National Aeronautics and
Space Administration

Geospace Dynamics Constellation (GDC) Mission of Opportunity Evaluation Plan

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

October 29, 2021

Outline

Introduction

SALMON- 3 AO NASA SMD Evaluation Plan

GDC PEA P Evaluation Plan

- Introduction
- Evaluation Panel Organization
- Proposal Evaluation Flow
- Scientific / Technical Evaluation
- Clarifications of Potential Major Weaknesses
- TMC Evaluation
- Exceptions to SALMON-3
- Form A, B, and C Ratings
- Accommodation Study
- Approval

Introduction

This package includes the Third Stand Alone Mission of Opportunity Notice (SALMON-3) Announcement of Opportunity (AO) NASA Science Mission Directorate (SMD) Evaluation Plan and the GDC Program Element Appendix (PEA) P Evaluation Plan.

The SALMON-3 AO is an omnibus solicitation for Principal Investigator (PI)-led Missions of Opportunity (MOs) that is updated by PEAs. The SALMON-3 AO NASA SMD Evaluation Plan covers the evaluation information from the SALMON-3 AO and from the NASA SMD evaluation processes conducted by the Science Evaluation Panel and Technical Management and Cost (TMC) Evaluation Panel. The “SALMON-3 AO Evaluation Plan” designation in the top right-hand corner of a slide indicates that the information refers to the SALMON-3 AO NASA SMD Evaluation Plan.

The GDC PEA P Evaluation Plan covers any updates to the evaluation information from SALMON-3 AO and from the NASA SMD evaluation processes that will be conducted by the Science Evaluation Panel and TMC Evaluation Panel. The “GDC PEA P Evaluation Plan” designation in the top right-hand corner of a slide indicates that the information refers to the GDC PEA P updates.

Third Stand Alone Missions of Opportunity Notice Announcement of Opportunity NNH17ZDA004O

NASA Science Mission Directorate Evaluation Plan

Outline

- Introduction
- SALMON-3 AO Compliance Checklist: Appendix F
- SALMON-3 AO NASA SMD Evaluations: General
- Science Evaluation
- TMC Evaluation
- Categorization
- Selection
- Approval

Introduction

The Third Stand Alone Missions of Opportunity Notice (SALMON-3) Announcement of Opportunity (AO) NASA Science Mission Directorate (SMD) Evaluation Plan covers the evaluation information from the SALMON-3 AO, which is the omnibus solicitation that is updated by each Program Element Appendix (PEA), and from the NASA SMD evaluation processes conducted by the Science Evaluation Panel and Technical, Management, and Cost (TMC) Evaluation Panel.

The Evaluation Plan for a specific PEA is found in the PEA-specific Acquisition Homepage.

SALMON-3 AO Compliance Checklist: Appendix F

Compliance Checklist

Checklist with the list of items that NASA checks for compliance before releasing a proposal for evaluation. All other requirements are checked during evaluation.

Administrative:

1. Electronic proposal received on time
2. Proposal on CD-ROMs received on time
3. Original signatures of PI and of authorizing official included
4. Meets page limits
5. Meets general requirements for format and completeness (maximum 55 lines text/page, maximum 15 characters/inch – approximately 12 pt. font, 1 inch margins)
6. Required appendices included; no additional appendices
7. Budgets are submitted in required formats
8. All individual team members who are named on the cover page indicate their commitment through NSPIRES
9. All export-controlled information has been identified
10. Complied with restrictions Involving China

Science, Exploration, or Technology:

11. Addresses solicited science, exploration, or technology programs
12. Requirements traceable from objectives to mission

Compliance Checklist

13. Plan to calibrate, analyze, publish, and archive the data returned
14. Baseline Investigation and Threshold Investigation defined

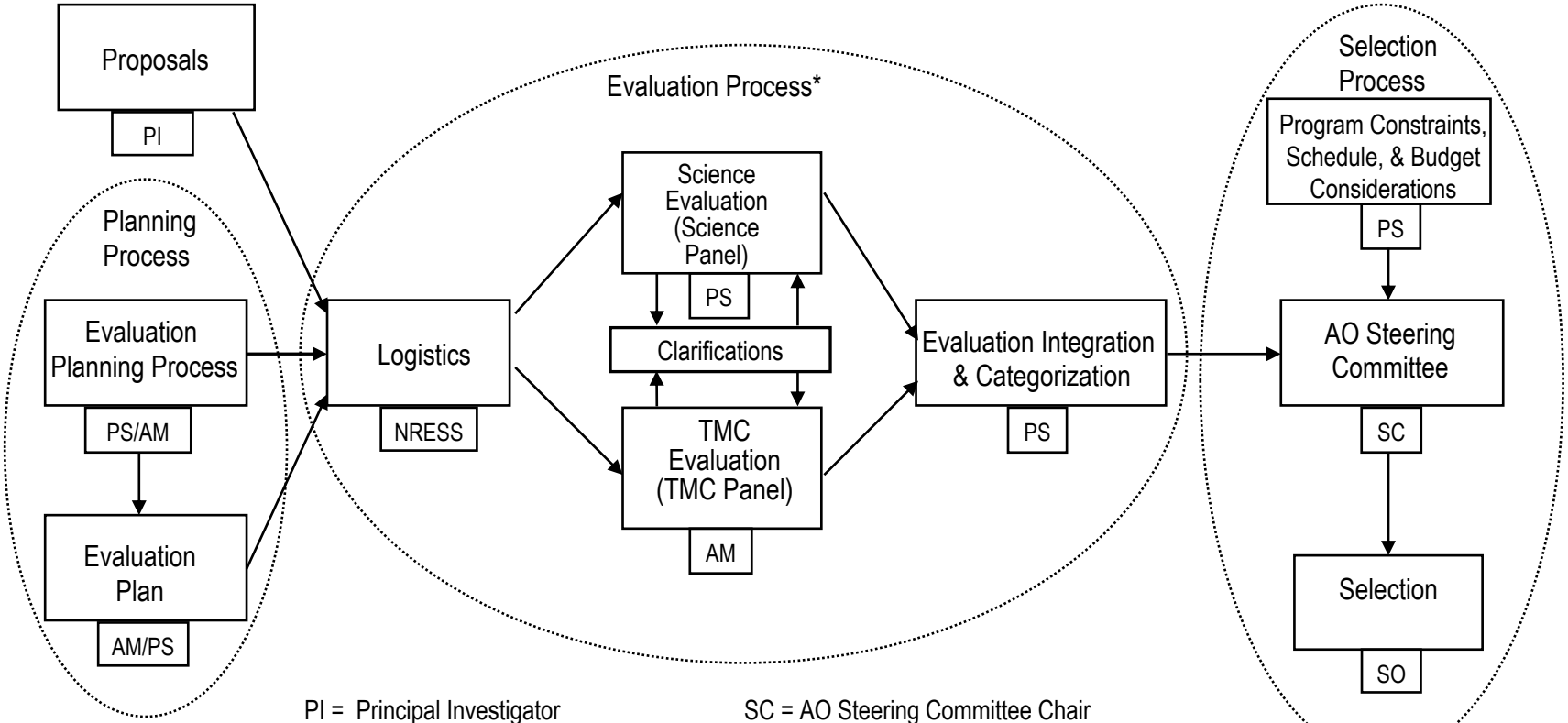
Technical:

