

# Construction of Regional Class Research Vessels (RCRV)

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## PROGRAM SOLICITATION

NSF 12-558



National Science Foundation

Directorate for Geosciences  
Division of Ocean Sciences

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

September 07, 2012

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## IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), [NSF 11-1](#), was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in [NSF 11-1](#) apply to proposals submitted in response to this funding opportunity.

**Cost Sharing:** The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG) Chapter II.C.2.g (xi)* for further information about the implementation of these recommendations.

**Data Management Plan:** The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

**Postdoctoral Researcher Mentoring Plan:** As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See [Chapter II.C.2.j](#) of the GPG for further information about the implementation of this requirement.

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## SUMMARY OF PROGRAM REQUIREMENTS

### General Information

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**Program Title:**

Design and Construction of Regional Class Research Vessels (RCRV)

**Synopsis of Program:**

The Division of Ocean Sciences (OCE) Integrative Programs Section (IPS) is soliciting proposals to manage the design and construction of up to three (3) Regional Class Research Vessels, to be based on an existing, NSF-owned concept design. **Advancement through successive project phases, including the award of a shipyard contract for the construction phase, will be contingent upon successful project execution by the Awardee as determined through NSF review and the availability of funds. The actual number of vessels built will be contingent upon projected future science utilization and the availability of funds.**

NSF will award a single Cooperative Agreement to a Lead Institution (LI) as the Awardee who will manage each phase of the design, construction and trials. Funding for the project will be awarded through Cooperative Support Agreements (CSA's) for each successive phase as described below. **Funding of subsequent phases will be contingent upon successful completion of prior phases.** Success will be determined through NSF review at key project milestones in accordance with the NSF Large Facilities Manual. **Unsuccessful project execution will result in NSF invoking one of several possible project off-ramps followed by solicitation for a new Lead Institution.**

All support is contingent upon appropriations from Congress and approval by the National Science Foundation as indicated herein. The proposing LI must demonstrate its ability to undertake the successful direction, management, technical oversight, procurement, construction, scientific outfitting, sea trials and post delivery activities of the vessel(s) as described herein. The proposing LI should demonstrate its ability to leverage planning and construction of the RCRV's to advance academic research; support investments in faculty development and graduate/undergraduate education; and engage in collaborative research.

Organizations responding to this program solicitation may, at their discretion, include a proposal to operate the first RCRV for a period not to exceed five (5) years, provided that it shall (1) operate the vessel in the appropriate geographic region based on coastal and near coastal science utilization at the time of delivery, and (2) operate the vessel with the highest degree of economic efficiency within that region. **The LI should anticipate an external review of operational effectiveness and quality of service after five (5) years of operation and, assuming a positive review, re-competition after ten (10) years of operation.** Re-competition does not imply that the Operating Institution will be required to change, but rather that it will be open for potential change. If the 5-year review is not satisfactory, NSF may decide to re-compete earlier than 10 years.

Selection of Operating Institutions for any additional vessels will be conducted by means of a separate competition that will be completed prior to delivery of the first RCRV. The selected Lead Institution will be allowed to compete for operation of any follow-on vessels.

The current RCRV design was developed through an interagency agreement with the U. S. Navy's Program Executive Office (Ships), which produced two competing vessel designs for a 155' multi-purpose oceanographic research ship capable of operating for up to 21 days in three distinct regions; the U.S. East, West and Gulf Coasts. That effort was completed in early 2009. A panel of experts was convened by NSF later that year to review the designs and recommend the one considered most favorable for further development.

During Phase I of the anticipated award, the existing design will be re-evaluated and refreshed by the Awardee based on (1) current regulatory requirements, and (2) recommendations from the University-National Oceanographic Laboratory System (UNOLS) Fleet Improvement Committee (FIC) as agreed to by NSF. An analysis of the feasibility and costs associated with acquiring and converting an existing vessel to meet the technical/operational requirements of the refreshed design shall accompany the analysis of construction costs for a new build RCRV. In accordance with the NSF Large Facilities Manual, an in-depth Conceptual Design Review (CDR) will be conducted during Phase I, the success of which will determine NSF approval of Awardee progression toward a Preliminary Design Review (PDR). A successful PDR will be required to support inclusion of the RCRV Project in a future Major Research Equipment and Facilities Construction (MREFC) budget request to Congress.

Following successful completion of PDR and NSF approval for inclusion of the RCRV in a future MREFC budget request, the LI will manage the shipyard selection process (Phase II). This Phase will include in-depth NSF review of the proposed Acquisition Strategy.

The LI will subsequently manage the entire construction effort (Phase III) for up to three hulls, contingent upon a successful Final Design Review (FDR), and the availability of funding. For efficiency of production, the hull and major machinery of the RCRVs will be identical and the arrangements nearly identical. Slight variations in the science outfitting may be made to suit the requirements of a particular region. The LI will also manage the trials and delivery of all three hulls (Phase IV) and assist in transition of the vessels to their respective Operating Institutions.

The proposal must demonstrate the Lead Institution's past experience in construction, conversion, maintenance and/or management of vessel operations in support of science and education as well as their ability to assemble a qualified team to successfully execute the RCRV project within cost, scope and schedule.

Following successful completion of Phase IV, the selected Operating Institution(s) will assume responsibility for the management, operation and maintenance of the vessel(s) to support NSF and other federally-funded oceanographic research projects. Operational funding for the RCRV(s) will be reviewed and negotiated annually through five-year Cooperative Agreement(s) with the Ship Operations Program, Division of Ocean Sciences. NSF intends that, following delivery and turnover of the RCRV(s), the selected Operating Institution(s) will obtain University-National Oceanographic Laboratory System (UNOLS) membership (See <http://www.unols.org>) and the ship(s) will be scheduled through the UNOLS scheduling process, allowing all interested funded scientists equal access to the facility.

