



Attendants

Arvind Parmar	ESA, ESTEC	AP
Michael Schmidt	ESA, ESOC	MS
Richard Southworth	ESA, ESOC	RS
Salma Fahmy	ESA, ESOC	SF
Peter Kretschmar	ESA, ESAC	PK
Angela Bazzano	IASF Roma	AB
Giovanni La Rosa	IASF Palermo	GLR
François Lebrun	CEA Saclay	FL
Jean-Pierre Roques	CESR Toulouse	JPR
Elizabeth Jourdain	CESR Toulouse	EJ
Roland Diehl	MPE	RD
Federico Cordero	SPI, VEGA	FC
Søren Brandt	DNOSC	SB
Volker Beckmann	ISDC	VB

1 Welcome & Agenda — PK

The Agenda was accepted without changes.

2 Actions & Open Issues — PK

- Co/13-03 closed
- Co/13-04 keep open
- Co/13-05 closed
- Co/13-06 closed
- Co/13-07 closed
- Co/12-01 closed
- Co/11-07 ongoing, discussed at this meeting
- Co/11-11 closed , no special effect
- Co/08-03 mostly done, a meeting has to be organized

Action IOCG/01-01 on SF, GLR

Due: end May

Organize meeting to discuss remaining issues on redundant chain and other questions.

3 Mission Status & Open Anomaly Reports — MOC

3.1 SPI

IASW 4.3.4 implemented successfully. GeD#12 performing slightly better. Recovery procedures approved with slight changes to redundant chain. All 108 packets are used

for download of SPI spectra data, otherwise TM usage is lower. Broadcast packet still not changed (change required at ISOC). TM usage roughly constant by enabling SE compression and disabling ME reduction.

INT_SC-70	wrong OR generation (11/2003)	closed
INT_SC-194	PSD channel rates malfunction, last occurrence 07/2007	pending
INT_SC-180	GeD#12 degradation	closed, some improvement
INT_SC-211	Problem in acquiring ACS parameters in packet 60601 at belt transition	Still valid for IASW 4.3.4. Nothing to be done, closed
INT_SC-212	Problem in acquiring PSD parameters in packet 60060 at belt transition	no longer seen with IASW 4.3.4 – keep open & monitor
INT_SC-218	TM parameter E0229 incorrect	open

3.2 IBIS

MCM still set manually to 20000, forgotten in one revolution. The change should be made permanent (*see below*). IBIS TM bandwidth saturates when bright source in FOV (even with MCM set to 20,000). Many OEM's for noisy pixels - disturbing operators in joint operations. Change of criticality of OEM recommended, but this would require a modification of the On-Board S/W.

INT_SC-184	PICsIT PDM8 in Latch-up mode	Keep open & monitor
INT_SC-185	VETO Calibration, Bottom & Lateral Counters reduced count rates	Keep open & monitor
INT_SC-198	VETO VDM05, VDM06 and VDM07 HV break down	Closed (see SC-207)
INT_SC-207	VETO VDM09 and VDM13 HV break down	
INT_SC-221	VETO CDM1 HV VETO CDM1	Latest of repeating event, keep open
INT_SC-222	VETO crash	Nothing to be done. Closed

3.3 JEM-X

INT_SC-201	DPE crash	SEU, closed
INT_SC-204	CSSW anomalies	Nothing to be done, can be closed.
INT_SC-209	DFEE CRC anomaly	Repeating event. No progress, but keep open.

3.4 OMC

No open problems.

4 Operations Status

4.1 Spacecraft, shared operations — MS

No viewgraphs. SPACON teams have been merged, one controller for both spacecraft. performance unchanged but no major anomalies encountered yet. Losing second analyst (P. Lippi) to be replaced by former SPACON. Engineers still separate teams. One

person lost for Integral, Two for XMM. Try to combine on-call from next month onwards. D. Heger leaving in October this year, succession not yet decided.

Idea of using Bear Lake station has been dropped at management level – technically feasible. In the long term Redu might be also required for Proba, but Villafranca or Weilheim could cover.

Less changes to the Mission Control System S/W and infrastructure are envisaged to become more stable. There are still a few problems, which have some impacts on the mission execution.

The main problem regarding the satellite concerns the LCL trips probably caused by SEUs. Power & fuel margins remain sufficient.

4.2 SPI — JPR

SPI annealing #11 successful. GeD#12 slightly recovered, problems probably caused by pollution after all.

Slight long-term drift towards worse resolution. Original resolution might be recovered by long annealing or more frequent annealing, but JPR would rather not.

