

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-TOS-OF
No. 068
Week 02
12.01.04
Routine Phase

Prepared by: M. Walker (TOS-OFI)

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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 03.01.04 until 09.01.04 (both dates inclusive) and covers the revolutions 150 & 151.

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 NGC 4945 (RA 13:05:27.48; DEC -49:28:05.6) and SN 1987A (RA 05:35:28.26; DEC -69:16:13.0). The activities consisted of 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 passages were nominal from an AOCS point of view. The last eclipse of the season occurred on 05/01/2004. With the end of the eclipse season, the AMD thresholds were set to their Sunlight season values and the ACC, FDE and FCE Eclipse Timers were stopped.

A whole DSS-16 pass was missed on 03/01/2004 because of problems at the station. This resulted in the loss of 7 science pointings.

Some details regarding the IMU usage up this stage of the mission is given in the appendix.

The fuel consumption over the period between 02/01/2003 and 09/01/2004 was 0.0656 kg. The remaining propellant is in the order of 173.109 Kg on the 9th 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**.

5/1/2004 (DOY 005)

Eclipse passage:

Eclipse #9 of eclipse season #3.

Total Eclipse Duration: 36m 41s

Umbra Duration: 34m 22s

ECD measured DOD Battery 1 13.8% (3.32Ah)

ECD measured DOD Battery 2 13.7% (3.29Ah)

(Note DOD calculation assumes nominal battery capacity rating of 24Ah)

Recharge time battery 1 1h 59m

Recharge time battery 2 1h 58m

Both the eclipse passage and recharge executed nominally, a small increase in the battery internal temperatures towards the end of the recharge period indicates that both batteries were fully recharged.

This was the last eclipse of the current eclipse season.

6/1/2004

Following the end of the eclipse season the EPS was reconfigured to its 'non-eclipse' status.

FCP_EPS_1273 Select full Charge Rate C/26 BCR1

FCP_EPS_1274 Select full Charge Rate C/26 BCR2

FCP_EPS-1260 Enable MRU EOC Timer and Load EOC Timer Value = 0

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

Following the end of the eclipse season the On-board monitoring table for 'non-eclipse' season was loaded and enabled.

FCP_DHS_1231 Load OBM For Sunlight 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. The number of Reed Solomon errors that occurred during Redu passes has reduced and the impacts are now limited.

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.

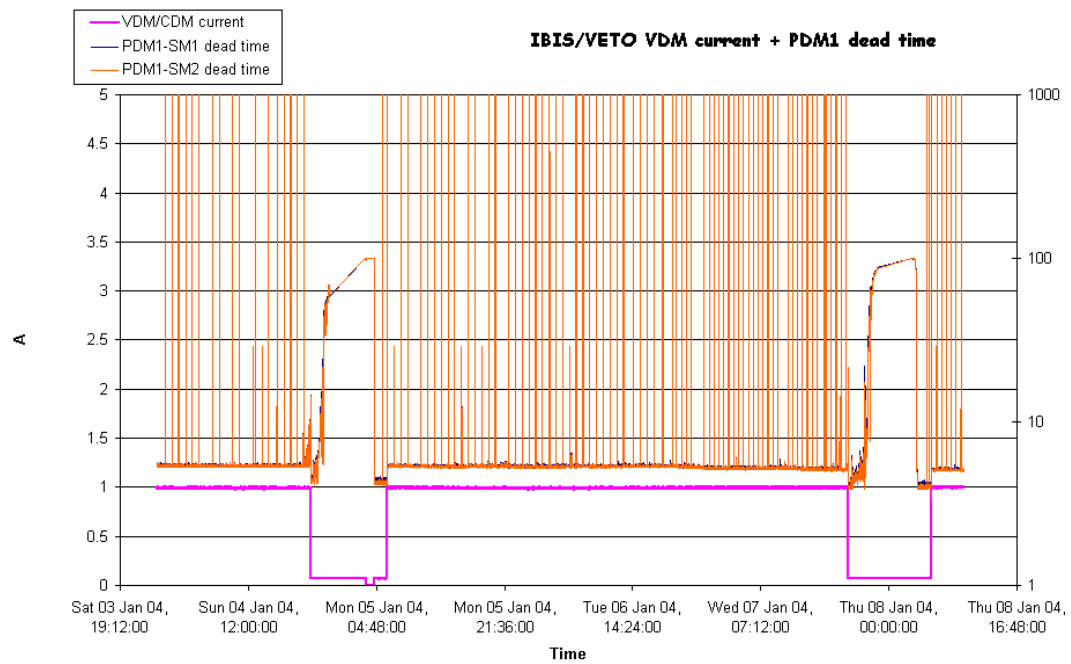
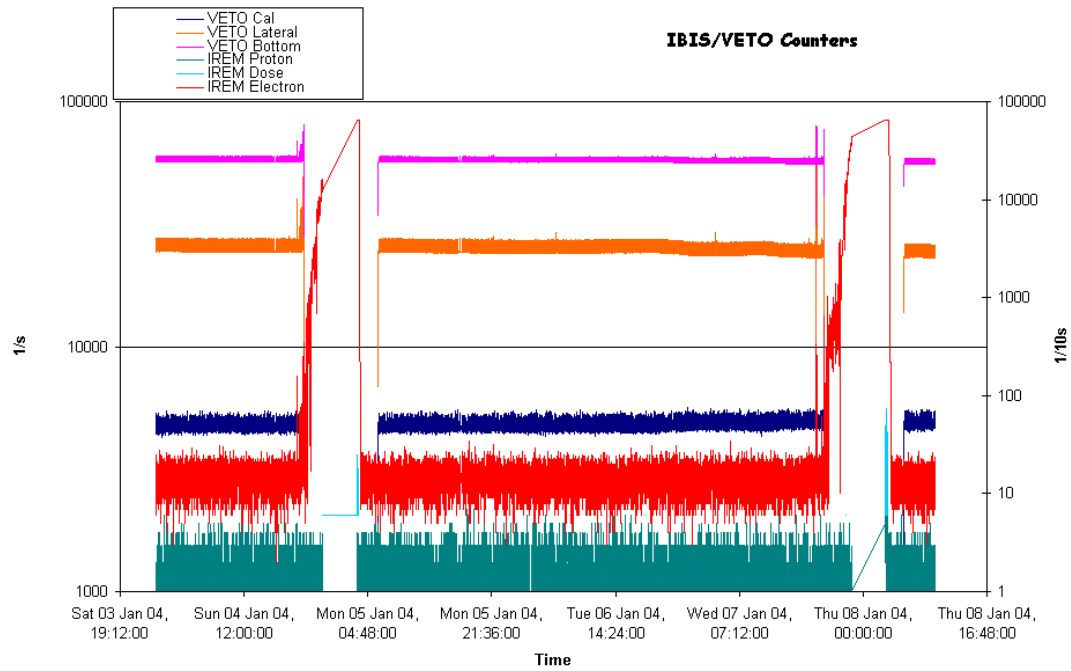
Note: Some more information concerning the SPI operations is provided in the Appendix.

