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

INTEGRAL
Mission Report

INT-MOC-SYS-RP-1001-TOS-OF

No. 069
Week 03

19.01.04

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 10.01.04 until 16.01.04 (both dates inclusive) and covers the revolutions 152 & 153.

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 SN 1987A (RA 05:35:28.26; DEC -69:16:13.0), GRO J0332-87 (RA 03:31:60.00; DEC -86:43:00.0), the galactic plane and Cygnus X (RA 21:13:12.00; DEC +41:15:58.0). The activities consisted of raster dithering and GPS observations. In addition, the Periodic FSS/STR Alignment Calibration and the Periodic Inertia Calibration were performed.

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, the FSS/STR Misalignment calibration and the RW/Inertia Calibration were performed from the Timeline during revolution 153. The new FSS Transfer function parameters were uplinked on 16/01/2004.

One slew was performed manually on DoY 015. The reason was the loss of Guide Star due to False Events, which happened after the change of Guide Star for the Close Loop slew and before the start of the slew.

The fuel consumption over the period between 09/01/2003 and 16/01/2004 was 0.0658 kg. The remaining propellant is in the order of 173.043 Kg on the 16th of January.

Note: Some more information concerning the AOCS operations and the fuel budget is provided in the Appendix.

3.1.2 Power

The power subsystem is working as specified. The available power from the arrays is in the order of **2200W**.

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 is nominal.

During the reporting period the instrument was in photon-by-photon mode with spectra TM enabled and an assigned TM bandwidth in the science windows of 98 pkts/cycle.

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

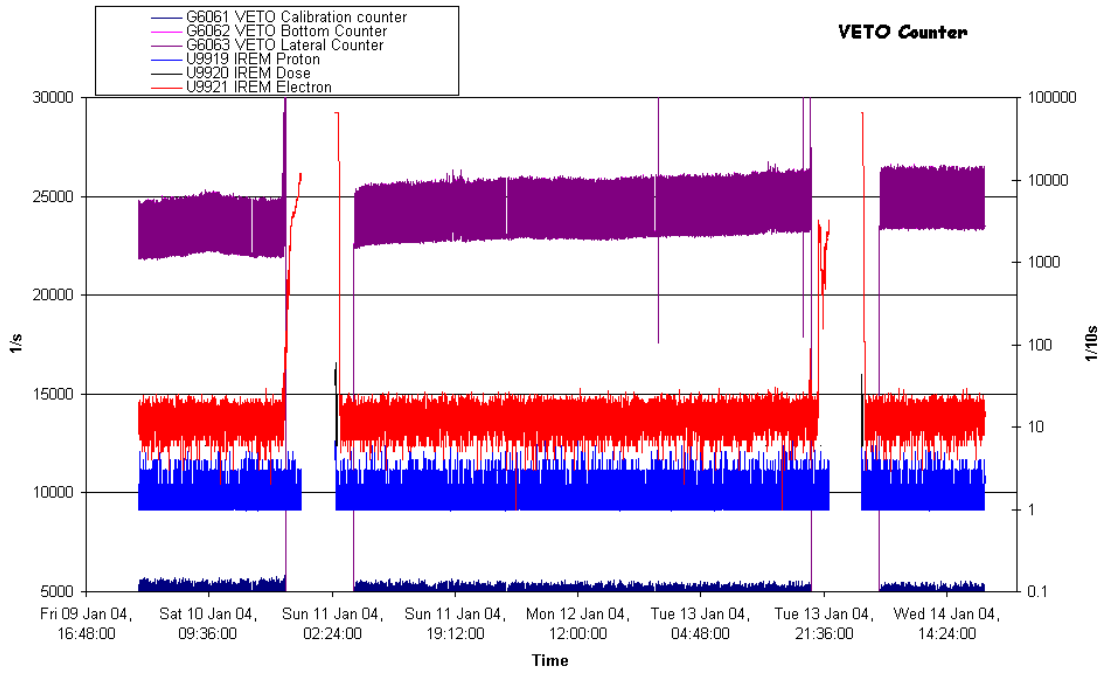
Note: Some more information concerning the SPI operations is provided in the Appendix.

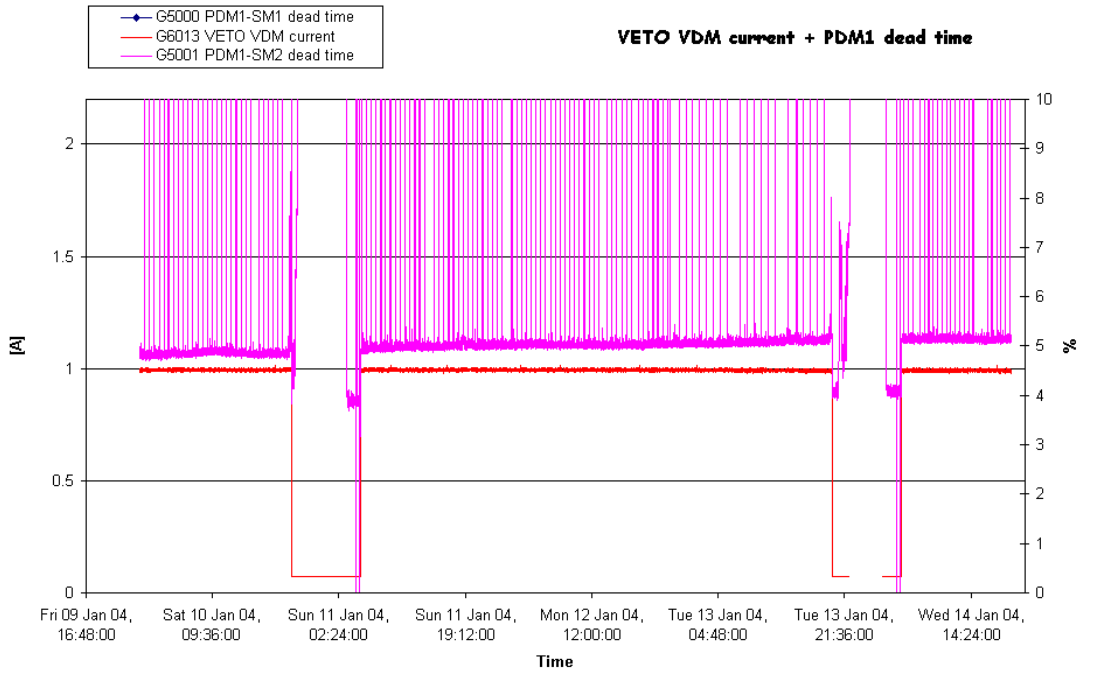
3.2.2 IBIS

The status of the unit is Nominal.

The TM bandwidth assigned to IBIS was 134 pkts/8sec. No occurence of anomalous OEM generation (ID 183-184-179-180, Class 2) was reported after the VETO S/W patch.

Plots of the VETO bottom and lateral counter with the PICsIT PDM#1 SM1-2 dead times, and the VETO VDM/CDM current during the observation period are 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.

During this period JEM-X1 was dormant with a TM allocation of 1 packet/cycle. JEM-X2 operations were performed by the automatic Timeline, with a TM allocation of 8 packets/cycle during science observations.

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 during normal science operations.

There were 157 OMC pointings executed nominally, and 1, which started late.

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.

The observation period was characterized by low solar activity.

The Electron Belts Entry/Exit for revs 152-->153, as defined by a cut-off flux of 3.76E+02 e/cm2/sec (E>0.5 MeV) and the predicted Proton Belts Entry/Exit, as defined by a cut-off flux of 1.25E+03 p/cm2/sec (E>8 MeV) are reported below:

Electron Belts

REV	S/C BCPKT Entry\Exit		CUT-OFF Entry\Exit	PREDICTED Entry\Exit	ALT[km] predicted
151	RAD_ENTR R	2004-01-10T20:07:09Z	Sat 10 Jan 04, 19:51:34	10-Jan-2004 20:44:27	54983.68
152	RAD_EXIT R	2004-01-11T05:10:06Z	Sun 11 Jan 04, 03:28:54	11-Jan-2004 03:54:27	27605.15
152	RAD_ENTR R	2004-01-13T19:56:16Z	Tue 13 Jan 04, 19:48:38	13-Jan-2004 20:38:22	54281.88
153	RAD_EXIT R	2004-01-14T04:58:52Z	Wed 14 Jan 04, 03:12:30	14-Jan-2004 03:38:22	26831.83
153	RAD_ENTR R	2004-01-16T19:45:10Z	Fri 16 Jan 04, 19:51:03	16-Jan-2004 20:28:22	54102.49

Proton Belts

REV	S/C BCPKT (electron)		PREDICTED Entry\Exit	ALT[km] predicted
152	RAD_ENTR R	2004-01-10T20:07:09Z	11-Jan-2004 02:14:27	12232.93
152	RAD_EXIT R	2004-01-11T05:10:06Z	11-Jan-2004 02:34:27	14518.67
153	RAD_ENTR R	2004-01-13T19:56:16Z	14-Jan-2004 01:58:22	11787.54
153	RAD_EXIT R	2004-01-14T04:58:52Z	14-Jan-2004 02:28:22	15234.32

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 in general good in the reporting period. The main problems this week, are briefly described below.

