

A.2.12 PLANETARY MAJOR EQUIPMENT

1. Scope of Program

This program element allows proposals for upgrading the analytical, computational, telescopic, and other instrumentation required by investigations sponsored by the Solar System Exploration programs entitled

- Cosmochemistry (Appendix A.2.2),
- Planetary Geology and Geophysics (A.2.3),
- Origins of Solar Systems (A.2.4),
- Planetary Astronomy (A.2.7),
- Near Earth Object Observations (A.2.8),
- Planetary Atmospheres (A.2.9),
- Exobiology (A.2.10), and
- Mars Fundamental Research (A.2.15).

Relevance will be judged according to the stated criteria in these program elements, as appropriate (see also the Solar System Exploration objectives for mission goals I and II stated in Table 3 of the *Summary of Solicitation* of this NRA). New major instrumentation that is necessary for the conduct and/or quality of proposed research or that would significantly benefit the broad science community may also be proposed. Major Equipment proposals may be submitted only in conjunction with new scientific research proposals or as an augmentation to existing OSS SSE multiple year proposals; a Planetary Major Equipment proposal that is not affiliated with such a “parent” OSS research proposal will not be returned as unresponsive to this program element.

Note that to enable the NASA Office of Space Science to properly evaluate the relevance of proposals submitted to its programs, as well as to track its progress towards achieving its goals as mandated by the Government Performance Review Act (GPRA), all research supported by NASA’s programs must now demonstrate its relationship to NASA Goals and Research Focus Area’s (RFA’s) as stated in the latest version of its Strategic Plan (follow links from the Web site <http://spacescience.nasa.gov/>); see also the discussion in Section 1 of the *Summary of Solicitation* of this NRA. Therefore, all proposers to this program element are asked to state their perception of this relevance in terms of the Goals, Science Objectives, and RFA’s given in Table 3 found in the *Summary of Solicitation*. In particular, this program element is designed to help fulfill most if not all of the RFA’s for all of the Science Objectives for Goal II for both the Solar System Exploration science theme as well as the Astronomical Search for Origins science theme. The appropriate place for this statement of relevancy is in the introduction to the proposal’s “Scientific/Technical/Management” section (see Section 2.3.5 in the *Guidebook for Proposers*). The index numbers in this table may be used to identify a specific RFA, for example, “Goal I, Sun-Earth Connection Theme, RFA 1(c)” or “Goal II, Astronomical Search for Origins, RFA 3(b).”

2. Exclusions and Restrictions

- Instrumentation or support equipment costing less than approximately \$25K is not considered major; requests for such items should be included in the body of the research proposal submitted to the appropriate Solar System Exploration program element as listed in Appendix A.2 in this NRA.

- Instrumentation, equipment, and services that are excluded from proposal to this program element include personal computers or computer peripherals (unless these are integral parts of the instrumentation requested), miscellaneous support equipment, support contracts, and the repair of equipment where the repair does not also involve

significant enhancement of the instrument's basic capabilities. In addition, no funds may be requested to support maintenance and continued operations of any instrument.

- In no event will proposals be considered that seek to design, develop, test, or evaluate new instruments that are intended for commercial sale.

3. Proposal Requirements

The Scientific/Technical/Management portion of the proposal (see Section 2.2 of the *NASA Guidebook for Proposers*) should specifically comply with the following guidelines for structure and content.

Format. A proposal for major equipment must be written so that it can be reviewed as a stand-alone proposal even though it will be reviewed in connection with the appropriate “parent” science proposal or existing multiple year award. This requirement is especially important for proposers who are operating under existing awards and who normally would submit only an Annual Progress Report in anticipation of a funding allotment to complete a period of performance. Planetary Major Equipment requests may also be reviewed by a multidisciplinary group external to the normal review process. Therefore, all proposals for this program element must contain a short abstract and sections on project description, management, and costs.

