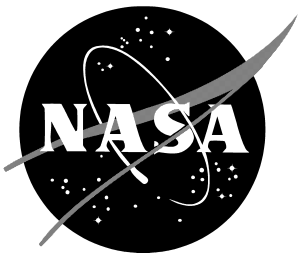

National Aeronautics
and Space Administration

**February 26, 1997**
**AO 97-OSS-01**

# Announcement of Opportunity

# Science Investigations on the New Millennium Deep Space One (DS1) Mission

**Notice of Intent to Propose** **March 18, 1997**
**Proposals due:** **May 27, 1997**

**OMB Approval No. 2700-0085**

# Science Investigations on the New Millennium Deep Space One (DS1) Mission

## Announcement of Opportunity Soliciting Proposals for Basic Research in Space Science

**AO 97-OSS-01**
**Issued: February 26, 1997**
**Notice of Intent to Propose Due: March 18, 1997**
**Proposals Due: May 27, 1997**

**Office of Space Science**
**National Aeronautics and Space Administration**
**Washington, DC 20546-0001**

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# 1. DESCRIPTION OF THE OPPORTUNITY

## 1.1 INTRODUCTION

This NASA Announcement of Opportunity (AO) solicits proposals for science investigations on the New Millennium Deep Space One (DS1) mission. Principal Investigators (PI's) of selected proposals will become members of the DS1 Science Team (ST). Although the primary role of the New Millennium program is to perform flight validation of new technologies to enable future science missions, these validation flights also offer opportunities to collect scientifically valuable data. Potential ST members are advised that participants in the mission must accept the risks associated with low cost, rapid-development technology-validation missions. These factors could result in changes in advanced technology or mission design to accommodate schedule and budget constraints.

DS1 is a New Millennium technology-validation mission that will fly by Asteroid 3352 McAuliffe and Comet P/West-Kohoutek-Ikemura. It is scheduled for launch on July 1, 1998. The two principal instruments on the mission are a Miniature Integrated Camera and Spectrometer (MICAS), provided by the Jet Propulsion Laboratory (JPL), and a Plasma Experiment for Planetary Exploration (PEPE), provided by the Southwest Research Institute (SwRI) and the Los Alamos National Laboratory (LANL). The primary goal of the mission is to validate new technology and scientifically investigate small solar system bodies. In addition, during the DS1 fly by of Mars, between the asteroid and comet encounters, an opportunity may exist to achieve some unusual scientific investigations of Mars that will not be carried out by Mars Pathfinder or Mars Global Surveyor. Such Mars investigations may be proposed with the appropriate justifications. A primary objective of DS1 is to validate Solar Electric Propulsion (SEP) and to evaluate its effects on acquiring scientifically valuable data in the plasma environment of the spacecraft by means of the PEPE.

Expertise is sought for in-flight calibration of the MICAS and PEPE instruments; planning of instrument observations; reducing and validating technical, engineering, and scientific data from the mission; preparing raw and reduced data for archiving in the Planetary Data System (PDS); and analyzing, interpreting, and publishing initial results.

DS1 is the first New Millennium mission. Cost constraints will require, among other things, strict limits on the number of Science Team members (see Section 3). The technology-validation objectives of the mission also dictate special responsibilities for Science Team members (see Section 1.5).

A Proposal Information Package (PIP) provides background information and specific details for the DS1 mission. This PIP is needed for preparing a formal proposal. The PIP is available via the World Wide Web (WWW) Universal Record Locator <http://nmp.jpl.nasa.gov/Missions/DS1/pip.html> Paper copies of the PIP are available from the address given in Section 4.1.4.

## 1.2 SCIENCE TEAM MEMBER PROPOSALS

This AO invites proposals from United States and non-U.S. science organizations. In accordance with NASA policy, all investigations by foreign participants will be conducted on the basis of no exchange of funds.

Participation is open all categories of organizations, both domestic and foreign: industry, educational institutions, nonprofit organizations, NASA centers, and other Government agencies.

Only one PI from each selected investigation will become a member of the DS1 Science Team. Proposers may identify and may request support for specific individuals or support staffs considered essential to the conduct of their investigations, but none of these individuals will be eligible for Science Team membership without their submitting an independent proposal.

The opportunities for science data acquisition that will be provided also involve the following advanced technology validation and engineering instruments for which further information is given in the Proposal Information Package (PIP):

Advanced Prototype Instruments:
- Miniature Integrated Camera and Spectrometer (MICAS)
- Plasma Experiment for Planetary Exploration (PEPE)

Other Advanced Technologies:
- Solar concentrator array
- Autonomous onboard navigation
- Autonomy-remote agent architecture
- Autonomy-beacon monitor operations
- Ka band solid state power amplifier
- Low power electronics
- Multifunctional structure
- Power actuation and switching module
- Small deep-space transponder
- Solar Electric Propulsion (SEP), including diagnostic sensors
- 3-D stack flight computer

It is expected that proposers will center their attention on one of the principal instruments and on technology validation as well as scientific investigations.

