



FIRST/Planck Project Telefax

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Ref. : PT-06148

Date : 22 December, 1998

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Cc : F. Felici, P. Estaria, F. Vandenbussche, H. Schaap, M. von Hoegen,
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Subject: FIRST/Planck - Commonality Working Group - WG#7

Dear all,

As a result of the meeting of the steering committee of the commonality working group, it has been decided to cancel the working group #7, "Common Instrument H/W Items".

The activities that had been identified so far as common elements among instruments were in most cases same or similar developments within two or three instruments and not all five FIRST/Planck instruments.

It was agreed therefore that these common elements are treated as separate, single items and are followed by a dedicated approach (working group or otherwise – see proposal below).

In a first attempt to start the activities on commonality of these items, I have compiled in the annex to this fax a list of those elements that were identified during the meeting and propose an approach.

Please review this list and provide your input and comments (due End January 1999).

In addition, I would like to obtain your input on further instrument elements that could benefit from commonality (also due End January 1999). The question could be raised in two ways:

- Do you have any element of your instrument, that you believe would be of interest to any other instrument?
- Do you expect any other instrument to have an element that would be of interest to your instrument?

Best regards,

T. Passvogel

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Annex to PT - 06148

1. Radiation Environment and Radiation Testing

The radiation environment for all FIRST instruments will be similar at L₂. The aspects that could be covered within this specific task are evaluation of the radiation environment, resp. definition of the needs of the instruments w.r.t. definition of this environment and the consequential ground testing.

We have to distinguish here between the warm units on the SVM, where an identical treatment can be expected and the focal plane units where differences in sensitivity and test approach are obvious.

The input required for this activity is expected to be twofold, i.e. on one side the definition of the radiation environment and on the other side the definition of instrument sensitivities and the test plans.

The radiation environment expected at L₂ have already been analysed some time ago and would be provided as input. The need for further input and analysis would be an outcome of the working group.

It is proposed that all instrument teams provide in return a written input and a proposed participation (mid February 1999). ESA will organise and co-ordinate the working group in response to the input received.

Each team should identify in the response already the need dates, milestones that are seen to be relevant.

The expected output from the activity is a common approach for all instrument teams and a clear definition of inputs needed from S/C and system analysis.

2. Instrument calibration and Calibration facilities

Each of the FIRST and Planck instruments need on ground calibration and a corresponding facility set-up. The amount of commonality that can be achieved is not clear, however, there appears to be some potential.

The objective of this working group is in the near future to distribute the calibration approach and to identify the commonalities.

In a first approach it is proposed that the calibration approach and the planned facilities for each instrument is communicated to the other instruments, e.g. by distributing the corresponding part in the development plan or any other source (please provide by late February 1999).

This input should be reviewed by the other instrument teams and potential common elements identified. This reply/review of the planned approach of the other instruments and the need of supporting facilities should initiate the further considerations (this could be discussed during the next meeting of the steering committee).

3. Optical Test Facilities

Optical test facilities had been mentioned as a separate commonality element in the steering committee meeting, however, I propose to include this in the above exchange of information on the calibration

4. Telescope Simulator

For instrument testing a simulation of the Telescope (FIRST or Planck) could be important. The need of such simulator is not yet clear and should be evaluated in a first step.

Each instrument team should provide its view and/or requirements of a telescope simulator and the intended use (please provide input by mid February 1999). This input will be distributed to identify commonality.

5. Contamination Control

The IID-A, via its applicable document on the PA requirements, defines a certain cleanliness level for the instrument unit. The ways to achieve this and to control the contamination, especially during integration and testing can be different. I believe that it is beneficial to all teams to implement a common approach.

In a first round I would ask each instrument team to provide written input to ESA to the following areas:

- Assessment of the contamination requirements as given in the 'Product Assurance for FIRST/Planck Scientific Instruments' (PT-RQ-04410) w.r.t. to the expected applicability on your instrument
- Instrument contamination approach (requirements, control plan)
- What are the expected instrument requirements on the spacecraft, i.e. identify critical areas for the s/c contamination and contamination control, as seen from an instrument point of view.

In response to the first input received from all five instrument teams, ESA will organise the further activities of this working group.

As a final result of the work of the working group I expect to achieve a common contamination control plan and common contamination control procedure.

6. Cold Vibration Facility

All three FIRST instruments need to perform a cold vibration of the Focal Plane Unit. Since at present no facility is identified that would accept the responsibility of this cold vibration a common approach is proposed, coordinated by ESA.

We want to start this activity with the definition of the work to be performed, i.e. a type of vibration test specification for all three instruments. A draft is under completion in the project and will be distributed for comments soon.

As soon as your response will be available, this will be incorporated and we will approach European facilities for a proposal for the facility setup and the corresponding costs.

With the response from the facilities we will organise a common meeting with all three FIRST instruments to decide on the further procedure, e.g. selection of facility and distribution of costs.

7. Focal Plane Unit Choppers

Each of the three FIRST instruments has a chopper implemented in the focal plane unit. It is not yet clear how far all three choppers could be based on the same design approach, resp. could really be physically the same.

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In order to evaluate the potential commonality it is proposed that each FIRST instrument provides the corresponding information on the chopper to the two other instruments.

A typical example would be a specification (taken from the definition done by PACS) including the definition of the following items:

- size
- mass
- mirror size
- chopper throw
- modulation functions
- frequency range
- heat dissipation
- failsafe position
- operation environment
- vibration loads
- operational lifetime

and the short description of the present design approach in the FPU.

This information should be forwarded to the other teams in January 1999 and response is expected by mid February.

The further activities will be based on this first exchange of information and could be organised by ESA if agreed by the teams.