

INTEGRAL
Mission Report
INT-MOC-SYS-RP-1001-TOS-OF
No. 038
Week 23
17.06.03
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.

It addresses the activities from 07.06.03 until 13.06.03 (both dates inclusive) and covers the revolutions 79 to 81.

2 Summary of Activities

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

The science activities in these revolutions consisted of raster dithering observations of Cygnus X-1 (RA 19:58:21.68; DEC +35:12:05.8), Cyg OB2 (RA 20:32:22.00; DEC +41:18:19.0), WR140 (RA 20:20:28.00; +43:51:16.0) and the Vela region (RA 08:52:45.57; DEC -44:35:07.2). In addition, the Periodic Thruster Calibration 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.

3.1.1 AOCS

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

A thruster calibration operation was successfully performed on the A branch of the Reaction Control System. This was the first thruster calibration in the operational phase of the mission.

The fuel consumption over the period between 06/06/2003 and 13/06/2003 was 0.202 Kg. The remaining propellant is in the order of 176.56 Kg on the 13th of June. The fuel consumption is nominal with respect to previous revolutions.

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.

The problem concerning the ratio of VC0 and VC7 CLCW data that occurred after the load of the S/W patch regarding the TM data rate increase has not been solved. For the time being commanding is performed using VC 0 commands only.

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.

The RF link margin after the increase of the TM data rate is currently being analysed.

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 91 pkts/cycle for the reported period.

The Cryocooler is working nominally maintaining 85K temperature in the detector cold 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 has changed from 107 to 134 pkts/cycle.

Reported (few) during Belt passage the OEM ID 167 Class 2<<IBIS1 PICsIT NOISY SEMIMODULE>> due to the fact that the PICsIT detectors are ON without the VETO anticoincidence system, as it required by PIs.

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.

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

3.2.4 OMC

During this period, OMC operations were executed smoothly from the timeline.

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

3.2.5 IREM

Status Nominal, no problem reported after the last SEU (#3).

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

4 Ground Facilities

The overall performance of the ground segment was good in the reporting period. The performance of the overall Ground Segment (OGS) was well within the specifications.

The performance of the ground segment after the data rate increase has been analysed and some bottlenecks have been identified. The relevant upgrades of the system, mainly concerning H/W of the control system, have been specified and the replacement has been triggered.

4.1 Mission Operations Centre

The performance of the IMCS was good in the reporting period. There was no problem that impacted the execution of the Timeline. However, the performance of the control system regarding real-time TM processing, archiving of data, data consolidation, offline data retrieval, data distribution, etc., is marginal under the load caused by the increased data rate. The parallel execution of several tasks could impact the real-time processing of data. The various activities have to be carefully scheduled, which leads to a delay of some activities, e.g. the generation of the CD ROMs.

4.2 Ground Stations & Network

Though there were a few problems related to the ground stations during the reporting period the overall performance was well within the specification.

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

The increased data rate is operationally used from revolution 80 onwards.

6 Anomalies

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

The list of the new anomalies is as follows:

ARid	Date Occurrence	Subject	Segment	Element	Status
INT - 002343	07/06/2003	Error sending data to ISDC	Ground	IMCS	Pending
INT -	08/06/2003	Telemetry drops from REDU	Ground	ESA Sta.	Pending

002344					
INT - 002345	09/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002346	11/06/2003	Instrument EDs as CCCF_EDs which should be normal EDs	Ground	ISOC	Pending
INT - 002347	11/06/2003	Recovery Procedure not found by SPACON	Ground	Procedures	Pending
INT - 002348	11/06/2003	Recovery procedure enhancement	Ground	Procedures	Pending
INT - 002350	12/06/2003	Telemetry Drop from GoldStone DR: G102867	Ground	NASA Sta.	Pending
INT - 002351	12/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002352	14/06/2003	Late handover to DSS-16, DR G102878 and G102879	Ground	NASA Sta.	Pending
INT - 002353	14/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002354	15/06/2003	Error sending data to ISDC	Ground	IMCS	Pending

7 Future Milestones

The next Eclipse Season will start on 24 June.

8 Appendix

The appendix includes various detailed information.