NSF will retain title to the RCRV(s).

#### **Cognizant Program Officer(s):**

*Please note that the following information is current at the time of publishing. See program website for any updates to the points of contact.*

- Matthew Hawkins, telephone: (703) 292-7407, email: [mjhawkin@nsf.gov](mailto:mjhawkin@nsf.gov)

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

- 47.050 --- Geosciences

## **Award Information**

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**Anticipated Type of Award:** Cooperative Agreement

**Estimated Number of Awards:** 1 One award will be made under a Cooperative Agreement.

**Anticipated Funding Amount:** \$3,000,000 This amount is anticipated for advancement to CDR only.

## **Eligibility Information**

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#### **Organization Limit:**

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

**PI Limit:**

None Specified

**Limit on Number of Proposals per Organization: 1**

One proposal per organization as Lead Institution is allowed.

**Limit on Number of Proposals per PI: 1**

One proposal per PI is allowed.

## Proposal Preparation and Submission Instructions

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**A. Proposal Preparation Instructions**

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg).
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide))

**B. Budgetary Information**

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full text of this solicitation for further information.

**C. Due Dates**

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):  
September 07, 2012

## Proposal Review Information Criteria

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**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

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**Award Conditions:** Additional award conditions apply. Please see the full text of this solicitation for further information.

**Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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# I. INTRODUCTION

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## A. Background

NSF is a participating agency in the Interagency Working Group on Facilities and Infrastructure (IWG-FI), formerly the Federal Oceanographic Facilities Committee (FOFC). NSF subscribed to the FOFC fleet renewal plan published in December, 2001 entitled, "Charting a Future for the National Academic Research Fleet: A Long-Range Plan for Renewal." The FOFC Fleet Renewal Plan identified the need for multiple vessel replacements over the next 20 years, including three or more Regional Class Research Vessels. Based on this, the UNOLS Fleet Improvement Committee published the Regional Class Science Mission Requirements in March 2003, and NSF subsequently announced its intent to move forward with design and construction of up to three RCRVs. Assistance was requested from the Navy, which ultimately transformed UNOLS Science Mission Requirements into technical packages for use in soliciting competitive proposals for the design and construction of the RCRV. Two designs were received and NSF convened a panel of experts in October 2009 to recommend to NSF which design should move forward. The panel's recommendation included several areas for further inquiry that were then forwarded to the Fleet Improvement Committee (FIC) for UNOLS community consideration and comment. FIC comments were received in August 2010.

The IWG-FI's *Federal Oceanographic Fleet Status Report* dated December 2007 describes the agency plan of retiring two federally-owned Global Class, three Ocean Class, and two Regional Class ships followed by construction of two new Ocean Class and three new Regional Class ships (East, West and Gulf Coast). The report goes on to highlight NSF's plans to undertake design and construction of the new Regional Class vessels and the Alaska Region Research Vessel (now the R/V *SIKULIAQ* which is considered a Global Class vessel) while the Navy undertakes construction of the new Ocean Class. Navy has programmed funds for the construction of the two new Ocean Class vessels (AGOR 27 and 28). Design of those vessels has been completed and the construction phase is currently underway. The IWG-FI Report is being updated with a draft report due in May 2012 and a final report due in June 2013. This report will help inform NSF on the number of Regional Class Research Vessels required.

In late 2009, a National Research Council Report titled "Science at Sea - Meeting Future Oceanographic Goals with a Robust Academic Research Fleet" included a recommendation reinforcing and revalidating the requirement for "...investment in larger, more capable, general purpose *Global* and *Regional* class ships to support multidisciplinary, multi-investigator research and advances in ocean technology."

Along with the R/V *SIKULIAQ*, the RCRV project represents NSF's inter-agency commitment to modernization of the U.S. Academic Research Vessel Fleet.

## B. Science Imperatives

A principal area of interest in Coastal Ocean Science includes the need for investigation of key scientific questions relating to physical, geochemical and ecosystem processes. Coastal ocean systems comprise the region from large river mouths and estuaries to continental shelf and slope waters. Understanding the spatial and temporal complexity of the coastal ocean is a long-standing challenge. Quantifying the interactions between atmospheric and terrestrial forcing, and coupled physical, chemical, and biological processes, is critical to determining the causes of coastal changes, elucidating the role of coastal margins in the global carbon cycle, and developing strategies for managing coastal resources.

A second Coastal Ocean Science imperative relates to investigation of climate variability and change, ocean circulation and ecosystem processes. The ocean stores heat and carbon dioxide, and redistributes them via the large-scale circulation. Both the storage capacity and redistribution patterns are affected by climate change and the ocean in turn may modify climate through various feedback mechanisms. Variability in ocean-atmosphere feedback on climate time scales may have profound effects on ecosystems through habitat change (increasing mean temperature) or through modulation of shorter time scale phenomena (e.g. the El-Nino/Southern Oscillation cycle). Nowhere are these processes more complex than in coastal seas, and likewise, nowhere are the impacts on human interests (communities, economies, and aesthetics) more accentuated.

Multidisciplinary measurement and sampling are needed to address the preceding research themes as physical forces induce biological and chemical effects, which in turn mediate other biological and chemical changes. Interdisciplinary science - ocean sampling, laboratory studies of biology and chemistry at sea, observation over time and space, process modeling, and experimentation in the sea are the modern hallmarks of coastal ocean science, often pursued with adaptive and data assimilative field programs. Sensing systems must be co-located and interoperable to enable studies across different science domains and observing regimes. Multiple science communities must likewise interact to provide a coherent, integrated view of the results.

