

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-TOS-OF
No. 029
Week 15
11.04.03
Routine Phase

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1 General

The Flight Control Team at MOC has compiled this report considering a couple of inputs provided by the Flight Dynamics Team.

It addresses the activities from 05.03.03 until 11.04.03 (both dates inclusive) and covers the revolutions 58 and 59.

2 Summary of Activities

The operations were performed according to the planning inputs from ISOC combined with some manual commanding of the instruments by MOC.

The targets of the revolutions were XTE J1550-564 (RA 15:50:58.90; DEC -56:28:35.3), Aql X-1 (RA 19:11:16.00; DEC +00:35:06.0), XT 1741-322 (RA 17:45:1.72; DEC -32:13:37.5), GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0), the Galactic centre and the Galactic plane. The activities consisted of 3 raster dithering observations, a hexagonal dithering observation, as well as GPS and GCDE 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 unexpected behaviour / malfunction was identified.

3.1.1 AOCS

The fuel consumption over the last 11 days was 0.33 Kg. The remaining propellant is in the order of 178.34 Kg on the 8th of April.

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 is in the order of 2380 W as since the beginning of the mission, i.e. no degradation has been identified so far.

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 identified.

3.1.5 RF

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 status is nominal.

The instrument is operating in photon by photon mode with Spectra telemetry disabled. The TM bandwidth assigned to SPI was 69 pkts for the all science windows during the period. The Cryo-cooler is working nominally ensuring 85K temperature in the detector cold plate.

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

3.2.2 IBIS

Status Nominal, on-going routine phase.

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

3.2.3 JEM-X

During the reporting period, JEM-X2 operations were performed nominally as planned in the timeline and JEM-X1 was dormant.

3.2.4 OMC

During this period OMC operations were interrupted once due to a TM glitch, which caused the timeline to stop.

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

3.2.5 IREM

The status of the unit is nominal.

4 Ground Facilities

The overall performance of the ground segment was good, well above the required 95 %. This concerns the number of executed pointings with respect to the planned pointings.

4.1 Mission Operations Centre

On day 098 at 06:30, it was noticed that the archiving and retrievals were not working. The cause of this was tracked down to missing old archives (that had been removed to save disc space, but were still in the archive catalogue) causing the archive server to fail, and switch the archiving off. This behaviour was not expected, it was always assumed that a clean up of the archive files would not require a manipulation of the catalogue. This was eventually corrected at 10:24, when the server was restarted with an empty catalogue. The impact of this was that there is now a hole in the short-term TM archive. The long term archive is, however, complete.

To avoid this problem in the future, a tool has been developed to edit the catalogue and remove the pointers to non-existing files. A new catalogue has been created with this tool, and put on the system on day 101.

4.2 Ground Stations & Network

During this week, there was only one problem related to the ground stations:

- On day 099 from 15:18 to 15:26, there was a TM drop with Goldstone DSS-16. The impact was that the star mapping failed causing pointings 63 and 64 of revolution 59 to be missed, with pointing 65 having to be manually recovered.

4.3 Science Ground Segment

4.3.1 ISOC

No ISOC Input has been provided

4.3.2 ISDC

No ISDC Input has been provided

5 Special Events

6 Anomalies

The problems related to the ground segments are already mentioned in chapter 4. The work on the interface with Goldstone (VC-7 in Online Complete mode) has been completed, and Goldstone is ready to support this connection mode.

A list of the pending anomalies since Launch is presented in the Appendix. New anomalies raised during the past week are listed below:

ARid	Date Occurrence	Subject	Segment	Element	Status
INT - 002291	2003/04/08	Archiving lost on A chain	Ground	IMCS	Pending
INT - 002292	2003/04/09	Telemetry Drops from GoldStone (DR 6102621)	Ground	NASA Sta.	Pending
INT - 002293	2003/04/13	Science data CDs produced with no TM inside.	Ground	IMCS	Pending

7 Future Milestones

There is a Packet Terminal Local Time wrap-around expected on 2003/04/29 06:00:11 (DoY 119), to within a second or so.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 58

In revolution 58 the following observations were performed:

- Raster dithering centred on XTE J1550-564 (RA 15:50:58.90; DEC -56:28:35.3) for ~3 hours;
- 21 pointings of a GPS lasting ~15 hours;
- Raster dithering observation of Aql X-1 (RA 19:11:16.00; DEC +00:35:06.0) for ~17 hours;
- Raster dithering observation of XT 1741-322 (RA 17:45:1.72; DEC -32:13:37.5) for ~22 hours.

Throughout these observations, the TM allocation was 69 SPI; 112 IBIS; 1 JEM-X1; 8 JEM-X2; 5 OMC and all instruments were in their nominal science modes, except for JEM-X1, which remained in Safe mode for the entire revolution.

