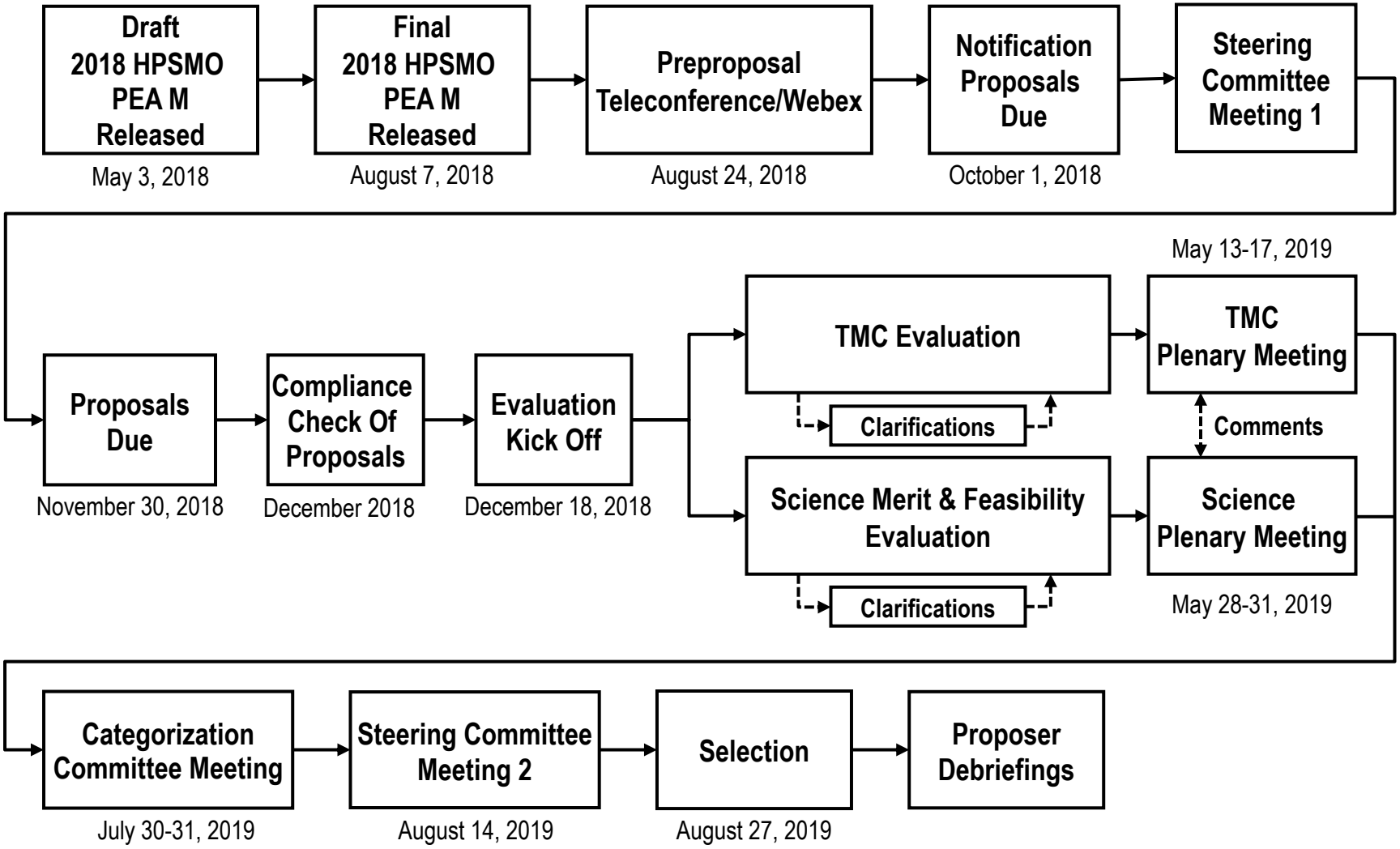
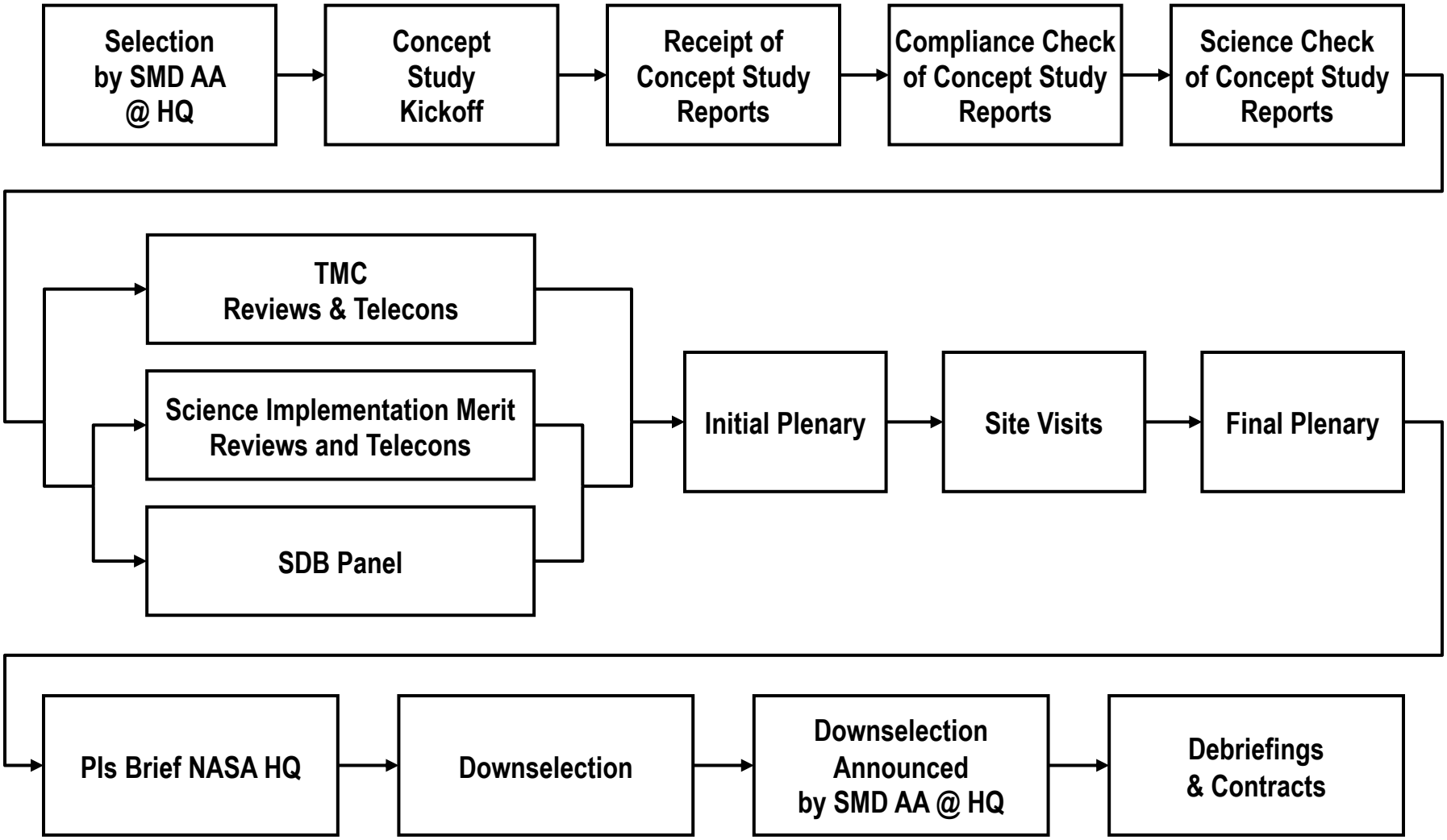
2018 Heliophysics Science Evaluation Process

