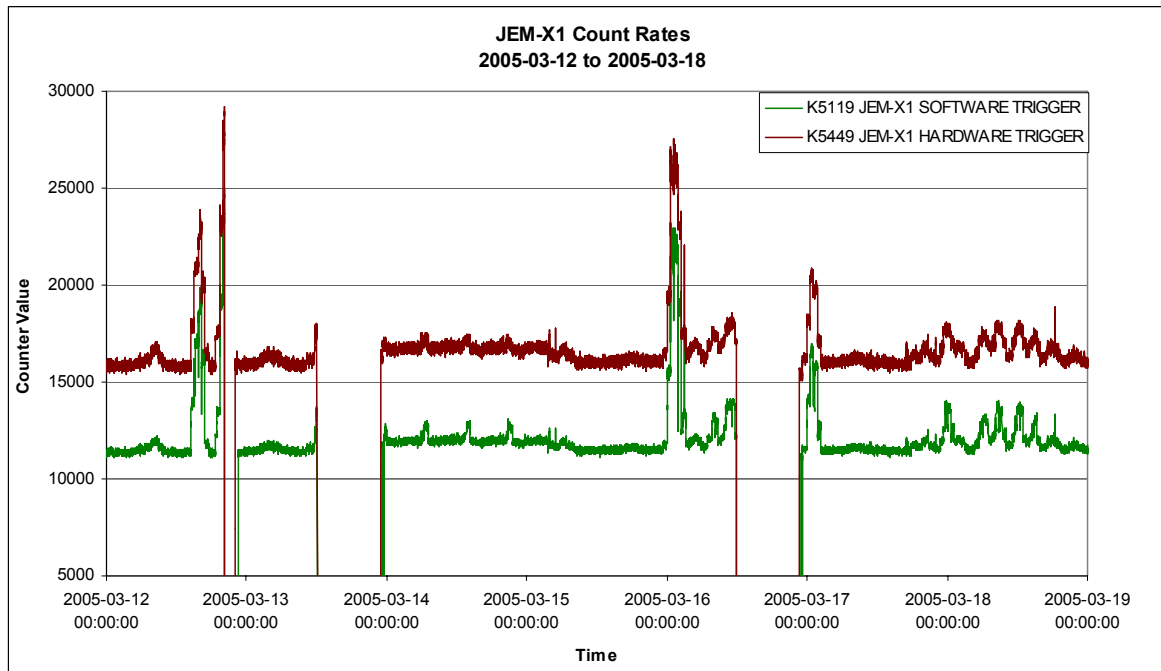
Summarising, IBIS incurred a timing problem on the LSL that affected the communication with the peripherals. During this time, a request for HK1 was sent to the MCE4 without response, due to a communications black-out between the peripheral and the DPE. The IASW flagged the non-generation of HK1 from MCE4 as an on-board rejection (time out) of the internal TC indicate in the OEM body. During this time no valid HK was collected from MCE4 therefore, what was reported in the HK1 was simply the IASW default (i.e all 0000...). This is confirmed by the reading of some of the TM parameters, such as the bias, operating mode and MDU temperatures all reporting the raw value 0. After few TM cycles, the unit resolved autonomously the internal conflict on the LSL and reported the valid HK1 for MCE4 (see ref. AR INT-SC-113). No further action was requested as for recovery action I-REJ-1.