Revolution 59

The observations in revolution 59 consisted of 21 pointings of a GPS lasting ~15 hours, followed by a series of GCDEs lasting ~15 hours, after which a hexagonal dithering observation centred on GRS 1915+105 (RA 19:15:11.50; DEC +10:56:44.0) was performed for the remaining ~31 hours of observation time.

Throughout these observations, the TM allocation was 69 SPI; 112 IBIS; 1 JEM-X1; 8 JEM-X2; 5 OMC and all instruments were in their nominal science modes, except for JEM-X1, which remained in Safe mode for the entire revolution.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2003-03-28T17:04:25.000Z	178.6693	F	Automatic TM processing.
2003-03-29T01:25:14.000Z	178.6538	F	Automatic TM processing.
2003-03-29T08:32:27.000Z	178.6340	F	Automatic TM processing.
2003-03-29T23:10:44.000Z	178.6142	F	Automatic TM processing.
2003-03-31T09:27:13.000Z	178.5997	F	Automatic TM processing.
2003-04-01T16:29:08.000Z	178.5643	F	Automatic TM processing.
2003-04-01T22:58:28.000Z	178.5429	F	Automatic TM processing.
2003-04-03T07:08:56.000Z	178.5262	F	Automatic TM processing.
2003-04-03T09:23:28.000Z	178.4932	F	Automatic TM processing.
2003-04-04T22:47:48.000Z	178.4869	F	Automatic TM processing.
2003-04-05T04:29:16.000Z	178.4623	F	Automatic TM processing.
2003-04-05T12:08:21.000Z	178.4403	F	Automatic TM processing.
2003-04-07T14:54:10.000Z	178.3870	F	Automatic TM processing.
2003-04-07T22:39:07.000Z	178.3605	F	Automatic TM processing.
2003-04-08T07:44:44.000Z	178.3371	F	Automatic TM processing.

This report was generated Wed Apr 9 08:00:08 GMT 2003

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 05/04/2003-10/04/2003

AOCs operations were executed from the Automatic Timeline. The operations were almost unaffected by ground problems. There were, however, a few problems related with guide stars (two losses due to the star being at the edge of the FoV, one due to radiation, and a noisy guide). All these problems happened with stars autonomously selected onboard at the end of open loop slews.

During this period, 78 Open Loop Slews, 146 Closed Loop Slews and 8 Momentum Biases were executed. 3 slews were missed due to a Ground Station problem. This is around 1% of the total. In addition, due to the guide star problems mentioned above, the OTF was low for 3 pointings, and flickered in another two).

During this week, an update of the onboard calibration parameters has been performed for the FSS-A Transfer Function, and the Inertia related parameters.

04/04/03 (Day of Year 094, Revolution 57-58)

Update of onboard calibration parameters: Around 16:00 an update of the calibration parameters related with FSS-A and the Inertias was performed. This was performed below the radiation belts to avoid any impact on science (there are transients in the attitude when the FSS roll and RW Decoupling Matrices are updated). The FSS-A coefficients are the product of a piece of software that performs a "running" calibration, developed by Flight Dynamics to take into account data from all the pointings. The Inertia related parameters are derived from the last calibration results, updated to take the fuel consumption into account. This update is expected to improve the residual error and rates at the end of open loop slews, and the absolute error around X during pointings.

05/04/03 (Day of Year 095, Revolution 58)

Guide star loss (STR FoV edge): There was a loss of the guide star right at the beginning of pointing 0058_0020 (13:52). The reason was that the guide was at the edge of the STR FoV. It happened at the end of an Open Loop Slew, during the first mapping. For this mapping, the FDS reconstructed the attitude with a 10' discrepancy in roll with respect to the FSS measured one. This caused an incorrect slew parameter update for the next pointing by the same amount. The result was that at the end of the slew to 0058_0021 the OTF jittered before stabilising at the high value. Note that 10' is the safety limit for the controller. The PTV didn't help in this case, since it was an Open Loop Slew of less than 6 deg.

There are two points that should be investigated in relation with this problem:

- Why was the attitude reconstruction so much affected in roll? There was virtually no roll oscillation due to the loss of guide.
- Whether it would be possible to put a sanity check on the FDS software to prevent these cases, by checking the difference between the expected alpha from the attitude reconstruction (star based), and the current alpha in TM (FSS based), and issuing an error if it exceeds a certain limit.

The impact of the problem was that the OTF stayed low for pointing 0058_0020, and flickered at the beginning of 0058_0021.

06/04/03 (Day of Year 096, Revolution 58)

Nothing to report.