15. Complete spaceflight mission (Phases A-F) proposed
16. Team led by a single PI (Principal Investigator)
17. PI-Managed Mission Cost within the PEA-specific Cost Cap (if a PEA-specific Cost Cap is stated in the applicable PEA)
18. Contributions within contribution limit (if PEA specifies a contribution limit)
19. Co-Investigator costs in budget
20. Launch/Commitment date prior to launch deadline (if PEA specifies a deadline)
21. Includes table describing non-U.S. participation
22. Includes letters of commitment from funding agencies for non-U.S participating institutions
23. Includes commitment from all U.S. organizations offering contributions
24. Includes letters of commitment from all major partners and non-U.S. institutions providing contribution of efforts of anyone on the Proposal Team.

Note: SALMON-3 Section 5.9.1.2 states "Major partners are the organizations, other than the proposing organization, responsible for providing research leadership, project management, system engineering, major hardware elements, science instruments, integration and test, mission operations, and other major products or services as defined by the proposer."

SALMON-3 AO NASA SMD Evaluations: General

NASA SMD Processes and Responsibilities



PI = Principal Investigator
PS = Program Scientist
AM = Acquisition Manager

SC = AO Steering Committee Chair
SO = Selecting Official
NRESS = NASA Research and Education Support Services

** The Evaluation Process is addressed in this document.*

Evaluation Planning, Pre-Evaluation Steering Committee

- As part of the Evaluation Planning Process, before the evaluation process begins, an AO Steering Committee will be convened. This Committee is composed of the SMD Deputy Associate Administrator for Research and a small number of SMD Program Scientists/Executives.

- The AO Steering Committee will conduct an independent assessment of the planned evaluation and associated processes regarding their compliance to established policies and practices, completeness, and self-consistency. They may provide recommendations to the Program Scientist and Acquisition Manager on potential adjustments to the evaluation team and the planned processes.

Conflict of Interest Prevention Requirements

- The Science Panel members will be on-boarded through NASA Research and Education Support Services (NRESS), and the non-Civil Servants be provided an honorarium for their participation. The TMC Panel members will be on-boarded through the NASA Science Office for Mission Assessments (SOMA) support contractor, and the non-Civil Servants will be hired as contractors.
- NRESS 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 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 Requirements

- All known potential 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. In the case of science evaluators recruited through the NRESS contract, standard mitigations have been defined (See SPD-01A) and will be applied. The results of the mitigations will be recorded in a log to be appended to the COI Mitigation Plan. In all other cases, 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.

Proprietary Date Protection Requirements

- 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.

Principles for Evaluation

- All proposals are to be treated fairly and equally.
- Merit is to be assessed on the basis of material in the proposal and clarification process (if applicable).
- Evaluation Ratings reflect the written strengths and weaknesses.
- Everyone involved in the evaluation process is expected to act in an unbiased objective manner; advocacy for particular proposals is not appropriate.

General Evaluation Ground Rules

- All proposals are evaluated to uniform standards established in the solicitation, and without comparison to other proposals.
- All evaluators are experts in the areas that they evaluate.
- Non-panel/mail-in evaluators (to provide special science expertise to the Science Panel) and specialist evaluators (to provide special technical expertise to the TMC Panel) may be utilized, respectively, based on need for expertise in a specific science or technology/engineering area that is proposed.

Evaluation Criteria and Selection Factors

Evaluation Criteria from Section 7.2 of the SALMON-3 AO:

1. Intrinsic Science, Exploration, or Technology Merit of the Proposed Investigation (Evaluated by the Science Panel);
2. Experiment Science, Exploration, or Technology Implementation Merit and Feasibility of the Proposed Investigation (Evaluated by the Science Panel);
3. TMC Feasibility of the Proposed Investigation Implementation (Evaluated by the TMC Panel).

