

Ocean Observatories Initiative: Project Office to Coordinate Ocean Observing Activities

Program Solicitation

NSF 03-576



National Science Foundation
Directorate for Geosciences
Division of Ocean Sciences

Letter of Intent Due Date(s) *(required)*:

September 29, 2003

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

October 27, 2003

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Ocean Observatories Initiative: Project Office to Coordinate Ocean Observing Activities

Synopsis of Program:

The processes that actively shape the earth and ultimately impact society must be investigated over the spatial and temporal scales at which they occur. To characterize the temporal processes occurring in the ocean, new types of infrastructure are needed that are capable of providing long-term, high-resolution observations of critical environmental parameters. Such infrastructure will provide a long-term ocean presence that will make available novel platforms for oceanographic discovery and facilitate cutting-edge oceanographic investigations. Emerging technological capabilities are enabling the investigation of complex earth and ocean processes and the inter-linkages among them with a new intellectual approach: adaptive "observatory" science for sustained time-series measurements. This approach will allow the study of multiple inter-related properties, variables, and processes over a range of time scales.

With funding from the Major Research Equipment and Facilities Construction (MREFC) account, the Division of Ocean Sciences (OCE) plans to initiate construction of an integrated observatory network that will provide the oceanographic research and education communities with a new mode of access to the ocean. The OOI has three elements: 1) a regional cabled network consisting of interconnected sites on the seafloor spanning several geological and oceanographic features and processes, 2) relocatable deep-sea buoys that could also be deployed in harsh environments such as the Southern Ocean, and 3) new construction or enhancements to existing facilities leading to an expanded network of coastal observatories. The scientific problems driving the need for the OOI are broad in scope and encompass nearly every area of ocean science. Once established, the observatories constructed as part of this initiative will provide earth and ocean scientists with unique opportunities to study multiple, interrelated processes over timescales ranging from seconds to decades; to conduct comparative studies of regional processes and spatial characteristics; and to map whole-earth and basin scale structures.

The Division of Ocean Sciences requests proposals from interested groups for the establishment of a Project Office to coordinate and assist with activities related to ocean observing systems leading to the Ocean Observatories Initiative (OOI). Proposals will be accepted from U.S. universities and colleges, U.S. non-profit, non-academic organizations, and for-profit organizations. The Ocean Observatories Project Office will be expected to successfully complete the following tasks:

Identify and facilitate committees for continued refinement of the OOI network design: An advisory structure must be established that provides the scientific leadership required by the community to define user needs for a research observing system that includes global, regional, and coastal systems. This advisory structure will also have committees targeted to address technical and engineering issues related to the implementation of this research observing system.

Develop a consensus vision for the OOI organizational structure, governance, and operating plans: The Project Office will develop a Science Plan for the OOI based on input and recommendations from the advisory structure and then use this Science Plan to develop the various component of a Project Execution Plan for the construction phase of the OOI as outlined in NSF's "Facilities Management and Oversight Guide" (<http://www.nsf.gov/bfa/lfp/>).

Identify and engage all constituencies of the ocean science research community in consensus-building activities: The Project Office will lead, coordinate and serve as the community focal point for research observatories in the ocean sciences and will report to NSF regarding these activities. Activities should include those that promote the development of integrated experimentation, computation, theory, and model-based simulation.

Operate an interactive web site for communicating with the ocean science community in regards to OOI activities and planning: The Project Office will develop an interactive website that will serve as the definitive source of information about the OOI for not only the ocean science community but also for operational oceanographers, the wider scientific community, and the public.

The operation of the Ocean Observatories Project Office will require a small team whose credentials must demonstrate expertise and past accomplishments in ocean science, development of organizations, committee organization and management, and interactive web site development, usage, and maintenance. Expertise must also be provided for technical report editing and web-based publications. A Principal Investigator (PI) must be designated that will have day-to-day involvement with this effort. Office and meeting facilities must be available for the project, including Internet communications capabilities and institutional meeting space necessary to conduct planned activities.