8.1 Overview of Revolutions

Revolution 80

The observations in revolution 80 began with a raster dithering observation of Cygnus X-1 (RA 19:58:21.68; DEC +35:12:05.8), which was performed for about 35 hours. This was followed by a raster dithering observation centred on Cyg OB2 (RA 20:32:22.00; DEC +41:18:19.0), which was amalgamated with an observation of WR140 (RA 20:20:28.00; +43:51:16.0). This observation was performed for the remaining ~24 hours of observation time.

Throughout these observations, all instruments were in their nominal science modes, except for JEM-X1, which was in Safe mode. The TM allocation commanded by the Timeline (and reported in the BCP) was 74 SPI, 107 IBIS, 1 JEM-X1, 8 JEM-X2, 5 OMC. However, a PST with a TM allocation of 98 SPI, 134 IBIS, 1 JEM-X1, 8 JEM-X2, 5 OMC was loaded manually.

Revolution 81

The science observations in revolution 81 consisted of a raster dithering observation of the Vela region (RA 08:52:45.57; DEC -44:35:07.2), performed throughout the available observation time. This was interrupted from 2003-06-13T05:26:04Z to 2003-06-13T11:26:04Z, during which time the Periodic Thruster Calibration was performed.

Throughout these activities, all instruments were in their nominal science modes, except for JEM-X1 which was 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

2003-05-29T22:07:40.000Z	177.0621
2003-05-30T04:59:16.000Z	177.0223
2003-05-31T18:21:44.000Z	176.9850
2003-06-01T09:07:54.000Z	176.9620
2003-06-02T04:54:52.000Z	176.9016
2003-06-03T18:05:03.000Z	176.8824
2003-06-05T14:21:49.000Z	176.8319
2003-06-05T21:57:34.000Z	176.8005
2003-06-06T00:25:26.000Z	176.7640
2003-06-06T17:50:16.000Z	176.7218
2003-06-09T11:11:42.000Z	176.7009
2003-06-09T17:33:51.000Z	176.6749
2003-06-12T10:24:38.000Z	176.6200
2003-06-12T17:24:38.000Z	176.5880
2003-06-13T06:07:04.000Z	176.5619

This report was generated Fri Jun 13 08:00:13 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 APCS SUMMARY OPERATIONS REPORT 07/06/2003-13/06/2003

AOCS operations were executed from the Automatic Timeline.

During this period, 137 Open Loop Slews, 32 Closed Loop Slews and 6 Momentum Bias were executed. 1 slew was lost. This is equivalent to a 0.6%.

07/06/03 (Day of Year 158, Revolution 79)

Nothing to report.

08/06/03 (Day of Year 159, Revolution 79)

Nothing to report.

09/06/03 (Day of Year 160, Revolution 79-80)

Failure of the FD system to update slew parameters due to a TM glitch: Due to a short drop in TM (from REDU ground station) the Flight Dynamics system failed to update the parameters for slew 00790070. After reestablishment of the TM link, a STR mapping was commanded from ground and the timeline recovery tool was used to manually update the parameters for slew 00790070.

Yaw Error due to undetected False Events: At 19:40:44 and 19:40:49, the ACC generated two Yaw Error On Event Messages. The guide star, which was picked by the ACC after an Open Loop Slew, had a magnitude of 8.40 and CCD Coordinates (-23631, -957). Each time there was a jump of about 154 CCD units (38 arc seconds) in the Z coordinate of the guide star. This is above the OTF threshold for Yaw Error. The reason for these jumps were undetected False Events, which had caused changes in the position of the guide star, as taken by the STR. This was at an altitude of about 41400 km. The second Yaw Error was seen at the BCP level and caused a flicker in the OTF at the beginning of pointing 00800004.

10/06/03 (Day of Year 161, Revolution 80)

Nothing to report.

11/06/03 (Day of Year 162, Revolution 80)

Nothing to Report.

12/06/03 (Day of Year 163, Revolution 80-81)

Slew missed due to Ground Station problem (Goldstone DSS-16): Slew 00800067 was missed due to a drop in TM that happened from 07:36 to 07:45. After reestablishment of the TM link, the timeline recovery tool was used to perform a manual slew to the attitude of pointing 00800067 and to update the parameters for slew 00800068.