3.2.2 IBIS

The status of the unit is Nominal.

The TM bandwidth assigned to IBIS was 134 pkts/8sec. No occurrence of anomalous OEM generation (ID 183-184-179-180, Class 2) was reported after the VETO S/W patch. Reported during revolution 149 and 150 the automatic transition to Stand-By and HVs switch OFF due to the high radiation background prior the BCP Radiation Belts entry.

Plots of the VETO VDM/CM current, VETO bottom and lateral counter and the PICsIT PDM#1 SM1-2 dead times 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.

Due to high radiation levels, JEM-X2 made autonomous transitions to Safe mode before radiation belt entry of revolutions 149 and 150. In revolution 149 this was just before it was due to be commanded into Safe mode by the Timeline. In revolution 150 a series of transitions into and out of Safe mode were performed, starting about 1.5 hours before the scheduled commanding of JEM-X2 to Safe mode by the Timeline.

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 182 OMC pointings executed, with 7 missed.

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 fluctuation of the Radiation Belts Entry altitude determined in rev 149 and 150 the anticipated switch OFF, due to the on-board automatism, of part of the payloads (see IBIS and JEM-X2 detailed parts).

Hereafter are reported the Electron Belts Entry/Exit for revs 150-->152, as defined by a cut-off flux of $3.76\text{E}+02$ e/cm²/sec ($E>0.5$ MeV) and the predicted Proton Belts Entry/Exit, as defined by a cut-off flux of $1.25\text{E}+03$ p/cm²/sec ($E>8$ MeV).

Electron Belts

REV	S/C BCPKT		CUT-OFF	PREDICTED	ALT[km] predicted
149	RAD_ENTR R	2004-01-04T20:29:48Z	Sun 04 Jan 04, 19:07:42	04-Jan-2004 21:08:38	54712.87
150	RAD_EXIT R	2004-01-05T05:32:33Z	Mon 05 Jan 04, 03:45:50	05-Jan-2004 04:08:38	26225.32
150	RAD_ENTR R	2004-01-07T20:18:41Z	Wed 07 Jan 04, 17:33:18	07-Jan-2004 21:00:55	54325.23
151	RAD_EXIT R	2004-01-08T05:21:51Z	Thu 08 Jan 04, 03:42:46	08-Jan-2004 04:00:55	26661.3
151	RAD_ENTR R	2004-01-10T20:07:09Z	No data	10-Jan-2004 20:50:55	54347.98
152	RAD_EXIT R	2004-01-11T05:10:06Z	No data	11-Jan-2004 03:50:55	26658.87

Proton Belts

REV	S/C BCPKT		PREDICTED	ALT[km] predicted
149	RAD_ENTR R	2004-01-04T20:29:48Z	05-Jan-2004 02:28:38	11608.3
150	RAD_EXIT R	2004-01-05T05:32:33Z	05-Jan-2004 02:58:38	14786.02
150	RAD_ENTR R	2004-01-07T20:18:41Z	08-Jan-2004 02:20:55	11852.14
151	RAD_EXIT R	2004-01-08T05:21:51Z	08-Jan-2004 02:50:55	15185.21
151	RAD_ENTR R	2004-01-10T20:07:09Z	11-Jan-2004 02:10:55	11727.23
152	RAD_EXIT R	2004-01-11T05:10:06Z	11-Jan-2004 02:40:55	15162.6

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, were with the links to the ground stations.

4.1 Mission Operations Centre

The performance of the MOC was very good in the reporting period, with only two minor anomalies reported, one with the MADDIS-ISDS, and one with the consolidator machine.

4.2 Ground Stations & Network

There was one major incident this week, where the uplink at DSS-16 was lost. This caused the loss of an entire pass. See below for details.

4.3 Science Ground Segment

4.3.1 ISOC

1. Mission planning

Short term PSF: Received up to rev. 159

Long term PSF: no longer required
POS and POD generated: up to rev 159
TSF: Up to rev 152

No replanning performed since week 51. Long term plan is now consolidated and agreed with Project Scientist. it covers the entire AO 3 period. It is also made available on the ISOC external web page.

2. Observation status

ECS's for rev's 132 to 134 and rev 137 received. Corresponding OCS's generated and sent to ISDC. 291Ksec of extra time credited to a proposal (carried over to AO 2 proposal. This is essentially due to the big solar flare.

3. ISOC science archive

No archive data received from ISDC. It should have been available by now.

4. ISOC system

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

5. Problems

A problem in the proposal handling system was detected causing the latest OMC flat field calibration to be only partially successful. A workaround solution is available until the problem is resolved in the next ISOC software release.

6. AO 2

AO 2 is now fully operational. The transition went very smooth without any problem.

4.3.2 ISDC

On 12/01/2004, 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

None

6 Anomalies

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

- On DoY 003, due to a problem with the TC at DSS-16, there was no uplink between 18:34, when there was LOS TC Redu, and 23:12 when the TC link was again established from Redu. The Timeline was eventually restarted at 23:57, the impact was pointings 01490042 through to 01490048 were lost. Telemetry was available during the gap for monitoring purposes only. The corresponding DR No. is G103918.
- On DoY 005 at 16:23, the link MADDS-ISDS was down, there were repeated attempts to correct the problem, but it was not until 08:19 the following day, after a problem with the firewall was discovered, that the system was recovered, an NCR ESOC 0013 was issued due to this anomaly.
- On DoY 009, at 11:50, the IDDA was Red, at 12:05, the TMAR and Archive tasks were restarted on the MADDS-B machine curing the problem.

