



# **Earth Venture Continuity - 1 Evaluation Plan**

**Third Stand Alone Missions of Opportunity Notice  
Announcement of Opportunity NNH17ZDA0040,  
Earth Venture Continuity - 1  
Program Element Appendix  
May 16, 2019**

---



# Outline

---

## Introduction

### SALMON- 3 AO NASA SMD Evaluation Plan

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

### Earth Venture Continuity - 1 Program Element Appendix Evaluation Plan

---



# 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 Earth Venture Continuity - 1 (EVC-1) Program Element Appendix (PEA) 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 EVC-1 PEA 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 “EVC-1 PEA Evaluation Plan” designation in the top right hand corner of a slide indicates that the information refers to the EVC-1 PEA updates.



# **Third Stand Alone Missions of Opportunity Notice Announcement of Opportunity NNH17ZDA0040**

## **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 (1 of 2)

---

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 (2 of 2)

- 
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 letters of 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.”

---

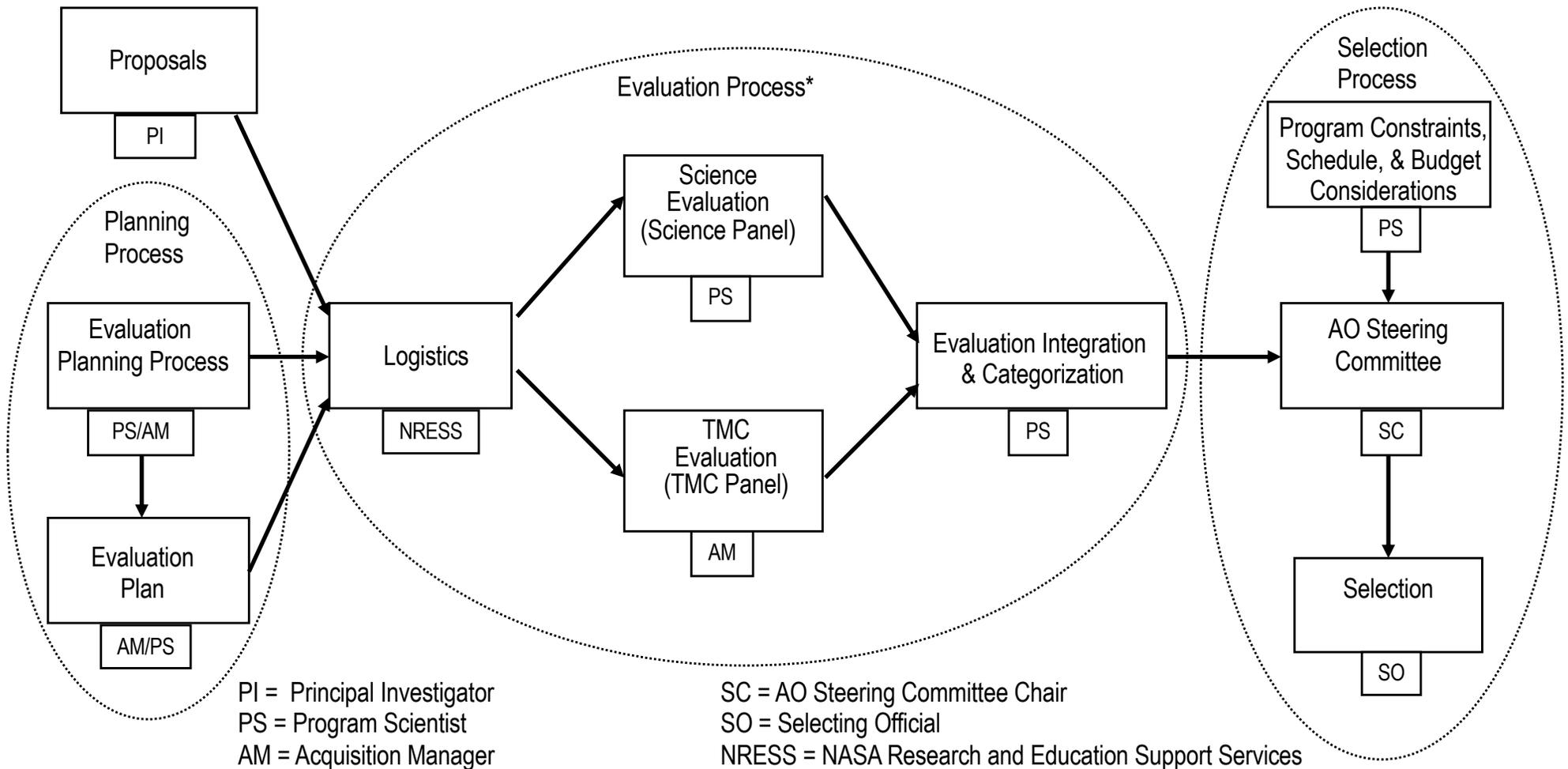


# SALMON-3 AO NASA SMD Evaluations: General



# SALMON-3 AO Evaluations (1 of 6)

## NASA SMD Processes and Responsibilities



\* The Evaluation Process is addressed in this document.



# SALMON-3 AO Evaluations (2 of 6)

SALMON-3 AO  
Evaluation Plan

---

## **Conflict of Interest Prevention Requirements**

- NASA Research and Education Support Services (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 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 exists.
- 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.



# SALMON-3 AO Evaluations (4 of 6)

SALMON-3 AO  
Evaluation Plan

---

## Proprietary Data 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.



# SALMON-3 AO Evaluations (3 of 6)

SALMON- 3 AO  
Evaluation Plan

---

## Conflict of Interest Prevention Requirements

- 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 (DAAR) 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.



# SALMON-3 AO Evaluations (5 of 6)

---

## 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.



# SALMON-3 AO Evaluations (6 of 6)

---

## 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 Evaluation (1 of 9)

---

## **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 Evaluation (2 of 9)

---

## **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 Evaluation (3 of 9)

---

## **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 Evaluation (4 of 9)

---

## **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 Evaluation (5 of 9)

---

## **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 (6 of 9)

---

## 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.



# Science Evaluation (7 of 9)

---

