

U S G P

U.S. GEMINI PROGRAM

General Status of the Gemini Project

Bob Schommer

As this article is being written (mid-April), the first Gemini proposals are being reviewed by the NOAO TACs and the Demonstration Science teams are being formed (see related articles). The telescopes and project are advancing rapidly, and this week the Gemini North primary is being re-aluminized (the first coating was "artisanal" in nature). The Hawaii AO system (Hokupa'a) and near-IR imager (QUIRC) performed well when on the telescope in early March; the telescope and system integration have advanced significantly (see the *Gemini Newsletter* for details). The chopping action of the secondary mirror system has been verified and has performed superbly, which is an important requirement for the use of OSCIR, the Florida mid-IR imager/spectrograph.

Our optimistic scenario is that science operations will start in mid-June with the Demonstration Science programs and that the telescope and system will be exercised by these staff and instrument team-led projects. By August, the first of the Quickstart projects from the community can begin and Gemini data will flow back to the Principal Investigators. The exact efficiency and scheduling of this operation are obviously still unknown.

We are awaiting the delivery to Gemini of the first facility instrument, the Near-Infrared Imager with grism spectroscopy (NIRI) from U. Hawaii. By the time you read this, it should have begun system integration at Gemini North. We hope to offer it by approximately the end of calendar year 2000. NIRI should be included in the next NOAO call for Gemini proposals, which has a deadline of 30 September for the 2001A semester.

Gemini South is actually several months ahead of schedule. The primary mirror, after delivery without untoward incident, is currently in the coating chamber on Cerro Pachón (see accompanying photo essay). Telescope system construction and testing are being completed, with first oil and first motion achieved. NOAO and the USGP will provide the IR imager 'Abu' as a commissioning imager for Gemini South. In addition, 'Phoenix,' the NOAO near-IR high-resolution spectrometer, will be shared between CTIO/SOAR and Gemini South (see the related instrumentation article).

I would like to take this opportunity to thank the instrument teams from U. Hawaii (Buzz Graves, Malcolm Northcott, and team) and U. Florida (Charlie Telesco and company) for providing their instruments for visitor use and supporting early science on Gemini North. The US and international Gemini communities owe them a very great debt, as they have enabled our first use of this important national telescope.

And finally, I would like to thank Todd Boroson for his 6+ years of service as US Gemini Project Scientist, and *all the help* he has given me over the past 6+ months. Whatever has succeeded in this transition and in the early scientific use of Gemini North has been the result of many months and years of Todd's tireless work and attention to an amazing number of details. Personally, he has made my life possible by providing an encyclopedic resource for all the things that are happening now with Gemini, and patiently explaining to me the history, rationale, and options that have been considered. I am sincerely grateful for his expert advice.



Gemini South Primary Mirror Arrives in Chile

USGP Staff

The primary mirror for the Gemini South telescope arrived safely in Chile in March. The mirror began its journey from the REOSC Optique outside Paris in mid-February and was shipped by sea, arriving at the Chilean port of Coquimbo in mid-March.