Cognizant Program Officer(s):

- Alexandra Isern, Program Director, Directorate for Geosciences, Division of Ocean Sciences, 725 N, telephone: (703) 292-8583, email: aisern@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.050 --- Geosciences

Eligibility Information

- **Organization Limit:** Proposals under this program announcement/solicitation will be accepted from U.S. universities and colleges, U.S. non-profit organizations, non-academic organizations, and for-profit organizations.
- **PI Eligibility Limit:** None Specified.
- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Cooperative Agreement
- **Estimated Number of Awards:** 1
- **Anticipated Funding Amount:** \$1,000,000 Funds (up to \$1,000,000 per year) will be provided over a two-year period, with a target award date of February 1, 2004. Near the end of the two-year performance period of the Project Office, a panel selected by NSF will review the progress of this office to determine whether the initial two-year base period of performance was completed successfully and whether this office has made acceptable progress towards planning and establishing the capabilities needed to manage the five-year construction period of the Ocean Observatories Initiative. Recommendations of this panel will be used by NSF to determine whether a proposal will be requested from the current Project Office or whether a new competition for this office will be solicited for the five-year construction phase of the OOI

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is required. Please see the full text of this solicitation for further information.
- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

- **Letters of Intent (required):**
September 29, 2003
- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
October 27, 2003

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

Summary of Program Requirements

- I. **Introduction**
- II. **Program Description**
- III. **Eligibility Information**
- IV. **Award Information**
- V. **Proposal Preparation and Submission Instructions**
 - A. Proposal Preparation Instructions
 - B. Budgetary Information
 - C. Due Dates
 - D. FastLane Requirements
- VI. **Proposal Review Information**
 - A. NSF Proposal Review Process
 - B. Review Protocol and Associated Customer Service Standard
- VII. **Award Administration Information**
 - A. Notification of the Award
 - B. Award Conditions
 - C. Reporting Requirements
- VIII. **Contacts for Additional Information**
- IX. **Other Programs of Interest**

I. INTRODUCTION

The Division of Ocean Sciences (OCE) plans to initiate construction of an integrated observatory network that will provide the oceanographic research and education communities with a new mode of access to the ocean. The Ocean Observatories Initiative (OOI) has three elements: 1) a regional cabled network consisting of interconnected sites on the seafloor spanning several geological and oceanographic features and processes, 2) relocatable deep-sea buoys that could also be deployed in harsh environments such as the Southern Ocean, and 3) new construction or enhancements to existing facilities leading to an expanded network of coastal observatories. The scientific problems driving the need for the OOI are broad in scope and encompass nearly every area of ocean science. Once established, the observatories constructed as part of this initiative will provide earth and ocean scientists with unique opportunities to study multiple, interrelated processes over timescales ranging from seconds to decades; to conduct comparative studies of regional processes and spatial characteristics; and to map whole-earth and basin scale structures.

The primary infrastructure for all components of the OOI include both dedicated fiber-optic cables to shore and moorings capable of two-way communications with a shore station. Moorings are envisioned to be both freestanding, as for the global array of buoys, and they will also be attached to fiber optic cables to provide the capability for water column investigations. Seafloor junction boxes connected to this primary infrastructure will support individual instruments or instrument clusters at varying distances from cables as well as the moorings. These junction boxes include undersea connectors that provide not only the power and two-way communication needed to support seafloor instrumentation, but also the capability to exchange instrumentation *in situ* when necessary for conducting new experiments or for repairing existing instruments.

The scientific problems driving the need for an ocean observing system are broad in scope and encompass nearly every area of ocean science: Ecological Characterizations, The Role of the Ocean in Climate, Fluids, Chemistry, and Life in the Oceanic Crust, Dynamics of the Oceanic Lithosphere and Imaging the Earth's Interior, Seafloor Spreading and Subduction, Organic Carbon Fluxes, Turbulent

The new observational capabilities outlined here will have significant impacts upon the U.S. ocean research community by providing the means to carry out fundamental research on natural and human-induced change on timescales ranging from seconds to decades. This system will also establish the foundation for new discoveries and major advances in ocean science. As such, the initiative directly addresses NSF's three strategic goals:

People: Scientific discoveries arising from the OOI will provide new opportunities for ocean education and outreach through the capabilities for real-time data transmission and, particularly, real-time display of visual images from the seafloor. This initiative will be a source of inspiration and innovation through the combination of cutting-edge technology and research to study the complex interactions of processes on, above, and below the seafloor. In addition, with the planned establishment of a National Integrated Ocean Observing System, there will be an unprecedented need for oceanographers skilled in the use and manipulation of large, oceanographic, time-series datasets. The facilities comprising the OOI will provide the ideal platforms to train this new generation of oceanographers.