## 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 Evaluation (8 of 9)

---

## 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 Evaluation (9 of 9)

---

## 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 Evaluation (1 of 8)

---

## 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 Evaluation (2 of 8)

---

## 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 Evaluation (3 of 8)

---

## **TMC Cost Analysis: Step 1 of a 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 Evaluation (4 of 8)

---

## **TMC Cost Analysis: Step 1 of a 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 Evaluation (5 of 8)

## 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 Evaluation (6 of 8)

---

## TMC Panel 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 in the Form C.



# TMC Evaluation (7 of 8)

---

## 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 Evaluation (8 of 8)

---

## 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)



# Classification



# Categorization (1 of 3)

---

## **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 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.



# Categorization (2 of 3)

---

## Categorization Process and Proposal Categories

- 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.



# Categorization (3 of 3)

---

## 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

---

## 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

SALMON- 3 AO  
Evaluation Plan

---

---

Cindy L. Daniels  
Director  
NASA Science Office for Mission Assessments

---

Dr. Jeffrey Newmark  
Deputy Associate Administrator for Research  
NASA Science Mission Directorate

Signed copy on file

---



# **Earth Venture Continuity - 1 Program Element Appendix**

## **Evaluation Plan**

**May 16, 2019**



# Outline

Introduction

Evaluation

Selection

Approval



# Introduction

---

This Evaluation Plan together with the Third Stand Alone Mission of Opportunity Notice (SALMON-3) Announcement of Opportunity (AO) NASA Science Mission Directorate (SMD) Evaluation Plan is a general guide to the evaluation of proposals submitted in response to the Earth Venture Continuity - 1 (EVC-1) solicitation. This Evaluation Plan is the companion to the SALMON-3 AO NASA SMD Evaluation Plan, covers evaluation information directly from the PEA, and points out areas where there are differences between the SALMON-3 AO and the PEA. These differences may include proposal requirements and evaluation criteria.

In the case of differences between the SALMON-3 AO and the EVC-1 PEA, and their respective evaluation plans, the EVC-1 PEA language takes precedence.

Overall, the EVC-1 PEA only solicits “science” investigations, so wherever the phrase “Science, Exploration, or Technology” appears in the SALMON-3 AO or Evaluation Plan, it should be interpreted to only indicate “Science”.

