GEMINI

# NEWSLETTER

Issue 15 December 1997

GEMINI

*8-Meter Telescopes Project*

## *Mauna Kea Enclosure Weathertight*

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United States ● United Kingdom ● Canada ● Chile ● Brazil ● Argentina

Mirror Blank #2 on the grinding table at REOSC, August 1997.

Test fitting the M1 lifter with the M1 cell to ensure it clears the lateral supports (September 1997)

# A NOTE FROM THE DIRECTOR: THE GEMINI PARTNERSHIP

The events over the last six months have certainly tested the Gemini partnership and demonstrated its strength. Gemini 8-M Telescopes Project has for a long time been committed to keeping its overall capital budget within the agreed limits and to delivering both telescopes on schedule to its international astronomical communities. Consequently, it was with considerable difficulty that on entering 1997 I felt it necessary to inform the Gemini Board that without guaranteed contributions from all our partners through 1997 - 2001 we would have little option but to slow the Project down to ensure we could maintain a positive cash flow throughout 1997 and 1998. Of course slowing down the Project would also have the effect of ultimately increasing the final cost to all the partners of the Gemini 8-M telescopes. The Gemini Board acted promptly, and discussions were started with Australia to see if they could take up the Chilean 5% share of Gemini, if Chile were unable to clear up the various national issues blocking their contributions to Gemini by 31st August.

What followed was an intense period of activity involving AURA, CONICYT and the US Embassy. Through the considerable efforts of several individuals, including Ambassador Barnes (former US Ambassador in Chile), and with the support of the Chilean astronomical community, the Chilean Congress passed legislation to normalize Gemini's legal position in Chile and to release $3.5M in Gemini contributions. On Friday, 22nd August, President Frei signed the bill into law and at approximately 4:30pm EST, on Friday, 29th August, the NSF received Chile's contribution, meeting the Board deadline of 31st August. It was a tense time for all concerned. To quote Dra. Maria Teresa Ruiz, the first astronomer to win Chile's Presidential Science Prize, and the newly appointed Chilean Gemini Project Scientist, "After what we had to go through I feel eager to put it all behind and start thinking constructively!"

So where does this leave Australia's nascent discussions with Gemini? To quote Wayne van Citters of the NSF from a recent article in Physics Today (October 1997), "The Australians would bring a lot of scientific and technical expertise to the partnership. So the possibility that they might add about $9 million to a project that is just getting under way is something we will discuss seriously in the next month or two."

*-Matt Mountain*
*Gemini Project Director*

# HOT NEWS!

The Adaptive Optics System for Gemini North has just successfully completed its Preliminary Design Review. The review was chaired by Peter Wizinowich of Keck. Many thanks to Peter and the Review Committee for their time and helpful comments. The Project has begun work on addressing some of the preliminary comments, given in advance of the final report. Congratulations to the Canadian Team, led by Glen Herriot and Simon Morris, on a job well done.

*-Jim Oschmann*
*Systems Engineering and Facility Instrumentation Manager*

**Figure 1**. A computer-generated image of the GAOS.

# PROJECT STATUS UPDATE – DECEMBER 1997

Despite a number of threats to the schedule in critical areas, we continue to project first light for the Mauna Kea telescope in December 1998. Construction of the Gemini Hilo Base Facility in the University Park at the University of Hawaii at Hilo started in August. The facility should be ready for occupancy not later than August 1998.

**Figure 2.** Hilo Base Facility construction, September 1997.

Construction at the Mauna Kea site is in full swing. Four major activities are closely intertwined and underway concurrently. Electrical, mechanical, and architectural fitup of the support facility and enclosure base are well along and due to be completed by the end of 1997. The enclosure carousel was weathertight by late October and erection should be completed by year-end.

The top and bottom halves of the coating chamber were received at Kawaihae and successfully transported to the summit in August. Installation and commissioning of the coating chamber in the enclosure base is underway and will also be completed by year-end.

The telescope structure and azimuth track also arrived at Kawaihae in August and the azimuth track (Gemini's widest and heaviest load) has been transported to the summit. Installation of the telescope structure starting with the azimuth

**Figure 3.** Transportation of the Mauna Kea Coating Plant up Mauna Kea, August 1997.

track should be completed in April 1998. NFM has started preassembly of the second telescope structure at Le Creusot. Disassembly and preparation for shipment to Chile should happen in May 1998.

At Cerro Pachon, construction has resumed after a series of severe winter storms and a magnitude 6.8 earthquake in October. The bad weather caused delays and damaged the road to Cerro Pachon, but other damage due to these natural calamities was minor. Installation of cladding on the support facility and enclosure base is complete and erection of the enclosure has begun.

**Figure 4.** Cerro Pachon, October 1997.

Both primary mirror blanks have been delivered by Corning and are now at the REOSC polishing facility outside of Paris. By December the

Mauna Kea primary will be ready for final acceptance testing with a figure error less than 30 $nm_{rms}$. It is scheduled to arrive in Hawaii in March 1998. Fine grinding is complete on the Cerro Pachon mirror with the surface error at less than one $micron_{rms}$.

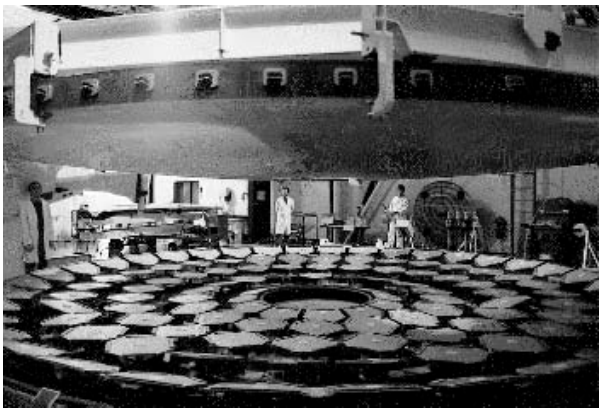


**Figure 5.** The #1 mirror being lowered onto the metrology mount at REOSC, July 1997.

The primary mirror support and thermal control systems are being integrated into the mirror cell structure by a Gemini/RGO team at the NFM facility in France. The integrated primary mirror cell is also scheduled to arrive in Hawaii in March.

**Figure 6.** The first M1 cell during installation of the mirror support system, August 1997.

We are encountering major difficulties obtaining our SiC secondary mirrors. Morton Advanced Materials has so far been unable to successfully produce a SiC blank. As an interim measure our secondary mirror prime contractor, Zeiss, has agreed to provide a lightweighted Zerodur secondary mirror on a schedule that allows us to reach first light before the end of 1998. The Zerodur secondary should arrive in Hawaii in August 1998. The rest of the secondary mirror assembly is going very well. Lockheed Martin has completed acceptance testing the Mauna Kea tip/tilt/focus/chopping mechanism and delivered it to Tucson in November 1997 for integration with the slow positioning mechanisms and deployable baffle.

Most of the software work packages (e.g. the

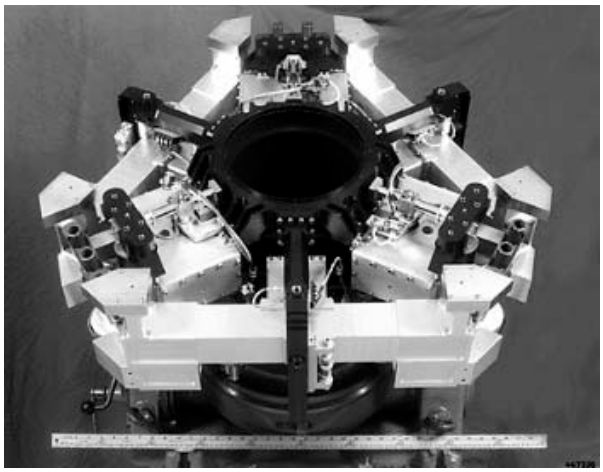


**Figure 7.** Secondary mirror tilt mechanism at Lockheed, August 1997.

top-level observatory control, the telescope control, and the data handling systems) are at the beta-release level. The Gemini-supplied instrument control system that forms the core of the control systems of the individual Gemini instruments completed final acceptance in September. Design of the communications system for Gemini North, including the summit, Hale Pohaku, and the base facility in Hilo, has been completed. Procurement and installation of the equipment has begun.

The work on facility instrumentation (the instrument support structure, Cassegrain rotator/cable wrap, acquisition and guiding system, and wavefront sensors) at AMOS, Zeiss, RGO and DAO is on track for delivery to Hawaii next spring. The prime focus wavefront sensor had successful test runs on the KPNO 4-meter telescope in October and is scheduled for runs on UKIRT in January 1998. Preliminary design review of the natural guide star Gemini

Adaptive Optics System (rechristened ALTAIR) occurred at the end of October. This system is due for deployment on Gemini North in 2000, but the team at DAO is trying to accelerate the development and bring delivery forward into 1999.

Fabrication of the Near-infrared Imager (NIRI)

**Figure 8** - the Acquisition and Guiding Unit project team in front of the three of the four modules for Unit 1.

at the University of Hawaii continues. We hope to have this instrument on the Mauna Kea telescope at first light, but we have growing concerns that it may not be ready in time. Critical design review of the Near-infrared Spectrograph (NIRS) being developed by NOAO took place in November 1997. This instrument is scheduled to arrive on Mauna Kea in the fourth quarter of 1999. In September we received the first two 1024 X 1024 InSb arrays produced by SBRC for Gemini. They are currently being tested at NOAO. One device is potentially science-grade with all quadrants functional. Rounding out the infrared instrumentation, competitive proposals to develop a Mid-infrared Imager (MIRI) for Gemini have been received. Selection of the MIRI developer should occur this fall.

Agreement was reached on a reduced scope for the Gemini Multi-Object Spectrographs (GMOS) and additional funding has been allocated to enable development to proceed. For the initially delivered instruments, the number of gratings and filters were reduced and the integral field units were removed. Fabrication of GMOS in Canada and the U.K. is well underway. The first GMOS should be delivered to Mauna Kea in the fourth quarter of 1999. Conceptual design of the other Gemini optical instrument, a Cassegrain-mounted High-Resolution Optical Spectrograph (HROS), was completed this past summer, but the estimated cost to complete this instrument significantly exceeded the budgeted cost. The requirements have been reviewed and simplified (primarily removal of the requirement for resolutions >50,000) to bring the estimated cost of HROS within the available budget. Capability for resolutions >120,000 will be implemented with a future fiber-fed spectrograph located in the more stable environment of a laboratory in the telescope pier.

With the first generation of scientific instrumentation well into development, attention has turned to on-going development of new instrumentation for Gemini. Representatives from all of the scientific communities of the Gemini partnership met in January 1997 to define the scientific goals and requirements for future instrumentation (see Gemini Newsletter #14, June 1997). A Gemini Instrument Forum, again with all partners represented, has been established to address the programmatic issues arising with instrumentation development and to formulate a proposed on-going instrumentation development program that meets the scientific expectations of the Gemini communities within the constraints of the projected funding. The first round of new initiatives proposed as a result of this process include an integral field unit (IFU) for GMOS, an IFU for the near-infrared spectrograph, polarization modulation capability on both Gemini telescopes and associated analyzers for instruments, and a laser guide star adaptive optics system for Gemini South.

*-Richard Kurz*
*Gemini Project Manager*

# GEMINI OPERATIONS

This is the first year of the "official" ramp-up of facilities and infrastructure toward operations. There are two main foci of this activity that go hand in hand: the establishment of the long-term base facilities and administrative systems, and the immediate use of these in direct support of the integration and commissioning efforts for the two telescopes. An important part of this approach is the ramp-up of integration and commissioning personnel. A number of these shorter-term positions will be continuing into the operations era to preserve technical experience with the very complex systems.

Since the North Telescope is deliberately phased ahead of the South, the bulk of the current activity is taking place in and around Hilo. The 16,500 square foot operations base facility in Hilo is well under construction next door to our partners at the Joint Astronomy Centre (JAC). The expected completion date in June or July 1998, which will be "just in time" to support the final push to first light.

In the meantime, the Hilo staff is housed in temporary quarters on the second and third floors of the Hilo Plaza building in historic downtown Hilo, and in its warehouse facility in the Free Trade Zone adjacent to the Hilo airport. The project has a staff of more than 20 in Hilo now and the ranks are swelling at the rate of about five per month. The count will reach more than 70 by August 1998, as a substantial fraction of the group presently headquartered in Tucson move to the Hilo base and join the additional staff being hired there.

On a related front, a resource-sharing agreement has been implemented between the JAC and Gemini for work in Hawaii. Under this agreement, there is an ongoing sharing of staff and facilities to the mutual benefit of both Gemini North and the JAC. This agreement will be even more useful when the Gemini Hilo Base Facility is finished and the two staffs and their facilities are housed a few meters apart.

On the administrative front, Gemini has recently assumed a substantial fraction of the administrative services functions that were previously performed by NOAO in Tucson. These have included a comprehensive computer-based purchasing, accounting, and control system that allows decentralized processing of transactions and retrieval of data at the three different work sites, while providing for global tracking and reporting.

In the South, there are ongoing discussions aimed at developing an independent AURA "Mauna Kea Support Services-like" organization to provide basic infrastructure support to CTIO, Gemini South, SOAR, and other programs that might make use of the observing sites at Cerro Pachon and Cerro Tololo. Procedures and processes are being developed to provide interfaces between the individual research programs and the current expertise in procurement, contracting and human resources available at CTIO. A small Gemini administrative group has begun activities in La Serena working with their CTIO counterparts.

