

**Minutes of SPIRE Project Team Meeting  
RAL, 2 Oct. 2000**

Present: Jean-Louis Augueres  
 Christophe Cara  
 Colin Cunningham (from 3.4)  
 John Delderfield  
 Trevor Dimbylow  
 Gary Davis (for items 1 - 4)  
 Matt Griffin  
 Bruce Swinyard (Chair)  
 Laurent Vigroux  
 Berend Winter

### 1. Agree agenda

The draft agenda were agreed, with the addition of some items to be raised under AOB.

### 2. Review of outstanding actions from previous meetings

No. PT-01-xx	Actionee	Description	Priority	Need and Date	Status
01	BMS/ KJK	Formalise the new programme for the CQM/STM by agreeing it with all relevant consortium groups and produce consolidated schedule.	High	For technical meeting  Draft 30/9/00	<b>Closed.</b> All PMs agree to milestones - so this represents agreement to the revised programme-details to be sorted out. Consolidated schedule by End Oct. - KJK will raise with institute managers.
02	JD	Review framework and format for Instrument Design Description and clarify and revise the top-level document tree.	High	For Systems Review. Outline doc. by 30/9/00 Final draft 30/10/00	<b>Open.</b> Revised date 7 Oct.
03	MJG	Revise and tidy up Science Requirements Document	Med	For Systems Review Final Issue 30/10/00	<b>Open</b>
04	JD	Digest the current interface control scheme and consult with Bruce and Colin on devising a more workable scheme	Urgent	Complete by 30/9/00	<b>Open.</b> Revised date: 10 Oct. in time for Oct. 11 tech. mtg
05	KJK	Produce revised Instrument Development Plan	High	For technical meeting Draft 30/9/00	<b>Open.</b> Same as 01.
06	BMS/ MJG	Draft top level criticality analysis with emphasis on impact on scientific performance; OBS and degraded modes.	Med	For Systems Review Draft 30/9/00	<b>Open.</b> Planned BMS and MJG meeting on 29 Sept. delayed. Meeting to be rearranged for the week after the Oct. 11 meeting.
07	BMS	Request sub-system level criticality analysis for input	High	Send request by 8/9/00	<b>Open.</b> BMS to do this tomorrow (Oct. 3).

		into system level criticality analysis			
08	MJG	Raise parallel mode with Albrecht Poglitsch at November FST	Low	For Systems Review Draft response 20/11/00	<b>Open.</b>
09	BMS	Request ESA to respond on the question of the cryoharness technology	Urgent	Cal. Facility procurement e-mail by 8/9/00	<b>Closed.</b> Still awaiting response. Will raise at the technical meeting Oct. 11. Discuss with ESA and then write up.
10	MJG/ BMS /KJK	Write formal response to ISVR board report	High	Technical Meeting Draft 30/9/00	<b>Open.</b> MJG to make presentation on Oct. 11.
12	BMS	Set dates for EMC; Control and WE summits	High	Summits need to be complete by mid October. Send e-mail by 15/9/00	<b>Closed.</b> EMC: 16 Oct. video-con. Cont/WE: 18-20 Oct. RAL (JJB will attend)
14	MJG	Approach Albrecht Poglitsch; Thijs De Graauw and Thomas Passvogel about setting up another commonality meeting	Med	Information needed for Systems Review Set date by 30/9/00	<b>Open.</b> Change to: include on agenda for Technical team meeting.
<b>No. PT-02-xx</b>	<b>Actionee</b>	<b>Description</b>	<b>Priority</b>	<b>Deadline</b>	<b>Status</b>
01	BMS	Raise black coatings issue at thermal summit	Med	Sept. 24	<b>Closed</b>
02	BMS	Write technical note on contamination requirements as answer to ESA action and input to PA plan	Low	Sept. 30	<b>Closed</b>
03	KJK	Ask Jerry Lilienthal to nominate parts proc. "user" at JPL	Med	Sept. 19	<b>Open.</b> KJK will call him this week.
04	KJK	Inform Technologica of SPIRE "users"	Med	Sept. 25	<b>Open.</b>
05	MJG/ KJK	Discuss BSM Development plan and schedule with ATC	High	Sept. 30	<b>Closed.</b> ATC to produce detailed plan for comment.
06	KJK	Request all institute managers to nominate alternates wherever they are away	Med	Sept. 19	<b>Closed.</b>
07	BMS/ KJK	Produce draft Review Preparation Plan for <u>finalisation</u> at the next PT meeting on Oct. 2.	High	Sept. 25	<b>Open.</b> Now very high priority.
08	KJK	Invite JLA or CC to next PT meeting on Oct. 2	High	Sept. 19	<b>Closed</b>