Ideas: The establishment of a seafloor observatory network will stimulate a philosophical and intellectual reorientation within the oceanographic community. This new mode of investigation will build on and enhance the more traditional shipboard expeditionary approach by providing the means to collect unique, sustained, time-series data sets as well as providing the means to respond to environmental events as they occur. The perspectives these data will provide will stimulate new paradigms in our understanding of the dynamic biological, chemical, physical and geological processes in the sea.

Tools: The newly available power, bandwidth and real-time instrument control provided by the systems of the OOI will lead to revolutionary advances in the technology and instrumentation needed to conduct ocean research. The availability of these observational platforms will stimulate the development of innovative biological and chemical sensors to collect the long time-series data needed to understand changes in biogeochemical systems. Furthermore, the OOI will enable whole new strategies for adaptive sampling and observation using 'intelligent' instrumentation and autonomous vehicles. The infrastructure provided through this initiative will allow integration across all GEO-related disciplines and activities and permit investigators to undertake research projects that were previously not possible.

II. PROGRAM DESCRIPTION

Within the FY04 President's Budget Request to Congress, the OOI was listed as a priority new start for FY06. In order to ensure that a well functioning project management structure is in place prior to the initiation of this major construction program, the NSF Division of Ocean Sciences is soliciting proposals from interested groups for the establishment of a Project Office to coordinate research and development activities leading to the construction of this network of research observatories. Proposals will be accepted from U.S. universities and colleges, U.S. non-profit, non-academic organizations, and for-profit organizations.

The Ocean Observatories Project Office will be expected to successfully complete the following tasks:

Identify and facilitate committees for continued refinement of the OOI network design: An advisory structure must be established that provides the scientific leadership required by the community to define user needs for a research observing system that includes global, regional, and coastal systems. This advisory structure will also have committees targeted to address technical and engineering issues related to the implementation of this research observing system.

Develop a consensus vision for the OOI organizational structure, governance, and operating plans: The Project Office will develop a Science Plan for the OOI based on input and recommendations from the advisory structure and then use this Science Plan to develop the various component of a Project Execution Plan for the construction phase of the OOI as outlined in NSF's "Facilities Management and Oversight Guide" (<http://www.nsf.gov/bfa/lf/p/>).

Identify and engage all constituencies of the ocean science research community in consensus-building activities: The Project Office will lead, coordinate and serve as the community focal point for research observatories in the ocean sciences and will report to NSF regarding these activities. Activities should include those that promote the development of integrated experimentation, computation, theory, and model-based simulation.

Operate an interactive web site for communicating with the ocean science community in regards to OOI activities and planning: The Project Office will develop an interactive website that will serve as the definitive source of information about the OOI for not only the ocean science community but also for operational oceanographers, the wider scientific community, and the public.

Planning for the OOI is being coordinated with a parallel effort organized through the National Ocean Partnership Program (NOPP) to develop an ocean observing system for operational oceanographic needs. This system, the National Integrated Ocean Observing System (IOOS) will focus on measurements in support of operational missions of agencies such as NOAA, NASA and the Navy. The outcomes of research and technology development, that are an integral part of the OOI, will provide essential support for the IOOS. For example, the cabled and moored buoy systems of the OOI will function as test beds and incubator sites for the development of new technologies (sensors, power sources, data telemetry) as well as advanced modeling capabilities (data assimilation, nowcasting, forecasting) essential to the evolution of the sustained IOOS. The OOI Project Office will be expected to liaise with the Ocean.US office to ensure optimal coordination of these two efforts.

