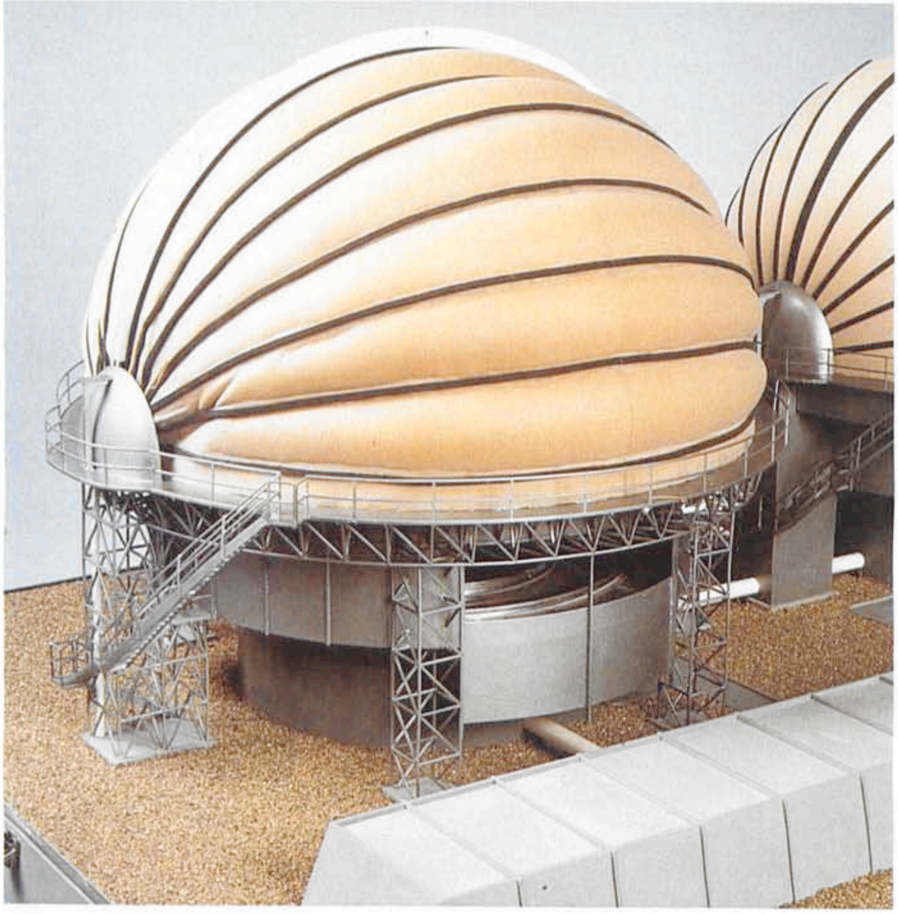

Figure 3: *The latest enclosure design for the VLT unit telescopes. The sliding door in the recess is used for natural ventilation. From another one at the opposite end it is possible to take the primary mirror out for aluminization.*

Figure 4: *The enclosure in open configuration.*

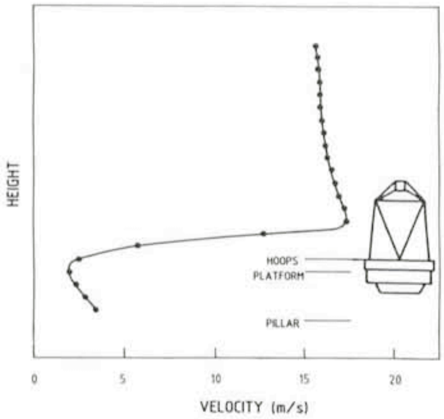

Figure 5: *Wind velocity profile along the azimuth axis measured during wind tunnel tests.*

platform for all four telescopes. A small crane will possibly also be included in each dome for minor handling operations.

The large wind screen present in the older versions has disappeared, as studies have shown that with the use of direct drives for the altitude motion and an active secondary mirror for correction of tracking errors it will be possible to achieve the specified tracking accuracy under wind buffeting.

Conversely, the lower part of the telescope is now imbedded in a recess made in the platform so that the primary mirror can be effectively protected from wind buffeting. Indeed the relative thinness of the primary mirror and the still preliminary status of the mirror support design led to assume conservatively that it will be necessary to shield the mirror from most of the wind loading. Several sliding doors in this recess will nevertheless allow complete ventilation of the enclosed volume when deemed convenient.

The dome in the model represents essentially a scaled-up version of the 15-metre prototype just erected at La Silla. The test and experimental phase which is beginning now will hopefully give many data for a refined design of the 30-metre domes for the VLT.

Inflatable VLT Dome Prototype Erected at La Silla

The 15-metre inflatable dome prototype has been erected at La Silla. First tests took place at the beginning of March and at the time these lines are written the dome is already sheltering a telescope, a new 40-cm seeing monitor which is being tested there previously to its installation at Cerro Vizcachas near La Silla.

