The power is down when the movable part is in position. Typical duration for movements will be 2 seconds and repeatability accuracy is expected to be 1 micron at 10 cm from the axis, as demonstrated with our warm dog prototype.

The grating scanner mechanisms are close copies of the scanners applied in the SWS and LWS spectrometers of ISO. These scanners are servo systems with linear motors as actuators and high-resolution LVDTs (Linear Variable Differential Transformers) as encoders. Adaptations of the SWS/LWS scanners for VISIR are being developed by SRON, (Groningen, the Netherlands).

2. 5 Control/software

The Control and associated software represent a heavy load. This work was not our priority during the predesign studies. Our group is well used to this aspect of an instrument and a lot of work has already been done for ISAAC, which will be used as a model.

3. Tools and Test Equipments

Final integration and tests of the instrument, which are the latest phase of a project, generally suffer from the cumulative delays which have happened in the earlier phases of the project. Then those tests are done under heavy time pressure. In order to avoid such a situation, we have decided to start very early in the project the construction of all the test and handling equipments and to prototype in full size many parts of VISIR. The VISIR test cryostat and integration support are already available, as can be seen on Figure 3. The installation of the test equipment has prompted the safety analysis of VISIR. We have the approval of the CEA internal safety panel to operate VISIR and its handling equipments at SAp.

Our early intensive test approach should prevent us from bad surprises during the final integration and tests, and help us to meet the contractual delivery date of VISIR at Paranal, beginning of 2001. The ESO decision to move VISIR from telescope unit 2 to telescope unit 3 should not prevent us from starting the commissioning of VISIR on telescope soon after arrival on site. Scientific observations are expected to start shortly after the commissioning, in the second semester 2001.

Acknowledgements

We wish to thank our VISIR colleagues who contributed so much to a very promising VISIR design and who are too numerous (23) to be quoted here. We also thank the members of the ESO infrared group and the PDR review panel for their numerous constructive comments. Our special thanks go to the panel chairman, Jason Spyromilio, who conducted the review with maestria. We use this occasion to salute Anton van Dijsselendonk, who is leaving ESO and will be missed by the VISIR team.

References


P.O. Lagage
lagage@sapvxa.saclay.cea.fr

NEWS FROM THE NTT

G. MATHYS, ESO

The relatively quiet situation that prevailed at the NTT since the return into operations (see the News from the NTT of The Messenger No. 90) has come to an abrupt end beginning of December. Since then, the NTT has been the scene of a quick succession of events, which will be reported below in chronological order of occurrence.

SOFI

The installation of SOFI was the first major technical intervention scheduled at the NTT since the end of the big bang. The readers of The Messenger have already had various opportunities to get acquainted with this instrument, the first one of the VLT generation. Indeed, the acronym SOFI stands for Son OF ISAAC. It may not be necessary to recall that ISAAC, an IR imaging spectrograph, will be one of the first two instruments to be mounted on UT1 of the VLT. As suggested by its name, SOFI is essentially a scaled-down version of ISAAC. There are many similarities between the two instruments, all the way from the opto-mechanical design down to the control software, which is common to both.

At the NTT, SOFI takes the place on the Nasmyth focus A that has been left vacant by the decommissioning of IRSPEC at the end of June 1996. IRSPEC had already been dismantled during the big bang year. By end of November 1997, SUSI, which had been sharing adapter A with IRSPEC, was, in turn, decommissioned. This was needed because the adapter flange on which SUSI was mounted had to be replaced by a new one, required by SOFI. This new adapter flange furthermore bears SUSI2 (of which more below). As soon as SUSI had been removed from the telescope, the installation of SOFI started. This installation proceeded very smoothly, and the performance of the instrument turned out from the first moment to be very promising.

SOFI is operated from a dedicated workstation, wsofi, whose dual-screen console has taken place in the EMMI control room. Another sign of the presence of SOFI which is perceived immediately by the visitor entering the NTT building is the SOFI “heartbeat”, that is, the sound of the Closed Cycle Cooler, which is permanently heard throughout the building and has already become one of its landmarks.

