

PROJECT SOLICITATION FOR THE MANAGEMENT AND OPERATION OF THE NATIONAL ASTRONOMY AND IONOSPHERE CENTER

Announcement of Opportunity

DIVISION OF ASTRONOMICAL SCIENCES

DEADLINE DATE: JANUARY 17, 1998



NATIONAL SCIENCE FOUNDATION

I. INTRODUCTION

The National Science Foundation (NSF) is authorized by the National Science Act of 1950, as amended, to initiate and support basic and applied scientific research and to initiate and support programs to strengthen scientific research potential. In this regard, NSF supports a number of facilities the purpose of which is to provide research platforms supporting various scientific disciplines for researchers. The National Astronomy and Ionosphere Center (NAIC) is such a facility, where research is conducted in radio and radar astronomy and in atmospheric sciences.

The most recent award for NAIC approved by the National Science Board (NSB-96-69) stipulates that a competition for the management of this Center take place during the Observatory's current 3-year award. Accordingly, the Division of Astronomical Sciences (AST) of the National Science Foundation is soliciting proposals for the management and continued operation of the National Astronomy and Ionosphere Center. The proposals should be for an initial 5-year award period; at least one additional 5-year renewal award will be made, contingent upon satisfactory performance, the availability of appropriated funds, and the approval of the National Science Board, NSF's governing body.

NAIC's principal research facilities are located on approximately 120 acres of Government-owned land in Barrio Esperanza, Arecibo, Puerto Rico, at an approximate latitude of 18 degrees North and an approximate longitude of 67 degrees West. The Center's main instrument is a 305-meter diameter, fixed spherical reflector located at the observatory site, some 10 miles inland from the city of Arecibo. The antenna is used for radio and radar astronomy and for upper atmospheric physics research; it is the world's largest radio/radar telescope. It was recently equipped with aberration-correcting Gregorian optics and is outfitted with a suite of state-of-the-art, low-noise receivers which cover frequency bands ranging from 400 MHz to 10 GHz. A new, 1 MW S-band (2380 MHz) radar system is available for solar system studies, and a 430 MHz incoherent scatter radar serves as a key instrument for atmospheric research. Several on-site lidars, and a 32-antenna ionospheric heating facility (HF) located on marshy ground near Islote on the Puerto Rican coast are other important components of NAIC's atmospheric research instrumentation. Further details about NAIC's facilities and operations may be found on the World Wide Web at <http://www.naic.edu>.

NAIC is one of three National Astronomy Centers supported by the Division of Astronomical Sciences. The Division provides about 80% of the Center's ~\$10 million annual operating budget; NSF's Division of Atmospheric Sciences (ATM) provides incremental funding, about 15% of

the budget, to support research in ionospheric and upper atmospheric physics. The National Aeronautics and Space Administration (NASA) provides about 5% of the total annual budget to support S-band planetary radar operations. Planned FY 1997 expenditures were as follows (in millions of dollars):

Operations and management support, AST.....	\$ 8.265
Increment for upper atmospheric research, ATM.....	\$ 1.350
Increment for radar astronomy, NASA.....	\$ 0.425

II. OBJECTIVES AND AWARDEE RESPONSIBILITY

A. General

The awardee shall be responsible for the overall welfare of NAIC, the mission of which is to support and stimulate research by the U.S. and international research communities in the fields of radio and radar astronomy and atmospheric science. In this regard, the awardee shall be responsible for the planning, initiation, and execution of NAIC's programs and activities and shall integrate the scientific interests of the communities served by the Center, the needs of these communities for scientific and facility support, and the needs of the National Science Foundation for support of these community efforts. In discharging these responsibilities, the awardee shall ensure that NAIC maintains its character as a visitor-oriented research institution with strong internal research programs in the fields of radio astronomy, atmospheric sciences, and radar astronomy.

B. Specific

The awardee shall:

- Staff, manage, operate, maintain, and develop NAIC.
- Provide, through its staff and the facilities of the Center, the scientific, technical, managerial, and other support necessary for the conduct of research in the fields supported by NAIC. The major criteria for the utilization of NAIC by staff and visiting scientists shall be the scientific merit of proposed research, the competence of the proposing individuals, and the suitability of the Center's facilities for the proposed research. These criteria shall be judged through a merit review mechanism acceptable to NSF.
- Develop new techniques and instruments for astro-

nomical and atmospheric observations and data processing.

- Plan and conduct feasibility studies for new facilities and instrumentation, as well as for the upgrade, alteration, or removal of existing facilities.
- Determine through appropriate mechanisms the scientific community's needs for facilities, operations, support, and instrumentation at NAIC, as well as the Center's ongoing needs for staff, facilities, and other support.
- Cooperate in the integration of Center programs into the overall national and international efforts in astronomy, upper atmospheric sciences, and related fields, while ensuring that the Center's programs complement research conducted by other institutions.
- Maintain vigilant awareness of, and protection for, the radio frequency environment of the Observatory through a program of radio frequency interference monitoring and mitigation.
- Promote the utilization of knowledge in astronomy, atmospheric sciences, and related fields, through public information, education, and training programs.