The science tool kit has evolved dramatically since the last Regional Class ships were delivered in the early 1980's. The interdisciplinary oceanography community now routinely employs a wide range of sophisticated instrumentation (acoustics, optical sensors, video, high speed data links, specialized nets and corers) deployed in a variety of ways (ship-mounted, lowering on ropes and cables, Remotely Operated Vehicle and Autonomous Underwater Vehicles) and geared toward multiple scales of interest. The new class of Regional vessels will include state-of-the-art design features and equipment for enhanced investigation of the present and emerging coastal science themes. Science support capabilities for the new class of Regional vessels must include:

1. Enhanced station keeping (Dynamic Positioning) for placement and servicing of benthic instrumentation and sample collection.
2. Integrated shallow water acoustic multibeam bottom mapping and sub-bottom profiling systems.
3. Significantly larger aft deck for operational flexibility: (2) 20' laboratory vans, plus adequate remaining deck space for multidisciplinary operations.

4. State-of-the-art handling systems (frames and winches) to improve efficiency and safety when deploying a wide array of science packages in various sea states.
5. Full-time, high speed satellite connectivity for communications, internet access and data transfer.
6. More berths for larger interdisciplinary science parties.
7. Low Underwater Radiated Noise (URN) signature for fisheries, acoustics, and marine mammal research and improved habitability.
8. Compliance with latest Academic Fleet standards relating to the Americans with Disabilities Act (ADA) to improve access to the sea.
9. To the maximum extent practicable, incorporation of commercially available and economically viable "Green Ship" technologies.

These capabilities are simply not available on the older Regional vessels due to their age and physical configuration.

## II. PROGRAM DESCRIPTION

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The objective of this solicitation is to select the most appropriate Awardee to design and construct the RCRV(s) in support of community-wide activities. A proposal must be compelling, technically sound and must thoroughly address the four (4) project phases as described below.

**Major Milestone Schedule:** The following tentative milestones are based on RCRV project requirements and are sensitive to the NSF assessment and review process for MREFC projects as well as the budget process:

- CDR: Award + 11 months (~ December 2013)
- PDR: Award + 18 months (~July 2014)
- NSF Approval for inclusion in MREFC budget: March 2015
- FDR and NSF approval of the Awardee to obligate construction funds: Not earlier than October 2016

These milestones are to be used for initial project planning purposes only and are subject to change.

### Off Ramps:

There are several points during the project where critical evaluations will be made on the likelihood of successful project execution that will directly influence NSF's decision on whether or not to continue. These decision points are considered project "off ramps" and are as follows based on NSF processes, budget uncertainties, and sound practice:

1. NSF determination not to make an initial Awardee selection
2. Failure of the Awardee to satisfy CDR requirements and/or NSF disapproval of funding increment for PDR
3. Funding increment for PDR not explicitly included in a budget request and therefore not appropriated by Congress
4. Failure of the Awardee to satisfy PDR requirements and/or NSF disapproval for inclusion in future MREFC budget request
5. Failure of the Awardee to satisfy FDR requirements, including selection of an acceptable shipyard for construction
6. Insufficient Year 1 MREFC appropriations and/or NSF disapproval of the Awardee to obligate funds as part of FDR
7. Insufficient out year appropriations to meet project objectives

**If any of these events occur, NSF may elect to re-solicit for the Lead Institution, re-plan the project schedule, re-scope the project, or discontinue the project completely as the situation warrants.**

Proposers should refer to NSF Large Facilities Manual for CDR, PDR and FDR criteria.

### Project Phases:

Proposals must encompass all four Phases as described below. The Awardee will be required to submit a revised proposal budget and scope, subject to negotiation with NSF based on panel and reviewer comments, for each supplemental request and/or future CSA.

**Phase I - Project Refresh:** This phase encompasses all activities necessary to support NSF's request to Congress for inclusion of RCRV construction funds in the MREFC budget. It begins with award of the entire project CA and the Phase I CSA. Initial funding will only be awarded for CDR. **Following successful completion of CDR, a supplement will be awarded to advance the project to PDR, provided this PDR funding is included in a future budget request and appropriated by Congress.** Phase I ends upon successful completion of PDR. The proposal should break down and illustrate incremental funding requests according to the CDR and PDR milestones.

The principal tasks include: (1) finalization of the RCRV contract design based on the Government Furnished Information (GFI) provided in this Solicitation and any region-specific arrangement and outfitting variations; (2) a high-level analysis of a vessel conversion option meeting RCRV design requirements for comparison with new construction cost estimates; (3) development of the Awardee's Project Execution Plan (PEP) as described below. The document packages will be advanced to increasing levels of refinement for successful progression through the CDR and PDR prior to award of Phase II in accordance with the NSF Large Facilities Manual. The more in-depth PDR establishes the formal project baseline and is a requirement to support any Panel recommendation to NSF, and subsequently to the Office of Management and Budget, for inclusion of the RCRV in a future MREFC budget request to Congress.

**The number of vessels to be included as part of the MREFC budget request will be determined during Phase I based on projected science utilization and other inter-agency considerations.**

All reviews will be convened by NSF and conducted using a panel of experts chosen to provide independent advice and recommendations to the agency on the technical, management and budgetary aspects of the Awardee's planning and performance. Mail reviewers will also be used. Detailed requirements for each review and the supporting documentation and activities are set forth in the NSF Large Facilities Manual.