4.1 Mission Operations Centre

The performance of the MOC was in general good in the reporting period, there were problems however with the CMDReleaser gobbling CPU, which needed to be stopped and restarted, interrupting the Timeline.

4.2 Ground Stations & Network

There were several minor incidents concerning the ground stations this week, RFI from DSS-16, and Reed-Solomon errors in Redu.. See below for details.

There was an upgrade of the Intermediate Frequency Modulating System at Redu this week, with IFMS1 being performed on the 12th January, and IFMS2 on the 16th. The upgrade was smooth and did not interrupt operations.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning
PSF's: Received up to rev. 162
(long term PSF's no longer required)
POS and POD generated: up to rev 162
TSF: Up to rev 155

No replanning performed this week. POS for rev 154 was manually edited by ISOC and resubmitted. See problems below.

2. Observation status
ECS's for up to rev's 139 except 135 and 136 received. Corresponding OCS's generated and sent to ISDC. No extra time credited to a proposal

3. ISOC science archive
No archive data received from ISDC. New forecast says three tapes expected next week.

4. ISOC system
ISOC system version 10.1 still in operational use. No change. System is stable.

5. Problems
A problem in one POS detected. It caused a slew to be scheduled too close to a reaction wheel bias event. Problem cause is identified. It happens when there is a very rare combination of events. This is the first time since launch that this combination of events has occurred. Until the software is updated extra manual checks will be performed in ISOC before sending the POS to MOC.

6. ISOC move to VILSPA
This topic has now resulted in a plan agreed within SCI - SD. The intention is that ISOC operations in VILSPA will start around 1 February 2005. This will allow AO 3 operations to be performed from the beginning with new system and people. The plan is built around AO 3 proposal submission and TAC process, assumed to be from 15 September to 29 October 2004 and the subsequent TAC process up to end of 2004. Great care is taken to ensure a smooth transition with no interruption of ISOC operations at any time.

7. AO 3 preparation
First steps towards preparation for AO 3 taken by reviewing lessons learnt from AO 2 and AO 1 and looking at planning.

4.3.2 ISDC

On 19/01/2004, the status of ISDC observation processing is:

- Latest Standard Analysis completed: observation 01202070003 (X1916-053, Revolution 131-134) on 05/01/2004.
- Latest products archived: observation 01202070003 (X1916-053, Revolution 131-134) on 08/01/2004.
- Latest observation products sent to the observer: 01202070003 (X1916-053, Revolution 131-134) on 09/01/2004.

5 Special Events

6 Anomalies

There were a number of problems related to the ground segment that impacted the operations:

- On DoY 010, at 15:29, there were consolidator errors on IDDA, probably due to the VC7 bit rate of 313kbps. JPL were informed, and the bit rate was returned to 104kbps, solving the problem.
- On DoY 010 at 20:30, the IMCA was showing yellow in the MMI global overview, due to the CMDReleaser using 44% of the CPU. The timeline was stopped and aborted. At 20:35, the TC link from DSS-16 was taken down, and at 20:36, the CMDReleaser was re-started, changing the status of the IMCA to green. The rest of the system was restarted, and the timeline rejoined at 20:45, without any impact.
- On DoY 011, at 22:25, sun128 was showing yellow due to low swap space.
- On DoY 013, at 01:15, there were Reed-Solomon alarms at Redu, which caused 39 frames to be flagged as bad.
- Later, at 16:31, there were errors sending data to the ISDS. The link MADDS-ISDS was reconnected, and data flowed immediately.
- On DoY 014 at 13:42, there was a drop in the bad TM frame link from Redu, without impact. At 13:45, there was a brief gap in the VC0 TM also from Redu.
- At 14:04, command A2554 failed release. The interlock failure occurred at CLCW level, investigation has shown there is a delay in Telecommand release from the NCTRS. Investigations are continuing, there was no impact.
- Later at 20:58, there were Reed-Solomon alarms in Redu.
- On DoY 015 at 12:50, 13:10 there were bad frames received from Redu, at 14:14, there was a brief drop in VC0 TLM, followed at 14:28, 14:30 by more Reed-Solomon errors, which eventually stopped at 14:40.
- At 17:26 there was some RFI detected from DSS-16, later at 17:32, there was a drop in TLM. At 17:49, there was more RFI.
- On DoY 016 at 14:25, CCC was requested to restart the application launcher on IMCA, instead all the applications were restarted, which temporarily killed the A-chain. At 14:41, operations were moved to the B-chain until 15:03, when they could be resumed on IMCS-A.
- At 15:00, the NCTRS-A was showing yellow, with the disk 98% full. At 16:25, after NCTRS support had intervened the system was returned to green status, with the disk usage now at 77%.
- Later, at 20:00, the IMCA was showing yellow, with the CMDReleaser using 45% of the CPU, the Timeline was stopped and aborted, the CMDReleaser was restarted, and at 20:19, the Timeline was rejoined. There was no impact as all this occurred below the belts.

The following new anomaly reports have been entered into the Anomaly Reporting and Tracking System. Repeats of existing anomalies are not shown in this table.

AR id	Date Occurrence	Subject	Segment	Status
INT - 002541	14/01/2004	PREQ scheduled too close to RWB in POS (0154_01.POS)	ISOC	Pending
INT - 002542	15/01/2004	TCs Fail Release from REDU, due to late CLCW verification	IMCS	Pending

7 Future Milestones

Planned for the beginning of February is a Veto patch to rescale the counter factor.

There is also an upcoming JEMX patch to update the on-board background rejection criteria and the HV safety limits. The precise date for this change has yet to be set.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 152
The observations in revolution 152 consisted of a raster dithering observation of SN 1987A (RA 05:35:28.26; DEC -69:16:13.0) lasting ~41 hours, followed by a raster dithering observation of GRO J0332-87 (RA 03:31:60.00; DEC -86:43:00.0) performed for the remaining ~21 hours of observation time.

Throughout these observations all instruments were in their nominal science modes, except for JEM-X1 which remained in Safe mode, and the TM allocation was 134 IBIS, 98 SPI, 1 JEM-X1, 8 JEM-X2, 5 OMC.

Revolution 153
The activities performed in revolution 153 were as follows:

- 3 pointings of a GPS lasting 2 hours;
- Periodic FSS/STR Alignment Calibration, with additional pointings for external torque model, performed over 22 hours;
- 10 pointings of a GPS lasting ~6.5 hours;
- Raster dithering observation of Cygnus X (RA 21:13:12.00; DEC +41:15:58.0) lasting ~16 hours;
- Periodic Inertia Calibration performed during an 8 hour window;
- Raster dithering observation of Cygnus X (RA 21:13:12.00; DEC +41:15:58.0) performed for remaining ~4 hours of observation time.