8.3.4 JEM-X Operations

8.3.4.1 JEM-X Count Rates

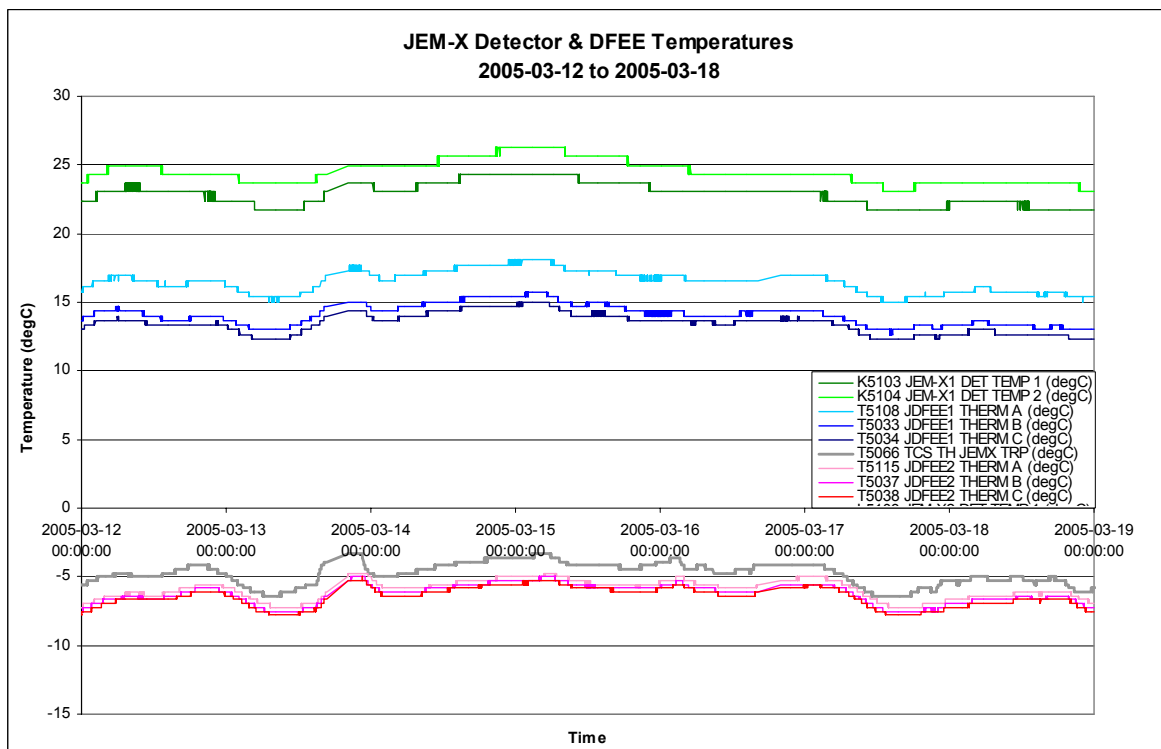
JEM-X1 count rates over the reporting period are displayed in the following graph¹.

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 reporting period are displayed in the following graph².



² Data sampled (1 frame in 8)

8.3.4.3 JEM-X Daily Report

2005-03-12 (DOY 071, Rev 294)

Several out of limits were received on the TM parameter K5136 BUFFER LOSS as follows:

- At 15:41:24Z K5136 BUFFER LOSS OOL High (value = 171), returning within limits at 15:42:28Z;
- At 19:22:44Z K5136 BUFFER LOSS OOL High (value = 501), returning within limits at 19:23:48Z;
- At 19:59:40Z K5136 BUFFER LOSS OOL High (value = 2673), returning within limits at 20:00:44Z.

Around the same times, out of limits were also received on the TM parameter K5119 SOFTWARE TRIGGER as follows:

- At 16:04:12Z K5119 SOFTWARE TRIGGER OOL Warning High (value = 20068) for 1 TM cycle;
- At 19:22:28Z K5119 SOFTWARE TRIGGER OOL Warning High (value = 20023), fluctuating in and out of limits until 19:28:28Z;
- At 19:51:08Z K5119 SOFTWARE TRIGGER OOL Warning High (value = 20028), fluctuating in and out of its soft limit until 20:01:56Z, when it went OOL Alarm High and started to fluctuate in and out of its hard limit.

At 20:12:28Z the value of K5119 SOFTWARE TRIGGER exceeded the Safe threshold for JEM-X1, causing JEM-X1 to make an autonomous transition to Safe mode. The TM parameter K5462 DFEE STATE IASW transitioned to state Safe for 1 TM cycle and then went to Setup and thus 2 occurrences of OEM 189 JEM-X1 PROB DFEE 9 were received. At 20:26:06Z FCP_JEM1_0040 was executed to command JEM-X1 to Safe mode, thereby setting K5462 DFEE STATE IASW to Safe as well and thus OEM 254 ERROR OFF was received. Commanding to JEM-X1 from the Timeline was disabled at 20:47Z.

