sition is recorded before and after the telescope has been moved back and forth by a given angle (from 10 arcminutes, up to 60 or 360 degrees) in altitude and azimuth directions. Due to the very small pointing errors to be measured (0.1 to 1 arcseconds), particular attention had to be paid to the thermal environment and to the processing method in order to eliminate thermal drifts of the measurement set-up. Figure 11 gives an overview of the excellent results obtained, basically limited by the residual measurement noise of 0.13 arcsec.

6. Conclusion

This article provides an overview of the current development of the Auxiliary Telescopes for the VLTI. The main performance tests of the first telescope are completed. They have shown that the system is on track to meet the severe and specific requirements originating from its dedication to interferometry, in particular a high dynamic performance. The functional tests related to the relocation of the telescope have been successfully completed on the first Transporter and the related performance tests are currently in progress. Early next year, the first AT will be ready for a short ESO test period in Liège to tune the telescope control system developed in parallel at ESO. The year 2003 will see the installation at Paranal of the first two ATs. This will considerably boost the scientific productivity of VLTI that will, at that time, be equipped with its two first-generation instruments: MIDI and AMBER. AT#3 is expected to be ready for scientific observation in mid-2004 and AT#4 in early 2005.

Paranal Observatory – 2002

ROBERTO GILMOZZI and JASON SPYROMILIO

We live in interesting times. Last year was our first with all four 8-m telescopes in operation. We had only one instrument per telescope but we were kept busy with UVES and ISAAC working round the clock and commissioning and installations during bright time when FORS1 and FORS2 were taking a breather. Now at the end of 2002 we look at Paranal and a very different picture appears in front of us.

We continued to operate with low technical time losses. In the period from April to October 2002 the down time was 3.6% on Antu, 4.4% on Kueyen, 2.9% on Melipal, and 3.1% on Yepun. Observing time losses due to adverse weather conditions represented 12% of the science time, somewhat more than in previous years. We archived 57,810 frames on ISAAC, 34,329 frames on UVES, 22,853 frames on FORS1 and 37,847 frames on FORS2.

NAOS/CONICA has been brought into operation in a major effort by the consortia that built it, ESO instrumentation division and Paranal. All parties pulled out all the stops to start science operations on the 1st of October 2002. NACO, as we now call the otherwise unwieldly named instrument, is widely recognized as the most powerful adaptive optics facility instrument in the world. Already fabulous results have appeared in press releases and more are to come. The spectacular results on the Galactic centre have demonstrated the excellent capabilities of the instrument. UT4 now has two instruments and both dark and bright time are fully exploited for science.

Figure 1: The VST enclosure taking shape at the edge of the Paranal platform.

VIMOS appeared, somewhat overweight and with all the challenges of what in effect is four imaging, multiobject spectrographs mounted on a single frame. Starting with two arms, it then had a leg added to it and another two arms making the whole thing quite a sight to be admired on the Nasmyth B platform of UT3. All of this under the careful supervision of Paranal engineering and extensive testing and discussions to ensure that nothing untoward occurred as we pushed the rotators beyond their specified and tested range. Again with a lot of work from the consortium and the support of the instrumentation division and the ever present Sandro D'Odorico, we have now reached the stage of Paranalization of the instrument and we have a fixed date with our customers on the 1st of April 2003. Already the PI (Olivier Le Fevre) has claimed success with the execution of the entire CFR Survey executed in a single exposure.

In the mean time FLAMES arrived in parts and has slowly grown to occupy the totality of the Nasmyth A platform of UT2. First OzPoz, the fibre positioner and then GIRAFFE the spectrograph to take the 130 spectra at medium resolution simultaneously. OzPoz did puzzle us for a while. Mostly it puzzled the consortium that built it. After a few interventions on the instrument to make sure it fit to the telescope properly and to make sure it could cope with the real

operational temperatures, it worked well enough to give us confidence to offer the instrument to the community also on April 1st 2003. Paranalization is in full swing also for FLAMES and the visits from Australia to fix it are rare.

FORS1 moved back to UT1 to make dark time available to VIMOS. Now UT1, UT2 and UT4 have dark and bright time instruments attached and either offered or just about to be. UT3 with VIMOS is eagerly awaiting VISIR next year.

On UT4 we added a laser clean room, kindly provided by telescope division in Garching. This is a whole new platform under the Nasmyth B focus of UT4 with a fancy room to house the laser for the artificial guide star to be installed at the VLT in 2003. We mounted a small telescope on the back on the secondary of UT4 to check for flexures and entertained ourselves and Martin Cullum trying to work out where the thing was pointing. In any case the flexures are low and we await the laser and the fibre to carry the light plus the launch telescope during 2003.

