# SNS • SORCE News Source

**Monthly Newsletter**

**July 2001**

## SORCE July 2001 Project Summary

The SORCE Program is on schedule and within budget. Launch is scheduled for July 31, 2002. SORCE recently received high praise from the administration of GSFC (Goddard Space Flight Center). SORCE is the only Principal Investigator mode mission that has maintained schedule for 3 years. Highly deserved thanks to all of the SORCE team members and their continuing efforts to meet schedule.

Much progress was made on the SORCE mission during the past month. At LASP the XPS and TIM instruments were integrated onto the satellite observatory. The integration of the MU (microprocessor unit) to the satellite observatory was also completed. At Orbital the CEU (central electronics unit), fuse box and harnesses were integrated on the spacecraft bus. The SIM and SOLSTICE instrument flight configuration builds were finished. XPS calibrations and environmental test are now complete. The TIM pre-environmental characterizations are complete and the SOLSTICE SURF (Synchrotron Ultraviolet Radiation Facility) pre-environmental calibration is complete. The SOLSTICE solar verification has been done. The first solar spectrum through the SOLSTICE flight instrument was obtained. Scattered light testing has been done and light leak testing is complete.

SORCE is not planning any descopes but removal of the FOG "gyros" ACS component from the SORCE spacecraft is still under consideration. A review was held June 28, 2001 at Orbital to evaluate the potential descope. Orbital has submitted an ECP (engineering change proposal) for the removal of the gyros from the SORCE spacecraft along with a plan for optimization of the ACS control system for to increase performance. The ECP to remove the gyros has been assessed. GSFC Code 570 has prepared a position paper expressing concern on the gyroless flight mode for the SORCE spacecraft. SORCE is currently studying the resulting issues with the Aerospace Corporation to ensure the robustness of the SORCE satellite without the gyros. SORCE and the Aerospace Corporation will present the results of their study at a PMC (program management council) meeting at GSFC September 13, 2001 to evaluate mission impact. Until then, SORCE continues to proceed in a gyroless mode.

The top concerns facing the SORCE program include diminishing schedule slack, a late flight MU (microprocessor unit) build, dwindling budget contingency, tight test schedules, and possible launch conflicts with ICESat. All concerns face constant review and solutions evolve day by day. As always, instrument build and test schedules are carefully monitored to meet the priorities of the SORCE program.

Last month, anomalies were found in the Interpoint power converters used on the SORCE instruments. Due to a problem of transient over voltage spikes, experienced on the power H-Bridge boards at turn on, new Interpoint +5volt converters were installed on all the boards. The new converters are from date code lots that do not exhibit the transient over voltage problem. Engineering ±15volt converters (from Advanced Analog) were installed on all of the power H-bridge boards to allow integration and test activities to continue. The Advanced Analog converters will be replaced with Interpoint converters and a soft-start turn-on transient limiting circuit will be added. The new circuit has been designed, simulated and is in prototype testing. Each board will require about ½ day of testing once the converters and the soft-start circuits are installed. All flight hardware will be burned in for >72 continuous hours at +50degrees C during the IM (instrument module) thermal vacuum testing. This will qualify all hardware, which was formerly powered by the faulty converters. Additional investigation continues.

On the business side of the program, SORCE contracts enjoy excellent status. SORCE deliverable products have been distributed on time and billed accounts have been paid to date. Several subcontract modifications are in negotiation regarding Mission Operations support, PWB (printed wire board) coupon testing, insight meetings proposals, thermal blanket proposals, and IV and V, (independent validation and verification). Test plan comments for the ACS (attitude control system) have



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been received. RFA's from earlier SORCE reviews have seen progress and some have seen closure.

## SORCE Science

June was an eventful month for the SORCE scientists.

1) Papers and talks pertaining to SORCE were presented at the AGU/APS SPD meeting in Boston, at the "International Solar Cycle Studies 2001" Meeting in Longmont, and at the "Evolving Sun and its Influence on Planetary Environments" Meeting in Granada, Spain.

2) Longmont and Boulder meetings in early June brought a number of visitors, including Gerhard Schmidtke from Germany, Claus Fröhlich from Switzerland, Gerhard Thuillier from France, and Judith Lean from NRL.

3) Co-Investigator, Dominique Crommelynck visited the week of July 9th and worked with Drs. Lawrence and Kopp on the TIM characterization.

4) The SORCE Science Team Meeting that had been scheduled for July 2001 has been postponed until after Observatory delivery to Orbital, possibly November. It is our intention to hold two (2) SORCE Science Team Meetings per year and we had planned to start in 2001 and continue through the Mission. The summer 2001 meeting was originally scheduled for July 9 to 11th, in Boulder. This meeting has been delayed and will be rescheduled to a later date. The reason for the July delay is the judgment that extramural activity on the part of the instrument teams would have an adverse effect on our final characterizations and preparations. The instrument delivery schedule is now likely in early November. As soon as a date is confirmed and a clear path to finishing the tasks ahead is established the next meeting will be scheduled. The agenda of this next Science Team meeting will be the careful examination of all calibration data. A followon Science Team meeting concentrating on the SORCE Science will now be scheduled in early 2002.

5) Dr. Doug Rabin, the Deputy Project Scientist for SORCE, visited LASP and attended the July Monthly Review.

**SORCE has received some disappointing news.** NASA announced last Friday that the UARS will be turned off as of September 30, 2001. This decision has major negative impact on the SORCE Science, and will severely compromise the relation of the SORCE ultraviolet irradiance to the time period of UARS. Now the long-term record of ozone and ozone change will not have the required continuous and long-term record of solar forcing. The peak levels of the present solar cycle 23 will likely not be recorded, just as the peak of solar cycle 22 and solar cycle 21 were missed. We have never obtained complete observations through the maximum of a solar cycle. The validation of the UARS SOLSTICE data and the evaluation of the performance of that instrument would have been greatly improved by overlap with the SORCE SOLSTICE.

## SORCE Instrument Status

The XPS is ready for flight. Mechanical assembly, electrical assembly, functional checkout, environment test, and calibration testing are all complete. The TIM is also assembled and complete. Mechanical assembly, electrical assembly, functional checkout, and calibration are complete. All that remains is environmental test, which has just begun. SIM mechanical parts are 98% complete and electrical parts are 95% complete. Mechanical assembly, electrical assembly, and functional checkout are nearly complete. Environmental test and calibration are in beginning process. SOLSTICE A is complete. Mechanical assembly, and electrical assembly are complete. Functional checkout is nearly complete as is calibration. Environmental test has not yet begun. SOLSTICE B is likewise complete. Mechanical assembly, electrical assembly, and functional checkout are nearly finished. Calibration has just begun, and environmental test has yet to begin. The Microprocessor Unit mechanical parts are 100% complete, electrical parts are 98% complete, and mechanical and electrical assembly are nearly done. Functional checkout has just begun, and environmental test and calibration need to be addressed. MU Software coding is nearly ready.

## Meetings

SORCE scientists and engineers plan to present papers or attend the following upcoming 2001 meetings:

- IAGA Session on Solar Variability August 2001 Hanoi, Vietnam
- Calcon 2001 September 2001 Logan, Utah
- NewRAD October 2001 Gaithersburg, Maryland

Please contact kathy.lozier@colorado.edu for information submission.



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