

## 1 PROGRAM MANAGEMENT OVERVIEW

*See acronyms list at the end of report*

Project	Stage progress	Status	Comments
<b>GPI</b>	25%	On-schedule	First technical light was accomplished as planned mid-November, followed by the first run (of 4) of the Verification and Commissioning campaign (ending in Q3 2014).
<b>GeMS/GSAOI*</b>	100%	2 <sup>nd</sup> handover review scheduled in February	Technical issues encountered in September were solved, including laser maintenance, and scientific observations resumed in December. A first review of the handover to operations was done in November.
<b>FLAMINGOS-2*</b>	100%	Handover review documentation ongoing	F2 has completed its first quarter of science observing in imaging and long-slit. A closeout review was done in November. Image quality affects data and a remediation plan is being prepared.
<b>GMOS CCD</b>	75%	Re-baselined	The installation into GMOS-S was postponed from march to May due to a delay in obtaining the export license to Chile. A SW acceptance review was done in November, and plans for burn-in tests and shipping are prepared.
<b>GHOS</b>	NA	Behind schedule	AAO finalized their new plan for the spectrograph subcontractor (NRC Herzberg) and contracts were send to the Gemini Board and NSF for approval. We expect the preliminary design kickoff in 14Q1.
<b>GEN4#3</b>	NA	On-hold	Project was on-hold in 13Q4. Expect to resume work in 14Q2.
<b>A&amp;G upgrades</b>	NA	On-hold	Project plan prepared for the PMAC (motion control) upgrade. On-hold until a new project manager joins in February to initiate procurement.
<b>GRACES</b>	NA	Behind schedule	All hardware was produced at or delivered to NRC Herzberg for integration including a 200m-long fiber bundle with acceptable FRD.

The order reflects the priority of internal resources assigned to the various development projects during that quarter.

\*These 2 projects have completed their main development phase and are handed over to Operations so they will not be shown in this Development report in the future. Instead, new spin-off projects for these instruments might make their entry.

## 2 PAST/CURRENT/FUTURE PROJECT ACTIVITIES

### ➤ **GPI**

- GPI was mounted on the telescope at the end of October and the first technical night run happened Nov 11-17. See <http://www.gemini.edu/node/12094>
- The first run of the Verification and Commissioning campaign (Dec 8-11) allowed continuing with performance optimization and some targets were observed for a press release in January, see <http://www.gemini.edu/node/12113>

#### **Upcoming:**

- A remediation period for two IFS mechanisms is scheduled in January and February.
- The concluding 3 runs of the Verification and Commissioning campaign are scheduled between March and July.

### ➤ **GeMS and GSAOI**

- The return to scientific observations after the winter shutdown was long and difficult due to weather, technical and human issues. Queue was resumed in December. Another science paper was published recently.
- The LGSWFS re-conjugation was mis-calibrated and returned to its original position. Gemini suffered the dramatic loss of Vincent Fesquet (laser engineer) in November. We are deeply thankful to our colleagues at Keck for sending their laser engineer, Pete Tucker, to support our diminished laser team.
- Several parts of the software were edited to ease the night-to night operations; versions of advanced telemetry, AO loops and Non Common Path Aberrations optimization were produced and tested.
- The first part of the hand-over review, focused on AO performance and operations, was done in November and will be followed by a second part in February.

#### **Upcoming:**

- Operations team is preparing the new support model for the laser, and some minor continuous improvements and cross-training to streamline operations.
- New improvements projects are being planned for the future: the new NGSWFS, also called NGS2, is developed with ANU who obtained some Government funding. We expect a contract to be in place for 14Q2. We are finalizing requirements and interface work to place a contract for the spare DM0 and its DM Electronics. We have started exploring the purchase of a new Toptica laser as part of our Laser Guide Star Facility sustainability plan for 2016.
- This is the last development report for GeMS-GSAOI.

### ➤ **FLAMINGOS-2**

- The project closeout review was held in November and documentation is being finalized.
- The remaining Image Quality (IQ) issue is being investigated as it limits the field (PSF are in specification up to a radius of 1.5arcmin only) and limits the spectral resolution to about 60% of nominal. A repair shutdown will be performed in 2014.
- Work on the OIWFS has been put on hold (the instrument still operates with PWFS2) until the IQ investigation is complete.