During the science observations all instruments were in their nominal science modes, except for JEM-X1 which remained in Safe mode. During the AOCS calibrations, SPI, IBIS and JEM-X2 continued in their science modes but OMC was in Standby. The TM allocation throughout these activities was 134 IBIS, 98 SPI, 1 JEM-X1, 8 JEM-X2, 5 OMC.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

```
2003-12-24T14:21:00.000Z     173.3383    F   Automatic TM processing.
2003-12-24T16:47:25.000Z     173.3186    F   Automatic TM processing.
2003-12-25T14:54:31.000Z     173.3049    F   Automatic TM processing.
2003-12-27T05:18:51.000Z     173.2862    F   Automatic TM processing.
2003-12-28T14:38:55.000Z     173.2643    F   Automatic TM processing.
2003-12-30T05:11:39.000Z     173.2458    F   Automatic TM processing.
2003-12-31T14:30:14.000Z     173.2308    F   Automatic TM processing.
2004-01-01T16:05:37.000Z     173.1837    F   Automatic TM processing.
2004-01-02T05:02:58.000Z     173.1746    F   Automatic TM processing.
```

```
2004-01-02T08:57:15.000Z     173.1410    F   Automatic TM processing.
2004-01-05T04:37:07.000Z     173.1205    F   Automatic TM processing.
2004-01-08T03:43:54.000Z     173.1090    F   Automatic TM processing.
2004-01-11T03:32:41.000Z     173.0878    F   Automatic TM processing.
2004-01-14T03:23:53.000Z     173.0643    F   Automatic TM processing.
2004-01-15T05:43:08.000Z     173.0432    F   Automatic TM processing.

This report was generated  Fri Jan 16 08:00:09 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 Operations

AOCS operations were executed from the Automatic Timeline.

During this period, 89 Open Loop Slews, 119 Closed Loop Slews and 4 Momentum Bias were executed. 1 slew was executed manually. This is equivalent to a 0.5%.

10/01/04 (Day of Year 010, Revolution 151)

Nothing to report.

11/01/04 (Day of Year 011, Revolution 151-152)

Nothing to report.

12/01/04 (Day of Year 012, Revolution 152)

Nothing to report.

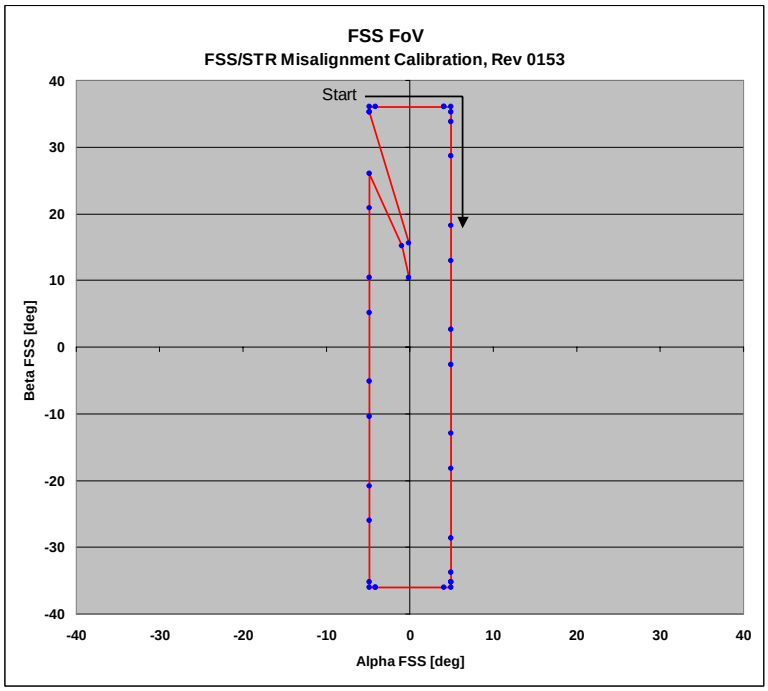
13/01/04 (Day of Year 013, Revolution 152)

Nothing to report.

14/01/04 (Day of Year 014, Revolution 152-153)

Execution of the FSS/STR Misalignment Calibration: As part of the periodic AOCS calibrations, the FSS/STR Misalignment calibration was performed in revolution 153. This operation was executed completely from the Timeline in a dedicated Engineering window from 2004-01-14T07:30:00 to 2004-01-15T05:30:00. The calibration itself consists of 3 pointings of 0.8 degrees offset at each corner (Roll = +- 5° Pitch = +- 36°) of the