The following new anomaly reports have been entered into the Anomaly Reporting and Tracking System:

AR id	Date Occurrence	Subject	Segment	Status
INT_SC – 75	05/01/2004	IREM anomaly SEU #8	Space	Pending
INT_SC – 76	07/01/2004	IBIS: PICsIT PDMs counters set to zero	Space	Open
INT-2539	08/01/2004	Link MADDS-ISDS Failed	COMMS	Pending
INT-2540	09/01/2004	Loss of Goldstone pass, 25/12/2003	NASA Station	Pending

7 Future Milestones

Between the 12th and 17th January, it is planned to upgrade the IFMS at Redu. During this period, there will be no redundancy at the ground station, and in the event of a contingency, VILSPA would have to take over. This would mean the loss of VC7 TM during such a case, but the TC and VC0 (House-keeping) TM would be unaffected. Currently, VILSPA is only scheduled as a hot back-up for part of this period, cold back-ups would mean a gap in service of about 15 minutes, while the antenna is brought up. If VILSPA was scheduled to support another mission, there is no coverage, although in the case of a contingency, that can be over-ridden.

Scheduled for next week are AOCS calibrations, which include FSS/STR misalignment and reaction wheel inertia calibrations.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 150

The observations in revolution 150 consisted of a raster dithering observation of NGC 4945 (RA 13:05:27.48; DEC -49:28:05.6) lasting ~37 hours followed by a raster dithering observation of SN 1987A (RA 05:35:28.26; DEC -69:16:13.0) performed for the remaining ~23.5 hours of observation time.

Revolution 151

In revolution 151 a raster dithering observation of SN 1987A (RA 05:35:28.26; DEC -69:16:13.0) was performed throughout the available observation time (~62 hours).

Throughout these revolutions 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.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2003-12-21T05:36:28.000Z	173.4099	F	Automatic TM processing.
2003-12-22T14:41:11.000Z	173.3941	F	Automatic TM processing.
2003-12-24T05:27:23.000Z	173.3560	F	Automatic TM processing.
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.

This report was generated Fri Jan 9 08:00:10 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, 49 Open Loop Slews, 139 Closed Loop Slews and 2 Momentum Bias were executed. 7 slews were missed or executed manually. This is equivalent to a 3.7%.

The AOCS eclipse operations were completely nominal. The Eclipse Timers and the Time Tagged sequence to re-enable IMU Auto Switch-Off 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 the end of the eclipse season are provided below:

AOCS Eclipse Times													Winter 2003-2004
Date	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	
2003-12-12	04:32:34	03:36:07	04:18:10	04:29:09	04:29:53	04:35:47	04:37:05	04:37:29	04:59:59	05:00:15	05:02:01	05:08:13	05:11:46
2003-12-15	04:21:25	03:22:47	04:05:00	04:16:15	04:16:59	04:22:27	04:23:35	04:23:37	04:58:29	04:58:44	04:59:58	05:06:19	05:09:55
2003-12-18	04:10:48	03:11:37	03:53:43	04:03:59	04:04:43	04:11:17	04:12:14	04:12:18	04:55:35	04:55:47	04:56:55	05:02:07	05:06:42
2003-12-21	04:00:41	03:02:10	03:44:19	03:55:55	03:56:39	04:01:50	04:02:33	04:02:45	04:51:46	04:51:53	04:53:02	04:59:55	05:02:53
2003-12-24	03:47:33	02:51:43	03:33:51	03:45:13	03:45:57	03:51:23	03:52:00	03:52:20	04:44:37	04:44:37	04:45:55	04:52:09	04:55:45
2003-12-27	03:36:35	02:43:16	03:25:21	03:35:58	03:36:42	03:42:56	03:43:31	03:43:53	04:37:03	04:37:03	04:38:23	04:44:22	04:48:10
2003-12-30	03:27:53	02:38:03	03:20:11	03:28:48	03:29:32	03:37:43	03:38:23	03:38:46	04:29:58	04:29:59	04:31:25	04:35:00	04:41:15
2004-01-02	03:19:55	02:35:10	03:17:10	03:27:28	03:28:12	03:34:50	03:35:40	03:36:06	04:21:24	04:21:28	04:23:04	04:28:32	04:32:46
2004-01-05	03:23:00	02:34:16	03:16:16	03:25:28	03:26:12	03:33:56	03:35:20	03:35:50	04:08:21	04:08:38	04:10:39	04:14:48	04:20:21

IMU Usage during Eclipse Season					Winter 2003-2004	
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]		
2003-12-11 21:23:04	2003-12-12 05:14:00	0.1884	0.2421	0.2052	7:50:56	7:50:56
2003-12-14 21:07:42	2003-12-15 05:12:07	0.2040	0.1719	0.2062	8:04:25	15:55:21
2003-12-17 21:05:17	2003-12-18 05:08:54	0.1822	0.0833	0.1584	8:03:37	23:58:58
2003-12-20 21:01:25	2003-12-21 05:05:02	0.3749	0.1773	0.1950	8:03:37	32:02:35
2003-12-23 20:39:17	2003-12-24 04:57:54	0.1869	0.2333	0.2469	8:18:37	40:21:12
2003-12-26 20:32:30	2003-12-27 04:50:23	0.1738	0.0849	0.1467	8:17:53	48:39:05
2003-12-29 20:19:58	2003-12-30 04:43:24	0.2032	0.1062	0.1534	8:23:26	57:02:31
2004-01-01 20:16:46	2004-01-02 04:35:04	0.3247	0.1859	0.2136	8:18:18	65:20:49
2004-01-04 19:48:19	2004-01-05 04:22:39	0.1967	0.1202	0.0826	8:34:20	73:55:09

