

LAMA Upgrade

After a recent failure of the high voltage supply of the Laser cutting machine a number of changes have been implemented. The major changes have been in operational procedures and in electronic failsafe modifications.

Operationally, it has been decided to never leave the unit running without an experienced operator in the room. While this has increased the workload on Waimea technical personnel CFHT is in the process of training all the Telescope Operators in the care and handling of LAMA.

After repairing a number of failed and burnt out electrical and electronic components (the unit delivers a 24 kilovolt starting voltage to the lamps) a complete investigation of the cause(s) of failure was undertaken. The main conclusion was that a number of failure modes of components and subsystems would result in catastrophic breakdown. In order to prevent reoccurrences it was decided to require positive operator intervention in order to generate the large voltages required. A switch has been installed which must be depressed by the operator in order for the high voltage circuits to be energized. Once the circuit has charged, the operator depresses a second switch to fire the lamps. In the spirit of the existing firing switch, called *amorage*, the new switch has been called *decoupage*.

To date these procedures have resulted in trouble free operation over a series of four runs.

In addition to these modifications a second high voltage supply has been ordered and will be set up has a "hot" spare should we encounter further difficulties with the present unit.

D. Josephson, T. Gregory

MARLIN Upgrade

A program of upgrading the MARLIN spectrograph is now beginning to yield results at the telescope. Although this instrument is in many ways an interim solution for multi-aperture spectroscopy pending the completion of MOS-SIS, MARLIN continues to provide current observers with a very efficient multi-spectral observing mode, while at the same time serving as a test-bed for observing and control techniques which will ultimately be used on MOS-SIS. Because of the continued heavy use of MARLIN anticipated for the next year or so before the final MOS-SIS release to the observing community an upgrade program has been put into effect to improve those functions of the instrument which have been particularly awkward, time consuming or difficult for observers and the technical support staff alike. Some of these efforts which mostly address a series of small improvements which have significantly improved the spectrograph operations are listed below :

1) Electrical systems

The electrical controls of MARLIN have always had a bit of an ad-hoc nature. Problems with circuit tracing have largely been removed since detailed and upgraded electrical schematics were generated by the electronics group. In addition, removal of at least one un-used signal line appears to have eliminated a curious interaction between the manual instrument controls which caused failures of CCD readouts, and elevated CCD noise levels in the past.

2) Mechanical systems

The comparison mirror inject drive mechanism, which previously was prone to failure at least once during every observing run has been reworked and cleanup by the mechanics group to the point that no problems have been reported for the past several runs. Similar improvements have been made to the shutter mechanism at the entrance of the instrument. Erratic operation of the grism fine rotation control and grism locks which have plagued previous setup operations and observations alike have similarly been made to operate correctly after several weeks rework in the machine shop. CCD alignment with the direction of grism dispersion has in the past been difficult largely because of a lack of suitable reference lines on the CCD adaptor. With the addition of simple reference lines, and alignment aids currently being added, this operation has already proved to be less time consuming.

3) Optics

With the availability of the MOS-SIS spectral calibration unit, a Fresnel field lens has been added to the shutter mechanism at the front of MARLIN. The lens is designed as part of the lamp feed optics. Tests of this system are currently underway.

B. Magrath, D. Salmon

MOS/SIS Calibration Lamps Unit

CFHT has developed a control interface for the MOS/SIS Calibration Lamps Unit. The lamps unit and a crude Control Unit were built at the Observatoire de Marseille. The different functions can be selected manually with a Hand Paddle or through a computer interface. Lamp power supplies, the Control Unit itself, wiring of the Hand Paddle and the computer interface were successfully built and tested at CFHT.

The Control Unit currently has 6 lamp power supplies in it. They are for a Halogen Spectral, a Halogen Image, two Neon, and two Argon lamps. The Halogen Spectral lamp draws too much power (it's too bright) and cannot be used. We will be replacing that lamp with a lower powered one. Although 6 lamps are available at this time, the Control Unit can potentially handle a total of eight. There are plans to add a He lamp as a next step.

The device is normally controlled from an HP 9000 workstation. The software group has written a friendly control window program called: Spectral Calibration Lamps. It switches on the selected lamp for the chosen duration and put the cassegrain bonnette in the appropriate configuration.

First tests have shown a very good quality of illumination both for flat fields with the faint halogen lamp and Neon and Argon lamps. However, the brightness provided by the lamps has to be reduced by a factor 2 for the Neon and Argon and 10 for the Halogens to provide exposure times longer than the minimum of 0.15 sec tolerable by the CCD shutter with no saturation of lines features. Neutral densities are being tested, and the unit should be available for the first MARLIN observing run of the second semester 1991.

D. Wilcox, O. Le Fèvre