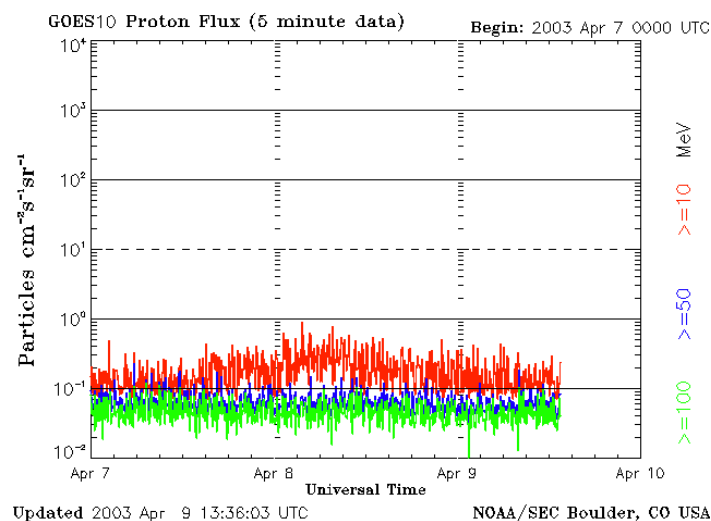
07/04/03 (Day of Year 097, Revolution 58-59)

OTF flickering, bad quality guide: During the pointing 00580096 (acquired via an open loop slew) the ACC picked up as guide a dim, variable star that is part of a multiple system. The star, Tycho # 3955-01681-1, has an expected instrumental magnitude of 8.8, but was reported in TM as 8.3. This could be due to contamination from another star of the multiple system. It could also be due to variability in the star it self, which is reported as an eclipsing variable with a change > 0.1 m. In any case the coordinates of the star jumped many times from around (13986, 4343) to around (13838, 4169). This is a jump of 36" in pitch and 43" on yaw, sufficient to make the OTF flicker. This happened 34 times, and it was reflected in the Broadcast Packet twice.

For the same reason the production of the Attitude History File for this pointing is creating problems to FD.

08/04/03 (Day of Year 098, Revolution 59)

Guide star released (SEU filter): At 08:21 the guide star was released by the SEU filter. A new guide star was immediately found by the autonomous mapping. The new star found was also lost almost immediately. In the two cases it was due to the SEU filter. Both stars were dim, with magnitudes around 8.3. In this occasion, all seems to indicate that there really was a moderately high proton flux hitting the S/C:



Protons of energy $> 10\text{MeV}$ are assumed to be the cause of STR False Events. Note that the flux was still very moderate with respect to the solar flares of the kind XMM has experienced in the years 2000 and 2001 (that were several orders of magnitude higher).

The impact of the lost guide is that the OTF for pointing 00590011 went to low.

Guide star loss (STR FoV edge): At the end of the slew to pointing 00590019, the guide star reached the edge of the STR FoV in Z, and was lost right at the start of the pointing. The impact of this problem was that the OTF stayed low for this pointing. In addition the FDS was not able to reconstruct the attitude (since it needs the coordinates of the guide star to correct for the S/C motion during the mapping). A new attitude reconstruction was performed manually, and the parameters for the next pointing updated.

09/04/03 (Day of Year 099, Revolution 59)

Slews missed due to Ground Station Problem (Goldstone DSS-16): At 15:18 frequent drops in TM started. Due to this the AOCS timeline operations had to be stopped, and a manual recovery performed once the TM was stable again. The impact of this problem was that slews 00590063, 00590064 and 00590065 were lost (the attitude of 00590065 was acquired manually).

10/04/03 (Day of Year 100, Revolution 59-60)

Nothing to report.