**Additional actions arising from the discussion:**

**Action 01:** CC to give BMS DRCU requirements on the cryoharness.  
Deadline = Oct 31 (BMS to review).

**Action 02:** BMS/MJG to arrange Nov. review format so that Lionel Duband as cooler expert is appropriately involved in all discussions

**Action 03: KJK to arrange a telecon with JLA and Jerry Lilienthal to discuss the availability of GSFC BACUS cryostat for detector testing. Also Systems/EMC participation from JPL. Deadline: Wednesday (preferable) or Friday this week.**

**Action 04: BMS to inform ESA that DRCU will be implemented as two boxes for (one for detectors, one for everything else). Deadline: Oct. 11**

Note: CEA may want to put a requirement on the distance between the boxes.

### **3. Reports from recent meetings**

#### **3.1 Thermal summit (QMW Sept. 25 26)**

- Attended by BMS, JD, MJG, Sam Heys, Lionel Duband, Terry Cafferty , Peter Hargrave + other QMW staff
- Sam Heys presented the thermal model and the inputs and assumptions were discussed. Sam will revise with updated parameters.
- The biggest problems are the  $\Delta T$  between cooler and detectors and the dissipation of the JFETs
- It was decided to analyse the use of a 6-litre cooler
- Temperature regulation: will not be implemented for CQM.

**Action 05: JLA to check whether 6-litre cooler can fit in PACS (meeting on Oct. 7). Deadline: Oct. 16.**

**Action 06: BMS to ask Lionel to specify what level of accuracy and information on necessary control law is needed if cooler temperature regulation is to be implemented by varying heating power to heat switches or pump (this has implications for warm electronics design and PACS/SPIRE commonality) . Deadline: Oct. 6**

#### **3.2 PACS ISVR (Garching 22 September)**

- BMS was on the Review Board
- BMS: Systems Engineering needs attention. PACS is still a complex instrument even though it's simpler with the CEA detectors. There are worries about the cold electronics for spectrometer, grating mechanism. PACS have some interesting launch lock designs which may be of interest for the SPIRE BSM or shutter. The PACS grating uses a variable inductance transducer - LAM might be interested.
- JLA: Passvogel gave feedback: the main problems noted were a lack of coordination and systems engineering, insufficient attention to QA on the project, and a concern on the development programme for the CRE for the spectrometers.

#### **3.3 EGSE support meeting (20 September)**

- KJK attended for SPIRE
- The meeting discussed the available software for command distribution and creation of test scripts and running of test procedures.
- ESTEC have a system working from the PROBA satellite that will be updated to SCOS 2000 by end of the year.
- The proposed test procedure environment not strongly favoured by the group - too many databases needed - it may be better for the three instruments to develop their own environment.

- ESA will send CD to inst. teams with software for evaluation

### 3.4 CDMS meeting (19/9)

- Nobody attended for SPIRE but KJK was able to report on the main outcome
- ESA have a contract with Astrium to specify the protocol for instrument-spacecraft communication (for all FIRST and Planck instruments).
- The other four instruments said that it was too complicated and expensive to implement - they prefer to define the interface. ESA believe it's the Prime Contractor's job.
- The instrument teams will approach their instrument contractors to see if they want to bid (, Astrium, Laben, RAL).
- SPIRE would need to pay at least 20% of the cost if it's done this way.

