

**SPIRE-RAL-MOM-001570****SPIRE Project Team Meeting, RAL, 17 March 2003**

**Present:** Matt, Eric, Doug, Dave, Eric, Anso, John

**STM-CQM status:**

- MSSL doing fit checks at the moment. A few misfits that need work-arounds. Delivery in about a week.
- Vibration fixture has been designed by MSSL, quotes available, still needs to be out for manufacture.
- MSSL schedule delays overall - historically due mid-2002 - now April 2003
- Need for continuing involvement from Berend
- Matt and Eric need to visit MSSL to discuss schedule, programme, resources with Berend and Alan on 28 or 31<sup>st</sup>.
- Black tiles:
  - MSSL need to specify shape and size of tiles
  - New process needs to be qualified - cold vibration problem
  - MSSL have to design the tiles - check with Berend
  - Bonding to alochrome surface needs to be established
  - Someone needs to be in charge of planning this - agreed it should be Eric to define the plan and ensure it gets done

**Telecon with Berend:****STM schedule:**

- RAL may get structure next week
- Early vibration test depends on fixture delivery - test schedule for April 23 - looks a bit tight
- Berend: Problem with mass saving needed for the fixture - had to do that. Two quotes in - Electromech (usually late) and another (6-8 weeks). Third quote today - order will go out today.
- Eric: If not going to get fixture in 4 weeks, must start something else on that timescale. Eric will look into that.
- Cheap-and-cheerful slip table fixture? OK but direction reqd for detectors won't be accommodated - but can discuss with Dave Rippington later this week - maybe split the test.
- Black tiles: as discussed . . .
- Level-0 interface tests: IDH tests to be done start April. John working hard on Gaia . . .
- Doug: will do test in AIV dewar for cooldown - will take a couple of weeks
- Matt: is level-0 plan and schedule all under control -
- Physical design of isolating joint between cold straps and optical bench - John working on this.
- Matt: when does this need to be done for STM-CQM?
- Eric: needs to be designed and built by July
- Electrical isolation of 2-K box: Fix for CQM is kapton sheet - will be used for PFM if OK.
- **Action: Eric to follow all up**
- MSSL support of mechanical integration needs to be confirmed.
- Level of effort at RAL:
  - Pete needed for STM/CQM thermal testing - CBB, SCAL integration
  - Canadians
  - RAL and MSSL technicians
  - JPL needed for BDA integration

- Check if Pete sent list
- Status of other STM/CQM deliveries:
- SMEC: Supposed to be available when needed - to be checked at next telecon
- Mirrors: here
- Cooler: Here
- SCAL: should be available
- Filters: OK - not needed
- Harnesses: Delays in getting model from MSSL and Tekdata making the horse
- BDAs: To be despatched this week from JPL.
- Conclusions: BDAs (CQM) and harnesses may be the pacing items.

### Thermal design:

- Anso: Astrium still having problems with RAL model
- Astrium now have full RAL model - they'll try that and get back on Wednesday
- Their new model has HOB 2.5-K lower
- ESA wants full 48-hr cycle to be run
- Astrium policy is now to stop work on SPIRE model and switch over to HIFI model
- **Action: John to draft note to Collaudin et al. to emphasise importance of sorting out this issue - to be sent by Matt and Eric. Judy to fax.**
- Options for recovery:
  - Anso did best case analysis and achieved 48 hrs with 1.7 evaporator temperature
  - 48 hrs barely doable
  - Anso to look at how it would improve if HOB temp comes down by 2.5 K
  - Need to update cooler model with Lionel's latest results
- Conclusion
- **Action: Anso to do analysis with - 2.5 K - this week**
- **Anso to update cooler model: requires Lionel's new data - probably one working week after she gets the new data - say 2 weeks from today**
- **Action on Anso to estimate how long it would take to update the model**
- Astrium have to sort out the thermal modelling
- We have to continue Level-zero conductance minimisation
- Option of having separate strap for pump . . . . three strap option . . . **Action: Doug will speak to Lionel about slow pump cool-down option**
- We'll review it again in two weeks time
- Overshielding inside the CVV has always been there - not just since the grounding review.
- It was in IID-B 2.0 31 July 2001
- Wasn't in the ITT that ESA sent to industry.
- Grounding review just allowed us to put details on implementation.
- Thermal impact was said to be the problem 1 year ago - turns out to have been small, now it's schedule
- Is the overshield needed since we have shields already:
- Response: our shields = analogue ground plane, exposed at both ends. Nano-V signals over large distances would lead one to triple rather than single shields.
- Impossible to model bolometer susceptibility - have to do it by experience
- Annex to ESA fax is misleading about system susceptibility
- Our design is based on best common practice
- We will test with what we have, so CQM is first test at system level on anything representative
- If CQM reveals a problem . . . . our CQM tests nullified; and recovery needed - the first test useful test of SPIRE at system level would be in the PFM.
- Mention their presence at the grounding review - raised thermal objections, not schedule objections
- We will not adopt any changes to our designed hardware

- Without the shield we of course need to substitute low-impedance wires from CVV connectors to the FPU - need for industry to liaise with us on this
- EMC working group meeting on 26<sup>th</sup>

Next meeting:

#### Summary of actions

Action	Responsible	Date	Status
Define plan for development of black coating, monitor and progress	Eric	First tiles required for the STM in mid July	Open
Consider schedule work arounds if vibration fixture is not available in time	Eric	24/3/03	open
Follow up Electrical isolation of 2-K box and L0, L1 straps	Eric	31/3/03	Open
Draft note to Collaudin et al. to emphasise importance of sorting the thermal design - to be sent by Matt and Eric. Judy to fax	John	24/3/03	Closed, Fax sent
Look at how hold time would improve if HOB temp comes down by 2.5 K	AnneSo	24/3/03	Open
Update cooler model with Lionel's latest results	AnneSo	31/3/03	Open
Estimate how long it would take to update the thermal model	AnneSo	24/3/03	Open
Speak to Lionel about slow pump cool-down option	Doug	24/3/03	Open