gramme, one of the first to be carried out at the NTT after the upgrading of the hardware and software to VLT standards, was a useful test case for ESO for the operation of the upgraded telescope and for the new procedures and software packages, such as Phase II proposal preparation, service observing, data-quality control and the archiving and distribution of the data. The preparation of the co-added images and the first photometric estimates have been carried out by S. Arnouts and S. Cristiani. The 3σ limiting magnitudes in the AB system computed over an aperture of 2 × FWHMs, are 27.20, 26.93, 26.61 and 26.20 in the four bands respectively. The three-colour deep image has been prepared by R.A.E. Fosbury and R.N. Hook at the Space Telescope European Co-ordinating Facility combining the *B*, *V* and (*r* + *I*) co-added frames. The fainter objects seen in this reproduction have magnitudes ≈ 26.

The image illustrates well the capability in deep imaging at good angular resolution at a 4-m-class ground-based telescope with a relatively modest investment in exposure time. It takes advantage of the combination of good seeing and fine sampling (0.12 arcsec/pixel) of the telescope point-spread function. The limiting magnitudes are already fainter than those which can be reached in spectroscopy of continuum sources at 8–10-m telescopes. The colour image shows the crowding effect at faint magnitudes and in particular the frequent close pairing of objects of very different colours, which would lead to confusion under worse seeing conditions. Of the approximately 500 galaxies detected in this field, the largest fraction are expected to be at redshifts smaller than $z = 1$ and about 20% to be distributed at higher z, up to $z = 4$ and possibly beyond.

These data will be of value for scientific investigations beside those proposed by the authors and can be used to test data-reduction and simulation packages to be applied to other larger surveys. On these grounds the calibrated images, as well as their colour combination, will be made generally available on the ESO web site by January 1998.

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The ESO VLT – Progress Report

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The latter half of 1997 and the coming year represent certainly the most challenging time for the VLT Programme. Notwithstanding delays which occurred in some areas, the project achieved major technical progress and milestones and we are fully prepared to complete the first Unit Telescope integration on Paranal.

There has been a great deal of activity in many different areas at the ESO Paranal Observatory. Work has continued on the assembly of various components of the Telescope Structures and on the surface of the summit platform, as well as in connection with the maintenance and storage facilities near the base camp at the foot of the mountain. The Telescope Structure of the first unit is complete inside the enclosure as shown in Figure 1.

The first large unit transport to Paranal was completed successfully in July 1997. After the European Acceptance Testing, the M1 Coating Unit was shipped to Chile, see Figures 2 and 3. The installation of the unit in the Mirror Maintenance Building was finished at the end of September this year. At present the Coating Unit is being commissioned and tested. The provisional acceptance tests started at the beginning of November.

After the successful completion of the European testing by GIAT in St. Chamond, France, and a long journey from Europe to Chile, the first Very Large Telescope mirror cell (VLT M1 cell) and a concrete 8.2-m dummy mirror were unloaded in the port of Antofagasta on October 31, 1997. From here they were transported by special