As this autonomous transition to Safe mode occurred far away from the radiation belts (~16 hours before JEM-X1 was planned to be commanded to Safe mode before radiation belt entry of revolution 294), the IREM radiation monitor counters were monitored for about 1 hour to ensure that they remained well within the Safe thresholds for JEM-X1. JEM-X1 was then reactivated as follows:

- At 21:36:02Z FCP_JEM1_0041 was performed to command JEM-X1 back to Setup mode.
- At 21:54:22Z FCP_JEM1_1010 JEMX1 CONFIGURATION SETTING FOR SCIENCE OPS was started.
- At 22:32:56Z FCP_JEM1_0044 was executed to put JEM-X1 in Data Taking mode and commanding to JEM-X1 from the Timeline was then re-enabled.

JEM-X1 operations continued nominally.

2005-03-13 (DOY 072, Rev 294-295) to 2005-03-15 (DOY 074, Rev 295)

Nothing to report

2005-03-16 (DOY 075, Rev 295-296)

Some out of limits were received on the TM parameter K5136 BUFFER LOSS as follows:

- At 00:35:48Z K5136 BUFFER LOSS OOL High (value = 1399), returning within limits at 00:36:52Z;
- At 01:12:44Z K5136 BUFFER LOSS OOL High (value = 1980), returning within limits at 01:13:40Z;
- At 01:49:40Z K5136 BUFFER LOSS OOL High (value = 316), returning within limits at 01:50:52Z.

In parallel, at 00:34:52Z the TM parameter K5119 SOFTWARE TRIGGER went out of limits Warning High (value = 20557) and remained out of limits, except for a few instances when it returned within limits briefly, until 01:54:28Z.

2005-03-17 (DOY 076, Rev 296) to 2005-03-18 (DOY 077, Rev 296)

Nothing to report

8.3.5 OMC Operations

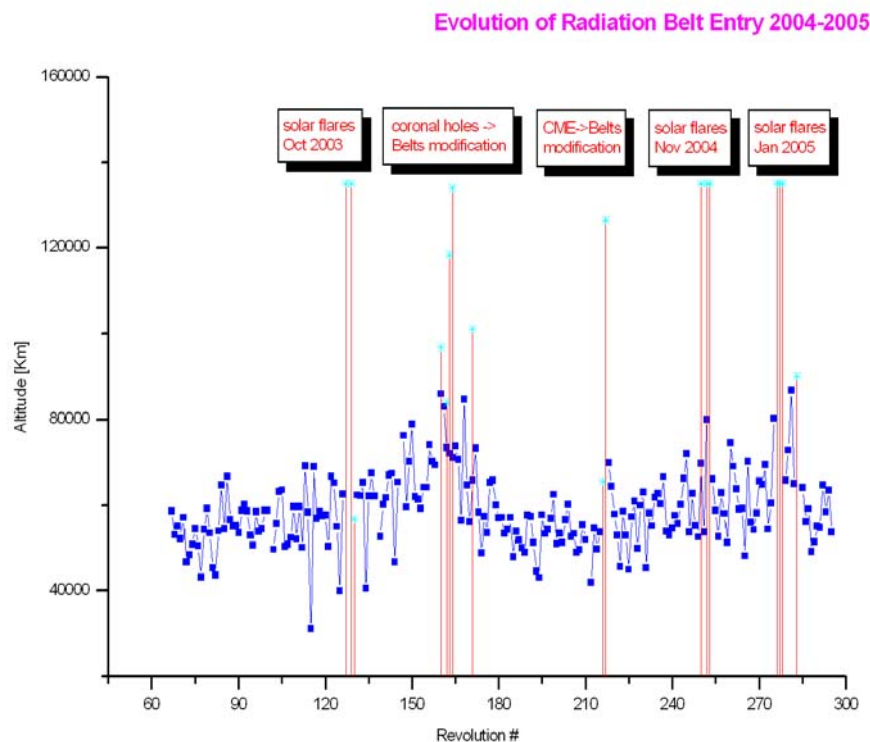
On DoY 072, from 12:10 to 12:50, problems with DSS-16 interrupted operations. The impact was the loss of pointings 02940101 and 02940102.

No commands were rejected this week.

On DoY 072 at 13:28:34 and DoY 075 at 13:14:37, OMC was switched by the Timeline to SAFE mode, at the nominal time.

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]
294	RAD_ENTR R 2005-03-13T13:28:17Z	2005-03-13 13:03:57	63565.8	2005-03-13 14:17:49	53246.17
295	RAD_EXIT R 2005-03-13T22:37:49Z	2005-03-13 21:17:25	>>24865.1	2005-03-13 21:27:49	29002.61
295	RAD_ENTR R 2005-03-16T13:14:21Z	2005-03-16 14:06:05	53785.2	2005-03-16 14:03:44	53484.27
296	RAD_EXIT R 2005-03-16T22:24:31Z	2005-03-16 20:52:29	24870.8	2005-03-16 21:13:44	28645.49

Reference

Very small error vs reference (less than 10 minutes)

Small error vs reference (between 10 and 30 minutes)

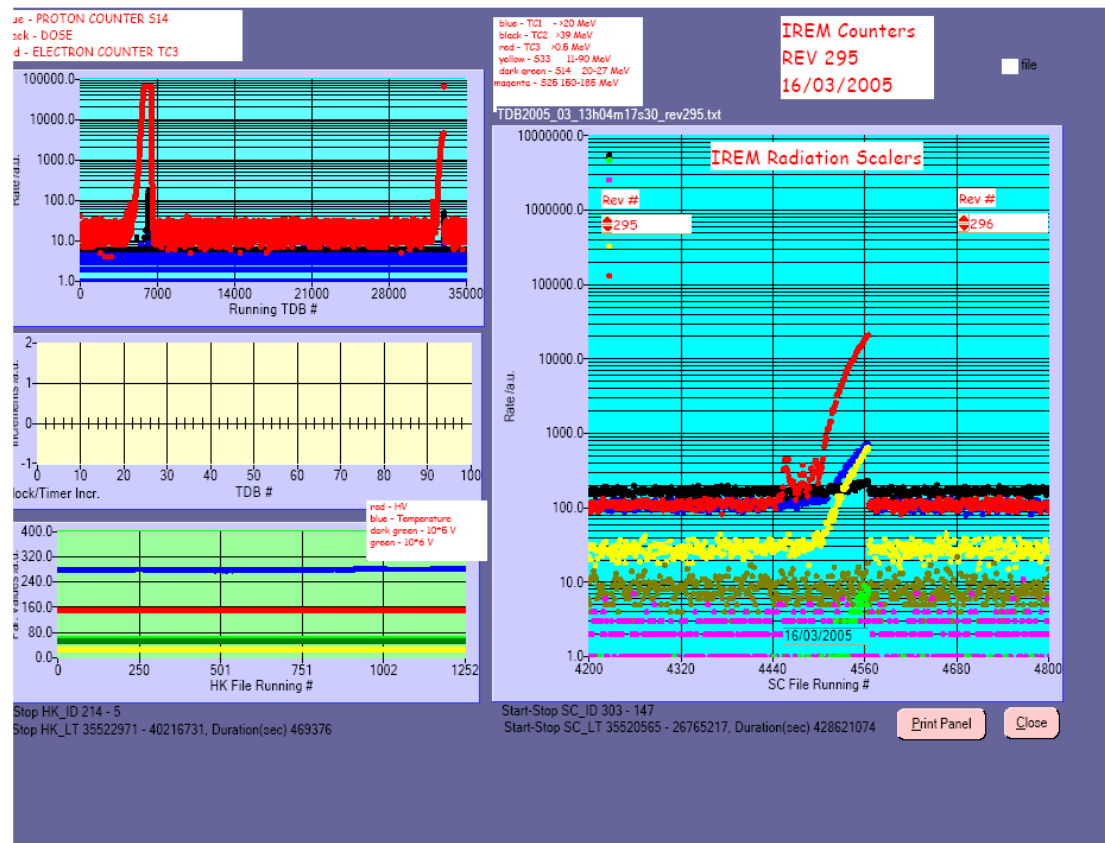
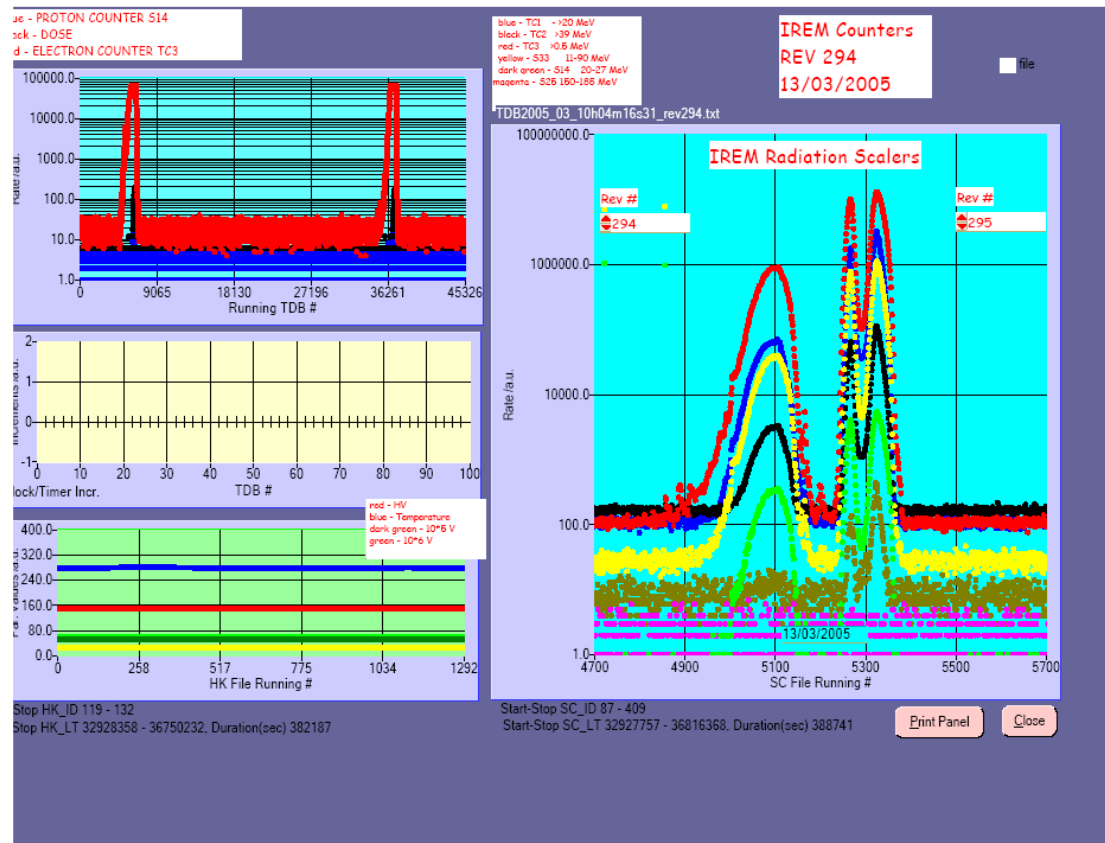
Large error vs reference (more than 30 minutes)

