

Written Debrief Materials: Overview

For Proposals Submitted to

Announcement of Opportunity #NNH10ZDA002O

Solar Probe Plus Investigations

Release date: December 3, 2009

GROUND RULES FOR THE DEBRIEFING

- This debriefing is a service to the proposing team to provide constructive feedback on the findings of the evaluation process. No debate of these findings is expected/permitted.
- The debriefing will cover your proposal ONLY and we will not comment about findings with regards to other proposals.
- Questions may be asked at any time, however, the debriefing period is limited, therefore, to assure that all findings are covered, all participating will need to be disciplined about the pace of progress.
- One and only one debriefing per team will be given and only in rare cases will questions be answered or actions be completed at any later time than at the debriefing.
- We will provide ALL findings and the TMC Risk Rating. These will be the findings of MANY people (not the Program Officer's or that of the Chairs of the TMC or Science panels): There were approximately 50 people (~15 people in the SPP TMC review and ~ 12 people in the science review, and ~27 in review and selection) involved in producing the findings that will be related to you at this debriefing.
- We will read the findings; notes may be taken; a hard copy of these debrief materials will be provided to you. No recording devices are allowed.
- Please be aware that it is our intention that the debriefings (except for findings) be identical for all proposal teams in all respects to the extent possible.

INTRODUCTION TO THE EVALUATION PROCESS

One of the most important Science Mission Directorate (SMD) activities covered by the NASA Science Management Handbook is the solicitation and selection of research investigations for NASA funding. SMD solicits proposals for basic research investigations using Broad Agency Announcements (BAA's); the most common BAA's are the Announcement of Opportunity (AO) and the NASA Research Announcement (NRA), while less frequent are the NASA Cooperative Agreement Notice (CAN). The distinguishing characteristic of all NASA BAA's is that they solicit ideas for basic research investigations, the end result of which is new knowledge and data that are to be made publicly available.

The document that describes the Announcement of Opportunity process is the NASA FAR Supplement (NFS) part 1872.0, entitled Acquisition of Investigations, which is complete and fully applicable. The NASA FAR Supplement is a component of the Federal Acquisition Regulations (FAR) System, which codifies and publishes uniform policies and procedures for use by all executive agencies in acquiring goods and services. All SMD AO processes are conducted in accordance with the FAR and with NFS 1872. In addition to this authority, the flow of activities and SMD policies involved in the process by which the SMD generates and issues AO's and reviews and selects submitted proposals is found in the NASA Science Mission Directorate (SMD) Management Handbook. The Solar Probe Plus Investigations AO selection process was conducted in accordance with these Federal regulations and SMD policies.

The Solar Probe Plus Investigations Announcement of Opportunity (AO) NNH10ZDA002O was released on December 3, 2009 (<http://nspires.nasaprs.com>). The AO solicited scientific research investigations to address the scientific goals of the SPP mission. On January 12, 2010 Amendment 1 was released which revised table 4 and B3. On February 18, 2010 Amendment 2 was released which revised the funding available under the AO.

On March 26, 2010 NASA received proposals submitted in response to the AO. A compliance check was performed on all proposals. 13 compliant proposals were received for SPP.

OVERVIEW OF THE EVALUATION AND SELECTION PROCESSES

NASA takes seriously its responsibility for ensuring that proposals are treated with the utmost confidentiality and are evaluated fairly and objectively without actual or apparent conflict of interest on the part of the reviewers. Therefore, it is NASA policy that NASA Civil Service personnel are in charge of and direct all aspects of the evaluation and, including the identification and invitation of peer review personnel, in-person monitoring of the deliberations of any peer review panel, and the adjudication of conflicts of interest that may be declared by participating program, project or panel personnel.

The SPP Evaluation and Selection processes are shown in Figure 1. These processes were managed by the LWS/Solar Program Plus (SPP) Program Scientist, Dr. Madhulika Guhathakurta, who served as the NASA Program Officer. Implementation was managed by the SPP Acquisition Manager in the Science Office for Mission Assessment (SOMA) of the NASA Langley Research Center.