8.3.2 SPI Operations

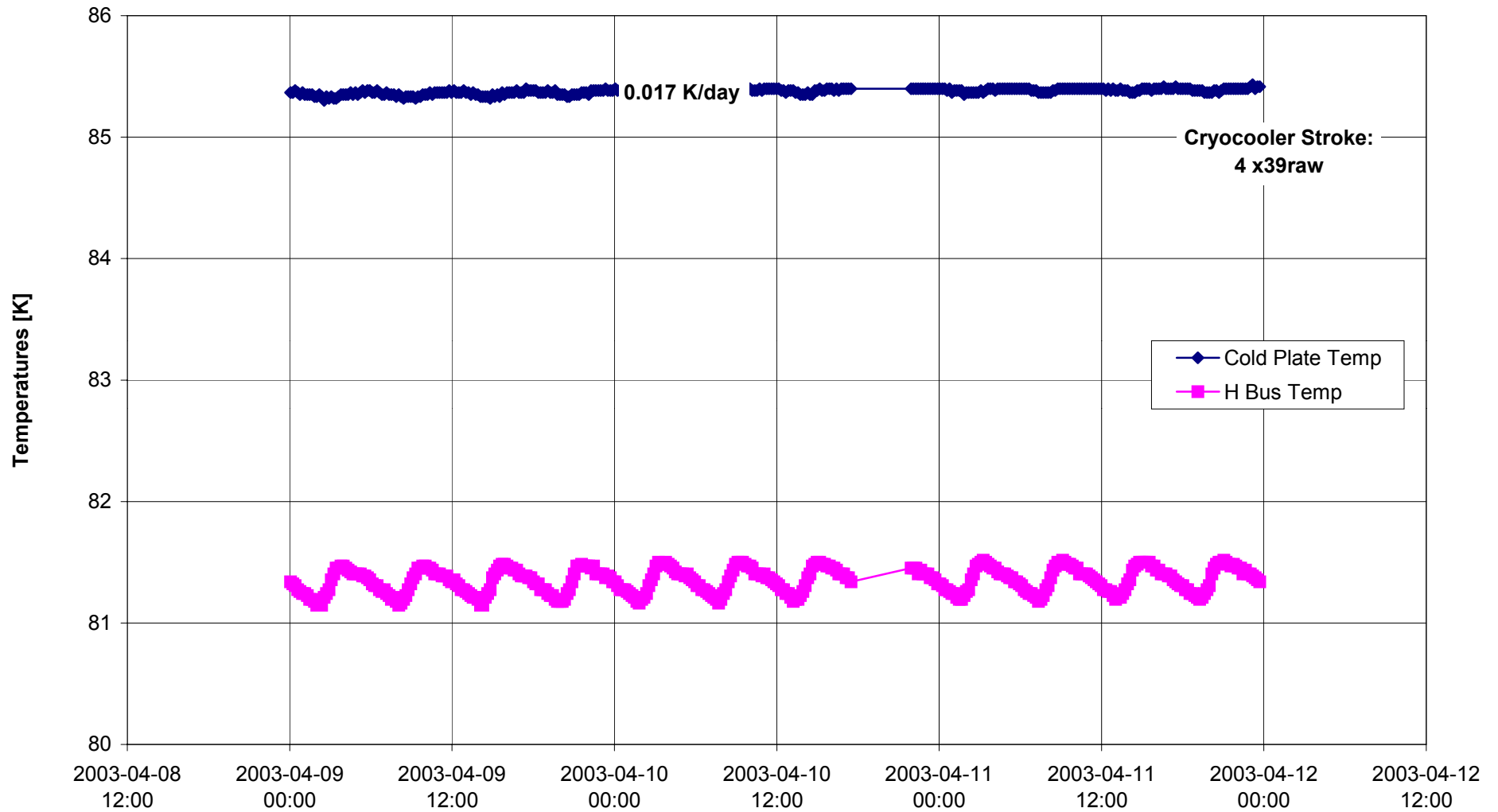
SPI Status: Details

No special events occurred during the last week.

The drift of the cold plate temperature still continues at a slightly reduced rate of about 0.017K/day (last week it was 0.025K/day). See attached plot.

The instrument still does not use 3 out of 69 TM slots allocated by the PST during the science windows.

Week 15 - SPI Cold Plate Temperatures



8.3.3 IBIS Operations

On DOY 2003. 095.03.46Z, 2003.096.08.21-12.46Z and 2003.098.19.59Z the OEM ID 179 Class 2 <<IBIS1 VETO COUNTER BOTTOM EXCEEDS ALERT VALUE>> was reported. The relevant TM_para G6062 reported values inside limits after few TM cycles and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

On DOY 2003.095.10.31-11.05-12.29-15.55-14.46-17.29-17.56-22.51-23.55Z, 2003.096.09.52-15-54-16.31Z and 2003.098.21.09Z the OEM ID 180 Class 2 <<IBIS1 VETO COUNTER LATERAL EXCEEDS ALERT VALUE>> was reported. The relevant TM_para G6063 reported a value inside limits and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

