

NOAO-S Facilities Operations

FY2017 Q2 Progress Report

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Executive Summary

This is the progress report of the NOAO-South Facilities Operations department for the second quarter of fiscal year 2017, FY2017 Q2. The total planned quarterly budget was 561 MCLP, not taking into account larger expenses or seasonal variations. FY2017 Q2 expenditures added up to a total of 493 MCLP, 12% lower than budgeted. Total revenues were 592 MCLP, 5% more than budgeted, resulting in a surplus of 98 MCLP in the second quarter. Note, this includes a 27 MCLP surplus in the project cost centers.

For the first half-year of FY2017, i.e. Q1 and Q2 combined, the total revenues and total actual expenditures were 1,187 MCLP and 1,001 MCLP respectively, resulting in a surplus in the first half-year of 185 MCLP, including a 49 MCLP surplus in the project cost centers. An overview for FYQ1, Q2 and Q1+Q2 is given in Table 2 in Section 3 of this document.

After a brief introduction, we discuss the accomplishments of the department in FY2017 Q2 in Section 2. In Section 3 we discuss the financial status of the department at the end of FY2017 Q2: starting with a summary, followed by comments on the finances per revenue stream: mountain share charges, per-use charges and census charges. Details of the financial status are presented in the appendix.

This progress report is complemented with a report on the status of the FY2016 and FY017 projects: “*Status of FY2017 & FY2016 Projects, At closing of Q2 of FY2017*”, April 27, 2017. Both reports, as well as the FY2017 budget report are posted on the NOAO-S Facilities Operations website¹.

¹ www.ctio.noao.edu/noao/content/Reports-and-documentation

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1. Introduction

The NOAO South Facilities Operations department is responsible for operations, maintenance and long-term stewardship of physical infrastructure shared by the facilities hosted by AURA-Observatory (AURA-O) in Chile. This includes support buildings, housing, hotel and kitchen facilities and miscellaneous other facilities in La Serena and on Cerro Tololo and Cerro Pachón.

A plan and budget are prepared on an annual basis, with a detailed budget for each cost center. Progress and finances are tracked on a monthly basis, and at the end of every quarter a progress report with the financial status and a brief update on work carried out by the department is presented to the programs and other clients. This report is the quarterly report for the second quarter of fiscal year 2017, FY2017 Q2.

Each year the department also plans for and executes several upgrade and improvement projects, as part of a major program to improve safety and services in all areas of the Facilities Operations department. Progress on those projects and the financial status of the associated cost centers is presented in a separate document, “*Status of FY2017 & FY2016 Projects, At closing of Q2 of FY2017*”, April 27, 2017.

2. Accomplishments during Q2 of FY2017

In this section we discuss the Q2 accomplishments of the NOAO-S Facilities Operations department that are not covered by the project status report mentioned in the previous Section. For descriptive purposes these accomplishments are divided between milestones, planned for in the NOAO Program Operations Plan FY2017 (NOAO POP FY17) and additional projects that are part of regular operations, including regular maintenance projects.

2.1. Milestones

In Table 1 we list the FY2017 milestones presented in the NOAO POP FY17. In the table we include a brief comment on progress made on each of those milestones during the first half of FY2017. Progress on the milestones due in Q2 was mostly limited to defining the projects and obtaining bids. In several cases it took more than two months to obtain bids, e.g. the two roof repair projects under milestones 2.6.7 and 2.6.8.

“*Upgrade of the heating systems of the hotel/restaurant building on Cerro Tololo*”, milestone 2.6.10, will be deferred to FY2018 or possibly FY2019. When studying the various options for such an upgrade, we concluded that the safest is to replace the air heating system in the Tololo hotel/restaurant building by a system with radiators. The scope of this project is significantly larger than what we anticipated when preparing the FY2017 plan and budget; we therefore will postpone this project. In the second half of FY2017 we will instead upgrade the heating systems of the Tololo technician building and 10-units building, as well as the heating systems of one or more of the Tololo houses. These upgrades are smaller projects, and were originally planned for FY2018.

Milestone 2.6.11, “*Upgrade of the heating system of hotel/restaurant building on Cerro Pachón*” will be included in the bid package for the remodeling and enlargement of the kitchen and dining facilities on Cerro Pachón. A bid package for this project will be prepared during Q3, while the execution of the project will start in Q4 of FY2017.

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The project related to milestones 2.6.5, *“Upgrade fill system water storage tanks on Cerro Tololo”* was postponed till the second half of FY2017. And the remainder of milestone 2.6.6, *“Repair or renew sewage system of hotel/restaurant building on Cerro Tololo”*, which consists of installation of a water treatment plant, will be deferred to FY2018, as part of a larger project to revise all septic tanks on Cerro Tololo and evaluate whether major maintenance is sufficient or whether it is necessary to replace the septic tanks with a water treatment plants.

The second milestone, *“Implement training plan for kitchen staff”*, should have been phrased differently, *“Define training plan for kitchen staff. As such the milestone is complete. In the first quarter we defined the needs for the kitchen staff, and obtained bids from three external consultants to implement this training plan. We opted for contracting Mr. Eric Lanzarotti, professor in International Gastronomy and Hotel Services at INACAP La Serena, and expert in training professional kitchen staff. The training started on March 25 2017, and will last for a period of about six months.*

A major project, which was one of the FY2016 projects, was called out as a FY2017 milestone because of its importance: the repair of the mountain road at km 30 (wash out) and km 27 (damaged retaining wall & culverts). In the first quarter the project was defined in detail; bids were obtained during Q2 and work started on March 20, 2017. The project is expected to be completed in four months, weather permitting.

Work on the last milestone, *“Implement system to track the department expenditures”*, is underway. In Q1 we developed a system together with CAS. In Q2 we worked with the group leaders responsible for the areas *“Civil Works”*, *“Electricity & other Utilities”*, *“Kitchen Services”* and *“Hotel & Other Services”*, *“Medical Services & Safety”*, to allow them to take control of their finances.

2.2. Other projects and accomplishments

During the year various other projects are carried out, smaller scale improvements or projects that are part of regular maintenance. In this section we present what was accomplished in this respect during Q2.

2.2.1. Road maintenance & heavy equipment

In Q2 of FY2017 a few remaining culverts of the dirt road were cleaned out, and towards the end of the quarter, gutters along the side of the road were made. Gutters narrow the road, and are eliminated during summer time, but are essential in getting the road prepared for winter.

A parking space for the Tololo bus was marked off next to the Round Office Building, and parking signage was put up on the parking area in front of the Cerro Pachón hotel/restaurant.

2.2.2. Electric systems

The equipment in the Tololo powerhouse is being modernized and renewed, a project funded by the NOAO no cost extension (NCE, funds from the prior AURA cooperative agreement with NSF to operate NOAO). Most of the new equipment has been installed, including a new 1 MVA transformer, and another automatic switchgear to allow for automatic transfer from one generator to the other. A spare 1 MVA transformer also arrived and is stored on the platform in front of the Tololo powerhouse. This transformer is a backup transformer for both the Cerro Tololo and Cerro Pachón electric substations. After installation of the switchgear, the company installing the equipment held a one-day training to the electric group on

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Programmable Logic Controllers. Protection cells have been ordered, and will be delivered in the last quarter of FY2017.

Modernizing the Tololo powerhouse is generating some additional projects. For example, in Q2 of FY2017, we ordered a new petrol tank to allow for a larger supply of petrol (3000 liter instead of 500 liter) readily available for the generators. The platform for the petrol tank was enlarged and we also obtained bids to place guardrails along the edge of this area and around the petrol & gasoline station. During Q2 we furthermore had to carry out repairs on the 2400V generator and on the original automatic switchgear, TTA1 (Tablero de Transferencia Automatico #1).

On Cerro Pachón we closed off the areas of the electric substation, a FY2016 project, and we prepared a platform near the “Caseta de Comunicaciones” for installation of a 500 liter petrol tank, to feed the generator of the communication hut.

2.2.3. Water supply system

Maintenance of two of the three pumps along the water supply system was carried out in Q1 of FY2017; maintenance of the third pump was carried out in Q2 of FY2017. In Q2 we also carried out major repairs and maintenance on the water truck.

The filter for the La Serena water system has to be changed. We send out request for quotes in February.

2.2.4. Kitchens Tololo and Pachón

The renovated Tololo kitchen was inaugurated on January 6 2017. Program directors and site managers were invited for this event. On March 8 we invited the health and safety committees (CPHS) of both Cerro Tololo and Cerro Pachón for lunch and an inspection of the renovated kitchen.

In January 2017 we completed the last bits and pieces of the renovation: we installed a new counter in the dining room to place the soft drink machine; we replaced china, cutlery and other smaller elements such garbage bins; we painted the walls of the serving line area of the dining room; and, in preparation for the formal kitchen training (milestone 2.6.2) the kitchen staff was instructed in the use and maintenance of the new equipment installed in the renovated kitchen. We also started a project to re-varnish the tables and chairs of the dining room, which will be done in the background, whenever there is some spare time.

In the Pachón kitchen and dining facility several smaller improvements were made: the display fridge was replaced by one identical to the display fridge in the kitchen on Cerro Tololo; a second large table was placed in the dining area to accommodate for large groups and the light fixtures in the kitchen were replaced by energy saving versions.

2.2.5. Hotels Tololo and Pachón

In Q2 of FY2017 several improvement projects were carried out in the hotels Tololo and Pachón: couches and sofas in the Tololo Technician and 10-units buildings were upholstered. Incandescent light bulbs were installed in all hotel buildings. The counter & sink in the living room of the Pachón hotel was replaced. Bathroom ceilings of rooms on Pachón were repaired and painted, a job that was started in Q1 and completed in Q2 of FY2017. Doors of the hotel rooms of the Tololo hotel were varnished and new room numbers were installed. The washer and the dryer on Cerro Tololo, for use by visiting astronomers

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and staff-on-turno on Tololo, were replaced. The laundry area will be renovated in Q3; quotes were obtained in Q2.

Solar panels were installed on the roof of the Tololo Technician building, in support of the hot water system of this building. Maintenance of the water heaters / boilers in all hotel buildings was carried out in Q2, while a renewal or upgrades of some of these installations will take place during the second half of FY2017.

2.2.6. Garage, temporary warehouse and new garbage collection area

Preparations for the construction of the new LSST office building on the La Serena compound have started: to make space for the LSST data center, the warehouse, garbage collection area and the La Serena hotel have been or are being moved.

The warehouse will be located in between the garage and the mechanical workshop, where currently the garbage collection area is situated. This garbage collection area will be moved, and the new site was prepared in FY2017 Q2: area cleaned and concrete floor put in. A fence and top will be installed in Q3.

A temporary warehouse has been set up in part of the garage, with containers in front of the garage serving as office space. This involved placing temporary walls to separate the warehouse space from the garage and renewing the metal curtain giving access to the temp warehouse.

We used the opportunity to replace the other garage door, which was also in need of replacement. All work related to the temporary warehouse, was funded through the new building project. The garage door was replaced with funds from the garage cost center.

2.2.7. La Serena hotel

Because of the construction of a new building the La Serena warehouse and the La Serena hotel will be moved. The La Serena hotel will be moved to one of the houses on the compound, Casa 9. In Q2 we obtained quotes for remodeling of this house such that all bedrooms have access to a private bathroom. The remodeling will be carried out in Q3. Casa 9 only has 4 bedrooms and we are considering adding a prefab module with 4 or 5 extra rooms in the garden of the house.

2.2.8. New hires

The FY2017 budget included three new staff members: a maintenance mechanic, a plumber and a heavy machinery operator. We started the process to hire these addition staff members at the end of FY2016. We hope to complete the process of hiring the plumber and the heavy machinery operator in FY2017 Q3.

3. Finances

In Table 2 the total planned budget, total actual expenditures and total actual revenue are given for FY2017 Q1, FY2017 Q2 and the Q1 and Q2 combined. For reference, in the discussion in this Section, we will take two quarters of the FY17 annual budget, i.e. 1,122 MCLP, as the target for this first half-year. We will note where seasonal effects or large planned expenditures for scheduled projects result in departures from a simple linear spending and revenue plan.

