Gemini Observatory Response to April 2012 STAC Report

Gemini thanks the STAC for their report on the April 2012 meeting at the Gemini North base facility in Hilo. Gemini responses to the actions and recommendations are provided here.

2.4 As the transition plan is accomplished and the resource requirements needed to support the decreased instrumentation of 4+AO are better understood, the STAC recommends the Observatory and Board remain open and flexible to additional instrumentation opportunities that do not require long-term commitment of resources and/or can exploit scientific niches that cannot be achieved with existing facility-class instruments.

Gemini> Gemini will look to take advantage of opportunities that may arise and will consult with the STAC and Board in setting priorities, recognizing the limitation that exploiting such opportunities will redirect resources from otherwise-planned work.

2.5 In order to comply with the 4+AO model of the transition plan, the STAC recommends that Michelle and T-ReCS be retired at the end of 2012B.

Gemini> Neither Michelle nor T-ReCS will be offered from 2013A onward. The instruments that are expected to be available at Gemini North are GMOS-N, GNIRS, NIFS, and NIRI, with Altair, and at Gemini South, GMOS-S, FLAMINGOS-2, GPI, and GSAOI, as noted in items 2.8 and 2.9.

2.6 The STAC further recommends that NICI be kept in use until GPI is ready for commissioning and then be retired at that time.

Gemini> NICI will be offered until scheduled commissioning of GPI.

2.7 The STAC requests a more detailed analysis of the costs (both money and effort) and time needed to refurbish NIRI's mechanisms, upgrade its detector controller, and possibly replace its detector. (This package falls between Options 3 and 4 of "The Future of NIRI" report to the STAC.)

Gemini> Gemini will provide a detailed analysis of the costs and time to refurbish NIRI by the April 2013 meeting. An update at the October 2012 meeting will be provided on a best-effort basis. Given the current extreme workload on various top-priority projects (e.g., FLAMINGOS-2, GeMS, A&G2, GPI, GMOS-CCDs, and GNIRS), our staff cannot insert this work request without significant disruption and delays.

2.10 The STAC reiterates its statement from November 2011 that it strongly values having AO capability at Gemini North as part of its vision for 2020 and beyond. The STAC recognizes that a replacement for the current Altair system (even with the planned near-term upgrades) will be needed on that timescale. The STAC looks forward to receiving input from the June AO workshop in Victoria, BC. The STAC is particularly keen to be presented with a range of options, both in price and capability. Options to be considered might include better single object AO for existing and future instruments, replicating MCAO from the South, or a plan by which a GLAO system could be accomplished within the current budget forecasts.

What capabilities can be achieved at $5M, $10M, $15M (USD)? Gemini's instrumentation budget through 2015 is $4.8mil (USD) per year on a best-effort basis and the STAC has been instructed not to plan for increases to that in the second half of the decade. Given the restrictions of the 4+AO operations model of the transition plan and the total amount of funding available for new and upgraded instruments, any new AO system will necessarily be a general-purpose system able to satisfy a wide variety of science cases and community needs. The STAC is open to creative options, such as further significant upgrades of ALTAIR or identifying other funding sources than Gemini's Instrument Development Fund. STAC Chair Henry Roe will attend the GNAO workshop.
Gemini> A separate report will more completely describe the workshop outcomes, which will be discussed further at the July Science and User Meeting and among the STAC.

2.11 The STAC is strongly supportive of moving forward with eavesdropping. The STAC recommends that a subset of 2012B programs be identified as potential test cases for an initial eavesdropping system. The criteria for programs in this initial test should include that PI's are experienced Gemini users in Bands 1 or 2.
Gemini> The observatory appreciates the STAC's approval of its remote eavesdropping proposal and will proceed with plans to hold test runs of remote eavesdropping in the late stages of Semester 2012B. This test will follow the outline given in the STAC paper entitled "Remote Eavesdropping Model". TACs were asked to identify eavesdropping candidate programs in the run up to the 2012B ITAC meeting, and these candidates will serve as some of the test cases.

2.12 The STAC requests the Observatory prepare a report for its next meeting laying out a path to providing remote observing for classical observers, including identifying the challenges to offering this capability and suggesting what the minimum requirements should be of remote users.
Gemini> Gemini will provide a report on remote observing for the October 2012 meeting, similar in scope to the eavesdropping report presented earlier.

2.13 The STAC recommends that to maximize scientific productivity the Observatory be as flexible as possible when working with classical observers, particularly with regard to backup programs and target selection.
Gemini> Gemini remains committed to supporting users' demand for classical observing. Users continue to have flexibility of target selection within the science program, provided observations are not duplicated.[1] Observers are encouraged to develop backup programs that the National TACs review, to make use of variable observing conditions.

2.14 The STAC endorses the Observatory's plan for recovery and re-design [of FLAMINGOS-2]. While the STAC is keen to see F2 available for science as soon as possible, it is also concerned that the repairs and redesign address the issues fully

[1] The STAC confirmed that this is the aim of this recommendation, not the expectation that observers have complete flexibility of telescope use upon approval of classical observing time.

and mitigate the risk of a similar lens failure in the future. As the redesign plans develop the STAC encourages the Observatory to continue to bring in outside expertise to review the plans.
Gemini> We continue to involve outside reviewers of the FLAMINGOS-2 design updates.