Solar Probe Plus Investigations Proposal Evaluation & Selection Process

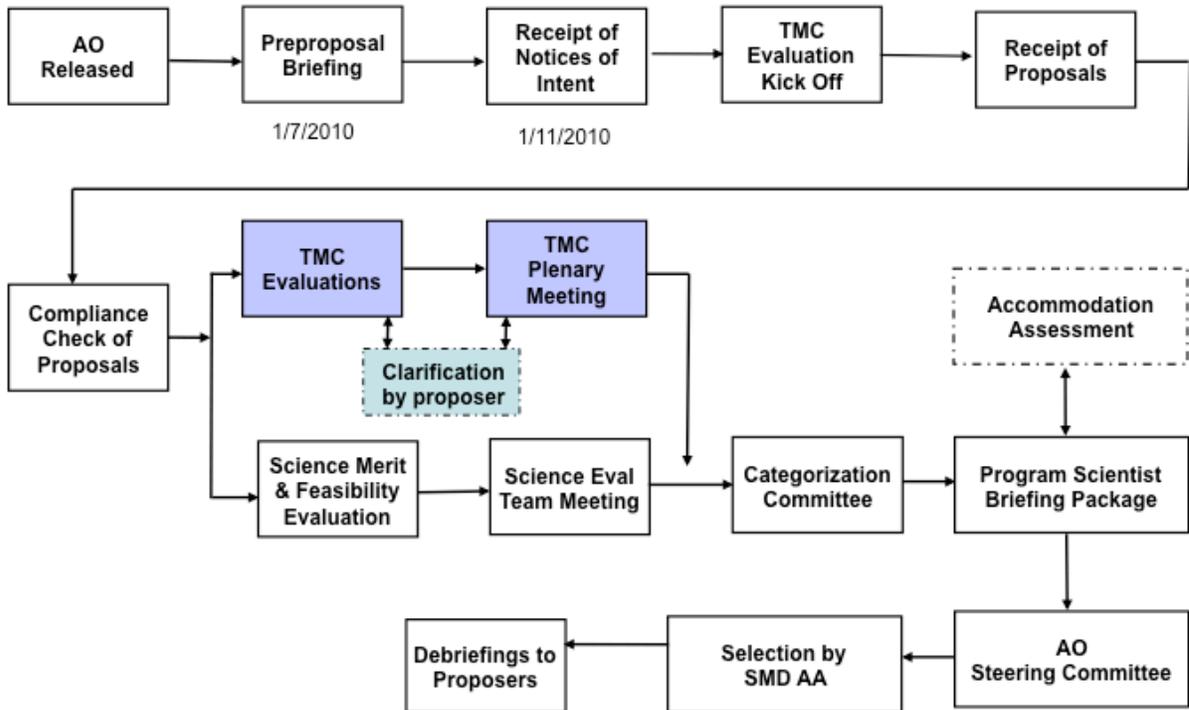


Figure 1

EVALUATION PROCESS

All proposals were evaluated against the criteria given in the AO guidelines by panels of individuals who are scientific and/or technical peers of the proposers. The evaluation criteria were grouped as follows:

For proposals for instrument(s) investigations, the evaluation criteria are:

- Scientific merit of the proposed investigation (Section 7.2.2);
- Scientific implementation merit and feasibility of the investigation (Section 7.2.3); and
- Feasibility of the Instrument Investigation Implementation, Including Cost Risk. (7.2.4). (TMC)

In the case of investigations that proposed to provide suites of instruments, the scientific merit; the scientific implementation merit and feasibility; and the technical, management, and cost (TMC) feasibility of each instrument was evaluated in addition to the overall suite.

For proposals for the Observatory Scientist, the evaluation criteria are:

- Scientific merit of the proposed investigation (Section 7.2.2);
- Scientific implementation merit and feasibility of the proposed plans for providing independent input to the SWG (Section 7.2.5); and
- Suitability of the proposer for the Observatory Scientist position (Section 7.2.6).

The definition of each of the above criteria is defined in section 7.2 of the AO.

The merit of the proposals was determined by peer reviewers while meeting as a panel. The science panels were managed by the LWS/Solar Probe Plus (SPP) Program Scientist, while the TMC panel was managed by the SPP Acquisition Manager. Reviewers were selected based on their known expertise relevant to the content of each proposal and avoidance of conflicts of interest. The panels were augmented, as required, by the use of Specialized Expert Reviewers and by reviews solicited by mail.