Objectives. Types and/or classes of instruments that are considered appropriate to be proposed for this program element are listed below, although requests for instruments not specifically identified in the list will receive equal consideration. Note that this list is not inclusive, but rather illustrative of the range of instrument types that are appropriate:

- Solid source, light element, and noble gas mass spectrometers;
- Electron microprobes;
- Scanning electron microscopes;
- Transmission electron microscopes;
- Camera-class ion microprobes;
- Activation analysis equipments;
- X-ray fluorescence analyzers;

- Organic analysis instrumentations;
- Static high pressure instrumentation
- Portable high-speed charge-coupled devices for occultation measurements;
- Telescopic instrumentations;
- High resolution infrared spectrometers;
- Large format optical charge-coupled devices (2000 x 2000 pixels) configured for use as a coronagraph;
- Faint object infrared spectrometers;
- Near infrared array cameras configured for use as a coronagraph;
- Coolable white cells;
- Instrumentation for planetary atmospheres laboratory studies;
- Tunable dye-laser high resolution spectrometers; and
- Instrumentation for measurements of gas phase reaction rates, photochemical reaction rates, and/or branching rates, and/or collisional, disassociation, ionization, and/or recombination cross-sections.

Project Description. The proposal must identify the instrument to be acquired or developed and the type of use proposed. It should contain a strong justification, including a description of why the instrument is necessary for the investigator's research or how it would enhance that research, citing specific examples wherever possible. It should also demonstrate why the enhanced capability is important to planetary science in general. If an instrument is proposed for the benefit of the science community, the justification should emphasize how the enhanced capability would benefit the larger planetary science community. All justifications should address how the requested instrument relates to existing capabilities, both in the investigator's own as well as other facilities.

Any substantial collaboration with individuals not included in the budget, or use of paid consultants, must be described. Any anticipated cost-sharing or substantial institutional contributions must be described. It should be noted that cost sharing (between NASA and other agencies such as the Department of Energy or the National Science Foundation) is encouraged to the extent that NASA's share of the cost will ensure adequate access to the finished instrumentation by NASA investigators; this acquisition/access aspect of any proposed effort involving cost-sharing must be discussed in the proposal. The proposal must document whether other agencies have been approached or have made tentative commitments and provide names and telephone numbers of appropriate officers in those agencies who can discuss their agencies' interest.

When it is expected that the acquisition or development of an instrument or facility will require more than one year, the proposal should cover the complete project but with a clear distinction between the efforts involved in each subsequent requested year.

Instrument Management and User Access. In addition to use by the Principal Investigator, if the proposed instrumentation is intended to be offered for use by the scientific community at large, a section is required that describes how the requested instrument would be managed. This description must include a statement of the

percentage of the instrument's time that would be available to other users and a general statement regarding aspects of user access, such as time of day when access would be granted, whether access would be “hands on” or only by an operator or collaborator in the proposer’s group, any costs to be charged for use and how costing would be handled, and how users would apply to gain access (personal communication, formal proposal, etc.).

Requests for an instrument should specify how the instrument is to be used, whether by Principal Investigator (PI) and the PI research group only, or by other investigators as well (facility instrument) in terms of the three categories defined below:

- Investigator Instrument. An investigator instrument is an instrument acquired or developed by an investigator to support his/her research where he/she has full authority for its exclusive use and where there are no commitments to make the instrument available to other investigators.
- Investigator Facility Instrument. An investigator facility instrument is an instrument acquired or developed by an investigator to support his/her research where an identified portion of its time is to be reserved for use by the PI, but where an additional specified portion of its time will be made available to other knowledgeable NASA-supported planetary program investigators, and where all details or access, method of use, charging, and data rights are determined by the PI in negotiation with potential users.
- Regional Facility Instrument. A regional facility instrument is an instrument of considerable cost or one that is limited to one location by virtue of its use on a specific facility but has been acquired by a PI to support his/her research. A significant, specified portion of a regional facility instrument's time will be reserved for use by the PI but a significant, specified portion of its time must also be available to other NASA-supported planetary program investigators. Unlike an investigator facility instrument, however, all details of access, announcement of availability, assistance to be provided on its use and methods of use (whether hands on or by a facility-based operator), charges, and data rights must be documented and agreed to by NASA and the sponsoring institution before NASA support is provided.

