

IS

Dr. Graham Brooks
Particle Physics and Astronomy Research Council
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North Star Avenue
Swindon Wiltshire SN2 1 SZ
United Kingdom

Dear Dr. Brooks:

The National Aeronautics and Space Administration (NASA) and the Particle Physics and Astronomy Research Council (PPARC) have a mutual interest in pursuing cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission. The purpose of this letter is to establish an Agreement between NASA and PPARC (hereinafter, "the Parties") to address our cooperation on the STEREO mission.

The STEREO mission is a major mission in the Solar Terrestrial Probes Program within the NASA Sun-Earth Connection theme in the Office of Space Science. STEREO will unveil the Sun in three dimensions for the first time. Its objective is to address the origin, evolution and interplanetary consequences of one of the most massive disturbances in our solar system called the coronal mass ejection (CME). This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth.

The instrument suite for STEREO will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

The NASA Headquarters' Office of Space Science solicited proposals for science participation in the STEREO mission including the opportunity for international collaboration in April 1999 and made selections in November 1999. A team led by Dr. Russell Howard from the U.S. Naval Research Laboratory was selected to provide the Sun Earth Connection and Heliospheric Investigation (SECCHI) instrument suite as part of the STEREO payload. The instrument suite contains three units as follows: a Heliospheric Imager (HI), a Sun-Centered Imaging Package (SCIP), and a data processing unit. The HI contains two telescopes to characterize the region between the Sun and Earth. The SCIP contains two white light coronagraphs to characterize the inner and outer corona (COR1 and COR2, respectively); and an Extreme Ultraviolet Imager (EUVI) to observe the solar chromosphere and low corona in the extreme ultraviolet.

Three investigators from the United Kingdom were selected to provide one instrument and components for three other instruments in the SECCHI instrument suite as follows:

- Investigators from the Rutherford Appleton Laboratory were selected to provide the design and qualification of the cameras;
- Investigators from the Astrophysics and Space Research Group of the School of Physics and Astronomy at the University of Birmingham were selected to provide the HI instrument; and,
- Investigators at the Mullard Space Science Laboratory were selected to provide the Charge-Coupled Device (CCD) screening and the fabrication of the cameras for the COR1, COR2, and EUVI instruments.

Pursuant to this Letter of Agreement, the PPARC will use reasonable efforts to carry out the following responsibilities:

1. Provide two HI flight instruments and prototype units, part of the SECCHI instrument suite on each of two identically-instrumented spacecraft;
2. Provide interface documentation (data, thermal, mechanical, electrical, etc.) to support the development, integration, and testing of the HI instrument into the SECCHI instrument suite;
3. Provide the ground support equipment to support the two HI instruments including computers, test cables, ground support hardware and software, and Internet distribution boxes;
4. Provide appropriate spare parts, documentation, calibration, electrical harnesses, purge plumbing, and simulators for the HI instrument as required to support the development of SECCHI instrument suite;
5. Provide data analysis support for the HI instruments during the STEREO mission;
6. Provide the interface with the Belgian Co-Investigator who is working with the University of Birmingham to provide parts of the HI instrument package;
7. Provide the design, fabrication, and delivery of the CCD cameras for the HI, COR1, COR2, and EUVI flight instruments on each of two identically-instrumented spacecraft;
8. Provide engineering and qualification CCD camera models;
9. Provide the ground support equipment to support the CCD cameras;
10. Provide appropriate spare parts, documentation, calibration, electrical harnesses, and simulators as required for the CCD cameras;
11. Provide support for the PPARC Co-Investigators;
12. Participate in the definition and development of performance requirements and interfaces for CCD cameras, and the HI instrument;
13. Support participation in Science Working Group and STEREO spacecraft and instrument meetings, and post-launch mission operations and data analyses; and,
14. Report on the schedule and performance of the PPARC deliverables to the respective STEREO instrument leads.

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the STEREO mission;

2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the HI instrument and the CCD cameras;
4. Provide interface (electrical, mechanical, software) specifications for the HI instrument and CCD cameras;
5. Provide performance assurance requirements to the PPARC-funded investigators;
6. Manage the PPARC-provided hardware and software contributions delivered to the U.S. organizations;
7. Provide the SECCHI electronics box simulator to PPARC-funded investigators for testing with the HI instrument, as required;
8. Assure that the PPARC-funded Co-Investigators will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
9. Release science data in a manner consistent with NASA STEREO science data policy; and,
10. Provide launch, and manage the STEREO flight operations and testing and post-launch data analysis.

NASA and the PPARC-funded institutions will provide, on occasion, as appropriate, for personnel to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of design and development of compatible instrument interfaces, integration, and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is

Dr. Dana A. Brewer
Program Executive
Advanced Technology and Mission Studies Division
Office of Space Science, Code SM
NASA Headquarters
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Facsimile: 202-358-2697

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
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Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The SECCHI Principal Investigator is:

Dr. Russell Howard
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Naval Research Laboratory
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The PPARC point-of-contact for this program is:

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The point-of-contact at the University of Birmingham is:

Prof. George M. Simnett
Astrophysics and Space Research Group
School of Physics and Astronomy
University of Birmingham
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United Kingdom
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The point-of contact at the Mullard Space Science Laboratory is:

Dr. J. Leonard Culhane
Director, MSSL and Head, Dept. of Space and Climate Physics
Mullard Space Science Laboratory
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The point-of-contact at the Rutherford Appleton Laboratory is:

Dr. James Lang

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United Kingdom
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FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.
2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by

- the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing party. The receiving party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.
3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving party exclusively for the purposes of the programs implemented by this Agreement.
 4. Title to all hardware to be exchanged under this Agreement will be retained by the party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors.

All equipment and technical data transferred by the Parties under this Agreement shall remain the property of the originating Party unless specified otherwise in this Agreement. In accordance with its laws and regulations, each Party shall facilitate free customs clearance and waiver of all applicable customs duties and taxes for equipment and related goods necessary for the implementation of this Agreement. In the event that any customs duties or taxes of any kind are nonetheless levied on such equipment and related goods, such customs duties or taxes shall be borne by the Party of the country levying such customs duties or taxes. The Parties' obligation to ensure duty-free entry and exit of equipment and related goods is fully reciprocal.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise, except in the case of willful misconduct.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;
2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;
3. Claims for damage caused by willful misconduct;
4. Intellectual property claims;
5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or
6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and PPARC will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CHOICE OF LAW

The parties hereby designate the U.S. Federal law to govern this Agreement for all purposes, including, but not limited to, determining the validity of the Agreement, the meaning of its provisions, and the rights, obligations, and remedies of the Parties.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of PPARC affirmative reply. It will remain in force for the duration of the STEREO mission including data analysis and archiving, or until STEREO is on station two years, approximately 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or PPARC after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to PPARC, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations