

1 PROGRAM MANAGEMENT OVERVIEW

See acronyms list at the end of report

Project	Work complete	Status	Comments
GPI	NA	On-schedule	Acceptance review held in July, shipping to Chile in August. Post-delivery testing done and instrument is now on flexure rig for final characterization. We expect first light mid-November.
GeMS/GSAOI	75%	Behind-schedule	Shutdown in July and August was completed. All systems were back on telescope early September. Return to routine operations was more complicated than expected due to bad weather and technical issues. Work is ongoing to understand issues between the September and October runs.
FLAMINGOS-2	98%	Behind-schedule	Queue observing started in September! Remaining commissioning tasks left are the OIWFS models (F2 currently uses PWFS2 for guiding) and MOS mode. A closeout review is scheduled at end of October.
GMOS CCD	70%	On-schedule	Major SW bugs were resolved and CCD characterization is now complete. Further software work remains, but we expect the lab acceptance to happen in November and ship to Chile in December. Project rebaselined for installation on telescope in March 2014.
GHOS	NA	Behind schedule	Selected contractor (AAO) has a setback with a spectrograph subcontractor (Kiwistar) and implemented a contingency plan by arranging a new subcontractor to take their place. Waiting for Board approval. Kickoff meeting tentatively in 14Q1 (1y after our original estimate).
GEN4#3	NA	On-hold	Little progress made in 13Q3 to focus our resources on GPI for the remainder of the year and into 14Q1. Expect to resume work in 14Q2.
A&G upgrades	NA	Behind schedule	Progress made to develop the PMAC (motion control) upgrade plan. Several vendors contacted.
GRACES	NA	Behind schedule	Fiber vendor (Fibertech) successfully produced a long science fiber meeting the FRD requirement but insertion into the shield causes binding that affects badly FRD. Three cable designs being reviewed. Pending the outcome of these designs, acceptance testing could begin at HIA as early as 14Q1, possibly on sky in 14Q2.

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

2 PAST/CURRENT/FUTURE PROJECT ACTIVITIES

➤ GPI

- After acceptance testing (July 8-15), and acceptance review (July 16-17), green light was given for shipping to Chile.
- IFS remediation work (pupil viewer and prism holder) will be conducted in Chile in 14Q1 as they do not affect testing for first light and early technical commissioning.
- Science team is preparing a review of all science impact of the few requirements not passed or waived.
- Instrument arrived at Cerro Pachon on August 17: <http://www.gemini.edu/node/12075>
- Instrument post-delivery functionality tests passed yielding expected performance in the end-to-end contrast ratio test on Sept 13.
- GPI installed on flexure rig on Sept 25 and rest of telescope integration plan is on-going smoothly.

Upcoming:

- Mount on telescope late October
- First light run is scheduled for mid-November, followed by the first technical commissioning run early December.

➤ GeMS and GSAOI

- Some of main tasks accomplished during the shutdown were: LGSWFS reconjugation to DM0, upgrades of some BTO mirrors, corrections of SW bugs and installation of all SW on operations machines, GSAOI cold head exchange and maintenance/calibrations to filter wheel #2 and Utility wheel.
- Procurement of replacement of DM0 on-going (DM4.5 is used in lieu of DM0).
- Tasks postponed or not completed: NGSWFS IQ improvements (tilt, astigmatism), hand-over review to Operations originally scheduled for September has been pushed back to November.
- First science paper published, see at: <http://www.gemini.edu/node/12068>

Upcoming:

- October run to resolve current calibration issues of the LGSWFS and resume science observing.
- Laser power has drifted down again in the 30-35W regime so a simple optimization will be done early October and eventually a longer one in November (while GeMS is off the calendar while GPI is observing).
- Continue cross-training on laser maintenance procedures, and on BTO-related activities.
- Continue documentation of sub-systems.
- Prepare the hand-over review that will review the short and medium-term operational model and also future upgrades needed (insertion of 3rd DM, upgrades to the NGSWFS, etc...). In October, we expect the outcome of the grant sought by ANU for a new focal plane array to replace the NGSWFS.