Reviewers were instructed to judge the proposals against the stated evaluation criteria and not to compare proposals to which they had access, even if they proposed similar science. Whether by mail, expert review, or as a member of the panel, NASA instructed all reviewers to base their comments on the specified evaluation criteria, to maintain confidentiality of their activities and of all proposals and review materials provided to them, to avoid any activities that may have led to actual or apparent conflicts of interest, and to report any actual or apparent conflicts as became known to them during the course of the review activities. All reviewers not employed by the U.S. Government submitted a signed *Nondisclosure Agreement* before they were allowed to review any proposal.

All SPP instrument proposals were evaluated by the same science panel and the same TMC panel. All SPP Observatory Scientist proposals were evaluated by the same science panel.

SPECIFIC EVALUATION PROCESSES

Science Evaluation Process:

The LWS/Solar Probe Plus (SPP) Program Scientist appointed a science panel to review all SPP instrument proposals and a separate panel to review all Observatory Scientist proposals.

The panel was monitored by the LWS/Solar Probe Plus (SPP) Program Scientist, who was the NASA Program Officer (PO) responsible for the panel. The Program Officer ensured that the panel had the required expertise to provide a fair and equitable review. Names of panelists were kept strictly confidential and not even revealed to other panelists (except the Chair) prior to the in-person panel meeting, in order that each panelist would develop his/her own unbiased evaluation of proposals. Proposals were made accessible to reviewers (both panelists and external) prior to the in-person panel meeting. All proposals were assigned a primary reviewer and one or more secondary reviewers. All reviewers were required to place their reviews on the web ahead of the panel meeting. During the panel review, each proposal was evaluated against the criteria given in the AO. The panel developed strengths and weaknesses for each proposal and prepared a report reflecting the panel findings. A summary rationale for the evaluation was also developed.

Principles for TMC Evaluation:

Basic Assumption: Proposers are the experts on their proposals.

- Proposer's task is to demonstrate that implementation risk is Low.
- TMC's task is to try to validate proposer's assertion of Low Risk.

All Proposals were reviewed to identical standards.

- The TMC process is used by SOMA to support all SMD evaluations with a standard process.
- Evaluation Plan approved by NASA Headquarters and in place before proposals arrive.

TMC Findings are those of the entire TMC panel.

- Findings that are above expectations are documented as strengths. Findings that are below expectations are documented as weaknesses. Findings that are as expected are not documented.
- Specialist reviewers provided findings but did not vote for Risk ratings.
- Final ratings were agreed to, in plenary, by way of individual voting. The final rating was found by polling the TMC members for their vote. The rating was the MEDIAN of the votes; it did NOT require unanimous agreement.

Clarifications:

Section 7.1. of AO "NASA may request clarification of specific points in a proposal; if so, such a request from NASA and the proposer's response must be in writing. In particular, before finalizing the evaluation of the feasibility of the instrument investigation implementation (see Section 7.2.4), NASA will request clarification on specific, potential major weaknesses in the feasibility of instrument investigation implementation that have been identified in the proposal. NASA will request such clarification uniformly from all proposers. The ability of proposers to provide clarification to NASA is extremely limited, as NASA does not intend to enter into discussions with proposers. A typical limited response is

to direct NASA's attention to pertinent parts of the proposal without providing further elaboration."

TMC Risk Rating:

The TMC evaluation is to determine the level of risk of accomplishing the scientific objectives of the investigation, as proposed, on time and within cost. The TMC evaluation results in a narrative text, as well as a TMC grade. There are three possible TMC grades: Low Risk, Medium Risk, and High Risk.

- **Low Risk:** There are no problems evident in the proposal that cannot be normally solved within the time and cost proposed. Problems are not of sufficient magnitude to doubt the Proposer's capability to accomplish the investigation within available resources.
- **Medium Risk:** Problems have been identified, but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources. Mission design may be complex and resources tight.
- **High Risk:** One or more problems are of sufficient magnitude and complexity as to be deemed unsolvable within the available resources.
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Cost Analysis:

An initial cost analysis was accomplished based on information in the Proposal (consistency, completeness, proposed basis of estimate, contributions, use of full cost accounting, maintenance of reserve levels, and cost management, etc.). Figure 4 illustrates the process and elements that make up the TMC cost assessment.