Weighting: the first criterion is weighted approximately 40%; the second and third criteria are weighted approximately 30% each.

Other Selection Factors from Section 7.3 of the SALMON-3 AO:

- Programmatic factors
- PI-Managed Mission Cost

Science Evaluation

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 Intrinsic Science Merit of the Proposed Investigation and the Experiment 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 a NASA Civil Servant and may be co-chaired by a 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 Panel Procedures

Each Science Panel member evaluates proposals as directed by the Chair.

- If special science expertise is required, the Science Panel may utilize non-panel/mail-in evaluators to assist with one or more proposals.
- Non-panel/mail-in evaluators evaluates only those parts of proposals pertinent to their scientific specialties.

Each proposal may be discussed by the evaluators in teleconferences.

- Findings in the form of Strengths and Weaknesses form the basis for initial panel discussions.
- Each panel member provides an individual evaluation prior to the teleconference.
- During the teleconference, proposals and the individual evaluations including non-panel/mail-in evaluations are discussed.
- Following the teleconference, the Lead Evaluator captures/synthesizes individual evaluations including discussions and generates the Draft Evaluation Forms including draft findings.

Science Panel Procedures

A Science Panel Meeting is held to refine and finalize the science evaluation forms.

- The Science Panel compiles all of the findings for each proposal.
- For each proposal, the Chair or designated Lead Evaluator leads the discussion, summarizes the proposed investigation, and documents the results.
- If warranted, the Panel may reconsider evaluations at the Meeting.
- Evaluations of all proposals are reviewed during the Science Panel Meeting to ensure that standards have been applied uniformly and in an appropriate and fair manner.
- The Lead Evaluator synthesizes and documents Panel evaluations.

Science Panel Evaluation Factors

Factors A-1 to A-6. Intrinsic Science, Exploration, or Technology Merit of the Proposed Investigation: Please refer to Section 7.2.2 of the SALMON-3 AO for details.

- Factor A-1. Compelling nature and priority of the proposed investigation's science, exploration, or technology goals and objectives.
- Factor A-2. Programmatic value of the proposed investigation.
- Factor A-3. Likelihood of science, exploration, or technology success.
- Factor A-4. Science, exploration, or technology value of the Threshold Investigation.
- Factor A-5. Merit of any Science-Exploration-Technology Enhancement Options (SEOs), if proposed.
- Factor A-6. Merit of any PI-developed Technology Demonstration Opportunities (TDOs), if proposed.

Science Panel Evaluation Factors

Factors B-1 to B7. Experiment Science, Exploration, or Technology Implementation Merit and Feasibility of the Proposed Investigation: Please refer to Section 7.2.3 of the SALMON-3 AO for details.

- Factor B-1. Merit of the instruments and investigation design for addressing the science, exploration, or technology goals and objectives.
- Factor B-2. Probability of technical success.
- Factor B-3. Merit of the data analysis, data availability, and data archiving plan and/or sample analysis plan.
- Factor B-4. Science, exploration, or technology resiliency.
- Factor B-5. Probability of investigation team success.
- Factor B-6. Merit of any Science-Exploration-Technology Enhancement Options (SEOs), if proposed.
- Factor B-7. Merit of PI-developed Technology Demonstration Opportunities (TDOs), if proposed.

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 in the Forms.

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.

Science Panel Products: Form A

For each proposal, the Science evaluation will result in two forms, Forms A and B:

Form A

- Proposal title, PI name, and submitting organization;
- Proposal summary;
- The Intrinsic Science Merit of the Proposed Investigation adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
- Summary rationale for the median rating;
- Narrative findings supporting the adjectival rating in the form of specific major or minor strengths or weaknesses;
- Comments to PI, Comments to NASA (optional)

Science Panel Products: Form B

For each proposal, the Science evaluation will result in two forms, Forms A and B:

Form B

- Proposal title, PI name, and submitting organization;
- The Experiment Science Implementation Merit and Feasibility of the Proposed Investigation adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
- Summary rationale for the median rating;
- Narrative findings supporting the adjectival rating in the form of specific major or minor strengths or weaknesses;
- Comments to PI, Comments to NASA (optional)

TMC Evaluation

TMC Panel Composition and Organization

The Acquisition Manager, who is a Civil Servant from the NASA Science Office for Mission Assessments (SOMA) at NASA Langley Research Center (LaRC), leads the TMC panel. 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 Panel Evaluation Factors

Factors C1 – C5: TMC Feasibility of the Proposed Investigation Implementation: Please refer to Section 7.2.4 of the SALMON-3 AO for details. These factors are evaluated as applicable for each proposed investigation.

Factor C-1. Adequacy and robustness of the instrument implementation plan.
Factor C-2. Adequacy and robustness of the investigation design and plan for operations.
Factor C-3. Adequacy and robustness of the flight systems.
Factor C-4. Adequacy and robustness of the management approach and schedule, including the capability of the management team.
Factor C-5. Adequacy and robustness of the cost plan, including cost feasibility and cost risk.

TMC Cost Analysis: Step 1 of Single Step Competitive Process

- Initial cost analyses is accomplished on the basis of information provided in the proposals (consistency, completeness, proposed basis of estimate, contributions, use full cost accounting, maintenance of reserve levels, cost management, etc.).
- One or more cost models are utilized to validate the proposed cost.
- Implementation threats are identified.
- Cost threat impacts to the proposed unencumbered reserves are assessed (see Cost Threat Matrix slide 32). The remaining unencumbered reserves are compared to the minimum required in the PEA.
- The entire panel participates in Cost deliberations. All information from the entire evaluation process is considered in the final cost assessment.
- Cost Risk is reported as an adjectival rating, ranging from “LOW Risk” to “HIGH Risk” on a five-point scale.
- Significant findings are documented in the Cost Factor on Form C and considered in the TMC Risk Rating.