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**Table 2. Financial summary:
FY2017 Q1, Q2 Totals in MCLP**

FY2017 Totals	Q1	Q2	Q1+Q2
Budget	561	561	1,122
Expenditures	508	494	1,001
Revenue	595	592	1,187
Surplus/Deficit	87	98	185
FY2017 Projects			
Project balance	22	27	49
FY2017 without Projects			
Suplus/Deficit	65	71	136

Overall the revenue and expenditures of the NOAO-S Facilities Operations department are on target. Actual *Total Revenues* are higher than budgeted by 5%, while actual *Total Expenses* were under budget by 12%. The total surplus in the first half-year of FY2017 is 185 MCLP, or 16% of the actual *Total Revenues*. This includes a 49 MCLP surplus in the project cost centers. Historical data shows that expenses in the first half-year tend to be less than average. In winter expenses tend to increase to well above average, especially for items such as heating, extra repairs and maintenance as result of winter storms, affecting roads, power lines, heaters and buildings.

Payroll expenses are under budget by 17%. Several positions are still to be filled, while some of the benefits will be paid later in the fiscal year. Costs expensed under *Equipment & Building Leases* and under *Professional Services* were budgeted under *Contracted Services*, with the result that *Equipment & Building Leases* as well as *Professional Services* are over budget, whereas *Contracted Services* are under budget. Most of these expenses, but not all, were moved in the FY2017 Q2 report, to allow for comparison between expenses and budgets. In FY2018 they will be budgeted under the correct expense codes.

3.1. Mountain Shares

The mountain share cost centers include:

- Emergency medical service
- Guard service
- Road maintenance
- Communications
- Maintenance of the power lines
- Maintenance of the Tololo power house (Tololo share only)

3.1.1. Mountain share common to both mountains

Total expenditures for the common mountain share cost centers are 8.5% under budget. The main reason for this difference is that meals budgeted in Mountain Share cost centers where in fact charged to home accounts of the staff. This will be corrected in the FY2018 budget, as in meals will be budgeted in the home accounts. As reported in Q1 costs expensed under *Equipment & Building Leases* and under

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Professional Services were budgeted under *Contracted Service*. There is no significant net over- or underspent.

3.1.2. Cerro Tololo share

Revenues and expenditures for the Cerro Tololo share cost centers are on target, with the exception of *Supplies & Materials*. As described in Section 2.2.2 we carried out various projects associated to the renovation of the power house. The costs for those projects, about 22 MCLP, charged to *Supplies & Materials* instead of *Contracted Services* and were not budgeted for. In addition, as reported in Q1, problems with the generators required extra maintenance resulting in unbudgeted expenses of about 14 MCLP in *Supplies & Materials*. Costs expensed under *Professional Services* were budgeted under *Contracted Services*.

3.1.3. Cerro Pachón share

Total Expenditures are falling behind by 26%. Only 43% of *Payroll* has been spent up to now, as the majority of the maintenance work, both on the road and on the power lines will happen during and after winter. In particular, clearing the road to Cerro Pachón after a winter storm requires extra effort. Several contracted jobs were carried out in Q2 or started in Q2, and these costs will appear in the Q3 report. Costs expensed under *Professional Services* were budgeted under *Contracted Services*.

3.2. Per-use services

3.2.1. Meal service

In the first half-year fewer meals were sold than estimated, resulting in 10% less *Total Revenues* than budgeted. In the third quarter of the fiscal year we expect sales to go up as contractors and staff involved in the construction of LSST will start to make use of the dining facilities on the mountain.

Total Expenditures are 39 MCLP higher than *Total Revenues*, i.e. there was a 19% overspend in the first half-year. As reported in Q1, this overspend is due to the remodeling of the Tololo kitchen, which was partially budgeted for under the project cost centers, and partly under kitchen cost centers. Note that the kitchen cost center did run a surplus in FY2016, which will help cover the current overspend in the kitchen cost. These financial data will be reported on in a forthcoming document on FY2016.