The “EVC-1 PEA Evaluation Plan” label in the top right hand corner identifies the pages containing EVC-1 PEA specific language.

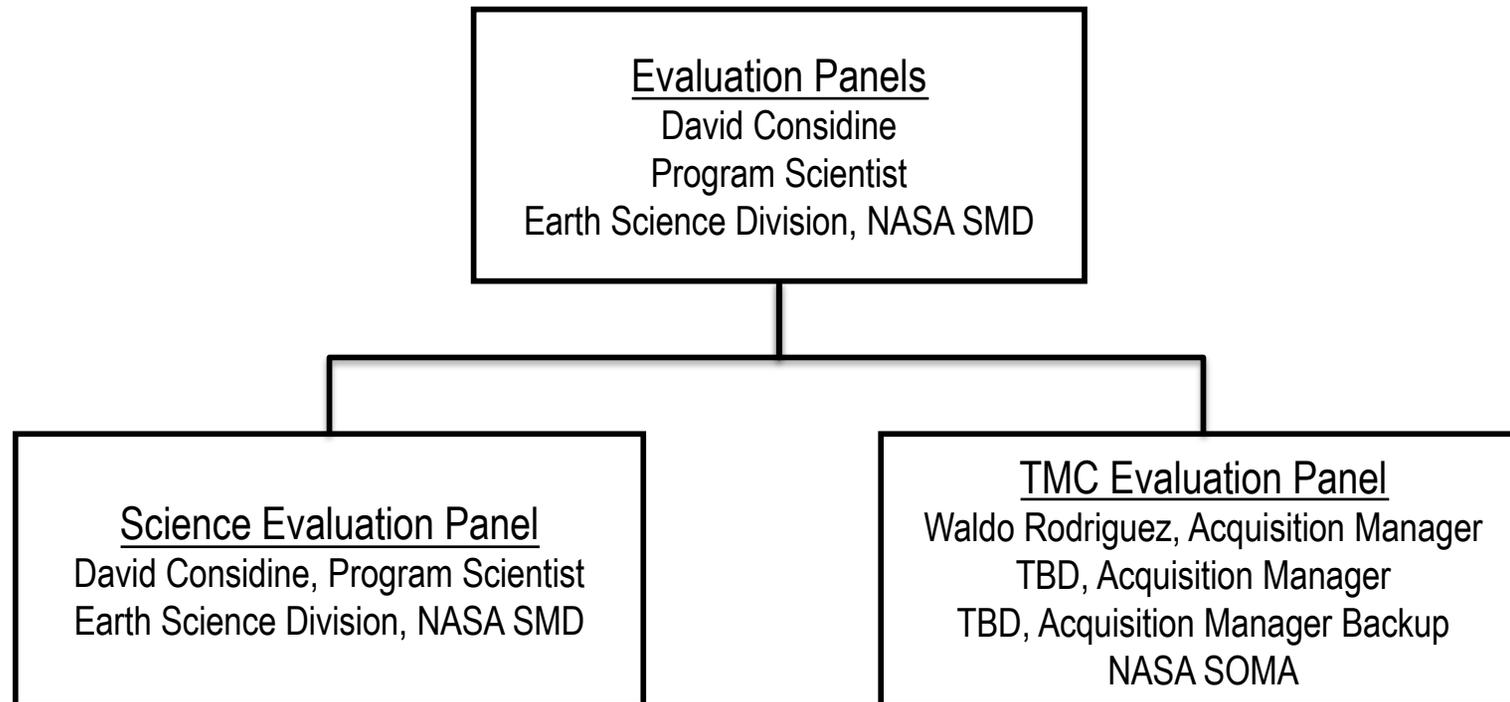
---



# Introduction

---

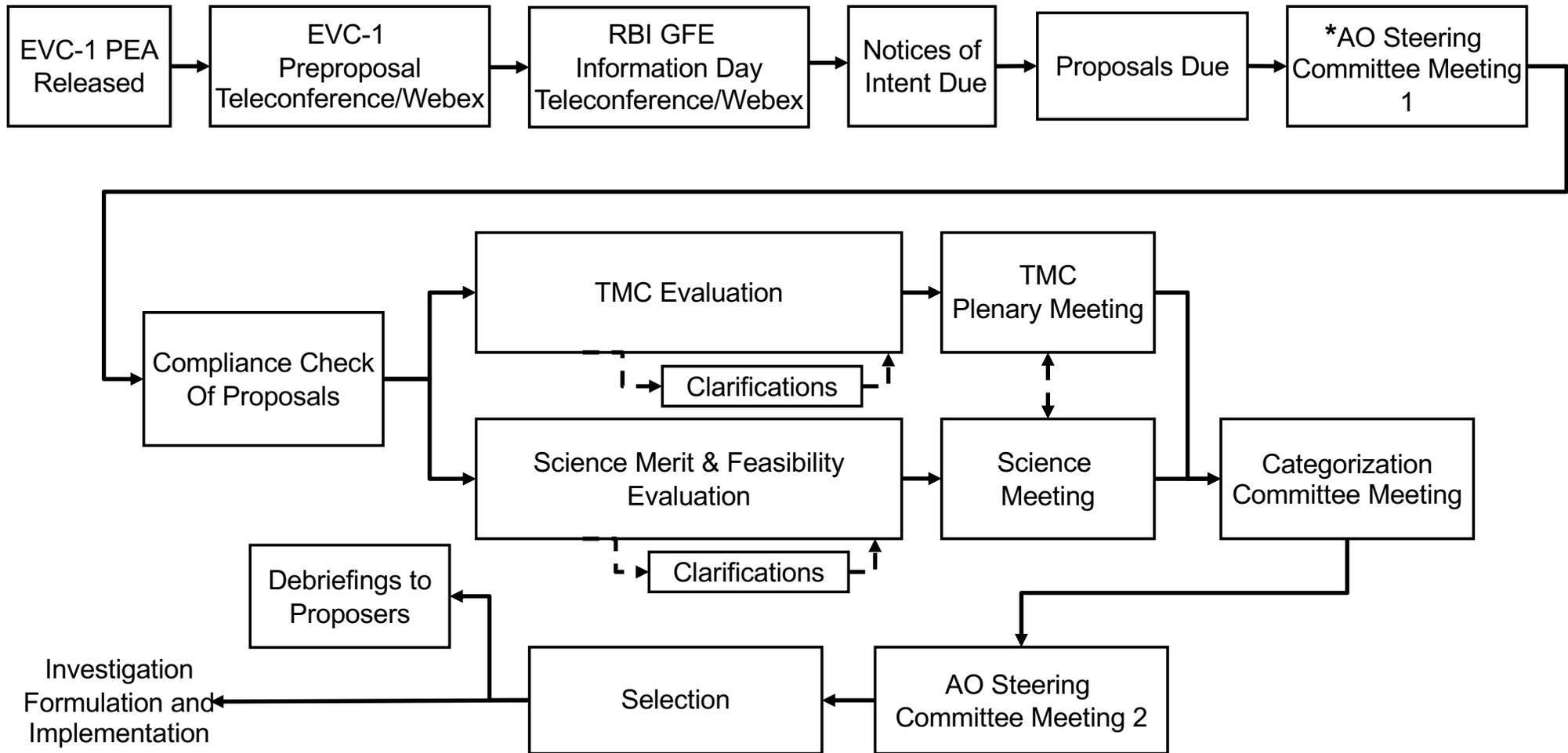
## Evaluation Panel Organization





# Introduction

## EVC-1 PEA Solicitation, Evaluation and Selection Flow



\*Or an alternative simplified procedure such as one or more direct meetings with the NASA SMD DAAR.



# Evaluation

---

## **EVC-1 Flight Options : PEA Section 2.3 (1 of 2)**

EVC-1 investigations may be proposed as a Focused Mission of Opportunity (FMO) or a Small Complete Mission (SCM), as detailed in the SALMON 3 AO, section 2.3 and 5.1. Proposal options include:

FMO (JPSS): The PI is responsible for developing and delivering an instrument that is compatible with National Oceanic and Atmospheric Administration (NOAA) requirements for flight on a JPSS spacecraft. This is similar to the approach utilized for CERES Flight Model 6 (FM6) on JPSS-1 and planned for the Radiation Budget Instrument (RBI), prior to its cancellation, on JPSS-2. The instrument and all associated project costs (project management, systems engineering, etc.) and the one year of operations are included under the PI-Managed Mission Costs (PIMMC). This option assumes utilization of the existing JPSS ground systems, including the NASA Earth Observing System (EOS) Data and Operations System (EDOS); any additional systems required to operate the instrument or collect data are the responsibility of the PI under the PIMMC. NASA will identify the accommodations costs in coordination with the JPSS program, and will fund accommodations to integrate the payload to the JPSS spacecraft outside of the PIMMC. JPSS instrument characteristics and resource specifications are available in the EVC-1 Library.