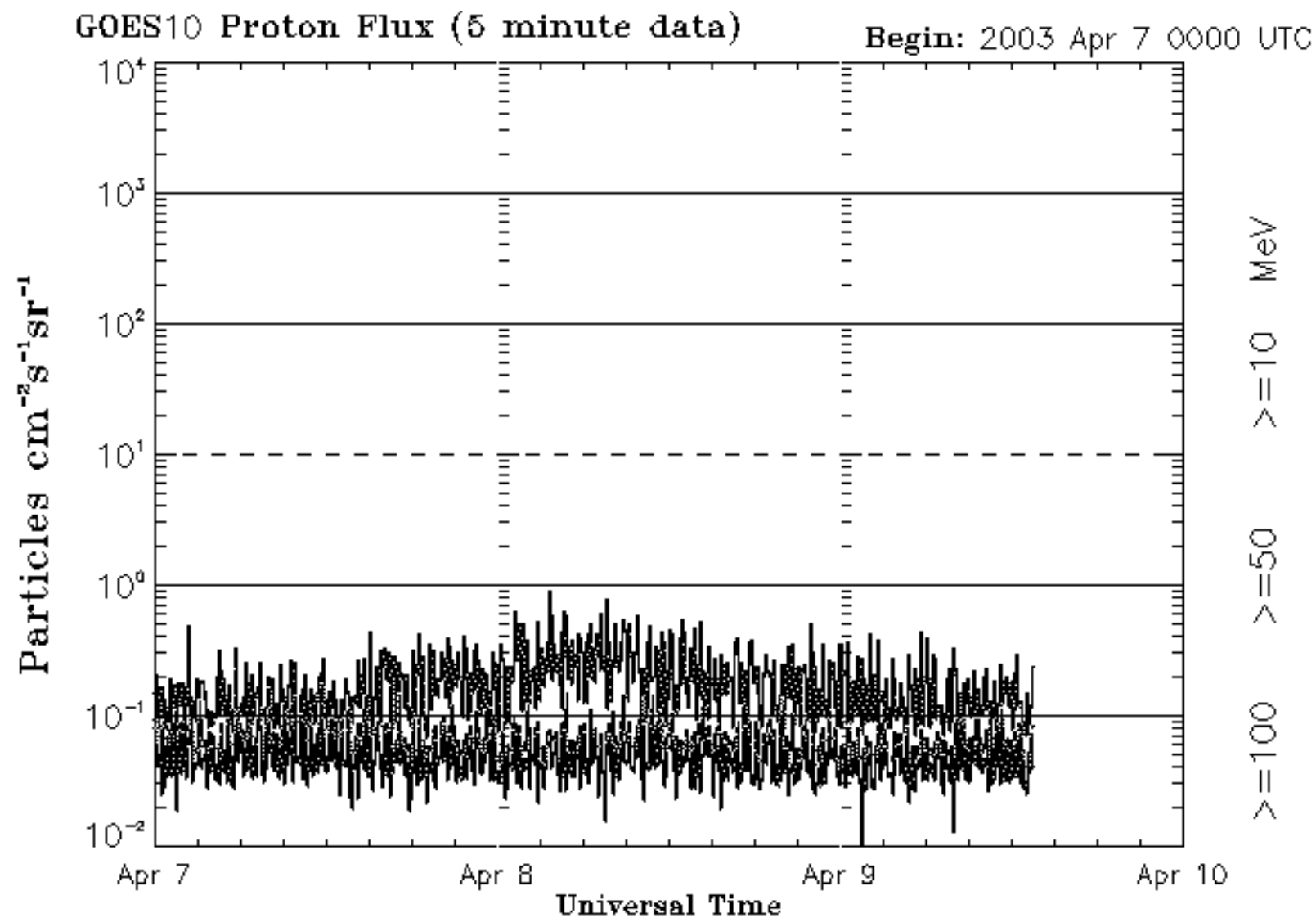
On DOY 2003. 096.23.27 the OEM ID 184 Class 2 <<IBIS1 VETO +28V VDM/CDM VOLTAGE OUT OF RANGE>> was reported. The relevant TM_para G6062 reported values inside limits and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

On DOY 2003. 097.14.25Z the VETO Lateral and Bottom Counter (TM para G6062-63) was OOL for few TM cycles. No action has been taken. The Radiation belt entry was expected at 15.29Z

On DOY 2003.098.07.13Z anomalous high count rates were reported. This was probably due to a solar flare (observed in the VETO data): the NOAA web site was reporting an increasing of proton flux (for energy ≥ 10 MeV) from the sun, in the morning of DOY 2003.098 (see image below). The solar flare was also observed as an isolated peak in the count rate of PICsIT PDM 8 SM 1, reaching a high value ~ 700 cts. No coincident peaks have been observed in the other PDMs and apparently there is no relation between events in VETO and in PICsIT. Nothing similar is reported by the ISGRI detectors, which only showed the plateau of high counts as reported in VETO and due to the solar flare. At the time, the satellite was performing a Galactic Plane Survey.