3.2.2. Hotel service

- **Mountain lodging**

Total Revenues and *Total Expenditures* are on track, with 13% higher revenues than expenditures. *Utilities & Office Expenses* lag behind by 50%, because the bulk of the expenses will occur in winter: gas cost for heating. As reported in Q1, expenditures under *Supplies & Materials*, *Contracted Services* and *NOAO South Services* are higher than budgeted, because of repairs; upgrades and annual maintenance of the mountain lodging facilities were carried out.

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Lodging on Cerro Pachón continues to include 16,201 CLP to pay off the AURA loan. As of March 31, 2017, an accumulated amount of US\$682,777 had been paid back leaving an amount outstanding on the AURA loan of US\$109,907.

- **La Serena lodging**

Total Revenues for the La Serena lodging cost center are on target, while the expenditures, in particular *Payroll*, *Supplies & Materials*, and *NOAO South Services* (mostly the Maintenance group), are expected to catch up when the La Serena dorms are moved from the current location to Casa 9. Renovations of Casa 9 started in May 2017. This move has been planned and budgeted for since FY2016, and the FY2016 carry-over will be available for this project as well.

3.2.3. Janitorial service

- **Mountain janitorial service**

Revenues and expenditures are on target.

- **La Serena janitorial service**

One of the La Serena janitors moved to the mountain, resulting in lower expenses under *Payroll*. The replacement janitor was hired on a temporary contract. These costs are encumbered and will be reported in the FY2017 Q3 under *Contracted Services*.

3.2.4. Water and sewage

- **Mountain water and sewage**

Estimates for water usage on Cerro Tololo and Cerro Pachón were based on FY2016 actuals. As reported in Q1, water consumption on Cerro Tololo was more than 2 times higher than budgeted for the first half of FY2017 because of a leak in water pipes of one of the Tololo telescopes and water usage on Cerro Pachón was 80% higher than budgeted, due to higher water consumption by LSST, resulting in a significant increase in *Total Revenue*. *Payroll* and other expenses are lagging behind in the Mountain Water and Sewage cost center, with major maintenance not taking place until the second half of FY2017. *Travel Expenses*, covering the cost of the transportation to the mountain for the personnel working on the mountain water supply system, are expensed under the Mountain Common Share cost centers, where the home accounts for the infrastructure personnel are. This will be corrected in the FY2018 budget.

- **Water transportation to Cerro Pachón**

Major maintenance and repairs of the water truck resulted in almost 7 MCLP extra expenses under *Contracted Services*, and extra personnel, during the vacation period, with contract and all expenses charged to the Water Transportation cost center, resulted in 50% higher expenses in *Supplies & Materials*, 5.8 MCLP instead of 3.9 MCLP. However, because *Total Revenues* in this cost center were 80% higher than budgeted, see above, the balance in this cost center is on target.

- **La Serena water and sewage**

Revenues and expenditures for the La Serena Water and Sewage are on target, considering that major maintenance on the system, including change of water filter, will take place in the second half of FY2017.

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3.2.5. Maintenance group

Due to an administrative change for one of the electrical technicians, the cost center of the maintenance group was credited erroneously in *Payroll*, resulting in a surplus in this cost center. Revenues, both external (*Total Revenues*) and internal, i.e. work orders within the department (*A&F Internal Sales*) were on target by the end of FY2017 Q1, while expenditures in *Supplies & Materials* and *Travel Expenditures* were over budget by about 50%, this includes the meals of the electric technician, which were budgeted in the Electric maintenance cost center, part of the Mountain Shares. It also includes the fraction of the cost for the bus to Cerro Tololo corresponding to the maintenance group; this was not considered in the FY2017 budget, but will be included in the FY2018 budget.

3.2.6. Garage

At the end of FY2017 Q1 the cost center Garage had a positive balance: the first quarter saw higher revenue than estimated, both external (*Total Revenues*), about 44% higher, and internal, i.e. work orders within the department (*A&F Internal Sales*), about 26% higher. In preparation for the FY2018 budget, in particular the estimates for internal sales will be reconsidered. Expenditures were on target.

3.3. Census charges

3.3.1. La Serena Census

The La Serena census cost centers include the La Serena guard service, maintenance of the common areas on the La Serena compound and the La Serena based communication services.