Additional reviews may be required as determined by the cognizant Program Officer. The Awardee should anticipate an NSF Ship Inspection Contractor Review of the refreshed design and specifications prior to CDR.

**Phase II - Shipyard Selection:** This phase will include competitive selection of the shipyard based on "best value" principles to build the RCRV(s) in accordance with the contract design finalized during Phase I. Final yard selection will be contingent upon NSF concurrence. If not completed earlier, the Awardee should anticipate an in-depth review of the proposed Acquisition Strategy. Following receipt of bids, this phase will end with the Final Design Review (FDR) in conjunction with NSF approval for the Awardee

to proceed with the obligation of construction funds to the selected shipyard, provided these funds are appropriated by Congress. Duration of this phase will be based on the proposed acquisition strategy. For planning purposes, **this phase cannot end earlier than October 1, 2016 (start of FY 17)** as given in the major milestone schedule above. **The proposal should break down and illustrate incremental funding requests according to this milestone, the proposed duration, and the need to maintain the project team until Phase III.**

**The number of vessels to be bid will be confirmed during Phase II based on likelihood of funding and projected science utilization. The number of vessels built through exercise of contract options is contingent upon appropriation of funds.**

Operator selection will proceed once the number of vessels to be built is known.

**Phase III - Construction:** This phase will begin with NSF approval for the Awardee to obligate construction funds with the selected shipyard. Duration will be based on project scope and then-current market conditions. It will include a period of Design Verification and Transfer (DVT) as described below, final design by the shipyard, fabrication, launch, builder's trials, and delivery from the shipyard to the Awardee of up to three (3) RCRVs in accordance with the contract design finalized during Phase I. The Awardee should anticipate an annual project review either at the shipyard or at NSF during this phase. As currently planned, this phase would start between October 2016 and April 2017 based on the availability of appropriated MREFC funds in FY17.

**Phase IV - Transition to Operations:** This phase begins with delivery of the first RCRV and includes operator sea trials, science trials, final science outfitting, cross-decking (if any) and delivery to the Operating Institutions (OIs). The Awardee will work with the OIs during trials and throughout the Transition to Operations Phase. Duration will be based on final project scope and Operator selections conducted under a separate, fully open and competitive solicitation. This phase will include the shipyard warranty period, NSF inspection and designation as a UNOLS vessel. The Awardee should anticipate annual project reviews during this phase. This phase will end with operational funding shifting to the Division of Ocean Sciences, Ship Operations Program.

#### **General Requirements:**

The proposal must demonstrate how the organization has the capacity, or intends to acquire the capacity to manage the planning, construction, and commissioning of the vessel(s) and other ancillary subcontracts or sub-awards. This includes successfully managing the evolution and maturation of technical and administrative requirements, overseeing very large acquisition processes, preparing for and carrying out "systems engineering"(Project Refresh and Final Outfitting), ensuring Quality Assurance (QA) and Health, Safety and Environmental (HSE) programs are in place, providing technical and project status reports, and providing financial reports using Earned Value Management (EVM).

Proposers shall demonstrate their ability to effectively perform in a scientific leadership capacity during each project phase, along with their past experience with ship construction, major overhaul and/or conversions projects. Proposers must also demonstrate their past experience in effectively and efficiently managing vessel operations in support of science and education and in order to facilitate completion of a final vessel design that reflects community needs.

#### **Project Execution Plan (PEP):**

Proposals must include a preliminary Project Execution Plan (PEP) that describes all relevant information necessary to demonstrate the ability of the Awardee to effectively implement and manage the RCRV project through completion of Phase IV within cost, scope and schedule. The PEP must incorporate the activities of the Awardee's entire project team, including its principal subcontractors.

During Phase I, the Awardee will fully develop the preliminary PEP adding all necessary detail as the construction design is refined in preparation for the CDR and the PDR. Phase II will not be awarded until NSF approves the PEP through establishment of a project baseline during the PDR. The PEP shall address the following eleven (11) areas of project management to encompass all four phases of the project. **For the proposal, the PEP should be as complete as possible, but only needs to address these areas conceptually or in outline, or as otherwise described below.** The proposal must also address how the detailed PEP will be developed **within the first 90 days of award. Technical sufficiency of the PEP will be a key evaluation criterion for award.**

1. **Organizational Structure:** The project organization, internally and externally, should show clear lines of authority, responsibility and communication between NSF, the Awardee and its subcontractors. Organizational wiring diagrams to demonstrate lines of authority and communication among the different performing and oversight entities should be included. Since a single shipyard contract is envisioned for final design and construction of a lead ship and up to two follow-on vessels, the proposal must clearly address how the requirements and interests of the Operators of the RCRVs will be integrated into the process, while maintaining continuity of the project management organization. As a minimum, contractors indicated in the organizational structure should include a qualified naval architecture firm and noise consultant for refinement of the NSF-owned design during Phase I.

Once the Cooperative Agreement is negotiated, the Awardee will establish an external oversight committee (membership subject to NSF consent) to provide guidance to the Awardee during the development of the PEP and refinement of the vessel design in preparation for CDR, PDR and FDR. This will include review of the scientific merit of project-specific plans and processes including, but not limited to, science outfit and final arrangements, cost and schedule realism, adequacy of budgeted contingency, organizational structure and management, and, if required, project de-scoping decisions. The committee shall include science representatives from each US geographic region (East, West and Gulf Coasts) who are supported by stakeholder federal funding agencies (NSF, ONR, NOAA, etc.). This committee will continue through Phases II, III and IV, but membership and specific charge may be modified to suit the particular requirements of each phase.

This section of the PEP should include a discussion of all significant interfaces between internal and external oversight entities and how these will be coordinated (i.e., through what mechanism and how often will interface with the user community be accomplished).