III. PROPOSAL SUBMISSION INFORMATION

A. Who May Submit

Proposals for the management and operation of NAIC may be submitted by U.S. academic institutions, non-profit or for-profit organizations, or consortia thereof, subject to the qualifications outlined in the *NSF Grants Policy Manual* (NSF 95-26).

B. Letters of Intent

Letters of intent to submit a proposal must be received at NSF by 5:00 PM EST on November 3, 1997. Letters must be submitted or endorsed by an authorized institutional representative, and should be submitted to the address given in Section VIII below. Letters of intent in no way obligate institutions/organizations to submit a proposal, but proposals will be accepted *only* from those institutions/organizations which have submitted letters of intent.

C. Site Visit to NAIC for Prospective Proposers

NSF/AST/ATM is prepared to arrange a day-long site visit at the Arecibo Observatory for prospective managers following the receipt of letters of intent and prior to the submission of proposals. The visit is currently planned for November 13, 1997. Any change in this date will be communicated to all institutions which have submitted letters of intent to propose. All costs associated with visits to the Observatory must be borne by the attendees.

D. Additional Information for Proposers

Copies of the current NAIC Program Plan and the current cooperative agreement for the management of NAIC are available either by request at the address for additional information below (Section VIII) or on the World-wide Web at <http://www.nsf.gov/mps/ast/naicdocs.htm>. A detailed list of NAIC property for which the current awardee is responsible will be provided at the NAIC site visit (Section IIIc).

E. Submission of Proposals

Proposals must be received at the address below (Section VIII) by 5:00 PM EST on January 17, 1998.

F. Evaluation of Proposals

The evaluation of proposals submitted in response to this solicitation will be administered by the Division of Astronomical Sciences. The proposals will be reviewed by a merit review panel. Reviewers will be chosen by AST in consultation with ATM and NASA, and will include members of the astronomical and atmospheric sciences communities, as well as scientists from other disciplines with broad management experience. Site visits to some or all of the proposing institutions may be a part of the review process.

IV. PROPOSAL REQUIREMENTS

The proposal should be prepared following the general guidelines contained in the *NSF Grant Proposal Guide* (NSF 98-2) and must include the information described below. The NSF Forms mentioned below are all available in the Proposal Forms Kit (NSF 98-3), included in the *Grant Proposal Guide*.

Each proposal should address the particular combination of the proposing institution's scientific, technical, managerial, and administrative qualifications both to manage and

to make best use of the Facility. Lengthy proposals are discouraged, although the page limits imposed by the *NSF Grant Proposal Guide* will not be applied. Appendices may be employed to furnish added details of plans of operation or of the experience and capabilities of personnel.

Each proposal shall contain the following sections:

1) NSF Cover Page.

2) Supplementary Information. Principal Investigator or Center/Project Director (NSF Form 1225). Attach one copy to the signed copy of the proposal. Do not include the form within the body of the proposal.

3) Table of Contents with page numbers keyed to major sections of the proposal.

4) Summary of the proposal, including managerial, administrative, scientific, and technical expertise.

5) Management and Transition Plans. The management plan should fully describe the proposed organization for the Center. Particular attention should be given to the management oversight and user-feedback mechanisms proposed for the Observatory, as well as proposed mechanisms for reviewing and scheduling user access to the facility. The management plan should also identify and provide appended *curricula vitae* for personnel considered to be key individuals by the proposing organization; these might, for example, include the Director and other key managerial, technical, and scientific personnel.

Proposing organizations other than the current awardee must also provide a detailed transition plan for the 12-month period preceding the new award. Under the provisions of the cooperative agreement under which NAIC presently operates, the current awardee will cooperate with any successor to the extent necessary to facilitate uninterrupted support for the Center during the transition period. NSF will support appropriate costs incurred by a successor awardee during this period.

6) Scientific Program Plan. This should discuss research planned by NAIC staff, as well as the proposer's vision of the critical science to be supported for the user community over the next 5 years.

7) Technical Program Plan. This should describe plans for the maintenance of current equipment and facilities, plans for major new equipment - such as receivers, spectrometers, detectors, radars, and lidars - and plans for upgrades to existing facilities of the Observatory.

8) Educational and Outreach Plan. Describe plans to involve undergraduate and graduate students in the facility. Describe plans for public outreach.

9) Proposed Budgets. In addition to a summary total budget, budgets should be prepared for each of the five years of this award. Detailed explanations for all entries should accompany the budgets. All budgets should be submitted on NSF Form 1030, *Summary Proposed Budget*, contained in the *NSF Grant Proposal Guide*.

In addition to budgets for the initial 5-year award period, a budget should be provided for the 12-month transition period, if appropriate.