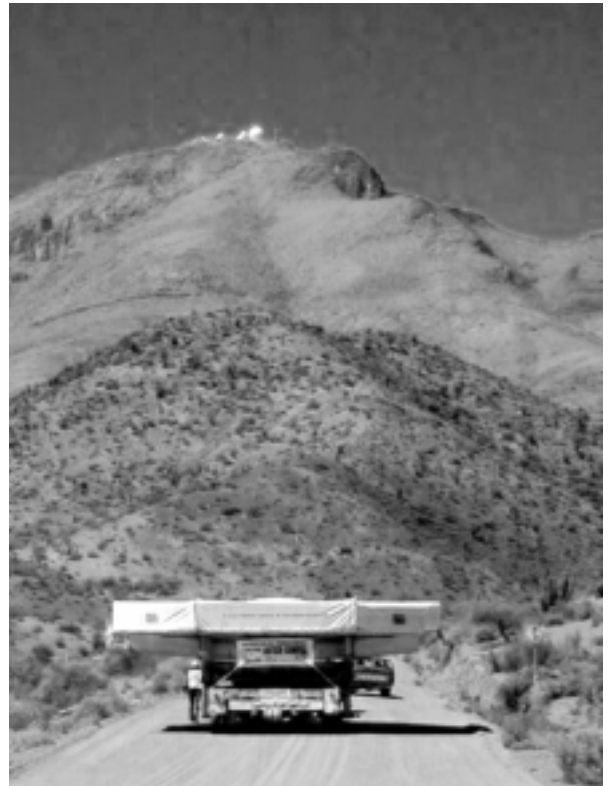
Early in the morning on March 15th, the mirror successfully passed through the Puclaro Dam Tunnel, the narrowest constriction on the route from the harbor, on its way to Cerro Pachón where it arrived on March 17th. The mirror now rests safe and sound within the coating chamber of the Gemini South enclosure. The mirror will see “first light” in the Gemini South telescope later this year.



Aboard the transport barge on the Seine.



Passing through the Puclaro Dam Tunnel.



On the Tololo road with Cerro Tololo in the background.

First Science: The Gemini Demonstration Science Program

Bob Schommer

The International Gemini Observatory received 22 letters of intent for the Demonstration Science Program, 12 from principal investigators in the US and 1 from Brazil, with significant US participation. In creating the Demonstration Science teams, the Gemini Project Scientists considered issues of international participation, team logistics and responsibilities, as well as scientific value and appropriateness. The two projects selected are a 10- μm deep field, led by P. Puxley (IGPO), and the Galactic Center AO program, led by F. Rigaut (IGPO). About half of the letters were new suggestions and half were offers to sign onto these two IGPO teams. Teams are now being put together. Both the teams will have significant US participation, including members of the USGP instrument support staff. The AO team will include participation of staff at the Center for Adaptive Optics (U. California, Santa Cruz).

Interestingly, the Demonstration Science letters of interest were 2:1 in favor of OSCIR projects, so the mid-IR capabilities are, as envisioned, an important component of the Gemini Observatory, even at this early stage.

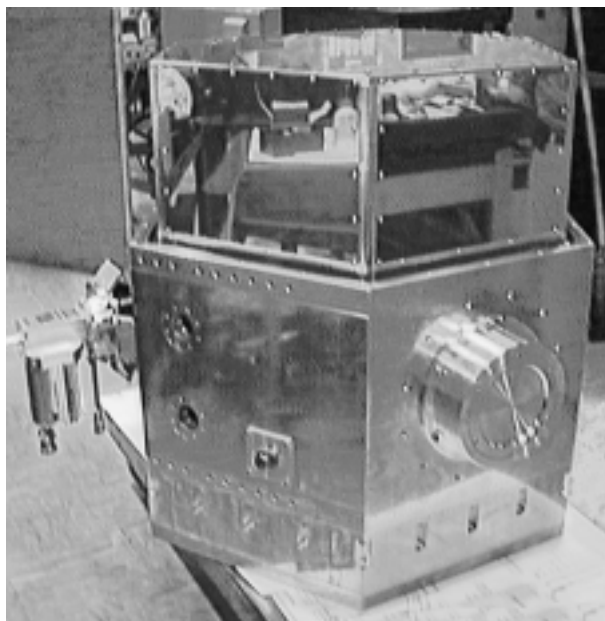
We are very encouraged by the extent and content of the response to the Demonstration Science Program and thank all those who submitted letters. Many of the alternative suggested projects would be excellent regular Gemini PI-led efforts. The strong response from the US community will allow the Gemini project and instrument teams to attempt the first science programs and understand the parameters and capabilities of the system, which should provide important information for the next round of Gemini proposals from the community.