FMO (Hosted Payload): The PI is responsible for the instrument, ground system, and hosting arrangement, and the one year of operations. The instrument, ground system, and all associated project development costs (project management, systems engineering, etc.) and the one year of operations are included under the PIMMC. NASA will fund hosting services and accommodations to integrate the payload to the host outside of the PIMMC. However, the specificity of hosting options and associated costs, as well as the appropriate partner costs identified in the proposal will be considered in the evaluation process .

---



# Evaluation

---

## **EVC-1 Flight Options : PEA Section 2.3 (2 of 2)**

SCM: The PI is responsible under the PIMMC for providing the observing system hardware, including instrument(s), spacecraft and ground system, as well as all associated project development costs (project management, systems engineering, etc.) and one year of operations. In addition, the PI must identify arrangements and costs for access to space, including all necessary launch services, in the proposal. However, costs associated with access to space will be covered by NASA outside the PIMMC.

NASA has not identified specific cost constraints for the FMO accommodations and hosting services or the SCM access to space. While these costs will not be considered in the Technical, Management, & Cost (TMC) proposal evaluation, the selecting official will consider these costs as part of the programmatic factors described in Section 6.2.



# Evaluation

---

## **Payload Risk Classification: PEA Section 4.4.3**

This opportunity solicits proposals for science investigations requiring the development and operation of space-based payload(s) of Class C risk classification (as defined in NPR 8705.4, Risk Classification for NASA Payloads; found in the EVC-1 Library).



# Evaluation

---

## **Scientific/Technical Evaluation Factors: PEA Section 6.1 (1 of 3)**

Proposals are evaluated according to the evaluation criteria set forth in Section 7.2 of the [SALMON-3 AO](#), subject to the modifications listed below.

- The Intrinsic Science, Exploration or Technology Merit of the Proposed Investigation is weighted at 30%.
- The Experiment Science, Exploration, or Technology Implementation Merit and Feasibility of the Proposed Investigation is weighted 40%.
- The Technical, Management and Cost Feasibility of the Proposed Investigation Implementation is weighted 30%.



---

## **Scientific/Technical Evaluation Factors: PEA Section 6.1 (2 of 3)**

The evaluation of the Experiment Science Implementation Merit and Feasibility of the Proposed Investigation includes additional evaluation factors, Factors B-8 and B-9:

Factor B-8. Merit of the calibration capabilities and calibration plan. 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 facilities, and the on-board calibration plan. Evaluation of the on-board calibration plan should include the description of how any on-board calibration equipment can be used to meet the objective of providing data product stability sufficient to seamlessly continue the NASA ERB data record as described in Section 2.

Factor B-9. EVC specific factor. This factor includes consideration of innovations in design that facilitate maintaining continuity of the ERB, of design features that facilitate the accommodation of a proposed instrument on either the proposed platform or a JPSS platform as appropriate, of features (such as reliance on easily available components) enhancing the producibility of the instrument and future copies, and of design features which would facilitate capability-enhancing technology infusion in future copies.



# Evaluation

---

## **Scientific/Technical Evaluation Factors: PEA Section 6.1 (3 of 3)**

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

Factor C-6. EVC specific factor. This factor includes consideration of innovations in design or processes that reduce cost, of the potential cost of future copies of the proposed observing system that will be necessary to maintain measurement continuity in the future, of the design features that facilitate the accommodation of a proposed instrument on either the proposed platform or a JPSS platform as appropriate, of features (such as reliance on easily available components) enhancing the producibility of the instrument and possible future copies, and of design features which would facilitate cost-reducing or capability-enhancing technology infusion in future copies.



