

SRI International



Arecibo: Challenges, Lessons Learned

NSF Large Facility Workshop
San Juan, Puerto Rico
May 12, 2015

Selecting sub-awardee team mates

The Arecibo Management Team

SRI International



Selecting sub-awardee team mates

The Arecibo Management Team

Primary Roles-Three Science Disciplines and EPO

- SRI International, (SRI)
 - PI Institution
 - Space and Atmospheric Science
- Universities Space Research Associates, (USRA)
 - Radio Astronomy
 - Planetary Science
- Universidad Metropolitana, (UMET)
 - Education and Public Outreach with emphasis on Puerto Rico
 - Facility O&M

The Arecibo Management Team

SRI International, PI Institution

Forty years of
NSF space and upper atmospheric
facility management



The Arecibo Management Team

Universities Space Research Associates

Astrophysics,
Radio astronomy,
Planetary science,
experience

The screenshot shows the USRA website homepage. At the top, the USRA logo is on the left, and navigation links for Facebook, Twitter, LinkedIn, and other site functions are on the right. The main banner features a large image of the SOFIA aircraft in flight. A text box on the left of the aircraft states: "SOFIA is the largest airborne observatory in the world, a highly modified Boeing 747SP, which studies the universe at infrared wavelengths." To the right of the aircraft is a smaller image of a galaxy with a text box: "An international science team, using SOFIA and other observatories, discovered that the first step to form our solar system lasted at least 1 million years by observing a similar system ~400 light years away." Below the banner is a "Universities Space Research Association (USRA) is an independent, nonprofit research corporation where the combined efforts of in-house talent and university-based expertise merge to advance space science and technology. USRA works across disciplines including **biomedicine, planetary science, astrophysics, and engineering** and integrates those competencies into applications ranging from **fundamental research to facility management and operations**. USRA engages the creativity and authoritative expertise of the research community to develop and deliver sophisticated, forward-looking solutions to Federal agencies and other government programs." To the right of this text is a "Headlines" section with a "More | RSS" link. It lists several news items with dates: "April 20, 2015 OASIS and ACE-H-1 experiments delivered to the ISS", "March 30, 2015 Race to Detect Gravitational Waves Advances with New NSF-funded NANOGrav Physics Frontiers Center", "March 27, 2015 NASA's Choice for Asteroid Redirect Mission May Not Sway Skeptics", "March 19, 2015 SOFIA Finds Missing Link Between Supernovae and Planet Formation", and "March 16, 2015 46th Lunar and Planetary Science Conference hosted by USRA's LPI". At the bottom right is a "RESEARCH HIGHLIGHT" section with a microscopic image of nanomaterials and the text: "Nanomaterials to improve power requirements, response time, and sensitivity of critical sensors." Below this is a "Related Research" link and a "MORE" button.

The Arecibo Management Team

Universidad Metropolitana

Largest private university in Puerto Rico

Strong ties within Island education and political entities

Principal for AMT in founding the
Council of Puerto Rican Chancellors and Stakeholders:

Ana G. Méndez University System

University of Puerto Rico, Río Piedras

University of Puerto Rico, Mayagüez

University of Puerto Rico, Humacao

University of Puerto Rico, Arecibo

University of Puerto Rico (UPR), Cayey

Inter American University, Bayamón

Inter American University, Metro

Polytechnic University

Universidad del Turabo

Universidad del Este

Universidad Sagrado Corazón

Caribbean University

PRIDCO

PRDOE

PR Department of Tourism

INTENOR

Angel Ramos Foundation

PR Senate



AMT Governance

The Executive Governing Committee—EGC

Membership consists of the managers of the Arecibo Director and the Deputy Directors

SRI, Dr. John Kelly (chair)

USRA, Dr. Nicholas White

UMET, Chancellor, Carlos Padin



Issues Related To Three Different Managing Institutions

- Need a unified team with AO as the common goal
- Need proper distribution of responsibilities
 - Possible overlap in accessing shared support resources
- Avoid competition for Projects, Resources, or Funding