TMC Cost Analysis: Step 1 of Two-Step Competitive Process

- Initial cost analyses is accomplished on the basis of information provided in the proposals (consistency, completeness, proposed basis of estimate, contributions, use full cost accounting, maintenance of reserve levels, cost management, etc.).
- One or more cost models are utilized to validate the proposed cost.
- Implementation threats are identified.
- Cost threat impacts to the proposed unencumbered reserves are assessed (see Cost Threat Matrix slide 32). The remaining unencumbered reserves are compared to the minimum required in the PEA.
- The entire panel participates in Cost deliberations. All information from the entire evaluation process is considered in the final cost assessment.
- Significant findings are documented in the Cost Factor on Form C and considered in the TMC Risk Rating.

TMC Cost Analysis: 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 Very Minimal/Minimal/Limited/Moderate/Significant/Very Significant cost impact being realized during development and/or operations."
- The likelihood is the probability range that the cost impact will materialize.
- The cost impact is the current best estimate of the range of costs to mitigate the realized threat.
- The cost threat matrix below defines the adjectives used to describe the likelihood and cost impact.
- The minimum cost threat threshold for Phases A/B/C/D and Phase E will be set at a X% or a $Y as stated in the applicable PEA.

		Cost Impact (CI, % of PI-Managed Mission cost to complete Phases A/B/C/D or % of Phase E not including unencumbered cost reserves)					
		Very Minimal (1% < CI ≤ 2.5%)	Minimal (2.5% < CI ≤ 5%)	Limited (5% < CI ≤ 10%)	Moderate (10% < CI ≤ 15%)	Significant (15% < CI ≤ 20%)	Very Significant (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 Panel Evaluation Finding 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 in the Form C.

TMC 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.

TMC Panel Product: Form C

For each proposal, the TMC evaluation results in a Form C that contains:

- Proposal title, PI name, and submitting organization;
- The TMC Feasibility of the Proposed Investigation Implementation adjectival risk rating from each evaluator of “LOW Risk”, “MEDIUM Risk” or “HIGH Risk”;
- Summary rationale for the median risk rating;
- Narrative findings supporting the adjectival risk rating in the form of specific major or minor strengths or weaknesses;
- Comments to the PI, Comments to the Selection Official (optional)

Categorization

Categorization Process and Proposal Categories

Upon completion of the evaluations, the results are presented to the Categorization Committee, composed wholly of Civil Servants and Intergovernmental Personnel Act appointees (some of whom may be from Government agencies other than NASA) and appointed by the Associate Administrator(s) for the appropriate Mission Directorate(s).

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, meritorious, and feasible 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 that data 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.

Categorization Process and Proposal Categories

- Category II. Well-conceived, meritorious, and feasible investigations that are recommended for acceptance, but at a lower priority than Category I, whatever the reason.

- Category III. Meritorious investigations that require further development. Category III investigations may be funded for further 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.

Evaluation Conclusion and AO Steering Committee

- Once Categorization has been completed, the Evaluation is considered complete unless any issue is questioned by a subsequent AO Steering Committee review.

- The AO Steering Committee will conduct an independent assessment of the evaluation and categorization processes regarding their compliance to established policies and practices, as well as the completeness, self-consistency, and adequacy of all supporting materials.

Selection

Selection Factors

The results of the proposal evaluations based on the criteria described in the SALMON-3 AO and the applicable PEA and the categorizations will be considered in the selection process.

The Selection Official(s) may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting among top-rated proposals, including, but not limited to, planning and policy considerations, available funding, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic balance across the mission directorate(s). While NASA develops and evaluates its program strategy in close consultation with the NASA community through a wide variety of advisory groups, NASA programs are evolving activities that ultimately depend upon the most current Administration policies and budgets, as well as programs' objectives and priorities that can change quickly based on, among other things, new discoveries from ongoing missions.

Approval

Dr. Cindy L. Daniels
Director
NASA Science Office for Mission Assessments

Dr. Michael H. New
Deputy Associate Administrator for Research
NASA Science Mission Directorate