Third Stand Alone Missions of Opportunity Notice Announcement of Opportunity NNH17ZDA004O, Program Element Appendix M

Evaluation and Selection Overview



What Follows Selection?



Evaluation Criteria
(SALMON-3 AO Section 7.2)

- **Scientific Merit (~40%)**
  - Compelling nature and scientific priority of the proposed investigation's science goals & objectives
  - Programmatic value of the proposed investigation
  - Likelihood of scientific success of the proposed investigation
  - Scientific value of the Threshold Science Mission of the proposed investigation
- **Scientific Implementation Merit and Scientific Feasibility (~30%)**
  - Merit of the instruments and mission design for addressing the science goals & objectives
  - Probability of technical success
  - Merit of the analysis and archiving/curation plans
  - Science resiliency
  - Probability of science team success
  - Merit of any science enhancement options, if proposed
  - Merit of any technology demonstration options, if proposed
- **Feasibility of Technical, Management, and Cost (TMC), including Cost Risk (~30%)**
  - Adequacy and robustness of the instrument implementation plan
  - Adequacy and robustness of the mission design and plan for mission operations
  - Adequacy and robustness of the flight systems
  - Adequacy and robustness of the management approach and schedule, including the capability of the management team
  - Adequacy and robustness of the cost plan, including cost feasibility and cost risk