US Gemini Instrumentation Program Update

Taft Armandroff and Mark Trueblood

Numerous activities are being conducted by USGP to help instrument the Gemini telescopes, both in-house at NOAO and in the wider community. This article gives a snapshot of their status as of late April.

NIRI, the 1-5 μm Near-Infrared Imager built by U. Hawaii, will soon be available on the Gemini North telescope on Mauna Kea. The instrument is designed with a 1024 \times 1024-pixel InSb array and cameras to offer three spatial scales.



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NIRI is a 1-5 μm imager with three pixel scales. NIRI has been undergoing a series of cold cycles to carry out tests and check fixes to problems discovered in previous tests. NIRI began its sixth cold cycle in mid-April and is expected to be cold by the deadline for this article. During the fifth cooldown, solutions to several previous problems were verified, but the test was interrupted when the science array controller stopped producing images. An anomaly inside the dewar was subsequently discovered and fixed, and the controller then began producing images. The next cold cycle was then begun and is expected to allow further testing and diagnostics by Klaus Hodapp (PI, Hawaii) and the NIRI Team.

T-Recs, the Thermal Region Camera and Spectrograph, is a mid-infrared imager and spectrograph for the Gemini South telescope, which is under construction at U. Florida by Charlie Telesco and his team. This 8–26 μm instrument passed its CDR in July 1999 and is far along in parts fabrication and procurement. The team is on schedule for commissioning in June 2001.

GNIRS, the Gemini Near-Infrared Spectrograph, is a long-slit spectrometer for the Gemini North telescope that will operate from 1 to 5 μm and will offer two plate scales and a range of dispersions. Following the Restart Review in July 1999, three-dimensional design and engineering analysis activities have been progressing well. Prototype testing is also being done as part of the overall risk-reduction strategy. Prototypes of motor drives and optics mounts have been fabricated and tested. Neil Gaughan (Project Manager), Jay Elias (Project Scientist), and their team will present the engineering results at a Pre-Fabrication Review to be held on May 11–12. After the successful completion of that review, mechanical fabrication will begin. A software plan has been written. Optics fabrication is proceeding on schedule. Delivery is planned for July 2002.

GMOS CCDs. For the two GMOS spectrographs, NOAO is responsible for the CCDs, CCD controllers, related software, and systems integration. The CCDs, controller, and related software for GMOS I for Gemini North were delivered in November 1999 and have passed their acceptance tests. Currently, the NOAO team, including Rich Reed, Tom Wolfe, and Richard Wolff, is testing CCDs for GMOS 2 for Gemini South.

NICI, the Near Infrared Coronagraphic Imager, is funded by monies from the NASA Origins Program. NICI will provide a 1–5 μm infrared coronagraphic imaging capability on the Gemini South telescope. Mauna Kea Infrared was the successful competitive bidder for the NICI conceptual design study and the only respondent to an RFP for building the instrument. A conceptual design review of their concept for NICI, followed by a procurement review of their proposal, was conducted by a single committee, in Hilo, on April 18–19. The review committee, chaired by Chick Woodward (Wyoming), includes scientific, technical, and managerial expertise.

Flamingos 2 is a concept for a multi-object near-infrared imaging spectrograph for the Gemini South telescope that is being developed by Richard Elston and his team at U. Florida. The Flamingos 2 concept builds on the heritage of the Flamingos imaging spectrograph, which is currently in final assembly. Flamingos 2 has been developed in response to the "Gap Filler" opportunity for Gemini South, wherein the relatively rapid deployment of a near-infrared spectroscopic and imaging capability is sought. A conceptual design review of Flamingos 2 will be held on April 28. The results of this review will then be compared with those for a competing instrument, IRIS2G. If the IGPO decides to select Flamingos 2 for construction, the Florida team plans to commission Flamingos 2 on Gemini South in May 2003.