#### **Upcoming:**

- The Multi-Object Spectroscopic and GeMS+FLAMINGOS-2 mode commissioning are on-hold until IQ issues are solved and will likely be scheduled from 2015.
- A new filter has been requested to cover fully the K-band until 2.5um.
- This is the last development report for FLAMINGOS-2.

### ➤ **GMOS CCDs**

- Software and systems acceptance was carried out in November.
- Export license to Chile (one item is subject to ITAR) was delayed by one month so we replanned the installation in the GMOS-S to May in order to keep the contingency for shipping and testing needed in Chile.
- Quotes were finally obtained from Hamamatsu for the new GMOS-N CCDs.

#### **Upcoming:**

- Due to an unexpected dome shutter failure at Gemini North, the team identified an opportunity to test the CCDs with GMOS-N in January in order to continue system debugging.
- The burn-in phase is scheduled for mid-February and the delivery campaign in Chile on March 12-26.

### ➤ **GHOS**

- AAO has developed their contingency plan to setup a new contractor for the spectrograph. Contracts with NRC Herzberg were signed and pushed into the approval cycle.
- Contracts were reviewed by the CoDR chair and AOC-G for compliance, and are now with Gemini Board and NSF approvals.

#### **Upcoming:**

- Preliminary Design phase kickoff meeting will be scheduled as soon as approvals are obtained, probably by the end of 14Q1.

### ➤ **Gen4#3**

- Project on-hold in 13Q4 as most of the assigned resources was focused on GPI.

#### **Upcoming:**

- The Instrumentation Dpt will work on the procurement model with NSF and the project will resume activity in 14Q2.

### ➤ **GRACES**

- Fiber vendor (Fibertech) fabricated a cable with 200m-long fibers with good FRD performance (within the 20% tolerance). The last stage is to create the final 270m science cable and good weather is awaited for fabrication.
- All parts are assembled in the NRC Herzberg lab to prepare for a performance review and pre-shipping acceptance.
- CFHT engineers made some inspection and tests to pull a fiber cable through the duct between Gemini and CFHT on Mauna Kea.

#### **Upcoming:**

- Delivery of the science fiber in armor cable to NRC Herzberg.
- End-to-end testing and pre-shipping acceptance review.

### ➤ **A&G-2**

- PMAC motion controllers options were reviewed and we chose to upgrade to the Turbo PMAC type. A board was acquired for some early compatibility testing.

#### **Upcoming:**

- A new project engineer will join in 14Q1 to manage the project and place the contracts with integrators. A new detector engineer will also join to review the guiding detectors options and make an internal feasibility study.

### 3 OTHER DEVELOPMENT TEAM ACTIVITIES

- **Altair upgrades**
  - No progress made to setup a contract with the vendor. Ongoing work for procurement of the 2 new science dichroic beamsplitters. Internal work to understand the Non-Common Path Aberrations and corrections for the secondary mirror print-through.
- **IR Detector Controller**
  - Hardware was purchased to setup a controller in the lab. Testing of the prototype is scheduled by end of 2014Q2.
- **Small development project Fund**
  - Activity on-hold and expected to resume in 2014.
- **Recruitment**
  - Our new Project manager, David Henderson, joined Gemini in November and is assigned primarily to GHOS.
  - We have finalized hiring for the systems engineering group manager and the project engineer, who will join Gemini in 14Q1.

### 4 ACRONYMS

- AAO: Australian Astronomical Observatory
- ANU: Australian National university
- A&G: telescope Acquisition and Guiding unit
- BTO: Beam Transfer optics
- CFHT: Canada-France-Hawaii telescope
- DM0: Deformable Mirror at 0km (ground)
- ESPaDOnS: high-resolution spectrograph at CFHT
- F2: FLAMINGOS-2
- FPA: Focal Plane Array
- FRD: Focal ratio Degradation
- GeMS: Gemini Multi-conjugate System
- Gen4#3: Generation 4 #3 (next instrument after GHOS and GRACES)
- GPI: Gemini Planet Imager
- IFS: Infrared Field Spectrograph (within GPI)
- LGSWFS: Laser Guide Star WaveFront Sensor
- NGSWFS: Natural Guide Star WaveFront Sensor
- NRC: National Research Council (Canada)
- OIWFS: On-Instrument WaveFront Sensor
- PMAC: Programmable Multi-Axis Controller
- PWFS: Peripheral WaveFront Sensor (inside A&G)