Science Panel Composition and Organization

- The Program Scientist leads the Science Panel.
- Science evaluators are typically, but not exclusively, recruited from the academic, governmental, and industrial research communities.
- The Science Panel evaluates the **Science Merit of the Proposed Investigation** and the **Science Implementation Merit and the Feasibility of the Proposed Investigation**.
- The science evaluation is conducted *via* one Science Panel, however sub-panels may be employed, depending on the number and variety of proposed investigations.
  - Any sub-panel is led by or co-chaired by a NASA Civil Servant or an unconflicted member from the scientific community.
  - Sub-panels may have an Executive Secretary.
- Each proposal is evaluated by assigned panel members.
  - The Lead Evaluator for each proposal leads the discussion.
  - The Lead Evaluator may assign another Evaluator to take notes on the discussion.
- The TMC Panel may provide comments and questions to the Science Panel.

Science Evaluation Findings

- **Major Strength:** A facet of the implementation response that is judged to be of superior merit and can substantially contribute to the ability of the project to meet its scientific objectives.

- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its scientific objectives.

- **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of merit.

- **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of merit.

Note: Findings that are considered "as expected" are not documented.

Science Evaluation

Factors A and B Rating Definitions

- **Excellent**: A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the AO as documented by numerous and/or significant strengths and having no major weaknesses.
- **Very Good**: A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.
- **Good:** A competent proposal that represents a credible response to the AO, having neither significant strengths nor weakness and/or whose strengths and weaknesses essentially balance.
- **Fair**: A proposal that provides a nominal response to the AO, but whose weaknesses outweigh any perceived strengths.
- **Poor**: A seriously flawed proposal having one or more major weaknesses (e.g., an inadequate or flawed plan of research or lack of focus on the objectives of the AO).

Note: Only Major Findings are considered in the rating.

TMC Panel Composition and Organization

- The Technical, Management, and Cost (TMC) review of the Feasibility of the Mission Implementation was accomplished with two subpanels.
- The Acquisition Manager, who is a Civil Servant from the NASA Science Office for Mission Assessments (SOMA) at NASA Langley Research Center (LaRC), oversaw and led the TMC review.
  - NASA SOMA works directly for NASA Headquarters and is firewalled from the rest of NASA LaRC.
- TMC Panel evaluators are a mix of the best non-conflicted contractors, consultants, and Civil Servants who are experts in their respective fields.
  - Evaluators read their assigned proposals.
  - Evaluators provide findings on their assigned proposals.
  - Evaluators provide ratings of proposals that reflect the findings.

Specialist evaluators may be called upon when technical expertise is needed that is not represented in the panel. They evaluate only those parts of a proposal that are specific to their particular expertise.

TMC Evaluation Process

- Evaluators and specialists participated in weekly, secure, teleconferences to develop preliminary findings (strengths/weaknesses).
- Clarifications were considered before the plenary sessions.
- Findings were finalized and the evaluation team was polled for the final TMC risk rating during the plenary.
- Ratings and findings were checked for consistency throughout the process to ensure that all proposals were evaluated fairly and held to the same standards.

TMC Evaluation Findings Definitions

- **Major Strength:** A facet of the implementation response that is judged to be well above expectations and can substantially contribute to the ability of the project to meet its technical requirements on schedule and within cost.
- **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.
- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its technical objectives on schedule and within cost.
- **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

Note: Findings that are considered "as expected" are not documented.

TMC Evaluation Product: Risk Ratings

Based on the narrative findings, each proposal is assigned one of three risk ratings, defined as follows:

- **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 well within the 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. Investigation 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.

Note: Only Major Findings are considered in the risk rating.

