

Minutes of SPIRE Project Team Meeting 16
SPIRE-RAL-MOM-000862
RAL 13 September 2001

Present: Jean-Louis Augeres, Laurent Vigroux, Matt Griffin, Eric Sawyer, Bruce Swinyard, John Delderfield, Berend Winter

Topics.

Detector meeting at JPL
 Meeting with ESTEC on 10/9/01
 AIT facility DDR (supply of FTS)
 Forthcoming ESA/Alcatel technical meeting 25/9/01.
 Issues raised by Sap:
 Cooler GSE clarification. Temperature probes.
 Cold vibration.
 Cleanliness issues
 Temperature tests.
 Harness, especially cryo cooler.
 FPU simulators.
 Cost of components.
 Communications with JPL.
 MOU between CEA and SPIRE and JPL.
 BDA SSSD status.
 Warm electronics interface footprint.

1 Review of outstanding actions from previous meetings

| No. PT-04-0570 | Actionee | Description | Priority | Deadline | Status |
|-------------------|----------|------------------------------------|----------|-----------|---------------------------------|
| 01 | KJK | Write WE integration and test plan | High | Oct. 2001 | Still Open. Needed for IBDR. |

| No. PT-10-0682 | Actionee | Description | Priority | Deadline | Status |
|-------------------|----------|---|----------|----------|--------------------------------------|
| 04 | MJG | Arrange for QMW to evaluate filter suppression. | Medium | May 31 | Open, not yet documented in the SSRD |

| No. PT-12-0726 | Actionee | Description | Priority | Deadline | Status |
|-------------------|-----------|---|----------|----------|--|
| 02 | EC KJK | Update the document management plan to reflect the new scheme for interaction of institute PMs with the documentation configuration control system. | | June 29 | Still open, action being taken This is an action on Ken |

| No. PT-13-0772 | Actionee | Description | Priority | Deadline | Status |
|-------------------|-------------|--|----------|--|--|
| 03 | KJK | Send ESA a progress report for JUNE | | 27/7/01 | Closed, ECS did one this week for July & Aug |
| 04 | BMS DKG | Bruce and Doug to talk to John and distribute a draft list of documents showing approval status. | | 3/8/01 | In progress |
| 06 | MJG | Matt to meet with Ken to discuss the outstanding MOUs | | 3/8/01 | Open, Matt to have at least a contents list ready for Ken's return. |
| 07 | DKG JD | Check scope for increasing the thermal load on the detector box JD to look at the fraction of the 2-K load that is due to the 2-K box | | 27/7/01 | Open, there appears to be little scope to increase thermal load. But MSSL are planning to optimise the dynamic performance without the thermal performance suffering. The load on the 2K strap is not cast in concrete |
| 10 | System team | develop a strategy for dealing with power increase. | | 31/7/01(progress meeting with Gavazzi) | Closed, |
| 11 | ECS | Outline new document scheme to the consortium | | | Open, check new proposals, and circulate note. |
| 12 | KJK | Ask for copy of PACS MOU | | 31/7/01 | Yes but not yet received |
| 13 | ECS | Seek confirmation of DDR dates | | 27/7/01 | Open, Structure and DPU not finalised |

| No. PT-14-0797 | Actionee | Description | Priority | Deadline | Status |
|-------------------|----------------|---|----------|---|--------|
| 03 | Peter Hargrave | define detector filter and incorporate into the filter ICD. | | This to be defined before the BDA review. | Open |
| 05 | KJK | confer with other PMs to decide what to do - maybe require IFSI to do the appropriate analysis. | | 17/8/01 | closed |

| No. PT-15-0824 | Actionee | Description | Priority | Deadline | Status |
|-------------------|----------|-----------------------|----------|----------|--------|
| 01 | MJG | Combine Matt and Kens | | 12/9/01 | open |

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| | | comments on partnership agreement and send to Alcatel | | | |
| 02 | ECS | Review product tree | | 12/9/01 | Open |
| 03 | JD | Organise review of IID-A and B | | 27/8/01 | closed |
| 04 | ECS | Clarify date of technical meeting with ESTEC | | ASAP | Closed 24/25 Sept |
| 05 | ECS | ES to let JB know that current version of the DDD is not to be updated until the IBDR. | | 30/8/01 | Open |
| | | | | | |
| 06 | ECS | Set up structure review meeting | | Proposed date 29/8/01 | Closed |
| 07 | BMS DG | Circulate first DDR draft report and amend as a result of the wrap up review. | | 21/8/01, stage 1 30/8/01, stage 2 | closed |
| 08 | MJG | Circulate agenda for the BMS delta review | | 21/8/01 | closed |
| 09 | ECS | Remind hardware managers to provide their reports every month without fail. | | 30/8/01 | Closed |
| 10 | MJG | Matt to contact CEA regarding lack of contact recently. | | 30/8/01 | Open |
| 11 | JD | John to chase electronics suppliers for documents and dates for DDR | | 29/8/01 | Closed |
| 12 | BMS JD | Produce a list of critical information that's ill-defined or incomplete in the IID-A and IID-B that we need to know about before holding the IBDR. | | 30/8/01 | Open |

