

1. SPIRE PROJECT

1.1 General

- This report covers November 2002
- Project team has focussed on
 - STM/CQM AIV planning
 - Instrument vibration level assessment
 - Thermal modelling
 - Funding issues
 - Harness definition

1.2 Instrument performance

- No changes

1.3 Problem Areas

- Qualification vibration levels
- Thermal design
- Funding
- Schedule

1.4 Project-Level Meetings

- Several project team meetings
- Cryo vibration meeting at CSL 21/11/02
- Interface meeting with ESA/Alcatel/Astrium 26 and 27/11/02
- SPIRE Funding meeting
- Regular telecons with sub systems

1.5 Documents Issued

SPIRE-RAL-DWG-000646, Spire block diagram issue 5.0
SPIRE-PAC-MOM-001450, Minutes of Common EGSE Meeting #24
SPIRE-UCF-COM-001447, Fax about Cryoharness.
SPIRE-ICS-DOC-000900 TC History Interface Control Document issue 1
SPIRE-ICS-DOC-000974 OOL Data Interface Control Document issue 1
SPIRE-ICS-DOC-000975 RTA-HCSS Data Interface Control Document issue 1
SPIRE-UCF-PRJ-001151, Filters Interface Control Document, issue 2.2
SPIRE-LAM-PRJ-000761, Optical Design and Configuration File (Config42)
SPIRE-IFS-DOC-001392, SPIRE On-Board Software Verification and Validation Plan, issue 1.0
Subsystem progress reports
SPIRE monthly report.

2. INSTRUMENT MANAGEMENT

2.1 Personnel

No Change

2.2 Work packages

No changes.

SPIRE	Monthly Report to Alcatel/ESA November 2002	SPIRE-RAL- REP-001477 Date: 16/12/02
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2.3 Schedule

There has been a problem with the supply of the FPU optics bench due to the subcontractor going bankrupt. This will cause a slip of approximately six weeks resulting in the main structure not being available for start of AIT until mid January. We need to discuss with Alcatel and ESA whether we should cut back our STM/CQM schedule to recover this delay. We can reduce testing on the STM but this increases the risk considerably. This should be discussed at the next meeting on 26 and 27th November.

2.4 Funding

- The UK funding envelope is still inadequate for the hardware plus ICC development programme. Pressure still exists to descope hardware (BSM or Flight Spare). Project management costs must be reduced. Discussions with ESA have recently been very positive, a practical implementation needs to be agreed..
- Funding within JPL is a problem and is considered to pose a risk to deliverables and/or schedule.

3. INSTRUMENT ENGINEERING

3.1 Instrument Design Changes

- Some modification to MGSE will be required to allow integration on the HOB.

3.2 PA/QA

- On going

3.3 Budgets

- Mass of warm electronics close to maximum.

4. INSTRUMENT SUBSYSTEMS

Subsystem	Responsible	Status	Schedule status
BSM	ATC	STM delivered to RAL. DM-2 assembly complete and tests started. All ATC harness and sub-system wire ordered via Tekdata.	OK
Calibrators	Cardiff	PCAL design complete. Enclosure parts in manufacture (STM & CQM). DM, STM & CQM sources in manufacture (DM will be used for lifetests). DM source received. SCAL DM/STM model assembled and tested thermally. Agrees well with thermal model. Thermal model being modified to model & optimise warm-up sequence, rather than just constant applied power	OK
Cooler	SBT	- CQM units : first unit ready for initial testing (filling, etc...) – initial testing expected week 50. Second unit will be ready by end of week 49. - Heat switches : Assembly of 5 heat switches almost done. Should be available by end of week 49. - Structures : available – To be confirmed : minor modifications to be implemented following SAP demand (additional threaded holes for thermal shields mounting – might be done only on PACS structure). - STM units : both STMs have been cold vibration tested at	OK

		RAL (! 85 K). Successfully passed but unexpected decrease in the resonant frequencies by 23% for the largest shift. Under investigation. STM S/N1 delivered to RAL. STM S/N2 to be delivered by RAL to SAp in the coming weeks - Kevlar characterisation campaign and Tensiometer : strong focus on this matter. New tests being done.	
Detectors, JFETS and RF Filters	JPL	BDA cold vibration tests planned for next month. Relaxation of input spectrum under discussion.	OK, but under review
DPU and OBS	IFSI	Software: Multiple hk_asking: completed , under testing, updating to new ICD; HS link communication task: new DRCU_SIM SW arrived on (11th dec '02): it seems that there are bugs; OBS under updating to new DRCU ICD; Multiple Non Real Time-VM and RT-VM: completed, test procedure started; TeleCommand execution: completed, interaction with HK's and VM's under testing Dynamic mem-management: completed, interaction with TC_exec task under test.	OK
DRCU and WIH	SAp	DCU DAQ IF 2 test boards available at JPL, Test completed. DAQ IF upgrade achieved (new Xilinx and patch AMP02 mounting) BIAS Board assembly achieved 29/05, Board test performed LIA-P PCB fabrication achieved, Board test performed LIA-S Board assembly achieved, Board test performed Back-Planes Functional test backplane built, Performance test backplane available test achieved Test plan •Test plans: LIA-P, LIA-S, BIAS, DAQ-IF available in draft form. Update in progress, Functional test plan: writing finalisation. Test Functional test achieved, Test on DAQ IF achieved, I/F DPU (FPGA) board validation achieved DPU I/F FPGA achieved SCU Heaters: prototype test achieved. Temperature sensors: test successful DPU I/F command and data I/F achieved. Analog port study achievement, software preliminary study in progress. Test board analog port study achieved Test software development started Heater & temperature: implementation achieved Calibrator: implementation achieved. HSK: prototype board in fabrication, 2 people were added for a few	Being optimised