FSS FoV and tracking four stars (in addition to the Guide Star) for the duration of each pointing. Usually a 12 hours window is assigned to this calibration. This time however, at the request of Flight Dynamics, the window was extended to 22 hours in order to allow pointings at Roll = +- 5° and intermediate Pitch angles. FD will use the data gathered in these extra pointings to further increase

the accuracy of their external torque model. The profile of this operation is shown in the following plot:

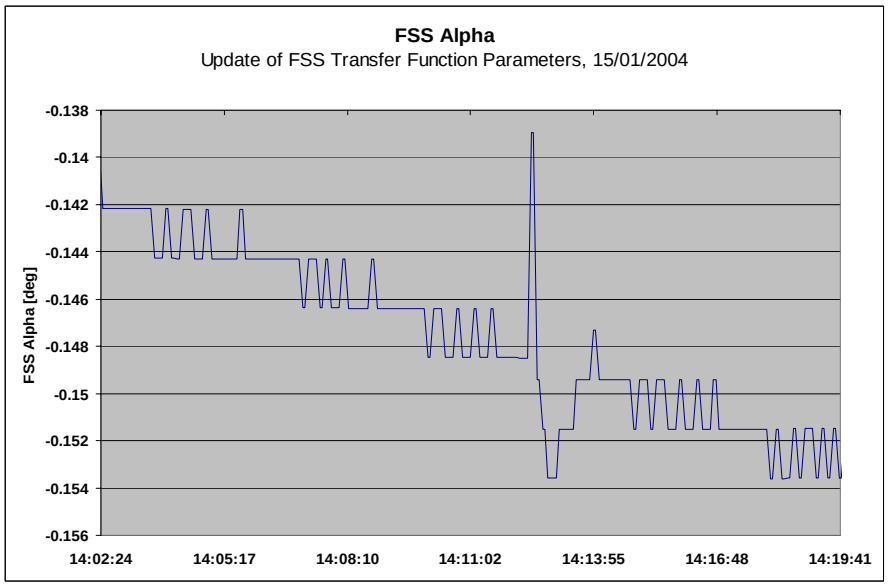


Failure of the commanded Search and Track: At 08:56, the commanded Search and Track for slot number 3 failed to find the commanded star, GSC#: 4090 1216 with 7.8 magnitude. The reason was probably the dim neighbour of magnitude 9.41 located at a distance of 2.35 arc-minutes, which had caused the Thresholding and Clustering process of the Search sequence to fail. Fortunately the star had not been selected for any other Search and Tracks. According to FD, this had no observable effect in the calibration results.

When the Search/Track for slot number 4 was up-linked, the STR Error Word indicated and input Error Status (TM A5108 = ERROR). The reason was that the Search/Track for slot number 4 was commanded while slot number three was free, due to the above-mentioned failure.

15/01/04 (Day of Year 015, Revolution 153)

Update of the FSS-A Transfer Function Parameters: Starting at 14:10, the FSS Transfer Function Parameters were updated with the results of the FSS/STR Misalignment Calibration. An empty Reaction Wheel Bias Window in the Timeline was selected for this operation to prevent any damage to science data due to an expected roll jitter caused by the uplink of the new coefficients. The roll step change, expected by FD (from description sheet of TPF 0152_0001_M.FSA) was +0.86 arc-minutes. After uplink and authorisation of the new coefficients a roll step change of +0.57 arc-minutes could be measured from telemetry. The next slew in the timeline was then manually updated.



Loss of Guide Star before the start of Close Loop Slew, caused by False Events:

18:00:25.577- Change of Guide Star for Close Loop Slew 01530024: [1130, 6773], 7.95 Mi.

18:00:25.577- An undetected False Event Caused the apparent position of the Guide Star to shift to [953, 7190], 7.2 Mi. This jump in both Pitch and Yaw was larger than the OTF threshold and resulted in generation of Roll and Pitch OOL Error messages and drop of the OTF. In the next cycle, the real Guide Star was detected as False Event and the STR latched on it as False Event.

