Interim Report for Period: 12/2010 - 02/2011  
Submitted on: 02/23/2011  
Award ID: 0947035

Principal Investigator: Smith, William S.  
Organization: AURA/Nat Optic Astron Obse  
Submitted By: Smith, William - Principal Investigator  
Title: Infrastructure Improvements at the National Optical Astronomy Observatory

Project Participants

Senior Personnel

Name: Smith, William  
Worked for more than 160 Hours: Yes  
Contribution to Project:

Name: Silva, David  
Worked for more than 160 Hours: Yes  
Contribution to Project:

Name: Dunlop, John  
Worked for more than 160 Hours: Yes  
Contribution to Project:

Mr. Dunlop has responsibility to execute ARRA projects related to Tucson facility and on Kitt Peak.

Name: Figueroa, Enrique  
Worked for more than 160 Hours: Yes  
Contribution to Project:

Mr. Figueroa has responsibility to execute ARRA projects related to La Serena facility and on Cerro Tololo and Cerro Pach?n.

Name: Logan, Regina  
Worked for more than 160 Hours: No  
Contribution to Project:

Ms. Logan oversees contracts with sub-awardees.

Post-doc

Graduate Student

Undergraduate Student

Technician, Programmer

Other Participant

Research Experience for Undergraduates

Organizational Partners

Other Collaborators or Contacts

See Pdf.
Activities and Findings

Research and Education Activities:
See Pdf.

Findings:
See Pdf.

Training and Development:

Outreach Activities:

Journal Publications

Books or Other One-time Publications

Web/Internet Site

Other Specific Products

Contributions within Discipline:

Contributions to Other Disciplines:

Contributions to Human Resource Development:

Contributions to Resources for Research and Education:

Contributions Beyond Science and Engineering:

Conference Proceedings

Categories for which nothing is reported:
Organizational Partners
Activities and Findings: Any Training and Development
Activities and Findings: Any Outreach Activities
Any Journal
Any Book
Any Web/Internet Site
Any Product
Contributions: To Any within Discipline
Contributions: To Any Other Disciplines
Contributions: To Any Human Resource Development
Contributions: To Any Resources for Research and Education
Contributions: To Any Beyond Science and Engineering
Any Conference
ARRA Infrastructure Improvements at the National Optical Astronomy Observatory

Quarterly Scientific Report (2) for

November 1, 2010 – January 31, 2011

Prepared for:
National Science Foundation
Scientific Program Order No. 16 (AST-0947035) is Awarded
Pursuant to Cooperative Agreement No. AST-0132798, Article VII

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ACTIVITIES AND FINDINGS

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

TUCSON INFRASTRUCTURE

Upgrade Tucson shop CNC capability:
Already Completed.

Renovate computer room electrical, cooling, and fire detection/suppression systems:
The successful installation of a new Computer Room Air Conditioning (CRAC) unit in the main computer room provided sufficient cooling to allow the contractor to complete the demolition of the deteriorated primary air handler. Once the demolition was completed, another larger CRAC unit was installed and brought on-line in late January. The contractor is currently working to install the new control system and finish up the basic contract requirements to complete the initial phase of the project. Facilities staff is continuing to work with the computer staff to research the remaining phase 2 efforts regarding fire detection/suppression efforts and electrical renovations to incorporate a potential backup generator system.

Replace and renovate electrical supply/distribution equipment:
Bids were received in early November, and the successful contractor began work on the phase 1 portion of the project to renovate the key primary electrical equipment. New equipment was placed on order, and the contractor worked very closely with Facilities staff to plan several electrical outages to renovate and replace equipment. New motor control centers and electrical breakers were installed in accordance with the engineering design. New transformers were received, and the phase 1 effort should be completed in the next quarter.

Replace 15-year-old building energy management and control system:
Facilities staff has been supporting the other ARRA projects as noted above, and, as a result, minimal additional work has been done on this project. The completion of the current work on the computer room cooling and electrical renovation projects noted above will allow for the final interface information to be incorporated into the bid documentation. It is anticipated that the project will be placed out to bid in the next few months.

