Introduction
The Helioseismic and Magnetic Imager (HMI) investigation contract (NAS5-02139) between NASA and Stanford University has been in place since 27 September 2002. As of this date the contract has been modified 37 times. Launch is expected by 31 August 2008.

The development of the HMI flight instrument is subcontracted to the Lockheed Martin Space System Company at its Lockheed-Martin Solar and Astrophysics Laboratory (LMSAL) in Palo Alto California. The monthly progress of the LMSAL subcontract is reported in parallel with this report and is considered to be an attachment to this report. The monthly report for E/PO activities is also attached to this report. All monthly reports are available at http://hmi.stanford.edu/Status_Reports/. The quarterly reports from science Co-Investigators are also available online and are considered to be attachments to this report. These monthly reports are written a week or two into the following month and include some status as of the date written. This section of the monthly report is written on 15 June 2007 and describes activities at Stanford University in support of HMI and JSOC-SDP development.
Status and Activities during May.

Administrative Issues:

A LMSAL cost proposal for costs to complete Phase-D work was received just before the Stanford holiday closure and was forwarded to NASA in mid December 2006. A response from LMSAL to some clarification questions was forwarded to NASA after some delay. After receipt of specific authorization from NASA we twice increased Lockheed’s authorization enough on an interim basis to allow work to continue. We hope to have the negotiated contract mod in place by the end of July. Future contract issues will include a second cost-to delivery proposal for LMSAL work, a Phase-E increased effort in years 3-5 proposal, and likely a proposal to support extended Phase-D activities.

Instrument Development:

Overview:

The SU team supported regular Weekly HMI meetings at the LMSAL facilities including the regular weekly status meeting and topical development and I&T meetings in areas including optics, thermal, electrical, software, and others as needed. This list should get smaller very soon.

The Stanford personnel responsible for the HMI instrument performance (R. Bush and J. Schou) are working intensively supporting the calibration activities. Sebastien Couvidat, Cristina Soares, Richard Wachter, and Tom Duvall are participating in analysis of calibration data.

Instrument Calibration:

The vacuum calibration first-cut was completed on March 2. During this run we verified performance and demonstrated readiness for determining the remaining parameters once the instrument is in its final configuration. The original front window has optical errors that prevent a full resolution image. A replacement must be installed before the final calibration. Aside from waiting for the new front window and waiting for opportunities to run the in air calibration and vacuum calibration on a complete instrument and waiting for final flight software the instrument in basically complete and ready to start environmental testing.

HMI SDP:

HMI Level 1

Work on Level-1 will start in earnest after calibration activities are complete.

HMI Level 2

Work is continuing to provide bindings to the JSOC DRMS system for several languages in addition to C. The FORTRAN work is essentially done with support from the NSO Co-I team and the IDL work will begin when Jennifer Spencer
joins the group in early June. This will enable existing code to be brought into the JSOC environment with less effort.

The local HS team has continued weekly meetings and definitions of the at-launch capability for level-2 analysis is complete but not yet well documented. Work is proceeding in parallel on tasks for the time-distance pipeline.

JSOC SDP:

**JSOC Capture System**

The basic functionality is complete and waiting for the delivery of LTO4 tape systems and testing with the DDS (the tape systems do not need to be installed to verify the DDS-SOC connections. The first OC3 line has been installed at Stanford but not yet connected to the JSOC data room nor activated by AT&T.

**JSOC Storage Unit Management System (SUMS)**

The SUMS system code development is complete. Several minor issues remain and will be accomplished after the capture system is complete.

**JSOC Data Record Management System (DRMS)**

The base DRMS system is stable. The performance issues reported last month have been resolved by rearranging the order of parts of the SQL statements. The [http://jsoc.stanford.edu](http://jsoc.stanford.edu) web site continues to be improved.

**JSOC Level-0 Processing**

Work is continuing on moving the level-0 code developed for the mission version in the DRMS/SUMS environment. The level-0 specification review has been delayed due to uncertainty in the AIA Region of Interest nomenclature and due to the availability of Keh-Cheng who was away for another two weeks to a family emergency. The HMI level-0 ground code is being modified (by LMSAL) to support AIA ground testing with the DCHRI/CIF boards which have become available this week.

**Science Team:**

As mentioned before, we completed a detailed review of the Phase-D plans for the Co-I team provided data product computation code, status and risks of insufficient funding. Several members received LWS TR&T grants for work in the local helioseismology area. We are assessing the remaining needs.

We are planning another local-helioseismology workshop for August to continue detailed work for the local-HS pipeline components. We will participate in a one-day HMI/AIA/EVE meeting after the conclusion of the LWS workshop in September.
HMI Home and JSOC-SDP Site:
The Solar Group data center including the JSOC Capture System was moved to the new location in the Physics and Astrophysics building basement room B10 on the weekend of 28 April. We are proceeding with moves of staff into different buildings in a phased manner. Those moving to the P&A building moved on 14 June. Those moving to Poplar will move on 21 June and the final group will move to Cypress (and Cypress Annex) on 28 June. We have scheduled the office moves to not impact HMI test activities. The new locations are described at http://sun.stanford.edu/local/move_2007. A more public site describing the group locations will be available soon.
Planned Activities for June

We will help prepare for and run HMI CPTs before and after vibration activities.

Capture system tape subsystem operational with LTO-4 tapes.

We expect to continue documentation updates and code development of the DRMS system.

We will continue level-2 pipeline module porting from the MDI system.

Near-term Milestones

31 July 2007  Capture system ready for DDS testing.
31 July 2007  Be completely out of our existing office space.
30 September  Level-0 processing should be ready.

Attachments

Lockheed Martin Solar and Astrophysics Laboratory HMI progress report and the HMI/AIA EPO progress report for the month are attached. This report, the LMSAL report, and EPO reports are also available at http://hmi.stanford.edu/Status_Reports for convenience.