The Awardee must designate one person with both strong project management experience in ship construction and inter-personal management skills to be the Project Manager (PM), with overall authority and responsibility for the project and interactions with the NSF Program Officer. In implementing the Project Execution Plan, the PM manages the project in accordance with the approved baseline (cost, schedule and scope), which is a full time job and takes a dedicated, qualified individual. The Project Manager must be supported by a competent technical staff knowledgeable of the principles of sound project management, acquisition and procurement, Earned Value Management (EVM), construction contract negotiation and shipyard/building experience, including an Authorized Technical Representative with demonstrated experience in ship design and construction management.

A complete project organizational diagram should be provided that illustrates both existing personnel and personnel to be hired following award. Resumes/CVs of proposed key personnel should be included as an appendix in the PEP to demonstrate qualifications. Final selection of Key Personnel will be subject to NSF approval in the CA.

2. **Project Baseline:** This contains the project scope, cost and schedule requirements to be used as the benchmark against

which all progress on the project will be measured.

**Scope:** The technical, management, procurement and administrative activities necessary for all phases of RCRV construction and delivery to broadly include: (1) reviewing the current Government-Owned RCRV design and incorporating necessary revisions to produce a construction-ready design (drawings, specifications, Contract General Provisions, etc.) suitable for Preliminary Design Review and competitive bid; (2) competitively soliciting and selecting a shipyard for vessel construction; (3) maintaining technical, contractual and financial oversight of shipyard engineering and production activities needed to achieve successful project performance through delivery and the post-delivery warranty period; and (4) maintaining technical, contractual and financial oversight of science trials, final outfitting, and delivery to the selected Operating Institution(s). Specific deliverables and reporting requirements for each phase of the project will be broadly described in the Cooperative Agreement and further detailed in the phased Cooperative Support Agreements.

Construction of the RCRVs shall be at a single shipyard using a phased build strategy. To the greatest extent practicable, all manufactured goods used to construct the RCRV(s) should be American-made.

The specifications for the RCRV shall include the use of a Single System Vendor (SSV) for the scientific load handling systems. The specifications shall also include compliance with the UNOLS Research Vessel Safety Standards (RVSS) in addition to regulatory and class requirements for a vessel of its intended size and purpose.

**Cost:** An estimate of the total project cost in then-year dollars to complete each phase of the project scope, including: (1) **inflation** in accordance with annual guidance issued by the Office of Management and Budget (available from NSF's Budget Division: <http://www.nsf.gov/bfa/bud/index.jsp>) or other accepted measures; (2) **risk-based budget contingency** using industry standards or experience gained from establishing similar facilities. Costs for project reviews and oversight committee meeting reviews should be included in project cost estimates.

For the proposal, the cost estimate presented must encompass all four phases of the project. For the RCRV's themselves (WBS elements "RCRV1", "RCRV2", and "RCRV3" per below) a **parametric cost estimate** (with supporting calculation sheets) should be provided based on the current Government-owned design **with the requested enhancements incorporated to the maximum extent possible**. The PEP shall include an initial estimate of the anticipated funding profile and cash-flow to efficiently support a 3-ship RCRV construction program assuming a phased, three ship build at a single shipyard. **The Proposers should assume a U.S. Shipyard for estimating purposes.**

During Phase I and for presentation at CDR, the Awardee shall conduct a cost comparison for conversion of an existing vessel versus constructing new. The conversion shall result in a vessel comparable to the RCRV with regard to all science support capabilities including low underwater radiated noise, "Green Ship" technologies, modern science load handling systems, and ADA. The cost of this effort should be included in the proposal.

**Schedule:** The schedule should encompass all four phases of the project including design up-date/refresh, shipyard selection, construction, incorporation of Owner-Furnished Equipment (OFE), system integration, commissioning, acceptance, testing and transition to operations activities. It should also include major milestones listed herein, major reviews (including oversight committee, project team and NSF reviews), review reporting, critical decision points such as potential NSF off ramps, and project deliverables.

The schedule shall include a minimum six (6) month period of Design Verification and Transfer (DVT) following shipyard contract award that allows the shipyard to fully verify that the vessel can be constructed to the Awardee-furnished contract design, and that the design has been revised to incorporate essential changes (if any) negotiated between the parties prior to beginning construction.

3. **Work Breakdown Structure (WBS):** This is a hierarchical, product-oriented decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. The WBS organizes and defines the total scope of the project. The WBS integrates and relates all project work (budget, schedule, scope, and risk) and is used throughout the project by management to identify and monitor progress, and to manage risk.

For the proposal, a three level WBS is required (i.e. 1.2.3) that encompasses all four phases. The vessels themselves should be shown as three separate, first or second-tier WBS elements (RCRV1, RCRV2, and RCRV3) in Phase III. The vessel WBS elements will be refined during Phase I as detailed, "bottom-up" cost estimates for construction are developed in preparation for PDR. The final Phase III WBS will be based on the selected shipyard's standard practice and used to develop the Integrated Master Schedule (IMS) for Earned Value Management (EVM) reporting. The proposal should include a draft WBS dictionary that defines activities, milestones and costs associated with each WBS element.

At CDR and again at PDR, NSF will assess the "bottom-up", risk-adjusted total project cost. This will be based on the information provided, including the WBS and an accompanying cost book that includes descriptions of WBS elements, their basis of estimate, associated risk, and an algorithmic methodology for deriving budget contingency based on risk. For this project, FDR will be used to evaluate shipyard bids.