### 3.5 Report by KJK on Project Managers' Telecon (19/9)

- All managers agreed that the major milestones identified for the revised STM/CQM programme are acceptable
- Managers have an action to provide schedules by last week (except ATC - after mechanisms summit)
- Specification documents: ATC, QMW, CEA have committed to dates for producing their SSSDs
- It was agreed that Renato Orfei and Valerie Manguen would be on the Board for SPIRE.
- November review dates: The review as planned clashed with Thanksgiving in the USA. The week of 13 Nov. was OK for all, and the week of Nov. 27 was OK for all except Ian Pain. **(Note this was discussed at the PM telecon on 3/10 and agreed dates are 28,29,30 November)**
- All PMs were asked to check the IID-B wiring table and respond with any updates to CRC before the Oct. 11 meeting.
- Ian Pain was worried about the LOA with MPIA.
- A fair number of monthly reports received this month (deadline = 1st of month)

JLA: Problem in getting flight quality parts for the QM

BMS: Will soon need detailed pin allocations for connectors for the AIV facility

### 3.6 UK FIRST/Planck Steering Committee (Sept. 21)

- This body is PPARC's management committee for the UK FIRST and Planck programmes and meets twice a year
- MJG reported on the status of SPIRE with emphasis on the instrument design, PDR/ISVR and the UK funding problem
- The committee strongly expressed the view that the UK shortfall did not merit a descope. The option of revising the flight spare philosophy was preferred, and the need for ESA to support ICC staffing was noted.
- Overall the committee was approving of the progress made in the last six months

### 3.7 Meeting with Alcatel (Sept. 22)

- MJG and KJK met with Jean-Jacques Juillet and Bernard Collaudin of Alcatel to discuss possible arrangements for instrument management in the event of Alcatel being awarded the prime contract for the FIRST spacecraft.
- PACS have had a meeting also - similar outcome

## 4. List of forthcoming meetings

Meeting	Date	SPIRE attendance
EMC summit	16 Oct. (Telecon)	Various

FGSSE/EGSE	9, 10 Oct.	SS, TGD
Technical meeting with ESA	11 Oct.	MJG, BMS, KJK
Parts Co-ordination Board	11 Oct.	RO, VM
Use Case Workshop	13 Oct.	TGD, NT
On-Board Software (Rome)	13 Oct.	KJK, SS
Warm electronics and operations (RAL)	18-20 Oct.	Various
Ground Segment Workpackages meeting	18 Oct.	ATC
ICC URD and ORAC Demo (ATC)	19, 20 Oct.	TGD, NT, SS
FIRST/Planck EMC and Power Meeting (ESTEC)	26 Oct.	CRC
SPIRE Systems and Interface Review (RAL)	22-24 Nov.	Many
CNES review of FIRST		

ESA want meeting on Oct. 30 on S/W Project Management plans for the Ground Segment and ILT testing (deliverables and timetables). Another meeting in Rome Oct. 12 to discuss work packages and implementation.

LV: CNES want a review of all FIRST involvement in December. Planck review 6, 7. Dec. 18 and 19 envisaged for SPIRE.

## 5. Preparation for November Review

Date of meeting = 28-30 November.

### System Review:

Break down into 4 or 5 major "systems" (simplified version of BMS diagram)

Must follow the document tree - JD must sort out the tree up-front

- Structure - Berend
- Thermal - Sam or John
- Data handling - Ken
- Electrical - Christophe
- EMC/EMI protection system - Colin or John

### Development plan review as separate item?

KJK to present based on inputs

### Interface review:

Need two full days.

Split into two halves?

Review interfaces between subsystems or suppliers?

Concentrate on major interfaces and their ICDs:

- All optical interfaces - in good shape
- Each of the subsystem spec docs should contain a description of its optical interface.
- All interfaces to FPU structure
- All interfaces to JFET box including the FIRST optical bench
- 300-mK and 1.7-K interfaces
- Wiring interfaces to the DRCU
- DPU - DRCU interface
- Wiring interfaces to the spacecraft
- Digital protocol DPU - DRCU
- Telemetry and telecommand list (first draft)

Need:

- New date for the meeting – (agreed in project managers Telecon 4/10/2000 as 28,29 and 30<sup>th</sup> November.)

