

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-TOS-OF
No. 047
Week 33
18.08.03
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.

It addresses the activities from 09.08.03 until 15.08.03 (both dates inclusive) and covers the revolutions 101 & 102.

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 Sco X-1 (RA 16:19:55.06; DEC -15:38:24.5), the galactic centre and the Crab Nebula (RA 05:34:31.90; DEC +22:00:52.0). The activities performed consisted of raster dithering, GCDE and staring observations. In addition, a JEM-X Diagnostic Data Dump was 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 unexpected behaviour / malfunction was identified.

3.1.1 AOCS

The AOCS operations were performed from the timeline during this period.

The reason for the failures of the Star Tracker Search-and-Tracks that we had experienced with one particular star was found to be related to a dim neighbour. The magnitude of this dim star is close to the threshold for extraction of stars for the Minimum Distance Test in the guide star selection process of the Flight Dynamics System. The trouble-making star is now disabled in the FDS and steps are being taken to avoid this problem in the future.

A new FDS feature to update the Sun-Steering Law parameters at certain intervals during long staring observations has been applied to staring observations of revolutions 102 and 103 with very good results. This considerably increases the pointing accuracy during these observations.

We had two cases of flickering of the On-Target Flag during pointings. This was caused by jumps in the location of the guide star as seen by the ACC. In both cases the guide was picked by the ACC after an Open-Loop Slew.

There was a case of loss of Guide Star during a perigee passage due to detected False Events, the number of which exceeded the SEU Filter threshold.

The fuel consumption over the period between 08/08/2003 and 15/08/2003 was 0.109Kg. The remaining propellant is in the order of 175.477 Kg on the 15th of August.

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 **2230W**. This means that there is no noticeable degradation of the solar arrays since launch.

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 anomaly occurred on FEE57 of the ACS subassembly on 05/08/2003 at 15.30Z is under investigation. Information about any scientific impact of the anomaly is not yet available. However the on-board BGO-PMT-FEE redundant design concept should be such to minimize it.

Apart from that, the overall status of the instrument is performing well.

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.

A couple of stroke adjustments were necessary on the cryo-cooler to maintain 85K in the detector plate.

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

3.2.2 IBIS

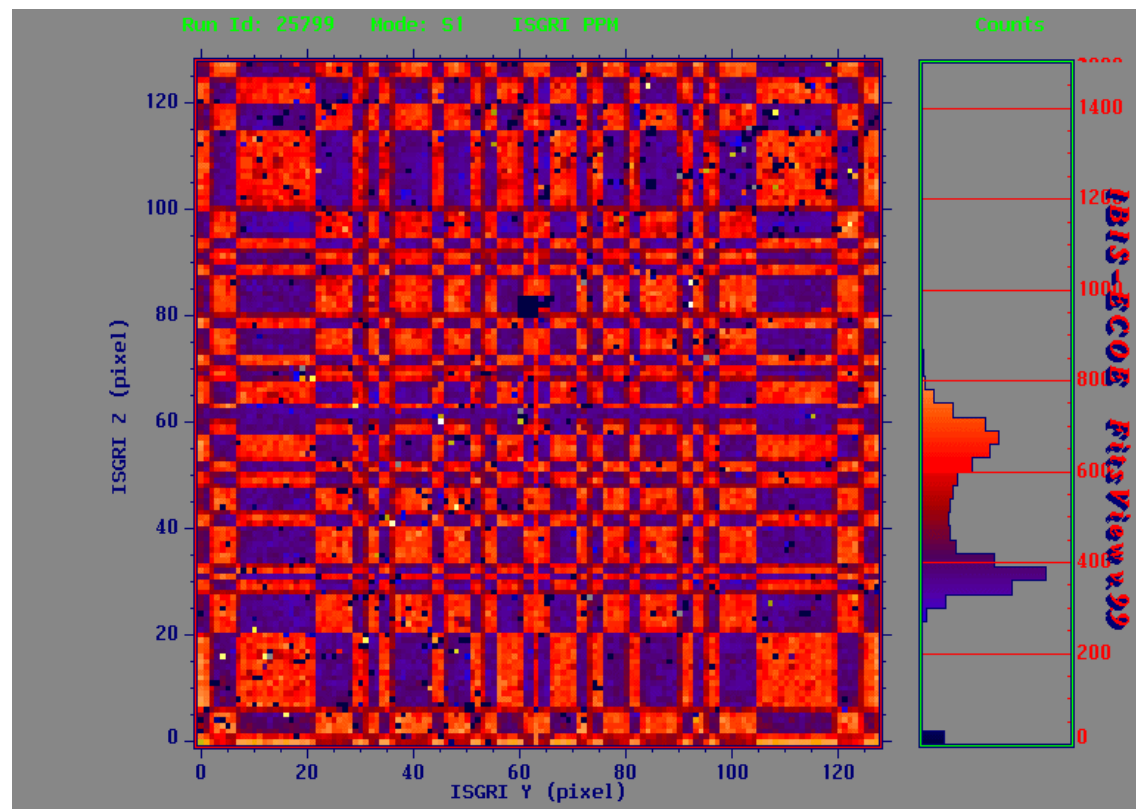
The Status of the unit is Nominal. The TM bandwidth assigned to IBIS is 134 pkts/8sec.

During the reporting period the second Crab Calibration (from 14->17 August) was executed.