Yaw Error due to undetected False Event: At 16.59.21, after AOS at the beginning of revolution 81, the ACC generated a Yaw Error On Event Message. The guide star had a magnitude of 6.75 and CCD Coordinates (17907, -16836). There was a jump of 194 CCD units (47 arc seconds) in the Z coordinate of the guide star. This is above the OTF threshold for Yaw Error. The reason for this jump was an undetected False

Event, which had caused the change in the position of the guide star, as taken by the STR. This was at an altitude of about 16500 km.

13/06/03 (Day of Year 164, Revolution 81)

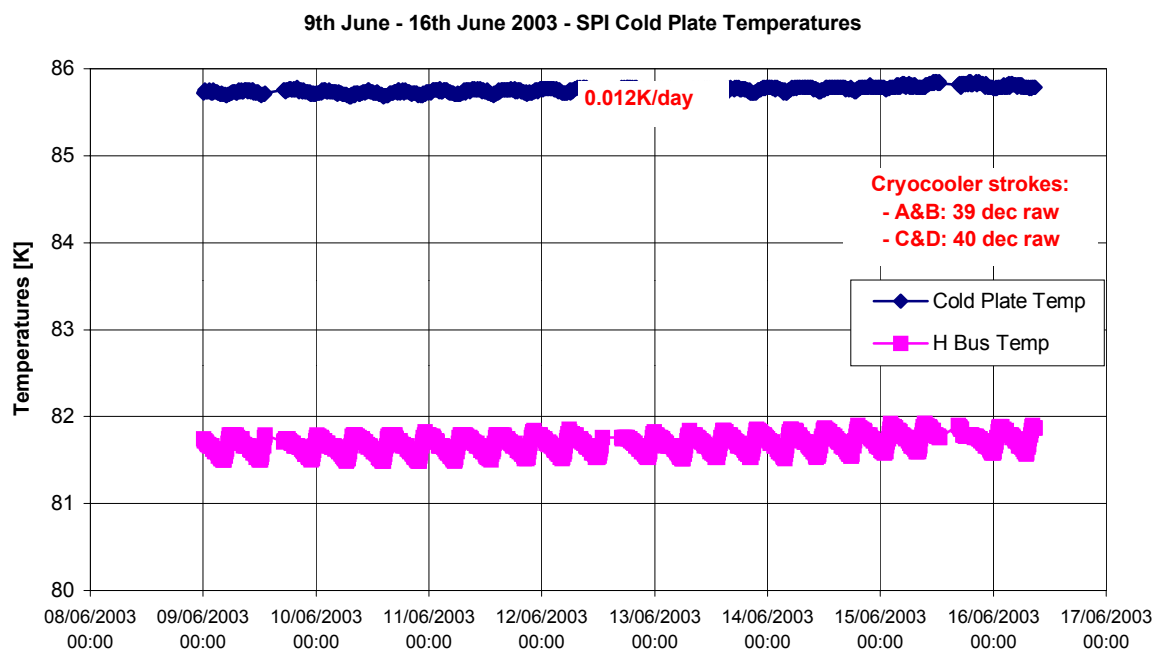
RCS_A Thruster Calibration: A thruster calibration operation was performed successfully on the A branch of the Reaction Control System. A 6-hour Satellite Engineering window from 05:26 to 11:26 was allocated to this activity to slew to the calibration attitude and adjust the wheel speeds, perform the thruster firings for the calibration, and slew back to the science attitude. This calibration consisted of three sets of thruster firings in IPS mode with the Sun Steering Law enabled. The Thruster On Time was 127.856 ms and the OTF was masked during this window.

The enabling of the Sun Steering Law was done manually from ground by using the FD timeline recovery tool. This was the first time that this tool was used to specifically generate the SSL parameters in order to enable it on the S/C.

8.3.2 SPI Operations

Cryocooler:

The performance of the 4 compressors is nominal and the cold plate temperature is maintained at around 85.75K with a constant drift of 0.012K/day. It is foreseen that within 10 days the temperature is going to hit the upper warning limit (i.e.86.9K), then the stroke of the compressors A&B will be incremented by 1 LSB.