Signed copy on file

GDC PEA P
Evaluation Plan

October 29, 2021

Introduction

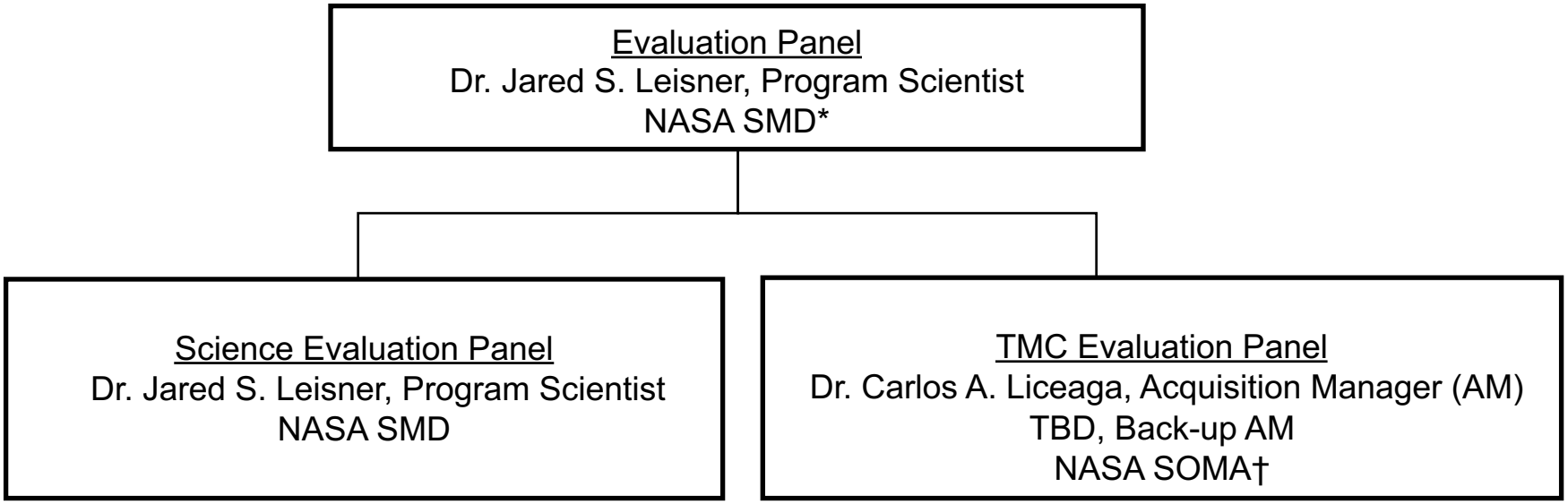
This Evaluation Plan, together with the SALMON-3 AO NASA SMD Evaluation Plan is a general guide to the evaluation of proposals submitted as a result of the GDC PEA P solicitation. This Evaluation Plan is the companion to the overall SALMON-3 AO NASA SMD Evaluation Plan, covers evaluation information directly from the PEA P, and points out areas where there are differences between the SALMON-3 AO and PEA P. These differences may include proposal requirements and evaluation criteria.

In the case of differences between the SALMON-3 AO and the GDC PEA P, and their respective evaluation plans, the GDC PEA P language takes precedence.

The GDC PEA P only solicits “science” investigations, so wherever the phrase “Science, Exploration, or Technology” appears in the AO or Evaluation Plan, it should be interpreted to only indicate “Science.” Science Evaluation Factors A-2, A-5, and A-6; Science Implementation Evaluation Factors B-6 and B-7; and TMC Evaluation Factor C-3 will not be evaluated under this Solicitation.

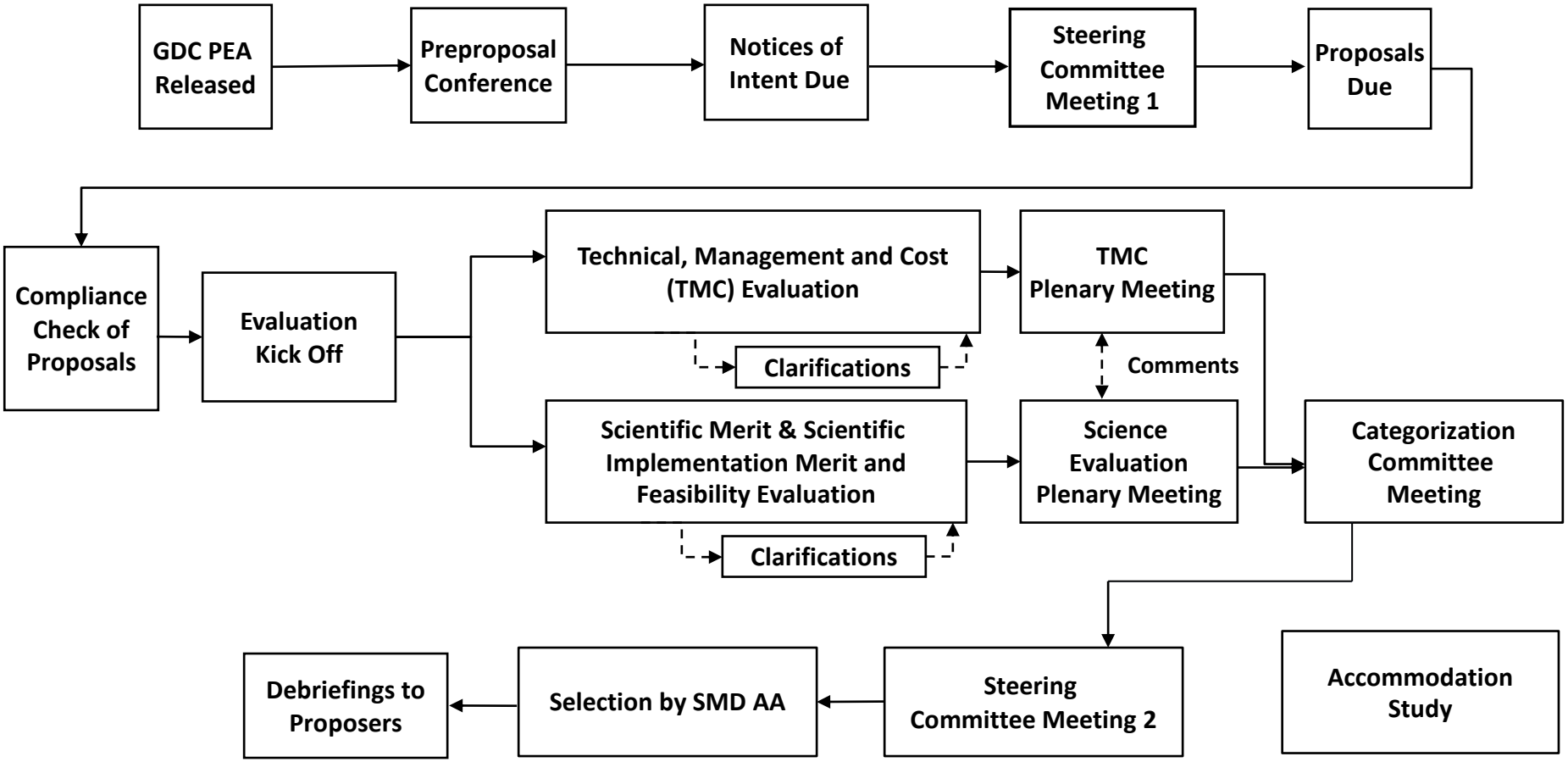
The “GDC PEA P Evaluation Plan” label in the top right-hand corner indicates that the page addresses the GDC PEA P Evaluation Plan.