## 1.3 SCHEDULE

It is requested that a Notice of Intent (NOI) to propose be submitted by March 18, 1997, to the address given in Section 4.1.4. It should contain: name of proposer, institution, address, telephone number, title of proposal, and a brief abstract. The information in the NOI is not binding on the proposer.

The proposal deadline is 5 p.m. EDT, May 27, 1997. The proposals will be evaluated by a science peer review panel. The proposal selections are expected to be announced by mid-August. It is expected that proposals will be selected for support for the period October 1, 1997, through September 30, 2000.

**Summary of major milestones for DS1:**

| | |
|---|---|
| **1997** | |
| May 1 | Begin integration and test of instruments and spacecraft |
| June 1 | Begin calibration of instruments |
| August 1 | Spacecraft level tests |
| **1998** | |
| July 1 | Launch |
| **1999** | |
| January | Closest approach to Asteroid 3352 McAuliffe |
| **2000** | |
| April | Mars fly by |
| June | Closest approach to Comet P/West-Kohoutek-Ikemura |
| July | End of DS1 primary mission |
| September 30 | End of data validation period and submission of data for archiving |

Options for an extended mission are not to be included in the proposal to this AO.

## 1.4 FORMATION OF SCIENCE TEAM

A Science Team (ST) will be formed by NASA consisting of the PI's of the selected science investigations requested by this AO. The ST will be co-chaired by the Flight Scientist (Dr. Robert M. Nelson, JPL) and the NASA Program Scientist for DS1 (currently Dr. Walter F. Huebner, NASA Headquarters). The ST may select a spokesperson for each of the two principal instruments from the members of the Science Team. The spokespersons will report directly to the Flight Scientist. The ST will meet regularly throughout the lifetime of the mission and will work with the JPL Project Manager to resolve conflicts among requirements to optimize the technical and scientific return.

## 1.5 RESPONSIBILITIES OF SCIENCE TEAM

The role of the Science Team (ST) is a vital part of the DS1 project and an important way to engage the planetary science community. Therefore, the Science Team will:

- Replace the current DS1 Science Advisory Group (SAG) but continue the SAG's activities.
- Provide science input for mission planning and instrument operations.
- Assist in instrument calibrations.
- Assist in technology validation activities.
- Reduce and validate technical and scientific data.
- Prepare raw and reduced data for archiving for future use by the scientific community.
- Analyze, interpret, and publish first results and findings in peer reviewed literature.
- Support advocacy and liaison efforts between New Millennium DS1 and the scientific community.

# 2. ANNOUNCEMENT OBJECTIVES

## 2.1 SCIENTIFIC AND TECHNICAL OBJECTIVES

To be considered, investigations proposed for the DS1 mission should address both technology and science goals. The following goals are not listed in priority:

Technical goals include:

- Characterize the plasma environment of the spacecraft, including effects of the ion propulsion system, modifications of solar wind, and sputtering effects.
- Improved calibrations of on-board instruments.

Scientific goals during cruise:

- Solar wind characteristics.
- Effects of SEP on solar wind measurements.

Scientific goals for Asteroid 3352 McAuliffe, to the extent feasible, include:

- Gross physical properties: dimensions, shape, surface morphology, albedo, and estimates for mass, volume, density, spin state, etc.
- Composition: elemental and mineralogic, including estimates of the heterogeneity.
- Changes in the solar wind as a result of its interaction with the asteroid.
- Sputtering from the asteroid due to the solar wind.

Scientific goals for Comet P/West-Kohoutek-Ikemura, to the extent feasible, include:

- Gross physical properties of the nucleus: dimensions, shape, surface morphology, albedo, heterogeneity, and estimates for mass, volume, density, spin state, etc.
- Coma features, plasma properties, and solar wind interaction: brightness profiles of coma, jet-like features (“jets”) of dust and gas, brightness changes along and perpendicular to dust "jets," plasma boundaries, plasma flux, etc.
- Relationship of nucleus surface features to coma dust “jets.”
- Composition of the coma/tail plasma: elemental, molecular, isotopic, dust-to-gas mass ratio.

Mars Science:

- Primarily investigations that cannot be done better by Mars Pathfinder or Mars Global Surveyor (see AO 96-OSS-01 available through the OSS Homepage at <http.//www.hq.nasa.gov/office/oss/closed.htm>).

## 2.2 EXPECTED SCIENCE RETURN

The science goals have been designed such that they are achievable within the technical capabilities of the mission. These goals have been derived directly from the NASA program strategy to develop missions that are focused on a limited set of scientific objectives. Thus, the DS1 mission, in addition to archiving its technology validation goals, will investigate the properties of the Asteroid 3352 McAuliffe and Comet P/West-Kohoutek-Ikemura. DS1 will combine focused but high-quality science goals and investigations, cost-effective mission operations, and disciplined management to ensure that cost targets are maintained.