This would be enough for most observatories to be going on. However, Paranal is more than a home for four 8-m telescopes. The interferometer continues to grow in capabilities and improves its operations. Last year we started the installation and first runs with the tip-tilt boxes at the coudé foci. Stabilized beams were fed from UT1 and UT3 into VINCI and excellent fringes were obtained. In 2002 the systems were stabilized operationally with very few nights of sky time. The other two coudé trains (UT2 and UT4) were installed aligned and tested. The reader should be aware that 11 mirrors appear in the normal coudé train before the beam is sent on the interferometer delay line tunnel. In September we obtained fringes with all four telescopes marking a major milestone in the development of the interferometric capabilities of Paranal.

In November, MIDI, our first fully fledged interferometric instrument arrived on site and is being integrated as this article is being written. First light should arrive soon. AMBER, FINITO and full coudé adaptive optics on the UTs for VLTI are all in the plan for 2003.

Three additional delay lines are being installed into the tunnels and variable curvature mirrors added to the system to better control the position of the pupil. The VLTI complex is reaching a maturity of operation at Paranal that is comparable to that of the UTs. We eagerly await the arrival of the first auxiliary telescope next year and the preparations on Paranal are ongoing with the alignment of the docking stations and the installation of the tracks.

In September of 2002, a set of boxes arrived on Paranal containing suspiciously Paranal blue metal pieces. At the time of writing these pieces are starting to be placed on top of the VST concrete pier for the enclosure of our next telescope. The enclosure is expected to be finished in early 2003 and the telescope is to be installed soon after. A few weeks before the enclosure erection begun we received the boxes containing the VST 2.6-m primary and secondary mirrors. Unfortunately the primary mirror was destroyed during transport. Our colleagues at the Osservatorio di Capodimonte in Naples who are building the telescope very quickly ordered a replacement mirror and if all goes well we expect no significant delay to the project.

Figure 2: The primary of UT3 coming out of the coating chamber with a reflectivity of 92% and a micro-roughness of 7 Ångströms. The best coating ever at Paranal.

We welcomed the VISTA site supervisor to Paranal and we prepare for the start of the works to accommodate the 4-m infrared wide field telescope.

The smallest telescope on Paranal was also commissioned. Called Mascot (ask J.G. Cuby) it is an all-sky camera based on simple commercially available components and with some in house ingenuity it makes its images available in real time on the UT consoles. The operators still go out to have a look.

Coating mirrors on Paranal is a never ending story. However, in 2002 we have reached a peak of activity. At the time of writing we are removing the primary and tertiary from UT1 and plan in the next few days to have the fourth 8-m coating this year. Moving these mirrors around and going through the cleaning and coating process, along with all the preventative maintenance that is performed on the domes and telescopes while the glass is out, is a major engineering effort organized to the minute and synchronized with great precision. The observatory is now undertaking the maintenance of the passive supports for the cell in an effort that is supported by La Silla who are providing the workshop space.

In January of 2002 we all moved into the new Paranal residence. The long stay in the containers is finally over and we now have a pleasant and comfortable environment in which to live. Work on Paranal is by necessity associated with long absences from family and friends and extreme weather conditions, in particular very low humidity. The new residence attempts, and we believe succeeds, to reduce the hardships associated with work on site.

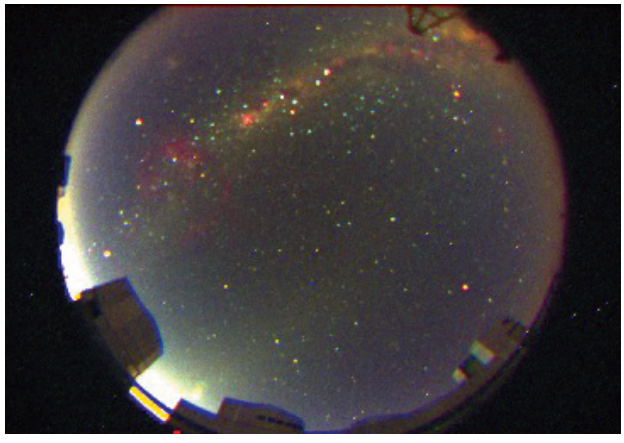

Figure 3: All-sky image from Mascot Camera which monitors the cloud cover on Paranal continuously during observations.