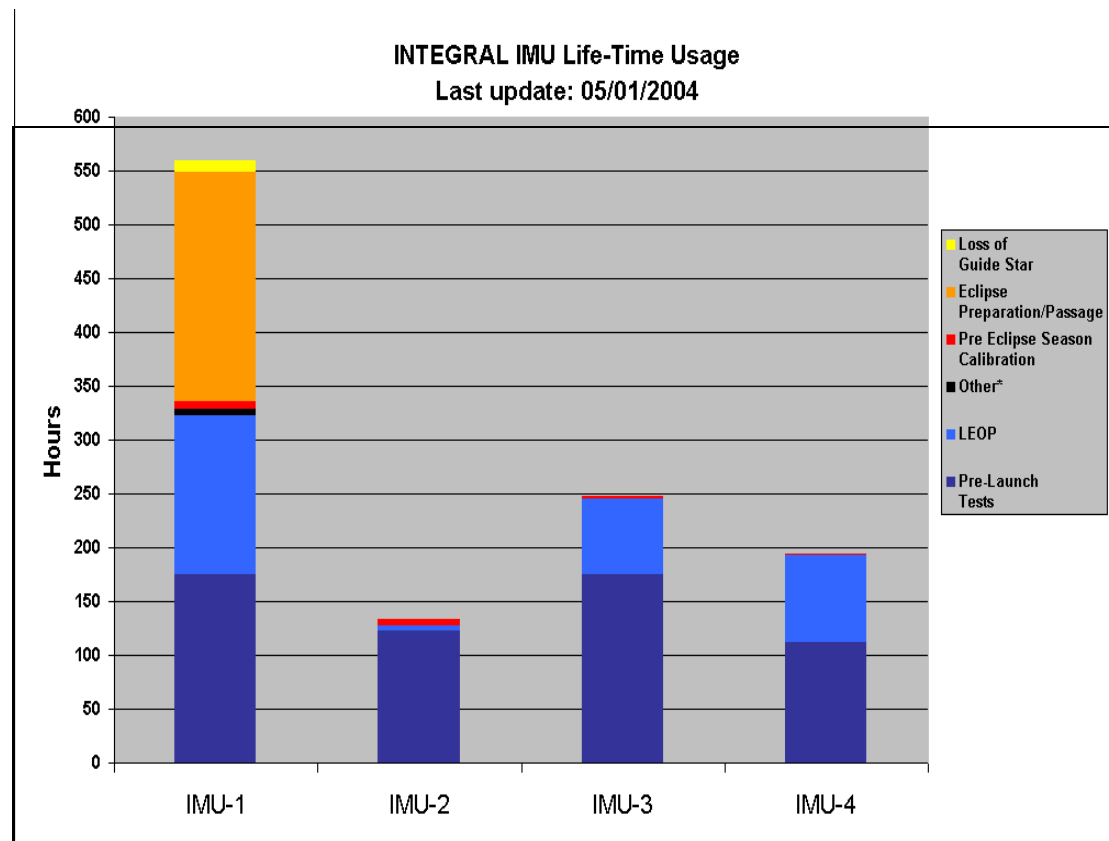
As can be seen from the above tables, for an accumulated eclipse duration of 6.820 hours there was a total of 73.919 hours IMU-1 usage. The effect of using Time-Tagged commands to re-enable the IMU Auto Switch-Off after the eclipse passage (instead of manually sending the TCs after AOS) can be seen when the IMU usage during the recent eclipse season is compared to that of the previous winter eclipse season. During the eclipse season of winter 2003-2003, for an accumulated eclipse duration of 7.307 hours there was a total of 99.049 hours IMU-1 usage.

The Fuel consumption during the period 12/12/2003 to 05/01/2004 was 0.4673 kg with a total number of 22 Reaction Wheel Bias Manoeuvres. This gives an average daily consumption of 18.7 grams/day. For comparison, the fuel consumption over the period between 01/11/2003 to 25/11/2003 (non-eclipse) was 0.3115 kg, which gives an average daily consumption of 12.5 grams/day. There were 13 RWBs during this period. This, however, is a very simplistic approach to determine the fuel penalty associated with the eclipse season, because the requirement for performing RWBs depends also on the performed observation plan.

IMU Usage up to this stage of the mission: The total IMU on times (to the best effort) from pre-launch tests up to the end of the recent Eclipse season are given below:

INTEGRAL IMU Life-Time Usage									
Unit	Total [hours]	% Usage WRT 1800 hr Reserved Flight Time	Pre-Launch Tests	LEOP	Loss of Guide Star	Eclipse Preparation/Passage	Pre Eclipse Season Calibration	Other*	Last Switch-Off
IMU-1	559.880278	31.10	175.045556	147.371944	11.290556	212.356389	8.018611	5.797222	05/01/2004
IMU-2	133.745556	7.43	123.023889	3.871111	0.000000	0.000000	6.850556	0.000000	05/12/2003
IMU-3	248.040000	13.78	175.449167	70.057500	0.000000	0.000000	2.533333	0.000000	20/06/2003
IMU-4	194.579722	10.81	111.528889	80.834167	0.000000	0.000000	2.216667	0.000000	20/06/2003

* "Other" consists of operations like STR Bright Object Test, STR Window Dump, etc.



According to the INTEGRAL UM, at least 1800 hours lifetime should be reserved for flight. Doing a rough extrapolation of the IMU usage (based on the above data and excluding pre-launch and LEOP) for another five years, IMU-1 lifetime would marginally fall within the 1800 hours. Under normal conditions, as long as IMU-1 is healthy and used, the usage of other units is limited to the pre eclipse season calibrations.

03/01/04 (Day of Year 003, Revolution 149)

Loss of slews due to Ground Station problem (Goldstone DSS-16): The Goldstone ground station could not support the pass with a planned handover time of 18:17 due to a transmitter problem (DR# G103918). The last slew performed on Redu was 01490041 and slews/pointings 01490042 to and including 01490048 were missed. After next AOS in Redu, a manual Open Loop Slew was performed to the attitude of

PID 01490048. Slew 01490049 was performed from the Timeline after being manually updated.

04/01/04 (Day of Year 004, Revolution 149)

Nothing to report.