Efforts are also ramping up to provide enhanced network services both in Chile and Hawaii. These are essential to implementing the high-speed channels required between the two telescopes and their respective base-level operations rooms, as well as for high-speed communications between the north and south sites and the community at large. When in place, these facilities will be the "glue" that ties the two telescopes into a single observatory.

*-Jim Kennedy*
*Gemini Operations Manager*

# REPORTS FROM THE NATIONAL PROJECT OFFICES

## *US GEMINI PROJECT OFFICE*

As mentioned in our contribution to the last newsletter, we are in the process of integrating the US Gemini Program into NOAO's new Science Operations Division (now called SCOPE). This change has the advantage of providing a pool of resources with which to address our operations-phase responsibilities, but the additional constraint of similar responsibilities for a number of other facilities. Initial activity associated with telescope proposal submission, investigating costs and benefits of archiving, and identifying data reduction requirements is proceeding well.

Progress has been made during the last six months on all the instrumentation efforts related to Gemini. The near-infrared imager (NIRI) is well into fabrication at the University of Hawaii, and the near-IR spectrograph is nearing its critical design review, which has slipped slightly to the middle of November. The first two InSb arrays that are part of the Gemini foundry run at Santa Barbara Research Center have been characterized at NOAO. One of these is an intermediate grade device with all four quadrants working. The second array has a number of defects that make its usefulness questionable, and will be used as a test array. The next two arrays from SBRC should be arriving for testing by December. Work on the IR array controllers is proceeding, and the first one, destined for NIRI, is being integrated into a cooled electronics enclosure.

The Mid-IR Imager (MIRI) was the subject of a recent competitive evaluation to select a supplier to build this instrument. A number of conceptual design approaches were investigated as part of an earlier phase of this procurement. A committee met in September to evaluate proposals to develop complete designs and build the instrument, scheduled to be delivered to Gemini South in 2000. Several good proposals were reviewed, and negotiations are proceeding with one of the groups.

In late September, SCOPE organized a three-day workshop in Tucson to identify and quantify the supporting facilities needed for the US community to use its large telescopes effectively. This workshop was initiated by discussions arising in the US Gemini Science Advisory Committee and gained momentum due to interest from the GSC and the Gemini Project. It has long been perceived that the very large telescopes, such as Gemini, would be "fed" by smaller telescopes with wide fields and a large range of different capabilities. Also, these smaller telescopes are expected to supply preparatory, calibration, and complementary observations. Our effort to provide solid justification for these ideas used a science-based approach. Fifty astronomers from around the US (plus one from Canada and one from Australia) worked in 8 panels, devising major programs that they would like to carry out with 8-meter class telescopes. They then analysed these programs from beginning to end in order to understand all the necessary capabilities that they would need to implement them aside from the very large telescopes.

The results, though not surprising, are very interesting for the details and points of view that they exposed. There was unanimous recognition that wide-field telescopes will be necessary to provide enabling survey material from which to draw samples to answer important astronomical questions. Over 2000 nights on 4-meter telescopes were identified as needed for the programs that these groups investigated. However, the groups also identified many other areas that require development and coordination for such surveys to be possible. These include detector development, software pipelines, accessible archives, and community involvement. It became clear that each of these should be

examined in turn in the context of surveys to support large telescopes. We are looking forward to comparing the results of this exercise with those of similar activities in the other Gemini partner countries.

*-Todd Boroson*

## *UK GEMINI PROJECT OFFICE*

The **Core Instrument Control System** passed its acceptance testing review on 29 August 1997, and is now available for instrument groups to use. The final version of the CICS contains 770 pages of documentation, 11137 lines of C, 7115 lines of EPICS state notation language, 115 Capfast diagrams with 1630 EPICS database records, and 54 engineering screens. Figure 9 shows a screen shot of the engineering screen for the CICS Components Controller. A Project History document is being made available to instrument groups so they may benefit from what has been learned while developing the CICS. Although the main CICS work has been completed, Steven Beard will still be available to provide consultation to instrument groups for the foreseeable future.

The CICS Components Controller was merged with the NIRI mechanism control software in May 1997 to produce the first complete top-to-bottom instrument control system. The CICS engineering screens were used to drive Hubert Yamada's mechanism control software, which drove prototype filter wheel and focus stage mechanisms in the laboratory. It is hoped that the CICS can be merged equally successfully with GNIRS and GMOS systems.