Evaluation Panel Organization



** Science Mission Directorate*
† Science Office for Mission Assessments

Proposal Evaluation Flow



Factor B-3

The wording of Factor B-3 set forth in Section 7.2 of the SALMON-3 AO is amended to delete mention of returned samples and add mention of a software management plan, to read:

- Merit of the data analysis, data availability, data archiving plan, and software management plan. This factor includes the merit of plans for data analysis and data archiving to meet the goals and objectives of the investigation; to result in the publication of science discoveries in the professional literature; to preserve data and analysis of value to the science community; and to release as open source scientific software and tools of value to the science community. Considerations in this factor include assessment of planning and budget adequacy and evidence of plans for well-documented, high-level data products and software usable to the entire science community; assessment of adequate resources for physical interpretation of data; reporting scientific results in the professional literature (e.g., refereed journals); and assessment of the proposed plan for the timely release of the data to the public domain for enlarging its science impact.

Factor B-8

The evaluation of the Experiment Science Implementation Merit and Feasibility of the Proposed Investigation includes an additional evaluation factor, Factor B-8:

- Merit of the calibration capabilities and calibration plan. This factor includes the ability to inter-calibrate all of the instruments proposed and support their cross-calibration with other instruments that measure the same physical parameter and overlap in range. This factor includes evaluation of the pre-flight calibration facilities, the pre-flight calibration plan (including the plans for acquiring and archiving appropriate pre-flight calibration data for later use as well as the value of the acquired calibration data), the on-board calibration capabilities, and the on-board calibration plan.

Factor C-6

The evaluation of the Technical, Management and Cost Feasibility of the Proposed Investigation Implementation includes an additional evaluation factor, Factor C-6:

- Adequacy and robustness of the instrument manufacturing plan. This factor includes the ability to build, test, and integrate the required number of flight instruments with repeatable quality and performance standards on the required schedule. This factor also includes evaluation of the instrument design's impact on the repeat manufacturability, the proposer's management of any subcontracted manufacturer, and the ability to capture and apply lessons learned for the effective production of subsequent units. This plan shall be provided in Appendix J.14, for which there is 4 page limit.

Tailoring

- Investigations may contain proposed adjustments to NASA requirements. Proposers must identify the tailorable requirements described in NPR 7120.5E that are being adjusted, provide a rationale for each adjustment, and describe any cost or schedule impacts that would occur should the adjustments be rejected by NASA.
- The panel evaluating the third evaluation criterion, TMC Feasibility of the Proposed Investigation Implementation, will provide comments to the Selection Official on the proposed adjustments and their justifications. These comments will not be considered for the TMC Feasibility of the Proposed Investigation Implementation risk rating but may be considered in the selection decision.

Clarification of Potential Major Weaknesses (PMWs)

Clarification Process for PMWs

NASA will request clarifications of PMWs identified by the evaluation panels in all three criteria; Intrinsic Science Merit of the Proposed Investigation, Experiment Science Implementation Merit and Feasibility of the Proposed Investigation, and TMC Feasibility of the Proposed Investigation Implementation. NASA will request such clarification uniformly, from all proposers.

- All requests for clarification from NASA and the proposers' responses are in writing.
- The ability of proposers to provide clarification to NASA is limited to the guidelines described on Charts # 53 – 58.
- PIs whose proposals have no PMWs are informed that no PMWs have been identified at that time, however, they are free to provide any additional information relevant to the proposed investigation as explained in Requirement 7.
- The PIs are given at least 3 full working days to respond to the request for PMW clarification.

PMWs Clarification Process: Modified from Previous AOs

Section 7.1.1 of the SALMON-3 AO states that “Proposers should be aware that, during the evaluation and selection process, 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, NASA will request clarification on specific, PMWs in the Intrinsic Science Merit of the Proposed Investigation (see Section 7.2.2), and the Experiment Scientific Implementation Merit and Feasibility of the Proposed Investigation (see Section 7.2.3), and the TMC Feasibility of the Proposed Investigation Implementation (see Section 7.2.4) that have been identified in the proposal. NASA will request clarification in a uniform manner from all proposers. Proposers will be allowed up to six pages (with some restrictions) for clarifications of PMWs associated with the Intrinsic Science Merit of the Proposed Investigation, and Scientific Implementation Merit and Feasibility of the Proposed Investigation evaluation criterions, and up to six pages (with some restrictions) for clarifications of PMWs associated with the TMC Feasibility of the Proposed Investigation Implementation evaluation criterion. These clarifications may include text, tables and figures to address the PMWs and to provide additional information.

