

1. SPIRE PROJECT

1.1 General

- This report covers November 2001.
- Project team has focussed on
 - Support and assistance of subsystem DDRs
 - Cryo-harness definition
 - IID-B update, change requests issued.
 - Preparation for IBDR

1.2 Instrument performance

The latest information on micro vibration from Alcatel indicates that we do not have a problem with the SMEC (TBC). However the levels may still be a problem for the detectors. This is being analysed by the system team and a technical note will be issued shortly.

1.3 Problem Areas

- Definition of cryo harness connectors (awaiting confirmation)
- Requested CQM delivery date remains incompatible with the SPIRE schedule.
- Electrical isolation of cold straps
- Mass of DRCU (no detailed mass breakdown exists, but indicative estimates show possible excess over allocation)
- Lack of cryostat dynamic thermal model from industry is holding up FPU thermal analysis.
- Undefined/unconfirmed spacecraft interfaces (IID-B) will soon cause problems.

1.4 Project-Level Meetings

- Detector meeting at RAL 6-7/11/01
- Structure DDR at MSSL 29-30/1/01
- Herschel optical systems meet 4/11/01
- EQM follow-up meeting 20/11/01
- EMC meeting
- ICC Scenario Meeting 7-9 /11/01
- HST Meeting 15-16/11/01
- Data Management Meeting 29/11/01

1.5 Documents Issued

- IBDR plan
- Subsystem DDR data packs.
- ECRs on SRD
- Draft SMEC DDR report.

2. INSTRUMENT MANAGEMENT

2.1 Personnel

No Change

2.2 Work packages

No changes.

2.3 Schedule

No changes to major milestone list since April 2001

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).
- High cost of DRCU electronic components poses potentially serious funding problem in France.
- Funding within JPL is a problem and is considered likely to have an impact on deliverables and/or schedule.

3. INSTRUMENT ENGINEERING

3.1 Instrument Design Changes

- none

3.2 PA/QA

- On going

3.3 Budgets

- Nothing to report

4. INSTRUMENT SUBSYSTEMS

Subsystem	Responsible	Status	Schedule status
BSM	ATC	Detailed 2 axis prototype testing continues. Mechanical design changes to DM completed & released for manufacture. Flex pivot discussions held with and UK industry : technically feasible but probably costly. Infineon position sensors re-ordered. Responses to RFQ for sub-con of random response FEA received: . Magnetic modelling underway at MPIA. Options identified for cryo-harness connectors; pursuing details..	OK
Calibrators	Cardiff	Updating ICDs HB6 tests complete – device easily meets SPIRE requirements (photometric output & speed). Next device (HB7) will be “tweaked” to attempt to attain the speed goal. New drawings for prototype components submitted for manufacture Prototyping of dichroics and beam dividers 300mK filter interface defined and agreed. 300mK filter clamp designed and submitted for manufacture.	OK
Cooler	SBT	- All parts for 2 CQM + 2 STM delivered and checked. All anomalies dealt with (when needed parts reworked or fully remachined). All parts available. Fit check done. - Laser marking of parts done - All soldering tools machined and delivered. - Electron beam welding of tube/pump half sphere and tube/evaporator half sphere in progress (Subcontractor) - Cooler structures (4) pre assembled (held using dedicated tooling) – to be delivered for EB welding Dec 5th. Numerical modeling of overall cooler mechanical performance : TN in progress. - Kevlar characterisation campaign : fatigue test set up built – currently in operation: Kevlar 34 (breaking at 12 DaN) Solicited between 7.8 – 9.2 DaN for over 240 000 times so far. (nominal tension in cooler : 5 DaN)	OK

		- Large test cryostat : manufacturing in progress	
Detectors, JFETS and RF Filters	JPL	Assembly of QM started. CQM to start soon. Bolometers being fabricated, due 11/1/02. 7 bolometer runs planned, each of 3 months Drawings to be released next week.	OK
DPU and OBS	IFSI	The first set of DPU boards have been delivered by CGS to IFSI after a partial acceptance test at CGS due to a failure in the IFSI provided SS I/F simulators. At IFSI the problem with the SS simulator have been fixed and a number of extensive tests have been performed on the boards. During our tests a number of problems, possibly located in the socket mounted FPGA, have arisen and we are in close contact with CGS in order to solve it. DPU SPIRE documentation have been written/updated and provided to the project for the December DPU DDR.	OK
DRCU and WIH	SAP	VHDL coding & Simulation. Commanding definition Heater lines design PSU Specification writing DRCU box Re-design due to new PSU I/F	OK
DRCU simulator Inst simulator	Stockholm		OK
Filters, Dichroics	Cardiff	Prototyping of dichroics and beam dividers 300mK filter interface defined and agreed. 300mK filter clamp designed and submitted for manufacture.	OK
Mirrors	LAM	Mirror sizes optimised.	OK
Shutter	USK	PDR complete	OK
Spectrometer Mechanism	LAM	DDR passed in October STM design finalised Synchronisation device material chosen Actuator specifications written Studies at BE System reinitiated with STM/flight design Test set up for sub components (LVDT and Actuator) in progress – preliminary tests done. Size of electronics board received from CEA Boards mechanical interfaces received from CEA Tests on MAC Board MAC QM1 Reading/Writing DSP-ADC/DAC test software OK Connector definition for Power supply OK Orcad layouts of Flight Model Electronics for DDR Detailed list of command review Definition of Harness pin out ACTEL FGA tools provided (Leonardo). CEA VHDL analysed with success MAC QM1 Board DSP : Arctangent calculations and optical encoder signals acquisition OK	OK
Structure	MSSL	Continuing design of the photometer 2K box. Closed out more subsystem interfaces, only thermal busbar, thermistors RF filters and SMEC open. Detailed design for MGSE nearly completed. DDR documents have been issued for DDR by the end of November. Reworked schedule due to latest shift in activities. MSSL design for thermal busbar has finished testing. Harness routings in progress. Receiving quotes for the manufacture of certain parts. Detail drawings of mirror mounts completed.	Being reviewed
Thermal straps	MSSL,	A small team has been formed to set up a design and test	OK

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	Cardiff	programme Design validation prototypes in manufacture for several suspension concepts. Preliminary tests indicate that the thermal impedance of a pressed copper-copper joint at 340-370mK agrees with Wiedermann-Franz predictions (electrical measurements	
AIV/Calibration facility	RAL	<p>Cryolab: Preparation continues</p> <p>Cryostat: The detailed engineering drawings for the outer vacuum vessel have been approved and manufacture has started. Detailed drawings for the cryogenic vessels have been produced and have been reviewed.</p> <p>A design of the HOB simulator and support frame has been produced and is under review. A thermal analysis of the cryostat to carried out so that the design of the HOB simulator can be optimised.</p> <p>Drawings for the filter mounts have been produced and manufacturers are being approached.</p> <p>The cryostat vacuum system has been delivered.</p> <p>Cryoharness: On order</p> <p>Telescope Simulator: The telescope-imaging mirror has been delivered to RAL and is currently undergoing 3D metrology.</p> <p>Laser: Refurbishment continues</p> <p>TFCS: A draft version of the User Requirements Document has been produced. Thermometer monitoring units have been ordered.</p>	OK

5. INSTRUMENT AIV

- A detailed AIT procedure is being developed

6. ACTIONS.

See action list attached to minutes HP-ASPII-MN-390