18:00:29.574- Finally the STR SEU Filter threshold exceeded and the Guide Star was released. The ACC issued a Mapping and a new Guide Star was picked.

Since this was just before the start of the Close loop Slew, the Timeline was stopped to prevent the execution of the slew with the wrong star. A manual Close loop Slew was then performed to the attitude of PID 01530024. This attitude was reached at 18:23:22, about 17 minutes later than the planned start time of this pointing.

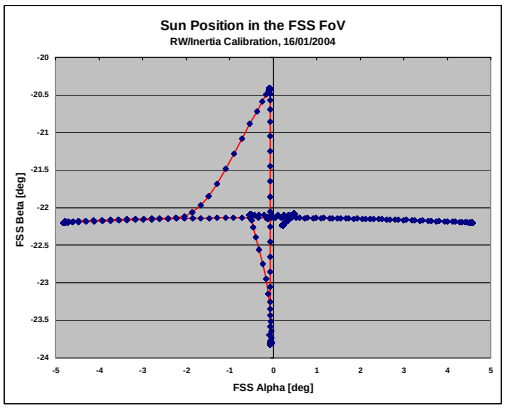
16/01/04 (Day of Year 016, Revolution 153)

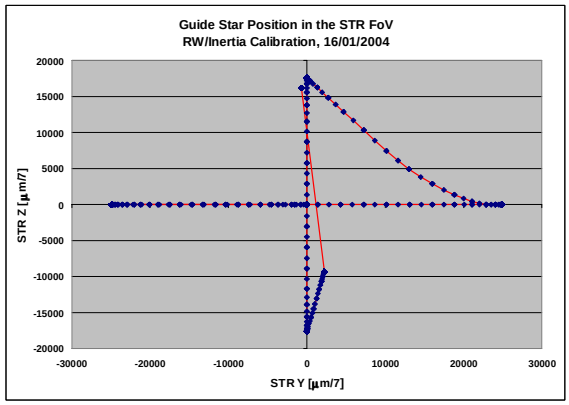
Execution of the Reaction Wheel Inertia Calibration: An Engineering window of 8 hours (06:30:00 to 14:30:00) was dedicated in the Timeline to the RW/Inertia calibration. This operation ran completely from the Timeline and consisted of:

- Change of Guide Star to pick the Guide Star for Slews
- Close loop slew to move guide at STR –Z extreme
- 30 minutes wait
- Close Loop slew to move guide to STR +Z extreme
- Close loop slew to move guide at STR +Y extreme
- 30 minutes wait

- Close Loop slew to move guide to STR -Y extreme
- Close Loop slew to move guide to (0,0) and roll to -4.8 degrees
- 30 minutes wait
- Close Loop slew to roll to +4.6 degrees
- Close Loop slew to return to zero roll
- Close Loop slew back to science attitude

The operation was done around a roll angle of zero and a pitch angle of –22 degrees.





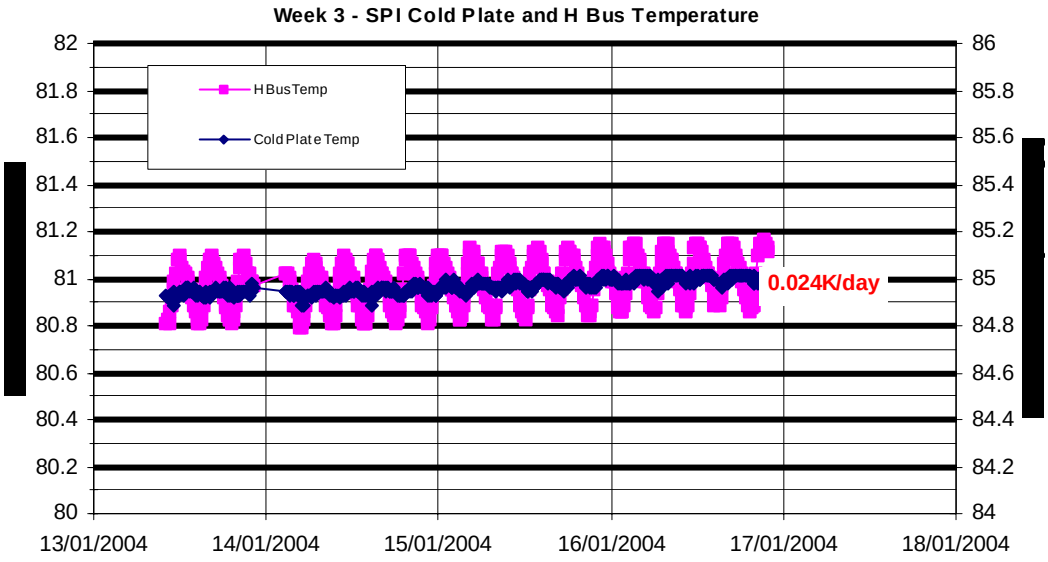
8.3.2 SPI Operations

NOTE: the following plots do not cover the period between 10th and 12th January due to data retrieval problems.

Cryo-cooler / GeD cold-plate:

The cold-plate temperature is leveled at around 84.9K with a small positive drift of 0.024K/day, which is within the expected range.

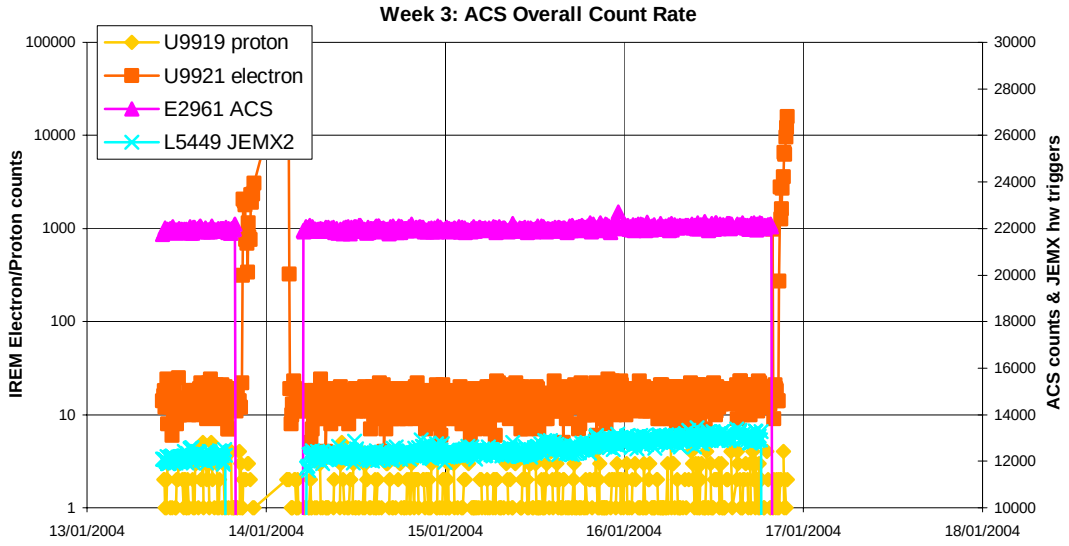
The following plot shows the evolution of the cold-plate and H bus temperatures during the reporting period.



IASW/DPE:
The SQL export file of the SPI EGSE TM database has been received from CSER Toulouse. The tables are being processed into a S2K database version of the SPI science housekeeping telemetry packets.

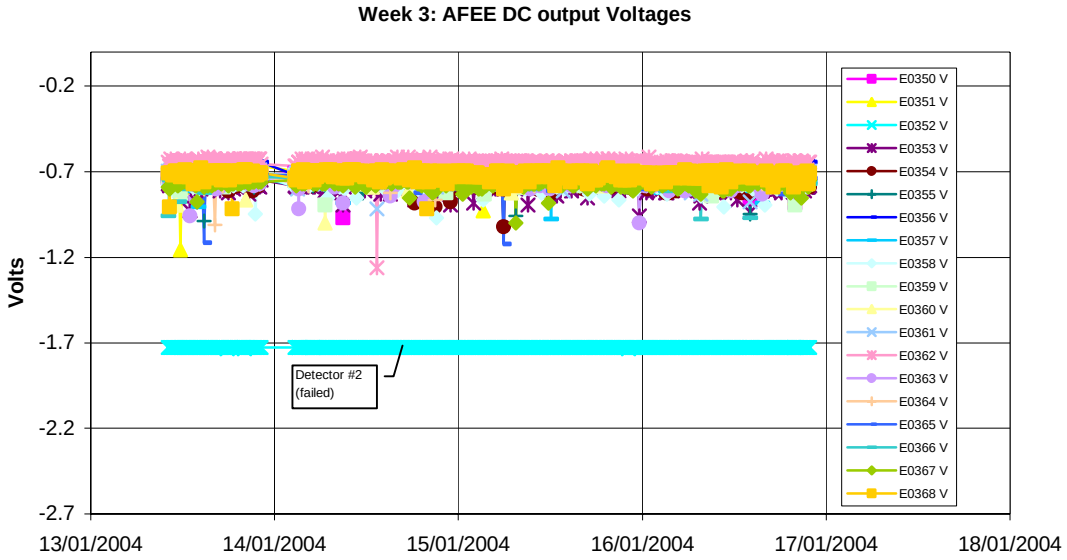
ACS:
Nothing to report.

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



AFEE:
Nothing to report.

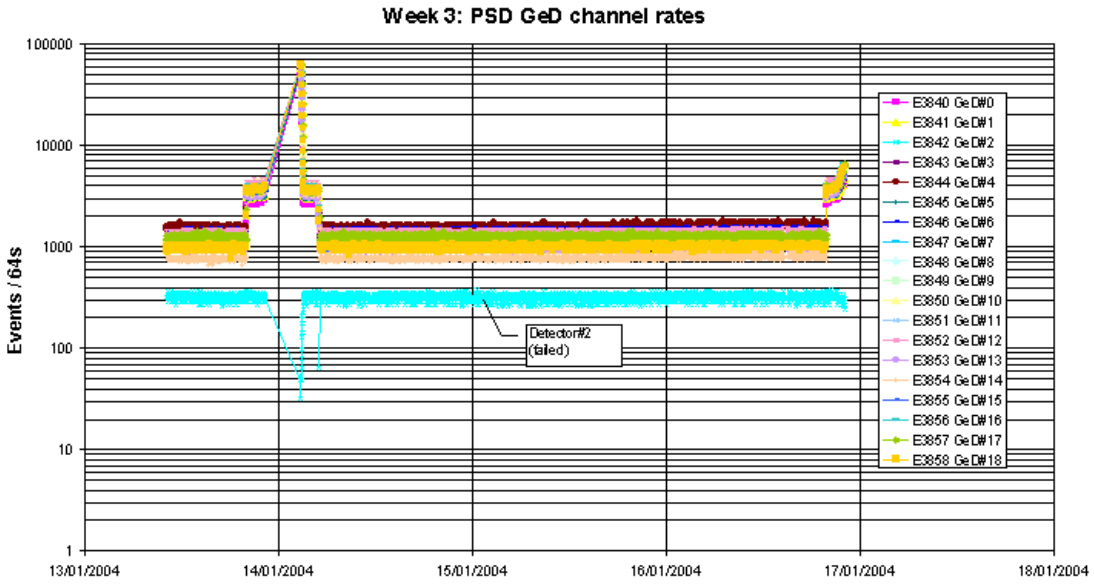
The expected AFEE dc output signals are here after plotted during the reporting period. These signals are the HV power supply control errors and provide a measure of the health status of the Ge detectors HV section. The Gedetector nr.2 is not working, see anomaly report INT_SC-72.