## 2.3 APPLICABLE REFERENCES

The motivation for relevant planetary science can be found in the COMPLEX report, *An Integrated Strategy for the Planetary Sciences, 1995-2010* (National Academy of Sciences Press, Washington, DC, 1994).

A summary of asteroid science may be found in the volume *Asteroids II*, edited by R.P. Binzel, T. Gehrels, and M. Matthews (University of Arizona Press, Tucson, 1989).

A summary of comet science can be found in *The Post-Halley Era*, edited by M. Neugebauer, R. Newburn, Jr., and J. Rahe (Kluwer, Dordrecht, Holland, 1990) and in *Physics and Chemistry of Comets*, edited by W.F. Huebner (Springer-Verlag, Heidelberg, 1991).

## 3. SPECIAL MISSION CONSTRAINTS

Certain special constraints are mandated by the intended low-cost character of the DS1 mission:

1. Selection of Science Team members will be based, among other factors, on the relevance of the science investigation to one of the two principal instruments. However, the description in this AO of the instruments that are expected to be part of the technology payload for the mission does not constitute a commitment by NASA to ultimately include these instruments in the mission payload. Because the mission has been deliberately established to test new technology and as a very cost-constrained activity, ongoing assessments of technical and programmatic (cost and schedule) risks may result in a deselection of portions of the technology payload. If such deselection becomes necessary, funding for the affected team members selected through this AO may be terminated.

2. The major scientific investigations of DS1 will be conducted during cruise phase and during the Asteroid 3352 McAuliffe and Comet P/West-Kohoutek-Ikemura fly by phases of the mission. It is anticipated that only limited scientific investigations will be conducted during the Mars fly by.

3. A science data validation period will exist for a limited period of time after completion of the fly by phases for DS1, after which the data will be archived and made available to the scientific community through the Planetary Data System (PDS). The period for data reduction and final archiving is expected to end September 30, 2000.

4. Current NASA policy does not allow for any proprietary rights to mission science data beyond a reasonable period for calibration and validation. All policies concerning the data validation period, data management, data archiving, and data release will be developed by the New Millennium Program Office, the DS1 Project Office, and NASA Headquarters, in conjunction with the ST.

5. Funding for this program comes from the New Millennium mission budget. The program is expected to extend from October 1, 1997, through September 30, 2000. Proposers should submit budgets for each of the three fiscal years from FY 1998 through FY 2000. It is anticipated that up to nine proposals will be selected. It is expected that, in total, there will be approximately $1.7M available for the ST for the duration of the project.

## 4. PROPOSAL SUBMISSION INFORMATION

### 4.1 FORMAT OF PROPOSALS

A uniform proposal format is required in order to aid in proposal evaluation. This format, and the required contents, are summarized below. General information and guidelines for proposal preparation are provided as Appendices A and B to this AO.

Each proposal should be submitted in two sections: *Section 1, Investigation and Technical Plan*, and *Section 2, Management Plan and Cost Plan*. Non-U.S. proposers are not required to submit a Cost Plan for their activities but must submit a Management Plan. Furthermore, a Budget and Cost Plan must be submitted for any participation by a U.S. individual in a foreign proposal if it is anticipated that such participation will be supported by NASA. All documents must be typewritten in English and must be easily legible. At least one copy of each document should be clear black print, on white paper, and of a quality suitable for reproduction.

### 4.1.1 Investigation and Technical Plan (Section 1)

Section 1 should consist of the main body of the proposal and any optional appendices. It should provide a clear statement of the proposed investigation and how it will address the overall technologic and scientific objectives of the DS1 mission. The proposal should contain enough background information to be meaningful to a reviewer who is generally familiar with the field, although not necessarily a specialist.

A technical description of the proposer's plan for in-flight instrument calibration, instrument operation, and development of observing sequences should be included. The proposal should also contain the best possible description of the proposer's plans for data processing, management, and archiving. It is recognized that many of the details of these procedures are not established at this time, but the proposer should give as much information as possible concerning his or her plans, requirements, and costs, especially those for unique data management requirements (hardware and software).

The title page of Section 1 must state the title, name, address, affiliation, and telephone number of the proposed Science Team member. In the preface to Section 1, the proposer must also include a separate abstract, one page or less in length, describing the proposed investigation. For formats see Appendix C. The title page and abstract page are not included in the page limits specified below.

The main body is limited to a maximum of twelve single-spaced, typewritten pages, in 12 point or larger font without reduction, including illustrations. Each side of a sheet of paper containing text or illustrations is considered a page. Proposals for investigations on the DS1 mission should, in addition to the scientific and technological investigation proposed, provide information as to specific talents or technical capabilities that the proposed PI would bring to the Team.

### 4.1.2 Management Plan and Cost Plan (Section 2)

This section does not have page limitations. Non-U.S. proposers are not required to submit a Cost Plan for their own activities but must submit a Management Plan. In addition, non-U.S. proposers must provide (or arrange to provide) to NASA a Budget and Cost Plan for U.S. individuals in their proposals if it is anticipated that the participation of such individuals will be supported by NASA. For budget forms see Appendix C.

