Gemini Science Committee

Meeting Resolutions

Meeting #11, October 1997

RESOLUTION 11.1:

We commend the Project team's performance, notably the rapid progress in assembly of the Gemini facility on the summit of Mauna Kea, and in maintaining the overall project schedule and budget in face of significant challenges.

RESOLUTION 11.2:

We welcome Chile back into the Gemini partnership. The GSC is very encouraged by Chile's interest in and support of the Gemini Project, and look forward to working with Maria Teresa Ruiz as Chilean Project Scientist.

RESOLUTION 11.3:

The simplified HROS as specified in the table given is an exciting scientific instrument for Gemini-S. We recommend that this table be adopted as revised performance requirements for HROS. Any significant relaxation of the fundamental performance specifications, including flexure, spectral coverage, slit width/resolution product, throughput and order spacing would severely compromise the scientific promise of this instrument.

Revised HROS Performance Requirements

Function	*Requirement*
Operating Locations	Cass only
Detector	2 x (2048)
Pixel Size	13.5µm
Slit width-resolution product	30,000 arcsec
Resolving Power (3 pixel)	50000
Slit width (R=50000)	0.6 arcsec
Total spectral coverage	300 -- 1000 nm
Simultaneous spectral coverage 3	25 -- 1000 nm (orders truncated > 830 nm)
Stability	0.05 resolution element/hour
Spectral image quality (dR)	< 10% resolution element
Spatial image quality (dPSF)	< 10% median seeing
Efficiency	> 20% (at 500nm) > 10% (at all wavelengths)
Slit width	0.1 to 10 arcsec (variable)
Slit length	0.25 to 60 arcsec (variable)
Minimum order spacing	7.0 arcsec
Scattered light	< 5% at 700nm
Polarimetry	Future upgrade
Slit viewer	Yes
Coronagraphic capability	Yes
Multi-slits	Maybe
ADC	None
Filters	Yes

RESOLUTION 11.4:

The GSC endorses the GMOS team proposal to provide an IFU for GMOS and a single mask maker for operational support of the GMOS's.

RESOLUTION 11.5:

The GSC recommends the following performance guidelines for the A&G polarization modulators:

- Optical/IR polarization modulator plates in front of the up-looking ISS port.
- Implementation must be remotely retractable and allow for unvignetted use of the bottom port over a minimum 7 arcmin diameter science FOV with a goal of 9 arcmin
- Wavelength coverage: 0.3-1.2μm and 1-5μm with a goal of 0.3-2.5μm with a single waveplate
- FOV: minimum of 1 arcmin. Extended FOV for OIWFS must be maintained
- A minimum of two modulator wheels that can be used in series
- calibration capability

RESOLUTION 11.6:

The GSC recommends the following guidelines for the high resolution pier spectrograph:

- Bench mounted in telescope pier; fibre fed from cass focal station
- Wavelength range: H&K lines to 1.1μm; simultaneous spectral coverage of at least 100 nm for 120K mode
- Resolution: 120K required, with goals of 300k, 500k, and 1000k
- Stability: <0.01 resolution elements/hr (3 pixels per resolution element); an absorption cell will be employed for high stability wavelength reference
- Maintain throughput under poor seeing conditions
- Sky subtraction capability
- A study should be conducted to determine throughput capabilities to the High Stability Lab

RESOLUTION 11.7:

The GSC adopts the following guidelines for the Cerro Pachon AO system:

- Wavelength Range: 1-2.5μm, with 0.5-5μm as a goal
- Operating zenith angle: 1 - 60º
- Switchable NGS and LGS modes. The emphasis is on LGS, but must support on-axis NGS as well
- Strehl ratio: NGS -- at a minimum achieve the same level as GAOS. LGS -- = Strehl ratio and sky coverage at H achieved by GAOS in the LGS mode
- General Spectroscopic performance (LGS): TBD% sky coverage at TBD% slit throughput in a 0.1 arcsec slit at H
- Preserve location of the telescope focal plane, and feed any instrument mounted on the ISS
- Design capabilities may be for either altitude or telescope conjugated systems. The capability to handle either mode is preffered, but this issue will be re-visited when CP site characterization is completed

The system will also be optimized to support AO instrumentation:

- Coronagraphic Imager -- should provide low scattering, waffle mode rejection, and an apodized mask possibly integral to the AO unit
- Multi-slit/IFU spectroscopy -- issues are slit throughput, short wavelengths, and the ability to boost sky coverage
- ~ 2 arcmin field of view
- Maintain at least the same throughput and emissivity specifications as GAOS