DFEE:
Nothing to report.

PSD:
Nothing to report.

The following plot shows the GeD channel rates as detected by the PSD during the reporting period. Detector#2 rate is triggered by noise.



8.3.3 IBIS Operations

DOY 2004.010 (10/01/04)

At 02.30 the IBIS Histograms downloading stopped as indicated from the HK parameters. The operator started the recovery action following the OR-109.
At 02.33 the CCCF was enabled and started the reconfiguration of the unit. At 02.36 the CCCF was completed and the unit back in Scientific Standard Mode. The anomaly was due likely to the coincidence (see AR 66) of GSHF with the starting of the S5 process (PICsIT Calibration Histogram): this happened during the Station Handover on DoY 2004.009.22:59 from DSS16 to Redu.

DOY 2004.011 (11/01/04)

Nothing to report.

DOY 2004.012 (12/01/04)

Nothing to report.

DOY 2004.013 (13/01/04)

Nothing to report.

DOY 2004.014 (14/01/04)

There were a few reports during the Belt passage the OEM APID 1280 ID 167 Class 2 <<IBIS1 PICsIT NOISY SEMIMODULE SIGNALLING>> due to the PICsIT detectors being ON without the VETO anticoincidence system, as required by the PIs.

At 02.57 the G5002 parameter family were reporting Alarm HIGH, due to the PICsIT detectors being ON , as required by IBIS PIs, during the Radiation Belts passage . No further action was taken.

DOY 2004.015 (15/01/04)

Nothing to report.

DOY 2004.016 (16/01/04)

There were a few reports during the Belt passage the OEM APID 1280 ID 167 Class 2 <<IBIS1 PICsIT NOISY SEMIMODULE SIGNALLING>> due to the PICsIT detectors being ON without the VETO anticoincidence system, as required by the PIs.

DOY 2004.017 (17/01/04)

There were a few reports during the Belt passage the OEM APID 1280 ID 167 Class 2 <<IBIS1 PICsIT NOISY SEMIMODULE SIGNALLING>> due to the PICsIT detectors being ON without the VETO anticoincidence system, as required by the PIs.

At 02.50 the G5002 parameter family reported OOL Alarm HIGH, due to the PICsIT detectors being ON , as required by the IBIS PIs, during the Radiation Belts passage. No further action was taken.

At 05.35.08 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 two OEMs were followed after few seconds by OEM APID 1280 ID 222 CLASS 3

<< IBIS1 MCE3 TIME OUT>>.

During the generation of the OEMs above, no ground commanding was on-going for the unit (apart from a recovery on the platform side not related to the event). The last valid TC for the unit was up-linked at 05.22.39 while the anomaly occurred at 05.35. During all the duration of the event the IASW status was STANDARD MODE.