The reader will find more details about the installation of SOFI and SUSI2 at the NTT and preliminary information about the instruments’ performance in separate, dedicated articles in this issue of The Messenger.

A New Release of the VLT Common Software

The VLT common software, which is the cornerstone of the NTT control system, keeps being developed. At regular intervals (6 months, for the time being), a new “official” package of this software is released, which contains the most recent versions of the various modules that have been fully tested and debugged off-line by the developers. This new release is then ported to the tele-
The newly installed version includes many changes with respect to the previous one which are almost invisible for the casual user, and which were made e.g. to improve the overall robustness of the system or to provide a better platform for implementation of some VLT specific applications. However, the impact of some modifications can be perceived right away. For instance, overviews in the executions of observation templates have become much more user-friendly.

The change affected the telescope and its software. In January 1998, this version was replaced by the one of November 1997 (in short, VLTSW NOV97). The pre-defined criteria. The output of the NTT is updated in real time according to the current meteorological conditions and to the history of the observations already performed. So that at any given moment, the service observer sees in the short-term schedule which is the OB best suited for execution. The first version of this tool which has been installed at the NTT is still preliminary in many respects, but its first tests during the service observing period of January 30 to February 5 have been quite promising and have yielded a large number of indications that will be exploited for the development of an improved version. The STS will continue to be used during the remaining service observing runs of Period 60 to gain more feedback for future developments.

The NTT Team has taken advantage of the installation of VLTSW NOV97 and of new versions of P2PP and OT to introduce a new release of the observation templates, which features increased functionalities of the already existing templates as well as a set of brand new templates (e.g. for observations in the dichroic medium-dispersion mode of EMMI).

Furthermore, in the new template release, the protocol keywords that were displayed on the P2PP user interface were replaced by more explicit “labels”: for instance, WIN1.UIT1 has become “Exposure time”. This should make the use of the P2PP tool and templates more user-friendly.
SUSI2

Beginning of February, the installation of SUSI2 at the NTT started. Let us recall that SUSI2 is an imager, which uses as a detector a mosaic of 2 CCDs of 2k x 4k, with a pixel size of 15 μm. The resulting field of view is approximately 5’ x 5’ (about 6 times as large as the field of view of SUSI1), with a sampling of 0.08” per pixel. As a matter of fact, the opto-mechanical part of SUSI2, which is attached to the adapter flange, had already been on the telescope since the SOFI installation in December. But a major step remained to be done in February with the arrival of the CCD and of its controller. At that level, SUSI2 features two premieres: the first new ESO controller FIERA to come into operations and the first new-generation EEV CCDs. FIERA is the controller that will be used for the VLT scientific CCDs, and EEV CCDs will be used in various instruments at the VLT, starting with the test cameras to be used for first light and during commissioning, and later on in FORS and UVES, they will also be found in the Wide-Field view of a Flexible 2.2-m telescope on La Silla. Hence the test represented by the installation of SUSI2 at the NTT is a critical one for the future of CCD-based instrumentation at ESO.

This is written just before the beginning of the SUSI2 commissioning period. Accordingly, it is too early to present definitive conclusions. However, it can already be mentioned that the preliminary tests carried out during the installation period yielded quite promising results, both with respect to the performance of the EEV CCD mosaic and of the FIERA controller, and with respect to the image quality achieved. The reader can find a more detailed report in a separate article in this issue of The Messenger.

On the control system side, SUSI2 presents a lot of similarities to SUSI1, and the Observation Software of the new instrument derivates directly from that of its predecessor. In particular, the astronomers interact with the system through a set of templates bearing the same names and having essentially the same functionalities as the old SUSI1 templates (even though the adaptation of the templates to SUSI2 has been accompanied with an almost complete re-coding in order to improve their performance and robustness).