IASW/DPE, ACS, DFEE, PSD, AFEE : Nothing to report

8.3.3 IBIS Operations

DOY 2003. 160

At 09.58 reported the OEMs Class 2

ID 131 <<IBIS1 IASW LSL transfer fail report (for high level module reset)>>

ID 132 <<IBIS1 IASW LSL transfer failed (low level)>>

This problem has been observed already in the past once for revolution and it is related to a problem of the Low Speed Line interface between the DPE and the peripherals, the action taken , accordingly to the FDIR doc, was to inform the s/s SOE and monitor the unit.

DOY 2003. 161

Reported at 00.01-15.35Z

the OEM ID 183 Class 2 <<IBIS1 VETO +5V VECU VOLTAGE OUT OF RANGE>>. The relevant TM_para G6106 reported a value inside limits and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

Reported at 07.50Z

the OEM ID 184 Class 2 <<IBIS1 VETO +28V VDM/CDM VOLTAGE OUT OF RANGE>>. The relevant TM_para G6107 reported values inside limits and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

DOY 2003. 162

At 15.44Z implemented OR_0080: the purpose of the OR was the testing of the IBIS new configuration to be used with the new PST(automatically loaded in the timeline from revolution 82). The new configuration foresaw:

- spectral timing integration time set from 62.5 to 1.95 msec
- spectral timing channels from 2 to 4;
- new energy thresholds for the spectral timing channels
 - G8824 = 676 KeV [13]
 - G8825 = 364 KeV [7]
 - G8826 = 260 KeV [5]
 - G8827 = 208 KeV [4]
 - G8828 = 156 KeV [3]

The unit did not reported any problem in using this configuration. The averaged TM utilisation of IBIS is 107 pkts/8sec.

DOY 2003. 163

Reported at 02.50Z the OEM ID 183 Class 2 <<IBIS1 VETO +5V VECU VOLTAGE OUT OF RANGE>>. The relevant TM_para G6106 reported a value inside limits and therefore the problem has been disregarded, as suggested by the nominal reaction to this OEM.

For all the revolution 81 IBIS used the new configuration as described above in DoY 162: this because an early update of the ODB and ISOC defaults values in the EDs made it possible since rev 81.

8.3.4 JEM-X SUMMARY OPERATIONS REPORT 07/06/2003-13/06/2003

Nothing to report

8.3.5 OMC SUMMARY OPERATIONS REPORT 07/06/2003-13/06/2003

During this period 147 OMC image acquisitions were performed by the timeline. 1 OMC pointings was missed due to a short drop in TM.

