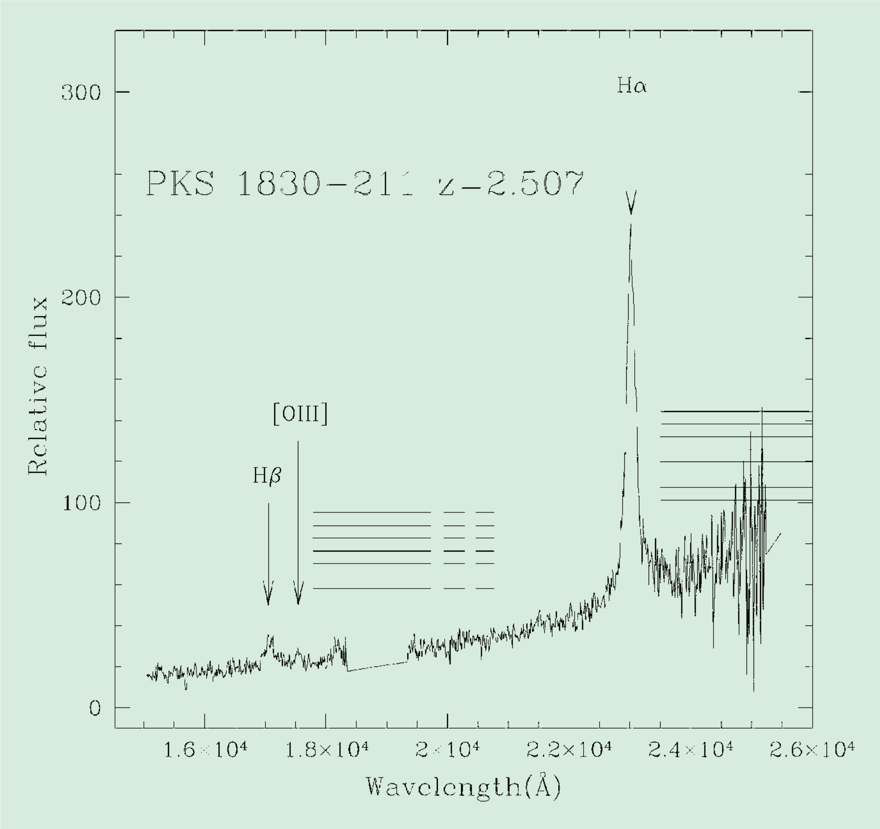
PKS1830-211 carried out by a team of astronomers headed by Frederic Courbin (Université de Liège). This team includes George Meylan from ESO Garching, Tom Broadhurst and Brenda Frye from the University of California at Berkeley and the author of these lines.

The optical identification and the redshift of PKS1830-211 has been long sought by astronomers. The optical-IR counterpart of PKS1830-211 was discovered last year through images taken with IRAC2b. The optical-IR colours suggested a significant amount of extinction. This was the impetus to take a spectrum with SOFI.

The following plot shows a spectrum of PKS1830-211 spanning the wavelength range 1.5 to 2.5 microns. It was taken with the red grism of SOFI. The exposure time was 24 minutes and the source is near 15th magnitude at K. In the plot, redshifted Hα and Hβ are clearly detected at $z = 2.507$. Other lines, such as [OIII] may also be visible. The horizontal lines mark regions where atmospheric absorption is strong: the region near 1.9 microns and the region beyond 2.5 microns are almost totally opaque, so the data in these regions have been deleted.



This new result, together with the known redshift of the lens (measured by molecular absorption at mm wavelengths – F. Combes and T. Wicklind 1998, *The Messenger* 91, p. 29) and continuing efforts to get a secure time delay, means that we are a step closer to the goal of determining H_0 from this lens.

3.6-m Telescope Passes Major Upgrade Milestones

M. STERZIK, ESO

During two months of technical time in July and August, major steps in the 3.6-m telescope upgrade plan were successfully passed. I shortly recall the objectives for the 3.6-m upgrade project (see *The Messenger* 85, 1996, p. 9): (i) optimisation of the mechanical and optical performance to improve the image quality (IQ), (ii) operational stability and efficiency to minimise downtime and maximise scientific return, and (iii) offer competitive instrumentation. After the upgrade, the 3.6-m telescope will return to the forefront of 4-m-class telescopes in the beginning of the next century.