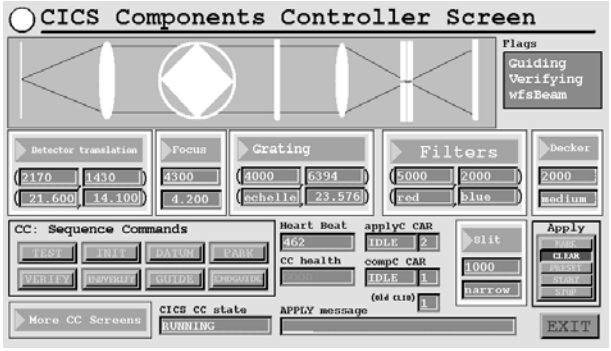



**Figure 9**. CICS Components Controller Screen.

The **Michelle Project** has now entered the integration phase when the major hardware components are being delivered and optical alignment and system testing has begun. The Main Optical Bench (an aluminium casting) and the Front Optical Bench (NC fabrication) (Figure 10) were delivered in late summer and after some initial mechanical fit checks are now being used for warm optical testing. Michelle uses diamond-turned aluminum alloy mirrors throughout and until these deliveries it has only been possible to confirm the optical performance of individual sub-assemblies.

The Radiation Shield, a welded aluminum structure, was delivered last week and two of the four components making up the vacuum vessel have also been received. Figure 11 shows the cast centre section of the Vacuum Vessel prior to machining. The centre section provides the main structural support of Michelle at UKIRT and is due to be delivered, along with the Front section by early November. Vacuum integrity testing is scheduled for November with initial cooldown tests around the turn of the year. The first full cooldown with all optics, array electronics, etc. is planned for February 1998

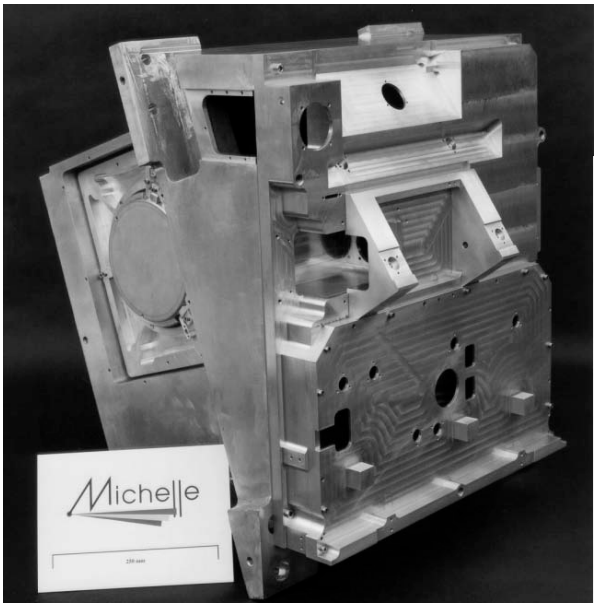



**Figure 10**. View of Main Optical Bench and Front Optical Bench. Scale is 250mm long.

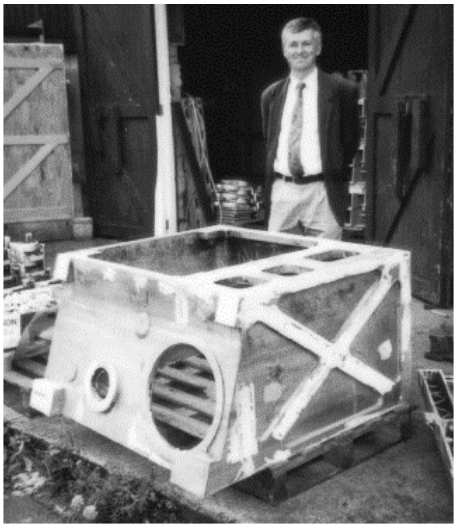


**Figure 10.** Michelle Vacuum Vessel - Centre Section Casting. Size approx 1.2m square by 0.75m deep.

and we currently hope to leave for UKIRT in late 1998.

*- Ian Bryson and Alistair Glasse*

## *CANADIAN GEMINI PROJECT OFFICE*

The focus of our effort has been in two areas: progress on our work packages and planning for the operations era.

The Canadian Gemini Science Steering Committee (CGSSC) held its annual meeting at the Herzberg Institute of Astrophysics (Dominion Astrophysical Observatory) in Victoria, BC on August 1 and 2, 1997. A large fraction of this meeting was spent reviewing existing facilities of interest to Canadians, and defining the support capabilities Canadian astronomers would need to prepare and to conduct their scientific programs with the Gemini Telescopes. Phil Puxley of IGPO participated very actively in the first day of the meeting. He exchanged views with the committee members on issues related to needed support requirements and to the role of the National Offices during the operations era of the Gemini Observatory. It was noted that there were many common links between the science that will be conducted from Gemini and from cm, mm and sub-mm radiotelescopes.

The CGSSC congratulated the GMOS team for their highly successful and productive efforts in the design of the instrument, and reiterated the scientific importance of integral field units.

