

The ESO Council, which met in Extraordinary Session on April 19, 1995, expressed its satisfaction for the many positive steps which had been achieved, its intent to ratify the Agreement and instructed the Executive to continue the direct negotiations with the Chilean Government to hopefully resolve all remaining issues prior to the regular Council meeting of June 7 and 8. Important and fundamental as the issue of Chile is to permit us to continue carrying out astronomical programmes, it was only one of significant events in the last few months.

The first comprehensive VLT management report based on a Work Breakdown Structure was presented to the ESO Scientific Technical Committee on May 4 and 5 and to the Finance Committee at its meeting of May 9 and 10. This report, which will be issued every six months at the request of Council, was very warmly received by both committees. Apart from its intrinsic interest for those who are involved in the monitoring of the technical and managerial aspects of the VLT programme, it represents the culmination of a very intensive effort by many groups at ESO to restructure the accounting, reporting and management information systems to cope with the challenge of the VLT project.

In the February ESO-wide annual review the same management principles were applied to the reporting of every ESO activity both in Europe and Chile. The efforts of the VLT Division, the newly created Instrumentation Division, Administration and Project Office, and of the Chile Administration were essential in making this possible. These new tools will be even more important to permit clarity of communication between ESO management and its oversight committees in the difficult financial times that one can see ahead.

While the overall technical progress on VLT is extremely encouraging, the difficulties in Chile in the recent past have resulted in both time and financial losses which are currently being evaluated. We

expect the date of first light to be affected by 3 to 6 months. Financial losses have been experienced due to work stoppages, delays, increased costs for storage of components, rescheduling of planned activities, etc. Resolution of these financial issues will require considerable attention by the ESO Executive and Council over the next year.

In the technical areas the meetings of the Users Committee and of the Scientific Technical Committee have resulted in important decisions regarding the future of La Silla. STC has approved the construction of SOFI (a near infrared imaging spectrometer for the NTT) and the beginning of the assessment phase of the 3.6-metre upgrade plan. The La Silla 2000 group is completing its work of planning for the future of La Silla in the VLT era. The increased attention by ESO to the development and operation of optical detectors with competitive quantum efficiencies, speed of read-out and noise has already resulted in notable improvements. A plan for the continuation of this effort for the VLT instrumentation was enthusiastically endorsed by both UC and STC.

The VLT Science Operation plan was presented to the STC and received a very positive approval and recommendation to proceed even further in implementing the end to end approach to implementation of the science programme that it represents. In general, the increased attention to the planning for the utilisation of the VLT telescopes and instruments has resulted in a first cut study for the necessary software and hardware tools that will need to be developed. Increased attention to and formal representation of the data flow necessary to take us from proposal entry to scheduling, data reception, calibration, reduction and archiving has shown the considerable amount of work still in front of us. A recent ESO Workshop on Calibration and Data Management Techniques was extremely successful in permitting us to measure our progress with respect to past and current large projects in astronomy.

These past few months have been also extremely significant in the development of an even closer involvement of the Science Divisions both in Garching and La Silla in all technical aspects of ESO activities. Staff scientists and Fellows are expected and do contribute to operations, maintenance and upgrading of existing facilities, to the development of new instrumentation, to the development of new software for proposal processing, scheduling and implementation, to the development of physical models of the instruments, to trade-off studies between scientific requirements and engineering difficulties, to development of detectors, in short to all essential activities of ESO as an observatory. While this involvement is being strengthened by proceeding with the hiring to the budgeted staff level, the cooperation between ESO scientists and engineers in Chile and Europe is increasing. Slowly, the concept that ESO is a single observatory, with a single staff whether in Chile or Europe, is emerging. Detector development projects are the responsibility of people at La Silla as well as Garching, the NTT and the 3.6-m refurbishment efforts are being carried out by mixed groups, software development is being carried out jointly and so forth. We consider this approach essential to the successful operation of facilities such as the VLT/VLTI in the future.

I would like to conclude these brief notes by expressing my increasing confidence that ESO and the European astronomical community will prove equal to the challenges of the next century. I base this confidence on the evidence I see of increased cooperation between ESO and its Scientific and Technical Committee and the European astronomical community. On the solidarity which was expressed in difficult times by all member states. On the remarkable performance by the European hardware contractors. Finally on the splendid performance by the entire ESO staff everywhere and in every function.

TELESCOPES AND INSTRUMENTATION

News from the VLT Programme

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This has been an incredibly challenging period for the VLT Programme. The simultaneous difficulties in Chile and two major external contracts have taxed the management resources of both the VLT

Programme and ESO as a whole. The most serious problems were related to difficulties with the import of material and equipment to Chile and the accreditation of contractor personnel. The second area

of difficulty was the civil engineering work being performed at the VLT site by the Joint Venture Skanska-Belfi which was aggravated by the Chile situation. Finally, the loss by Matra Marconi of access to a

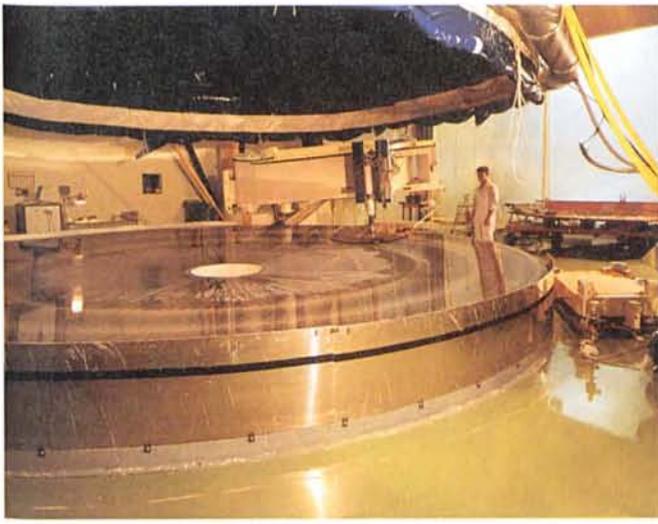


Figure 1: Mirror No. 1 in the final stages of polishing.