Total Revenues are on target, while *Total Expenses* are 8% under budget. There are several encumbrances for jobs already carried out. Encumbrances are not included in this report, resulting in an underspent of 15% in *Contracted Services*. As reported in FY2017 Q1, the cost for the upgrade of the La Serena communication system was charged to *Supplies & Materials*, while budgeted under *Capital Equipment*.

3.3.2. All-Site, All-Staff Census

The cost centers financed by the All-Site, All-Staff census charges include the AURA reception in La Serena, which provides service to both La Serena and mountain facilities and safety in all areas that fall under the responsibility of the NOAO-S Facilities Operations department.

As reported in FY2017 Q1, *Total Revenues* in the All-Site, All-Staff Census cost centers are over budget, because the revenue of the sale of one of the vehicles is included. *Supplies & Materials* are significantly underspent. Meals & Lodging for the La Serena based staff was budgeted under *Supplies & Materials* of these cost centers, but are in fact charged to the home accounts of the staff. This will be corrected in the FY2018 budget. Costs for international freight, in the cost center Reception, is charged directly to the users. The FY2018 budget will be corrected accordingly.

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Table 1. FY2017 Milestones.
Updated April 3, 2017

Number	Milestone Text	Due Date	Status - Detail
2.6.1	Paint outside of hotel/restaurant building on Cerro Tololo.	31-Dec-16	Complete
2.6.2	Implement training plan for kitchen staff.	31-Dec-16	Complete. Should have been phrased: Define training plan for kitchen staff. A training program tailored to the needs of the kitchen was developed, an external consultant contracted and the training started on March 25, 2017.
2.6.3	Implement system to track and control kitchen food supplies.	31-Dec-16	Complete. System developed, and in place. This system will be used together with the stock control system, which is part of the kitchen training/improvement plan under 2.6.2
2.6.4	Complete installation of protection equipment on medium-tension power lines on the mountain.	31-Dec-16	Complete
2.6.5	Upgrade fill system for water storage tanks on Cerro Tololo.	31-Mar-17	No progress; project to be completed by September 30 2017.
2.6.6	Repair or renew sewage system of hotel/restaurant building on Cerro Tololo.	31-Mar-17	Kitchen sewage system was upgraded as part of the kitchen renovation. Hotel part of the sewage system will be revised and if needed, will be upgraded in the second half of FY2017. Completion date: September 30, 2017.
2.6.7	Repair roof of technician dorms on Cerro Tololo.	31-Mar-17	In progress. Bid package prepared, soliciting quotes. Completion date: June 30, 2017
2.6.8	Repair roof of hotel/restaurant building on Cerro Pachón.	31-Mar-17	In progress. Bid package prepared, soliciting quotes. Completion date: August 15, 2017.
2.6.9	Enlarge parking area in front of hotel/restaurant building on Cerro Pachón.	31-Mar-17	Complete. Parking area was enlarged by 200 square meters.
2.6.10	Upgrade heating system of hotel/restaurant building on Cerro Tololo.	31-Mar-17	Heating system hotel/restaurant building postponed. Upgrade of heating system for other Tololo hotel facilities, Technician, 10-units and Tololo house planned for second half of FY2017. Completion date: July 31, 2017.
2.6.11	Upgrade heating system of hotel/restaurant building on Cerro Pachón.	31-Mar-17	Project defined, but will be combined with upgrade of kitchen/dining area hotel Pachón. (4th quarter of FY2017)
2.6.12	Upgrade road signage.	31-Mar-17	Complete. Road signage has been upgraded. Distance indicators have been placed every kilometer along the way from the gate to both mountain tops. Other road signage have been replaced where needed.
2.6.13	Repair mountain road at the area around kilometer 30.	30-Jun-17	In progress. Work started March 20, 2017. Expected duration four months.
2.6.14	Implement system to track department expenditures.	30-Sep-17	Work with AURA-CAS has started. Monthly financial reports are prepared for group leaders of the four areas of the department, as well as for the NOAO-S safety engineer. In FY2017 Q2 group leaders were trained in interpretation and usage of these reports.