The dome itself is not yet formally complete as the motorized system for lowering the auxiliary hoops and some minor items have still to be supplied by the contractor, but the planned test programme aiming at achieving the optimum design for the VLT has already started. The main functions of the dome (opening, closing, blowing) are success-

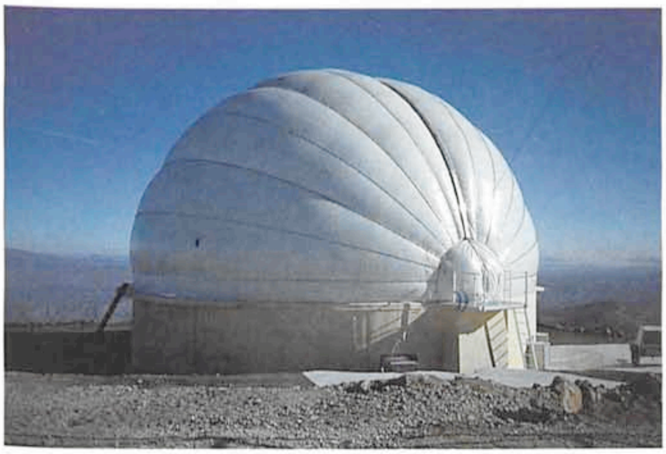

Figure 1: *The closed and inflated dome.*

Figure 2: *The open dome. The motor for lowering the auxiliary hoops has still to be installed.*

fully demonstrated so far, and now the work will concentrate on other aspects such as the thermal behaviour, safety devices, resistance to extreme conditions.

The safety and reliability aspects are particularly important. In this respect, the coming austral winter will represent a suitable test for the resistance to extreme environmental conditions. The dome was designed to withstand wind speeds of the order of 200 km/h, but with such a particular structure the calculations were inevitably approximate and, although large margins of safety were taken, it is always possible that an unthought-of problem appears. Furthermore, the actual effects and possible damages of a combination of extreme wind, ice and snow conditions can only be verified in reality. This also will be an objective of the present evaluation phase.

Another known major hazard to the dome may come from a prolonged electrical power cut-off as then the internal volume will be quickly depressurized, while the ribs will take 10–20 minutes to deflate, with serious loss in strength and stiffness. For the VLT, independent emergency power generators will be mandatory.

The experiments performed so far are already giving ideas for improvements and optimization in view of the VLT final design. Among the improvements already envisaged, we have the automation of the locking system which is now manual. More ambitious will be the replacement of the present closing/opening mechanisms constituted of winches, cables and auxiliary hoops with hydraulic actuators acting on the main hoops. This will allow the dome to serve also as a wind shield with variable height during observations. This is not possible now because of the auxiliary hoops.

L. ZAGO, ESO

Site Evaluation for the VLT: Seeing Monitor No. 2 Tested in Garching

M. SARAZIN, ESO

The ESO parking lot in Garching must be eliminated from the list of candidate sites for the VLT. During the night of April 19, the second seeing monitor (Fig. 1) underwent final full scale tests before being shipped to La Silla. It was an opportunity to verify that the seeing in Garching is not of the quality that the VLT deserves. During the few minutes we had before the instruments were covered with condensed water, an average seeing of 3 arcsec was measured. (Not all that bad for Europe, though!)

The seeing monitor No. 1 has now been sensing the atmosphere over Cerro Paranal, 2,700 m, for one year (*The Messenger* No. 49, September 1987, p. 37–39) and measurements will continue. In addition to seeing, many parameters are monitored simultaneously so as to acquire full understanding of the environment which a large telescope would meet if this site was chosen.

The summit of Vizcachas, 2,400 m, 5 km from La Silla, is now being prepared for seeing measurements. A road has been completed and a 5 m high tower is being built. The seeing monitor No. 2 will be installed there and will perform measurements in a way exactly identical to its Paranal counterpart. Detector and software are completely interchangeable, yet the telescope has been considerably improved in two ways.

The alt-alt mount has been modified for easier setup, it is now possible to start measurements less than one hour after arriving at a site, which is very convenient when several spots are to be probed or for temporary tests such as measurements inside the dome of a large telescope.

Secondly, autoguiding is now possible, using the same star as for seeing measurements. This, added to the computer control of the ICCD intensification level, provides the possibility to completely automatize seeing measurements in the near future.

For several future applications such as adaptive optics, dome and telescope thermal control, remote observing or flexible scheduling, modern large telescopes will need as much information as possible about their environment, and automatic seeing monitoring stations will soon be considered a vital necessity to boost the efficiency of the astronomical work.

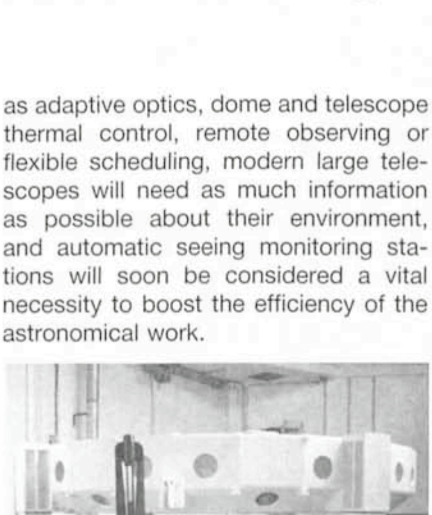

Figure 1: *A pilot fish for modern large telescopes: The Seeing monitor telescope close to the NTT primary mirror cell in the Assembly Hall at the ESO Headquarters in Garching.*