Unify the Three Member Team

Potential obstacles:

- Differences in indirect cost structure
- Differences in accounting formats/practices
- Make AO the team goal not individual agendas
- Dealing with insufficient funding



Unify the Three Member Team

- Differences in nonprofit organizations and University structures
 - Policies
 - Processes
 - Culture



Unify the Three Member Team

- Unify salary and benefits as much as possible
 - AO staff employment is distributed among the three members
 - Staff morale strongly affected by knowledge of differences
 - AMT agreed to work on this problem and reduce the differences as much as company policies allow



Distribution of responsibilities

- Local management vs. home institution
 - Most decisions made on site
- Local procurement function
 - More timely
- Shared resources
 - Example-electronics department common to all
- Senior staff and reporting (mixed employers)
 - Staff from one team reporting to a supervisor from another team
- Corporate functions in Menlo Park



Management Issues Linked to NSF (AST) Budget Reductions

- Staff retention
 - Very difficult to recruit professional positions given the uncertainty of future funding from NSF (divestment?)
- Operations vs maintenance
 - Reduced funding could (should) require reduction in staff. A result of that consequence could (should) result in longer periods of maintenance down time at the expense of telescope user time.
- Staff science activity level
 - Another result of reduced funding could (should) reduce or even eliminate staff science activities
- User support
 - Scale down to reflect funding level decline

Augment Funding

- Seek funding outside of CSA
 - Science staff proposals
 - Limited success
 - NASA NEO Congressional mandate
 - Significant success
 - Enhance visitors center revenue
 -
 - Seek Puerto Rican funding sources
 -
- Three institutions involved in fund raising-difficult to do as unified team. Each team member has expertise and relationships with identified funding sources.



Ensuring Compliance

Primary compliance responsibility rests with SRI as PI institution

- SRI Corporate functions performed in Menlo Park for AO
 - Contracts, subcontracts
 - EHS
 - Property control
 - Legal
- The SRI “Project Management Support Office” provides for the Principal Investigator, management of Menlo Park Corporate Support Functions
- SRI performs audits of CSA activities including SRI’s, USRA’s and UMET’s