RESOLUTION 11.8:

The GSC endorses the Preliminary Ongoing Instrumentation Program as being consistent with our scientific priorities, given the limitations in available resources. The strengths of this program are the timely implementation of LGS AOS at CP, and provision of instrumentation to exploit this capability. We are concerned that this program defers critical scientific capabilities such as the High Stability lab spectrograph, IR MOS capabilities and LGS capability at MK until the latter half of the next decade, thus severely compromising Gemini's competitiveness and timely exploitation of the full range of atmospheric conditions. We recommend that significant additional resources for the instrument program be sought, in order to ensure future competitiveness and operational efficiency of the Gemini observatories.

RESOLUTION 11.9:

RESOLUTION 11.10:

RESOLUTION 11.11:

The GSC is unanimous that Australia should be accepted into the Gemini Partnership. Australian participation would strengthen the partnership by adding significant technical and astronomical expertise.

The GSC believes that Australian contributions to the construction and operations budgets must provide `added value' to the Gemini Observatory. The major portion of the Australian contribution to these budgets should thus be used to accelerate the ongoing instrumentation program and enhance the scientific productivity of the Observatory.

The GSC recognizes that the Australian portion of observing time has to be accommodated within the current partnership shares. We believe acceptable models exist for preserving appropriate and fair levels of observing time for the current partners. We task the PS team to develop these options in order to reach agreement in a timely manner.

RESOLUTION 11.12:

We recognize the mutual benefits in training, education and enhanced partner involvement in Gemini operations that will arise from extended visits of national support staff and community astronomers to the Gemini Observatory. It is further recognized that these visits

will play a key role in creating and sustaining the vibrant scientific culture necessary to attract and motivate quality scientific staff for Gemini.

RESOLUTION 11.13:

The GSC endorses the Operations SWG recommendations concerning the observing process, namely:

- the scientific and technical cases forwarded to Gemini by the NPO's should be restricted in length to a total of two pages of text plus one of figures;
- to maximize efficient use of telescope time, pre-planning of programs with the Observing Tool should be expected for all users, classical as well as queue;
- Gemini should support flexible and responsive access to the telescopes, via the classical and the queue modes. The partners may elect to use part of their classical time in service mode, executed by visiting astronomers.

RESOLUTION 11.14:

The GSC endorses the Operations SWG recommendations concerning scientific data rights, namely:

- The definition of scientific ownership of Gemini data should not preclude the long-term scientific use of the data by the partner communities. Engineering and commissioning data obtained after Gemini instrument acceptance should be treated the same as science data;
- Information associated with a program should be accessible with the following restrictions: (1) non-proprietary (e.g. available in public queue/schedule or archive): Gemini calibrations, title, investigators, instrument, abstract, (2) proprietary (18 month period): science data, and (3) the full science case is the property of the applicants;
- the 18 month proprietary period should begin immediately upon completion of each science observation within a science program. Applicants should be permitted, via either their NTACs or NGOs, to petition the Director for an extension to this period, or to shorten the proprietary period. Normally this would be at the time of submission; the highest priority use of the Gemini archive will be for scientific research. However, it is recognized that the archive should allow access for educational and historical use.

RESOLUTION 11.15:

The GSC endorses the following mission statement for the Gemini Observatory:

To fulfill the scientific aspirations of the Gemini astronomical communities by developing, operating and maintaining the Gemini telescopes as forefront optical and IR facilities for astrophysical research.

To achieve this, the Observatory will work in partnership with its communities to ensure excellence and cost effectiveness in the facilities, instrumentation, and in the support it provides to the entire Gemini telescopes user community.

RESOLUTION 11.16:

The GSC endorses the science verification goals and process outlined by the Project. The Gemini Scientific staff, the Project Scientist team, and instrument science teams will meet early in 1998 to develop preliminary Science Verification plans for the telescopes and instruments which will be presented to the GSC at the next meeting.

RESOLUTION 11.17:

The National Workshops held in Canada, the UK and the US, have already provided valuable results; namely educating the community about the Gemini scientific opportunities and identifying the need for significant amounts of observations on 4m class telescopes, particularly deep, wide field optical and IR imaging, to enable most effective use of the Gemini telescopes. We urge rapid compilation and synthesis of the results so the partner communities can assess requirements for supporting capabilities.