05/01/04 (Day of Year 005, Revolution 149-150)

Change of the AMD thresholds to their non-eclipse season values and stopping of the ACC and FDCE Eclipse Timers: At the beginning of revolution 150, the first revolution after the Eclipse season, the AMD thresholds were set back to their sunlight season values:

Thresholds from INT-MA-AI-0001, 5.3.2.4.2.2, and INT-PR-MMB-0005 page 5-9, modified as per new AMD Threshold agreement for the eclipse season.						
Wheel Inertia:						
RW#1:	0.096	Kgm**2				
RW#2:	0.09768	Kgm**2				
RW#3:	0.09729	Kgm**2				
RW#4:	0.09763	Kgm**2				
Sunlight Season:						
	Subset 1		Subset 2			
WSMAX	39		35.9			
WSMIN	2.2		4.8			
WSMAX	To Uplink:				In rpm:	
	X1		X2		X1	X2
RW#1:	406.25	rd/s	373.9583	rd/s	3879	3571
RW#2:	399.2629	rd/s	367.5266	rd/s	3813	3510
RW#3:	400.8634	rd/s	368.9999	rd/s	3828	3524
RW#4:	399.4674	rd/s	367.7148	rd/s	3815	3511
WSMIN	To Uplink:				In rpm:	
	X1		X2		X1	X2
RW#1:	22.91667	rd/s	50	rd/s	219	477
RW#2:	22.52252	rd/s	49.14005	rd/s	215	469
RW#3:	22.61281	rd/s	49.33703	rd/s	216	471
RW#4:	22.53406	rd/s	49.16522	rd/s	215	469

The ACC, FDE and FCE Eclipse Timers were also stopped by:
 Freezing the FDE Eclipse Timer in the sunlight state (by loading zero and starting it).
 Freezing the FCE Eclipse Timer in the sunlight state (by loading zero and starting it).

Stopping the ACC Eclipse Timer task.

06/01/04 – 09/01/04 (Day of Year 006 - 009, Revolutions 150 & 151)

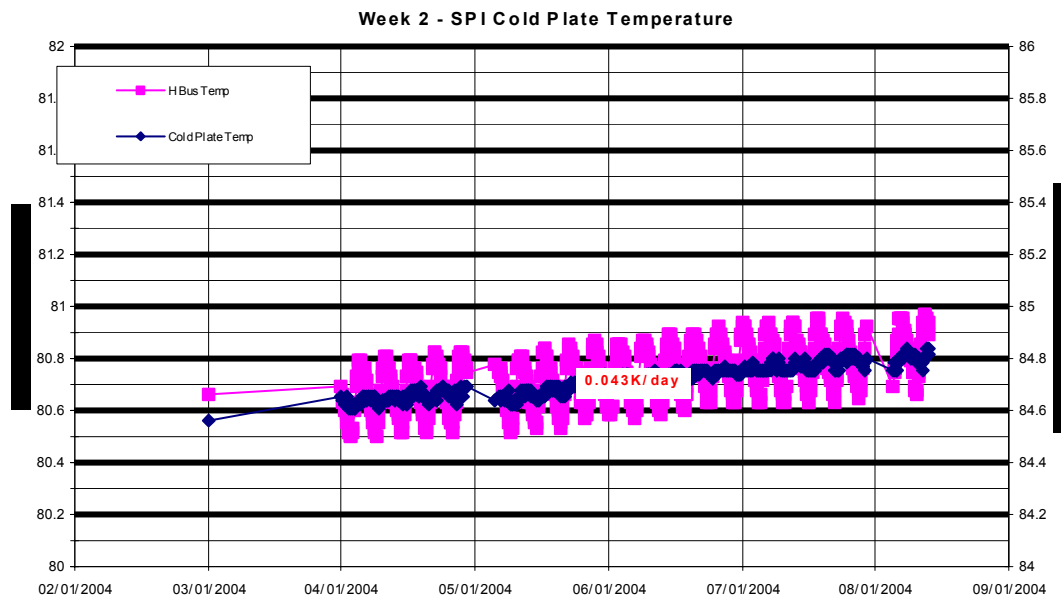
Nothing to report.

8.3.2 SPI Operations

Cryocooler / GeD cold-plate:

The cold-plate temperature is leveled at around 84.8K with a small positive drift of 0.043K/day, within the expected range.

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

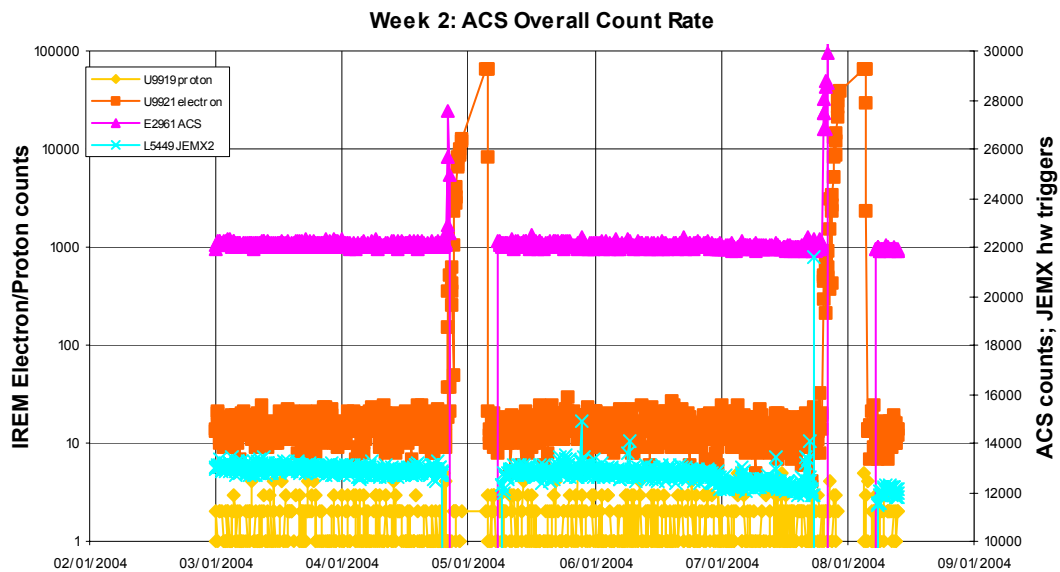


IASW/DPE:

Nothing to report.

ACS:

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



AFEE:
 Nothing to report.

DFEE:
 Nothing to report.

PSD:
 Nothing to report.

8.3.3 IBIS Operations

DOY 2004.004 (04/01/04)

At 20:11 the automatic transition to Safe configuration (IASW In Stand-By + HVs OFF) due to the high radiation background was reported, about 18 minutes prior the S/C broadcasted Radiation Belts entry time.

RAD_ENTR R 2004-01-04T20:29:48Z D Radiation belt entry time

DOY 2004.005 (05/01/04)

Executed OR-124 (VETO S/W patch) for the last Eclipse of the season (rev 150).

DOY 2004.006 (06/01/04)

Nothing to report.

DOY 2004.007 (07/01/04)

At 16:28 the parameters of the G5002 family were reporting Alarm low. No further action was taken because after a few TM cycles as the parameters returned within limits.

At 19:08 the automatic transition in Safe configuration (IASW In Stand-By + HVs OFF) due to the high radiation background was reported, about 70 minutes prior the S/C broadcasted Radiation Belts entry time.

RAD_ENTR R 2004-01-07T20:18:41Z D Radiation belt entry time

At 22.12Z reported the parameters G5002 and G50027 in warning for few TM cycles. No further action was taken.

There were a few reports during the Belt passage of 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 2004.008 (08/01/04)

On DoY 008, there were a few reports during the Belt passage of 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 2004.009 (09/01/04)

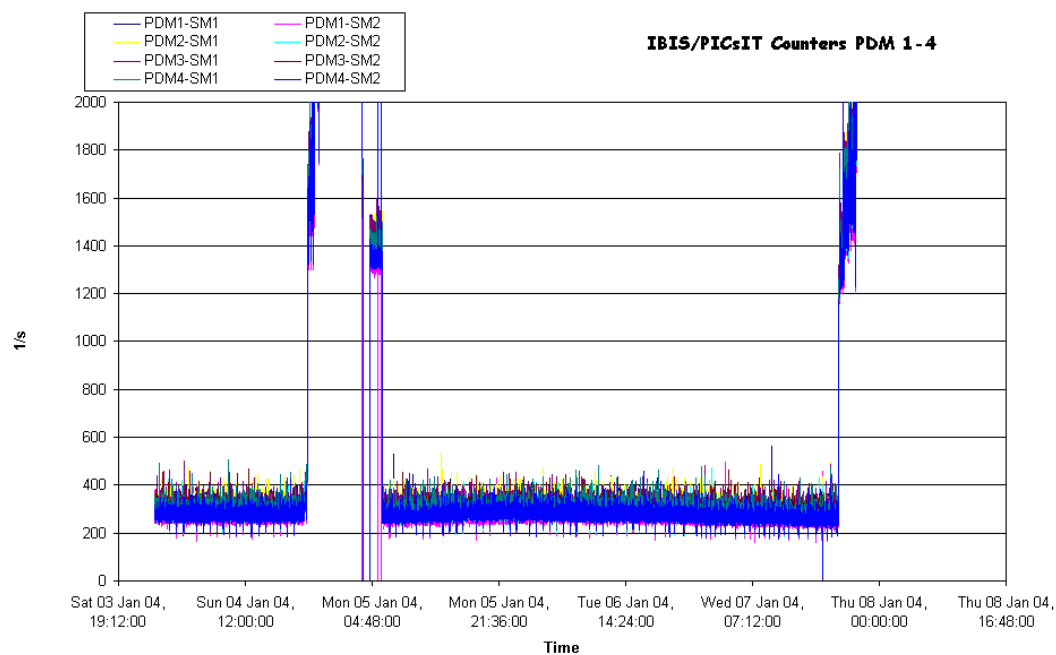
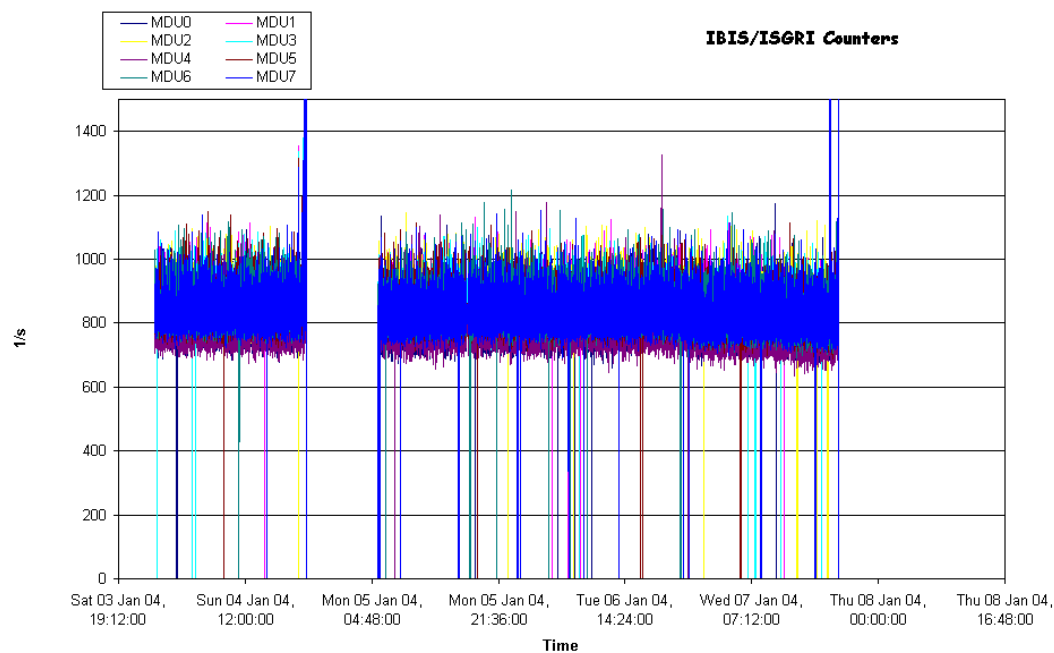
Nothing to report.