Duties of the Ocean Observatories Project Office

The operation of the Ocean Observatories Project Office requires a small team of dedicated investigators to plan and conduct its activities. The project staff credentials must demonstrate expertise and past accomplishments in ocean science, development of organizations, committee organization and management, education and outreach, and interactive web site development, usage, and maintenance. Expertise must also be provided for technical report editing and web-based publications.

A lead Principal Investigator (PI) must be designated that will have direct day-to-day involvement in this effort. The PI may be assisted by co-PIs, consultants who bring additional expertise needed to conduct the duties of the office, and administrative/clerical staff. An experienced webmaster must budget a minimum half-time effort annually over the project period. Office and meeting facilities must be available for the project, including Internet communications capabilities and institutional meeting space necessary to conduct planned activities. The PI will work closely with the cognizant NSF Program Manager to keep NSF informed of Project Office activities and also to solicit input on aspects related to program planning.

The Ocean Observatories Project Office will be expected to successfully complete the following tasks:

Identify and facilitate committees for continued refinement of the OOI network design.

The Project Office, in consultation with the research community and NSF, will establish an advisory structure that provides the scientific leadership required by the community to define user needs for a research observing system that includes global, regional, and coastal systems. This advisory structure will also have committees targeted to address technical and engineering issues related to the implementation of this research observing system as described in the Science Plan, which must include cyber infrastructure needs of this system as well as issues related to standardization of observing system components. Proposals should describe how committees will be organized, led, operate, interact, reach consensus, and disseminate their discussions and findings.

The Project Office, through consultation with NSF, Ocean.US, and other participating agencies, will formulate the most efficient mechanism to facilitate interactions between the IOOS and NSF's research-based OOI.

Develop a consensus vision for the OOI organizational structure, governance, and operating plans.

A significant task of the Project Office will be to develop a Science Plan for the OOI based on input and recommendations from the advisory structure. The Project Office, will then use this Science Plan to develop the various component of a Project Execution Plan for the construction phase of the OOI as outlined in NSF's "Facilities Management and Oversight Guide" (<http://www.nsf.gov/bfa/lfp/>). These components include the following:

- Organizational Structure;

- Baseline Project Definition;
- Work Breakdown Structure;
- Risk Assessment and Management;
- Contingency Management;
- Configuration Management and Change Control;
- Quality Assurance and Quality Control;
- Safety, Environment, and Health, including analyses and descriptions of any environmental assessments and permits that may be required for the construction phase;
- Financial and Business Operations Controls;
- System Integration, Commissioning,
- Testing and Acceptance; and
- Plan for transitioning from Implementation to Operations & Maintenance.

This plan will be developed in response to recommendations from the community-based advisory structure established by the Project Office. As part of the baseline project definition, the Project Office will be expected to independently assess costs for the implementation of the OOI. While developing this plan, the Project Office will be expected to also develop appropriate plans for any funding hiatuses between the current development phase of the OOI and the expected appropriation of funding for the construction phase in 2006. Intellectual property related to the Project Execution Plan will remain the property of the NSF. If operations of the Project Office, as determined by periodic reviews by NSF, are deemed to be successful, this Office will be encouraged to prepare and submit proposals for the construction and interim operations of the OOI. In parallel to this proposal process, the Project Office must also

prepare Request for Proposals for the coastal, regional, and global components of the OOI. Selection of awardees for these components will be made in close coordination with NSF.

Identify and engage all constituencies of the ocean science research community in consensus-building activities

It is expected that the Ocean Observatories Project Office will lead, coordinate and serve as the community focal point for research observatories in the ocean sciences and will report to NSF regarding these activities. It is expected that this office will work with NSF to organize activities to encourage increased community participation in the design, construction, and eventual use of OOI facilities. Activities should include those that promote the development of integrated experimentation, computation, theory, and model-based simulation. As planning for the OOI progresses, an important role of the office will be to help foster interactions between other existing and planned observing systems both nationally and internationally, including other appropriate NSF research initiatives such as Earthscope and IODP.

