ARRA Infrastructure Improvements at the National Optical Astronomy Observatory

Quarterly Scientific Report (3)

for

February 1, 2011 – April 30, 2011

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ACTIVITIES AND FINDINGS

Activity related to infrastructure improvements in the third quarter (February through April) of Year 2 of the three-year award is described for each project below.

TUCSON INFRASTRUCTURE

Renovate computer room electrical, cooling, and fire detection/suppression systems: The new primary computer room air conditioning unit was brought online and made fully operational during this period. The new room exhaust system was completed and efforts were initiated to add a new, remote fire alarm system panel and clean/update the detector systems. Work was done to integrate the basic operation of the new systems into the current building control software. Efforts were begun to work with a local Engineering firm to develop the design and prepare bid documents for installation of a critical back-up power generation system. This will ensure operation of the computer room and its environmental cooling systems when the main power supply to the facility is disrupted during the monsoon storms or power company distribution problems.

Replace and renovate electrical supply/distribution equipment: The first phase of the project to renovate the primary equipment was completed during this period. This work included replacement of the 480-V motor control center, installation of new main breakers in the primary switchgear, and the replacement of the primary 1000-KVA delta system transformer with a new 225-KVA transformer. The second phase to replace secondary distribution equipment for key systems is in progress. This ongoing effort will correct serious electrical safety issues, update compliance with the electrical codes, and help increase power availability to areas with insufficient capacity.

Replace 15-year-old building energy management and control system: Bid documentation that incorporated the new HVAC systems was prepared and provided to the NOAO contracts office for bidding. It is anticipated that the project will be put out for bid and a contract awarded during the fourth quarter of this award year.

KPNO MOUNTAIN INFRASTRUCTURE

KPNO water system renovation: Due to unanticipated issues with the proposed vendors, the original project renovation bids were rejected. Staff worked with the contracts office to revise the bid documents and clarify the requested project renovation scope of work. The project was put out to rebid, and it is anticipated that new vendor bids will be received in the coming quarter.

Kitt Peak instrument handling facility: NOAO is waiting for the NSF to provide formal approval to proceed with the project. This will allow for bid and/or construction efforts to proceed. Informal information and documentation about the proposed project has been provided to the Tohono O’odham Nation over the past few quarters to keep their administrative offices informed.
CTIO MOUNTAIN INFRASTRUCTURE

Pachón water system renovation:
During this period, couplings and 14,000 linear feet of 3-inch inner diameter steel pipe with an epoxy-lined interior were ordered to replace the old, leaking pipes.

Dormitories repair & renovations:
Roof repair for the Cerro Tololo dormitories and houses was carried out and completed during this period.

Pachón kitchen & dining facility:
A contract for construction of phase three is underway and progressing. The completion of this phase should occur by the end of June 2011, weather conditions permitting.

Blanco 4-m computer room & console upgrade for DECam:
The console room relocation, refurbishments, and upgrades were completed. Work on the computer room was completed, and it is now operational.

Blanco 4-m mirror coating chamber:
The vacuum pump and other components were installed and used during this period. A very good aluminum coating was applied to the Blanco primary mirror in advance of the DECam installation scheduled for later in calendar year 2011.

Blanco 4-m entrance protection:
Enterance protection was completed this period.

Blanco 4-m cooling system upgrade:
A 40-ton chiller unit was purchased and arrived at CTIO. Installing it and putting it into service is scheduled for June 2011.

Cerro Tololo UPS upgrade:
The new UPS (uninterruptible power supply) was installed and placed in operation. Some spares and a service contract need to be obtained.

Mountain meeting room renovation:
Some of the furnishings needed for this project were purchased.

Mountain road guardrail installation:
With NSF’s authorization, this account’s funds were designated to repair a damaged CTIO Frequency Converter, and to replace the worn out and extensively used standby generator for CTIO. Repairs to the Tololo Frequency Converter were completed during award year 1. The generator arrived at CTIO the last week of March 2011 and will be installed and put into operation by the end of June 2011.

LA SERENA INFRASTRUCTURE

Machine shop modification & refurbishment:
No further progress was made on this project during this reporting period.

La Serena compound water system renovation:
No work has been done yet.
La Serena meeting rooms renovation:
No further progress was made on this project during this reporting period.

Repair and renewal of security fencing for La Serena compound:
No further progress was made on this project during this reporting period.

SUMMARY OF THIRD QUARTER EXPENDITURES

The following table provides a summary of the account, showing cumulative expenditures to date (April 30, 2011) and the total funds remaining.

<table>
<thead>
<tr>
<th></th>
<th>Award Amount</th>
<th>Prior Expenses</th>
<th>Expenses This Quarter</th>
<th>Total Expenses</th>
<th>Funds Available</th>
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<tbody>
<tr>
<td>CTIO El Totoral Facilities</td>
<td>2,098,000</td>
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<td>355,774</td>
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<td>Kitt Peak Facilities</td>
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<td>AURA F&amp;A</td>
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<td><strong>Totals</strong></td>
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<td><strong>1,460,989</strong></td>
<td><strong>576,042</strong></td>
<td><strong>2,037,031</strong></td>
<td><strong>3,562,969</strong></td>
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