the telescope when the Cass Bonnette is removed for several months to allow the rebuild to occur in Waimea. A major improvement to the way the Bonnette is removed and installed was fabrication of a carrying cart. This allowed the easy handling of the 1350 lb Bonnette both in the shop and on the blue platform used to remove and install the Bonnette on the telescope.

The Cass environment was again removed from the primary mirror cell to allow work on the cable windups. Removal of the environment was done last shutdown for the first time since installation. This time the job went very smoothly, although we should consider building a cart similar to the one for the Cass Bonnette if the environment is to ever be removed again.

Considerable work was done on the system to alternately open and close the mirror covers. The computer racks in the computer room on the fourth floor were also completely reorganized by the Electronics and Software groups in preparation for TCS 4 and other improvements.

Again, it was alot of hard work, and the shutdown involved just about everyone in the company. Thanks to all!

D. Cowley

Aluminizing and Cleaning of the CFHT Primary

One of the activities of the July 1993 shutdown was the recoating of the 3.6 meter primary. Although the process of realuminizing the polished front surface of 20 tons of glass may appear to be anything but routine it was, in fact, as close to routine as one would want thanks to the thorough planning and professional training of CFHT's staff.

After the mirror was lowered by crane to the Summit Aluminizing Room on July 2 and before it was coated on July 7 several cleaning tests were performed to learn about non-contact methods of cleaning the bare aluminum coating. We determined by Scatterometer measurements, directly on the primary, that an alcohol-based solution cleaned the 2-year old Aluminum coating better than a detergent-based solution. The results of these tests along with the preparation and distribution of witness slides have allowed me to design an experiment that hopes to answer two questions; 1) What is the best method to clean the primary? 2) When exactly should the the primary be realuminized? The investigations are planned to continue for the next four years.

When these cleaning tests were completed the realuminizing work began with first, the removal of the old coating and second, the application of the new coating. This process took two days and the involvement of five members of the Optics group, J. Seerveld, G. Barrick, M. Laurance, M. Krismer and myself. A new wrinkle on the cleaning process was the use of CO_2 "snow" immediately before putting the mirror into the chamber. Nominal chamber operation, perfected by former CFHT technician T. Gregory, left a thin film of 797 Angstroms of pure aluminum on the front surface. A witness slide coated simultaneously with the primary was tested for Absolute Reflectance and is reported in Figure 12.

There is nothing quite as dazzling as the sight of this freshly coated mirror emerging from the Vacuum chamber or as startling as the sight of falling dust that immediately begins to collect on this pristine surface. The removal of this dust optimizes the reflectance of the primary and is the main goal of the CO_2 cleaning program. Once a month CO_2 "snow" is swept over the primary and once every two months the resultant surface is evaluated by a portable Scatterometer. A typical set of measurements gives Relative reflectance and Scattered light both before and after the CO_2 cleaning. The reflectance usually increases by a few percent but the scattered light measurement typically decreases by a factor of 3.

The bottom line for all these activities is the hope that we can extend the life of the Aluminum coating. In turn, this will minimize the risk of handling the primary and allow the possibility of returning more nights to our Astronomers.

B. Magrath

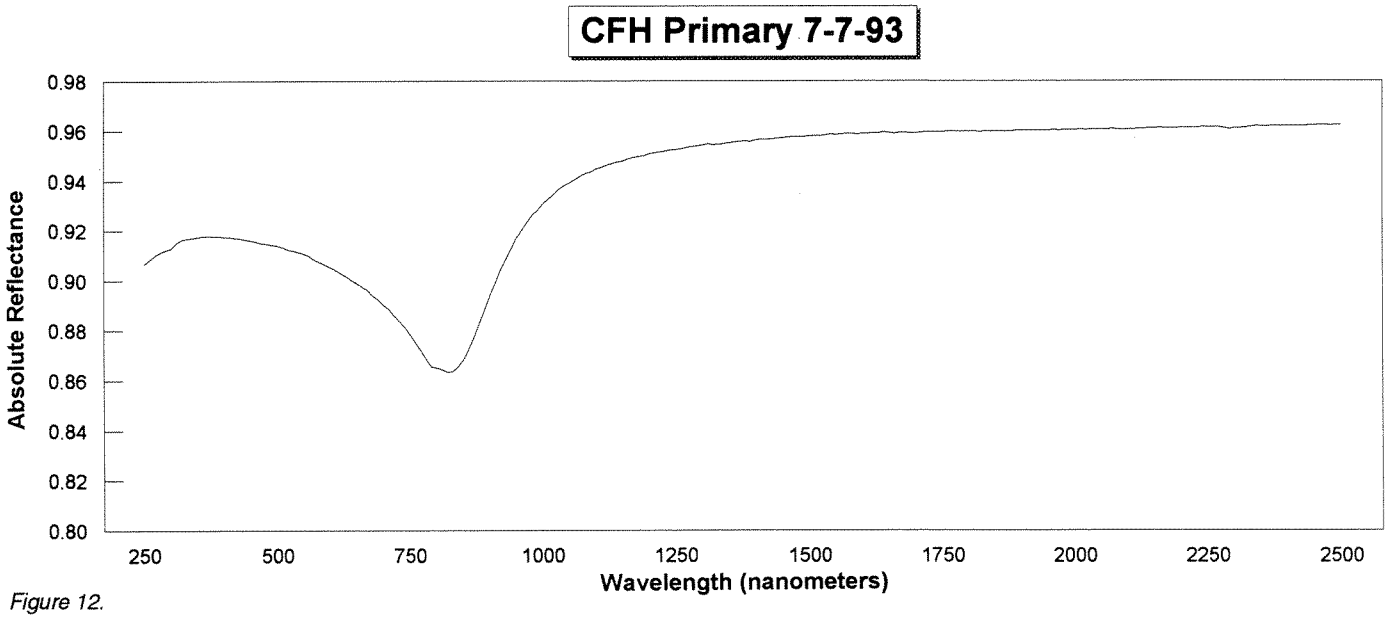

Figure 12.