All the work done during the last months was in that direction. Thanks to the careful project planning of Ueli Weilenmann, all milestones foreseen in the technical time could be passed. A major **opto-mechanical improvement** was the successful installation of an active pressure control system for the M1 lateral pad support. M1 movements in the mirror cell are now practically eliminated. Tests demonstrate that already in open loop the force distribution onto the lateral mirror support can be controlled at a level of, typically, 20 kg difference between theoretical and measured forces, and further reduced to 2 kg in closed-loop configuration. (With the old REOSC system, force differences of 300 kg were typical.) This control is of crucial importance for the IQ at larger zenith distances. For the presentation of impressive IQ results, please refer to the ongoing series by Stephane Guisard in *The Messenger*. At this moment, I rather wish to stress that already now sub-arcsec IQ is routinely possible at the 3.6-m telescope for scientific work (as long as the external seeing conditions allow). Considerable progress was also made in increasing the mechanical stability of the guide probe, now allowing reproducible movements with an accuracy below 0.2 arcsec. Here, thanks go to the La Silla mechanics and optical support teams, who solve many problems promptly and thoroughly.

Another central issue related to **telescope control software** (TCS) was the installation and commissioning of the TCS under NOV97 VLT-Common Control Software. This includes the workstation part of the telescope interface, and the part related to the local control units of adapter functions. The conceptual complexity of the VLT software is well known, and it is obvious that adapting this software to the specific requirements of the 3.6-m telescope is not straightforward, and sometimes leads to hiccups. For example, a reliable interface of the front-end VLT-software with the still operating HP1000-based TCS (which still controls the telescope in the back-end, i.e. "moves" the telescope), is a demanding task and a potential source of problems. It is the price to pay in the approach taken for the 3.6-m upgrade: to offer the telescope to the community largely in parallel with the upgrade. And here, I would like to express my gratitude to the highly committed software team at La Silla who successfully accomplished this challenging task with limited resources.

A part of the software upgrade is the implementation of a fully VLT-compliant **instrument control software** (ICS) for EFOSC2. This is the most striking change that observers will experience when