Cost and Management Plans should be simplified to the minimum needed to permit evaluation. It is expected that most of the costs will be related to manpower (e.g., salary and travel for the Principal Investigator and essential support personnel) and to data processing requirements.

### 4.1.3 Certification

All proposals must be signed by an institutional official authorized to certify institutional support and sponsorship of the investigation as well as of the management and financial parts of the proposal. In addition, the Certification Regarding Drug-Free Workplace; the Certification Regarding Debarment, Suspension, and Other Related Matters; and the Certification Regarding Lobbying must accompany each proposal. Forms for submission of these three Certifications are included in Appendix C.

### 4.1.4 Quantity

Fifteen copies, including one with original signatures, must be submitted by all proposers to the following address:

NASA New Millennium DS1 Science Team AO
Jorge Scientific Corporation
400 Virginia Ave., SW, Suite 700
Washington, DC 20024

Point of contact for commercial delivery: Ms. Debbie Tripp, telephone: (202) 554-2775.

### 4.1.5 Deadlines

One copy of the Notice of Intent (NOI) to propose should arrive on or before 5 p.m. EDT March 18, 1997, at the address in Section 4.1.4. Proposals must arrive on or before 5 p.m. EDT May 27, 1997, at the address in Section 4.1.4.

### 4.1.6 Notification

The proposers will be notified in writing that their proposals have been received. Proposers not receiving this confirmation within two weeks after the deadline should contact Jorge Scientific at the address given in Section 4.1.4.

### 4.1.7 Contact for Further Information

Dr. Walter F. Huebner
DS1 Program Scientist
Research Program Management Division
Code SR
NASA Headquarters
Washington, DC 20546-0001

Telephone: (202) 358-0828/0292 e-mail: <walter.huebner@hq.nasa.gov>

## 4.2 Non-U.S. PROPOSALS

Non-U.S. proposers need not submit a Cost Plan unless NASA-supported U.S. individuals are involved in the proposal, but must follow all other specifications given in Sections 4.1.1 and 4.1.2. Non-U.S. proposers must have their proposals reviewed and endorsed by their appropriate government agency. An endorsed original of the proposal should be sent to the NASA International Science and Aeronautics Division (address given in Appendix B) and should arrive

before the deadline for receipt of proposals. The additional copies of the proposal should be sent directly to the address given in Section 4.1.4 above.

Appendix B contains additional guidelines for non-U.S. proposers.

# 5. PROPOSAL EVALUATION, SELECTION, AND IMPLEMENTATION PROCEDURES

## 5.1 EVALUATION CRITERIA

The fundamental goal of the evaluation process is to identify scientific ideas and unique theoretical and analytical capabilities that best meet the overall objectives of technology evaluation, science, and cost of the DS1 mission as described in this Announcement. Accordingly, the following criteria, listed in order of descending importance, will be used in evaluating all proposals submitted in response to this Announcement:

1. The scientific and technological merit of the proposed investigation and its relevance to this specific opportunity and to the established mission plans and objectives, particularly the advanced technology validation objectives.

   Factors of equal priority that will be considered in determining the scientific and technical merit of a proposal also include the following:

- A clear understanding of the DS1 mission, the MICAS or PEPE instrument and its scientific and technical capabilities, particularly those related to the proposed investigation.

- Feasibility of the proposed investigation using the instrument and the data returned from it and a clear statement of the instrument data required for the proposed investigation.

- The ability, capabilities, and commitment of the investigator to participate in planning, collection, reduction, and evaluation, of the data to be submitted to the PDS for archiving in the specified amount of time. A description of the specific data products that will be produced by the investigation should also be included.

2. The competence and relevant experience of the proposing PI and any proposed support personnel as an indication of their ability to perform the proposed technical tasks and carry the investigation to a successful conclusion.

3. Reasonableness of total costs. Total costs will be considered to include not only those proposed for technology evaluation, scientific investigation, and science data analysis, but also the impact the proposed investigation may have on spacecraft and mission operation costs.

4. Management considerations, including demonstrated capability to adhere to sound business practices.

5. The commitment of the PI's institution, as measured by the willingness of the institution to provide the necessary support (logistics, facilities, etc.) to ensure that the investigation can be completed satisfactorily.

## 5.2 EVALUATION AND SELECTION PROCEDURES

Proposals received in response to this Announcement will be evaluated in accordance with the provisions of NASA Federal Acquisition Regulations (FAR) 1870.102, Appendix I (Guidelines for Acquisition of Investigations). All proposals will be subjected to a preliminary screening by NASA to determine their suitability and responsiveness to the Announcement. Proposals that are not responsive to the intent of the Announcement will be handled as correspondence and returned.

Following this preliminary action, the scientific and technical aspects of each proposal will be assessed by a panel composed of scientific and technical peers of the proposers. The purpose of this peer evaluation will be to determine the scientific and technical merit of each proposal, expressed in terms of its strengths and weaknesses.

