Mr. P. Nørregaard, Brorfelde, has reprogrammed the microprocessor-based safety-system so that physical collisions between telescope base and auxiliary equipment remain impossible.

H. Pedersen, ESO

MIDAS Memo

ESO Image Processing Group

1. Application Developments

An extended CCD reduction package made by S. Jörsäter, Stockholm Observatory, has been implemented in MIDAS. This package includes tools for standard reductions of CCD frames such as dark current and sensitivity corrections. A set of sophisticated routines also allows the user to make mosaics of several frames including photometric adjustments of the individual exposures.

A calibration directory structure is being created. This will contain general calibration data useful for reduction of data from La Silla. The first data to be included are tables of spectral lines, flux of standard stars, and extinction data. Information on filter transmission curves, performance of ESO CCD chips, gratings efficiencies, etc. will be added later.

2. Portable MIDAS

The developments of the portable version of MIDAS are proceeding according to schedule. The portable monitor has been tested successfully on a μ VAX ULTRIX system while internal verifications on a SUN and Bull SPS 7 system are in progress. The full Table File System has been ported using the new set of table interface routines. The Fortran application code has been converted from VAX/VMS Fortran to standard Fortran with 5 simple extensions (i.e. INCLUDE, IMPLICIT NONE, !-comments, ENDDO and long internal names). A preprocessor was made for Fortran compilers which do not support these extensions.

We are also happy to announce that a new UNIX system programmer, Carlos Guirao Sanchez, has joined the IPG. One of his main responsibilities is to develop and maintain the system dependent interfaces of MIDAS. He will therefore be strongly involved in the implementation of MIDAS on new systems.

3. MIDAS Workshop

The next Data Analysis Workshop, arranged by the ST-ECF, will be held on the 26th and 27th April, 1988. For the convenience of people who also want to participate in the MIDAS workshop, the Image Processing Group has scheduled this workshop for 28th April, 1988. The programme will include sessions on general developments and new applications. Since the Portable version of MIDAS will be made available during this summer, a significant part of the MIDAS Workshop will be devoted to this topic. We anticipate giving a demonstration of a prototype of the Portable MIDAS during the workshop. A tentative agenda will be sent out to all MIDAS sites together with other material for the Data Analysis Workshop. People interested in participating in the Workshop should contact either the IPG or the ST-ECF.

4. MIDAS Hot-Line Service

The following MIDAS Support services can be used in case of problems to obtain fast help:

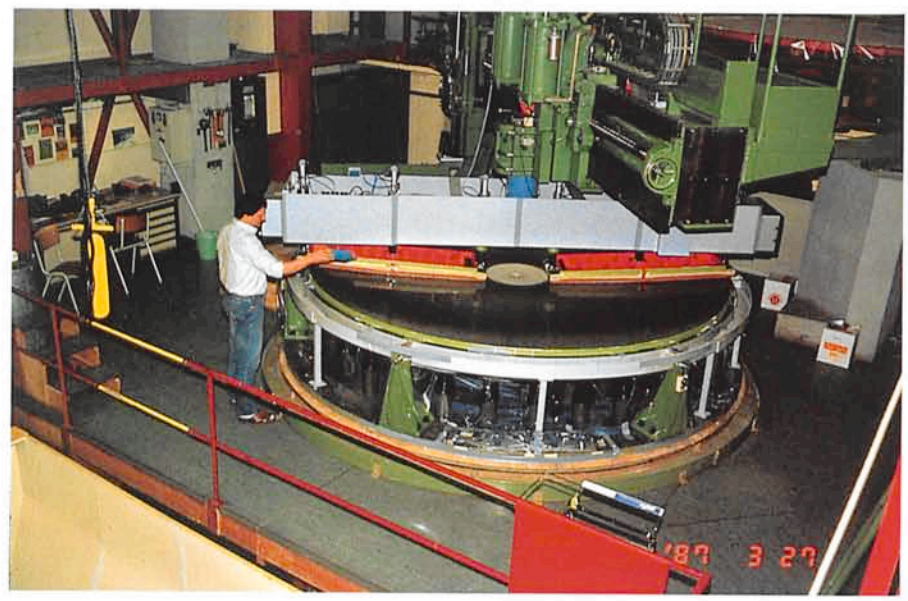
- EARN: MIDAS@DGAESO51
- SPAN: ESOMC1::MIDAS
- Tlx.: 528 282 22 eso d, attn.: MIDAS HOT-LINE
- Tel.: +49-89-32006-456

Also, users are invited to send us any suggestions or comments. Although a telephone service is provided, we prefer that requests are submitted in written form through either electronic networks or telex. This makes it easier for us to process the requests properly.