Presented predictions when next annealing might be required. Two options: start in early July or in mid August. The latter is relatively late and will lead to a recovery to not quite original but is preferred for long-term perspective. Final decision end of May. Both options feasible for ISOC & MOC.

Timing problems still remain. Check by SPI team found times with a difference between given differences of two time stamps in real-world time (Integral Julian Date) vs the corresponding difference in On-Board Time.

4.3 IBIS — FL

Main news already given by SF in presentation above.

FL presented status on noisy pixels. NPHS decides if a pixel is noisy if the accumulated count rate in that pixel reaches its set maximum (PCM) faster than the module as a whole a similar limit (MCM). During the PV phase values of PCM=200, MC=10000 were determined as useful.

MCM trigger rate (bkg + sources) has roughly doubled \Rightarrow pixels must be twice as noisy to be detected! Change of MCM has drastic effect on noisy pixel detection. Thus, MCM should be permanently changed.

Action IOCG/01-02 on SF <i>Update database to make new MCM value of 20000 the normal setting</i>	Due: end May
--	---------------------

4.4 JEM-X — SB

Gain evolution continuing. Last step down in revolution 623, next one expected towards end of the year. During eclipse season, recovery is slower as instrument was switched off. Could it be kept switched on during eclipse?

Action IOCG/01-03 on MOC <i>Comment on possibility to leave JEM-X HV switched on during eclipse.</i>	Due: end May
--	---------------------

No anode loss in past 9 months! The situation may have stabilized. Particle trigger rate reached maximum in 2007.

Electronic efficiency understood, but not fully implemented in OSA. Source detection sensitivity limited by systematics (collimator).

TM rate sufficient for 0.6 Crab, optimal rate would depend on position of bright source in FOV.

4.5 OMC — MM

No operational anomalies. Maximal CCD temperature seems to have increased in last months. Reasons unclear. Spacecraft operations? Less efficient cold finger? The OMC team will continue to monitor this.

Hot temperature warnings should be relaxed.

Action IOCG/01–04 on MW, EDM <i>Change limit in database</i>	Due: end May
--	---------------------

CCD Flat Field has stabilized. But now new strategy is required to improve pixel-to-pixel corrections.

OMC EGSE only partially available.

False trigger (IGR source) led to GRB trigger with images taken after 20.5 seconds.

4.6 ISOC — PK

Rees Williams has left ISOC and has been replaced by Marion Cadolle Bel. Progress on archive slowed down somewhat.

Presented changes in ISOC software & operations. Mainly implementation of roll-angle stepping and AO preparation. Problems with Web application performance and with numerical errors in Flight Dynamics software.

AO-6 proposals submission phase successfully finished with 179 valid proposals received (up from 160) and an oversubscription factor of 5.8. TAC Meeting 19-22 May.

4.7 ISDC — VB

Software updated to accommodate SPI TM compression (IASW 4.3.4). Some tests on science data done successfully.

Another reprocessing of all data (rev_3) is required to correct SPI event energies and time correlation. About 3 months processing, want to finish end of 2008

ISDC plans to create long-term 'sky pixel' archive for users. Per ScW: TSTART, TELAPSE, exp. time, flux, error in 15 energy bands. Have developed software to do on-the-fly mosaics/spectra (works for images).

I. Kreykenbohm left end 2007, C. Ferrigno will start August 2008.

NASA will stop ISDC support for budget constraints. One S/W engineer left, looking for Swiss money for other.

Waiting for some ISGRI updates and aiming at end of summer for next OSA release.

Might have JEM-X ISSW updated by then as well.

5 Telemetry share

RS presented the status. Instruments saturate TM occasionally, but never continuously. Report packets (3 packets originally reserved) are rare. Assigned 3 extra packets to SPI, which seems to do OK in the current setup.

No clear information on situation for IBIS. Currently priority goes to Histogram, SPTI, and Compton packets.

Action IOCG/01–05 on IBIS team <i>Study of TM loss effects.</i>	Due: end May
---	---------------------

Simulations show that over-allocation of TM packets could be probably pushed further for most revolutions. But if over-allocation is high, buffer might be filled up quickly and lose 175 packets at once.

Action IOCG/01–06 on RS, SF <i>Simulation of TM usage. Statistics of frequency of TM saturation.</i>	Due: mid May
--	---------------------

For the moment, no further changes to TM settings will be done.

6 Handling of very bright sources

PK briefly summarized the situation. While historical data is often difficult to compare (different energy ranges), realistic expectations are for sources with a few Crab to maybe 10-20 Crab in the few 10 keV range as maximum. Sgr A* could in theory become even brighter if some estimates are right, but the probability of this was considered very low.

