the software position control module, Gianluca Chiozzi for the preset module and everything related to object oriented design and C++, and the rest of the staff in VLT/ELE department for VLT common software and VLT electronic standards. We also thank Rolando Medina for installing the antenna and fibres for the VLT timing system in advance of the test.

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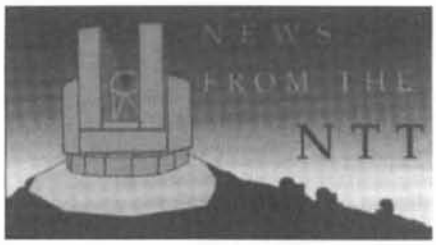

The NTT upgrade project has the following goals:

1. *Establish a robust operating procedure for the telescope to minimise down time and maximise the scientific output.*
2. *Test the VLT control system in real operations prior to installation on UT1.*
3. *Test the VLT operations scheme and the data flow from proposal preparation to final product.*

J. SPYROMILIO, ESO

This issue of *The Messenger* is the last before the NTT upgrade project goes into phase II (the Big Bang) of the upgrade. In July this year the NTT will go off-line to install the VLT control system on the telescope. Many people ask me why the NTT is going off-line for a whole year for a change in the control system. This appears to a number of people as a disproportionate length of time. The modifications to the NTT are not limited to the telescope itself. Every subsystem of the NTT is upgraded to VLT standards from the building and hydraulics to the target acquisition systems. The slow read-out electronics for the CCDs are also being upgraded to the ACE system which should cut down the read-out times dramatically. In addition the supporting systems such as scheduling, phase 2 proposal preparation tools, automatic data reduction are being upgraded as well. Alignment procedures and tools for the VLT are also being tried out during this period.

The NTT team fully appreciates that removing a resource as valuable as the NTT from the community for any length of time is painful. The astronomers within the team are also active users of the telescope and will also suffer the withdrawal symptoms. However we firmly believe that for every month that is expended on the NTT now, we shall gain a month on the VLT UT1. This does not only apply to the software and hardware installations but also to the operation of the VLT as a scientifically useful telescope. The transition from a facility that works to one that produces science is often long. The NTT project as a test bed for VLT operations aims to cut this transition time down to a minimum for UT1.

Operational News

The statistics for 1995 are in. The NTT had a total down time of less than 48 hours in 1995. This is 2.1% of the time available for observing and puts us at the bottom of the published results for 4-m-class telescopes. In this case being at the bottom is the best position to be in. This number has been achieved by a number of ways. First and foremost the dedication of the operational staff. Preventive maintenance also plays a big role. The NTT has a maintenance plan which details the activities of the team every day of the year. Operations have been moved from the minds of individuals to documents and check lists. The NTT runs according to a plan and this transparency of operations minimises the time lost due to mistakes.

Unfortunately, some bad news have also to be reported. The sensitivity of EMMI has dropped significantly. Preliminary investigations indicate that some of the very sophisticated coatings of the EMMI optics which had reflectivities as high as 98% have aged more rapidly than expected. The problems are being further investigated as this article is written and the latest EMMI sensitivities will be published on the Web. The recoating of the elements is not an operation that can be undertaken on very short timescales. However, every effort to recover the nominal sensitivity is being made.

Progress with Big Bang Preparations

On page 7 of this issue of *The Messenger,* a detailed description of the first test of the VLT Telescope Control System can be found. However it is appropriate here to say a few words about the significance of this field test. In the past the NTT team has tested a number of subsystems of the control system to be installed during the big bang. However, the TCS test can fairly be described as the biggest challenge for the VLT software to date. Problems were found during the test but no show stoppers. In the article describing the details of the test, an image where the NTT was made to write "VLT" on the sky is shown. Although this image showed a problem with the tracking in the new system, I am confident that this problem will be solved. It should be noted that this image was created by using a very large number of functions of both the new TCS and the VLT control system. The image was generated by using the differential tracking and offsetting modes of the new TCS and was run in a completely hands free mode. A script for the higher level operation software (also known as the sequencer) was written in a few minutes in the scripting language for the VLT. The script was executed at the workstation level, and the actual movement of the telescope was performed by two independent local control units synchronised by the VLT standard absolute time reference system.

The importance of the sequencer in the VLT style operations cannot be overstated. The sequencer is the primary communications tool between the outside world and the VLT control software. It makes possible the co-ordination of the telescope, instrument and detector control software.

As the article is being written, the author is on La Silla watching the EMMI instrument being controlled by VLT standard instrumentation software and electronics. These results give great confidence that baring unforeseen problems we expect to be ready for the big bang in time.

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