2.15 The STAC reaffirms its recommendation to have an external independent cost analysis [of FLAMINGOS-2 work].
Gemini> A specialized contractor was identified and this analysis is being carried out now. We expect to receive the report by June 20, 2012.

2.16 Once the GHOS down-select has occurred the STAC is keen to understand the projected cost and timeline of the down-selected team(s) as these have significant impact on when the next instrument post-GHOS could be started.
Gemini> The final reports from the Conceptual Design Review committee and the external cost analysis will be provided to the Director by early July and shared with the STAC to clarify the strategy for the next instrument procurement. The GHOS Preliminary Design Phase will end approximately in 2013Q3. This would be the conservative time to launch a conceptual design competition for the next instrument, but it would push the delivery of the instrument well beyond the horizon of the current international agreement. Nonetheless, mid-year 2013 is the most likely time significant work on the next instrument could begin, given other development activities scheduled until then and the need to have an established long-range plan before initiating the next instrument.

2.18 The STAC encourages the Observatory to advertise as widely as possible that GPI will be available for PI science. Based on the good community response with targets for the GeMS pre-SV observing runs, the STAC recommends a similar community call for targets for GPI pre-SV and proceed with a fully public SV as soon as possible during commissioning. The intent is to provide data to users as soon as possible to help them understand the capability and begin to plan their PI science proposals.
Gemini> We will consider a pre-SV target selection for GPI. However, we note a key difference compared with GSAOI: the planned SV should follow immediately after the commissioning runs, without a months-long delay during a winter shutdown.

2.19 In working through instrumentation scenarios the STAC has maintained a minimum of 6 semesters of GPI operations to fulfill the requirements of the campaign. The STAC is concerned that the 4+AO operations model may force the removal of GPI before it has fulfilled a significant fraction of its scientific potential and will be closely monitoring user demand and scientific output.
Gemini> We encourage the STAC to monitor user demand and scientific output of GPI. We expect the instrument's novel capabilities to be of interest beyond the GPI science campaign.

2.20 The STAC applauds the Observatory for being flexible in attempting to engage

the community as early as possible in the commissioning project [of GeMS]. The STAC sees great value in having users involved during early commissioning and distributing data publicly as soon as possible for the community to evaluate and understand the new capability. This pre-SV model should be considered for all future commissioning.
Gemini> Gemini acknowledges and thanks the users who submitted targets and regrets that weather conditions in both GeMS +GSAOI runs in April were too poor to observe any of them.

2.21 Observatory to continue to pursue avenues that might bring this highly desired upgraded capability (GMOS CCD) to users sooner, especially in the South.
Gemini> We will provide a detailed plan by October 2012 to accelerate as much as possible both the GMOS Hamamatsu CCD implementation in both GMOS instruments and the IR detector controllers, and we will evaluate options to execute both projects in parallel. As analyzed and decided in January 2012, the sequence of installing new CCDs in GMOS-N and then in GMOS-S cannot be reverted due to the instrumentation availability and impact on the observing schedule in 2013.

2.23 The STAC provisionally recommends the Observatory pursue commissioning of GeMS+GMOS once GeMS is commissioned and functioning reliably. To assist with further decision-making the STAC requests a more thorough study of the expected sensitivity of GMOS-S behind GeMS.
Gemini> We will follow the commissioning sequence of GeMS+GSAOI, GeMS+F2, and finally GeMS+GMOS-S. Work planned in 2013 to use Altair+GMOS-N could be a precursor to GeMS+GMOS–S.

2.24 The STAC endorses the Observatory's plan to bring this capability [GRACES] to Users as soon as possible, even though it means offering the instrument in the 2013B Call-for- proposals before the performance is fully characterized. The STAC recommends the Observatory solicit community input on to targets to be observed during commissioning with the goal of engaging users and providing example data to users as soon as possible. Because of the timing of the commissioning and the desire to involve the community as soon as possible, the STAC views the inclusion of time during commissioning for observing community suggested targets, in a similar manner as the pre-SV GeMS observations, as very important. With the inclusion of these community suggested targets in the commissioning, the STAC endorses the request for 5 nights of GRACES commissioning.
Gemini> We will attempt to solicit commissioning targets from users and to offer the new capability as soon as possible.

2.25 The STAC requests more details of the GRACES vs. HIRES trade study that was completed before the project was initiated as part of the input to its mid-2013 assessment of GRACES.
Gemini> Gemini will provide this information by end of July 2012.

2.26 While near-infrared high-resolution spectroscopy is a desirable capability,

given the reality of limited current development resources and the operational model of 4+AO in the future, the STAC recommends not pursuing the possibility of a Gemini fiber feed to SPIRou at this time. However, this issue might be re-visited after the observatory and user community gains experience with GRACES, and assuming that there are no technical impediments.

