ESO Donates DM 100,000 for Reconstruction Work After Earthquake in Northern Chile

On Sunday, July 30, at 1.15 hours, the Antofagasta region was struck by an earthquake, reaching 7.8 on the Richter Scale. Three people died and more than 130 houses and buildings were damaged beyond repair. The port also suffered damage.

In an act of solidarity with the local community and its authorities, ESO immediately decided to donate 25 million Pesos (about 100,000 DM) towards the reconstruction work, and on August 7, a cheque was handed over to the Intendente for the II region, Mr. Cesar Castillo, by Daniel Hofstadt of ESO Chile.

C. Madsen

Photographer: H. Zodet

News from the Secondary Mirror Units

D. Enard, ESO

Can a talented writer make a breathtaking novel out of the M2 Unit story? Well, . . . sounds a priori difficult but . . .

The ink of issue 76 (June 1994) of *The Messenger*, where I wrote a short article relating the effective start of the M2 Units contract, was not fully dried that ESO received a "red flag report" mentioning quite unexpected difficulties with the supplier of the Silicon Carbide mirror blanks who suddenly and for quite unclear reasons withdraw from his previous commitment. After three months of stormy discussions, negotiations, looking for alternatives, moving forward, backward, etc., it was finally decided to select DORNIER as the new contractor and an ATP (Authorisation To Proceed) was signed beginning of September, intended originally for the delivery of 4 electromechanical units and 4 Silicon Carbide and one Beryllium mirrors.

Figure 1: *First machining of the Beryllium mirror at LORAL on July 6. Second from left: Marc Cayrel (REOSC), P. Dierickx and A. Michel (ESO), Bob Langenbach (LORAL).*

After negotiations the new contract was finally signed in November 1994. The scope of the contract was reduced to the delivery of 4 electromechanical units and to one Beryllium mirror only, the three remaining mirrors having to be contracted separately at a later stage. The reason for this delayed procurement was essentially the very uncertain situation of the light-weight mirror market, in particular with respect to prices and guaranteed delivery. This situation is essentially due to the opening of the Eastern countries, which can now deliver high-tech products at very competitive prices, and simultaneously the collapse of military orders in the US with, as consequences, the declassification of certain technologies on the positive side but also, on the negative side, a financial fragility and uncertain future of potential suppliers.

At the moment the more promising technology in terms of cost and performance still seems to be Silicon Carbide although there is a fierce competition with Beryllium which tends to become more affordable than in the past, in part for the reasons mentioned above. The well-known potential drawback of Beryllium is the risk of deformation over long periods of time. However, important progress has been made in the processing of Beryllium in particular with the use of HIP technology (Hot Isostatic Pressing) and the development of sophisticated annealing procedures which

Figure 2: *Close up on the Beryllium mirror during machining. Because of its potential toxicity, machining of Beryllium requires some safety measures: the two pipes on each side of the tool are connected to a sucking device which recuperates the metal chips as well as possible toxic vapours.*