The group of messages reported by the unit flagged an anomaly condition on the communication line between the DPE and the MCEs (the low speed link). The LSL protocol is a serial transmission and is used for Telecommand and Housekeeping communication between MCE and DPE. Each MCE has two LSL interface: prime with IFDM1 and redundant with IFDM2, automatically detected by the MCEs by checking the HSL (high speed link) clock signal.
Considering what was reported in the bodies of the three OEMs resulted the following:

1) the OEM ID 133 flagged a hardware event (interrupt) on the LSL due to an overrun on the link; the IASW may replace the standard CSSW handlers in case of timing problem. This was reported by para G1605 (REASON OF FAILURE) = LSL OVRN ERR;

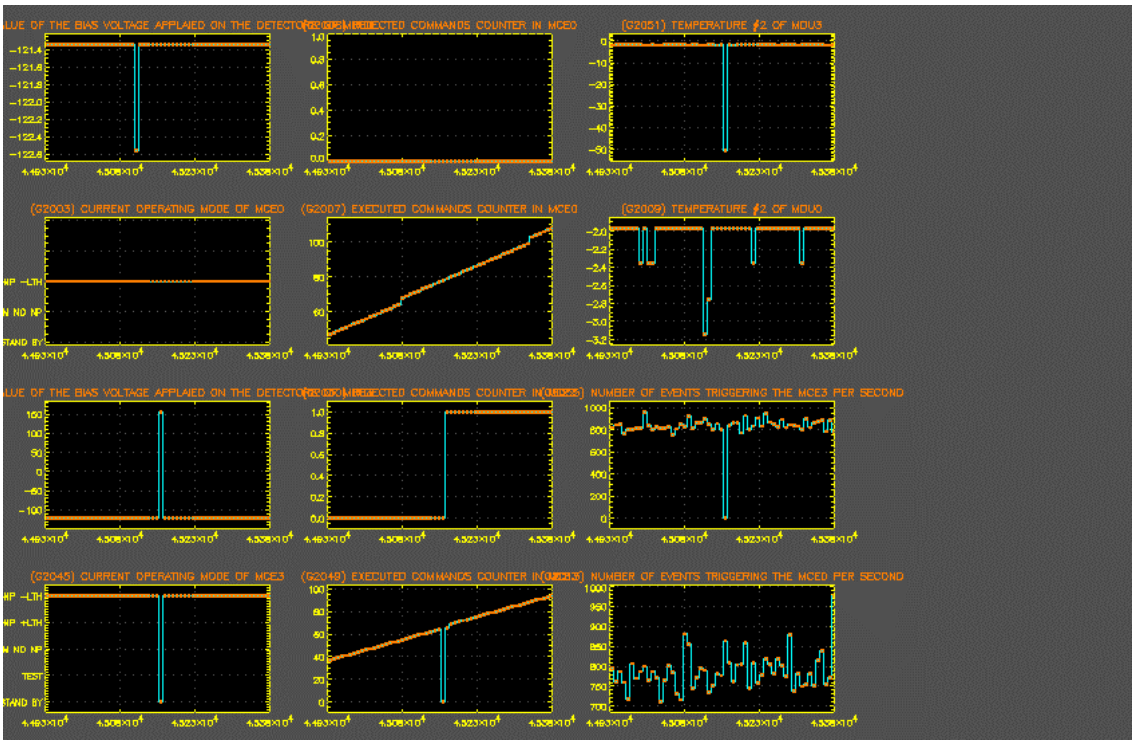
2) the second OEM ID 131 reported that the IASW had problem receiving data from a specific peripheral (para G1570 LSL TRANSFER FAIL = RECEIV DATA) upon a specific task request; the requesting task (para G1580 TID OF CALLER= HOUSEKEEPING1) is the HK1 task; the peripheral reporting problem in sending the data was the MCE4 (MDU3) as flagged by para G1581 (SUB INSTRUM ID)=242=MCE4; the TC sent by the IASW to the MCE4 was the command requesting the HK1 (para G1582 CID=254);

3) the last OEM ID 222 is simply flagging a time out problem in the execution of the internal TC CID=254 because no report was generated after(due to the problem above). At the same time the IASW TC_rejection_counter for MCE4 reported an increasing of 1 unit.

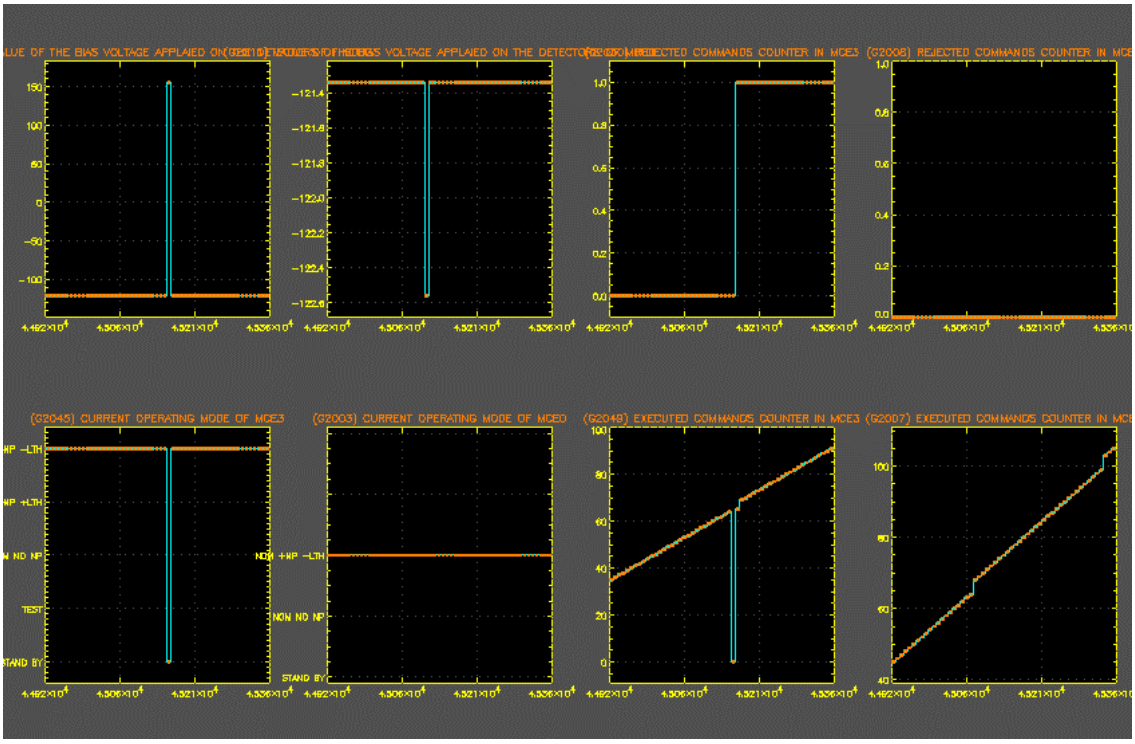
The anomaly lasted only one TM cycle and at the time of the anomaly was reported a transition to Stand-By of the MCE4 and a transition to zero of the relevant Bias.

Summarizing, 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 any answer due to the black out in communication between the peripheral and DPE. The IASW flagged the non-generation of HK1 from the MCE4 as an on-board rejection (time out) of the internal TC indicated above (CID 254). During this time no valid HK was collected from MCE4 therefore what reported in the HK1 was simply the IASW default (i.e. all 000000...). This is confirmed by the reading of some TM_paras as the biases, operating modes and MDUs temperatures all reporting the raw =0. After few TM cycles the unit solved autonomously the internal conflict on the LSL and reported the valid HK1 for MCE4. As suggested by the Payload FDIR doc no action was requested but just a monitoring of the unit.