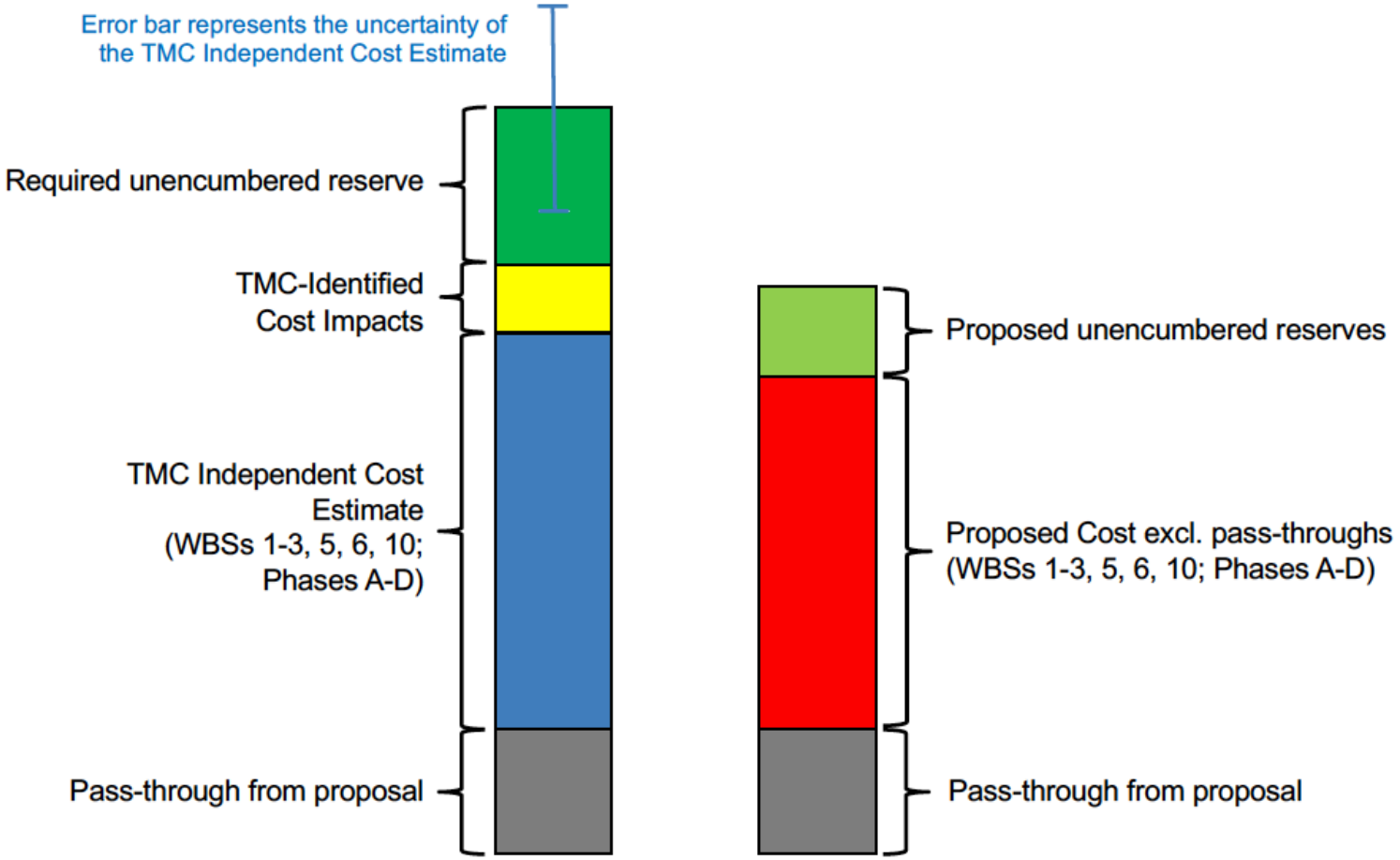
Cost Threat Matrix

- The *likelihood* and *cost impact*, if any, of each weakness is stated as "This finding represents a cost threat assessed to have an Unlikely/Possible/Likely/Very Likely/Almost Certain likelihood of a Minimal/Limited/Moderate/Significant/Very Significant cost impact being realized during development and/or operations, which results in a reduction from the proposed unencumbered reserves."
  - The *likelihood* is the probability range that the *cost impact* will materialize.
  - The *cost impact* is the best estimate of the range of costs to mitigate the threat.
- The cost threat matrix below defines the adjectives used to describe the *likelihood* and *cost impact.*
- The minimum cost threat threshold is $250K.

		Cost Impact (CI) % of PI-managed mission cost to complete Phases B/C/D or Phase E not including unencumbered cost reserves or contributions				
		Minimal (2.5% < CI ≤ 5%) (2.5% < CI ≤ 5%)	Limited (5% < CI ≤ 10%) (5% < CI ≤ 10%)	Moderate (10% < CI ≤ 15%) (10% < CI ≤ 15%)	Significant (15% < CI ≤ 20%) (15% < CI ≤ 20%)	Very Significant (CI > 20%) (CI > 20%)
Likelihood (L, %)	Almost Certain (L > 80%)					
	Very Likely (60% < L ≤ 80%)					
	Likely (40% < L ≤ 60%)					
	Possible (20% < L ≤ 40%)					
	Unlikely (L ≤ 20%)					

Note: For each proposal the percentages in the above table will be converted to dollars by the cost estimator.

TMC Evaluation Product: Cost Validation



Shown is the comparison for mission Phases A-D. **Phases E and F were passed-through from proposal**.