# Evaluation

---

## **Scientific/Technical Evaluation Factors: Accommodations**

Accommodations on both types of FMOs (JPSS and Hosted Payloads) will be evaluated by the Technical, Management, and Cost (TMC) Panel and TMC major findings regarding accommodations will be considered in the TMC Risk Rating. However, any cost threat associated with TMC major weakness identified on accommodations will be recorded as a comment to the Selection Official, as this cost is outside the PI Managed Mission Cost (PIMMC) and will be considered as a part of the programmatic factors for selection.



---

## **Potential Major Weaknesses Clarification Process**

NASA is requesting clarifications of Potential Major Weaknesses (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 requests 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 extremely limited, as NASA does not intend to enter into discussions with proposers.
- PIs whose proposals have no PMWs are informed that no PMWs have been identified at that time.
- The form of the clarifications is strictly limited to a few types of responses:
  - Identification of the locations in the proposal (page(s), section(s), line(s)) where the PMW is addressed.
  - Noting that the PMW is not addressed in the proposal.
  - Stating that the PMW is invalidated by information that is common knowledge and is therefore not included in the proposal.
  - Stating that the analysis leading to the PMW is incorrect and identifying a place in the proposal where data supporting a correct analysis may be found.
  - Stating that a typographical error appears in the proposal and that the correct data is available elsewhere inside of the proposal.

The PIs are given at least 24 hours to respond to the request for PMW clarification. Any response that goes beyond the five forms of clarification stated above will be deleted and not shown to the evaluation panel.



# Evaluation

---

## **Classified Material: PEA Section 5.2.1 (1 of 6)**

Section 5.2.1 of the EVC-1 PEA supersedes Section 5.9.4 of the SALMON-3 AO.

Requirement N-28: Proposals submitted in response to this PEA, as well as the proposed investigations and all proposed technologies, shall be unclassified. The proposal shall be complete including an unclassified appendix regarding heritage (see Section J.9, Appendix B, of the [SALMON-3 AO](#), for further details).

In order to increase the capabilities of investigations proposed in response to this PEA, while minimizing the development and operations risks within the PIMMC, proposers may choose to leverage technology with classified heritage that was developed by other institutions and agencies as well as technology developed by NASA and NASA-funded partners.

If a proposer chooses to submit a classified appendix regarding heritage, the requirements on content, format, and length are the same as but independent from those for the unclassified appendix regarding heritage included in the proposal (see Section J.9, Appendix B, of the [SALMON-3 AO](#), for further details) with the exceptions that Letters of Validation and cost basis of estimates may be included in the classified appendix regarding heritage.

The entire proposal including the unclassified appendix regarding heritage will be read and evaluated by the entire evaluation panel. The evaluation panel will not have access to the classified appendix regarding heritage, however. Proposers are strongly encouraged to provide as much information and detail as possible on their technology heritage in the unclassified appendix regarding heritage.



---

## **Classified Material: PEA Section 5.2.1 (2 of 6)**

NASA allows three options for proposers to support heritage claims from classified programs: 1) delivery to NASA of a classified appendix regarding heritage, 2) "delivery in place" of a classified appendix regarding heritage, and 3) sponsor verification of the heritage claims derived from classified programs. Each of these options are explained below.

### Delivery to NASA

Proposers may provide NASA access to a classified proposal appendix for validation of classified heritage claims. The classified appendix regarding heritage may include Letters of Validation for classified heritage claims from technology development sponsors and classified cost basis of estimate information. The proposer is responsible for determining what information is classified and what information is unclassified; any classified information provided to NASA must be handled appropriately to include marking and declassification information and must comply with the applicable Security Classification Guide (SCG) or similar document. The proposer is responsible for obtaining any "need to know" permission for at least one reviewer with appropriate clearance and relevant expertise to evaluate the classified appendix regarding heritage.

The delivery to NASA option of a classified appendix regarding heritage requires delivery to NASA Headquarters (HQ) separately from the proposal. A single copy of the classified appendix regarding heritage must be submitted along with a cover letter referencing the submitted proposal by name, PI, and proposing organization. The "need to know" permission for the reviewer should be discussed in a cover letter. The proposer assumes all responsibility for determining the appropriate security clearance and method of delivery to NASA HQ of the

---



# Evaluation

---

## **Classified Material: PEA Section 5.2.1 (3 of 6)**

classified appendix regarding heritage. The classified appendix regarding heritage must be handled and delivered to NASA HQ in compliance with [NPR 1600.1A, NASA Security Program Procedural Requirements](#).