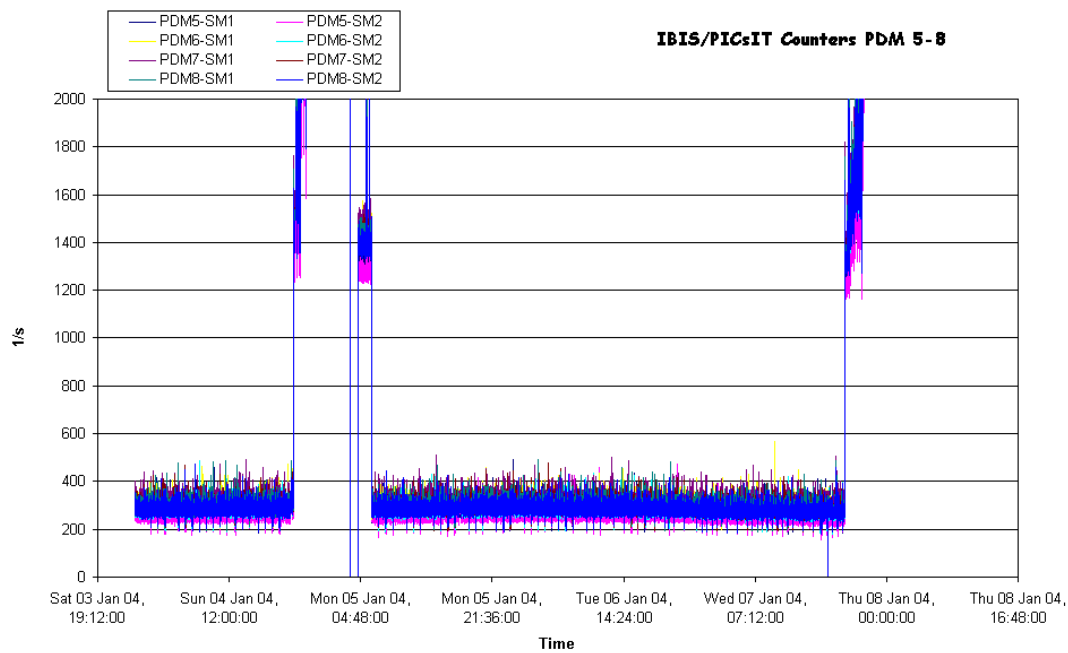
DOY 2004.010 (10/01/04)

At 02.30 the IBIS Histogram downloads stopped as indicated from the HK parameters. The operator started the recovery action following the OR-109.

At 02.33Z the CCCF was enabled and started the reconfiguration of the unit. At 02.36 the CCCF was completed and the unit was 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 2004.009.22:59Z from DSS16 to Redu.

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





8.3.4 JEM-X Operations

2004-01-03, DOY 003, Rev 149

Nothing to report

2004-01-04, DOY 004, Rev 149

At 19:07:43Z the following radiation monitoring parameters from IREM went Out of Limits:

K5317 RAD MONITOR 3 (Electron Counter), value = 125

L5317 RAD MONITOR 3 (Electron Counter), value = 125,

causing JEM-X2 to transition to Safe mode autonomously at 19:07:59Z (issuing OEM 231 JEM-X2 AUTO EVENT 1).

This was less than a minute before the ED LESAFE01 was scheduled in the Timeline (at 19:08:17Z) to put JEM-X2 in Safe mode before radiation belt entry.

2004-01-05, DOY 005, Rev 149-150

Nothing to report

2004-01-06, DOY 006, Rev 150

Nothing to report

2004-01-07, DOY 007, Rev 150

Before radiation belt entry of revolution 150, JEM-X2 made a series of autonomous transitions into and out of Safe mode due to high radiation as follows:

17:32:55Z Parameter L5119 SOFTWARE TRIGGER went out of limits (value = 25012). JEM-X2 autonomous transition to Safe mode.

17:33:02Z OEM189 JEM-X2 PROB DFEE 9 was issued as the parameter L5462 DFEE STATE IASW continued to report state Setup

17:33:19Z IREM electron counter parameters K/L5317 RAD MONITOR 3 out of limits (value = 128)

17:33:35Z L5462 DFEE STATE IASW began to report state Safe, and the following OEMs were issued:
OEM 231 JEM-X2 AUTO EVENT 1
OEM 254 ERROR OFF

17:54Z JEM-X2 autonomous recovery to Setup mode (issuing OEM 233 JEM-X2 AUTO EVENT 3) after the IREM RMCR values had remained below the JEM-X2 thresholds for exiting from Safe mode for more than 10 minutes.

18:39Z Out of limits on K/L5317 RAD MONITOR 3 (value = 82)
JEM-X2 autonomous transition to Safe mode (OEM 231 JEM-X2 AUTO EVENT 1)

18:52Z JEM-X2 autonomous recovery back to Setup mode (OEM 233 JEM-X2 AUTO EVENT 3)

18:55Z Out of limits on K/L5317 RAD MONITOR 3 (value = 72)
JEM-X2 autonomous transition to Safe mode (OEM 231 JEM-X2 AUTO EVENT 1). This was just before the ED LESAFE01 was scheduled in the Timeline (at 18:57:06Z) to put JEM-X2 in Safe mode before radiation belt entry.

2004-01-08, DOY 008, Rev 150-151

Nothing to report

2004-01-09, DOY 009, Rev 151

Nothing to report

8.3.5 OMC Operations

On DoY 003, between 18:34 and 23:57, the Timeline was stopped due to an uplink problem at the ground station. Pointings 01490042 to 10490048 were lost.