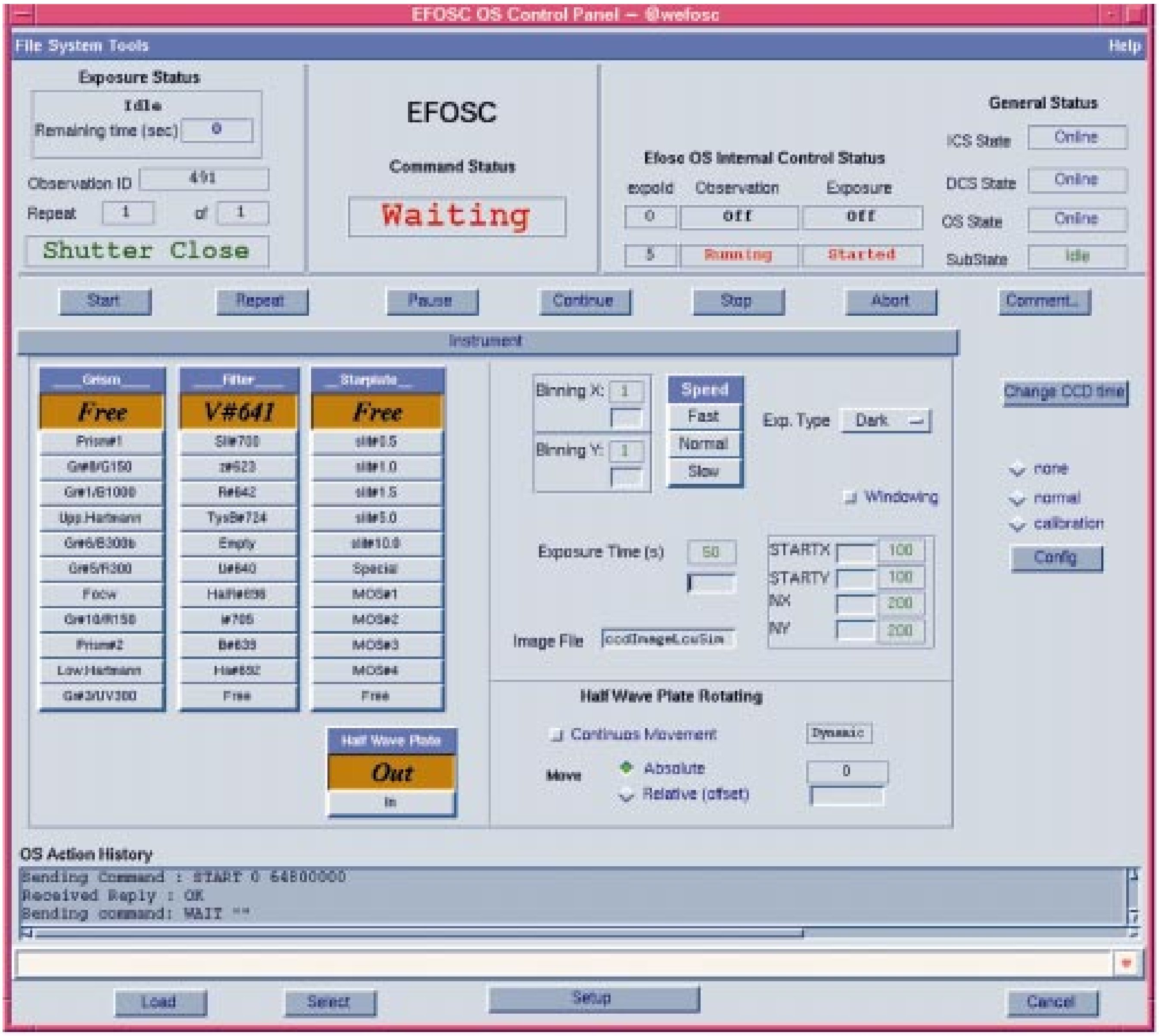


Figure 1.

working with the instrument starting this September. The old HP1000 control is replaced by a GUI-based instrument control panel (Fig. 1) that allows full control over a multitude of EFOSC2 functions such as changing grisms, filters, and slits. It provides an elegant way to adjust the half-wave plate for polarimetry and allows full control over the CCD.

But it is not only the EFOSC2 cosmetics that have changed; new grisms offer higher efficiencies, and a brand new FIERA CCD controller dramatically speeds up read-out times, a bottleneck for some programmes in the past (see *The Messenger* 83, 1996, p. 4). Most important, the whole observing philosophy changes with the advent of the new ICS: it converges to the observing modes known from the NTT, and employed at the VLT. Visiting astronomers observing with EFOSC2 will be asked to prepare their observations (together with the help of on-site support astronomers) in advance with the Phase 2 Proposal Preparation (P2PP) tool. P2PP in visitor mode will support EFOSC2, and serves to combine so called observing templates (scripts that contain a predefined sequence of operations that control the telescope, the instrument, and the detector) in Observing Blocks (OB), which are minimal entities that describe meaningful scientific observations. The EFOSC observing templates were developed by the 3.6-m team (the NTT/EMMI templates certainly helped a lot to speed up their creation) within a very short time in July and August. Not all glitches could be removed during the commissioning of the ICS, as the complex communication between all subsystems requires that we gain more experience, especially with the response times occurring in the many possible configurations. I apologise for any inconvenience that may be encountered, but already now most observation programmes will benefit from our effort. The most common observing modes of EFOSC2 (imaging and long-slit spectroscopy) are supported by templates. They can be planned and executed in a more efficient way and are less error sensitive. We are interested in learning the responses of the community, and intend to further improve and extend this service. Stay tuned and look up the WEB (http://www.ls.eso.org/lasilla/Telescopes/360cat/html/3p6VLT.html).

The operation of EFOSC2 is, conceptually, embedded in a more complex data-handling concept, known as the Data Flow System (DFS) from NTT/VLT, and described e.g. by D. Silva and P. Quinn (*The* Messenger 90, 1998, p. 12). It includes a transfer chain incorporating a reduction pipeline and archiving tools. In the future, this functionality is planned in the framework of a La Silla wide data-handling and -archiving system. For the time being, astronomers will obtain their data on DAT tapes in a more conventional fashion at the 3.6-m telescope.

Let us now look at the **near future** of the 3.6-m telescope: more and more TCS functions (interlock system, tracking LCU, telescope servos) will be incorporated into the new control system. The HP1000-based TCS will be fully abandoned next April. Already this year we plan to move the control room (next to the telescope on the cold observing floor) to a spacier, more comfortable room located on the third floor. New furniture will underpin the modern "look and feel" when observing with a telescope having one of the most advanced control systems. Regarding instrumentation, the CES will be the next awaiting VLT-compliant instrument control. A fibre-link to the Cassegrain-adapter of the 3.6-m telescope has already been installed, and the final commissioning will take place this October. Then EAGAL (ESO And GSFC ALADDIN Camera), a new near IR camera for the 1–5 μm wavelength range, and mainly foreseen in conjunction with the ADONIS adaptive optics system, and TIMMI2, the more sensitive successor of the old Thermal Infrared Multi Mode Instrument, will arrive. They will offer exciting and complementary facilities, especially important to bridge the gap until the VLT goes fully into operation. The 3.6-m telescope will remain a cutting-edge telescope in its class, and will gain further importance when science priorities like the High Accuracy Radial velocity Planetary Search (HARPS) programme are conducted at this telescope.

The last few months saw major **personnel movements** in the 3.6-m team. Roland Gredel, team leader of the 3.6-m+CAT Team since 1997, left La Silla in order to assume responsibility as director of the Calar Alto observatory in Spain. On behalf of the 3.6-m Team, I wish him all the best in this new challenge. His function will be taken over by the author of these lines.