PMWs Clarification Process Requirements (1 of 4)

Clarifications Responses must conform to the following requirements:

Requirement 1: Proposers shall submit only two Clarification Response Documents; i.e., one for Intrinsic Science Merit of the Proposed Investigation, and Experiment Scientific Implementation Merit and Feasibility of the Proposed Investigation; and one for the TMC Feasibility of the Proposed Investigation Implementation.

Requirement 2: The Clarification Response Documents shall be a single unlocked (e.g., without digital signatures) searchable Adobe Portable Document Format (PDF) file, composed of the response text, figures, and/or tables. Images (e.g., figures and scans) shall be converted into machine-encoded text using optical character recognition. Animations shall not be included. Links to materials outside of the response are not permitted. Do not insert any comment fields.

PMWs Clarification Process Requirements (2 of 4)

Requirement 3: The Clarification Response Documents shall be presented in 8.5 x 11 inch paper (or A4). Text shall not exceed 5.5 lines per vertical inch and page numbers shall be specified. Margins at the top, both sides, and bottom of each page shall be no less than 1 inch if formatted for 8.5 x 11 inch paper; no less than 2.5 cm at the top and both sides, and 4 cm at the bottom if formatted for A4 paper. Type fonts for text, tables, and figure captions shall be no smaller than 12-point (i.e., no more than 15 characters per horizontal inch; six characters per horizontal centimeter). Fonts used within figures shall be no smaller than 8-point.

Requirement 4: The Clarification Response Documents shall not exceed a total of six pages, i.e., six for Intrinsic Science Merit of the Proposed Investigation, and Experiment Scientific Implementation Merit and Feasibility of the Proposed Investigation; and six for the TMC Feasibility of the Proposed Investigation Implementation. Text, table(s) and figure(s) are permitted, however all material shall be within the six page limit and limitations in Requirement 3.

PMWs Clarification Process Requirements (3 of 4)

Requirement 5: The Clarification Response Documents shall not contain International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR), or classified material.

Requirement 6: Each PMW shall be addressed and each clarification response labelled with the PMW number provided. Each PMW clarification response shall only contain information relevant to the PMW.

Requirement 7: The proposers are free to provide any additional information on any criteria or requirements relevant to the proposed investigation, e.g., for TMC Feasibility of the Proposed Investigation Implementation, advances in proposed technologies since proposal submission. However, this response together with the PMW clarification responses shall fulfill requirements above and not exceed the six total page limitation per Clarification Response Document.

PMWs Clarification Process Requirements (4 of 4)

Requirement 8: In support of each PMW clarification response, proposers shall not provide more than two references; references are restricted to peer reviewed literature. In support of any additional information response, proposers shall not provide more than three additional references; references are restricted to peer reviewed literature. Proposers shall not provide URLs with any of the responses, with the exception of any DOI links for the references.

Requirement 9: Proposers shall include within the PMW clarification response page limit all modifications to existing fold-outs and any new fold-out submissions. Proposers shall append to the response complete versions of any fold-out that contains at least three modifications and are encouraged to append any fold-out that contains less than three modifications. The modified part of a fold-out or a new fold-out will be counted against the response page limit as described in SALMON-3 AO Requirement B-4. Modifications presented in text form shall be clearly labeled to enable reviewers to easily identify changes in a fold-out. All fold-outs, whether included (in part or in whole) in the response or appended to the response, shall have modifications clearly marked by the use of yellow font color or by a yellow-bordered box (labeled “PMW Clarification”).

TMC Cost Analysis: Step 1 of Single Step Competitive Process

- Initial cost analyses is accomplished on the basis of information provided in the proposals (consistency, completeness, proposed basis of estimate, contributions, use full cost accounting, maintenance of reserve levels, cost management, etc.).
- One or more cost models are utilized to validate the proposed cost.
- Implementation threats are identified.
- Cost threat impacts to the proposed unencumbered reserves are assessed (see Cost Threat Matrix slide 60). The remaining unencumbered reserves are compared to the minimum required in the PEA.
- The entire panel participates in Cost deliberations. All information from the entire evaluation process is considered in the final cost assessment.
- Cost Risk is reported as an adjectival rating, ranging from “LOW Risk” to “HIGH Risk” on a five-point scale.
- Significant findings are documented in the Cost Factor on Form C.

TMC Evaluation Cost Analysis: 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 Very Minimal/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 current best estimate of the range of costs to mitigate the threat.

The cost threat matrix defines the adjectives that describe the likelihood and cost impact.
The minimum cost threat threshold is $1M.

			Cost Impact (CI) % of PI-Managed Mission Cost to complete Phases B/C/D or % of Phase E not including unencumbered cost reserves or contributions					
	Likelihood of Occurrence	**Weakness**	**Very Minimal** 0.5% < CI ≤ 2.5% ($xM < CI ≤ $xM) 1% < CI ≤ 2.5% ($xM < CI ≤ $xM)	**Minimal** 2.5% < CI ≤ 5% ($xM < CI ≤ $xM) 2.5% < CI ≤ 5% ($xM < CI ≤ $0M)	**Limited** 5% < CI ≤ 10% ($xM < CI ≤ $xM) 5% < CI ≤ 10% ($xM < CI ≤ $xM)	**Moderate** 10% < CI ≤ 15% ($xM < CI ≤ $xM) 10% < CI ≤ 15% ($xM < CI ≤ $xM)	**Significant** 15% < CI ≤ 20% ($xM < CI ≤ $xM) 15% < CI ≤ 20% ($xM < CI ≤ $xM)	**Very Significant** CI > 20% (CI > $xM) CI > 20% (CI > $xM)
Likelihood (L, %)	Almost Certain (L > 80%)							
	Very Likely (60% < L ≤ 80%)							
	Likely (40% < L ≤ 60%)							
	Possible (20% < L ≤ 40%)							
	Unlikely (L ≤ 20%)							

Note: Each "$xM" is converted to dollars according to the associated percentage depending on the proposed PIMMC.