Actions raised during this meeting

| No. PT-16-0862 | Actionee | Description | Priority | Deadline | Status |
|-------------------|----------|---|----------|----------|--------|
| 01 | DG | Doug to inform consortium that 1030 Cernox is the baseline temperature sensor | | 20/9/01 | Open |
| 02 | BMS | RAL (Bruce) to write a DRCU reliability spec at the channel level which also defines a failure. | | 20/9/01 | Open |
| 03 | MJG | Investigate supply by Cardiff, of equipment to measure cooler temperatures in the | | 20/9/01 | Open |

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| | | absence of a DRCU | | | |
| 04 | ECS | Send costs of cold vibration tests to Sap. | | 30/9/01 | open |
| 05 | JD | Investigate pumpdown time before cooling at spacecraft level. | | 30/9/01 | open |
| 06 | ECS | DRCU, FM harness is not shown in the milestone list, check it in the deliverable list. | | 30/9/01 | Open |
| 07 | SH | Thermal model required by CEA. Sam to send cooler model to Lionel | | 30/9/01 | It is a big job to extract the cooler from the overall SPIRE model and could not be started for at least 2 months. The information is contained within SPIRE-RAL-PRJ-000560 |
| 08 | CEA/ Sap | CEA to check when harness information is required. | | 30/9/01 | Open |
| 09 | RAL | FPU simulator, RAL to check if there is a requirement for a delivery of two units. | | 30/9/01 | Open |
| 10 | RAL | Warm interconnect harness. (DRCU to DPU) One delivered with QM1, is another harness required for QM2? RAL to clarify | | 30/9/01 | open |
| 11 | BMS | Put on Livelink The version of the BDA SSSD, taken by Matt from JPL | | 30/9/01 | open |
| 12 | MG | Set up telecon with JPL week 17/9/01, Sap are invited | | 17/9/01 | open |
| 13 | ECS | Investigate making PM telecons more effective. | | 30/9/01 | open |
| 14 | ECS | ECS to propose review panel members for warm electronics DDR. Date 10 and 11 December proposed | | 15/10/01 | open |
| 14 | MSSL | MSSL to update schedule and identify milestones, before the meeting on 25 th . | | 24/9/01 | open |
| 15 | Sap | Provide provisional mass breakdown for the | | 24/9/01 | open |

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|----|-----|--|--|---------|------|
| | | meeting on 25/9/01 | | | |
| 16 | MJG | Clarify with KJK when the ICC work packages will be defined | | 30/9/01 | open |
| 17 | JD | Check general robustness of P/LW photometer array and take this into account in harness partitioning | | | open |

2 Project Management Issues

2.1 Management Reporting and Control

2.2 Document change and configuration control

2.3 PA

2.4 Business Agreements

2.5 Schedule:

3 Instrument Issues

3.1 Structure

Some interface issues with BDAs, larger capstans have increased the envelope of the BDA.

JPA design rules indicate that inserts are required which may be an issue.

Alignment of arrays is almost defined.

Random vibration – max acceleration level specified. Redesign of detector box has been carried out.

MSSL are investigating lowering the fundamental frequency in X (180 Hz).

3.2 Mirrors

3.3 Detectors

3.4 OBS and Instrument Control

3.5 DPU

3.6 DRCU and related issues (Sap)

Status of documentation.

PSU specification will be complete by the end of the month – thermal interface for this unit is problematic and interface to S/C needs to be clarified.

Interfaces.

Mechanical interface not defined . Raise this at the technical meeting on 25/9/01. Sap to provide outline interface drawing before the meeting.

Sap to attend SMEC DDR, they are free on 26/9/01 only.

Cooler EGSE.

There will not be a dedicated EGSE.

Drive during test is very simple, power and temperature monitoring only required.

RAL will not have the equipment to readout electronics.

Possibilities are:

RAL to purchase or hire; supply by Cardiff, Matt indicated that this is quite likely, he will confirm; CEA (unlikely), Sap has made no provision for this equipment, but are prepared to investigate some form of loan or provision of some form of breadboard.

Temperature sensors – 1030 Cernox is the baseline, Doug to inform consortium.

Flight spare cooler.

Refurbishment of EM is not practical, it is planned to build two CQMs so that each instrument will have a flight spare after rebuilding, or a complete new unit will be produced. Funding is not agreed, but not seen as a problem.

Cold vibration.