KPNO MOUNTAIN INFRASTRUCTURE

Handicapped access lift for Visitor Center public telescope:
Already Completed.

KPNO water system renovation:
The EPA provided review information that was incorporated into the bid specifications and documentation prior to bidding of the project. Two on-site bid meetings were held on Kitt Peak with a number of suppliers and contractors in attendance. A formal bid review procedure was established, and contractor bids were received in early January. Bids were reviewed and evaluated with a final selection meeting taking place in late January. Information regarding the bidding process and contractor selection is being submitted to the NSF in early February for their formal review and anticipated approval.

Kitt Peak instrument handling facility:
Facilities staff continued to develop the proposed project plans and identify preferred site and building requirements. Discussion is ongoing with appropriate organizations to define relevant
issues for formal selection of a preferred site and ensure that proper procedures are followed to obtain formal NSF approval to proceed with the project. Once approvals are obtained, current plans are to pursue design/construction bids late in the second quarter of FY11.

**CTIO MOUNTAIN INFRASTRUCTURE**

**Pachón water system renovation:**
An option for using PVC-lined steel pipe is still being investigated. A proposal for the painting and maintenance of five 5,000-gal water storage tanks has been received and the contract will be awarded during the next quarter.

**Dormitories repair & renovations:**
Roof repair of houses and dormitories on Cerro Tololo is in progress, with completion estimated to be the end of February 2011.

**Pachón kitchen & dining facility:**
The construction contract was awarded and the start of construction is scheduled for February 7. It is estimated that the job will take five months.

**Coudé room upgrades/handling for new instruments:**
Already Completed.

**Blanco 4-m computing room & console upgrade for DECam:**
The console room was completed and is ready for the furniture and workstations to be installed. The expected completion date is February 2011.

**Blanco 4-m mirror coating chamber:**
All major components were received, and the upgrade is ready to be started.

**Blanco 4-m entrance protection:**
Work is in progress and will be completed by the end of February 2011.

**Blanco 4-m cooling system upgrade:**
A new chiller (40 tons of refrigeration) was ordered for $25,650. Together with other associated expenses, the purchase leaves a balance near zero for this upgrade.

**Cerro Tololo UPS upgrade:**
The UPS is installed and operating. What remains is to finalize a list of spares and purchase them.

**Mountain electronic laboratory equipment renewal:**
Already Completed.

**Cerro Pachón dorm emergency generator:**
Already Completed.

**Mountain meeting rooms renovation:**
No work done to date.

**Mountain road guardrail installation:**
With NSF authorization, the funds of this account were used to repair a damaged CTIO Frequency Converter and to replace the worn out and extensively used standby generator for CTIO. The Frequency converter was repaired, installed, and put in operation. The standby generator was purchased last June with an expected delivery date in March 2011.
LA SERENA INFRASTRUCTURE

Machine shop modification & refurbishment:
Quotations for the originally planned work were received, but they all exceeded the budget. A de-scope is planned, but not completed.

La Serena laboratory equipment renewal:
Already Completed.

CNC milling machine:
Already Completed.

OTDR unit:
Already Completed.

La Serena compound water system renovation:
No work done to date.

La Serena meeting rooms renovation:
No work done to date.

Repair and renewal of security fencing for La Serena compound:
The main entrance to the compound was completed and some painting and maintenance work will continue to be carried out during the next quarter.

Vehicle fleet renewal:
Already Completed.

SUMMARY OF SECOND QUARTER EXPENDITURES

The following table provides a summary of the account, showing cumulative expenditures to date (January 31, 2011) and the total funds remaining.

<table>
<thead>
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<th>Award</th>
<th>Amount</th>
<th>Prior Expenses</th>
<th>Expenses This Quarter</th>
<th>Total Expenses</th>
<th>Funds Available</th>
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