		<p>month's to study it, the test software and a FPGA to convert different communication protocols.</p> <p>SCU logic (pinout): study achieved</p> <p>SCU logic (logic): study in finalisation, logic finalisation on FPGA.</p> <p>Temperature: design PCB achieved. PCB layout achieved.</p> <p>Cchkif: design PCB achieved. Board scheme finalisation.</p> <p>Back plane: PCB design & layout achieved.</p> <p>MCU</p> <p>Design available at LAM & SAp</p> <p>Sub-contractor selected.</p> <p>PSU</p> <p>Separate power bench will be used for QM1 and QM2 and FM.</p> <p>Draft Specification available.</p> <p>Call for tender process started</p> <p>Contractual specification finalised</p> <p>Enclosures</p> <p>Modeling completed.</p> <p>DCU STM box complete</p> <p>FCU box detail design achieved</p>	
DRCU simulator Inst simulator	Stockholm		OK
Filters, Dichroics	Cardiff	<p>SPIRE STM CFIL1 still in manufacture – delay due to long lead-time obtaining new photolithographic masters for CFIL1.</p> <p>STM PDIC1 and PDIC2 rings & shims still in manufacture – delay due to non-availability of SANMAC tube stock. Problem now solved, and manufacture started.</p> <p>STM PFIL2 and SFIL2 material ready for cutting to shape.</p> <p>300mK spectrometer lenses complete. Assembly of SLW CQM filter/lens stack in progress</p>	OK
Mirrors	LAM	STM/CQM manufacture complete	OK
Shutter	USK	Deleted	OK
Spectrometer Mechanism	LAM	STM in manufacture	OK
Structure	MSSL	<p>Production drawings of the busbar have been revised and issued. Have tested the second set of MKIII units and light baffle from Cardiff and FEA is still in progress. The assembly drawings have been started. After the liquidation of the manufacturing contractor, two suppliers were found to complete the three remain major components. . The optical Bench has been roughed (2 cycles) completely on one side and the second side is in progress. This is still due on 20 December.</p> <p>Spectrometer 2K detector box is due 31 January 2003. The photometer Cover has been fit checked as an assembly. MSSL's workshop continues to finish all the smaller parts of the structure. The FEA model of the instrument has been updated to reflect the current design of Spire and random vibration analysis has been performed with the new vibration levels.</p>	Critical path for STM
Thermal straps	MSSL, Cardiff	<p>Thermal busbar development is continuing. A new schedule has been drawn up between Cardiff and MSSL. Production drawings of the busbar have been completed. Have tested MKIII units and light baffle from Cardiff and have started the FEA.</p>	OK

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AIV/Calibration facility	RAL	<p>Cryolab: The pipework for the cryostat is being installed. A hut for the cryostat pumps has been delivered and is being made ready for installing the cryostat backing pump and 2K He pump.</p> <p>Cryostat: Delivery expected on 13/12/02</p> <p>MGSE: A trial assembly of the MGSE was performed and it was demonstrated that it could support a load up to 250Kg. The HOB plate has been delivered to MSSL for trial fitting of the rotisserie.</p> <p>Cryoharness: The cryogenic section of the harness is complete and is waiting final cold testing. The cold section should be available by mid December for the cryostat commissioning tests at RAL.</p> <p>Work on the warm section of the harness has been suspended pending a decision on the grounding scheme. The warm section is almost complete apart from final potting of the 128way connectors.</p> <p>Telescope Simulator: Work is in progress to complete the motion control software.</p> <p>Laser: A stabilisation unit from Edinburgh instruments has been tested.</p> <p>TFCS: The temperature and pressure monitoring software has been completed. Work is in progress to complete the cryogen level sensors and the interface to SCOS-2000.</p>	OK
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5. INSTRUMENT AIV

- A detailed AIT procedure is being developed

6. ACTIONS.

See HP ASPI MN 1725 annex 1