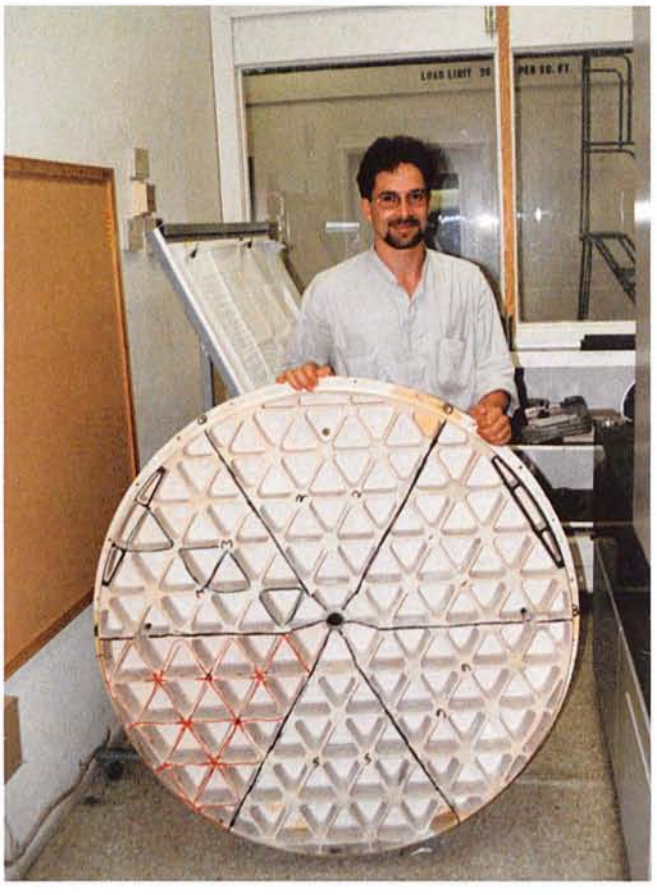

Figure 3: *This plastic model has been realised to verify the machine tool programme before machining the real Beryllium piece. Standing: Marc Cayrel, responsible at REOSC for the M2 mirror programme.*

make nowadays Beryllium an excellent mirror material even for cryogenic applications.

The reason to select Beryllium for the first unit is simply the relative security that a good mirror will be available on time for the first light of the VLT.

The VLT M2 Beryllium mirror is produced out of a solid piece produced by Brush-Wellmann in the US through the HIP process. The machining is contracted to LORAL and to TINSLEY for the fine turning of the surface according to the aspheric shape. The mirror is then sent back to LORAL for the deposition of a nickel coating before final grinding and polishing performed by REOSC.

The design of the Electromechanical Unit is progressing well. The Final Design Review is expected in November after a series of tests on the Chopper breadboard. This breadboard will later be converted into the final chopper unit to the extent that the tests are successful. The highly demanding dynamic performance required from the M2 units makes this test very critical and ESO looks (nervously) forward for the first results in September 1995.

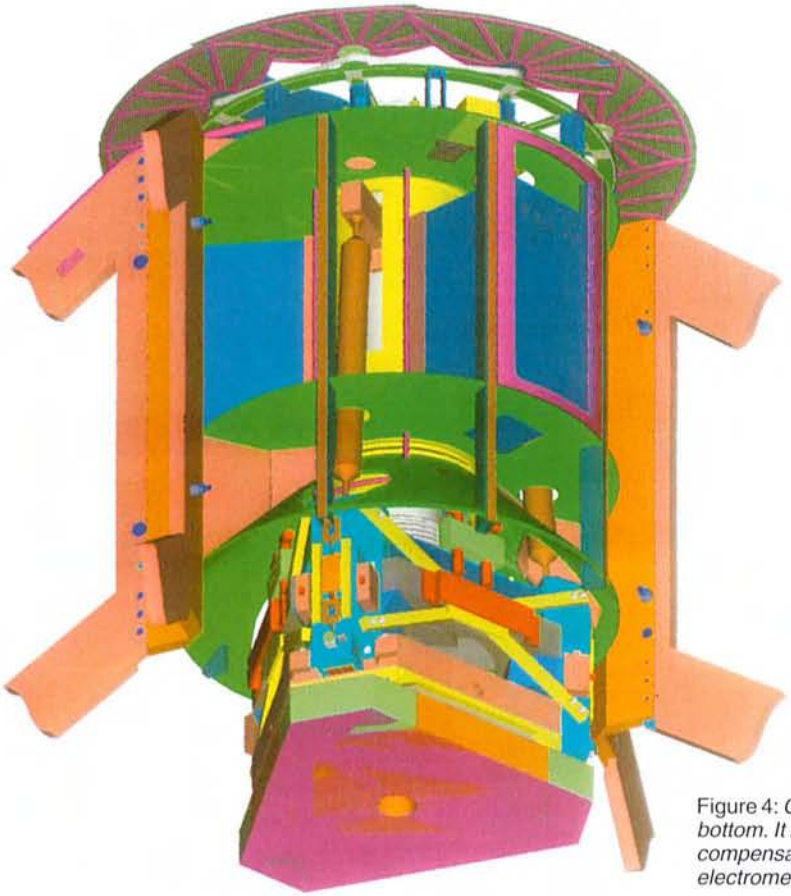

Figure 4: *CAD picture of the M2 Unit. The chopper stage is located at the bottom. It is equipped with a dynamically balancing system, intended to compensate the reaction forces which could cause oscillation of the electromechanical assembly.*

E-mail address:
D. Enard, denard@eso.org