Operate an interactive web site for communicating with the ocean science community in regards to OOI activities and planning

Within six-months after the award, the Project Office will be expected to make operational an interactive website that will serve as the definitive source of information about the OOI for not only the ocean science community but also for operational oceanographers, the wider scientific community, and the public. This web site will be used to inform on project activities and will be the source for meeting minutes, workshop announcements, and reports. The site will also have an important role in education and outreach for activities related to the OOI and will be the source for educational materials created in relation to this initiative.

Although proposals for the Ocean Observatories Project Office must address the duties outlined above, proposers are encouraged to identify additional tasks that they feel are important to complete prior to the OOI construction phase.

III. ELIGIBILITY INFORMATION

Proposals under this program announcement/solicitation will be accepted from U.S. universities and colleges, U.S. non-profit organizations, non-academic organizations, and for-profit organizations.

IV. AWARD INFORMATION

NSF expects to award one Cooperative Agreement of up to \$1,000,000 per year over a two-year period with an anticipated award date of February 01, 2004. Near the end of the two-year performance period of the Project Office, a panel selected by NSF will review the progress of this office to determine whether the initial two-year base period of performance was completed successfully and whether this office has made acceptable progress towards planning and establishing the capabilities needed to manage the five-year construction period of the Ocean Observatories Initiative. Recommendations of this panel will be used by NSF to determine whether a proposal will be requested from the current Project Office or whether a new competition for this office will be solicited for the five-year construction phase of the OOI.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent (required):

Letters of intent are required and should be submitted by the principal investigator via email to aisern@nsf.gov by September 29th, 2003. The letter of intent should include: names and affiliations of the Principal Investigator and co-Principal Investigator(s); the telephone and facsimile numbers and email addresses of the Principal Investigator and an authorized organizational representative of

the submitting institution/organization, a list of participating institutions and organizations, and a brief description (not more than 500 words) of the vision for the Ocean Observatories Program Office. Letters of intent will not be evaluated or used to decide on funding. They are requested to assist NSF in planning the review process. The submission of a letter of intent enables NSF to begin identifying potential panelists before the proposal submission deadline. Letters of intent are treated with the same confidentiality as NSF proposal submissions. NSF will acknowledge receipt of the letter of intent via email to the principal investigator.

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

The following information supplements guidelines in the Grant Proposal Guide.

The Project Description section must not exceed 25 pages. Figures, including charts, graphs, maps, photographs, and other pictorial representations can be submitted as supplemental documentation and are not included in this 25-page limit. Non-conforming proposals will be returned without review. References cited and biographical sketches are also not included in this page limit. The Project Description section must contain the following sections, 1 through 8, in the sequence and with the headings shown below.

Section 1: List of All Project Personnel. For each project staff member, list name, professional title, department, organizational affiliation, and mailing address.

Section 2: Results from Prior NSF Support (up to 5 pages). If the principal investigator or co-principal investigator(s) have received NSF funding in the past five years, information on prior awards is required. Reviewers will be asked to comment on the quality of the prior work described in this section of the proposal.

Section 3: Vision for Development of the Ocean Observatories Project Office. Discuss the proposer's vision for the development of the Ocean Observatories Project Office as aligned with the concept for the OOI as articulated in this program solicitation. The proposal should include organizational structures for the administration, governance, and operation of the OOI that will be used to guide the development and construction effort and discuss why these would be appropriate structures. Discuss the important decision points in determining which options were used.

Section 4: Project Milestones, Outcomes, and Activities. Identify and discuss all project milestones and outcomes. As part of the supplementary documentation submitted, in tabular form provide a concise list of project activities that are keyed to the milestones and outcomes. Provide rationale for why these activities are selected, who will organize, facilitate, and participate in them (cite types of backgrounds, disciplines, sectors, etc., rather than specific participant names), and the methods/metrics that will be used to evaluate their effectiveness to fulfill project milestones and outcomes. Describe the proposed plan, process, and activities during the project period that will be used to:

- (1) identify and facilitate committees for continued scientific planning and refinement of the OOI network design. Describe how the committees will be organized, led, operate, interact, reach consensus, and disseminate their discussions and findings;
- (2) develop a consensus vision for the OOI organizational structure as well as governance and operating plans that will include a Science Plan for the OOI based on input and recommendations from the advisory structure. This Science Plan will be used to develop the various component of a Project Execution Plan for the construction phase of the OOI as outlined in NSF's "Facilities Management and Oversight Guide" (<http://www.nsf.gov/bfa/lfp/>);
- (3) identify and engage all constituencies of the ocean science research community in consensus-building activities. Discuss how outlying or dissenting input will be addressed; and
- (4) operate an interactive web site for communicating with the ocean science and broader community activities related to OOI activities and planning. Describe how the web site will be developed and integrated into the various OOI activities and used to provide timely and definitive information for and communications among members of the ocean science community as well as the broader science community and the public as well as educational material.

Section 5: Risks. Discuss any risks associated with the establishment of the OOI management and governance structure for the construction phase of the project and discuss the strategy planned to manage these risks. Discuss lessons learned by the proposing

team from past experience in the development of organizations and consensus building for similar types of organizations and broad constituencies.

Section 6: Project Schedule. Provide a clearly organized Gantt chart with key milestones, outcomes, and major activities over the project period. Identify and discuss the critical path for development and incorporation of the OOI management and governance structure prior to the construction phase of the project. The schedule should show the sequencing of all major activities to be conducted in sufficient detail to justify the proposed budget.

Section 7: Management Plan, Organizational Structure, and Project Staffing. Provide a management plan for the Project Office. Discuss the administrative and organizational structure and qualifications of the project staff. Discuss why each member of the project staff, including all subawardees and consultants (if any), is needed. Provide a table that shows for each staff member, including all subawardees and consultants, the following: name, administrative position/title on the project, level of effort (monthly and annually), activities assigned, and responsibilities for achievement of key milestones and outcomes. Provide a functional project budget in tabular form showing how resources will be allocated for management and project milestones, outcomes, and activities. Provide a plan for annual project critical self-assessment that includes measurable metrics and discuss how the results of the self-assessment will be used for project improvement.

Section 8: Facilities. Describe office and meeting facilities that will be available for the project, including office equipment, communications capabilities, and institutional meeting space necessary to conduct project business.

Proposers are reminded to identify the program announcement/solicitation number (03-576) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

C. Due Dates

Proposals must be submitted by the following date(s):

Letters of Intent (required):

September 29, 2003

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

October 27, 2003

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing

of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: <http://www.fastlane.nsf.gov>

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 ([NSB 97-72](#)). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued [Important Notice 127](#), Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the [Grant Proposal Guide](#) Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

The operation of the Ocean Observatories Project Office will require a small team whose credentials must demonstrate expertise and past accomplishments in ocean science, development of organizations, committee organization and management, and interactive web site development, usage, and maintenance. Expertise must also be provided for technical report editing and web-based publications. A lead principal investigator must be designated that will have direct day-to-day involvement with the Project Office. Office and meeting facilities must be available for the project, including Internet communications capabilities and institutional meeting space necessary to conduct planned activities.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc and/or panel review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at <http://www.gpo.gov>.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

The activities of the Ocean Observatories Project Office will be monitored through Quarterly Interim Progress Reports. In lieu of a Fourth Quarter Report, an Annual Report on progress and plans will be submitted by the awardee to the cognizant NSF Program Manager. NSF will provide the format for these reports within one month of the award date. Both Quarterly and Annual reports must address progress of the Project Office regarding the duties outlined in the Solicitation.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Alexandra Isern, Program Director, Directorate for Geosciences, Division of Ocean Sciences, 725 N, telephone: (703) 292-8583, email: aisern@nsf.gov

For questions related to the use of FastLane, contact:

- Kandace S. Binkley, Associate Program Director, Directorate for Geosciences, Division of Ocean Sciences, 725 N, telephone: (703) 292-8583, fax: (703) 292-9085, email: kbinkley@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF *E-Bulletin*, which is updated daily on the NSF Website at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's *Custom News Service* (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

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The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. 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 subjected to discrimination under any program or activity receiving financial assistance from NSF, although some programs may have special requirements that limit eligibility.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the GPG Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

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- **For General Information** (NSF Information Center): (703) 292-5111
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- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. 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 and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230.

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