Hereafter are reported the plots at the time of the LSL timing error as recorder by the IBIS ECOE at ESOC.

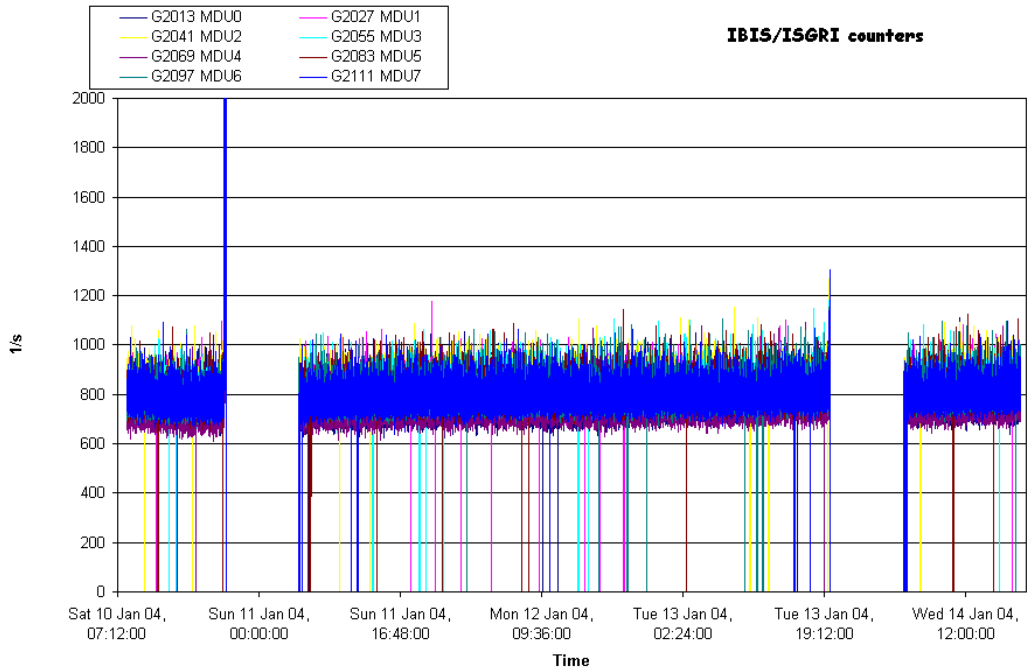
The comparison between MCE1 and MCE4

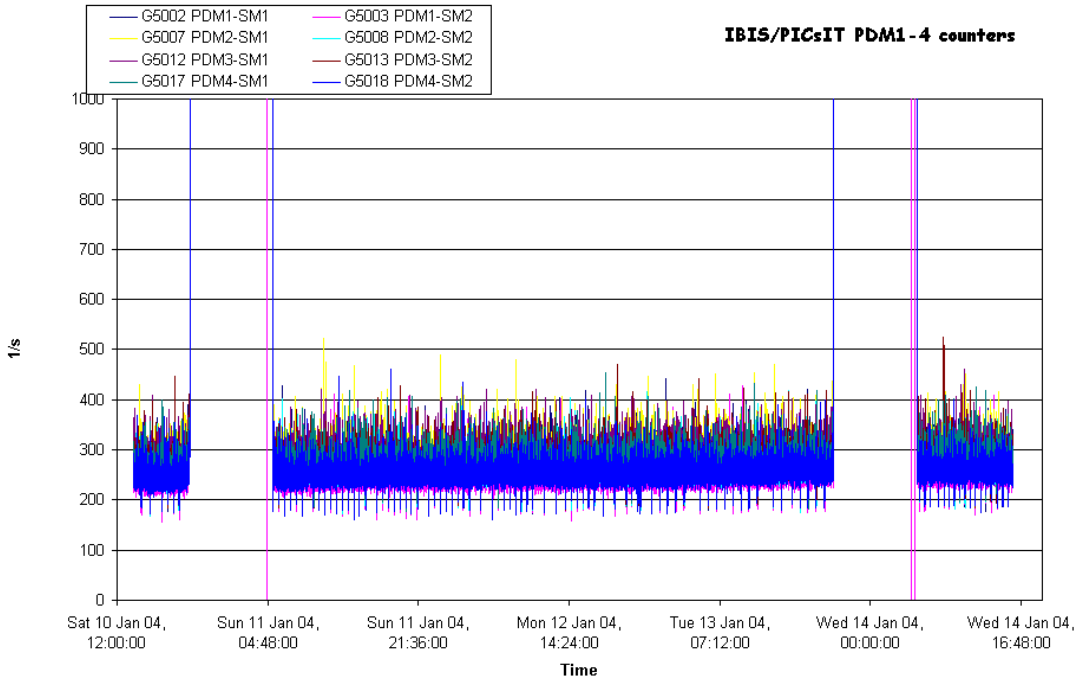


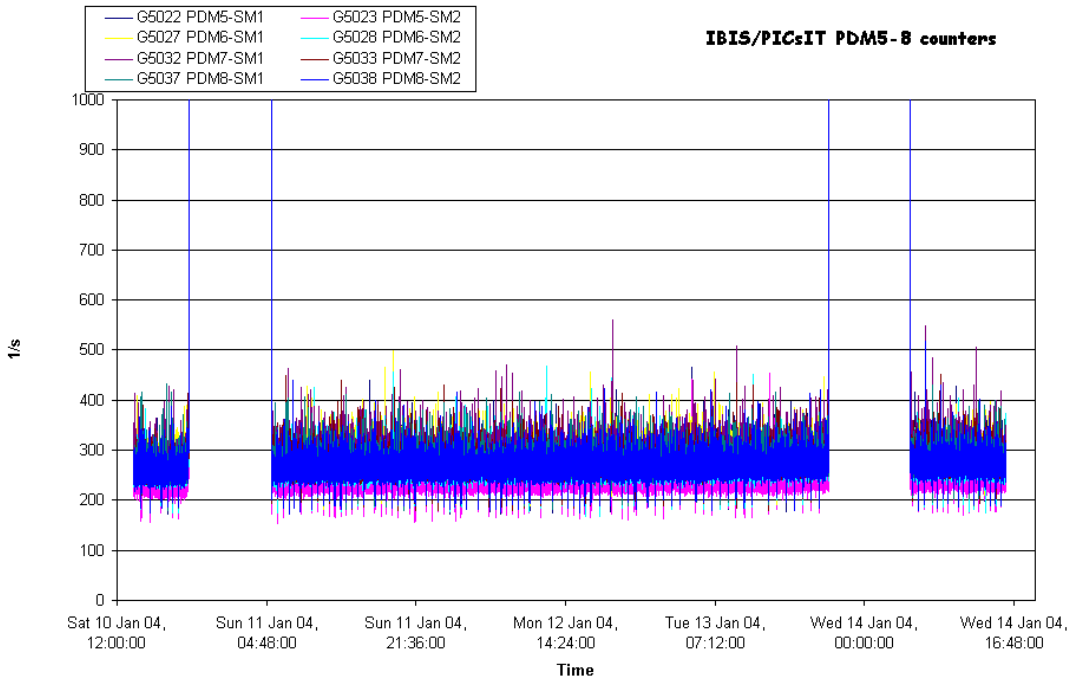
And at the instant of the on-board rejection.



Plots of the ISGRI and PICsIT counters during the observation period are shown below:





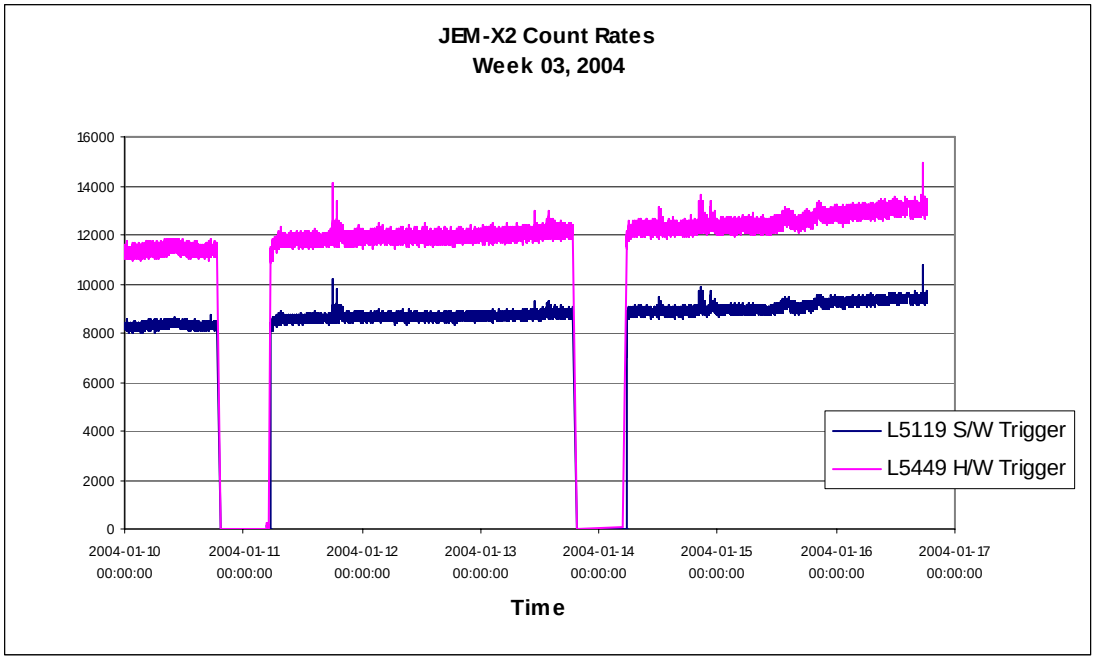


8.3.4 JEM-X Operations

2004-01-10 (DOY 010, Rev 151) to 2004-01-16 (DOY 016, Rev 153)

No contingencies or special operations to report.
JEM-X2 count rates over the reporting period are displayed in the following graph[1].

[1] Data sampled to smooth spikes in S/W trigger due to flushing of buffer during slews.



8.3.5 OMC Operations

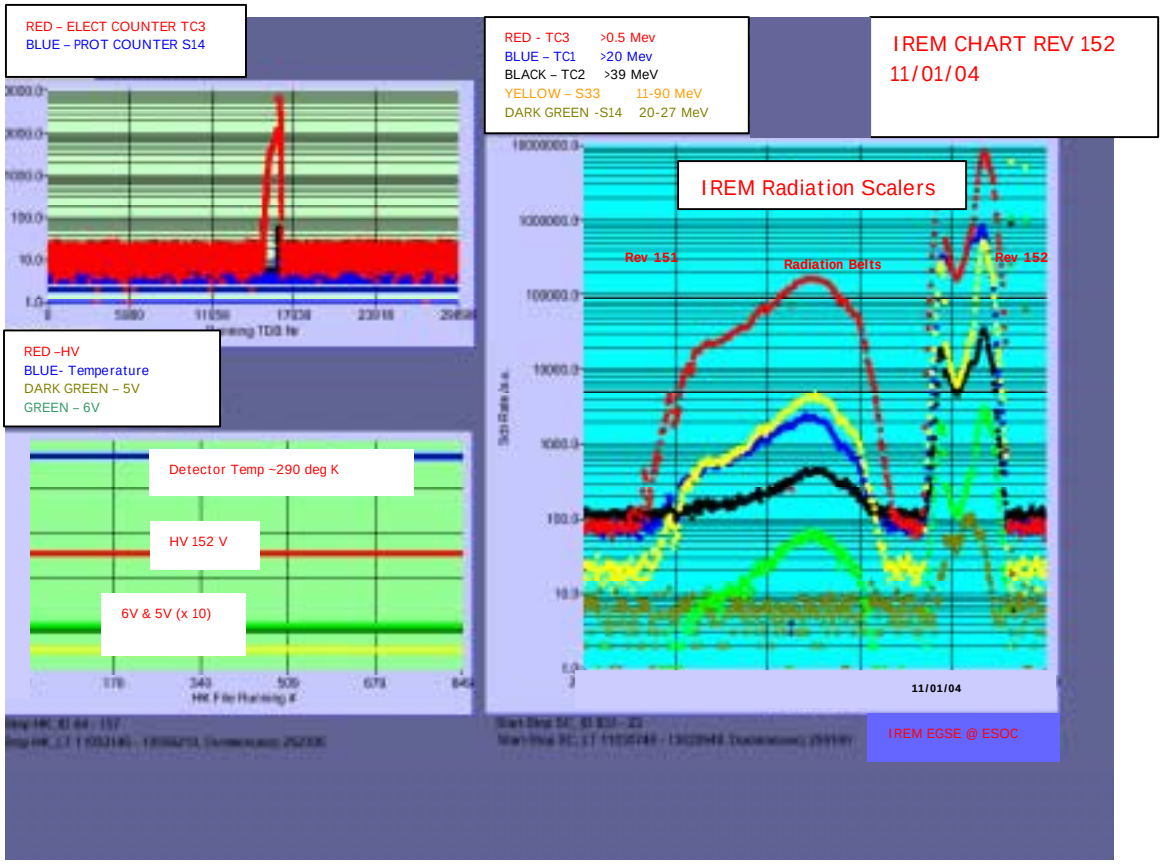
On DoY 015, at 18:23, due to AOCS problems, about 18 minutes late, pointing 01530024 started.

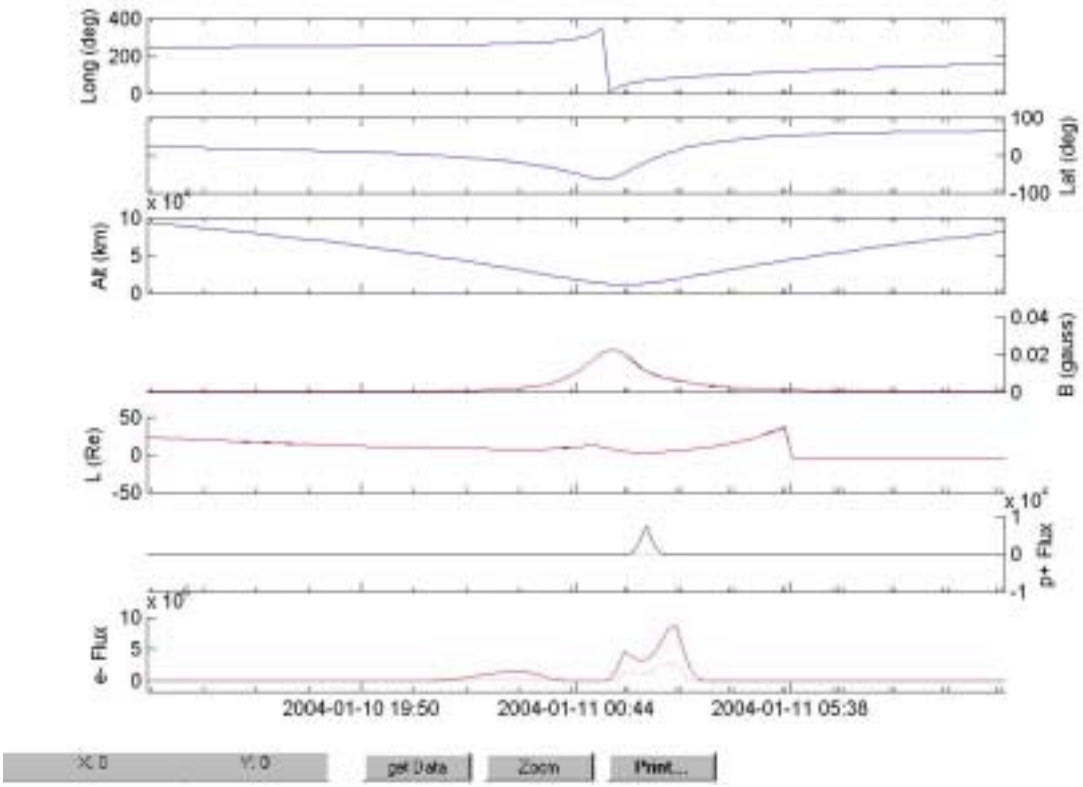
On DoY 010, at 20:07, again on DoY 13, at 19:56, and again on DoY 016, at 19:45, OMC was switched by the Timeline to SAFE mode, at the nominal time.

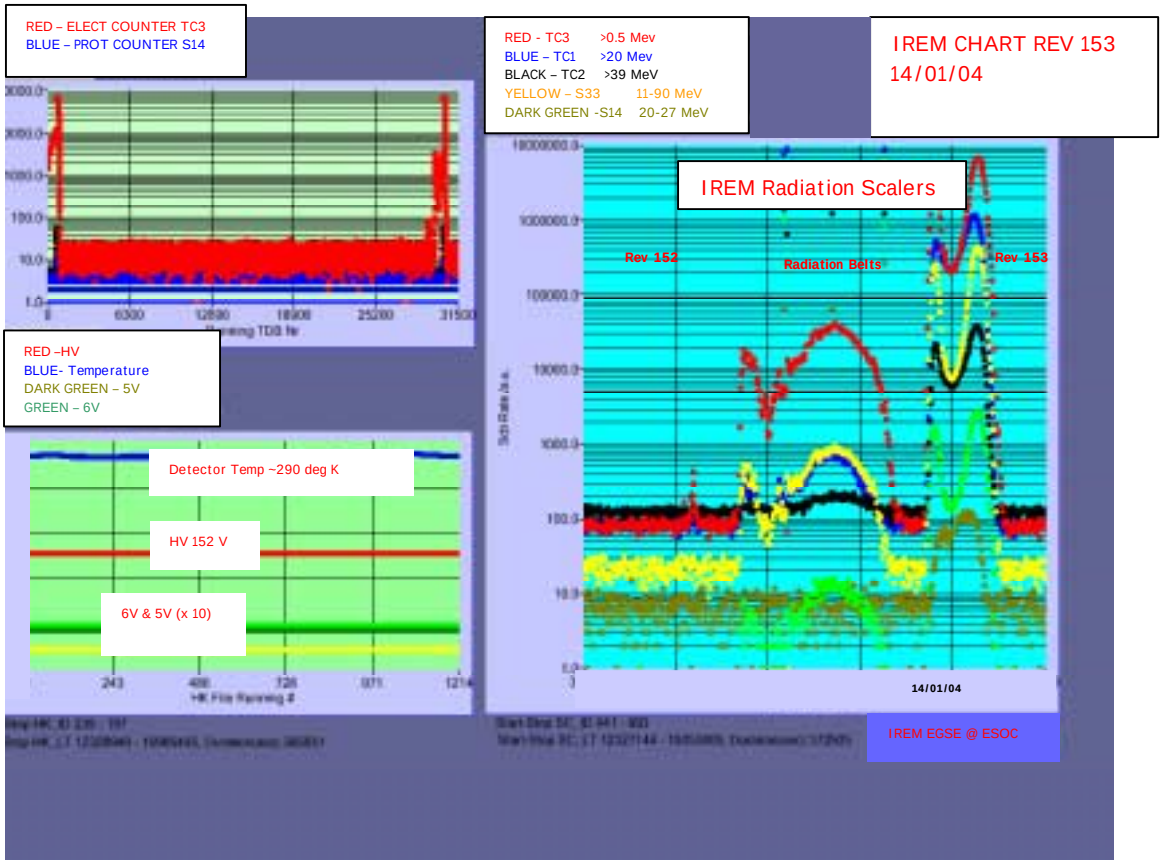
Apart from that, nothing to report.

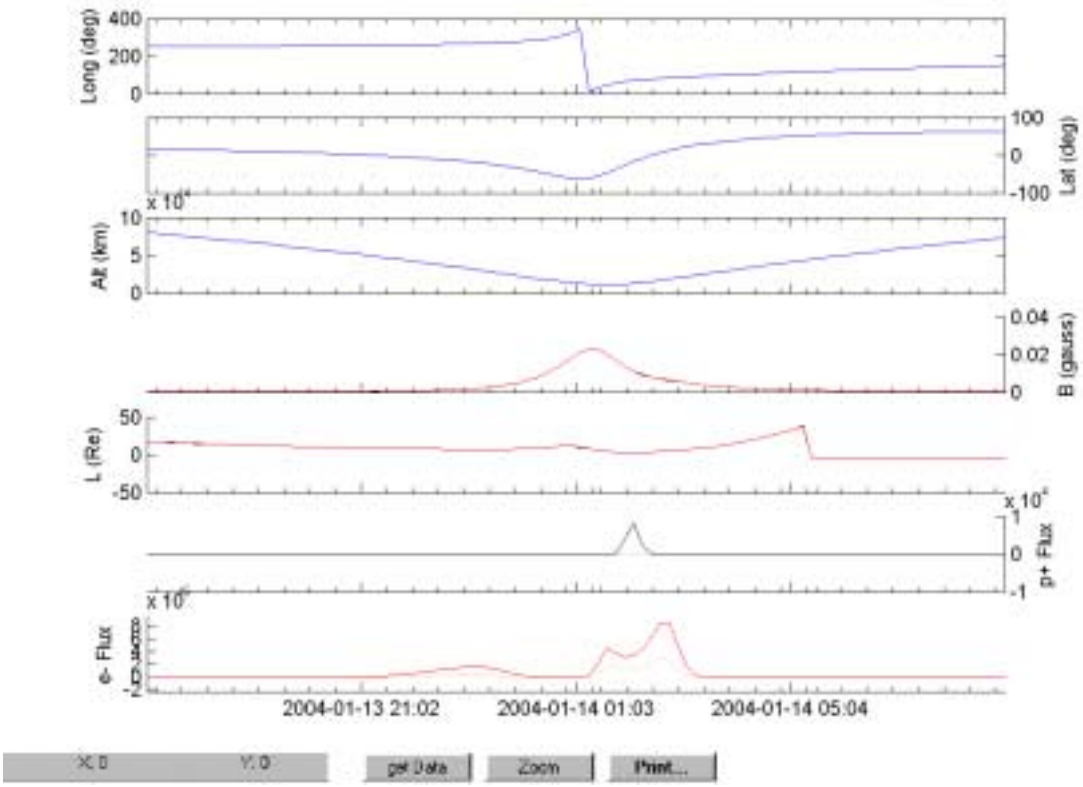
8.3.6 IREM Operations

Plots of the evolution of the IREM counters from revs 152-->153 and the predicted Belts passages (as calculated with AP8Max and AE8Max models by using the RADMON tool),are shown below:


RED – ELECT COUNTER TC3
BLUE – PROT COUNTER S14
RED - TC3 >0.5 Mev
BLUE – TC1 >20 Mev
BLACK – TC2 >39 MeV
YELLOW – S33 11-90 MeV
DARK GREEN -S14 20-27 MeV
IREM CHART REV 152
11/01/04
IREM Radiation Scalers
Rev 151
Radiation Belts
Rev 152
11/01/04
RED –HV
BLUE- Temperature
DARK GREEN – 5V
GREEN – 6V
Detector Temp ~290 deg K
HV 152 V
6V & 5V (x 10)
IREM EGSE @ ESOC


Long (deg)
Lat (deg)
Alt (km)
B (gauss)
L (Re)
p+ Flux
e- Flux
2004-01-10 19:50
2004-01-11 00:44
2004-01-11 05:38
X: 0
Y: 0
get Data
Zoom
Print...


RED – ELECT COUNTER TC3
BLUE – PROT COUNTER S14
RED - TC3 >0.5 Mev
BLUE – TC1 >20 Mev
BLACK – TC2 >39 MeV
YELLOW – S33 11-90 MeV
DARK GREEN -S14 20-27 MeV
IREM CHART REV 153
14/01/04
IREM Radiation Scalers
Rev 152
Radiation Belts
Rev 153
RED –HV
BLUE- Temperature
DARK GREEN – 5V
GREEN – 6V
Detector Temp ~290 deg K
HV 152 V
6V & 5V (x 10)
14/01/04
IREM EGSE @ ESOC


Long (deg)
Lat (deg)
Alt (km)
B (gauss)
L (Re)
p+ Flux
e- Flux
2004-01-13 21:02
2004-01-14 01:03
2004-01-14 05:04
X: 0
Y: 0
Get Data
Zoom
Print...