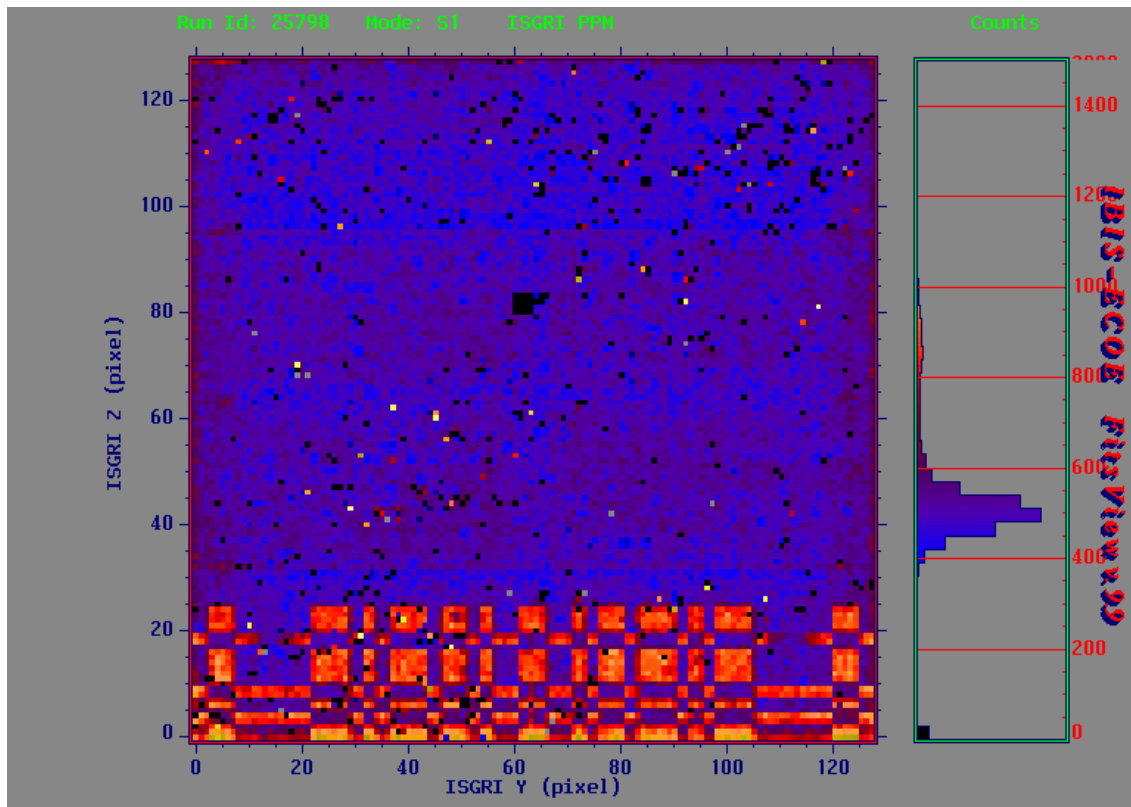
Different off axis pointings were performed to get the detector background map of the area close to the Spectrometer.

Some of the IBIS shadowgrams, as recorded by the IBIS ECOE @MOC, summarizing the different pointings performed are shown below.

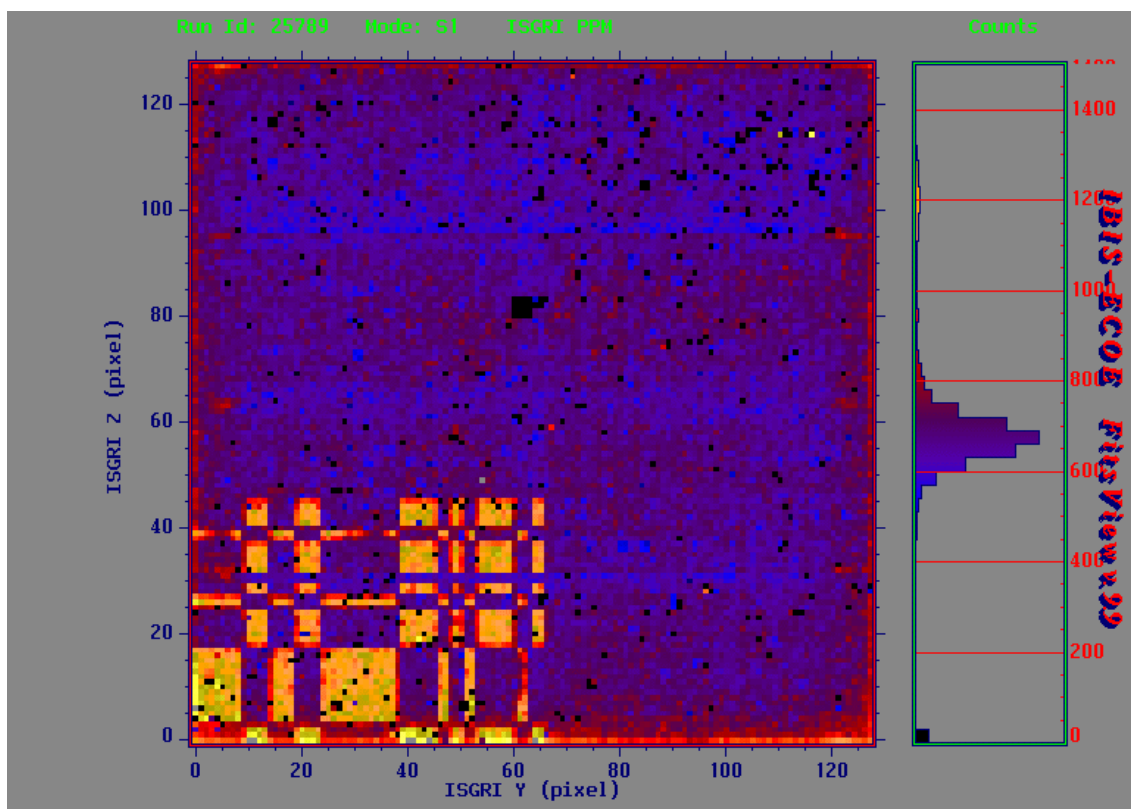
Note: They are provided to illustrate the performance of the PI workstations that are currently located at MOC.



CRAB in the band 15-150 KeV: all the detector plane is illuminated with the Crab in axis with respect to the IBIS mask



CRAB off axis 12.5/0. in the band 15-150 KeV: is illuminated a stripe from the detectors 7 and 3 close to the Spectrometer.



CRAB off axis 14./315 in the band 15-150 KeV: illuminated is only detector #7 (close to the Spectrometer) and part of detector 6

Acknowledgement to the IBIS team for permission to reproduce these images.

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 executed from the Automatic Timeline and JEM-X1 was dormant. Operations were interrupted twice, once by the implementation of a change request, and once after JEMX-2 slipped into SAFE mode after the unit detected a S/W radiation threshold was exceeded.

Note: Some more information concerning the JEM-X operations is provided in the Appendix

3.2.4 OMC

During this period 188 OMC images were acquired with one missed due to a guide star problem.

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

3.2.5 IREM

The status of the unit is Nominal.

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

4 Ground Facilities

The ground problems reported during this week were mainly a minor VC7 TLM problem from DSS-16, and a brief connection problem with ISDC, none of which caused data loss.

4.1 Mission Operations Centre

The upgrade of the H/W related to the Mission Control System to be able to cope with the higher system load induced by the increase of the TM data rate has been implemented. The system is showing a better performance. A further improvement will be available when the corresponding S/W upgrade will be implemented on 20 August.