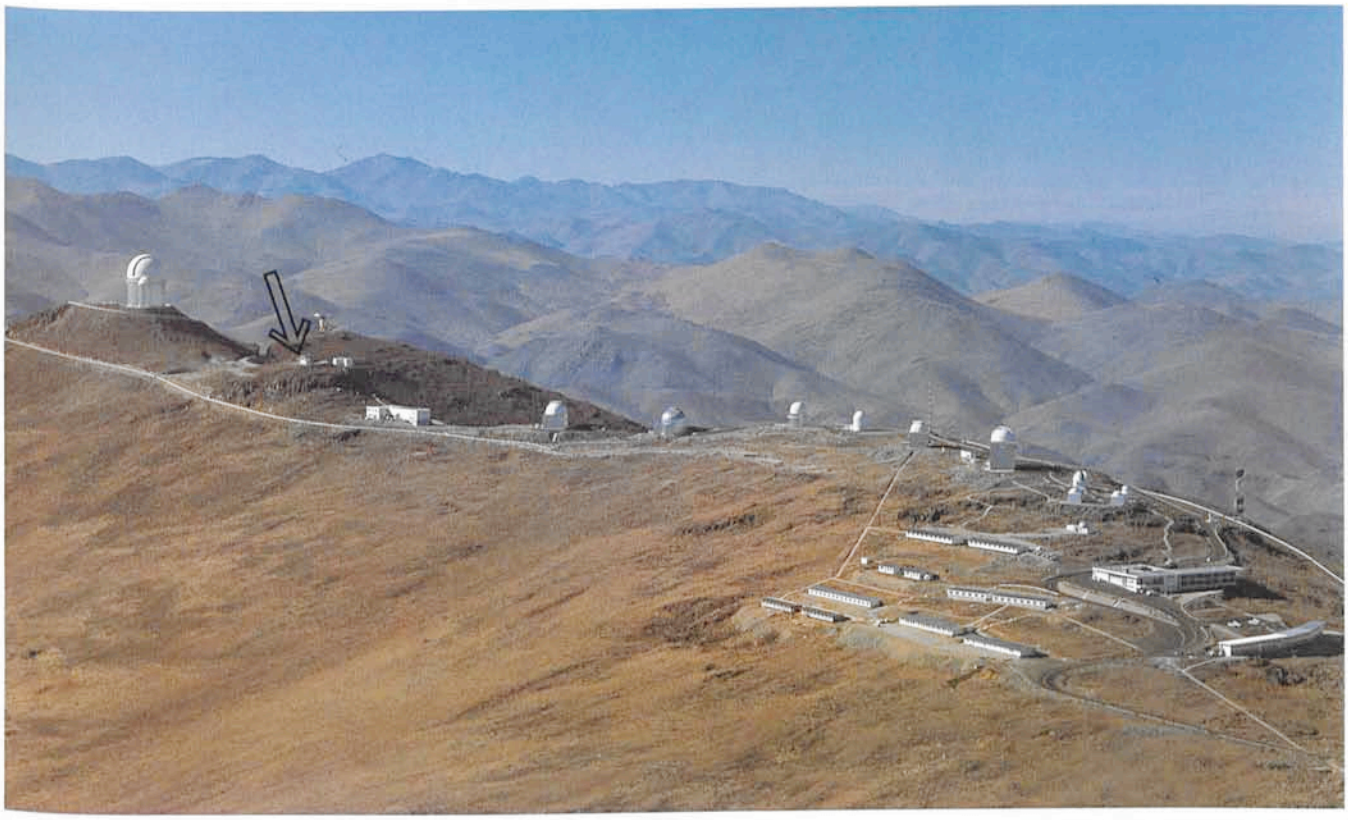
Unusual Building for the ESO NTT Arrives at the La Silla Observatory

Early in February, M/S *Cervo* arrived in the harbour of Valparaiso, Chile, with the packaged parts for the building which will house the ESO New Technology Telescope (NTT). Soon thereafter, the 350 ton load was hauled by road to the ESO La Silla observatory in the Atacama desert, some 600 km north of Santiago de Chile. Here, at one of the best astronomical sites on earth, the giant mechanical puzzle will now be put together to form one of the strangest telescope domes ever seen.