07/06/2003, DOY 158, Revolution 79

Nothing to report

08/06/2003, DOY 159, Revolution 79

Nothing to report

09/06/2003, DOY 160, Revolution 79-80

Nothing to report

10/06/2003, DOY 161, Revolution 80

Nothing to report

11/06/2003, DOY 162, Revolution 80

Nothing to report

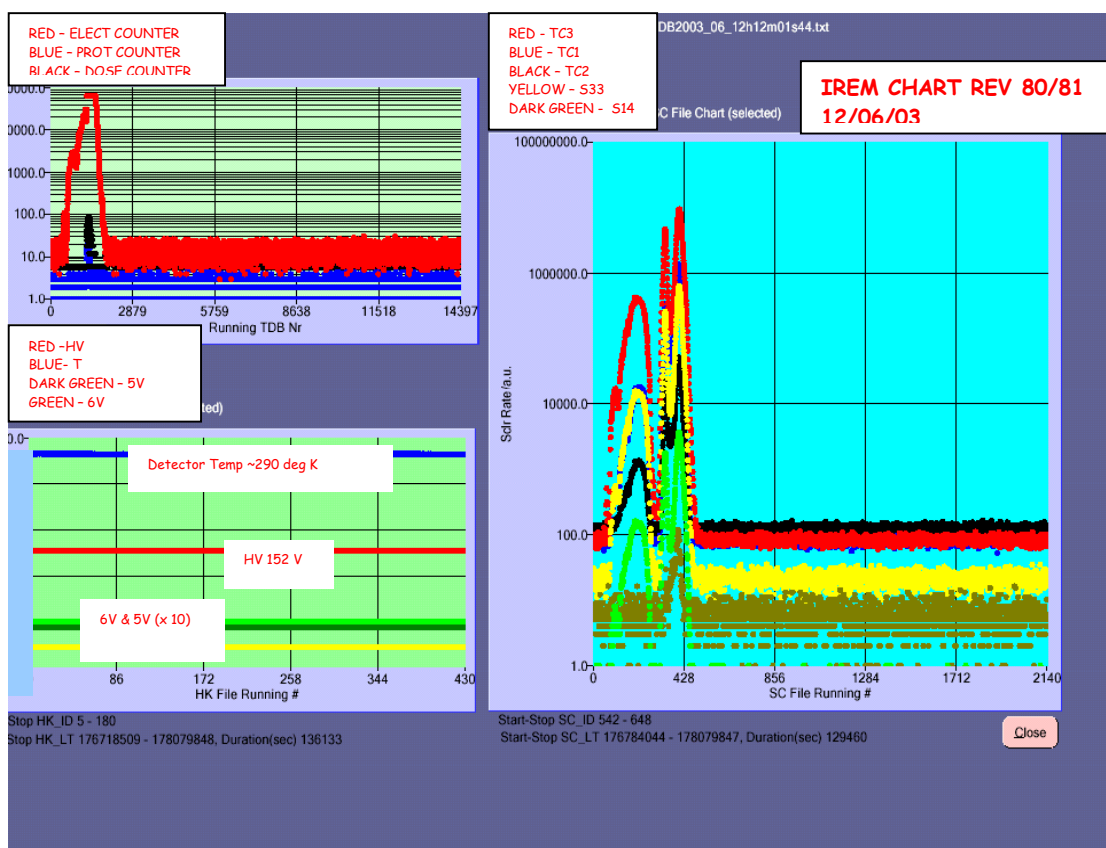
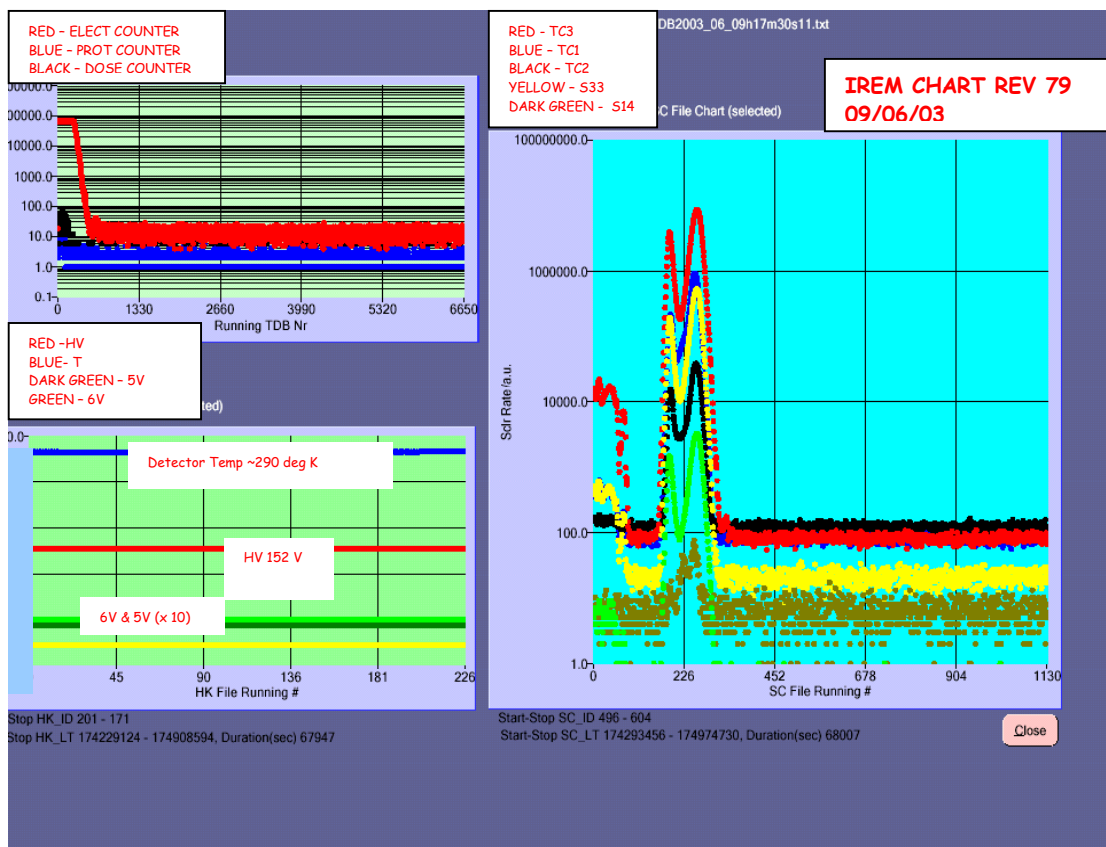
12/06/2003, DOY 163, Revolution 80-81