RAL are investigating upgrading the ISO cryostat, Costs will be sent to Sap.

Cleanliness Issues.

Bruce has produced a cleanliness plan.

This will be used by CEA to assess their cleanroom requirements.

Cleaning after assembly of the cooler is not acceptable.

John to investigate pumpdown time before cooling at spacecraft level.

Spec for all FPU items at delivery to ESA is 300 ppm.

Temperature regulation.

Tests by Lionel have shown that regulation using the thermal switch is not achievable. Reaction times are a problem and also getting a consistent impedance of the switch.

Using the pump to regulate is being tested, looks promising. This will be reported in about two weeks. 0.3 mK per hour has been achieved with no regulation.

Thermal model required by CEA. Sam to send cooler model to Lionel.

CQM cooler harness to be supplied by CEA, this is the 4K harness from the inside of the RF filters to the cooler, it is shielded and specified in the harness definition doc issue 0.5. Harness routing information is not frozen. RF filter interface is not frozen. Harness routing can not be frozen before the RF filters interface is frozen. Harness 4 weeks after filters. CEA to check when harness information is required.

FM harness is not shown in the milestone list, check it in the deliverable list.

FPU simulator, RAL to check if two are really needed to be delivered.

QM 1 will not have a full set of channels, QM 2 will, so simulator will need upgrading between QM1 and QM2 delivery.

Warm interconnect harness. (DRCU to DPU) One delivered with QM1, is another harness required for QM2? RAL to clarify situation, is the requirement for a form and fit harness.

Electronic parts.

Cost has escalated above estimates by factor 4. The yield on an individual channel is 0.9. The FMECA will identify reliability levels required. Overall reliability required of the warm electronics is to be very small compared to the risk of a detector channel failure. RAL (Bruce) to write a DRCU reliability spec at the channel level which also defines a failure.

May need to revise LIA channel distribution for 500- μm array. Failure of one particular LIA board could write off nearly all of the 500- μm array. But same would need to be done at the JFET level.
Action: JD to check general robustness of P/LW photometer array and take this into account in harness partitioning.

CEA will send FMECA and an assessment of the impact within one month.

JPL issues.

Detector SSSD to be checked by CEA, aim to define all TBDs. The version taken by Matt from JPL will be put on Livelink.

MOU between JPL and CEA was not discussed at the detector summit. Raise at the next project managers meeting.

Problem with communications, Sap are concerned with slow progress on the electronics interface issues. It is best to copy communications to Gary as well as Jerry.

A telecon with JPL is planned for next week, Sap is invited to attend. Matt to initiate telecon, date TBD.

Test plans.

Some outline of likely tests required from Sap. Including level of support for post delivery activities planned.

Involvement of CEA ICC staff is foreseen during calibration to gain experience of operations, this activity is funded.

Weekly telecon. Sap expressed reservations about the usefulness of these telecons. ECS to investigate making these telecons more effective.

Warm electronics DDR. Date 10 and 11 December proposed. Attendees – RAL , JPL , LAM, IFSI. ECS to propose review panel members.

Forthcoming ESA/Alcatel technical meeting 25/9/01.

Points to raise.

Mechanical interface of warm electronics.

Mass budget

Schedule

Thermal modelling

Telescope and stray light design.

Grounding

IBDR objectives and format.

Status of cold vibration facility

Management of SPIRE schedule

IID-B updates

Attendees - System team, Berend, Sap possibly more likely by phone.

4 ICC Issues

LV: We need clearly-defined ICC work-packages soon. Esp. for LAM, to allow staff effort planning for FTS-related software to be done. Would be useful for MJG to discuss with Jean-Paul.

Action: MJG to clarify with KJK when the ICC work packages will be defined

5 Meetings:

Meeting with ESA.

MSSL to update schedule and identify milestones, before the meeting on 25th.

Mass of DRCU is poorly defined and over mass. Sap to reassess and supply an updated mass breakdown by 25th September.

Effect of SMEC on SPIRE and other instruments is not known. Test data will be required.

5.1 Detailed design Reviews

5.1.1 Planned Dates for other DDRs

Latest summary:

- Mirrors: Complete
- FTS: Some time in September. MCU and SMEC should be reviewed together.
- DRCU/WIH 10/11 December.
- Structure/thermal straps End September TBD
- DPU: Not decided yet
- AIV 6/9/01
- EGSE: TBD
- BDAs:/JFETs Complete
- Filters/calibs: 18/9/01
- BSM: 30/7/01 not all issues closed out, delta review on 23/8/01
- OBS Requirements review 30/7/01
- Shutter PDR: July 17, Almost a DDR, some aspects still open.
- Cooler Complete, some RIDs to be signed off.
- DRCU simulator TBD

IBDR

6 Progress on Open Issues

7 AOB

Next meeting