After these evaluations, an *Ad Hoc* Subcommittee of the Space Science Steering Committee (SSSC), composed entirely of Civil Servants, will consider the proposal evaluations, together with additional information regarding management and cost aspects, and categorize the proposals according to the following definitions:

> Category I: Well-conceived and scientifically and technically sound investigations pertinent to the goals of the program and the Announcement's objectives and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that the investigation can be delivered on time and within budget.
>
> Category II: Well-conceived and scientifically and technically sound investigations that are recommended for acceptance, but at a lower priority than Category I.
>
> Category III: Scientifically and technically sound investigations that require further development. (For purpose of this AO, there is neither funding nor time to allow further development of Category III proposals. Thus any Category III proposals will be treated as Category IV).
>
> Category IV: Proposed investigations that are recommended for rejection for this particular opportunity, for scientific, technical, cost, or other reasons.

Following the evaluations described above, the NASA Program Scientist will develop a recommendation for selection of Science Team members. This recommendation, and all peer review and categorization materials for all proposals, will be submitted to SSSC, appointed by the Associate Administrator for Space Science, which will review all materials for adherence to NASA policies and procedures, and completeness. The SSSC will then submit these materials to the co-signers of the AO for final selection. These selections will be final; no Accommodation Phase or Science Confirmation Review is planned for these investigations.

### 5.3 IMPLEMENTATION PROCEDURES

Following the selection, the PI's of the selected investigations will be notified immediately by telephone, followed by formal written notification. Proposers of investigations that were not selected will be notified in writing and offered an oral debriefing.

## 6. CONCLUSION

The New Millennium program represents a challenging new way for NASA to develop, apply, and test new technology coupled to the scientific exploration of the solar system. It provides an opportunity for frequent flights to execute technological advances at the forefront of solar system science investigations. NASA invites you to participate in proposals for Science Team membership in the first New Millennium mission.

Jurgen H. Rahe
Science Program Director
Solar System Exploration
Office of Space Science

Wesley T. Huntress, Jr.
Associate Administrator
for Space Science

George L. Withbroe
Science Program Director
The Sun-Earth Connection
Office of Space Science

## APPENDIX A

## GENERAL INSTRUCTIONS AND PROVISIONS

### I. Instrumentation and/or Ground Equipment

By submitting a proposal, the investigator and institution agree that NASA has the option to accept all or part of the offeror's plan to provide the instrumentation or ground support equipment required for the investigation, or NASA may furnish or obtain such instrumentation or equipment from any other source as determined by the selecting official. In addition, NASA reserves the right to require use, by the selected investigator, of Government instrumentation or property that becomes available, with or without modification, that will meet the investigative objectives.

### II. Tentative Selections, Phased Development, Partial Selections, and Participation with Others

By submitting a proposal, the investigator and the organization agree that NASA has the option to make a tentative selection pending a successful feasibility or definition effort. NASA has the option to contract in phases for a proposed experiment, and to discontinue the investigative effort at the completion of any phase. The investigator should also understand that NASA may desire to select only a portion of the proposed investigation and/or that NASA may desire the individual's participation with other investigators in a joint investigation, in which case the investigator will be given the opportunity to accept or decline such partial acceptance or participation with other investigators prior to a selection. Where participation with other investigators as a team is agreed to, one of the team members will normally be designated as its team leader or contact point.

### III. Selection Without Discussion

The Government reserves the right to reject any or all proposals received in response to this AO when such action shall be considered in the best interest of the Government. Notice is also given of the possibility that any selection may be made without discussion (other than discussions conducted for the purpose of minor clarification). It is therefore emphasized that all proposals should be submitted initially on the most favorable terms that the offeror can submit.

### IV. Foreign Proposals

See Appendix B, Section II, paragraph 3.

### V. Treatment of Proposal Data

It is NASA policy to use information contained in proposals and quotations for evaluation purposes only. While this policy does not require that the proposal or quotation bear a restrictive notice, offerors or quoters should place the following notice on the title page of the

proposal or quotation and specify the information, subject to the notice, by inserting appropriate identification, such as page numbers, in the notice. Information (data) contained in proposals and quotations will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

**RESTRICTION ON USE AND DISCLOSURE OF PROPOSAL AND QUOTATION INFORMATION (DATA)**

The information (data) contained in [insert page numbers or other identification] of this proposal or quotation constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed for other than evaluation purposes; provided, however, that in the event a contract is awarded on the basis of this proposal or quotation the Government shall have the right to use and disclose this information (data) to the extent provided in the contract. This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

## VI. Status of Cost Proposals (U.S. Proposals Only)

The investigator's institution agrees that the cost Proposal is for proposal evaluation and selection purposes, and that following selection and during negotiations leading to a definitive contract, the institution will be required to resubmit or execute a Standard Form (SF) Form 1411 "Contract Pricing Proposal Cover Sheet" and certifications and representations required by law and regulation.

## VII. Late Proposals

The Government reserves the right to consider proposals, or modifications thereof, received after the date indicated, should such action be in the interest of the Government.

