DEIMOS
SSC Presentation: June 24, 1999
Twentieth Quarter

Progress on DEIMOS since our last report in October 19998 has continued to be slow owing to continuing work on ESI. The expected freeing-up of resources that we predicted on March 15, 1999, still has not yet occurred, although, with the packing and shipping of ESI now begun on Jun 21, 1999, this freeing-up should commence shortly. Detailed plans have been laid for camera and detector assembly, and DEIMOS is poised to move forward rapidly the minute that shop manpower becomes available.

Progress since last report:

- Optical polishing of the replacement for Element 8 (which was broken at Coherent) was completed. The new element is now at Coherent for coating.
- The pre-compression scheme for mounting Element 2 was tested successfully. (Element 2 is made of CaF_2 and is mounted with elastomer in a metal ring. When cooled, the CaF_2 shrinks more than the metal, putting it into undesirable tension. The metal ring will be pre-compressed by an outer press-fit steel ring to maintain the CaF_2 in compression down to the survival temperature.)
- Detailed plans and fixturing for assembling the camera were completed, and an automated procedure for centering mechanical and optical elements to within a few microns was developed. Meeting the tight tilt and decenter tolerances of 0.001-in appears feasible. Assembly of Camera Body 1 (the first multiplet) began on June 14.
- Further tests of Lot 9 and 10 MIT/LL CCDs show that many should be acceptable for DEIMOS provided they are operated warm at -90 C. Most amplifiers work, and prospects for operating in two-amplifier mode with a total readout time of 60 sec are good. The dark count will be roughly 6 e^- per px per hr, comparable to the lowest expected sky count rate of 5 e^- per px per hr, reached with a 1200-line grating in the B band.
- Preliminary tests of two Orbit CCDs in parallel were completed in the test dewar, and a testing protocol was developed for the remainder. Because the MIT/LL CCDs need to be operated at -90 C, the Orbit CCDs must also operate warm if they are to use the same cooling circuit, necessitating special tests of these chips. Alterations to the test dewar thermal control software to allow this are underway.
- The CCD mounting scheme and dewar thermal cooling circuit are being reviewed and improved. The original cooling design was not compliant enough and exerted undesirable forces on the CCDs when cooled. The CCD mounts are being simplified by purchasing molybdenum packages from Gerry Luppino.
- A microscope facility for measuring the flatness of the detector mosaic was designed, and a used, reconditioned microscope procured.
- The rebuilt slitmask cassette holder is complete (the previous design flexed too much under rotation). Testing of the new assembly should start in early July, along with the rebuilt PA drive.
- A detailed plan for assembling the detector/signal chain was developed and used to produce a detailed schedule for this critical path item. The new plan did not increase project duration or cost significantly (see attached report).
- UCO/Lick lost the services of its very capable Software Administrator Robert Myckland, who left to go into private business. However, considerable progress on DEIMOS software came as a byproduct of software work on ESI. The attached budget and schedule have been revised to take this into account.

Delays and concerns:

- Budget and schedule are the prime concerns.
- A second concern is that we still have not yet fully tested any subsystem. Several systems have required rework, including the grating drive, PA drive, slitmask cassette, and dewar cooling system. A great deal of our engineering is untested.

Schedule and Budget:

- See attachment.