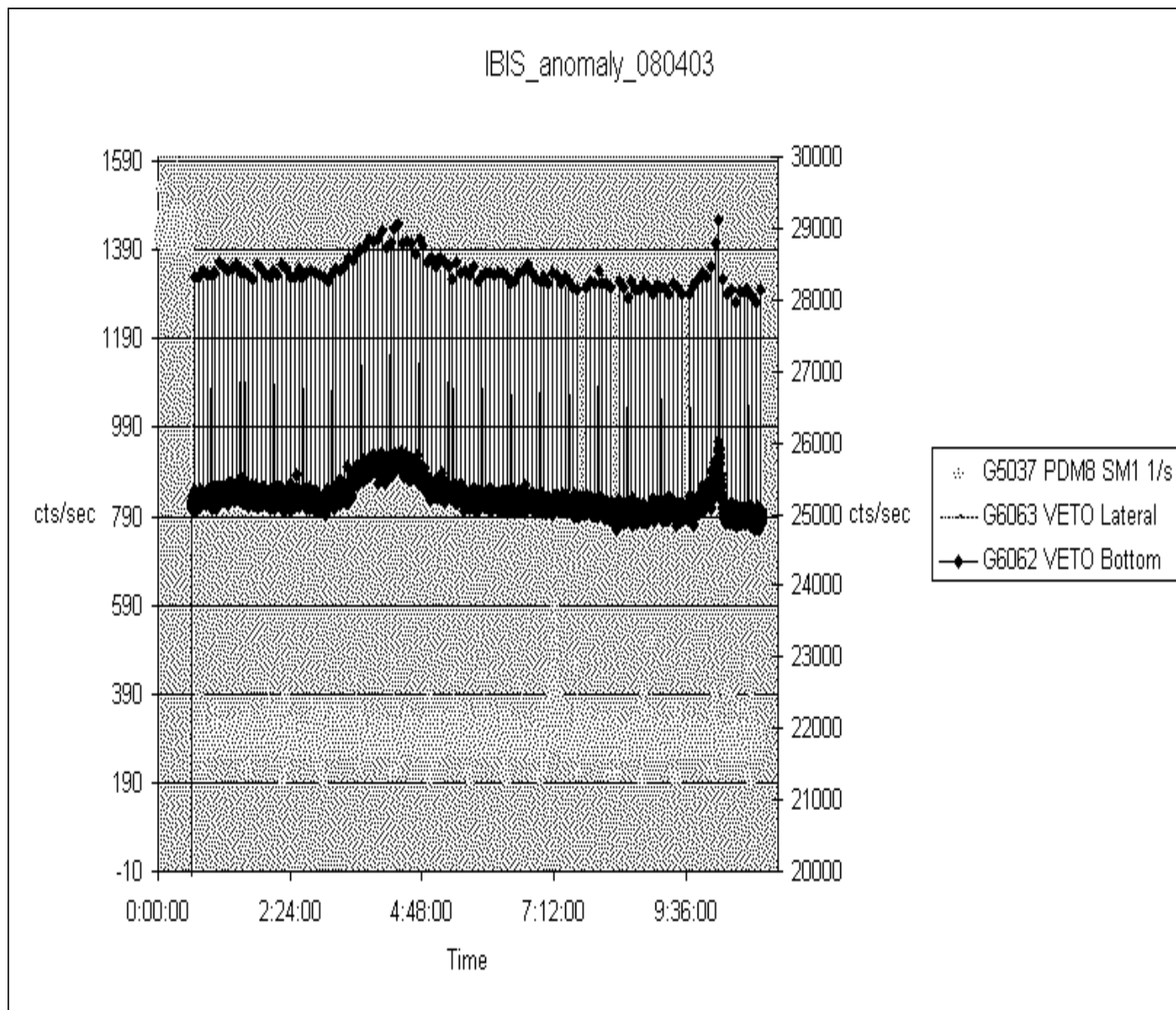
If the radiation was coming from the FOV, it should in principle have been distributed on all the PDMs and not just on one, in addition it was expected that VETO would react with an increase of the count-rates. It is therefore considered likely, that the event was caused by a noisy pixel in the PDM 8. The max count rate before the control software intervenes is ~ 4000 cts/sec, this event was probably not able to trigger noisy pixel detection software, so the effect has just been the high count rate peak in one PDM. The cause of the noisy pixel it is thought to be the earlier strong proton flux from the sun.

Below are reported the plots of the count rates for VETO and the PICsIT:



Updated 2003 Apr 9 13:36:03 UTC

NOAA/SEC Boulder, CO USA



8.3.4 JEM-X Operations

Nominal operations, nothing to report.

8.3.5 OMC Operations

During this period, 2 out of the 189 originally planned OMC pointings were missed.

09-Apr-2003, DOY 099, Revolution 59

- **Pointings 00590063 and 00590064 were missed.** At 15:18, an AOCS TC failed due to a glitch in telemetry from Goldstone. Due to this, pointings 00590063 and 00590064 were missed. OMC resumed normal operations from pointing 00590065.

8.3.6 IREM Operations

The status of the unit is nominal.

8.4 List of Anomalies since Launch

The following table presents the list of all identified anomalies that have been registered since Launch and that are still pending. Though these Anomaly Reports still have a pending status most of the problems have been analysed and solutions or at least workarounds are already in place.