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Phoenix, a high-resolution near-infrared spectrometer, has been in productive scientific use on the KPNO 4-m and 2.1-m telescopes. Phoenix yields spectra with resolution up to $R = 70,000$ in the wavelength range of 1–5 μm . Our intent is to make Phoenix available on the Gemini South telescope at the inception of scientific use of this telescope. Phoenix would be shared equally between Gemini

South and CTIO/SOAR. An agreement between NOAO/USGP and IGPO that specifies the modification of Phoenix for Gemini and how the instrument will be supported and maintained is in the final stages of negotiation. Ken Hinkle will be the NOAO Instrument Support Scientist for Phoenix.

Gemini Proposals: What's Next?

Caty Pilachowski

As of this writing, the 78 proposals requesting Gemini QuickStart observations are in the hands of the NOAO TAC, which is charged with evaluating the proposals based on scientific merit. The TAC will meet in early May, and the rankings of the various subpanels will be merged for discussion in a “Merging TAC” meeting. The Merging TAC will also consider issues related to technical use of the telescope; the distribution of required observing conditions; and the balance of large, medium, and small programs in making recommendations on a final ranking of proposals to forward to the International Gemini Observatory.

In late June, the International Telescope Allocation Committee will meet in Hilo at the Gemini Observatory to merge the requests from all the partner countries and to make final recommendations on the allocation of observing time, consistent with international agreements governing partner shares. Following the ITAC meeting, a final ranking and observing queue will be formulated by the IGPO.

Information on the final rankings and the observing schedule should be communicated to NOAO shortly thereafter, following which we will contact investigators by e-mail and regular mail as soon as possible. Successful QuickStart proposals will be assigned staff contacts at the Gemini Observatory, who will assist the Principal Investigator in preparing the equivalent of a Phase II observing program.

Gemini Proposals in March 2000: How Did It Go?

Caty Pilachowski

The March 2000 proposal round was, for many people, the first scientific interaction with the NOAO's US Gemini Program and the International Gemini Observatory. NOAO received 78 proposals for observations with the Gemini North telescope during the 2000B semester (see “2000B Observing Request Statistics” in the *Observational Programs* section). The NOAO proposal system was heavily modified to accommodate the special requirements for Gemini proposals, which resulted in investigators also needing to navigate between the proposal documentation offered by NOAO and the instrument and telescope documentation offered by IGPO. Help for investigators was available both directly from NOAO staff and through the Gemini HelpDesk offered by IGPO.

Since the 2001A semester proposal round will be upon us soon, we request your input on what we can do to make your life easier the next time around. What can we do better, and what changes are needed to make the process work more smoothly for you, the users? What problems did you encounter, and were you able to find help to solve them? Please send your comments and suggestions to gemini@noao.edu.



The US Gemini Science Advisory Committee

Bob Schommer

The US Gemini Project meets semiannually with its community-based advisory council, the US Science Advisory Committee (US SAC), to discuss the US perspective on all matters that bear on the scientific quality and productivity of the Gemini Telescopes. The current membership for the US SAC includes:

Suzanne Hawley, U. Washington

Buell Jannuzi, NOAO-Tucson

Robert Joseph, U. Hawaii, Institute for Astronomy

Mario Mateo, U. Michigan

Caty Pilachowski, NOAO-Tucson

Larry Ramsey, Pennsylvania State U.

Christopher Stubbs, U. Washington

John Tonry, U. Hawaii, Institute for Astronomy

Ray Weymann, Carnegie Observatories, Mt. Wilson & Las Campanas Observatories

Charles Woodward, U. Wyoming

Our most recent meeting was held May 18–19 in Pasadena, and was hosted by the Mt. Wilson and Las Campanas Observatories. Topics for discussion included the first set of US Gemini proposals, the definition and implementation of the Demonstration Science Program, and the instrument complement, in particular the Multi-Conjugate Adaptive Optics effort, which is undergoing conceptual design review at the end of May.

Members of the US astronomical community should feel free to contact any member of the US SAC, or me personally (rschommer@noao.edu), with issues or concerns related to the Gemini Observatory.

How to Contact the USGP

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