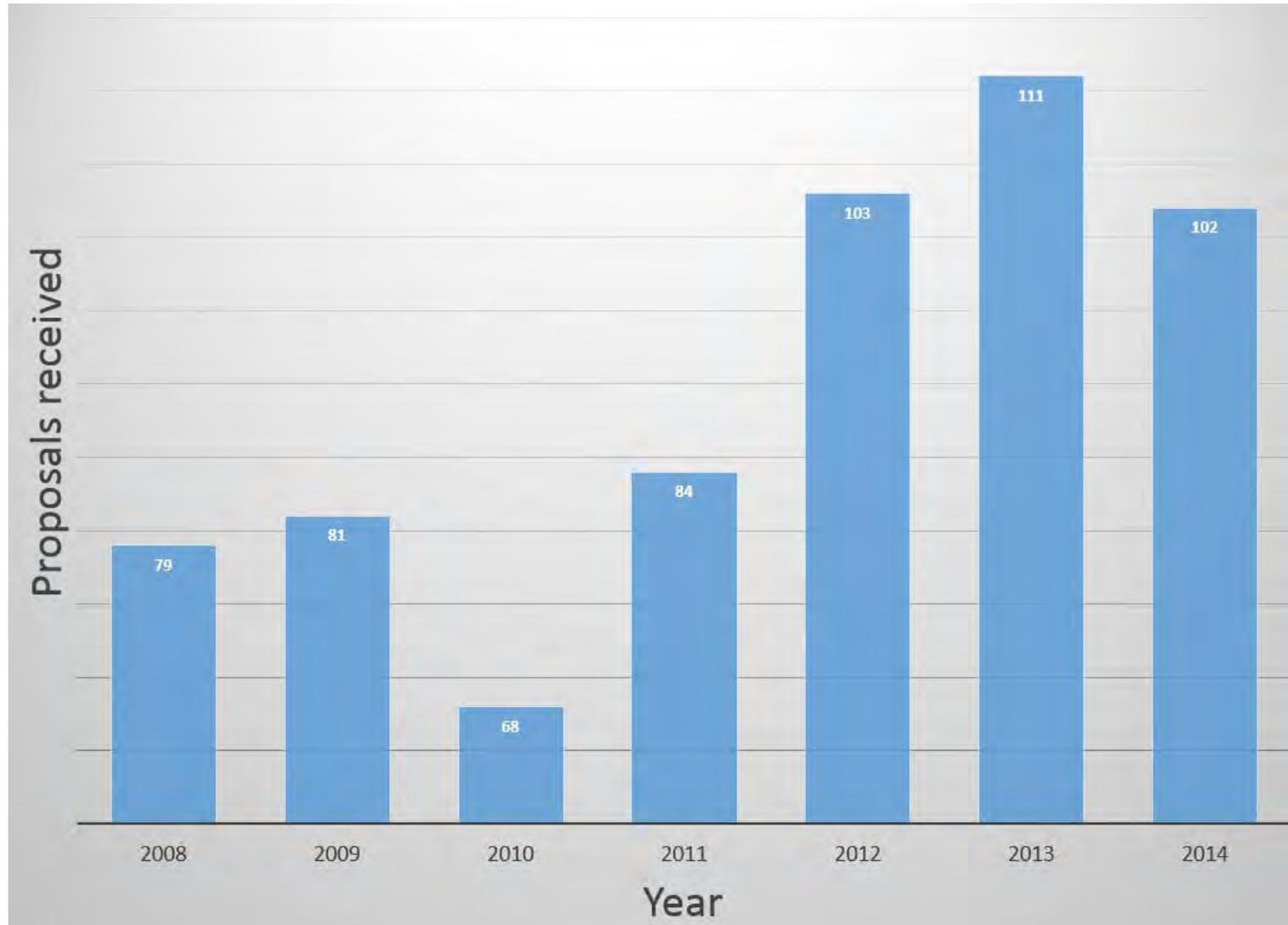


Have We Provided AO With An Effective Management Structure?

The viability and contributions of Arecibo Observatory over the next 5-10 years will provide that answer, but these results are very positive:

- User subscription - Gordon Telescope proposals and renewed community interest
- Safety record - Workman's Compensation days
- Contingency response - earthquake
- Funding expansion
- Local stakeholder "buy-in"