Requirement N-29: Proposers that choose to deliver to NASA a classified appendix regarding heritage shall submit the appendix and a cover letter to NASA HQ no later than the deadline for receipt for the CD-ROM in Section [7](#). The proposer shall determine the appropriate security classification for the classified appendix, the proposer shall obtain any permission required for a reviewer to read the classified appendix, and the proposer shall ensure that all appropriate security requirements are followed in delivering the classified appendix to NASA HQ.

Requirement N-30: The Point-Of-Contact (POC) for the PEA (Section [7](#)) shall be notified of the intent to submit a classified appendix regarding heritage and its level of classification to ensure sufficient evaluator clearance. The PEA POC notification shall include whether the sender is considering delivery to NASA via a classified email system in lieu of physical delivery. The unclassified appendix regarding heritage shall also indicate that a classified appendix is being submitted.

The address for delivery of the package containing the classified appendix regarding heritage is: Mr. Paul Raudenbush, Chief, NASA Headquarters Security Office, Suite 1M40, 300 E Street SW, Washington, DC 20546. The package containing the classified appendix regarding heritage should be sent to NASA HQ by an appropriate means (e.g., courier, U.S. Registered Mail, etc.) with coordination in advance with the receiving facility.



---

## **Classified Material: PEA Section 5.2.1 (4 of 6)**

Should a proposer choose to deliver a classified appendix regarding heritage to NASA in addition to a complete proposal, the evaluation process (Section 7.1 of the [SALMON-3 AO](#)) will be supplemented. At least one NASA-selected evaluator with appropriate clearance and relevant expertise will review the classified appendix regarding heritage; this evaluator may be a member of the evaluation panel or this evaluator may be a specialist reviewer. All findings generated during the review of the classified appendix regarding heritage will be unclassified, and these findings will be provided as input for assessing the Technical, Management, and Cost (TMC) Feasibility of the Proposed Mission Implementation. Clarifications may be requested concerning findings from evaluation of the classified appendix regarding heritage.

### "Delivery in Place"

Proposers may choose to utilize the option for "delivery in place" of the classified appendix regarding heritage, where the classified material is not delivered to NASA but is kept at the point of origin. The complete, unclassified proposal must state that a classified appendix regarding heritage has been delivered in place and provide the classification level of the material, the location of the material, and the POC to be contacted to access the material.

Should a proposer choose to submit a classified appendix regarding heritage to NASA in addition to a complete proposal using the "delivery in place" mechanism, the evaluation process (Section 7.1 of the [SALMON-3 AO](#)) will be supplemented. At least one NASA-selected evaluator with appropriate clearance and relevant expertise will travel to the delivery location and review the classified appendix regarding heritage; this evaluator may be a

---



# Evaluation

---

## **Classified Material: PEA Section 5.2.1 (5 of 6)**

member of the evaluation panel or this evaluator may be a specialist reviewer. All findings generated during the review of the classified appendix regarding heritage will be unclassified, and these findings will be provided as input for assessing the Technical, Management, and Cost (TMC) Feasibility of the Proposed Mission Implementation. Clarifications may be requested concerning findings from evaluation of the classified appendix regarding heritage.

Requirement N-31: Proposers that choose the option of delivery in place of a classified appendix regarding heritage shall develop – and deliver to a designated POC/custodian – the appendix by the deadline for electronic proposal submission in Section [7](#), with a cover page record of the last date that the document was edited. The POC/custodian of the classified appendix shall certify the date of receipt of the document and its unchanged status, each time the classified appendix is viewed by a reviewer. The proposer shall determine the appropriate security classification for the classified appendix, the proposer shall obtain any permission required for a reviewer to read the classified appendix at the proposer’s designated facilities, and the proposer shall ensure that all appropriate security requirements are followed in the handling of the classified appendix.

Requirement N-32: The POC for the PEA (Section [7](#)) shall be notified of the intent to utilize the delivery in place option for a classified appendix regarding heritage, the level of classification to ensure sufficient evaluator clearance, and the POC/custodian contact information.