4. **Risk Management Plan:** The Risk Management Plan (RMP) must identify potential risks to the project by WBS element and document appropriate strategies for managing those risks. The RMP should be the foundation for the statistical, risk-based contingency estimate (Monte Carlo with S-curve of cost vs. confidence level) when incorporated with the WBS. Contingency should be part of the total cost estimate and allow for items, conditions or events that experience demonstrates will likely result, in aggregate, in additional costs. As such, these funds are expected to be expended, and shall not include amounts for major project scope changes, extraordinary events, management reserves or escalation effects.
5. **Contingency Management Plan:** Contingency is an essential tool of the Project Manager to accomplish the intended scope of the project. The PEP should include a plan to manage the total project contingency that is developed by the RMP. In this case, the methods used should be adapted to the specific needs of the ship construction. The project's Change Control Process, which allocates budget contingency to specific WBS elements to mitigate project risk, is a component of the Contingency Management Plan. Contingency allocations exceeding thresholds defined in the Cooperative Agreement will require **prior** NSF approval. All expenditures are subject to review and audit. The Contingency Management Plan should include provisions for determining and managing schedule and cost contingency and will be linked to the Configuration Management Plan (Item 6). NSF's "no cost overrun" policy requires that cost estimates developed at PDR have adequate contingency to cover all foreseeable risks, and that any cost increases not covered by budget contingency be accommodated by reductions in scope. A draft Contingency Management Plan should be provided with the proposal.
6. **Configuration Management (Change Control) Plan:** This plan identifies and defines the items in a project that are subject to change and establishes a means for controlling and managing those changes through a documented process in order to achieve project goals and objectives. Configuration Management Plans often involve project level approval, Change Control Boards, and NSF Program level approval depending on the cost and effects of the change. A draft Configuration

Management Plan should be provided with the proposal. The Configuration Management and Contingency Management Plans are often linked once construction begins.

7. **Quality Assurance and Quality Control Plan:** The Awardee is responsible for establishing a quality assurance (QA) plan, conducting inspections and retaining records of the inspections conducted as appropriate. In this case, the plan should eventually be linked to the selected shipyard's QA plan. A description of how the QA plan will be developed should be provided with the proposal.
8. **Health, Safety, and Environmental Plan:** The Awardee must develop a plan that addresses health, safety, and environmental (HSE) issues that is appropriate to the project and is integrated throughout all phases. This plan is intended to ensure that all staff, workers, the environment and the general public are appropriately protected while all tasks are performed. The plan should also discuss any likely environmental permitting requirements, if applicable (e.g., marine mammals). In this case, the plan should be closely linked to the shipyard's HSE plan. A description of how the HSE plan will be developed should be provided with the proposal.
9. **Financial and Business Operations Controls:** For the proposal, controls should be described that illustrate how the project will operate in compliance with NSF policies and procedures and other appropriate Federal regulations including Earned Value Management (EVM) reporting, document control, and other safeguards. The proposing organization should describe the business and financial systems currently in place as well as the added controls that will be necessary to execute the project. This section should also include a description of the Awardee's ability to support the development and execution of acquisition strategies for large contracts, including the shipyard contract. The Awardee will not be allowed to enter into large contracts without prior NSF consent per the terms of the CSA.
10. **Plans for System Integration, Commissioning, Testing and Acceptance:** The Project Manager establishes a turnover and acceptance process that includes a punch list item resolution, verification of compliance with project requirements, and system startup for proper operations. For the RCRV project, this will mostly occur during Phase IV following acceptance from the shipyard. However, some high level system integration (for Underwater Radiated Noise, Load Handling Systems, Power Management System, etc.) will be required during the Phase I project refresh. It is anticipated that acceptance and turnover procedures from Phase III will be established by the selected shipyard and approved by the Awardee. Builder's Trials will be witnessed by the Awardee.
11. **Plans for transitioning from delivery to operations:** The proposal should describe a planned, structured and organized project transition including the identification of the budget necessary for required activities, as well as adequate staffing to effectively complete Phase IV. Three vessels going to three separate operating institutions should be assumed for the proposal as the most complicated case. The transition plan will be refined following operator selection. However, if the proposer intends to retire an existing vessel from service, the details should be described in the preliminary transition plan as part of proposal submission.

#### Final Review and Approval of the Project Execution Plan

An updated version of the PEP, incorporating revisions resulting from Phase I reviews and subsequent NSF direction to the Awardee, will be submitted to NSF for final review and approval prior to beginning shipyard selection (Phase II).

#### Proposal Deliverables

As a minimum, the proposal shall include the following:

- A. Preliminary Project Execution Plan (PEP)
- B. Revised General Arrangement (GA) drawings with NSF determinations on the FIC review incorporated to the maximum extent possible. If not able to be reasonably incorporated, include a description of how each will be resolved during Phase I. The description should correspond with the major milestone schedule above and the Proposer's detailed schedule provided in the PEP.
- C. Proposer's own description of the coastal science imperatives to be addressed by the RCRV in each region (East, Gulf and West Coast) to provide a basis for validating the project's design goals and the associated infrastructure requirements.
- D. Description of scientific uses visualized for the vessel, including likely involvement of scientists and educators of the proposing institution(s), other likely users such as outreach programs (i.e., those promoting education and diversity), and sponsoring federal and state agencies.
- E. Description of the Awardee's experience and demonstrated successful track record in the effective construction, overhaul, conversion and/or maintenance and management of oceanographic research vessels.
- F. One year ship operating cost estimate for one (1) RCRV using the format provided in the Proposal Submission Guidelines for the Integrative Programs Section (IPS) (NSF 04-052), Ship Operations Program, Section 5, Table 1C, posted at:

[<http://www.nsf.gov/pubs/2004/nsf04052/nsf04052.pdf>]

or subsequent IPS Facilities and Equipment Solicitation. Include a description of estimated 1-year operating costs from a maintenance and logistical perspective for this period (use Section 6, Detailed 4-Year Budget Table of the IPS Guidelines as a template). Major Overhaul Stabilization Account (MOA) line in the budget shall be refined during Phase I as equipment and arrangement details are finalized.