IBIS has proposed a staged response with two main options: switching off modules and possibly play with TM priorities. The latter may be very difficult to change.

For SPI no change is the preferred option. Any change would change the response and bias the results. Losses due to TM saturation would be effectively random.

JEM-X has the existing grey filter mechanism giving a factor 30 reduction, but for a very bright source it might switch off automatically because of trigger limits. Individual anode sections could be disabled to reduce overall count rates, this has been tested in past Crab calibration.

Centering a 5*5 pattern ~1 deg off-axis of the source would slightly reduce effective area for JEM-X and not disturb the main instruments. But the benefit for JEM-X would be very limited.

The option to switch off some instruments completely – maybe alternating – was discussed but without a clear preference.

In case of a dramatic event ISDC can provide NRT data publicly for 1–2 weeks with a delay of some hours as simple tar files on an ftp server. For longer times the data would need to be buffered at other places. PK was confident that place could be found at ISOC in such a case.

PK will summarize options in outstanding Tech Note (Action Co/11-07).

7 Time correlation — RS

RS summarized the situation. The source of the problem is in the orbit calculation – the orbit file used to calculate the light travel time was not updated regularly. Maximum error introduced: 15 ms. With fix on system, max. errors $23\mu\text{s}$.

Data at ISDC would need to be reprocessed. This would also fix other known problems. Tests done with Crab data and set of revolutions 300-350. Next step: re-generate OLFs for revolutions 450-550.

JPR presented results from independent checks at Toulouse which also show some large deviations. *Verification after the meeting by RS showed that these could all be explained by problems with stations as found before or extrapolations across perigee passages. But the check has turned up some new events and should be repeated once the time correlation information has been regenerated.*

Action IOCG/01–07 on RS	Due: end May
<i>Provide updated TCO data</i>	

Action IOCG/01–08 on JPR	Due: end June
<i>Repeat time correlation check using the information provided by RS</i>	

8 Telemetry archive — PK

At the moment the raw telemetry data is not archived at ISOC and possibly not in other form than CD at ISDC. The ISDC packet archive does some ‘unpacking’ of the CD contents already. At MOC only about three months of recent telemetry data are kept online and easily accessible. ESOC will not guarantee a long term archiving of the telemetry data for more than 6 months after the end of the mission.

Consolidated telemetry is transferred by CDs. About 8 h of telemetry correspond to 420 Mb of data. The CD is checked manually (size & files) for completeness at MOC.

The SPI team has a private archive of all telemetry data from which in principle the full historical data could be retrieved. JEM-X would be interested in an archive easily accessible by AppID. Software in this vein exists at ESOC and Toulouse.

ISOC plans to create a full archive of the raw telemetry, corresponding to the CDs within ESAC’s archive infrastructure. In the long run, also the software to go from this to data usable by OSA must be available at ESAC as ‘backup’. PK will discuss details of how to transfer telemetry data from ESOC to ESAC on Friday 25 April with MOC.

9 GSE equipment

The IBIS GSE + IASW compiler equipment should be transferred from Tübingen, due to lack of manpower. There is currently no funding to support its use within the IBIS

team and future S/W updates would need huge effort. ESOC confirmed that it has space to set up the equipment and the move could be done at any time. However, only minimal support could be given by MOC. Contractors would be ready to give support if funding were available.

Action IOCG/01-09 on MS <i>Investigate amount of support required to keep the IBIS GS hardware active.</i>	Due: end June
--	----------------------

SPI has maintained a working set up including support (FC) paid at ESOC and Toulouse.

OMC has failing equipment, the people are still around. It would be too costly to get pack to a working equipment, but at the moment no changes to on-board software are planned.

For JEM-X the DFEE has been active, but the DPE part has not been active for a long time (no need). Should have manpower and knowledge for next 4-5 years.

10 Cross-calibration

EJ presented the results of a cross-calibration study showing nice overall agreement across all high-energy instruments for the Crab. The new dither pattern does not affect the spectral extraction for SPI. The ISDC found a lower rate for Crab seen by ISGRI in revolution 666 – to be verified.

These results will be presented at the IACHEC Meeting 2008 (18-21 May). SPI will be represented by EJ and JPR, IBIS by L. Natalucci and JEM-X by N.-J. Westergaard. LN for IBIS, NJW for JEM-X.

11 AOB

At the June SPC Meeting a proposal will be presented to group mission extension requests. AP hopes to have Integral only up for discussion in 2010.