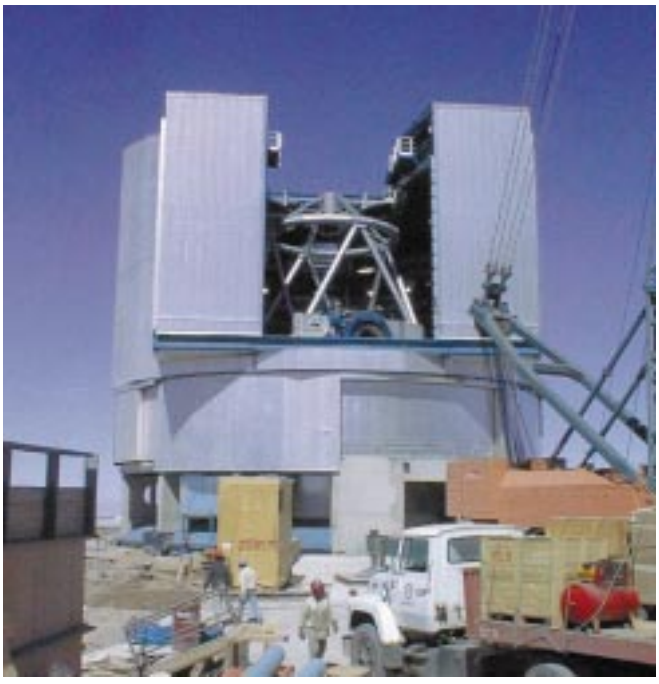

Figure 1: A recent view of Unit Telescope 1 through the open slit doors in the upper rotating part of the enclosure. ◄

Figure 2: The VLT coating plant in front of the Mirror Maintenance Building on Paranal. After removal of the upper part of the vacuum chamber, the lower part is lifted off the carriage, allowing a good view of the individual parts, including the rigid transport structure. ▼

trucks to the Paranal Observatory, see Figures 4 and 5.

Both the mirror and the cell arrived well at Paranal and a thorough check showed that they had suffered no damage during the transport from Europe, see Figure 6. Accordingly, green light was given right away to send the first polished 8.2-metre VLT mirror of Zerodur from the REOSC factory in St. Pierre du Perray, south of Paris, to Paranal. The mirror, securely fastened in a box of the same design as the one in which the dummy mirror was moved, departed by river barge on the Seine a few days later. It was loaded on an ocean-going vessel in the port of Le Havre on November 12, see Figures 7 and 8. The expected arrival time in the port of Antofagasta is mid-December *(see Latest News on page 18)*.

GIAT started the M1 Handling Tool installation in the Mirror Maintenance Building end of July and has already completed it.

Figure 3: View from the inside of the Mirror Maintenance Building through the 10-m door. The lower part of the coating plant has been placed on the air cushion transport system which will move it along the two tracks seen in the foreground. The total moving weight with an 8.2-m mirror in the chamber is about 50 tons.

Figure 4: The convoy on the "Old Panamericana Road" in the Atacama desert, north of Paranal.

A major achievement is the completion of the polishing activity of the first M2 Beryllium Mirror by REOSC and its delivery to DORNIER in September 1997. The first Electro-Mechanical Unit tests by DORNIER have demonstrated compliance of the M2 Unit performance in the fields of focusing, centring, thermal control and sky baffle.

The system tests with the M2 Beryllium mirror started in October and the Provisional Acceptance of the M2 Unit

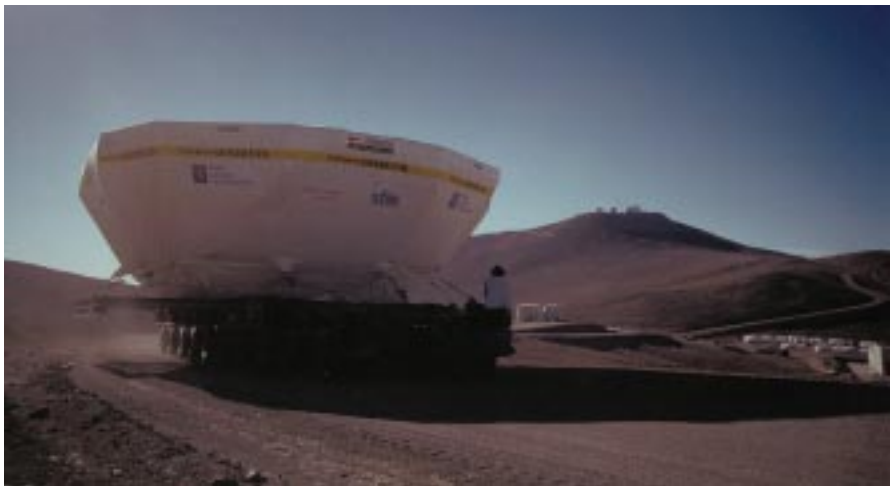

Figure 5: The truck with the M1 cell approaches the base camp, at the foot of the Paranal mountain. The enclosures that house the VLT unit telescopes are seen at the platform at the top.

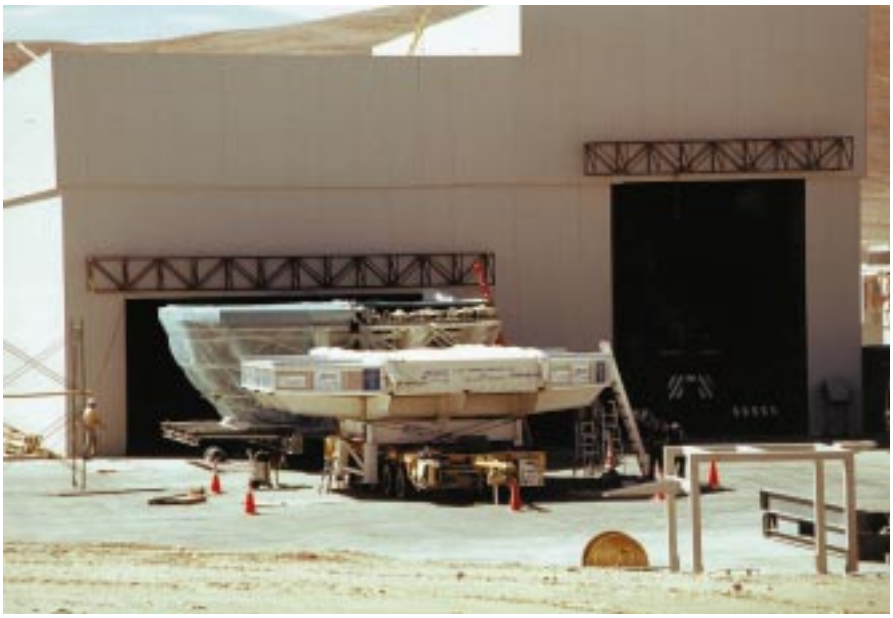

Figure 6: The M1 cell and the dummy mirror arrive in front of the Mirror Maintenance Building (MMB). Here they are being unloaded and placed next to the 10 metre wide entrance.

The key schedule targets, i.e. First Light and release of the first telescope for the instrumentation are planned for June 1998 and October 1998.

ESO made a considerable effort to co-ordinate the work by all contractors on the Telescope Area and Maintenance Area Buildings and succeeded in achieving excellent progress and co-operation with a minimum of disturbance between contractors performing crucial tasks side by side in the same areas.

In the reporting period the VLTI Team was reinforced and the new group head took up his duty in September. The Delay Line proposals have been received and the technical evaluations has been completed; Fokker Space was selected as a contractor. The foundations of the Auxiliary Telescopes are in an advanced phase of construction on Paranal.

Figure 7: The 8.2-m mirror being lifted from the river barge onto the M/S TARPON SANTIAGO in Le Havre. ▼

no. 1 is planned for the beginning of December 1997 *(see also Latest News on page 34)*.

The first M3 Cell and Mirror were tested mid-June and will be delivered in Europe mid-November 1997.

One Cassegrain and two Nasymth adapters for Unit Telescope 1 have been accepted and have already arrived on Paranal. The adapters for the Unit Telescope 2 are also nearing completion, one Cassegrain and one Nasmyth have already been accepted and the second Nasmyth acceptance is planned for December 1997.

The Clean-Room construction has been completed successfully in Europe and is now on the ship to Antofagasta. The installation will start immediately after the completion of the Coating Unit in December 1997.

The installation of the Power Station and various subsystems has been completed. The commissioning of the diesel engines due to the adjustment of the engine to the site altitude took longer than expected because it is the first time that this type of engine has been installed at the altitude of the VLT Observatory. In October the power station was run for 200 hours showing excellent performance.

The first part of the acceptance testing of the first enclosure was performed during the second half of July 1997. The second part of acceptance testing, i.e. testing of the air-conditioning system and the operations simulations, will be performed after completion of the chilled liquid plant in parallel with ESO integration during the first quarter of 1998.

Figure 8: The 8.2-m mirror in its final location on the ship. ▶