

**Monthly Progress Report**  
**SPIRE Test Facility and Scientific Support**

**Contract Number:** 9F007-020251/001/SR  
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## **Part 1**

1. Is the project on schedule? **Yes.**
2. Is the project within budget? **Yes.**
3. Is the project free of any areas of concern in which the assistance or guidance of Canada may be required? **Yes.**

## **Part 2**

### **Task 3.1: Provide SPIRE Test Facility FTS**

- Data is collected to validate the continuing functionality of the Test Facility FTS. On a weekly basis, long-term scans are performed and data analyzed at the University of Lethbridge. The optical and the software system have been functioning flawlessly. Two minor changes of the control software have been requested by the SPIRE test team and will be implemented as soon as the grad students have arrived at the Rutherford Appleton Laboratory (RAL) early next year.
- Two kinds of problems with the counter electronics have been identified from these tests:
  - (1) Not all reset commands of the DPU clock that are issued by the Spacecraft Operating System (SCOS) lead to a reset of the DPU clock counter. The frequency of the missed resets varies considerably from test to test and is most likely due to changes in the test environment and not the counter electronics itself.
  - (2) When a reset is issued while scanning, counting errors occur at a low frequency (<1%) at the 20 bit boundary.These problems are not severe and feasible work-arounds have been proposed:
  - (1) After a reset command has been issued, the operator in the test facility needs to double-check that it has been executed.
  - (2) The miscounts at the 20 bit boundary can be reliably identified and automatically corrected during data ingestion.
- Version 2.0 of the Quick Look Analysis (QLA) tool was released November 14 by the software development team. This new release adds new features to the QLA which make it a more efficient application. However, it has necessitated a work-around solution to retrieve data from the Herschel database. Also, the visualization of data from the Test Facility FTS in the QLA is currently not available. A respective software problem report was issued to the development team in the UK.

### **Task 3.2: Provide SPIRE Data Analysis Software**

- The work packages for the University of Lethbridge were consolidated with Ken King, the SPIRE project manager. In developing these contributions to SPIRE it will be instrumental to keep close ties with the Calibration Team, the ICC Software Development Team, and the Observations and Data Processing Team. The responsibility for these work packages lie with the Rutherford Appleton Laboratory (RAL) and the Imperial College, both located in the UK.

- The draft calibration plan was reviewed and resulting comments were sent to Tanya Lim at RAL who leads the calibration team.
- Email addresses from staff at the University of Lethbridge were added to the mailing list of the software development team to keep up to date with current developments.
- The data processing team has welcomed the idea of using test data from the BLAST project. The immaturity of the BLAST data collected over the summer prohibits the current use of this data for SPIRE purposes. In the future, it is anticipated that this data will become useful for the development of the data reduction software.

**Task 3.3: Canadian SPIRE Team Support**

- Almost all current Canadian Associate Scientists have signed up for the SPIRE Specialist Astronomy Groups. The following table lists the Canadian involvement in the science to be done with Herschel/SPIRE:

<b>Specialist Astronomy Group</b>	<b>Canadian Scientist involved</b>
High-redshift galaxies	Douglas Scott (University of British Columbia)
Galaxies in the local universe	Christine Wilson (McMaster University)
Star formation in the galaxy	Christine Wilson (McMaster University)
The galactic inter-stellar medium	David Naylor (University of Lethbridge)
Solar system	David Naylor (University of Lethbridge)
Stellar and circumstellar	

- Applications for the two currently vacant positions in the Canadian Herschel/SPIRE Science Steering Committee have been solicited through the CASCA exploder on November 19, 2003. Deadline for applications is December 8, 2003. It is anticipated that a decision will be made at the December meeting of the JCSA.

**Task 3.4: SPIRE ITT and ICC Support**

- Samuel Ronayette, the SPIRE ITT member for Canada at RAL, and Asier Abreu, the SPIRE ICC member for Canada at RAL, have both continued to prepare the test campaign of the SPIRE Qualification Model next January.
- Asier is involved in testing and validating all components delivered to the SPIRE test facility. He is also in the process of writing a formal acceptance test plan for the Test Facility FTS.
- Samuel has designed a canopy to protect the beam path to accommodate a variety of test setups involving the Test Facility FTS, the Far-Infrared laser, and the telescope simulator. He also verified the cold black body that was recently delivered to RAL.
- More detailed preparations were made for the visit of John Lindner and Locke Spencer, the two graduate students at the University of Lethbridge who will each spend six months at RAL early next year to support the SPIRE test campaign.