Radiation Spike

Proton Belts

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

IREM radiation counters

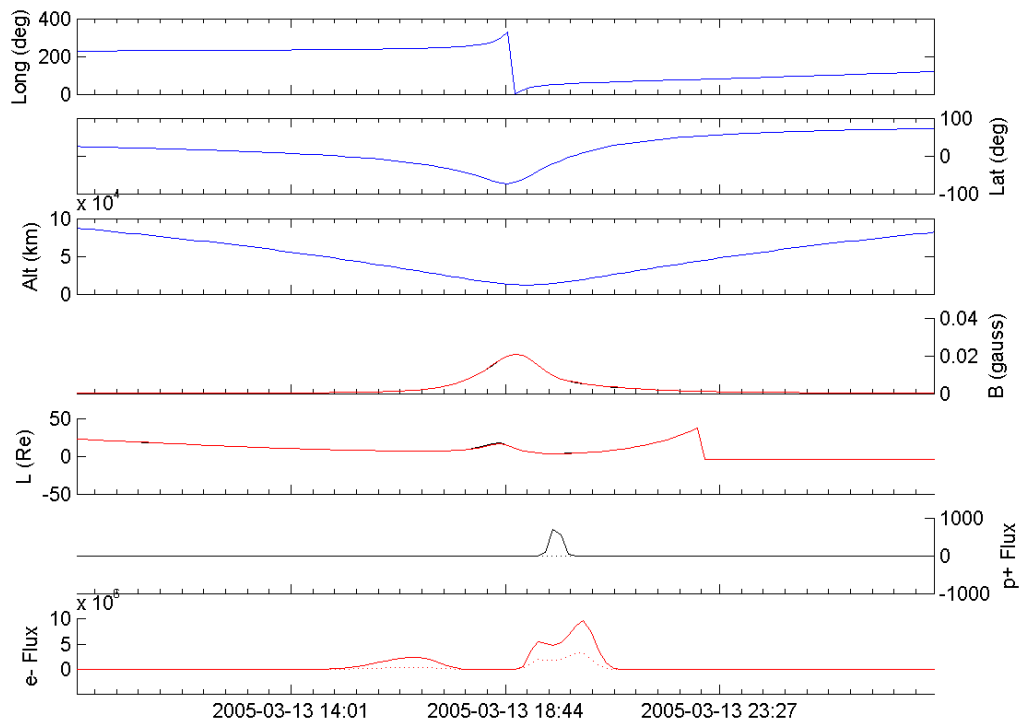


Doc. Title : INTEGRAL Mission Report #130
Doc. Ref. : INT-MOC-SYS-RP-1001-OPS-OF
Date : 21/03/05

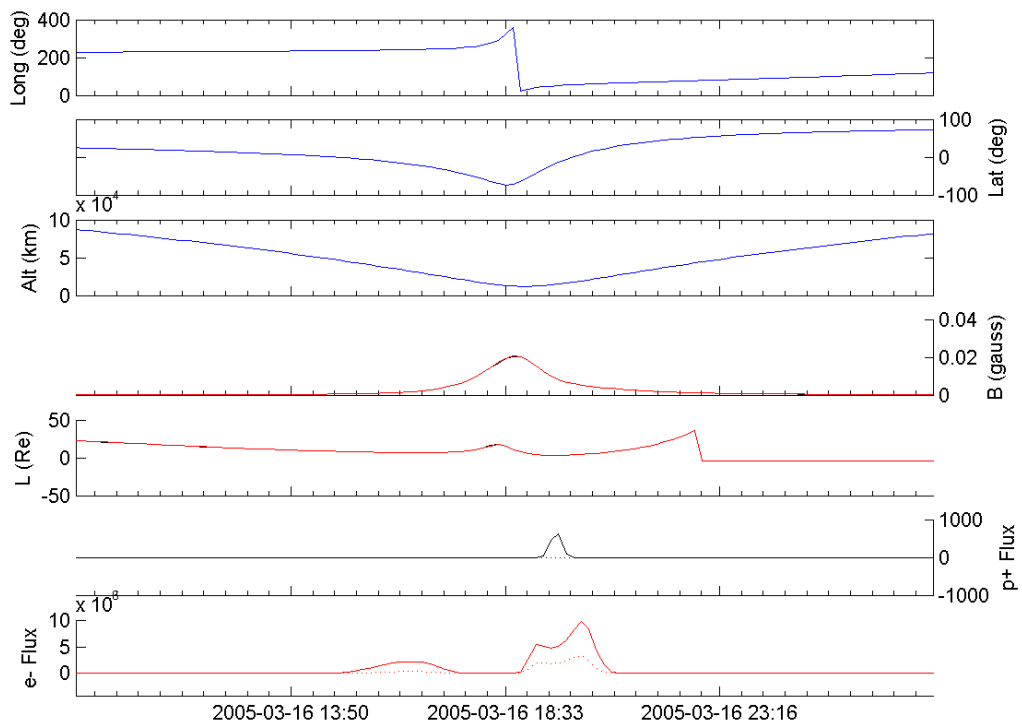
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Due to problems on the TM distributor machine, IREM radiation counter data, acquired by IREM ECOE, are not fully available for the perigee passage of revolution 295.

IREM Predicted Radiation Belt Passages.
Rev 294



Rev 295



SEC-GOES Observed Particles Fluxes.