Any indirect costs or management fees included in the budget should be fully described. In-kind, non-Federal cost-sharing, or other indirect benefits provided to NAIC by the proposing organization or other sources should be fully explained. Details regarding health benefits, retirement, and disability insurance offered to employees should also be described.

10) Appendices should include the *curricula vitae* of individuals identified as key individuals by the proposing organization (*cf.* item 5 above), as well as current and pending support for any key individuals for whom NSF salary support will be requested.

V. EVALUATION OF PROPOSALS

As with all proposals submitted to NSF, proposals submitted in response to this Solicitation will be evaluated in accordance with the basic review criteria adopted by the National Science Board in March 1997 (NSB 97-72). These are:

- What is the intellectual merit of the proposed activity?
- What are the broader impacts of the proposed activity?

In addition, for this Solicitation, the following criteria will be used in the evaluation of proposals. All five criteria are important, but particular emphasis will be given to the first three.

Management Capabilities

- Suitability and quality of management plan for operating and maintaining NAIC.
- Institutional commitment to the success of the Facility.

- Suitability, experience, and professional stature of key management staff.
- Proposing organization's experience and background in operating a facility like NAIC.

Scientific Capabilities

- Quality of the scientific program and match to NAIC's instrumental capabilities and potential.
- Degree to which scientific programs are integrated with the programs of user communities.
- Experience and stature of key scientific staff.

Technical and Logistic Support

- Degree to which the prospective manager will ensure that NAIC is operated and maintained in an optimal manner.
- Potential to further develop NAIC as a leading-edge national Center.
- Degree to which the prospective manager will ensure that NAIC's facilities can be used easily and effectively by visiting scientists.

Education and Outreach

- Degree to which the proposed management plan will create opportunities for student involvement in the use of NAIC.
- Degree to which the proposed management plan will create opportunities in the use of NAIC for women and minorities.
- Extent and nature of proposed public outreach.
- Proposing organization's experience and background in melding education and public outreach with research facilities.

Total Operating Costs and Costs to NSF

- Extent to which the proposed operating costs of the Facility maximize scientific return and are otherwise deemed reasonable; extent and sources of cost sharing and institutional commitment of funds.

VI. AWARD

The initial award will be a cooperative agreement for a duration of 5 years, to be funded in yearly increments. If an awardee is chosen to succeed the current managing organization, NSF will also support appropriate transition costs for the 12-month period preceding the new award. The award is expected to begin on or about October 1, 1999. It is anticipated that at least one additional 5-year renewal award will be made to the awardee, contingent upon (i) satisfactory management performance during each award period, as judged by NSF; and (ii) the receipt of acceptable proposals to operate NAIC within future award periods, as determined by merit review and NSF judgment. *All awards shall be subject to the approval of the National Science Board and the availability of appropriated funds.*

VII. SUMMARY OF DEADLINES AND MILESTONE DATES

DEADLINES:

Deadline for receipt of letter of intent to propose
November 3, 1997

Deadline for receipt of proposal (20 copies)
January 17, 1998

OTHER IMPORTANT DATES:

Site visit for prospective proposers
 November 13, 1997

NSF target date for announcement of awardee selection
 June 23, 1998

Transition period begins.....October 1, 1998

NSF target date for start of new award
 October 1, 1999

VIII. ADDRESSES FOR ADDITIONAL INFORMATION, LETTERS OF INTENT AND PROPOSAL SUBMISSION

Further information may be requested from:

Dr. Robert L. Dickman, Unit Coordinator
 Radio Astronomy Facilities
 Division of Astronomical Sciences
 National Science Foundation
 4201 Wilson Boulevard, Room 1045
 Arlington VA 22230
 (703) 306-1820
 rdickman@nsf.gov

Letters of intent should be addressed to:

Division of Astronomical Sciences
National Science Foundation
4201 Wilson Boulevard, Room 1045
Arlington VA 22230

attn: NAIC COMPETITION

Proposals should be submitted to:

National Science Foundation
4201 Wilson Boulevard, Room 1045
Arlington VA 22230

attn: Proposal Processing Unit

Twenty (20) copies of the proposal are required. It must be signed by the principal investigator(s) and by an official authorized to represent the institution in business and government affairs.

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

Privacy Act. The information requested on proposal forms is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals and may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees; to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and research-

ers as necessary to complete assigned work; and to other government agencies in order to coordinate programs. See Systems of Records, NSF 50, Principal Investigators/Proposal File and Associated Records, and NSF-51, 60 Federal Register 4449 (January 23, 1995). Reviewer/Proposal File and Associated Records, 59 Federal Register 8031 (February 17, 1994).

Public Burden. Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

The public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Gail A. McHenry, Reports Clearance Officer, Information Dissemination Branch, National Science Foundation, 4201 Wilson Boulevard, Suite 245, Arlington, VA 22230.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

This program is described in the Catalog of Federal Domestic Assistance category 47.049, Mathematical and Physical Sciences.

NATIONAL SCIENCE FOUNDATION
ARLINGTON, VA 22230

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