ARid	Date Occurrence	Subject	Segment	Element	Status
INT - 002003	2002/10/19	Command failure from TCE2 at Redu1.	Ground	ESA Sta.	Pending
INT - 002010	2002/10/22	Time correlation not applied correctly to time parameters in TM type 8 reports.	Ground	IMCS	Pending
INT - 002024	2002/10/28	OEM: SPI1 Fixed print overflow	Space	SPI	Pending
INT - 002055	2002/11/09	IBIS VETO anomalous count rates.	Space	IBIS	Pending
INT - 002061	2002/11/12	TM Desktop performance collapses when de-selecting super-commutated processing.	Ground	IMCS	Pending
INT - 002066	2002/11/13	Data routing to ISDS	Ground	I/F to SGS	Pending
INT - 002082	2002/11/13	TM packet production lower than allocation.	Space	SPI	Pending
INT - 002070	2002/11/14	TDRS: data Retrievals cancelled	Ground	IMCS	Pending
INT - 002079	2002/11/14	Timing Problem with Tele-commands	Ground	ESA Sta.	Pending
INT - 002083	2002/11/16	SPI DPE Crash	Space	SPI	Pending
INT - 002092	2002/11/19	Load-Dump comparison uses also non-released load commands	Ground	IMCS	Pending
INT - 002094	2002/11/19	TDRS does not work with super-commutated parameters	Ground	IMCS	Pending
INT - 002121	2002/11/26	ISGRI count rates increase up to 8000 counts/sec in one module	Space	IBIS	Pending
INT - 002125	2002/11/29	Data loss between IMCS and ISDC	Ground	I/F to SGS	Pending
INT - 002122	2002/12/02	IBIS VDM4 HV broke down	Space	IBIS	Pending
INT - 002142	2002/12/11	TDRS Time Interval Setting	Ground	IMCS	Pending
INT - 002145	2002/12/15	Commands failing PTV for no reason	Ground	IMCS	Pending
INT - 002174	2002/12/29	Wrong GuideStar selected.	Space	Spacecraft	Pending
INT - 002169	2003/01/03	IREM S/W local resets due to SEU (twice)	Space	IREM	Pending
INT - 002191	2003/01/11	FDS not able to update slew parameters	Ground	FDS	Pending

INT - 002194	2003/01/16	Wrong handling of the OTF after Open Loop Slew	Space	Spacecraft	Pending
INT - 002199	2003/01/17	Incorrect handling of CLCW wrap-around in CLTU mode	Ground	ESA Sta.	Pending
INT - 002197	2003/01/20	Lost Tele-commanding via REDU	Ground	IMCS	Pending
INT - 002202	2003/01/22	NCTRS log file writing takes all the CPU making the application fail.	Ground	NCTRS	Pending
INT - 002208	2003/01/27	Autostack: Commands that fail release do not apply any further interlock.	Ground	IMCS	Pending
INT - 002212	2003/01/29	TDRS Interval-by-Interval TM Retrieval Problem	Ground	IMCS	Pending
INT - 002213	2003/01/29	SCOS 2000 Interval-by-Interval TM Retrieval Problem	Ground	IMCS	Pending
INT - 002214	2003/01/29	Drop in telemetry from REDU	Ground	ESA Sta.	Pending
INT - 002216	2003/01/31	TPF generation failed	Ground	FDS	Pending
INT - 002217	2003/02/06	TC link drop	Ground	NASA Sta.	Pending
INT - 002219	2003/02/10	IBIS: PICsIT PDMs counters SET to 0 (twice) during nominal operation	Space	IBIS	Pending
INT - 002220	2003/02/10	Wrong Scrolling Display definitions on IMCS following Import	Ground	IMCS	Pending
INT - 002221	2003/02/10	IBIS: SCI submode table loaded only if forcing the submode	Space	IBIS	Pending
INT - 002227	2003/02/16	IDDA/IDDB crash	Ground	IMCS	Pending
INT - 002228	2003/02/21	STR 1750 Processor Fault in the presence of Saturn in the FoV	Space	Spacecraft	Pending
INT - 002233	2003/02/24	Time Calibration not Coherent among Ground Stations	Ground		Pending
INT - 002234	2003/02/24	S2K unable to access READ ONLY disk in IDDA.	Ground	IMCS	Pending
INT - 002235	2003/02/25	Too narrow window for RMU cal in PSF of rev 49	Ground	I/F to SGS	Pending
INT - 002239	2003/02/26	Attitude Determination Failed	Ground	FDS	Pending
INT - 002240	2003/02/27	Update of slew failed on FDS	Ground	FDS	Pending
INT - 002242	2003/03/02	TM &TC Drop on DSS 16	Ground	NASA Sta.	Pending
INT - 002243	2003/03/04	CDS Failed to Lock at Redu - H/O Postponed	Ground	ESA Sta.	Pending
INT - 002244	2003/03/05	Loss of guide star immediately prior to slew	Space	Spacecraft	Pending
INT - 002246	2003/03/05	Loss of Telemetry from DSS16	Ground	NASA Sta.	Pending
INT - 002245	2003/03/06	TDRS: Retrieval of packet 60602 or contained parameters does not work	Ground	IMCS	Pending
INT - 002251	2003/03/10	Loss of Guide Star	Space	Spacecraft	Pending
INT - 002252	2003/03/10	CDS out of Lock at Redu - TM&TC Loss	Ground	ESA Sta.	Pending
INT - 002253	2003/03/10	RX1 and RX2 Locked at the same time	Ground	NASA Sta.	Pending