- Three independent cost models were used to analyze proposed cost.
- The cost threats, risks, and risk mitigation analysis were analyzed.
- All information from the entire Evaluation Process provided the final assessment.
- Significant findings from the Cost Evaluation Summaries will be documented in the Cost and Schedule Factor on Form C and considered in the Form C grade.

“The Pyramid”

Process Steps:

5. Overall Cost Risk Rating
4. Cost Assessment Summary
3. Cost Threats identified in Steps 1 & 2
2. Independent Tools
 - Models
 - Analogies
1. Analysis of Proposal

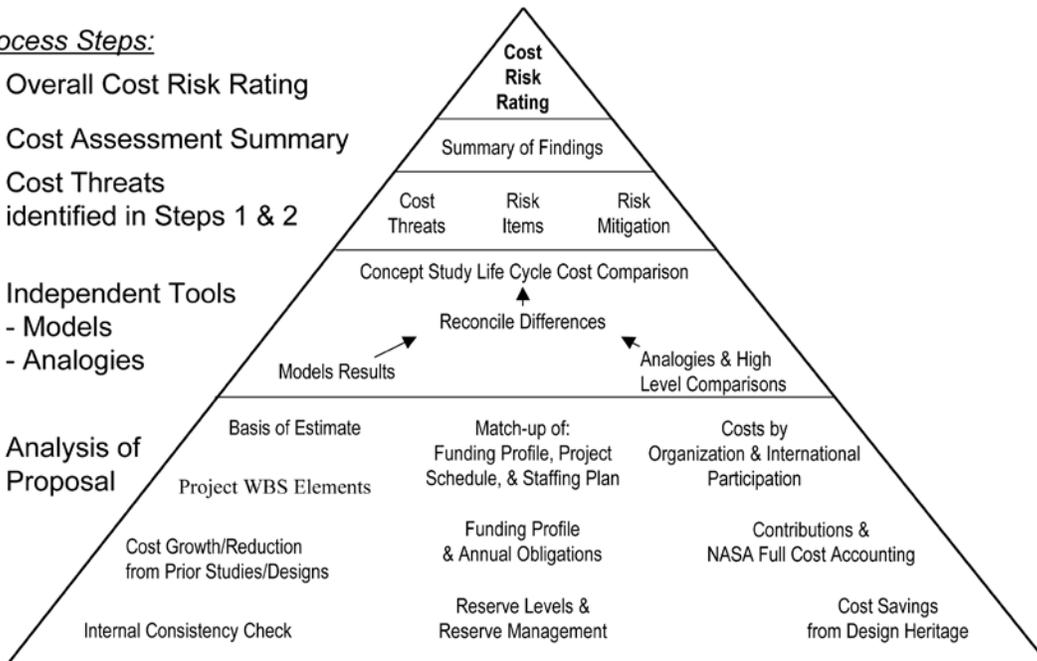


Figure 4: Processes and elements contributing to the TMC Cost Assessment.

Documentation of Cost Risk on Form C:

The Cost Risk rating has 5 possible grades: Low, Medium Low, Medium, Medium High and High.

1. For a Low Cost Risk, the TMC included the Cost Risk Summary as a Major Strength in the TMC form.
2. For a Medium Low Cost Risk, the TMC panel determined if the cost risk significantly affected the Form C grade and if it did, the Cost Risk Summary was documented as a Major Strength. However, if the Medium Low Cost Risk did not significantly affect the Form C grade, the Cost Risk Summary is placed at the end of the Form C.
3. For a Medium Cost Risk, the TMC panel determined if the cost risk significantly affected the Form C grade and if it did, the Cost Risk Summary was documented as a Major Weakness. However, if the Medium Cost Risk did not significantly affect the Form C grade, the Cost Risk Summary is placed at the end of the Form C.
4. For a Medium High Cost Risk, the TMC included the Cost Risk Summary as a Major Weakness in the TMC form.
5. For a High Cost Risk, the TMC included the Cost Risk Summary as a Major Weakness in the TMC form.