4.2 Ground Stations & Network

During this week, there was one problem relating to VC7 TLM from Goldstone:

- On DoY 226 at 01:32, the VC7 TLM from DSS-16, dropped every 26 seconds or so. Goldstone reported a communication problem between DSS-16 and JPL.
-

4.3 Science Ground Segment

4.3.1 ISOC

No ISOC Input has been provided

4.3.2 ISDC

There were two items concerning the link to the ISDC reported this week:

- On DoY 226 at 05:44, VC7 TM was swapped to the B-chain, ISDC confirmed that data was being received on the redundant side.
- Later, at 07:13, ISDC reported that auxiliary files had not been received since 05:10, at 07:27 Computer restarted the IFTS curing the problem.

5 Special Events

Nothing to report

6 Anomalies

The problems related to the ground segment are already mentioned in chapter 4.

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 - 002421	12/08/2003	IREM anomaly : SEU #6	Space	IREM	Pending
INT - 002422	18/08/2003	IMCS OOL display frozen	Ground	IMCS	Pending
INT - 002423	18/08/2003	Drop in VC-7 from DSS-16	Ground	NASA Sta.	Pending
INT - 002424	18/08/2003	NCTRS-A restart	Ground	NCTRS	Pending
INT - 002425	18/08/2003	TM drop due to non-scheduled line switch at JPL - DR:101291	Ground	NASA Sta.	Pending
INT - 002426	18/08/2003	Auto-stack crashed on SUN-122	Ground	IMCS	Pending

7 Future Milestones

The upgrade of the Mission Control System S/W to cope with the higher load induced by the increased TM data rate will be implemented on the prime chain on 20 August. If the system will work properly the redundant chain will be upgraded on 26 August.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 101

In revolution 101, a raster dithering observation of Sco X-1 (RA 16:19:55.06; DEC - 15:38:24.5) was performed for ~51 hours. This was followed by a GCDE observation which was performed for the remaining ~9 hours of observation time.

Throughout these observations SPI, IBIS and OMC were in their nominal science modes. JEM-X2 was in Data Taking with Spectrum TM format for the Sco X-1 observation and Data Taking with Full Imaging TM format for the GCDE observation. JEM-X1 remained in Safe mode for the entire revolution. The TM allocation during both observations was 134 IBIS, 98 SPI, 1 JEM-X1, 8 JEM-X2, 5 OMC.

Revolution 102

The target of the observations throughout revolution 102 was the Crab Nebula. The following different observations were performed:

- Crab off-axis staring observation (RA 04:46:19.58; DEC +30:54:32.4) lasting ~17 hours;
- Crab on-axis (RA 05:34:31.90; DEC +22:00:52.0) raster dithering observation lasting ~16hrs30mins;
- Crab off-axis staring observation (RA 04:41:5.54; DEC +20:45:11.5) lasting 16hrs40mins;
- Crab on-axis staring observation (RA 05:34:31.90; DEC +22:00:52.0), performed for the remaining ~11 hours of observation time. During the first 2hrs47mins of this observation, a JEM-X Diagnostic Data Dump was performed.

With the exception of the Diagnostic Data Dump, for which both JEM-X1 and JEM-X2 were in Diagnostic mode, all instruments (including JEM-X1) were in their nominal science modes for these observations. The TM allocation during the JEM-X Diagnostic was 90 IBIS, 61 SPI, 45 JEM-X1, 45 JEM-X2, 5 OMC and otherwise was 134 IBIS, 98 SPI, 4 JEM-X1, 5 JEM-X2, 5 OMC.

8.2 Consumables

8.2.1 Detailed Fuel Book-keeping

2003-07-24T14:20:44.000Z	175.7966	F	Automatic TM processing.
2003-07-25T20:38:39.000Z	175.7564	F	Automatic TM processing.
2003-07-27T07:18:59.000Z	175.7354	F	Automatic TM processing.
2003-07-27T14:00:59.000Z	175.7008	F	Automatic TM processing.
2003-07-30T13:44:59.000Z	175.6756	F	Automatic TM processing.
2003-08-01T00:51:34.000Z	175.6575	F	Automatic TM processing.
2003-08-02T13:28:18.000Z	175.6279	F	Automatic TM processing.
2003-08-04T00:33:42.000Z	175.6208	F	Automatic TM processing.
2003-08-05T13:11:53.000Z	175.6087	F	Automatic TM processing.
2003-08-07T00:06:29.000Z	175.5861	F	Automatic TM processing.
2003-08-08T12:56:57.000Z	175.5673	F	Automatic TM processing.
2003-08-09T23:13:33.000Z	175.5512	F	Automatic TM processing.
2003-08-11T12:39:29.000Z	175.5395	F	Automatic TM processing.
2003-08-12T23:54:05.000Z	175.4991	F	Automatic TM processing.
2003-08-14T12:26:16.000Z	175.4772	F	Automatic TM processing.

This report was generated Fri Aug 15 11:28:12 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 Operations

AOCS operations were executed from the Automatic Timeline.

During this period, 77 Open Loop Slews, 123 Closed Loop Slews and 4 Momentum Bias were executed. 2 slews were missed or executed manually. This is equivalent to 1% of the total.

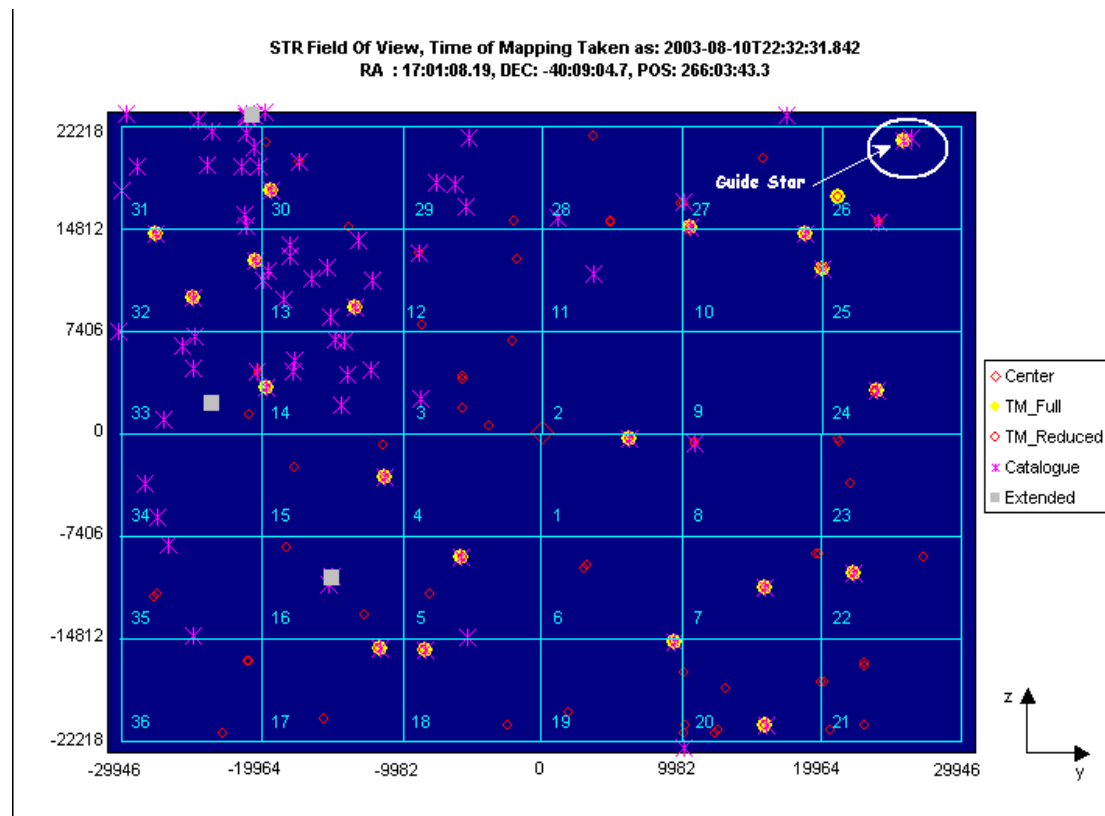
09/08/03 (Day of Year 221, Revolution 100)

Nothing to report.

10/08/03 (Day of Year 222, Revolution 100)

Flickering of the On-Target Flag due to Pitch Error: After Open-Loop Slew 01000084 the ACC picked as guide-star the barycentre of the images of two dim stars with an angular distance of 1.4 arc-minutes and magnitudes of 8.79 and 8.76. The guide-star as reported by the ACC was located at CCD coordinates (15127, -384) with 8.30 Mi. Throughout the pointing frequent jumps of about 38.5 arc-seconds in Pitch in the location of the guide-star caused Pitch Error messages and flickering of the OTF.

Flickering of the On-Target Flag due to Pitch and Yaw Error: After Open-Loop Slew 01000104, the ACC picked guide-star had CCD coordinates (25812, 21101) and magnitude 8.3. Throughout the pointing there were frequent jumps of 125.4" and 45.6" in Pitch and Yaw respectively in the position of the guide, which caused Pitch and Yaw Errors and flickering of the OTF. The Mission Star Catalogue Extract reports two near-by stars at CCD (25809, 21104) and (26325, 21295) with magnitudes 8.19 and 8.23 respectively. This situation, which is also shown in the following reconstruction of the STR FoV at the time, caused the jumps in the location of the guide-star as seen by the ACC.



11/08/03 (Day of Year 223, Revolution 100-101)

Release of Guide Star by the ACC STR SEU Filter: At 12:12:39, the guide star was released when the accumulated number of detected SEUs exceeded the threshold of the ACC STR SEU Filter. This star was of magnitude 7.00 and located at (-15340, -8067). An automatic mapping was commanded by the ACC and a new guide-star was found. This was at an ascending altitude of about 16000 km.

12/08/03 (Day of Year 224, Revolution 101)

The STR rejected the FDS commanded guide star for Close-Loop Slew: The Star Tracker issued a "STARS REjected" error message when the Search-and-Track was commanded for Close-Loop slew 01010027 (start time :2003-08-12T17:35:19Z). This error is generated when the Minimum Distance criteria fails during the Search-

and-Track. The attitude was RA: 16:36:54.38, DEC: -19:35:59.7 and the star selected by the FDS for the SRCH/TRCK was:

TYCHO#	HIP#	R.ASCENSION	DECLINATION	MV	MVI
SP R Y_AMIN Z_AMIN Y_CCD Z_CCD					
6228-00307-1	80992 16H 32 26.16	-20 45'07.7"			8.30
8.25 K1 1	-50.99 78.37	-12458 19150			

This was the same star that had caused a similar problem for Close-Loop Slew 00970028 on 31/07/2003. The case is reported in INTEGRAL Mission Report No. 045, Week 31.

More investigation into the problem revealed that this guide star has a near-by star of magnitude 9.46 with an offset of about RA: 63.7" and DEC: -109.7". For this pointing, this offset translates into 1.1 and 3.0 pixels in STR Y and Z respectively, which is marginally below the STR SRCH/TRCK Minimum Distance Criteria (UR-3.2.3-1.1) and is probably the reason for failures of the SRCH/TRCKs that we have observed on this star. There is also a minimum distance criterion in the Flight Dynamics System for the selection of guide-stars. However, the magnitude threshold set on this criterion in the FDS is 9.3, not expecting stars dimmer than this to be seen by the STR, and This is why the star was being selected by the FDS.

As an immediate step to avoid further problems, this star has been disabled in the FDS and it will not be selected anymore. The Flight Dynamics has also taken the action to investigate the circumstances and modify the above-mentioned threshold in their system, if required.

The effect of this problem was that slew 01010027 was missed and slew 01010028 was performed manually.

13/08/03 (Day of Year 225, Revolution 101)

Nothing to report.

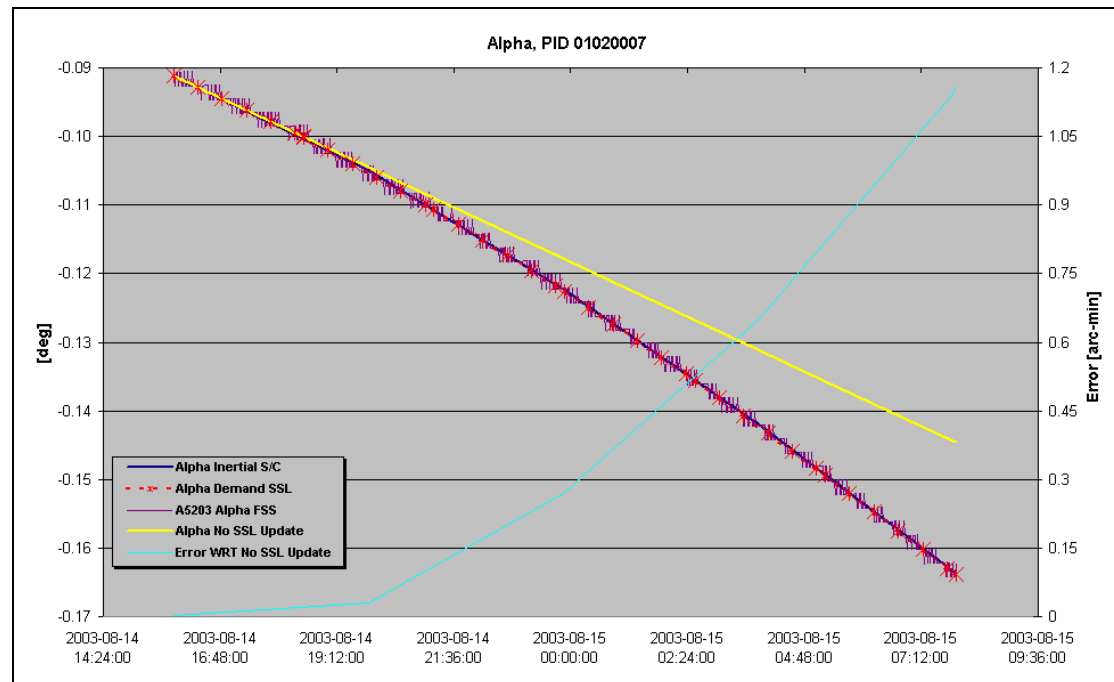
14/08/03 (Day of Year 226, Revolution 101-102)

Nothing to report.

15/08/03 (Day of Year 227, Revolution 102)

Update of Sun-Steering Law parameters during staring observations: For the first time in the operational orbit an FDS feature to update the SSL parameters during staring observations at certain intervals was implemented. For the long observations of revolutions 102 and 103, the SSL parameters are updated roughly every three hours. Prior to this, the SSL parameters were loaded once at the beginning of the observation. The errors of the SSL would then accumulate over time throughout the pointing and would cause deviation of the Roll angle from that of an inertially fixed spacecraft. In certain circumstances this would even cause the Roll angle deviation to exceeded the pointing requirement of 1 arc-minute. As can be seen in the following graph, with this new implementation, the Roll angle perfectly follows the predicted

Roll angle of an inertially fixed spacecraft. This, in effect, increases the pointing accuracy during staring observations. The case with no update of the SSL parameters is simulated for comparison and the error in Roll angle for this case is also plotted.



Where:

Alpha Inertial S/C: Predicted roll angle for the inertially fixed S/C

Alpha Demand SSL: Time evolution of the Roll angle from the loaded SSL parameters

A5203 Alpha FSS: FSS Alpha reading from TM

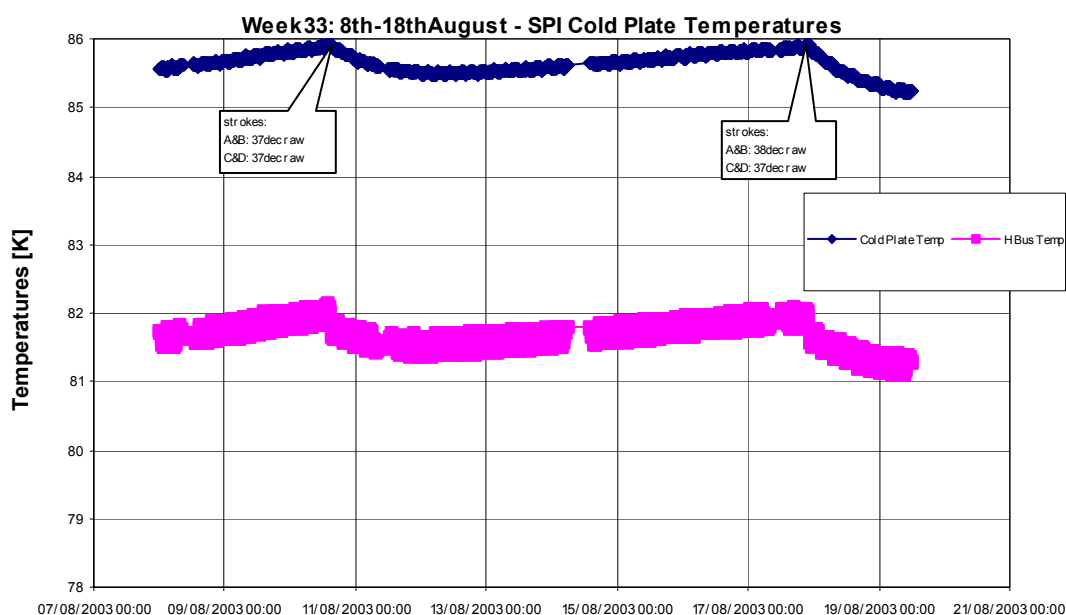
Alpha No SSL Update: Time evolution of the Roll angle if SSL was not updated during the observation

Error WRT No SSL: Pointing error in Roll if the SSL was not updated during the observation

8.3.2 SPI Operations

Cryocooler:

The stroke of the compressors C&D was increased by 1LSB on 10/08/2003 at 14:06Z. The same adjustment was done on 17/08/2003 at 21:23Z for the compressors A&B. All the parameters (current, phase, temperature, etc) of the 4 compressors are nominal after the stroke changes. The stroke adjustments were necessary as the cold plate temp hit the high warning limit at 89.9K due to the temperature drift phenomenon, which, after the annealing in July, has still to stabilize to the expected value of less than 0.030 K/day.



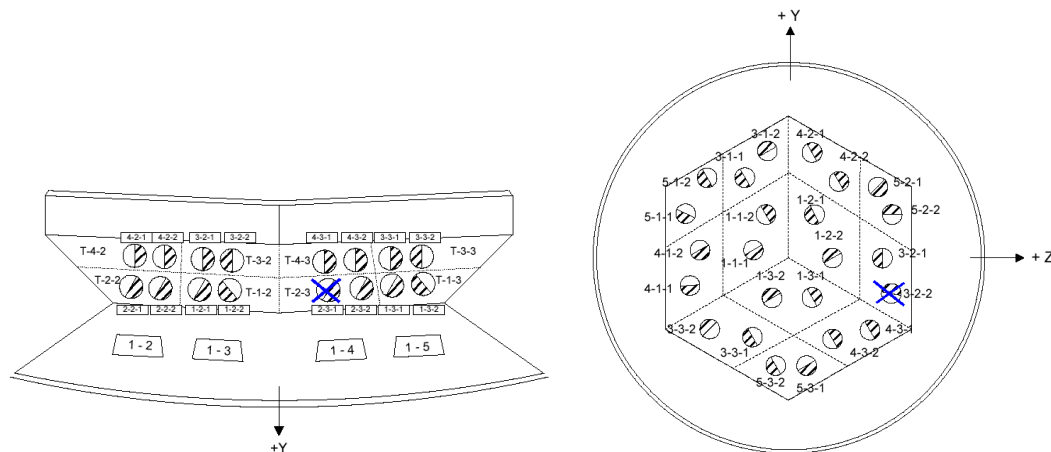
IASW/DPE:

Duplicated packets in VC7 TM : As reported in week30, an AR has been opened (INT-002390). The problem is very likely due to a ground segment problem. MOC is still waiting to have information about further occurrences of the problem for further investigations.

ACS:

The FEE57 is in watch dog reset state since rad belt exit of rev.99 (05/08/2003 at 15.30Z). Recovery attempts (i.e. reload of ACS configurations parameters from DPE and ACS power cycle) performed on the 08/08/2003 were not successful. Further tests are under discussion and preparation in cooperation with the SPI team in CSER Toulouse and ACS specialists in MPE Garching. The FEE watch dog reset is always triggered if no new PMT anode signal integration cycle has started for times longer then 30 ms. In this case this could mean that there is no input signal (caused by PMT or FEE HV section anomaly) or that the logic of the FEE has suspended. In this state the FEE57 does not contribute any longer to the ACS overall veto signal (FEE57 counts are 0). The remaining 89 FEEs are however working fine.

The ACS redundant design implemented on-board is such that each BGO crystal has two PMTs, which are connected to two different FEEs and each FEE controls two PMTs. The anomaly of FEE57 implies that the PMTs 2-3-1 and 3-2-2, respectively mounted on the BGO crystals RST-2#3 and RST-3#2, do not contribute into the overall veto signal. However the same BGO crystals have a redundant PMT (2-3-2 and 3-2-1), which are connected to two other FEEs (56 and 72) still working nominally. The permanent loss of FEE57 would probably imply some vetoing event detection sensitivity degradation in the area covered by crystals RST-2#3 and RST-3#2 (in the LVS ACS structure, close to the cryostat, see the following pictures). Information about any scientific impact of the anomaly is however not yet available at this time.



AFEE :
 Nothing to report.

DFEE, PSD:
 Nothing to report

8.3.3 IBIS Operations

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

On DOY 225 (13/08) at 22:25Z, DoY 226 at 20:59Z and 22:38Z, and again on DoY 227 at 00:31Z the OEM ID 179 Class 2 <<IBIS1 VETO COUNTER BOTTOM EXCEEDS ALERT VALUE>> was reported. The relevant TM_para G6062 showed values inside limits therefore the problem was disregarded, as suggested by the nominal reaction to this OEM.

On DoY 225 at 22:31Z and DoY 226 at 21:42Z and DoY 227 at 02:23Z and 04:04Z the OEM ID 180 Class 2 <<IBIS1 VETO COUNTER LATERAL EXCEEDS ALERT VALUE>> was reported. The relevant TM_para G6063 showed values inside limits after few TM cycles and therefore the problem was disregarded, as suggested by the nominal reaction to this OEM.

On DoY 221 (09/08) at 10:47Z, DoY 223 at 04:11Z, and again on DoY 224 at 14:09Z the OEM ID 183 Class 2 <<IBIS1 VETO +5V VECU VOLTAGE OUT OF RANGE>> was reported. The relevant TM_para G6106 showed a value inside limits each time and therefore the problem was disregarded, as suggested by the nominal reaction to this OEM.

8.3.4 JEM-X Operations

During this week there were two events of note, the implementation of a change request, and an autonomous switch to SAFE mode of JEMX-2.

On DoY 223 at 04:17 the JEM-X2 software for the HV-switch-off limit was modified. This corresponded to the CR#152. The action was completed at 04:35.

On DoY 225 at 05:35 although the thresholds had been raised, JEMX-2 switched to SAFE mode due to S/W trigger rates. At 07:41, the JEMX-2 Science configuration options were re-set to switch on the high voltages, and at 08:10, the unit was returned to the DATA-TAKING mode.

8.3.5 OMC Operations

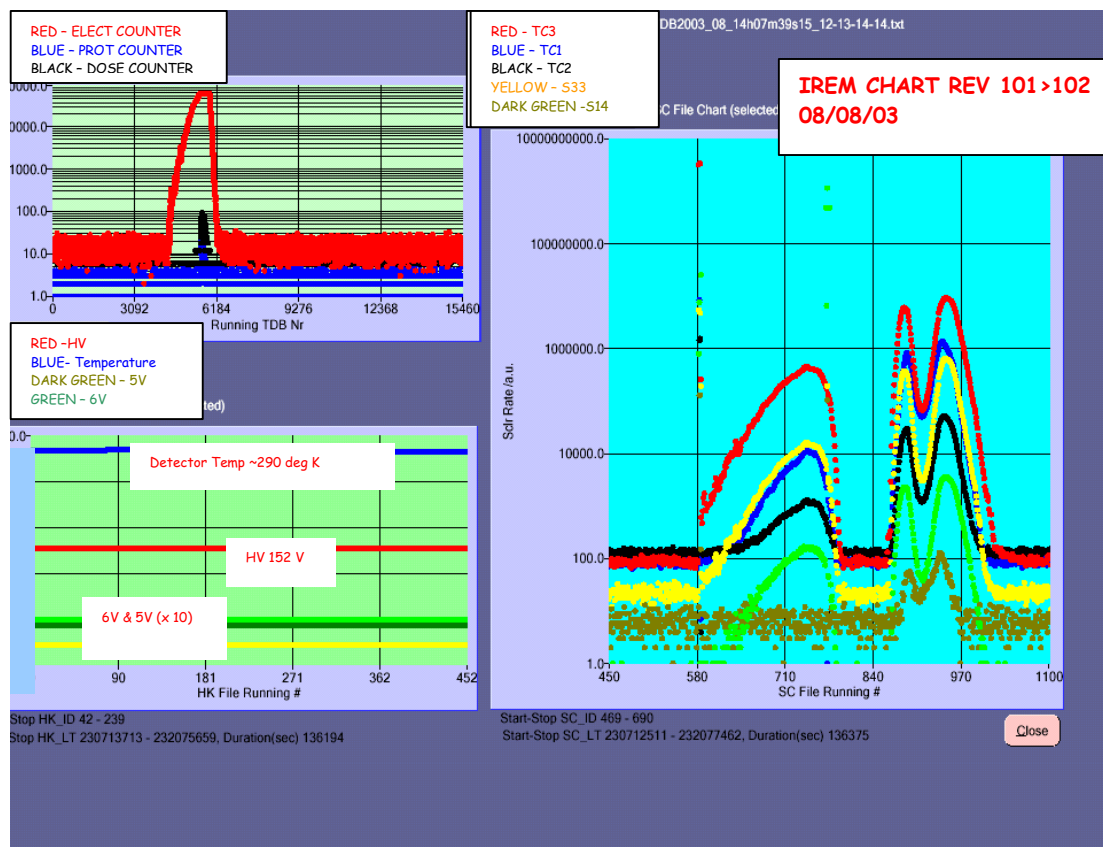
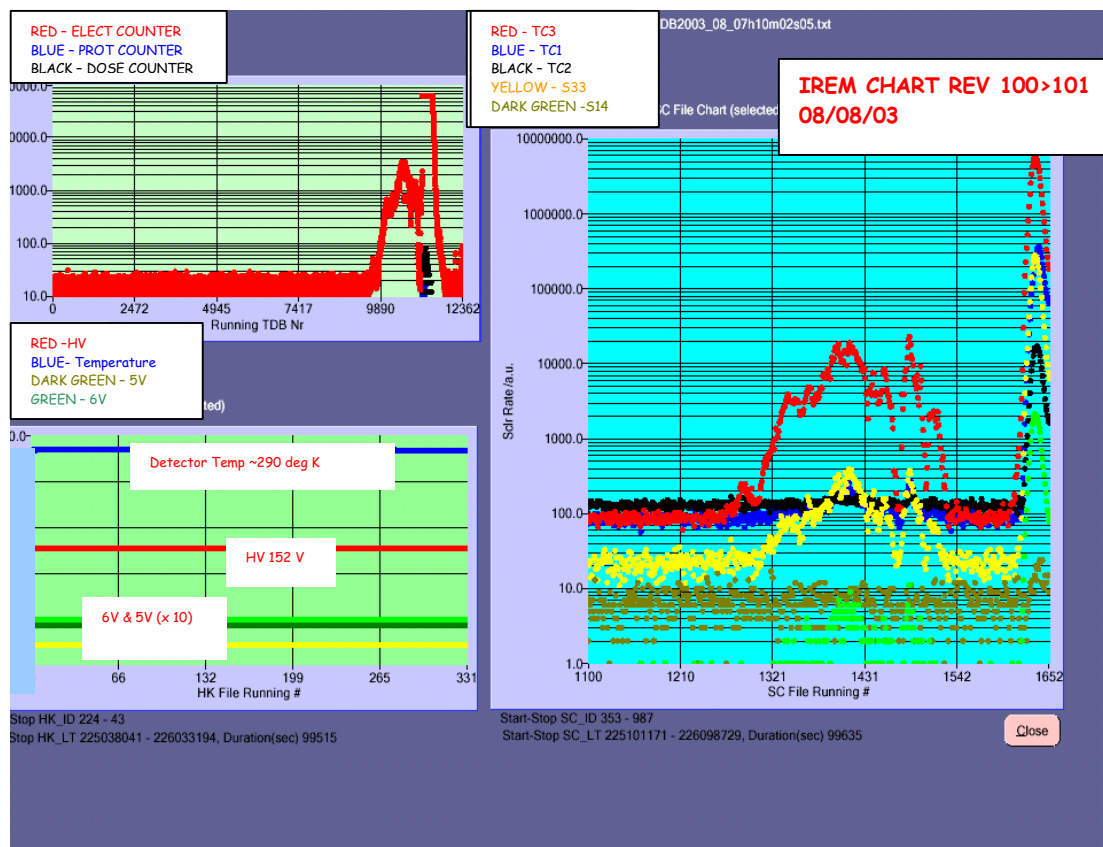
On DoY 224 at 17:35 two Tele-commands were rejected owing to a missed pointing caused by a guide star problem.

On DoY 225 at 00:08:45, during a centring cycle, a science window was rejected, this was probably due to attitude disturbances caused by a reaction wheel bias which had terminated at 00:06:52.

8.3.6 IREM Operations

On DOY 223 (11/08) at 08.25Z and again on DoY 226 (14/08) at 08:14Z the TC U4921 failed the command execution verification due a late update of the relevant TM_para.

The figures below show the IREM count rates for the Belts passage in rev 101 and 102.



Doc. Title : INTEGRAL Mission Report # 47
 Doc. Ref. : INT-MOC-SYS-RP-1001-TOS-OF
 Date : 18/08/03

Issue : 1
 Rev. : 0
 Page : 18

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 - 002010	22/10/2002	Time correlation not applied correctly to time parameters in TM type 8 reports.	Ground	IMCS	Pending
INT - 002082	13/11/2002	TM packet production lower than allocation.	Space	SPI	Pending
INT - 002094	19/11/2002	TDRS does not work with super-commutated parameters	Ground	IMCS	Pending
INT - 002142	11/12/2002	TDRS Time Interval Setting	Ground	IMCS	Pending
INT - 002145	15/12/2002	Commands failing PTV for no reason	Ground	IMCS	Pending
INT - 002212	29/01/2003	TDRS Interval-by-Interval TM Retrieval Problem	Ground	IMCS	Pending
INT - 002213	29/01/2003	SCOS 2000 Interval-by-Interval TM Retrieval Problem	Ground	IMCS	Pending
INT - 002234	24/02/2003	S2K unable to access READ ONLY disk in IDDA.	Ground	IMCS	Pending
INT - 002259	21/03/2003	TDRS: Retrieval log is Meaningless.	Ground	IMCS	Pending
INT - 002260	21/03/2003	Monitoring task Printout, sample time	Ground	IMCS	Pending
INT - 002262	21/03/2003	TDRS: FEN Retrievals containing status parameters always fail.	Ground	IMCS	Pending
INT - 002304	26/04/2003	IFTS MCS instance not working	Ground	IMCS	Pending
INT - 002307	06/05/2003	Wrong sign applied in the S/C delay in the correlator.	Ground	IMCS	Pending
INT - 002309	06/05/2003	Command release delayed	Ground	ESA Sta.	Pending
INT - 002311	06/05/2003	Drop in TM on MADDS-ISDSA link	Ground	ESA Sta.	Pending
INT - 002312	06/05/2003	Static PTV in "No Go" State for command A3189	Ground	IMCS	Pending
INT - 002318	09/05/2003	SUN workstation 128 rebooted itself.	Ground	IMCS	Pending
INT - 002314	12/05/2003	Wrong file displayed for Timeline Summary File	Ground	IMCS	Pending
INT - 002323	19/05/2003	Telemetry Drops from Goldstone (DR 109346)	Ground	NASA Sta.	Pending
INT - 002324	19/05/2003	Command A3084 not verified	Ground	IMCS	Pending