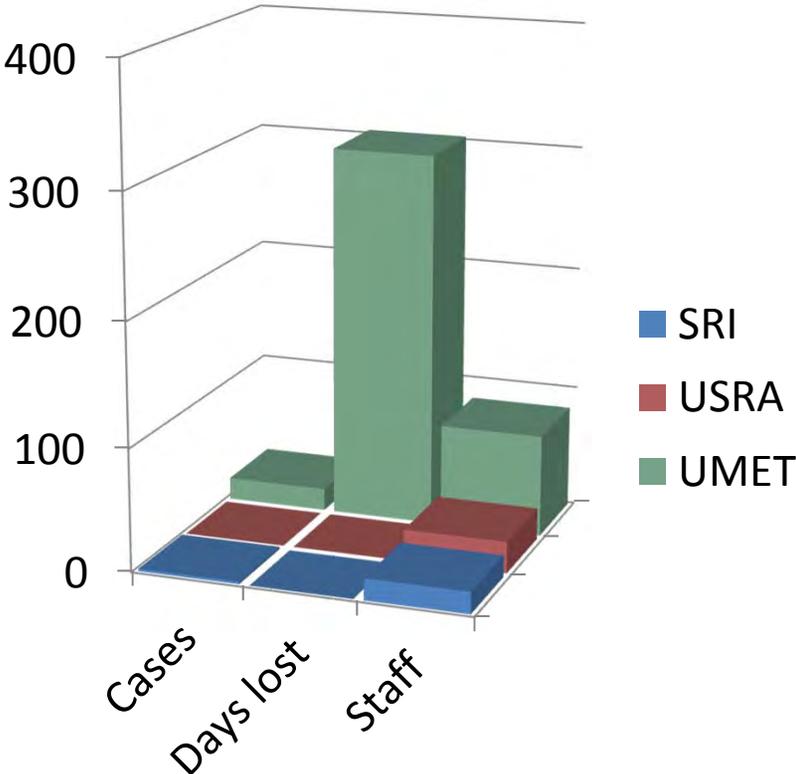
Proposals to use the facility



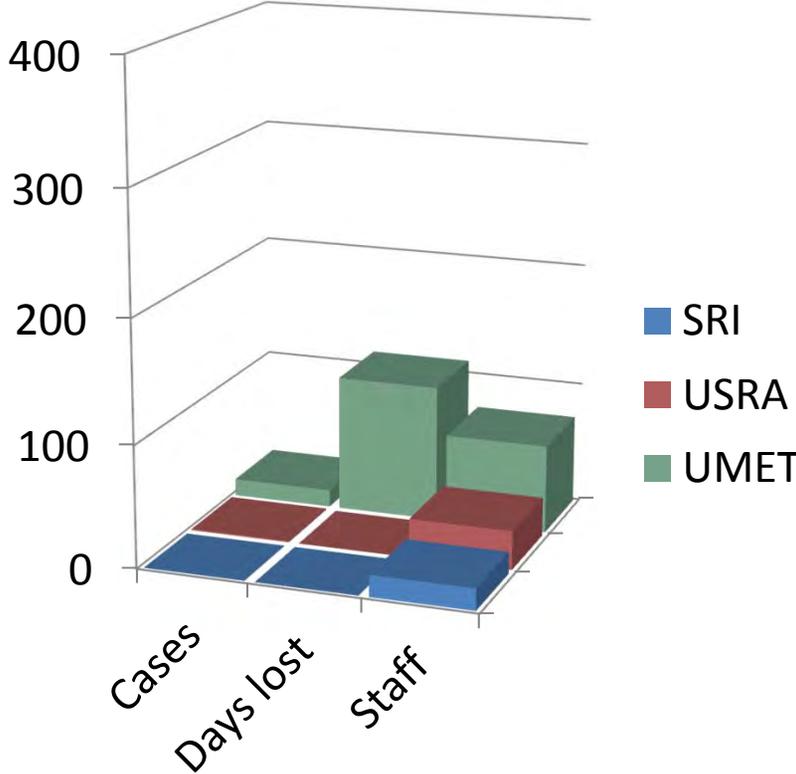
Safety

Workman's comp days reduced 3-fold in 3 years

Workers Compensation 2012



Workers Compensation 2014



Contingency response

In January, 2013, an earthquake caused significant damage to the Gordon Telescope suspension system. Damage from that mission-threatening event was repaired in 60 days, while continuing data taking throughout.



Local Stakeholder Engagement

Accomplishments:

- Interns in electronics, structural Engineering, mechanical engineering
 - IAU Aguadilla
 - National University
 - UPR Arecibo
- AO staff have identified 12 R&D projects suitable for University collaborations in an ongoing education and development program
- Formal agreement with DOT for road and signage improvements
- New power source for AO (PR Energy & Power Authority)



What Would We Do Differently Next Time?

- Keep major funding enhancements with the PI institution - make planetary radar an SRI responsibility
- Mandate identical benefits and pay scales
- (Re)consider forming a JV or LLC composed of management team
- Reduce operations to reflect reduction of funding (cannot give the NSF the same productivity and accept drastically reduced funding - efficiency takes us only so far)
- Negotiate CSA more wisely

However,

Through the process of establishing the Arecibo Management Team, confronting “three team” issues, resolving those issues, and eliminating mistrust between team mates, the AMT is demonstrating that this model can successfully manage a Large Facility.