The recommendations of the Abingdon meeting on Future Gemini Instrumentation were reviewed and discussed, and priorities were assigned which best correspond to Canadian astronomical goals. The CGSSC then discussed staffing requirements to support Canadian Gemini users and explored various models. The CGSSC re-stated the potential scientific impact of a Gemini science archive, and emphasized that the scientific usefulness of the Gemini archive would be guaranteed only with a well defined set of baseline calibration exposures during each observing sessions.


The Gemini Adaptive Optics Team, led by Glen Herriot and Simon Morris, has shipped the documentation for the preliminary design review. They have also chosen a new name for this facility: ALTAIR, for “ALTitude-conjugated Adaptive optics for InfraRed”, and they have developed a logo incorporating the summer triangle. The star name Altair means "the Eagle", which is very fitting given the visual acuity of Eagles.

Brian Leckie and Tim Hardy have obtained very promising results with the EEV CCD-39 used for the wave front sensors, working with the San Diego State University controller SDSU-2. Brian reports that two 80x80 CCD's in TEC packages have been received from EEV. These packages contain a two-stage Peltier cooler and are evacuated and backfilled with Krypton. These were tested with a four-channel CCD controller; the second controller shipped to DAO from SDSU and the first to incorporate the liquid-cooled card cage. The measured read noise is 4.5 $e_{rms}$ at 400 kpx/s. Measured dark current is 10 $pA/cm^2$ at room temperature in inverted mode operation. Measured hot side to

cold side temperature difference is 60ºC. The quantum effiency is about 80% at 700nm.

The CADC group has reached a bit of a milestone with the Data Handling System. We have managed to take simulated instrument data and pass it through the DHS and display it on the quick look system. The system is currently undergoing stress testing which seems to be going well. We should be in a position to provide performance measurements soon.

*-Andy Woodsworth*

### *CHILEAN GEMINI PROJECT OFFICE*

Much has happened in Chile since the last newsletter:

1. Dra. Maria Teresa Ruiz, a Chilean astronomer from Universidad de Chile, has been appointed as the new Gemini Project Scientist for Chile.
2. We have a new President of CONICYT. His name is Dr. Mauricio Sarrazin, and he is a seismic engineer (PhD at MIT 1971). Dr. Sarrazin will be representing Chile at the Gemini Board.
3. The Gemini Law was finally approved by the Chilean Parliament and this will give resources to CONICYT to be able to participate in the Project.
4. We are trying to reactivate our participation in the communications work package and beginning to collaborate in the site characterization of Cerro Pachón.
5. A new studentship was awarded to Mr. Jose L. Arenas, a Chilean student from U. de Concepción, to pursue doctoral studies at Keele University, UK. This studentship was possible due to a collaborative effort by PPARC, Fundación Andes, and CONICYT. So far, there are four Chilean doctoral students in the UK and three in the USA thanks to the Gemini partnership.
6. AURA's President, Dr. Goetz Oertel, visited CONICYT and met our new president, Dr. Sarrazin, in the past month of September.
7. John Casani, Chairman of the AURA Oversight Committee for Gemini, gave outstanding lectures on NASA's future science projects, and he visited the Gemini South site at Cerro Pachón.

*-Oscar Riveros*

## NEWS FROM AURA

### NEW AURA BOARD OF DIRECTORS & AURA OVERSIGHT COMMITTEE FOR GEMINI (AOC-G)

Effective July 1, 1997, the members of the **AURA Board of Directors** are:

| | |
|---|---|
| Bruce Margon, Chair ..... | University of Washington |
| Richard Zdanis, Vice Chair ..... | Case Western Reserve University |
| James Hesser ..... | Dominion Astrophysical Observatory |
| John Huchra ..... | Harvard-Smithsonian Center for Astrophysics |
| Gloria Koenigsberger ..... | Universidad Nacional Autonoma de Mexico |
| Leonard Kuhi ..... | University of Minnesota |
| Morton Lowengrub ..... | Indiana University |
| Jeremy Mould ..... | Mt. Stromlo & Siding Spring Observatory |
| Dennis O'Connor..... | Smithsonian Institution |
| Goetz Oertel, *ex officio* . | AURA |

Robert Rosner .....University of Chicago

Paul Schechter.....Massachusetts Institute of Technology

Lee Anne Willson .....Iowa State University

The Board is composed of thirteen members. Twelve members are elected by the Member Representatives[†] to serve for staggered three-year terms. The President of AURA serves as a member *ex officio*. The Chair of the Board is elected annually by the Member Representatives from among the members of the Board. The Vice Chair of the Board is elected by the Board itself.