CATEGORIZATION PROCESS

A separate Categorization Subcommittee of the Steering Committee was appointed for SPP by the SMD Chief Scientist, who was the Chair of the Steering Committee. The Subcommittee was composed of SMD Civil Servants. The LWS/Solar Probe Plus (SPP) Program Scientist was the non-voting Chair of the Categorization Subcommittees. The Categorization Subcommittee was provided the review reports of the proposals four working days ahead of the panel meeting. The Subcommittee members were required to read all the review reports and assign categories based on the definitions of the categories given in the AO and the weights assigned in the AO to the three evaluation criteria. In order to ensure that reports for each proposal were given a thorough review, two members were assigned to read each report carefully. At the Categorization Meeting, the LWS/Solar Probe Plus (SPP) Program Officer presented the strengths and weaknesses of each proposal as evaluated by the peer review committees. These were discussed in depth by the Subcommittee, and Categories assigned to each proposal.

ACCOMMODATION STUDY

As stated in the AO, “After categorization, the Program Scientist may request a payload accommodation assessment of the highly ranked proposals to aid in developing a recommendation for selection of an integrated science payload that addresses the AO objectives (Section 2). The accommodation study will be led by the LWS Program Office” The Program Scientist decided not to request a payload accommodation assessment from the LWS Program Office due to the small number of selectable proposals.

STEERING COMMITTEE

The final process before selection was a review of the entire AO process by a Steering Committee, Chaired by the SMD Chief Scientist. Once the Committee had determined that all AO rules had been correctly executed, the Chair approved proceeding towards selection.

SELECTION PROCESS

The LWS/Solar Probe Plus (SPP) Program Scientist briefed the Selection Board on the results of all proposal evaluations. The Selection official was the Associate Administrator of SMD. The Selection Board consisted of the Selecting Official, the Heliophysics Division Director, the other SMD science division directors, the SMD Chief Scientist, the Deputy AA of SMD, the Deputy AA for Management, and the Deputy AA for Programs. Senior members of SMD, Office of Procurement, Office of Chief Engineer, and Office of General Counsel served as non-voting members. Only Category I proposals were recommended for selection. All Category I proposals were selected.

SELECTION

After careful consideration of the evaluation findings, the mass limitations of the mission, and incorporating programmatic and budgetary reasons, 4 instrument SPP proposals were selected. One Observatory Scientist proposal was selected.

The selected proposals are:

-- Solar Wind Electrons Alphas and Protons Investigation: principal investigator, Justin C. Kasper, Smithsonian Astrophysical Observatory in Cambridge, Mass.

This investigation will specifically count the most abundant particles in the solar wind -- electrons, protons and helium ions -- and measure their properties. The investigation also is designed to catch some of the particles in a special cup for direct analysis.

-- Wide-field Imager: principal investigator, Russell Howard, Naval Research Laboratory in Washington. This telescope will make 3-D images of the sun's corona, or atmosphere. The experiment actually will see the solar wind and provide 3-D images of clouds and shocks as they approach and pass the spacecraft. This investigation complements instruments on the spacecraft providing direct measurements by imaging the plasma the other instruments sample.

-- Fields Experiment: principal investigator, Stuart Bale, University of the California Space Sciences Laboratory in Berkeley, Calif. This investigation will make direct measurements of electric and magnetic fields, radio emissions, and shock waves that course through the sun's atmospheric plasma. The experiment also serves as a giant dust detector, registering voltage signatures when specks of space dust hit the spacecraft's antenna.

-- Integrated Science Investigation of the Sun: principal investigator, David McComas of the Southwest Research Institute in San Antonio. This investigation consists of two instruments that will monitor electrons, protons and ions that are accelerated to high energies in the sun's atmosphere.

-- Heliospheric Origins with Solar Probe Plus: principal investigator, Marco Velli of NASA's Jet Propulsion Laboratory in Pasadena, Calif. Velli is the mission's observatory scientist, responsible for serving as a senior scientist on the science working group. He will provide an independent assessment of scientific performance and act as a community advocate for the mission.