Costs. Regardless of whether the proposed instrument is to be purchased by the proposing investigator from a commercial vendor or is to be designed and built by the investigator him/herself, only those costs directly associated with the acquisition, installation and check-out of the instrument may be requested through this program element. Costs for maintenance and operation beyond the check-out period must be requested in research proposals submitted to the appropriate Solar System Exploration discipline program elements described in this or future NRA's. In all cases, however, provision of an adequately documented cost section greatly facilitates evaluation of the proposal, and, if selected, significantly improves the likelihood of a timely award. Therefore, each relevant cost should be fully explained and substantiated; there is no page limit for this section.

4. Programmatic Information

It is estimated that \$1M will be available through this program element to support approximately 15 grants. In order to make the best possible use of the funds that may be available, proposers who request funds for Planetary Major Equipment are encouraged to seek cost sharing where appropriate and to propose collective use where reasonable, i.e., instruments that could be made available for use by other qualified members of the planetary science community. Cost-shared proposals are encouraged for very high cost instruments; the partners of such proposals must provide a written statement regarding long term funding and/or institutional commitments.

It is expected that title to any equipment developed through this Planetary Major Equipment program shall vest with the proposing institution in accordance with the provisions of §1260.74 of NASA's *Grants and Cooperative Agreement Handbook* found online at <http://ec.msfc.nasa.gov/hq/grcover.htm>. However, in the cases where the equipment upgrade is for a facility owned by the Government, NASA reserves the right to negotiate title of the equipment for the best interests of the user community.

Evaluation factors will be those listed in the *NASA Guidebook for Proposers*, with the following additions:

- In considering the relevance of the Planetary Major Equipment request to NASA's Solar System Exploration science objectives, attention will be focused on the added value that would be gained by the addition of the instrument capability to ongoing and anticipated research of the proposer, in particular, and to NASA's objectives in general.
- In evaluating the intrinsic merit of the request, additional factors that will be considered of equal weight are the scientific merit of the original proposal to which the request is tied and the value that the new or enhanced capability would add to science and/or education beyond that offered specifically to planetary science.

Planetary Major Equipment proposals will be reviewed by the relevant discipline peer review panels during the full proposal reviews and in the context of their respective "parent" research proposals. Those proposals that most clearly meet the criteria outlined in terms of scientific merit, program balance, and funding as judged by the peer panels will be considered by the OSS Program Officers in developing their recommendations for selection.

All requests selected for Major Equipment support will be funded through augmentation to the "parent" grant/contract for the basic research program. If such a request involves a multiple year period of performance for its development activities, an annual funding allotment to the basic continuing award will be provided only upon receipt, review, and approval of an Annual Progress Report and updated budget and/or statement of work as appropriate to cover the additional effort. The *Annual Progress Report* will be due no later than 60 days in advance of the anniversary date of the award and is to be submitted as an attachment to an E-mail message to the Discipline Scientist for this program.

As noted in Section 1 of this Program Element, a Major Equipment proposal is to be submitted only in conjunction with a new scientific research proposal, or as an augmentation to an existing multiple year investigation currently funded in support of the OSS Solar System Exploration science theme. Therefore, the schedules for submission of Major Equipment NOI's and proposals are the same as those given in the *Summary of Solicitation* of this NRA for the relevant Solar System Exploration program elements.

IMPORTANT INFORMATION

- As discussed in the *Summary of Solicitation* of this NRA, the Office of Space Science (OSS) now uses a unified set of instructions for the preparation and submission of proposals given in the document entitled *NASA Guidebook for Proposers Responding to NASA Research Announcement - 2003* (or *NASA Guidebook for Proposers* for short) that may be accessed by opening <http://research.hq.nasa.gov/> and linking through "Helpful References," or by direct access at <http://www.hq.nasa.gov/office/procurement/nraguidebook/> (note that the updated 2003-edition of the *Guidebook* is used for this solicitation).
- Section 6 of this NRA's *Summary of Solicitation* contains the Web address relevant to the electronic submission of a Notice of Intent (NOI) to propose and a proposal's *Cover Page/Proposal Summary/Budget Summary*, as well as the mailing address for the submission of the hard copies of a proposal.

Questions about this program element should be directed to the cognizant Program Officer for the program element in Appendix 2 to which the "parent" scientific research proposal is being submitted, or who is cognizant for the existing multiple year award for which a Planetary Major Equipment proposal is proposed as a supplement.