# Evaluation

---

## **Classified Material: PEA Section 5.2.1 (6 of 6)**

### Sponsor Verification

Finally, proposals that include technologies with classified heritage may utilize sponsor verification. This option is only available if the sponsor organization is not a team member in the proposal. Such proposals would only reference classified materials, including associated cost basis of estimates; the materials would not be provided to NASA in any format. In lieu of a direct review of the classified materials, the evaluation panel will compile a list of questions regarding claims made in the proposal that need to be substantiated by the classified material. The list would be sent to the sponsor of the classified programs who must verify that the claims are supported.

Requirement N-33: Proposers that choose the option of sponsor verification of classified materials shall provide an enumeration of claims related to the classified materials in the body of the proposal.

Requirement N-34: The POC for the PEA (Section [7](#)) shall be notified of the intent to utilize the sponsor verification option and the POC to whom associated questions would be sent.



## TMC Cost Analysis: Cost Threat Statement and Cost Threat Matrix

The Cost Threat Statement describes the likelihood and cost impact, if any, of an identified weakness 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 best estimate of the range of costs to mitigate the threat.

The Cost Threat Matrix (CTM), below, is populated by the cost estimator with dollar amounts of the expected cost impact.

		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%)						



---

## **TMC Cost Risk Definitions (1 of 4)**

The three criteria below are indicators of Cost Risk. Evaluators must consider these criteria and other relevant information (e.g., cost model applicability, uncertainty of the cost models error bars, effect of cost issues that fall below the minimum cost threat threshold, likelihood of cost impacts, mitigating factors such as major strengths, etc.) together with their judgement in determining the appropriate Cost Risk for a particular investigation.

Three criteria are considered for the determination of the Cost Risk for a proposed investigation; 1) The level of unencumbered reserves after any reduction by TMC identified cost threats; 2) The comparison of proposed cost with the TMC Base Independent Cost Estimate considering the appropriate error bars; and 3) The proposed cost, including reserves, supported by material in the proposal.

Appropriate Cost Reserves are defined as the minimum unencumbered reserves required by the Announcement of Opportunity (AO), or higher as judged by the TMC evaluation panel based on the justification provided by the PI (Principal Investigator). Unencumbered cost reserves higher than the minimum AO requirement may be necessary for some investigations, such as those requiring specific technology maturation.



---

## TMC Cost Risk Definitions (2 of 4)

### 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 Cost Risk Definitions (3 of 4)

### 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 Cost Risk Definitions (4 of 4)

### 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.



# Selection

---

## **Selection Process: PEA Section 6.2**

After the review by the AO Steering Committee, the final evaluation results will be presented to the Associate Administrator for the SMD, who will make the selection(s). As the Selection Official, the Associate Administrator for the SMD, may consult with senior members of SMD and the Agency, including the Director of the ESD, concerning the selections.

As stated in Section 7.3 of the [SALMON-3 AO](#), the Selection Official may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting among selectable proposals, including, but not limited to, planning and policy considerations, available funding and funding profiles, programmatic merit and risk of any proposed partnerships, and maintaining a programmatic balance.



# Observers

---

The SMD Deputy Associate Administrator for Research may invite Civil Servants, Intergovernmental Personnel Act Assignees, and Contractors with downstream implementation responsibilities to participate as observers to panel meetings.

Observers must comply with SMD Policy Document SPD-17, Statement of Policy on Observers at Panel Reviews of Proposals. This policy will be provided to all approved observers.

Invited Observers from the NASA Earth Science Division (ESD) to the EVC-1 Science Plenary Panel Review include:

- Bruce Tagg, EVC-1 Program Executive. He played a key role over the course of the entire solicitation and will initiate the formulation phase of the selected investigation(s).
- TBD

Observers invited to the EVC-1 Technical, Management, and Cost Plenary Meeting include;

- Bruce Tagg, EVC-1 Program Executive (see above)
- TBD



# Approval

---

David Considine  
Program Scientist,  
Earth Science Division, NASA SMD

---

Cindy Daniels  
Director  
NASA SOMA

---

Waldo Rodriguez  
Acquisition Manager  
NASA SOMA

---

Michael New  
Deputy Associate Administrator  
for Research, NASA SMD

---

Sandra Cauffman  
Director (Acting)  
Earth Science Division, NASA SMD

Signed copy on file

---