## VIII. Source of Space Transportation System Investigations

Investigators are advised that candidate investigations for Space Transportation System (STS) missions can come from many sources.

## IX. Disclosure of Proposals Outside Government

NASA may find it necessary to obtain proposal evaluation assistance outside the Government. Where NASA determines that it is necessary to disclose a proposal outside the Government for evaluation purposes, arrangements will be made with the evaluator for appropriate handling of the proposal information. Therefore, by submitting a proposal, the investigator and institution agree that NASA may have the proposal evaluated outside the Government. If the investigator or institution desire to preclude NASA from using an outside evaluation, the investigator or institution should so indicate on the cover. However, notice is given that if NASA is precluded from using outside evaluation, it may be unable to consider the proposal.

## X. Equal Opportunity (U.S. Proposals Only)

By submitting a proposal, the investigator and institution agree to accept the following clause in any resulting contract:

### EQUAL OPPORTUNITY

During the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

2. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (a) employment, (b) upgrading, (c) demotion, (d) transfer, (e) recruitment or recruitment advertising, (f) layoff or termination, (g) rates of pay or other forms of compensation, and (h) selection for training, including apprenticeship.

3. The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

4. The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

5. The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding the notice to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

6. The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

7. The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. Standard Form 100 (EEO-1), or any successor form, is the prescribed form to be filed within 30 days following the award, unless filed within 12 months preceding the date of award.

8. The Contractor shall permit access to its books, records, and accounts by the contracting agency or the Office of Federal Contract Compliance Programs (OFCCP) for the purposes of investigation to ascertain the Contractor's compliance with the applicable rules, regulations, and orders.

9. If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, the contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

10. The Contractor shall include the terms and conditions of subparagraph 1 through 9 of this

clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each Subcontractor or vendor.

11. The Contractor shall take such action with respect to any subcontract or purchase order as the contracting agency may direct as means of enforcing these terms and conditions, including sanctions for non-compliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

**XI. Patent Rights**

1. For any contract resulting from this solicitation awarded to other than a small business firm or nonprofit organization, the clause at NFS 1852.227-70, "New Technology," shall apply. Such contractors may, in advance of contract, request waiver of rights as set forth in the provision at NFS 1852.227-71, "Requests for Waiver of Rights to Inventions."

2. For any contract resulting from this solicitation awarded to a small business firm or nonprofit organization, the clause at FAR 52.227-11, "Patent Rights--Retention by the Contractor (Short Form)" (as modified by NFS 1852.227-11), shall apply.

## APPENDIX B

## GUIDELINES FOR PROPOSAL PREPARATION

The following guidelines apply to the preparation of proposals in response to an AO. The material is a guide for the proposer and not intended to be encompassing or directly applicable to the various types of proposals which can be submitted. The proposer should provide information relative to those items applicable or as required by the AO.

### I. Cover Letter

A letter or cover page should be forwarded with the proposal signed by the investigator and an official by title of the investigator's organization who is authorized to commit the organization responsible for the proposal.

### II. Table of Contents

The proposal should contain a table of contents.

### III. Identifying Information

The proposal should contain a short descriptive title for the investigation, the names of all investigators, the name of the organization or institution and the full name, address, and telephone number of the Principal Investigator.

## SECTION 1 -- INVESTIGATION AND TECHNICAL PLAN

### 1. Investigation and Technical Plan

The investigation and technical plan generally will contain the following:

**a. Summary**. A concise statement about the investigation, its conduct, and the anticipated results.

**b. Objective and Significant Aspects**. A brief definition of the objectives, their value, and their relationships to past, current, and future efforts. The history and basis for the proposal and a demonstration of the need for such an investigation. A statement of present development in the discipline field.

**c. Investigation Approach**

(1) Fully describe the concept of the investigation.

(2) Detail the method and procedures for carrying out the investigation.

### 2. Data Reduction and Analysis

A discussion of the data reduction and analysis plan including the method and format. A section of the plan should include a schedule for the submission of reduced data to the Planetary Data System.

## SECTION 2 -- MANAGEMENT PLAN AND COST PLAN

### A. Management Plan

The management plan should summarize the management approach and the facilities and equipment required. Additional guidelines applicable to non-U.S. proposers contained herein:

#### 1. Management

a. The management plan set forth gives the approach for managing the work, the recognition of essential management functions, and the overall integration of these functions.

b. The management plan gives insight into the organization proposed for the work, including the internal operation and lines of authority with delegations, together with internal interfaces and relationships with the NASA major subcontractors and associated investigators. Likewise, the management plan usually reflects various schedules necessary for the logical and timely pursuit of the work, accompanied by a description of the investigator's work plan and the responsibilities of the support personnel.

#### 2. Facilities and Equipment

All major facilities, laboratory equipment, and ground-support equipment (GSE) (including those of the investigator's proposed contractors and those of NASA and other U.S. Government agencies) essential to the experiment in terms of its system and subsystems are to be indicated, distinguishing insofar as possible between those already in existence and those that will be developed in order to execute the investigation. The outline of new facilities and equipment should also indicate the lead time involved and the planned schedule for construction, modification, and/or acquisition of the facilities.

