# 1. SPIRE PROJECT

## 1.1 General

- This report covers October 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

- No changes

## 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

- SRR at ESTEC 12 October
- Project Team meeting, RAL, 15 October.
- SMEC DDR, Marseille, 22 and 23 October
- EMC meeting at Alcatel.
- Cryo harness meeting at Astrium
- DDR preparation meeting at Sap.
- Electronic system meeting at Sap.

## 1.5 Documents Issued

- Harness definition document.
- Subsystem DDR data packs.
- Sub system ECRs
- EGSE integration and acceptance report
- FIRST SPIRE optical error budgets version 3
- Review report on SPIRE shutter PDR

# 2. INSTRUMENT MANAGEMENT

## 2.1 Personnel

- A new project controller has been recruited at SAp.

## 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 fore 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

- A lens has been introduced in front of the spectrometer detectors to correct for the non-telecentricity of the FTS optics.

## 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 commenced with sensor outputs and pivot spring rates analysed. Mechanical design changes to DM nearly complete. Electronics group effort has been applied to the harness design, to bring this up to DM standard. Flex pivot discussions held with UK industry. Alternate flex pivots may be available from C-Flex (previously assumed not capable of meeting requirements, recent data suggests otherwise). RFQ for sub-con of random response FEA placed. Magnetic modelling underway at MPIA. | OK |
| Calibrators | Cardiff | Minor design modifications are in hand following recommendations from the DDR. | OK |
| Cooler | SBT | Parts for 2 CQM + 2 STM available (90% delivered, remaining end of week) – Parts verification<br>- Additional tools for EBM welding designed and currently manufactured (delivery expected week 45)<br>- Gold plating of copper external surface not performed at SBT anymore : subcontracted (subcontractor already identified) : test on compatibility of copper gold plated / titanium brazing to be performed in the coming days<br>- Numerical modeling of overall cooler mechanical performance : most info available now – TN in progress.<br>- Kevlar characterization campaign : fatigue test set up built – preliminary tests done : slight modification of test set up being done.<br>- Following ITT subcontractor selected for large test cryostat : manufacturing initiated | OK |
| Detectors, JFETS and RF Filters | JPL | Characterisation tests on Kevlar completed, results ok.<br>On schedule for manufacture, first components due in one week.<br>Bolometer manufacture started,<br>Qualification testing of RF filters started. | OK |

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|---|---|---|---|
| DPU and OBS | IFSI | An updated general planning including the CGS schedules has been circulated.<br>A new updating is necessary as a consequence of CGS delivery updates.<br>- Activities at CGS according to the 4th progress meeting held at CGS on 2nd October (minutes and hand-outs circulated):<br>-Two EM boards delivered and being debugged.<br>- DC/DC Board activities delayed by 2 weeks (not critical as we can work with external power supplies)<br>- Motherboard artwork delayed by 1 week.<br>- Late in October a motherboard was shipped to IFSI to start cabling.<br>- CPU Board activities in line with the schedule;<br>- I/F Board activities delayed because of late availability of IFSI HIFI simulator, delivered on the 14th of September instead of the 24th of August;<br>- SW reported to have a delay of 1-2 weeks probably recoverable.<br>- The decision is taken during the progress meeting to leave the boards at CGS in order to allow a proper HW and SW integration.<br>The acceptance procedure is planned for the first week of November.<br>- Activities at IFSI:<br>- Box mechanical design in progress, nearly completed.<br>- Architectural Design in progress, to be finalised in parallel with the code development.<br>- Software Specification Document in progress. | OK |
| DRCU and WIH | SAp | VHDL coding & Simulation.<br>Commanding definition<br>Heater lines design<br>PSU Specification writing<br>DRCU box Re-design due to new PSU I/F | OK |
| DRCU simulator<br>Inst simulator | Stockholm | | OK |
| Filters, Dichroics | Cardiff | Some interface issues with BDAs to be resolved. | OK |
| Mirrors | LAM | Mirror sizes optimised. | OK |
| Shutter | USK | PDR complete | OK |
| Spectrometer Mechanism | LAM | Study done by BE systems on selection of flex pivots.<br>Pivot type selected.<br>Request for increased maximum thermal dissipation studied and report issued (SPIRE-RAL-NOT-000771) | OK |
| Structure | MSSL | Continuing design of the photometer 2K box. Defined and analysed supports for the 2K photometer box. Closed out more subsystem interfaces including cooler, BDAs and mirrors. Detailing design for MGSE. Draft DDR documents have been produced. Reworked schedule due to latest shift in activities. Development team has met to discuss thermal busbar and have produced three concept designs. MSSL started vibration testing their low tension design. Started harness routings | To be reviewed |
| Thermal straps | MSSL, Cardiff | A small team has been formed to set up a design and test programme<br>Testing of prototype straps has started. | OK |
| AIV/Calibration facility | RAL | Cryostat out for manufacture.<br>Cryo lab preparations continuing | OK |

## 5. INSTRUMENT AIV

- A detailed AIT procedure is being developed

## 6. ACTIONS.

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