At the same time, two new fellows joined the Team: Olivier Marco, now responsible instrument scientist for ADONIS, and Ferdinando Patat, who already played a key role in producing observing templates for EFOSC2. He takes over the responsibility as EFOSC2 instrument scientist. The 3.6-m Team welcomes its new astronomers.

2.2-m Telescope Upgrade Started

The 2p2team, ESO, Chile

On 15 July 1998 the upgrade of the MPG/ESO 2.2-m Telescope was started at La Silla. This project was launched late last year in order to:

• modernise telescope equipment,

• replace worn-out parts and units which malfunction frequently after being in service for more than fifteen years,

• prepare the telescope for the reception and operation of its future only standard scientific instrument, the Wide Field Imager (WFI), a half-degree imager equipped with an 8 × 8K CCD (see separate report on the WFI in this issue).

The goal is to run the telescope in a modern VME based control environment which will allow the use of a VXWORKS based telescope control system (TCS) and a simple interfacing to the WFI instrument control environment. As a baseline, the 2.2-m TCS will follow the concept of the TCS for the Danish 1.5-m telescope, but will be considerably modified and improved in order to support the autoguiding system of the WFI, the automatic guide-star selection through guide-star catalogues, the new absolute encoders, and the modernised telescope safety system. Since the WFI will finally be operated in service mode, precautions in the TCS are made to interface accordingly with the new instrument control system DAISY+ which is an advanced version of the existing La Silla instrument control package DAISY (currently in use at the Danish 1.5-m, the Dutch 0.9-m, and also foreseen for the B&C and FEROS instruments at the ESO 1.5-m).

During the past 8 months, La Silla engineers, technicians and astronomers analysed the status and health of the telescope optics and electromechanics, made the design of the new equipment and programmes and prepared the hardware and software for the implementation of the upgrade.

While the telescope optics was found to be of excellent intrinsic quality (optical aberration of below 0.2 arcsec is routinely measured during image analysis tests at this telescope), the electromechanics and telescope control system (computers and software) needed a major overhaul and replacement. The mechanics overhaul concentrates on the gearbox of the alpha drive (the worn-out alpha gear was replaced on 18 July 1998), the hydraulics system, the installation of new encoders (now also at the telescope adapter/rotator unit). The telescope electronics will be based on VME technology and it will receive a new dome control system as well as a distributed system of environmental sensors for the registration of the temperature and humidity at the telescope, instrument and inside/outside of the dome. Furthermore, a major clean-up of the whole telescope cabling is foreseen. On the software side, the TCS is adapted to the new logics of the telescope and instrument control, while interfaces to the DAISY+ software are added. The computer platform for the telescope and instrument control will be based on Hewlett Packard (HP) workstations inserted in a local network that supports high data transmission rates as needed for the WFI (a single WFI image is about 130 MB in FITS format and will be read out by the ESO FIERA CCD controller in about 30 seconds). Beside the HP735 workstation for the TCS, HPC200 and HPJ2240 workstations each equipped with 108 GB disk drives and 35/70 GB DLT units will serve as data acquisition and data reduction machines for the WFI and will provide support to the users for the on-line inspection through a real-time display (RTD) and for the on-line analysis by means of standard image processing packages like MIDAS, IRAF and IDL. Last, but not least, the control room will be refurbished such that both people and electronics will work in the environment as needed and most comfortable for a successful operation.

The upgrade is underway: after the hardware modifications and installations at the telescope, a test period of about 1 month will start by the end of August 1998 in order to tune and verify the telescope optics and electromechanics in the new control environment. Thereafter, the telescope is – hopefully – ready for the commissioning of the WFI which will arrive at La Silla in the last quarter of 1998.

Near-infrared instrumentation is now no longer offered at the 2.2-m: IRAC2, ESO's near infrared array camera which was a workhorse instrument of the 2.2-m for many years, was decommissioned in mid-July 1998 (it is replaced by the more powerful SOFI instrument at the NTT).

The 2.2-m telescope upgrade team consists of: J. Alonso (project manager), J. Araya, T. Augusteijn, H. Boehnhardt, J. Brewer, R. Castillo, H. Kastowsky, F. Labraña, M. Mornhinweg, R. Olivares, F. Richardson, E. Robledo, A. Torrejon.

The following LSO teams and ESO persons are supporting the project: LSO Electronics (R. Medina), LSO Mechanics (G. Ihle), LSO Optics (A. Gilliotte), LSO Software Support Group (G. Lundqvist), LSO Infrastructure Group (F. Luco), LSO Management (G. Andreoni, J. Melnick), ESO Garching (D. Baade).