The NTT will be mounted in a rotating building with an unusual octagonal shape. It has been designed to ensure maximum exposure of the telescope to the external environment during observation, while protecting the structure from strong winds and dust. Furthermore, the floor of the building is actively cooled and the temperature in the telescope room and in the instrument rooms is maintained at the level of the



The 3.58-m NTT main mirror being polished at Zeiss, Oberkochen, F.R.G.



Aerial view of La Silla. The site for the NTT building is indicated by an arrow. Photograph by C. Madsen, February 1987.

outside temperature at night. These features will improve the NTT performance, as compared to other telescopes, since there will be less turbulence in the surrounding air and the images of astronomical objects will therefore be sharper.

The exact shape of the building was determined by wind tunnel tests at the Technical University of Aachen.

The building was conceived at ESO and designed and manufactured by a consortium of Italian companies (MECNAFER, Mestre, ZOLLET, Belluno, and ANSALDO Componenti, Genova) in close cooperation with a number of European industries. One of these is RKS France who manufactured an extremely precise roller bearing with diameter of no less than 7 m, a key component of the rotating system.

It will take almost six months to complete the erection of the rotating building at La Silla.

The NTT itself has now been dismounted and will be shipped to Chile with arrival in the course of May 1988. It will then be erected inside the rotating building and it is expected that the first sky observations begin at the end of 1988.

Here are some data for the NTT project:

Estimated price of the NTT project: 25 million DM
Size of NTT building: 18 m (high) × 17 m × 17 m
Weight of building: 250 tons
Length of telescope tube: 8 m
Weight of telescope: 125 tons
Main mirror material: Zerodur
Size of main mirror: Diameter 3.58 m; Thickness 24 cm; f/2.2
Weight of main mirror: 6 tons
Foci: 2 Nasmyth platforms, f/11, with fixed infrared and visual multi-function instruments.

ALGUNOS RESUMENES

Observaciones infrarrojas de estrellas variables, con el telescopio de un metro.

Muchas estrellas son variables. El primer observador de estrellas variables fue el holandés Fabricius, quien a fines del siglo XVI descubrió, en la constelación de la Ballena (Cetus), un objeto estraño que aparecía y desaparecía, con un período de un año. Este fenómeno estaba en plena contradicción con el dogma clásico que establecía que las estrellas eran objetos perfectos que no pueden cambiar. Entonces, Fabricius llamó a este objeto Mira Ceti (la maravilla de la constelación de la Ballena). Posteriormente, se descubrieron muchas estrellas variables y aquellas que, como Mira Ceti, tienen un período de un año o más y son rojas, fueron apodadas Miras. Hoy sabemos que ellas son gigantescas: su radio mide entre cien y mil veces el radio del Sol, lo que las hace entonces más grandes que la órbita de la Tierra. Su luminosidad es mil a cien mil veces la del Sol. Las teorías de evolución estelar predicen que, en algunos billones de años, el Sol también será una Mira por un millón de años antes de extinguirse definitivamente.

La superficie de estas estrellas no está bien definida, y contínuamente ellas pierden material. A grandes distancias, este material se enfría lo suficiente como para condensarse y luego formar una especie de polvo. Este polvo absorbe la luz estelar y la reemite en la gama infrarroja. La densidad del polvo puede aumentar a tal punto que la totalidad de la luz de la estrella central es absorbida; en este caso detectamos solamente una fuente infrarroja.

Muchos de estos objetos infrarrojos fueron descubiertos por el astrónomo francés N. Epchtein, utilizando el telescopio de un metro, en La Silla. Ahora, después de tres años, algunas de esas fuentes son observadas regularmente con el mismo telescopio para apreciar los cambios de luminosidad. Se puede hacer este tipo de observaciones infrarrojas tanto de día como de noche; pero, por supuesto, es más fácil de noche. Los períodos son a veces mucho más largos que el de Mira Ceti. Por ejemplo, la estrella designada por OH/IR 286.50+0.06 (Fig. 1,