For the purposes of estimating operating cost and daily rates the following assumptions shall be made:

1. The RCRV(s) will operate as ABS classed, **uninspected** oceanographic research vessel(s).
2. An average operating schedule of **180 days** away from home port.

An estimate of the scope and cost of marine technical services should also be provided using the format identified in Section 4 of the Ship Technician Program guidelines found within the IPS Guidelines or subsequent solicitation.

Potential operational efficiencies for up to three (3) RCRVs will be addressed in the eventual Operator selection solicitation once the number of hulls being constructed is known.



**Government Furnished Information:**

The Division of Ocean Sciences provides the following information at [www.nsf.gov/geo/oce/rcrv/gfi/index.jsp](http://www.nsf.gov/geo/oce/rcrv/gfi/index.jsp).

**Current NSF-owned RCRV design which includes:**

Glossary of Technical Terms and Acronyms

Contractor's Ship Specification

Drawings

1. General Arrangement Drawing
2. Deck Systems Arrangement Drawing
3. Hull Lines Drawing
4. Appendage Drawing
5. Navigation Light Locations Drawing
6. Topside Configuration Drawing

Diagrams

1. Auxiliary Systems
2. Electrical One-Line Diagram
3. Heating, Ventilation and Air Conditioning
4. SES and SIS One-line Diagrams

Contract Design Weight Estimate

Major Equipment List

Sketches

1. Equipment Removal Sketch
2. Habitability Space Sketch
3. Integrated Monitoring, Alarm & Controls Concept Sketch
4. Machinery Space Sketch
5. Mooring, Anchoring and Deck Fitting Sketch
6. Pilothouse and Chart Room Sketch
7. Scientific Space Sketch
8. Scientific System Deployment Sketch
9. Structural Sketch

Supporting Calculations and Analyses

1. Airborne Noise Report
2. Area/Volume Report
3. Automation Control and Monitoring Systems
4. Auxiliary Systems Report Calculations
5. Habitability Systems Report
6. Integrated Electrical Plant Design Report
7. Intact and Damage Stability Report
8. Maneuvering Performance Report
9. Model Test Report
10. Pollution Control System Report
11. Propulsion System Report
12. Radiated Noise Report
13. Scientific Electronic Systems (SES) Report
14. Sea keeping Performance Report
15. Sonar Self Noise Report
16. Speed and Power Report
17. Structural Calculations
18. Vibration Report

Other

1. Shore Based Spares List
2. Manning Study

**FIC Memo Dated August 30, 2010****NSF Determinations based on FIC Memo dated March 20, 2012****Regional Vessel Duty Cycle Analysis (Provided during Phase I)****NSF Manuals and Guidelines**

1. Large Facilities Manual
2. Business Systems Review Guide
3. Roles and Responsibilities of NSF Staff Involved in the Management and Oversight of Large Facilities
4. Risk Management Guide
5. Guidelines for Reporting Requirements
6. Guidelines for Financial Management

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**III. AWARD INFORMATION**

One award for a Cooperative Agreement (CA) is expected to be made under this solicitation. Cooperative support agreements will be made under the CA to support the various phases of the project.

## IV. ELIGIBILITY INFORMATION

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### Organization Limit:

Proposals may only be submitted by the following:

- Universities and Colleges - Universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the US, acting on behalf of their faculty members. Such organizations also are referred to as academic institutions.
- Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

### PI Limit:

None Specified

### Limit on Number of Proposals per Organization: 1

One proposal per organization as Lead Institution is allowed.

### Limit on Number of Proposals per PI: 1

One proposal per PI is allowed.

### Additional Eligibility Info:

To qualify for an award, an organization must be a U.S.-based college, university, non-profit research institution, or association of colleges and universities that has substantial in-house ocean science research and education programs and can also demonstrate the ability to manage a large facility construction project.

## V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

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### A. Proposal Preparation Instructions

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**Full Proposal Preparation Instructions:** Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program 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/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov). Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.
- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=grantsgovguide](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

**Program:** Ship Acquisition and Upgrade [[http://www.nsf.gov/geo/oce/pubs/IPS\\_Guidelines.pdf](http://www.nsf.gov/geo/oce/pubs/IPS_Guidelines.pdf)]

**Refer to Section II, Program Description, for specific proposal preparation information and instructions.** The proposal page limit is 250, including all diagrams, charts and figures. The entire proposal, including all charts, diagrams and figures, must be submitted via Fastlane or Grants.gov. Due to the complexity of the proposals being submitted, however, use of FastLane to prepare and submit proposals is strongly encouraged.

### B. Budgetary Information

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**Cost Sharing:** Inclusion of voluntary committed cost sharing is prohibited

**Indirect Cost (F&A) Limitations:** Not Applicable

**Other Budgetary Limitations:**

Cost-share by the proposing organization toward construction or outfitting of the vessels is not allowed.