The by-laws prescribe that at least four of the twelve Directors shall be Member Representatives, at least four shall not be Member Representatives, and at least two Directors shall come from non-U.S. institutions. Further, no more than four Directors may be non-U.S. citizens.

The Board establishes the policies of AURA, approves its budget, elects members of the Management Councils, appoints the AURA President, the Center Directors, and other principal officers. The Board of Directors is responsible to the Member Representatives for the effective management of AURA and the achievement of its purposes.

Effective July 1, 1997, members of the **AOC-G** are:

John Casani, Chair .....Jet Propulsion Laboratory

Jay Frogel, Vice Chair...Ohio State University

Victor Blanco .....retired Director, Cerro Tololo Inter-American Observatory

Peter Napier .....National Radio Astronomy Observatories

Goetz Oertel, *ex officio* .AURA

Wallace Sargent .....California Institute of Technology

Michal Simon .....State University of New York at Stony Brook

Domenick Tenerelli .....Lockheed Martin Corporation

The AOC-G is a Management Council of the Board. It is responsible for overseeing the management of AURA's responsibilities as the Managing Organization for the Gemini Project as agreed to by the international partnership. This includes carrying out periodic reviews of the program to ensure that the Project meets scope and other scientific and technical requirements within cost and schedule. AURA recognizes the role of the Gemini Science Committee in providing advice on scientific issues and does not provide independent scientific direction to the Project.

The AOC-G consists of eight core members and the AURA President, *ex officio*. Core members are elected by the AURA Board. Council members serve staggered three-year terms. One-half of the members are derived from the Board of Directors or the Member Representatives, or in combination therefrom. The other half come from outside the Board and Member Representatives. Management Councils elect their own officers.

*- Lorraine Reams*
*AURA Director of Corporate Relations*

[†]The president of each AURA member institution appoints one representative to serve as its Member Representative. Member Representatives typically are either astronomers or high-level administrators.

## RELEASED DOCUMENTATION

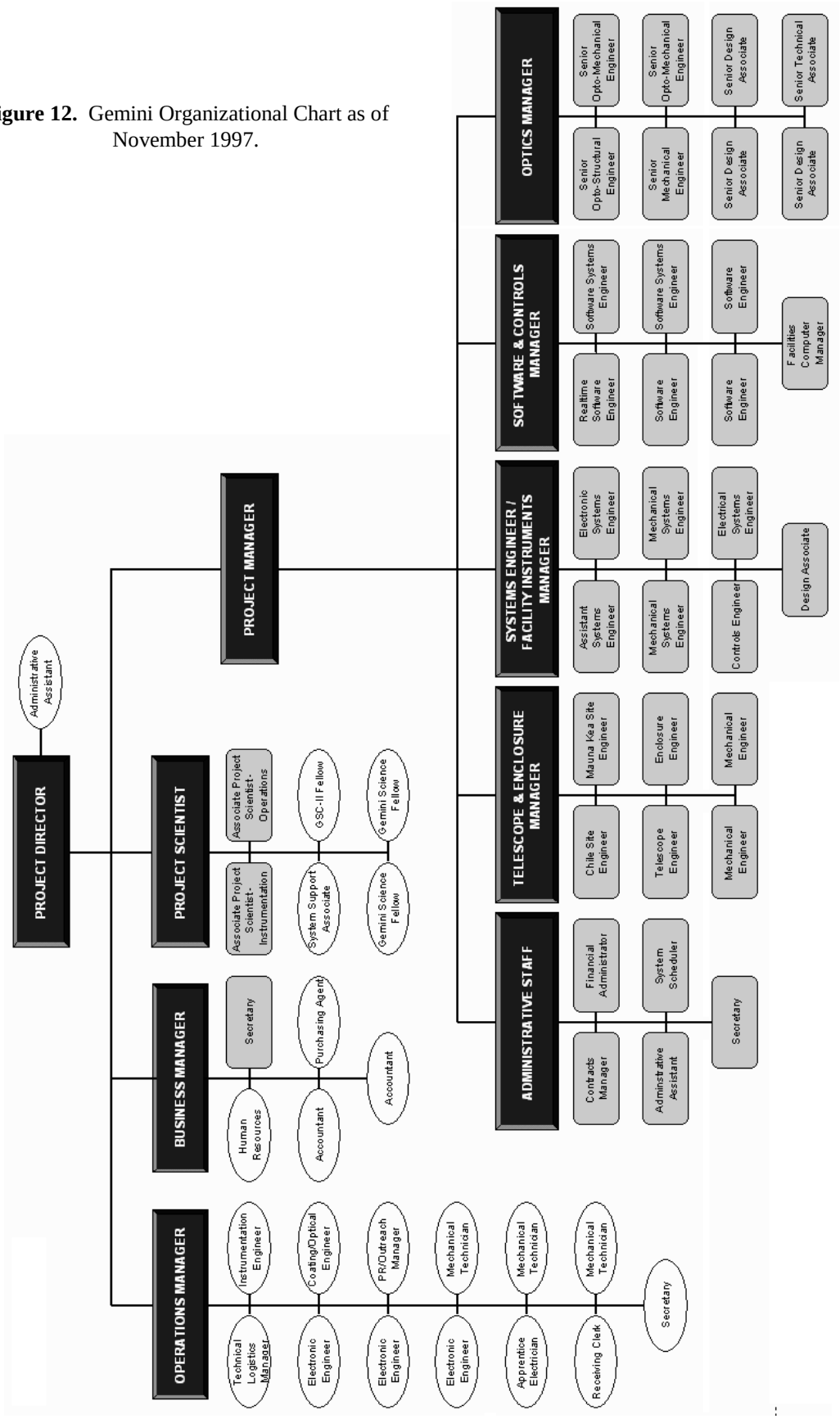
The following documents have been released by the Gemini Project since the last edition of the Gemini Newsletter (June 1997). Copies of these and other publications are available either via Gemini's Documentation page on the Web site at *http://www.gemini.edu/documentation/*; on request by contacting the Gemini Project systems librarian at the project address; or by emailing Ruth Kneale at *rkneale@gemini.edu*. Document numbers are listed in parentheses. **Please note:** This list does not include any Interface Control Documents. For current ICDs, please see the Gemini ICD database tool at *http://www.gemini.edu/systems/icd_main.html*.