- **Pointing missed due to Ground Station problem (Goldstone DSS-16):** Slew 00800067 was missed due to a drop in TM that happened from 07:36 to 07:45. After reestablishment of the TM link, the timeline recovery tool was used to perform a manual slew to the attitude of pointing 00800067 and to update the parameters for slew 00800068.

13/06/2003, DOY 163, Revolution 81

- **OMC in STANDBY be cause of thruster calibration operations:** A 6-hour Satellite Engineering window from 05:26 to 11:26 was allocated to the thruster calibration operation in the timeline during which the OTF was masked. OMC was in Standby mode from 04:29:54 to 11:26:22.

8.3.6 IREM Operations



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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 (AR) still have a pending status it does not mean that there is still a problem in the system. Most of the problems have already been analysed and the relevant system improvements are in place. There is just the process outstanding to close formally these AR's.

ARid	Date Occurrence	Subject	Segment	Element	Status
INT - 002308	05/05/2003	Loss of TM/TC link due to hit on line	Ground	COMMS	Pending
INT - 002010	22/10/2002	Time correlation not applied correctly to time parameters in TM type 8 reports.	Ground	IMCS	Pending
INT - 002024	28/10/2002	OEM: SPI1 Fixed print overflow	Space	SPI	Pending
INT - 002061	12/11/2002	TM Desktop performance collapses when de-selecting supercommutated procesing.	Ground	IMCS	Pending
INT - 002066	13/11/2002	Data routing to ISDS	Ground	I/F to SGS	Pending
INT - 002082	13/11/2002	TM packet production lower than allocation.	Space	SPI	Pending
INT - 002070	14/11/2002	TDRS: data Rerievals cancelled	Ground	IMCS	Pending
INT - 002094	19/11/2002	TDRS does not work with supercommutated 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 - 002199	17/01/2003	Incorrect handling of CLCW wraparound in CLTU mode	Ground	ESA Sta.	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

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INT - 002214	29/01/2003	Drop in telemetry from REDU	Ground	ESA Sta.	Pending
INT - 002217	06/02/2003	TC link drop	Ground	NASA Sta.	Pending
INT - 002219	10/02/2003	IBIS: PICsIT PDMs counters SET to 0 (twice) during nominal operation	Space	IBIS	Pending
INT - 002220	10/02/2003	Wrong Scrolling Display definitions on IMCS following Import	Ground	IMCS	Pending
INT - 002221	10/02/2003	IBIS: SCI submode table loaded only if forcing the submode	Space	IBIS	Pending
INT - 002233	24/02/2003	Time Calibration not Coherent among Ground Stations	Ground		Pending
INT - 002234	24/02/2003	S2K unable to access READ ONLY disk in IDDA.	Ground	IMCS	Pending
INT - 002235	25/02/2003	Too narrow window for RMU cal in PSF of rev 49	Ground	I/F to SGS	Pending
INT - 002242	02/03/2003	TM & TC Drop on DSS 16	Ground	NASA Sta.	Pending
INT - 002243	04/03/2003	CDS Failed to Lock at Redu - H/O Postponed	Ground	ESA Sta.	Pending
INT - 002246	05/03/2003	Loss of Telemetry from DSS16	Ground	NASA Sta.	Pending
INT - 002252	10/03/2003	CDS out of Lock at Redu - TM&TC Loss	Ground	ESA Sta.	Pending
INT - 002253	10/03/2003	RX1 and RX2 Locked at the same time	Ground	NASA Sta.	Pending
INT - 002255	10/03/2003	Late AOS at DSS-24	Ground	NASA Sta.	Pending
INT - 002256	14/03/2003	Late AOS at DSS-16	Ground	NASA Sta.	Pending
INT - 002257	17/03/2003	Late AOS at DSS-24	Ground	NASA Sta.	Pending
INT - 002258	20/03/2003	IBIS: stop downloading HIST during GCDE	Space	IBIS	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 - 002265	24/03/2003	Loss of TC & TM Link	Ground	ESA Sta.	Pending
INT - 002267	25/03/2003	Drop in link from ISDS to ISDC	Ground	I/F to SGS	Pending