➤ FLAMINGOS-2

- The science commissioning tasks for imaging and long-slit were executed in July.
- OIWFS models were not completed in August so guiding is currently done with PWFS2.
- Two technical difficulties were resolved early September (entrance shutter and OIWFS CCD misalignment) and queue science is ongoing.
- Spectacular images were recently released at: <http://www.gemini.edu/node/12047>

Upcoming:

- Schedule the OIWFS remaining tests.
- A project closeout review is scheduled at the end of October and will identify the areas of the instrument that are not yet to final specifications (image quality, MOS operation,...).

- **GMOS CCDs**
 - SW debugging done with help from HIA to allow full characterization of the entire focal plane array in the test dewar.
 - CCD data (like QE) are being analyzed to generate the purchase order for the next batch of CCDs (for GMOS-N). Overall performance meets original specification.
 - Testing from the High-Level Software is ongoing.

Upcoming:

 - Purchase the new CCDs for the GMOS-N
 - SW and system acceptance testing through November
 - Shipping to GS in December.

- **GHOS**
 - Project hit a temporary show-stopper late July when the AAO (awarded instrument contractor) lost their main subcontractor (KiwiStar Optics) due to a restructuring of the parent company, Callaghan Innovations.
 - STAC met and (re)validated the scientific priority of GHOS.
 - AAO developed a contingency plan and presented it to Gemini early September. The plan builds on partnering with a new subcontractor to fabricate the spectrograph. Gemini validated the plan and communicated to the Board mid-September for their approval.

Upcoming:

 - Finalize approval and signature of new contract.
 - Preliminary Design phase kickoff meeting could be scheduled in 14Q1 at the earliest

- **Gen4#3**
 - No significant work done in 13Q3 as most of the assigned resources were focused on GPI.
 - Release of an external blog to inform on project:
<http://staff.gemini.edu/g43/2013/08/22/geminis-next-new-instrument/>

Upcoming:

 - On-hold until 14Q2.

- **GRACES**
 - Fiber vendor achieved fabrication of a long 270m science fiber with good FRD performance. Inserting the fiber into its shield causes binding that decreases the performance below specification.
 - Several designs of shields within the armor cable are being prototyped to identify the best solution.
 - Mechanical fabrication finalizing at HIA and slicer built and characterized.
 - Fiber input support structure ready to CFHT to install in ESPaDOnS.

Upcoming:

 - Delivery of the science fiber in armor cable to HIA late December.

- **A&G-2**
 - Project focused reliability upgrades on the PMAC motion controllers and corresponding SW. Vendor (Delta-Tau), contractors and neighbor observatories (Keck) contacted to identify the best upgrade path with Turbo PMAC.
 - Test bench for motion control and WFS being defined.
 - WFS sensitivity analysis draft report by Tom Hayward concludes the current design should allow guiding nearly 2 magnitudes fainter.

Upcoming:

 - Finalize statement of work for PMAC contractor.
 - Continue PWFS sensitivity analysis with a detector engineer in December.

3 OTHER DEVELOPMENT TEAM ACTIVITIES

- **Altair upgrades**
 - On-going discussion with HIA to define the work packages. We expect a formal launch in 2014. Getting quotes for the 2 new science dichroic: one allowing usage with GMOS (testing expected in 14Q1), and one optimized for L and M.
- **IR Detector Controller**
 - A preliminary project plan has been defined and HW identified for purchase in Q4.
- **Small development project Fund**
 - The launch is on hold until we have finalized some recruitment and launched GHOS. We will send detailed information to the community on the process when it is ready.
- **Long Range Plan Working Group**
 - Assisting the STAC with the definition of a Long-Range Plan for instrumentation
- **Recruitment**
 - We are interviewing for a new project manager and a new systems engineering group manager.

4 ACRONYMS

- AAO: Australian Astronomical Observatory
- 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
- OIWFS: On-Instrument WaveFront Sensor
- PMAC: Programmable Multi-Axis Controller
- PWFS: Peripheral WaveFront Sensor (inside A&G)