INT - 002255	2003/03/10	Late AOS at DSS-24	Ground	NASA Sta.	Pending
INT - 002256	2003/03/14	Late AOS at DSS-16	Ground	NASA Sta.	Pending
INT - 002257	2003/03/17	Late AOS at DSS-24	Ground	NASA Sta.	Pending
INT - 002258	2003/03/20	IBIS: stop downloading HIST during GCDE	Space	IBIS	Pending
INT - 002259	2003/03/21	TDRS: Retrieval log is Meaningless.	Ground	IMCS	Pending
INT - 002260	2003/03/21	Monitoring task Printout, sample time	Ground	IMCS	Pending
INT - 002262	2003/03/21	TDRS: FEN Retrievals containing status parameters always fail.	Ground	IMCS	Pending
INT - 002263	2003/03/22	Data flow interruptions to ISDC	Ground	I/F to SGS	Pending
INT - 002264	2003/03/23	Loss of bit-lock + TLM problems on DSS-16	Ground	NASA Sta.	Pending
INT - 002265	2003/03/24	Loss of TC & TM Link	Ground	ESA Sta.	Pending
INT - 002267	2003/03/25	Drop in link from ISDS to ISDC	Ground	I/F to SGS	Pending
INT - 002268	2003/03/25	No bit lock via DSS-16	Ground	NASA Sta.	Pending
INT - 002269	2003/03/25	Telemetry lost from DSS-16	Ground	NASA Sta.	Pending
INT - 002270	2003/03/26	Late uplink via DSS-16	Ground	NASA Sta.	Pending
INT - 002271	2003/03/26	Drops in telemetry from DSS-16	Ground	NASA Sta.	Pending
INT - 002272	2003/03/26	TC link via DSS-16 lost	Ground	NASA Sta.	Pending
INT - 002273	2003/03/27	Drop in VC7 via REDU	Ground	ESA Sta.	Pending
INT - 002274	2003/03/28	IFTS MCS instance not working	Ground	IMCS	Pending
INT - 002275	2003/03/28	Constraint Error Exception in the OMCAS on DOY081	Space	OMC	Pending
INT - 002276	2003/03/28	Crash of OMCAS on DOY083	Space	OMC	Pending
INT - 002277	2003/03/28	Telemetry lost from DSS-16. DR N100888	Ground	NASA Sta.	Pending
INT - 002278	2003/03/28	FEC failure in REDU	Ground	ESA Sta.	Pending
INT - 002279	2003/03/29	Telemetry lost from DSS-16. DR N109197	Ground	NASA Sta.	Pending
INT - 002280	2003/03/30	Telemetry lost from REDU	Ground	ESA Sta.	Pending
INT - 002281	2003/03/31	TC outage via REDU	Ground	ESA Sta.	Pending
INT - 002282	2003/03/31	Bad data being received from DSS-16	Ground	NASA Sta.	Pending
INT - 002283	2003/04/01	ISDS-A and IDDA services stopped	Ground	IMCS	Pending
INT - 002284	2003/04/01	Reed Solomon alarms from REDU	Ground	ESA Sta.	Pending
INT - 002285	2003/04/02	Redu Antenna Uplink switch goes off bus	Ground	ESA Sta.	Pending
INT - 002286	2003/04/02	Reboot of ESOC Firewall	Ground	I/F to SGS	Pending

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INT - 002287	2003/04/03	Event logger messages	Ground	IMCS	Pending
INT - 002288	2003/04/03	TM/TC lost via REDU	Ground	ESA Sta.	Pending
INT - 002289	2003/04/03	Delayed handover to DSS-16	Ground	NASA Sta.	Pending
INT - 002290	2003/04/03	Bad frames and TLM drop from DSS-16. Possible RFI	Ground	NASA Sta.	Pending
INT - 002291	2003/04/08	Archiving lost on A chain	Ground	IMCS	Pending
INT - 002292	2003/04/09	Telemetry Drops from GoldStone (DR 6102621)	Ground	NASA Sta.	Pending
INT - 002293	2003/04/13	Science data CDs produced with no TM inside.	Ground	IMCS	Pending