TMC Evaluation Products: Cost Risk Ratings (1 of 3)

Low Risk

- No cost threats have been identified by the TMC evaluation panel that reduce the proposed unencumbered cost reserves below the Appropriate Cost Reserves.
- The proposed investigation cost and the cost of all modelled lower Work Breakdown Structure (WBS) levels are greater than or equal to the lower bounds of the TMC Base Independent Cost Estimate error bars.
- The proposed investigation cost estimate is very well supported by the information in the proposal.

Low/Medium Risk

- No cost threats have been identified by the TMC evaluation panel that reduce the proposed unencumbered cost reserves below the Appropriate Cost Reserves.
- The proposed investigation cost and the cost of most modelled lower WBS levels are greater than or equal to the lower bounds of the TMC Base Independent Cost Estimate error bars.
- The proposed investigation cost estimate is well supported by the information in the proposal.

TMC Evaluation Products: Cost Risk Ratings (2 of 3)

Medium Risk

- Cost threats have been identified by the TMC evaluation panel that reduce the proposed unencumbered cost reserves below the Appropriate Cost Reserves.
- The proposed investigation cost or the cost of most modelled lower WBS levels are greater than or equal to the lower bounds of the TMC Base Independent Cost Estimate error bars.
- The proposed investigation cost estimate is mostly supported by the information in the proposal.

Medium/High Risk

- Cost threats have been identified by the TMC evaluation panel that reduce the proposed unencumbered cost reserves below the Appropriate Cost Reserves.
- The proposed investigation cost or the cost of most modelled lower WBS levels are lower than the lower bounds of the TMC Base Independent Cost Estimate error bars.
- The proposed investigation cost estimate is not well supported by the information in the proposal.

TMC Evaluation Products: Cost Risk Ratings (3 of 3)

High Risk

- Cost threats have been identified by the TMC evaluation panel that reduce the proposed unencumbered cost reserves significantly below the Appropriate Cost Reserves.
- The proposed investigation cost and the cost of most modelled lower WBS levels are significantly lower than the lower bounds of the TMC Base Independent Cost Estimate error bars.
- The proposed investigation cost estimate is not supported by the information in the proposal.

Exceptions to SALMON-3

The following content in the SALMON-3 Section is modified or excluded from the GDC PEA P evaluation.

Chart # 22: Factors A-2, A-5, and A-6 will not be evaluated under this Solicitation.
Chart # 23: Factors B-6 and B-7 will not be evaluated under this Solicitation.
Chart # 30: Factor C-3 will not be evaluated under this Solicitation.
Chart # 32 is not applicable because this Solicitation is Step 1 of a Single Step competitive process.
Chart # 31 is replaced by Chart # 59 (above).
Chart # 33 is replaced by Chart # 60 (above).

Form A, B, C, and Cost Risk Ratings

Forms A & B Ratings: Polling will be held twice on the Form A and B ratings. The individual ratings from the final polling are recorded and reported. The final rating is set equal to median of the final polling. A median score that falls between two ratings will be "rounded" up. If there is a divergence of opinion, there may be additional rounds of discussion and polling.

Half-step ratings for the Intrinsic Science Merit and Experiment Science Implementation Merit and Feasibility criteria may be used.

Form C Rating: The Form C will be reviewed three times. Polling will be held twice on the Form C risk rating after the last two reviews of the Form C. The final polling is recorded and reported. For the final polling, the individual ratings are recorded, the median calculated and the final rating recorded which reflects the Form C Risk rating of the median of the polling. A median score that falls between two risk ratings will be "rounded" to the higher risk rating. If there is a divergence of opinion, there may be additional rounds of discussion and polling.

Cost Risk Rating: Polling will be held twice on the Cost Risk risk rating after the first two reviews of the Form C. The rest of the methodology is the same as for the Form C Risk rating above.

Organizational Conflict of Interest Avoidance and Mitigation Plan

The GDC PEA requires that each proposal include an Organizational Conflict of Interest Avoidance Plan (OCIAP, Req. P-2). That Plan must cover:

- Both proposal development (past) and instrument development (future)
- Contracts and companies that were involved in the development of PEA requirements
- Actions to avoid and mitigate OCIs due to those contracts'/companies' involvement

Each Plan will be evaluated by NASA outside of Forms A, B, and C, and will not be included in the Preliminary Major Weaknesses process. The evaluation will be performed by NASA Civil Servants from the Office of General Counsel and the Office of Procurement, with the results returned to the GDC Program Scientist.

The evaluations will be conveyed to the Selection Official to confirm compliance and responsiveness. Compliant and responsive Plans will not affect the selection process.

The Plans will be finalized, addressing any NASA-identified issues, and need to be accepted before contract awards are in place.

Accommodation Study

After the evaluation, but prior to the selection decision, NASA will perform an accommodation study of selectable investigation proposals to assess the extent to which the proposed investigations are compatible with other potential investigations and spacecraft, including their interfaces and operations. This accommodation study will also consider the accommodations of selectable proposals for launch.

This accommodation study will be performed by firewalled NASA Civil Servants working in the GDC Project Office, with potential support from contractors whose participation in the GDC PEA has been fully limited (GDC PEA, Section 4.2.1).

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Concurrences and
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