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INT - 002273	27/03/2003	Drop in VC7 via REDU	Ground	ESA Sta.	Pending
INT - 002279	29/03/2003	Telemetry lost from DSS-16. DR N109197	Ground	NASA Sta.	Pending
INT - 002283	01/04/2003	ISDS-A and IDDA services stopped	Ground	IMCS	Pending
INT - 002286	02/04/2003	Reboot of ESOC Firewall	Ground	I/F to SGS	Pending
INT - 002288	03/04/2003	TM/TC lost via REDU	Ground	ESA Sta.	Pending
INT - 002291	08/04/2003	Archiving lost on A chain	Ground	IMCS	Pending
INT - 002293	13/04/2003	Science data CDs produced with no TM inside.	Ground	IMCS	Pending
INT - 002295	15/04/2003	Telemetry Drops from GoldStone	Ground	NASA Sta.	Pending
INT - 002298	20/04/2003	ISDS - ISDC link outage	Ground	I/F to SGS	Pending
INT - 002299	21/04/2003	Telemetry loss from DSS-24	Ground	NASA Sta.	Pending
INT - 002302	24/04/2003	Telemetry loss via DSS-16 due to RFI	Ground	NASA Sta.	Pending
INT - 002305	04/05/2003	Telemetry Drops from GoldStone. DR G102720	Ground	NASA Sta.	Pending
INT - 002308	05/05/2003	Loss of TM/TC link due to hit on line	Ground	COMMS	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 - 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
INT - 002326	21/05/2003	Hardware failue at DSS-16 during handover DR: G102772	Ground	NASA Sta.	Pending
INT - 002329	24/05/2003	Late handover to DSS-16. DR: G102803	Ground	NASA Sta.	Pending

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INT - 002327	26/05/2003	CLCW: change in ratio of the number of VC-0 / VC-7 CLCWs in VC-0 TM Frames	Space	Platform	Pending
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 - 002333	03/06/2003	TM acquisition from MRU-B no longer possible.	Ground	Simulator	Pending
INT - 002337	03/06/2003	Late handover to DSS-16 due to uplink bind problem	Ground	NCTRS	Pending
INT - 002338	03/06/2003	Error sending data to consolidator (VC-7)	Ground	IMCS	Pending
INT - 002339	05/06/2003	IREM anomaly: SEU (#3)	Space	IREM	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 - 002344	08/06/2003	Telemetry drops from REDU	Ground	ESA Sta.	Pending
INT - 002345	09/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002346	11/06/2003	Instrument EDs as CCCF_EDs which should be normal EDs	Ground	ISOC	Pending
INT - 002347	11/06/2003	Recovery Procedure not found by SPACON	Ground	Procedures	Pending

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INT - 002348	11/06/2003	Recovery procedure enhancement	Ground	Procedures	Pending
INT - 002350	12/06/2003	Telemetry Drop from GoldStone DR: G102867	Ground	NASA Sta.	Pending
INT - 002351	12/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002352	14/06/2003	Late handover to DSS-16, DR G102878 and G102879	Ground	NASA Sta.	Pending
INT - 002353	14/06/2003	Telemetry drop from Redu	Ground	ESA Sta.	Pending
INT - 002354	15/06/2003	Error sending data to ISDC	Ground	IMCS	Pending