Telescope News

In the News from the NTT in The Messenger No. 87, J. Spyromilio had described in some detail the optical realignment of the telescope that had been performed as part of the big bang. In particular, he had noted that, although the intervention had been mostly successful, it had not been possible to adjust optimally the secondary mirror (M2), which was only marginally within the specified limits. The practical impact of this was an extreme sensitivity of image quality towards the edge of the EMMI field of view to the configuration of the primary mirror and to the telescope focusing. With time, this had proved critical, since small changes of the telescope conditions during an integration (such as, e.g., a drift of the temperature of the Serrurier structure by 0.5°) could yield unacceptable image degradation (elongations of several tens of percent) away from the EMMI field centre.

The problem was followed up, and further analysis, based in particular on mappings of the astigmatism with the image analysis system throughout the field reachable with the guide probes, allowed us to understand better its origin and to devise a corrective action. The latter was executed in the beginning of February. Its outcome was a spectacular reduction of the amount of field astigmatism by a factor of approximately 6, which reflects the fact that M2 is now very well aligned.

On the other hand, study of the problem of telescope pointing degradation reported in these pages in the last issue of The Messenger has continued. In particular, telescope pointing performance has been put under regular monitoring. As part of this monitoring, a large pointing jump, of the order of 30”, has been observed at the time of the earthquake of October 14, which with its epicentre close to Ovalle, has been the strongest one affecting La Silla in a long period of time. Since then, the NTT pointing has behaved very well, showing no other large sudden variation and achieving a performance close to specifications. This is somewhat surprising, since before October 14, pointing errors of up to 20” were appearing on timescales of a few days. The much improved behaviour of the telescope pointing over the last few months is, of course, welcome, but not understood yet. One can, for the time being, only speculate about possible causes of the degradations previously occurring: for instance, unrecognized seismic activity or seasonal effects (e.g., some unexpected sensitivity to temperature below a certain threshold). This lack of understanding is unsatisfactory, especially because the reappearance of the problem at any time cannot be ruled out. Accordingly, the NTT Team keeps actively studying and monitoring this issue.

Staff Movements

The last three months have seen an unusually large number of changes in the composition of the NTT Team. This is partly due to the facts that the NTT upgrade project is nearing completion and that the integration of the first unit telescope of the VLT is well under way.

In the middle of December, José Parra became the NTT Team’s second Data Handling Administrator. He is one of the two Data Management Division members undergoing a training in the area of VLT Data Flow Operations at the NTT before being transferred to the VLT. His main tasks are the preparation of the CD-roms for data archiving and the maintenance of the databases.

End of December, Percy Glaves and Roberto Rojas left the NTT Team to go back to the La Silla Software & Communication Support Team, which they had left temporarily to participate in the NTT upgrade. Percy is taking up new duties, becoming one of the La Silla System Administrators. Roberto’s assignment is a genuine continuation of his work at the NTT: he is one of the VLT Software programmers participating in the upgrade of the 3.6-m telescope (in particular, he is developing the control software of EPICS2). He will also continue to give occasional support to the NTT when required.

End of January, two more software engineers, Marco Chiesa and Thanh Phan, left the NTT Team. They had joined it early in the upgrade project, first in Garching and then on La Silla, and had accordingly participated in most of the developments of the new control system. Thanh had been trained from the start both as a preparation for the VLT, and along this line, Marco and Thanh have now moved to Paranal to participate in the integration of the first Unit telescope. The vast experience that Marco and Thanh have acquired through work at the NTT will undoubtedly be extremely beneficial for the VLT.

Finally, end of January was also the time of departure for Griet Van de Steeple, after three years of fellowship at ESO. During that time, Griet had been the astronomer in charge of monitoring the performance of the NTT CCDs and of co-ordinating maintenance and corrective actions in this area with the Optical Detector Team. The dedication and the commitment to excellence that she showed in the execution of these tasks served the astronomical community even better than the many introductions that she gave to visiting astronomers, which have always been highly appreciated by the latter. Griet has now joined Mount Stromlo and Siding Spring Observatories, in Australia. She will soon be replaced by a new fellow.

G. Mathys
gmathys@eso.org