#### 3. Additional Guidelines Applicable to Non-U.S. Proposers Only

The following guidelines are established for non-U.S. responses to NASA's AO. Unless otherwise indicated in a specific announcement, these guidelines indicate the appropriate measures to be taken by non-U.S. proposers, prospective non-U.S. sponsoring agencies, and NASA leading to the selection of a proposal and execution of appropriate arrangements. They include the following:

a. Where a "Notice of Intent" to propose is requested, prospective non-U.S. proposers should write directly to the NASA official designated in the AO and send a copy of this letter to the International Science and Aeronautics Division, Code IS, NASA, Washington, DC 20546-0001, U.S.A.

b. Unless otherwise indicated in the AO, proposals will be submitted in accordance with this Appendix excluding cost plans. Proposals should be typewritten and written in English.

c. Persons planning to submit a proposal should arrange with an appropriate non-U.S.

governmental agency for a review and endorsement of the proposed activity. Such endorsement by a non-U.S. organization indicates that the proposal merits careful consideration by NASA and that, if the proposal is selected, sufficient funds will be available to undertake the activity envisioned.

d. An endorsed original of the proposal and letters of endorsement from the non-U.S. governmental agency should be sent to:

Ms. Shiron Gaines
International Science and Aeronautics Division
Code IS
NASA Headquarters
Washington, DC 20546-0001
U.S.A.

These documents must arrive before the deadline established for each AO.

e. Those proposals received after the closing date will be treated in accordance with NASA's provisions for late proposals. Sponsoring non-U.S. government agencies may, in exceptional situations, forward a proposal directly to the above address if review and endorsement is not possible before the announced closing date. In such cases, NASA should be advised when a decision on endorsement can be expected.

f. Successful and unsuccessful proposers will be contacted directly by the NASA Program Office coordinating the AO. Copies of these letters will be sent to the sponsoring Government agency.

g. NASA's International Science and Aeronautics Division will then begin making the arrangements to provide for the selectee's participation in the appropriate NASA program. Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

(1) A letter of notification by NASA.

(2) An exchange of letters between NASA and the sponsoring non-U.S. governmental agency.

(3) An agreement or Memorandum of Understanding between NASA and the sponsoring non-U.S. governmental agency.

**B. Cost Plan (U.S. Investigations Only)**

The cost plan should summarize the total investigation cost by major categories of cost as well as by function.

1. The categories of cost should include the following:

a. **Direct Labor**--List by labor category, with labor hours and rates for each. Provide actual salaries of all personnel and the percentage of time each individual will devote to the effort.

b. **Overhead**--Include indirect costs. Usually this is in the form of a percentage of the direct labor costs.

c. **Materials**--This should give the total cost of the bill of materials including estimated cost of each major item. Include lead time of critical items,

d. **Subcontracts**--List those over $25,000, specify the vendor and the basis for estimated costs. Include any baseline or supporting studies.

e. **Special Equipment**--Include a list of special equipment with lead and/or development time.

f. **Travel**--List estimated number of trips, destinations, duration, purpose, number of travelers, and anticipated dates.

g. **Other Costs**--Costs not covered elsewhere.

h. **General and Administrative Expense**--This includes the expenses of the institution's general and executive offices and other miscellaneous expenses related to the overall business.

i. **Fee** (if applicable).

2. Separate schedules, in the above format, should be attached to show total cost allocable to the following:

   a. Principal Investigator and other personnel costs.
   b. Data reduction and analysis including the amount and cost of computer time.

3. If the effort is sufficiently known and defined, a funding obligation plan should provide the proposed funding requirements of the investigations by quarter and/or annum keyed to the work schedule.

# APPENDIX C

## OFFICE OF SPACE SCIENCE
## STANDARD FORMS FOR PROPOSERS RESPONDING TO NASA ANNOUNCEMENTS OF OPPORTUNITY

## PROPOSAL FORMS KIT

1. PROPOSAL COVER SHEET
2. ABSTRACT FORM
3. BUDGET SUMMARY FORM
    - In addition to this form, an organization may include its own budget forms. SF 1411 also required
4. BUDGET PER YEAR FORM
    - In addition to this form, an organization may include its own budget forms. SF 1411 also required
5. CERTIFICATION FOR DRUG-FREE WORKPLACE
    - This form requires a signature.
6. CERTIFICATION FOR DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITIES
    - This form requires a signature.
7. CERTIFICATION REGARDING LOBBYING (IF > $100,000)
    - This form requires a signature.
8. MAILING FORM UPDATE