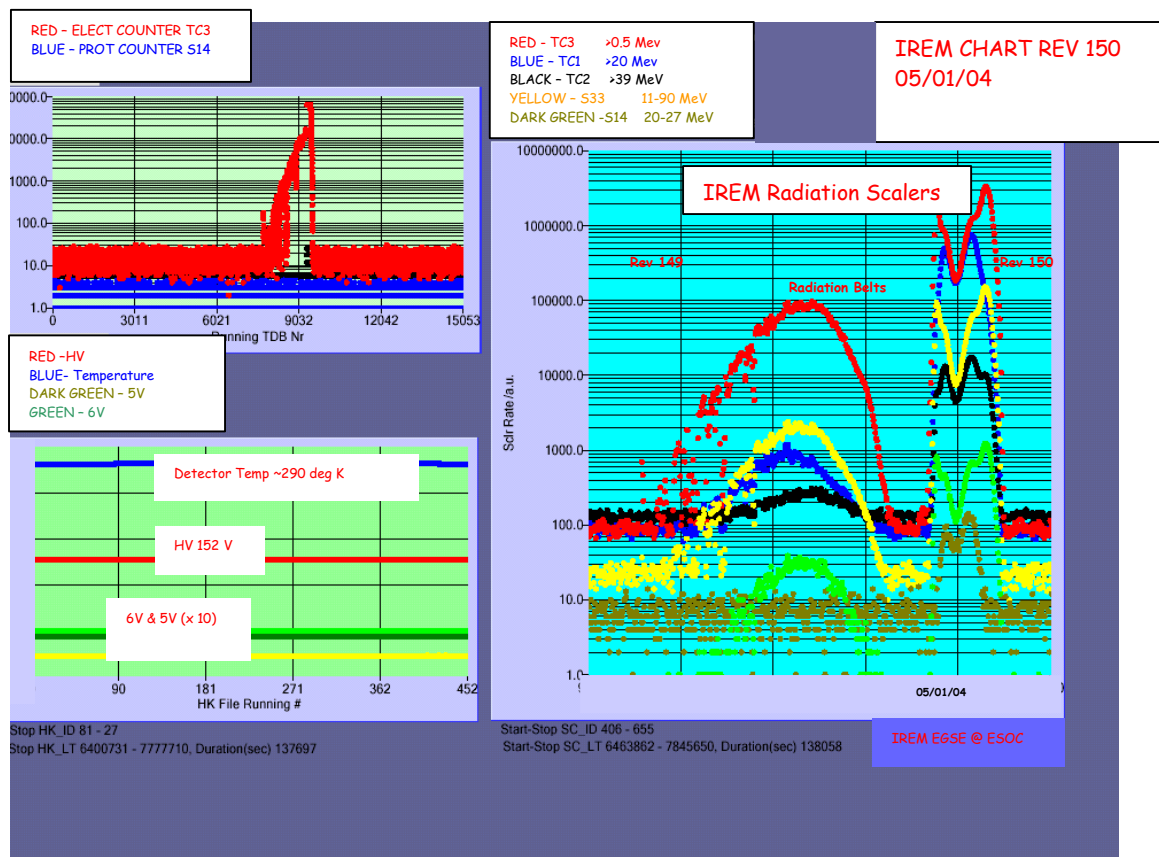
On DoY 004, at 20:30, and again on DoY 007, at 20:18, OMC was switched by the Timeline to SAFE mode, at the nominal time.

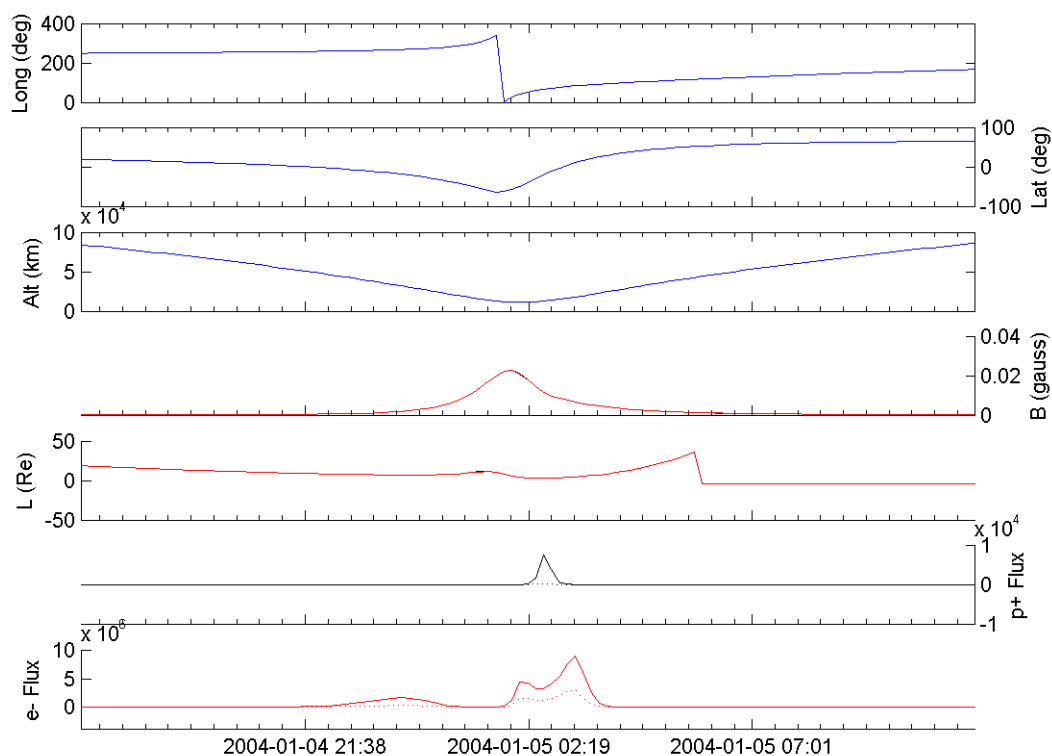
Apart from that, nothing to report.

8.3.6 IREM Operations

On DoY 007 at 22.12Z the IREM TC U4921 (Ground Link OFF) failed the CEV due to a late update of the relevant TM parameter in the CMD verifier task. No further action was taken after positive verification of the status OFF of the Ground Link.

Plots of the evolution of the IREM counters from revs 150 & 151, and the predicted Belts passages (as calculated with AP8Max and AE8Max models by using the RADMON tool) are shown below:





X: 0

Y: 0

get Data

Zoom

Print...

