SPIRE-RAL-NOT-001143

SPIRE IBDR Preparation Plan

Matt Griffin and Eric Sawyer

4 February 2002

1. Introduction

The SPIRE Instrument Baseline Design Review (IBDR) meeting will be held on March 5, 6 2002. The venue will be RAL. This is a formal review in front of an ESA-appointed Review Board, and is an important milestone in the instrument development. This note outlines the scope and format of the review, and the Project Team's plan for IBDR preparation. It is based on the requirements for the IBDRs in general as defined by ESA, and additional considerations based on the particular needs and current status of SPIRE.

2. IBDR objectives

2.1 ESA-defined objectives

The objectives of the Herschel/Planck IBDRs (as defined by ESA in consultation with the instrument teams) are to demonstrate:

(i) that the system and sub-system designs have been completed and are under configuration control and interfaces between subsystems are frozen;
(ii) that the interface requirements with the spacecraft have been consolidated and are under configuration control;
(iii) that the On-Board Software requirements and the architectural design are complete and interfaces have been frozen;
(iv) the readiness of the AVM/CQM/PFM programmes, including manufacturing and AIT/AIV;
(v) the readiness of the Ground Support Equipment (GSE) programme.

2.2 Additional SPIRE objectives

The SPIRE IBDR will follow on from the sequence of subsystem DDRs that will be completed by the end of this year. In the review we will report on the DDRs and present the status of the subsystems, and also focus on the instrument system design with particular attention on the following:

(i) FPU thermal behaviour and modelling;
(ii) EMC;
(iii) Failure mode analysis and redundancy;
(iv) FPU mechanical analysis;
(v) Instrument AIV plan.

2.3 Constraints

A comprehensive package of review documentation must be sent out in early February, and must therefore be reviewed internally by mid-January. This means that most of the documents must actually be produced in near final form by the end of the year - a week before Christmas. The review will therefore be of the status of the project at that time, not on the date of the IBDR meeting itself. Any significant updates will be highlighted on the day.

3. Review Board composition

The IBDR Review Board will consist of

- Jerry Crone ESA Payload Manager (Chairman)
- Göran Pilbratt ESA Project Scientist (Co-Chairman)
- Jean Bruston ESA Instrument System Engineer (Secretary)
- ESA-appointed members covering the following areas:
  - Product Assurance
  - AIV/Ground Support Equipment
  - Electrical/Thermal-Cryo/Mechanical
  - Data Management /On-board software
- Industry Representative
- Representatives of national funding agencies and/or independent scientific experts (if proposed by the instrument team). SPIRE will invite Otto Bauer and possibly one other independent member.

By mutual Instrument and ESA agreement, other parties may be invited to the review as observers.

4. IBDR format

The review will consist of two parts:

(i) review of the documentation package;
(ii) a review meeting involving presentations, discussion, Review Board meeting, and feedback

ESA require that the documentation and presentations make clear the following:

(A) the status of the instrument baseline and performance;
(B) progress made since the IIDR (held in April 2001), including the implementation of recommendations from that review;
(C) open issues and critical areas;
(D) plans for proceeding and resolving problems.

In order to meet these objectives, two full days will be required for the review meeting.

The documentation package must be delivered four weeks before the meeting (because of difficulties caused by the late distribution of documents for previous reviews, ESA are rightly insistent on this point).

During the review of the documentation, a list of points to be clarified and discussed will be generated by the Review Board and forwarded to the instrument team before the review meeting.

4.1 Guidelines for presentations

1. At the review meeting, most of the presentations will be by Project Team members (see the draft agenda below). Short presentations will also be given on the status of the subsystems. We can assume that the Review Board and the audience are familiar with the instrument system and subsystem designs as presented at the System Design Review in November 2000, at the IIDR in April 2001, and in the substantial IBDR documentation package. The emphasis will be on using the presentations to emphasise key issues and assist the Review Board in concentrating on the four aspects highlighted by ESA - these are to be explicitly addressed in the presentations by adopting a format which includes the following headings:

   (A) Status of the instrument/subsystem design and performance;
   (B) Progress since the IIDR;
   (C) Open issues and critical areas;
   (D) Plans for proceeding and resolving problems;

The short subsystem presentations should provide this information based on
- the DDRs and resulting follow-up;
- status of ICDs.

There is no need to describe the design, except to highlight any key updates or changes.

2. All presentations should take at least 5 minutes less than the allotted time to allow for questions and change-over.

3. All presentations are to be in Powerpoint or PDF form, and must be made available to Eric Sawyer before the review meeting for installation on one machine.

4. The review meeting shall also be chaired by the Review Board chairman. The session chairs shall be responsible for ensuring that speakers keep within the allotted time.

5. List of documents to be issued for the review

The table below lists the documents that will be provided for the review. Most of the documents are to be written by members of the Project Team. Subsystem-level documentation will be available in the form of the DDR documentation packages (updated as appropriate).

No.	Document	Responsible	Comments
Top level requirements documents			
1	Science requirements document	PI	
2	Instrument Requirements Document	PI + Inst Sci	
3	Calibration Requirements Document	PI + Inst Sci	
Instrument Design Description and Development Plan			
4	SPIRE Design Description Document	System team	
5	Instrument Development Plan	RAL	
6	EMC control plan.	RAL	
IID-B and related documents			
7	IID-B +relevant ECRs IID-A	RAL	
8	Thermal Model	RAL	
9	FPU Mechanical Model	MSSL	
10	Harness Definition Document	RAL	
11	Stray light model	RAL	
12	Budgets spreadsheets	RAL	
13	Optical error budget	LAM	
On-board Software			
14	OBS URD	IFSI	
15	DPU architectural design note OBS specification document	IFSI	
16	Operating Modes Document	PI + Pro Sci	
17	Operating the Instrument Document	RAL	
18	SPIRE Data ICD	RAL	
AIV Plan			
19	AIV Plan	RAL	
20	Warm Electronics integration plan	RAL	
21	FPU integration plan	MSSL	
22	Alignment Plan and Alignment Procedures	LAM	

23	Instrument-Level Test Plan	RAL	
24	Manufacturing Flow Chart	RAL	
GSE			
25	GSE Overview	RAL	
PA			
26	FMECA	RAL	
27	Worst Case Analysis	RAL	
28	HW/SW interaction analysis	RAL	
29	FDIR	RAL	
30	Cleanliness Control Plan	RAL	
31	Parts, Processes and Materials lists	RAL	
32	Verification Matrices	RAL	See AIV plan
33	Configured Items Data List	RAL	
34	Critical Items List	PI	
35	Change Requests and Waivers List	RAL	
Additional Information To Be Available To The Panel			
36 etc.	All DDR Document sets All DDR Review Board Reports Technical notes and papers as deemed appropriate by the Project Team		