

HIRES Dewar Upgrade

Project Monthly Report – Mar 20/3

Progress

Detectors

Initially we were sent three Lot 17 Lincoln CCDs with backside processing by Mike Lesser. We tested all three devices. They were all very similar in performance, with very high UV QE and excellent CTE. We did observe large-area QE non-uniformities but we have identified a process to eliminate or significantly reduce these QE non-uniformities. There also appear to be some small, low-QE spots. These appear as circular spots up to about 10 pixels in diameter. These spots seem to have very little QE at 400nm or shorter wavelength. We are still investigating the nature of these spots.

After testing all three of the CCDs it was agreed that we would send one of the CCDs back to Gerry Luppino so he could send it to one of the other consortium members. One of the three CCDs had only one working amplifier and that is the one returned to Luppino. Luppino, in turn, agreed to send us another CCD (apparently from a University of Hawaii run) which reportedly has good CTE and has an AR coating that gives it better red response than any of the Lot 17 devices. We expect this third CCD to arrive shortly.

Mechanical

A full scale mockup of the CCD interconnect boards and their orientation within the dewar has been completed. Support hardware was designed and a prototype was fabricated to prove the design. The flex cables leading to the boards from the feed thru's were simulated. This made it possible to determine the length of the flex cables with confidence. As a result, cables of two different lengths will be used, depending upon position. Order with supplier has been placed and a fabrication drawing was created.

Preliminary drawings of the majority of the components comprising the electronics box have been made. Completion of the design and release of all the drawings are pending final release of the circuit board design.

Preliminary design of the flex cable pipe assembly has been completed and preliminary detailed drawings are being prepared.

The delrin counterbore locators have been incorporated into the CCD support spider.

Three Alloy 42 (Invar grade) backplanes have been fabricated to the revised

design. They have been lapped and polished for flatness. Measurements of the surface flatness and kinematic features have been made and recorded.

Electronics

Both the flex circuit and the CCD Interconnect board that will reside in the dewar have been sent out for fabrication. We have received all the hermetic SMA connectors for the dewar's video signals, but will not be receiving the 51-pin custom hermetic connectors until the last week in March.

The printed circuit board layout of the analog switch board, which resides in the electronics box, has resumed now that all the dewar electronics have been completed. It is expected that the layout will be completed by the end of the month. A final round of reviewing the mechanical packaging of the electronics box and its effect on the analog switch board will be made before it is sent out for fabrication. The two other boards (CCD preamplifier and Power Filter) that reside in the electronics box use nearly the same layouts as our existing boards but with some minor modifications. As a result the circuit board layouts for these two boards are not expected to take much time and are anticipated to be completed by the end of March as well.

Software

No report this month

Issues and Concerns

Keeping to the schedule both for delivery and testing of the CCDs, and for development of the electronics circuit boards. Since the last report the schedule has slipped approximately 3 weeks due to delays in the design of the electronics boards. We do not expect it to slip further. The circuits that caused the slip are designed and are out for fabrication.

Schedule

The updated schedule is attached.

Budget and Spending Profile

To the end of February the project has spent \$398,977 or 53 % of the project funds not including contingency. A summary of the budget is attached as is a chart.