- Draft agenda for presentations
- List of documents to be reviewed (what's their status at present?)
  - Must include revised interface control system
- Review plan to be issued to all concerned
  - Purpose and format of the review
  - Outline of **who** needs to do **what** and by **when**
    - Presentations and documentation

**Action 07:** BMS and JD to identify ICD's or parts of ICDs to review (start tomorrow)

**Action 08:** MJG to visit RAL this week to help formulate review plan document and agenda on Thursday this week (TBC)

## 6. Preparation for Oct. 11 meeting with ESTEC

SPIRE will present to ESA:

- Response to ISVR/PDR report: Presentation by MJG
- Update on instrument conceptual design: Presentation by BMS
- The STM/CQM programme: Presentation by BMS
- Update on SPIRE Development Plan: Presentation by KJK
- Update to IID-B: BMS to coordinate/compile

Other important issues for discussion:

- No Flight Spare option
- Cooler redundancy
- Cryoharness implementation
- Cold vibration facility urgency
- CQM programme (LV):
  - What do ESA want to do with the CQM?
  - BMS: Their cryostat thermal environment will be representative  
Other aspects: EMC, stray light not so representative  
How important are these tests?  
ESA get a dry run of various instrument systems, trained staff etc.
  - If we still had it we could
    - upgrade or do more tests
    - identify problems earlier
- Discussion of Model Philosophy in general under STM/CQM programme

## 7. Systems Engineering Responsibilities

CRC has equivalent of 3 days per month

One point of contact for all System's activities = JD.

**Action:** BMS/JD and CRC to confer and write short note on the division of Systems Engineering responsibilities, including Christophe's and Viktor's participation.

**Action:** CRC to include discussion of SPIRE EMC modelling on the agenda for the telecon.

**Action:** LV ask Louis Rodriguez why temperature regulation using pump heating is not favoured (tomorrow)

Note: JPL participation in EMC/grounding scheme very important. RF filter design important.  
CRC to raise these issues.

LV: Understanding is that Viktor not available for modelling - only advice.

## **8. AOB**

### **8.1 FPU simulator**

Minimal box to check the interfaces.

**Action: BMS to write requirements document for the FPU simulator.**

**Deadline: Oct. 16**

### **8.2 BSM electronics**

LAM should be point of contact for CEA in discussing the options.

LAM have received circuit specs and designs for the Roger Sidey mechanism.

**Action: CRC to ask LAM for estimate of the date by which the decision on which option is needed. Deadline: Oct. 6. [This should be included in the development plans anyway]**

## **9. Next meeting date**

17 October at RAL

Items for discussion:

- Web page philosophy
- Livelink evaluation
- Others TBD

## 10. Summary of actions

No. PT-03-xx	Actionee	Description	Priority	Deadline	Status
01	C Cara	Specify requirements on cryoharness needed for CEA detector electronics testing	High	31/10/2000	Open
02	BMS /MJG	Include Lionel Duband in systems review to give expert opinion to review board	Medium	Include in review plan	Open
03	KJK	Arrange telecon between JLA and Jerry Lilienthal to discuss provision of GSFC BACUS to CEA	High	10/10/2000	Open
04	BMS	Raise issue of two DRCU boxes with ESA	Urgent	for Tech meeting 11/10	Open
05	JLA	Check whether 6 Litre cooler is compatible with PACS	High	16/10 Raise at PACS meeting 7/10	Open
06	BMS	Ask Lionel to specify requirements on electronics for temperature regulation using pump heater	High	6/10	Open
07	BMS/JD	Identify ICDs or parts of ICDs to be reviewed at Systems Review	Urgent	As part of plan for Review	Open
08	BMS/JD/ CRC	Confer on system engineering responsibilities and draft short note to consortium	Urgent	6/10/2000	Open
09	CRC	Include discussion of EMC modelling on agenda for EMC videocon	High	16/10/2000	Open
10	LV	Ask Louis Rodriguez why temperature regulation using pump heating is not favoured (tomorrow)	High	Answer needed for tech. meeting. 6/10/2000	Open
11	BMS	Write requirements document for the FPU simulator.	High	16/10/2000	Open
12	CRC	Ask LAM for estimate of the date by which the decision on which BSM option is needed	High	16/10/2000	Open