# OSS PROPOSAL COVER SHEET

| AO 97-OSS-01 | AO Title: Science Team Members for the NM DS1 Mission |
|---|---|

| Principal Investigator | | | |
|---|---|---|---|
| *Title* | *First Name* | *Middle Name* | *Last Name* |
| Department | | | |
| Company/Institution | | | |
| Street Address | | City/Town | |
| State | Zip/Postal | | Country |
| Telephone | Fax | | E-Mail Address |
| Principal Investigator's Signature | | | Date |

| Proposal Title |
|---|

| Co-Investigator(s) Name | Institution | E-mail |
|---|---|---|
| | | |

Institutional Endorsement

| Name of Authorizing Official | |
|---|---|
| Title | |
| Institution | |
| Signature | Date |

| Budget Summary | | | | |
|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Total Funding |
| Amount Requested | | | | |

# ABSTRACT

| Principal Investigator | | | |
|---|---|---|---|
| *Title* | *First Name* | *Middle Name* | *Last Name* |
| Proposal Title | | | |

## PROPOSAL BUDGET SUMMARY

**FROM:** _____ **to** _____

**TITLE OF INVESTIGATION:**

**PRINCIPAL INVESTIGATOR/ INSTITUTION:**

| | | (NASA USE ONLY) | |
|---|---|---|---|
| | **A** | **B** | **C** |
| **1.** Direct Labor (salaries, wages, and fringe benefits) | _____ | _____ | _____ |
| 2. Other Direct Cost: a. Subcontracts/grants | _____ | _____ | _____ |
| b. Consultants | _____ | _____ | _____ |
| c. Equipment | _____ | _____ | _____ |
| d. Supplies | _____ | _____ | _____ |
| e. Travel | _____ | _____ | _____ |
| f. Other | _____ | _____ | _____ |
| 3. Indirect Costs | _____ | _____ | _____ |
| 4. Other Applicable Costs | _____ | _____ | _____ |
| 5. Subtotal--Estimated Costs | _____ | _____ | _____ |
| 6. Less Proposed Cost Sharing | _____ | _____ | _____ |
| 7. Carryover Funds (if any) a. Anticipated amount | _____ | _____ | _____ |
| b. Amount used to reduce budget | _____ | _____ | _____ |
| 8. Total Estimated Costs | _____ | _____ | XXXXXXXXX |
| APPROVED BUDGET | XXXXXXXXXXX | XXXXXXXXX | _____ |

## PROPOSAL BUDGET PER YEAR

**FROM:** _ _____ **to** _ _____

**TITLE OF INVESTIGATION:**

**PRINCIPAL INVESTIGATOR/ INSTITUTION:**

| | | (NASA USE ONLY) | |
|---|---|---|---|
| | **A** | **B** | **C** |
| **1.** Direct Labor (salaries, wages, and fringe benefits) | _____ | _____ | _____ |
| 2. Other Direct Costs: a. Subcontracts/grants | _____ | _____ | _____ |
| b. Consultants | _____ | _____ | _____ |
| c. Equipment | _____ | _____ | _____ |
| d. Supplies | _____ | _____ | _____ |
| e. Travel | _____ | _____ | _____ |
| f. Other | _____ | _____ | _____ |
| 3. Indirect Costs | _____ | _____ | _____ |
| 4. Other Applicable Costs | _____ | _____ | _____ |
| 5. Subtotal--Estimated Costs | _____ | _____ | _____ |
| 6. Less Proposed Cost Sharing | _____ | _____ | _____ |
| 7. Carryover Funds (if any) a. Anticipated amount | _____ | _____ | _____ |
| b. Amount used to reduce budget | _____ | _____ | _____ |
| 8. Total Estimated Costs | _____ | _____ | XXXXXXXXX |
| APPROVED BUDGET | XXXXXXXXXXX | XXXXXXXXX | _____ |

## Certification Regarding Drug-Free Workplace Requirements
## Grantees Other Than Individuals

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 34 CFR Part 85, Subpart F. The regulations, published in the January 31, 1989 Federal Register, require certification by grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award the grant. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or government wide suspension or debarment (see 34 CFR Part 85, Sections 85.615 and 85.620).

This grantee certifies that it will provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing a drug-free awareness program to inform employees about -
- The dangers of drug abuse in the workplace;
- The grantee's policy of maintaining a drug-free workplace;
- Any available drug counseling, rehabilitation, and employee assistance programs, and
- The penalties that may be imposed upon employees for drug abuse violations in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will -
- Abide by the terms of the statement; and
- Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;

(e) Notifying the agency within ten days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction;

(f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d)(2) , with respect to any employee who is so convicted -
- Taking appropriate personnel action against such an employee, up to and including termination; or
- Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraph (a), (b), (c), (e), and (f).

Organization Name | PR/Award Number or Proposal Name

Name and Title of Authorized Representative

Signature | Date

## Certification Regarding
## Debarment, Suspension, and Other Responsibility Matters
## Primary Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, Section 85.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
   (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
   (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statues or commission of embezzlement theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
   (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
   (d) Have not within three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name PR/Award Number or Proposal Name

Name and Title of Authorized Representative

Signature Date

## Certification Regarding Lobbying

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000, and not more than $100,000 for each such failure.

Organization Name PR/Award Number or Proposal Name

Name and Title of Authorized Representative

Signature Date