Scientific/Technical Evaluation

- Proposals will be evaluated according to the evaluation criteria set forth in Section 7.2 of the SALMON-3 AO, with the exception of Factors B-5 and C-4 for Streamlined Class-D missions, which are amended to delete evaluation of the PI's spaceflight experience.
  - In Factor B-5, "Probability of investigation team success," the scientific expertise of the PI will be evaluated but not his/her experience with NASA.
  - In Factor C-4, "Adequacy and robustness of the management approach and schedule, including the capability of the management team," the capability of the management team will be evaluated as a whole, as opposed to assessing the capabilities of each of the Key Team Members independently.
- Comments about the managerial experience of the PI, and whether appropriate mentoring and support tools are in place, ***will*** be made to the Selecting Official but these comments shall not impact the "Science Implementation Merit" or the "Technical, Management, and Cost Feasibility" ratings.

Proprietary Data Protection

- All proposal and evaluation materials are considered proprietary.
- Viewing of proposal materials are only on a need-to-know basis.
- Each evaluator signs a Non-Disclosure Agreement (NDA) that must be on file at NRESS prior to any proposals being distributed to that evaluator.
- The proposal materials that each evaluator has access to is recorded.
- Evaluators are not permitted to discuss proposals with anyone outside their Science or TMC Panel.
- All proprietary information that must be exchanged between evaluators will be exchanged *via* the secure NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), *via* the secure Remote Evaluation System (RES), secure WebEx or *via* encrypted email, FedEx, fax, or regular mail. Weekly Web conferences among TMC Panel evaluators will be conducted *via* secure lines.
- Evaluators' electronic and paper evaluation materials will be deleted/destroyed when the evaluation process is complete. Archival copies will be maintained in the NASA SOMA vault.

Conflict of Interest Prevention

- NASA Research and Education Support Services (NRESS) support contractor cross-checks all the Science Panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational Conflict of Interest (COI) exists.
- The NASA Science Office for Mission Assessments (SOMA) support contractor cross-checks all TMC Panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational COI exists.
- All evaluators must divulge any other financial, professional, or potential personal COI, and whether they work for a profit-making company that directly competes with any profit-making proposing organization.
- All Civil Service evaluators must self certify confirming that no COI exits.
- The TMC evaluators must notify the NASA SOMA Acquisition Manager, in case there is a potential COI. The Science evaluators must notify the Program Scientist, in case of a potential COI.

Conflict of Interest Prevention

- All known conflict of interest issues are documented and a COI Mitigation Plan is developed to minimize the likelihood that an issue will arise in the evaluation process. Any potential COI issue is discussed with the Program Scientist and the NASA SMD Deputy Associate Administrator for Research and documented in the COI Mitigation Plan. All determinations regarding possible COIs that arise will be logged as an appendix to the COI Mitigation Plan.

- If any previously unknown potential COI arises during the evaluation, the conflicted member(s) will be notified to stop evaluating proposals immediately, and the Panel Chair will be notified immediately. If a COI is confirmed, the conflicted member(s) will be immediately removed from the evaluation process, and steps will be taken expeditiously, to remove, mitigate, or accept any actual or potential bias imposed by the conflicted member(s). The steps will be documented in the COI Mitigation Plan.

- Members of the Science and TMC panels are prohibited from contacting anyone outside their panel for scientific/technical input, or consultation, without the prior approval of the Program Scientist.

Categorization

The Categorization Committee considers the evaluation results and, based on the evaluations, categorize the proposals in accordance with procedures required by NFS 1872.403-1(e). The categories are defined as:

- Category I. Well-conceived and scientifically and technically sound investigations pertinent to the goals of the program and the AO's objectives and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that any essential flight hardware or other support can be delivered on time and data that can be properly reduced, analyzed, interpreted, and published in a reasonable time. Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.
- Category II. Well-conceived and scientifically or technically sound investigations, which are recommended for acceptance, but at a lower priority than Category I.
- Category III. Scientifically or technically sound investigations, which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities.
- Category IV. Proposed investigations that are recommended for rejection for the particular opportunity under consideration, whatever the reason.

For the 2018 HPSMO procurement, only Category I and II investigations were considered for selection. Materials for all investigations were included in the selection materials.

Selection Process
(SALMON-3 AO Section 7.1.3)

Selection Factors

- Selection Official: Associate Administrator for SMD
- The SMD Science Management Council, sitting as a selection board in accordance with its charter, included the Deputy Associate Administrators, Division Directors and representatives from the Offices of the General Counsel, Chief Engineer, Procurement, and International and Interagency Relations.

- Selection Factors include (AO Section 7.3):
  - Evaluation and Categorization rationales
  - Past performance of proposers
  - Cost to NASA
  - Other programmatic factors (e.g. balance, funding, policy)