Figure 2: Mirror No. 2 in the grinding stage.

critical silicon carbide technology for the secondary mirror assembly of the VLT required ESO to negotiate a contract with Dornier, the second qualified bidder, resulting in both cost and schedule increases.

These problems have to date resulted in a projected schedule delay, with reference to the June 1993 baseline of 5 months to first light.

In spite of these problems, excellent work has been performed in most of the major areas of the Programme. For example, the heart of the VLT, its 8.2-metre primary mirrors, are progressing well (Figs. 1 and 2). The first two blanks have been delivered by Schott and exceed expectations. The third and fourth blanks are due in July and October 1995 and are proceeding on schedule. It should be remembered that this was originally considered one of the greatest risk areas of the Programme. Polishing of

the first mirror is nearing completion at REOSC with the on-time completion of the remaining mirrors projected.

The contract for the main structure is also proceeding well. The AES consortium is scheduled to complete the unit one telescope subsystem by September 1995. Calculations indicate that the completed unit will deliver the best rejection of external disturbances ever obtained on a telescope of this size. The contractor is scheduled to complete erection of the unit telescope in Milan at the end of December 1995. The large mechanical structures for Main Structure Units 2, 3 and 4 have already been started and are proceeding according to plan.

The complex M1 Cell-M3 tower, which supports the 8.2-metre primary mirror, using 150 active supports which constantly maintain the correct shape of the mirror, is entering the manufacturing phase. This was considered the second

area with many technical risks, and two contractors had entered into competition. After a design competition between Zeiss and GIAT, the GIAT design was found to fully meet the Programme requirements and be both superior in performance and lower in cost. The prototype produced by GIAT indicates that the final system will perform as required.

The secondary mirror M2 has been mentioned as one of the cost/schedule problem areas of the project. It should be pointed out, however, that the original impact caused by the MATRA problem (six months on first light) has now been reduced to only three months' delay. The contract with Dornier-DASA is proceeding on schedule, although with a higher price than ESO's original baseline project price projections because of the use of beryllium mirrors for the first unit.

The four telescope enclosures are also progressing well. The contractor has sent



Figure 3: Paranal on 2 April 1995.



Figure 4: The completed section of the delay line tunnel.



Figure 5: Inside the building of the first Unit Telescope.

8 shipments with over 300 tons of material to the site to begin erection as soon as the importation and accreditation problems are solved. Work in Europe is proceeding as planned.

At the Paranal site, the work on the foundation for the first telescope is almost complete (Figs. 3, 4 and 5). The total site concrete work is 25% complete. Although significant problems with schedule have plagued this contract, we believe that the critical work for telescope No. 1 can be completed in May 1995 to allow the next contractor, SEBIS, to begin erection of the enclosure. It should be noted that the contractor has also been affected by the import problems.

One of the critical areas of the performance of the VLT and its scientific instruments is the CCD detectors. A new head of this group has been recruited. This group has been strengthened with additional manpower to ensure that this important area is properly covered. The

new ESO CCD prototype system, ACE, has been tested on La Silla and is functioning well.

A number of management changes have also been implemented in the Programme. The VLT work was organised into work packages beginning in February 1994 with budget planning by work packages implemented with the 1995 budget. In January 1995, the accounting systems at ESO were modified to include cost collection by work package in addition to the traditional cost collection by nature of expense.

Another critical area was the system engineering. The vacancy of the head of the System Engineering Group has now been filled and the new head of system engineering brings in-depth telescope system experience to ESO and has now recruited personnel for the remaining open system engineering positions including the important area of configuration control.

Another positive development has been the selection of the VLT Programme Scientist which still has to be confirmed by Council. The VLT Programme Scientist will provide the nucleus for a small group of scientists to assist the VLT Programme in scientific issues. Also the new Project Scientist for the VLT, F. Paresce, has begun work, adding senior scientific oversight to this important Programme area.

In February 1995, the third annual ESO Wide Review was held. In this Review, the work, schedule and cost for the year 1995 were reviewed. A key element of this Review was the introduction of clear quarterly progress milestones which form the basis for control by the upper management.

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Scientific Priorities for La Silla in the VLT Era

J. ANDERSEN, Chairman of the Working Group

In a previous article (*The Messenger*, No. 78, p. 3), the rationale behind the creation of the ESO Working Group (WG) on *Scientific Priorities for La Silla in the VLT Era* was outlined. At the same time, the WG solicited the views of the community on the main classes of science to be carried out from La Silla over the next five to ten

years, and the facilities that will be needed to do so.

After analysing the replies, the WG has prepared a first draft plan to serve as a skeleton for the following discussions. We are grateful for the keen interest of the community and would like to present below a brief status report on our work and the plans for its completion.

The Questionnaire Survey

Nearly 150 replies were received by mid-February, a quite respectable turnout. While any such survey will inevitably be both incomplete and biased for a number of reasons, and cannot be an exact measure of the community's plans and wishes, this material is an invaluable