## C. Due Dates

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

September 07, 2012

## D. FastLane/Grants.gov Requirements

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- **For Proposals Submitted Via FastLane:**

Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: <https://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](mailto: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 solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

**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. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

- **For Proposals Submitted Via Grants.gov:**

Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. Comprehensive information about using Grants.gov is available on the Grants.gov Applicant Resources webpage: [http://www07.grants.gov/applicants/app\\_help\\_reso.jsp](http://www07.grants.gov/applicants/app_help_reso.jsp). In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: [support@grants.gov](mailto:support@grants.gov). The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

**Submitting the Proposal:** Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

## VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

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Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

### A. NSF Merit Review Criteria

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All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. 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 the reviewer 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, original, or potentially transformative 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?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: <http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

#### **Additional Solicitation Specific Review Criteria**

Programmatic review criteria will include:

1. The adequacy and technical soundness of the preliminary Project Execution Plan and other required proposal deliverables;
2. An evaluation of the initial, high-level incorporation of the NSF determinations into the NSF-owned concept design to assess the Awardee's understanding of project requirements;
3. An evaluation of the national distribution of research vessel capabilities and the avoidance of "*undue geographic concentration*" of oceanographic facilities.

NSF staff also 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.

## **B. Review and Selection Process**

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Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review and/or Panel Review, Internal NSF Review, or Site Visit Review.

Use of one or a combination of the review methods (Ad hoc, Panel, Internal NSF and/or Site Visit) will be decided by the Program Officer in consultation with the Integrative Programs Section Head and the OCE Division Director.

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.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. 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 deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's 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 Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Acquisition and Cooperative Support for review of business, financial, and policy implications and the processing and issuance of a Cooperative Agreement. Proposers are cautioned that only a Grants and Agreements Officer can obligate funds or make 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**

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### **A. Notification of the Award**

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Notification of the award is made to *the submitting organization* by a Grants and Agreements Officer in the Division of Acquisition and Cooperative Support. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program 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.B. for additional information on the review process.)

### **B. Award Conditions**

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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 (GC-1); \* or Research Terms and Conditions \* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and Cooperative Agreement Supplemental Financial Terms and Conditions - Large Facilities (CA-SFATC-LF) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

\*These documents may be accessed electronically on NSF's Website at [http://www.nsf.gov/awards/managing/award\\_conditions.jsp?org=NSF](http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF). Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from [nsfpubs@nsf.gov](mailto:nsfpubs@nsf.gov).

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the *NSF Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at [http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=aag](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag).

#### **Special Award Conditions:**

The award associated with this solicitation will be a Cooperative Agreement (CA) with phased Cooperative Support Agreements (CSA) that will fund vessel construction and associated construction activities that will lead to final vessel delivery and acceptance. Each phase of the CA/CSA must be completed successfully in order to advance to the next phase. **Unsuccessful completion may result in NSF re-soliciting for the Lead Institution or discontinuing the project completely as the situation warrants.**

### **C. Reporting Requirements**

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For all CSAs issued under the CA, the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a CA/CSA, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. 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. Such reports provide information on activities and findings, project participants (individual and organizational) 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. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

#### **Additional Reporting Requirements**

Content and schedule for the required deliverables and reports for each Phase of the RCRV project will be specifically defined in the associated CSA.

Prior to vessel construction, frequent communication between the PI and the NSF Program Officer will be expected. As the project matures through the stages of Phase I, the Awardee will prepare the information and materials essential to successfully progress through an in-depth Concept Design Review (CDR) and Preliminary Design Review (PDR). A key deliverable supporting each review is an updated Project Execution Plan at a level of completeness corresponding to each stage. It is important to note that a significant amount of preparation and planning for these reviews is required of the Awardee, which will involve travel to NSF for reviews lasting up to 5 days. Review results will be made available within 30 days of completion, and the Awardee must respond to Panel recommendations and requests from NSF resulting from each review.

An essential deliverable for completing the CDR milestone will be the Awardee's analysis of feasibility and costs associated with acquiring an existing vessel and converting it to a research vessel capable of meeting RCRV technical/operational requirements. The cost analysis should assume that the converted vessel is fully equipped with state-of-the-art features for enhanced investigation of the present and emerging coastal science themes as described in the RCRV specifications including enhanced station keeping, multibeam and sub-bottom acoustic profiling, state of the art handling systems, low underwater radiated noise, "Green Ship" technologies, and compliance with ADA Academic Fleet standards. Advantages and disadvantages of this approach will be presented and evaluated during the Conceptual Design Review.

During Phase III, weekly project status reports to the cognizant NSF Program Officer will be required. In addition, more detailed monthly and/or quarterly reports providing information on progress, critical procurement actions, project timelines, budget and financial status, risk assessments, EVM, contract deliverables, deviations from the vessel baseline and change control will be required. All reports shall be submitted via e-mail and also to FastLane as interim project reports. Failure to provide interim project reports may also delay NSF review and processing of future funding increments and pending proposals for the PI.

As a minimum, the proposers should anticipate annual project reviews during construction. As the construction stage nears completion, the Awardee will develop and refine a testing and commissioning plan covering activities required for vessel operational readiness in Phase IV for panel review by NSF.

Within a 1 year period following award of the CA, the Awardee may be required to participate in a Business Systems Review (BSR), which is intended to evaluate Awardee business practices against government requirements, as well as to provide guidance on best practices.

## **VIII. AGENCY CONTACTS**

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*Please note that the program contact information is current at the time of publishing. See program website for any updates to the points of contact.*

General inquiries regarding this program should be made to:

- Matthew Hawkins, telephone: (703) 292-7407, email: [mjhawkin@nsf.gov](mailto:mjhawkin@nsf.gov)

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: [fastlane@nsf.gov](mailto:fastlane@nsf.gov).

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: [support@grants.gov](mailto:support@grants.gov).

## IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the [NSF web site](#).

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

## ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 55,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Arctic and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

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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.

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Last Updated:  
11/07/06  
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