Some of the containers are being retained as we continue to build on Paranal (e.g. VST and VISTA) and often have more people working on site than are expected in a steady state of operation. The recent MIDI commissioning required for the reactivation of some containers for ESO and consortium staff. Not all were happy with the move back to the not-so-good-old days.

The new Visitor's Centre was concluded and is in use for the weekend visitor programme, and as a starting point for VIP visitors.

The scale of the Paranal operation is often difficult to appreciate. Ourselves on the mountain find it all fairly normal. To put it into context the ESO Paranal casino serves approximately 100,000 meals every year and we have 40,000 overnight stays per year. Paranal is not connected to the Chilean electricity grid and has to generate its own power (up to three megawatts). Water is of course a necessary resource and we can store up to 1 million litres in our tanks. Keeping the observatory supplied requires a water tanker truck to arrive on site every 8 hours, every day of the year.

In 2002, Joerg Eschwey, who more than any other individual has personified the challenge and success of creating a whole observatory and its infrastructure in the middle of the Atacama desert, has moved on from the VLT to the ALMA project. With this move a small shake up of the observatory organization was necessary and it has been a pleasure to welcome Frank Ruseler from the Santiago office of ESO to Paranal where he has taken over the logistics department.

The year ahead of us promises to be as exciting as this past one. VISIR, VST, OmegaCAM, MACAOs for the UTs, FINITO, AMBER, Auxiliary telescopes and the laser guide star all intend to arrive on Paranal. Times will continue to be interesting on Paranal for the foreseeable future. Exciting new facilities and capabilities continue to be added to this astronomy wonderland.

News from La Silla: Science Operations Department

O. HAINAUT

This year has seen a major restructuring of the internal workings of La Silla observatory. While this is not immediately obvious to the visiting astronomer, it prepares the observatory for the future and decreasing staffing levels. In particular, the engineering and telescope teams have been reorganized and now constitute two departments:

(1) La Silla Engineering Department (LED). This is a merger of the previous Mechanics, Electronics and Instrumentation teams. This department is responsible for the maintenance of the telescopes and projects taking place at La Silla.

(2) La Silla Science Operations (SciOp). This team actually operates the telescopes.

The Infrastructure Support Group (ISG), Software and Communications (SWC), Logistics, and Management departments all keep the same structure as before.

La Silla SciOp

This is a merger of the three former telescope teams (NTT, 3.6-CAT and Medium-Sized Telescopes) which were abandoned in order to optimize human resources. SciOp currently consists of 17 astronomers, 18 TIOs, and 2 operation engineers who are allocated to different "Instrument Forces". The astronomers and TIOs work within a specific instrument force to focus their expertise on instruments of a particular type. For example, the Infrared Instrument force consists of SOFI and TIMMI2. All people working within this force will support both of these instruments. Each force is led by one of the Instrument Scientists, and primary responsibilities include implementing a coherent calibration plan, producing consistent documentation, observing templates, etc., and following-up developments and problems that may occur with the instruments within the instrument force.

The La Silla web pages will be restructured to reflect the organizational changes in the observatory, and in particular to make comparisons between instruments simpler. If you have a query about a particular instrument, you should contact the corresponding instrument force (see below). You can also contact La Silla SciOp by sending an email to lasilla@eso.org. This account is continuously monitored by the SciOp Shift Leader (one of the astronomers on duty) who will then forward your query to the correct person. This email address is the best way to contact us in order to receive a fast reply.

The new web page of SciOp is available at http://www.ls.eso.org/lasilla/sciops/ . Here you will find links to all the instrument pages, as well as more information on the new structure.

The RITZ!

For the visiting astronomer, most of the above will probably go largely unnoticed. The one big change for visitors is the opening of the new control building (nicknamed "RITZ", for Remote Integrated Telescope Zentrum). This new, central observing hub of La Silla is located at the bottom of the NTT access ramps in front of the "Sarcophagus" (Figure 1). It is 300 metres square and will ultimately host the con-

Instrument Force	Instruments	Contact email
Imaging	WFI 2.2-m SUSI2 NTT	ls-imaging@eso.org
Visible Spectro-Imagers	EFOSC2 3.6-m EMMI NTT	ls-spectro@eso.org
Infrared	TIMMI2 3.6-m SOFI NTT ADONIS 3.6-m	ls-infrared@eso.org
High-Res. Spectroscopy	FEROS 1.5-m/2.2-m CES 3.6-m HARPS 3.6-m EMMI-Echelle NTT	ls-hires@eso.org
Telescopes	NTT, 3.6-m, 2.2-m	ls-telescopes@eso.org