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INT - 002328	27/05/2003	TDRS queries for some SPI parameters fail before DOY 2003.034	Ground	IMCS	Pending
INT - 002330	27/05/2003	NCTRS CPU goes to 85% for a problem related with tracking data	Ground	NCTRS	Pending
INT - 002331	27/05/2003	Monitoring Task ASCII Printout, not in ASCII format	Ground	IMCS	Pending
INT - 002334	30/05/2003	Bad telemetry from Goldstone - DSS-16	Ground	NASA Sta.	Pending
INT - 002336	02/06/2003	VC-0 telemetry not being received from Goldstone	Ground	NASA Sta.	Pending
INT - 002338	03/06/2003	Error sending data to consolidator (VC-7)	Ground	IMCS	Pending
INT - 002340	05/06/2003	IBIS anomaly: Histogram production stopped due to coincidence of GSHF=1 with the start of S5 process	Space	IBIS	Pending
INT - 002341	05/06/2003	IBIS anomaly: Histogram production stopped due to the combination of PDUR setting with IASW observation duration calculation during long staring	Space	IBIS	Pending
INT - 002342	05/06/2003	Telemetry Drops from Goldstone DR: AR109393	Ground	NASA Sta.	Pending
INT - 002343	07/06/2003	Error sending data to ISDC	Ground	IMCS	Pending
INT - 002350	12/06/2003	Telemetry Drop from Goldstone DR: G102867	Ground	NASA Sta.	Pending
INT - 002357	20/06/2003	Error sending data to ISDS	Ground	IMCS	Pending
INT - 002358	22/06/2003	Error sending data to ISDC	Ground	IMCS	Pending
INT - 002359	22/06/2003	NCTRSA application restart	Ground	NCTRS	Pending
INT - 002363	23/06/2003	Error sending data to ISDC	Ground	IMCS	Pending
INT - 002367	25/06/2003	SPI: Spikes in GeD count rates after HV switch on following 1st annealing	Space	SPI	Pending
INT - 002368	25/06/2003	IFTS Transfer on IMCS-A Failed	Ground	IMCS	Pending
INT - 002370	01/07/2003	Static PTV conditions handled incorrectly.	Ground	IMCS	Pending
INT - 002375	02/07/2003	Error sending data to ISDS	Ground	IMCS	Pending
INT - 002376	03/07/2003	Unexpected behaviour of IMCA	Ground	IMCS	Pending
INT - 002379	03/07/2003	ISDS to ISDC link drop messages	Ground	IMCS	Pending
INT - 002388	16/07/2003	FDS failed to create TPF	Ground	FDS	Pending
INT - 002389	16/07/2003	IBIS: PICsIT PDMs counters SET to 0 during nominal operation (#3-4)	Space	IBIS	Pending
INT - 002391	18/07/2003	TC problems following the TMP swap on DOY 197	Ground	ESA Sta.	Pending
INT - 002392	18/07/2003	Broadcast Packet Eclipse Entry/Exit Times Incorrect	Ground	FDS	Pending
INT - 002393	23/07/2003	Auto-stack crash on sun128	Ground	IMCS	Pending
INT - 002399	25/07/2003	IFRD: the CSM-IFRD task crashed on isdsa after new IMCS SW release (8.8).	Ground	IMCS	Pending

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INT - 002401	31/07/2003	Link MADDs - ISDS toggled between connected and TM flow.	Ground	IMCS	Pending
INT - 002406	31/07/2003	Link MADDs/ISDS Disconnected	Ground	IMCS	Pending
INT - 002408	31/07/2003	Late TC Link from DSS-16	Ground	NASA Sta.	Pending
INT - 002410	31/07/2003	Strange Disconnection Messages.	Ground	NCTRS	Pending
INT - 002412	31/07/2003	OMC (OMCAS) IASW Crashed	Space	OMC	Pending
INT - 002413	01/08/2003	CMD failure caused slew to be missed.	Ground	FDS	Pending
INT - 002414	06/08/2003	B-Chain not operational after OPSLAN work.	Ground	IMCS	Pending
INT - 002415	06/08/2003	TC Fails release - Spurious PTV Failure.	Ground	IMCS	Pending
INT - 002416	06/08/2003	TC fails release	Ground	IMCS	Pending
INT - 002417	06/08/2003	TCP Crash at DSS-16	Ground	NASA Sta.	Pending
INT - 002418	06/08/2003	Possible Hardware fault on INTRB	Ground	NCTRS	Pending
INT - 002419	06/08/2003	Drop in VC7	Ground	NASA Sta.	Pending
INT - 002420	07/08/2003	SPI -ACS anomaly on FEE 57	Space	SPI	Pending
INT - 002421	12/08/2003	IREM anomaly: SEU #6	Space	IREM	Pending
INT - 002422	18/08/2003	IMCS OOL display frozen	Ground	IMCS	Pending
INT - 002423	18/08/2003	Drop in VC-7 from DSS-16	Ground	NASA Sta.	Pending
INT - 002424	18/08/2003	NCTRS-A restart	Ground	NCTRS	Pending
INT - 002425	18/08/2003	TM drop due to non-scheduled line switch at JPL - DR:101291	Ground	NASA Sta.	Pending
INT - 002426	18/08/2003	Auto-stack crashed on SUN-122	Ground	IMCS	Pending