- Basic Assembly and Use of the Cerro Pachon Weather Station. Simons, Jul-97 (TN-PS-G0052)
- ECS prototype review documents. Wooff/Yeung, Jul-97 (REV-C-G0107)
- SCS Beta Review Documents. Paterson, Jul-97 (REV-C-G0108)
- Health and Alarms. Wampler, Aug-97 (TN-C-G0053)
- Therm-optic analysis of bi-metallic mirrors. Vukobratovich/Gerzoff/Cho, Aug-97 (Preprint #24)
- Self-learning Bayesian centroid estimation. Dillon et al, Aug-97 (TN-I-G0054)
- Gemini Instrument Site Safety Policy. Hunten, Aug-97 (PG-I-G0010)
- Safety Plan for M1 Cell Assembly Area at NFM Technologies. Stepp, Aug-97 (PG-O-G0011)
- PCS Beta Review Report. Stewart, Aug-97 (REV-C-G0109)
- SCS Beta Review Report. Stewart, Aug-97 (REV-C-G0110)
- ECS Prototype Review Report. Stewart, Aug-97 (REV-C-G0111)
- MCS Implementation Phase I Review Report. Stewart, Aug-97 (REV-C-G0112)
- OISWG Report. Gillett, Aug-97 (SWG-I-G0045)
- Hydrogen recombination lines in the compact HII region K3-50a. Puxley, Aug-97 (Preprint #25)
- Hydrostatic Bearing Control System Design Review Report. Hunten, Sep-97 (REV-S-G0114)
- TCS Beta Review Materials. RGO, Oct-97 (REV-C-G0115)

## STAFF CHANGES AT GEMINI

Several significant changes in the Gemini organization have occurred in the last six months. In June Jim Kennedy became Gemini Operations Manager. Jim's primary responsibility will be coordinating a smooth transition from the construction project to an operational observatory. On the down side Rick McGonegal, Controls & Instrumentation Group Manager, resigned and left Gemini on August 15, and Ken Krohn, Business Manager, resigned and left at the end of October. Rick's responsibilities for controls and software work have been taken over by Steve Wampler, and his instrumentation responsibilities have been reassigned as follows: Jim Oschmann is responsible for facility instrumentation, including adaptive optics, Doug Simons is responsible for the Phase 1 scientific instrumentation, and Fred Gillett is responsible for on-going scientific instrumentation development. The buildup of the Gemini operations staff has accelerated in the second half of 1997 with 22 new employees as of November (the ovals in Figure 12).

**Figure 12.** Gemini Organizational Chart as of November 1997.



The Mauna Kea enclosure showing the vent and shutter, late October 1997.

The coating plant installed in the enclosure base coating area, late September 1997.



An artist's concept of the completed Hilo Base Facility (top), with images from the groundbreaking ceremony on June 24th, 1997.

# GEMINI

## 8-Meter Telescope Project

*THE GEMINI 8-METER TELESCOPES PROJECT is an international partnership managed by the Association of Universities in Research in Astronomy under a cooperative agreement with the National Science Foundation.*

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