Gemini> Gemini notes that SPIRou will be in advanced design stages in 2013, making it extremely difficult to retrofit a module for a Gemini fiber at acceptable cost and complexity. We strongly encourage the STAC to develop a long-range plan of capabilities that the Gemini telescopes will offer, to decide actively whether high-resolution NIR spectroscopy is part of this plan, and if so, whether SPIRou (or other options) represent a cost-effective way to deliver this capability.

2.28 The STAC recommends advertising the capabilities of this mode [LGS+P1] as widely as possible, including publishing more detailed performance numbers, such as encircled energy, to assist users in planning observations.

Gemini> We are pleased with the strong response to use this mode in the 2012B call for proposals. The instrument web pages continue to be updated with performance measurements as they become available.

2.29 The STAC is strongly supportive of exploring whether a GCAL-2 could be incorporated within the A&G-2 units, thus freeing an additional instrument port. This would allow all four instruments at a site to be mounted and available on the telescope simultaneously, enabling an "every instrument available every night" mode of operations.

Gemini> Gemini is currently using the feasibility studies done in Dec 2011-Jan2012 by external contractors to fold this option into the new A&G design requirements.

2.30 The STAC requests a more detailed analysis on the risk of failure in the NIRI and GNIRS controller and recommends the development of a contingency plan if a failure occurs in the detector controller of one of these workhorse instruments.

2.31 The STAC recommends the Observatory seek additional outside expertise to help move either the Detector Controller project or GMOS Hamamatsu CCD project forward in order to enable acquiring new detector controllers for NIRI and GNIRS sooner than 2014. If outside help cannot be borrowed or purchased to accelerate the timeline to new detector controllers, then the Observatory should consult with the STAC to determine which project (GMOS CCD upgrades vs. Detector Controller) has a higher priority.

Gemini> Gemini will provide a detailed answer to both 2.30 and 2.31 by the October 2012 meeting. As stated in the response to 2.21, we are exploring options work on GMOS-CCD and IR detector controllers in parallel.

2.32 The STAC requests the Observatory keep the Chair informed of the status of the current Speckle Camera project. The STAC will meet by telecon if it is necessary to review the project or make specific recommendations ahead of its October 2012 meeting. If the Speckle Camera is assigned time then the STAC requests a summary of the Gemini resources that were required to get the

instrument operational.
Gemini> The Observatory will keep the STAC informed of the possible use of the speckle camera on Gemini. Ten hours of Director's Discretionary Time are planned for the end of July, requiring very little Observatory effort.

2.34 The STAC encourages the Observatory to take a pragmatic approach to the development of cookbooks and pipelines. Releasing 'quick-and-dirty' cookbooks that are refined and updated over time is a better approach than delaying release until much more thorough versions are perfected. Based on experiences at other observatories the STAC encourages the Observatory to utilize the expertise and enthusiasm of its users, e.g. some of the best data cookbooks have been written or significantly improved by non-staff graduate students and postdocs.
Gemini> We are working on various options to make cookbooks and tools available soon, including developing user forum web pages for software contributions and discussions. We continue to make existing information more available to help users reduce Gemini data. A new compilation of resources is available from the "getting started" page, which includes example reduction scripts and links to tutorials and presentations from data reduction workshops.

2.35 The STAC views data reduction pipelines as a separate issue that should be considered on a case-by-case basis with instrument. In some cases a `quicklook' reduction is all that is necessary as most users will use other tools for their final data reduction, while in other more complicated data cases a full pipeline is necessary to enable science for most users. However, again, the STAC recommends a `quick-and-dirty' approach whenever possible; Better to release a tool sooner and find that users need additional refinements or extensions than to take much longer to build in every possible function and discover that only a fraction of the functionality is useful to most users.
Gemini> While automated science-quality data reduction is not part of the Observatory's planned work, the software developed for the quality assessment (QA) pipeline is the future data reduction platform for the user software. A preliminary release with limited support is expected towards the end of 2012. This new user package will offer greater automation and will assist with the selection of calibrations, providing users with a quick assessment of their data.

2.43 The STAC recommends the Observatory investigate further the possibility of retrofitting a dichroic into one of the existing A&G units. The STAC requests a report for its October 2012 meeting on the feasibility, predicted performance, and estimated costs of this possible upgrade. Questions that arise during this work may directed to Alan Stockton and Henry Roe.
Gemini> Gemini needs a full and clear set of science objectives and requirements from the STAC to develop this option, which greatly expands the scope of the current A&G-2 project. Although we understand the proper timing of this request in the conceptual design phase of A&G-2, this work will slow down the currently established project scope, aimed to increase reliability and sensitivity for guiding.

Long Range Planning Process

The STAC is also developing a timeline of events, decisions, and contingencies to guide its decision making process in the future and help ensure that the community is informed of pending decisions and has ample opportunity to comment. It is the intention of the STAC to focus on long-range planning at its October 2012 meeting, discuss its preliminary recommendations with the Board at the November 2012 meeting, and finalize its recommendations by early 2013.

Gemini> Gemini encourages the STAC to create a clear decision process to define the long-term strategy. This will guide future plans and provide the transparency needed to keep our user community informed and engaged. Such broad validation and endorsement are essential for a successful outcome.