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Announcement of Opportunity

NNH26ZDA011O

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Signed copy on file

This Evaluation Plan has been cleared for public release by SMD.



Introduction

Introduction

The goal of this Evaluation Plan is to define the ground rules, processes, organizations, and schedules to be used in evaluating the proposals received in response to the Astrophysics Explorers Program 2026 Small Explorer (APSMEX26) Announcement of Opportunity (AO).

This Evaluation Plan covers evaluation information from the AO and from the evaluation processes conducted by the Science Panel and the Technical Management and Cost (TMC) Panel.

This Evaluation Plan describes the single-step competitive process that entails the solicitation, submission, evaluation, and selection of proposals prepared in response to the AO.

The Science Office for Mission Assessments (SOMA) at NASA Langley Research Center (LaRC) developed this APSMEX26 Evaluation Plan for the Science Mission Directorate (SMD) at NASA Headquarters.

The APSMEX26 Program Scientist is responsible for validating all evaluation processes, responsibility assignments, assumptions, and ground rules.

APSMEX26 Solicitation

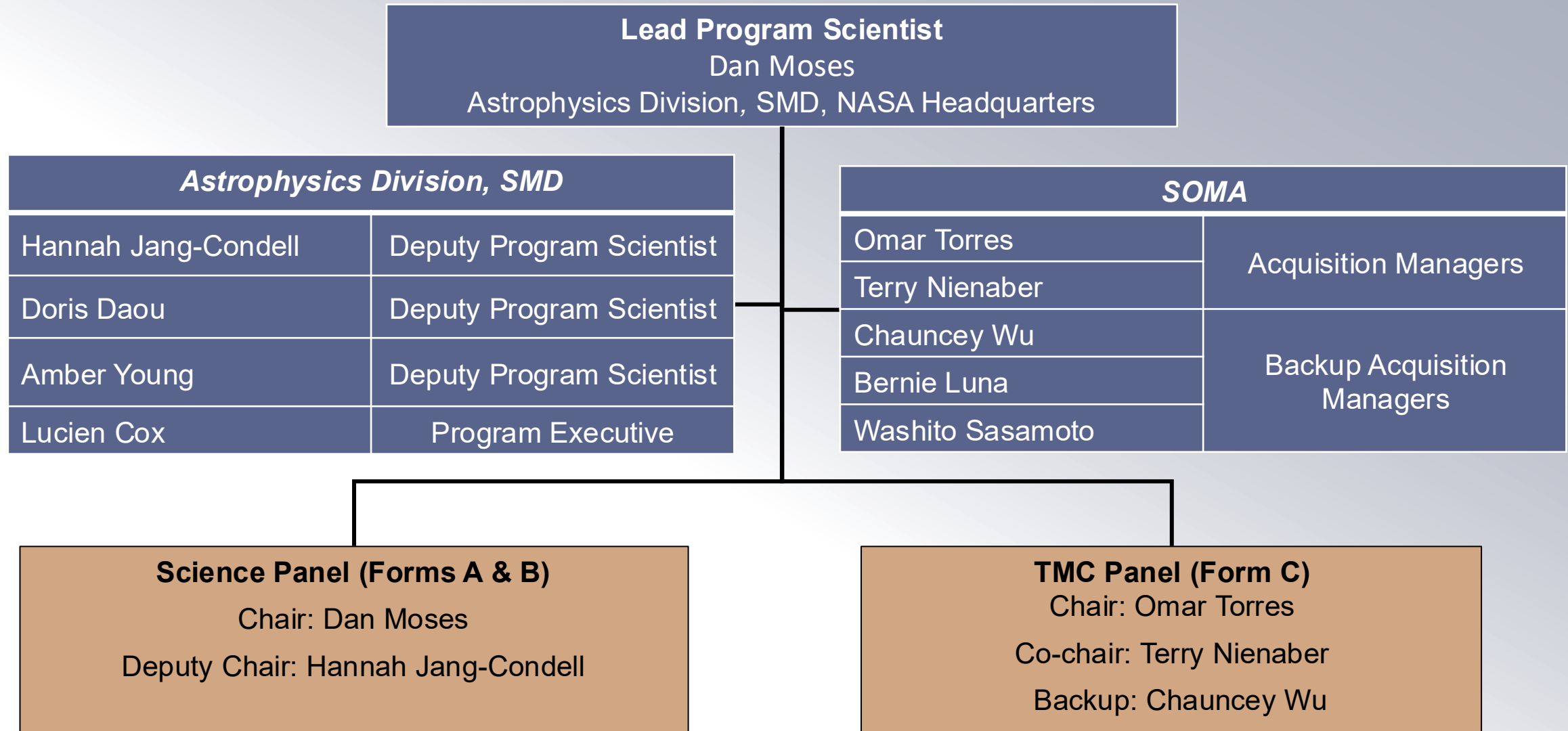
All investigations proposed in response to this solicitation must: support the goals and objectives of the Explorers Program (Section 2.3), be implemented by Principal Investigator (PI) led investigation teams (Section 5.3.1), be implemented through the provision of a complete spaceflight mission (Section 5.2.1), and include implementation within the schedule and cost constraints, inclusive of Phases A-F.

The AO Cost Cap for an APSMEX26 mission is \$190 million in NASA Fiscal Year 2026 (FY26) dollars. Cost of standard launch vehicle and launch services or any contributions is not included. Application of AO-specified incentives and/or charges may result in a proposal-specific Adjusted AO Cost Cap.

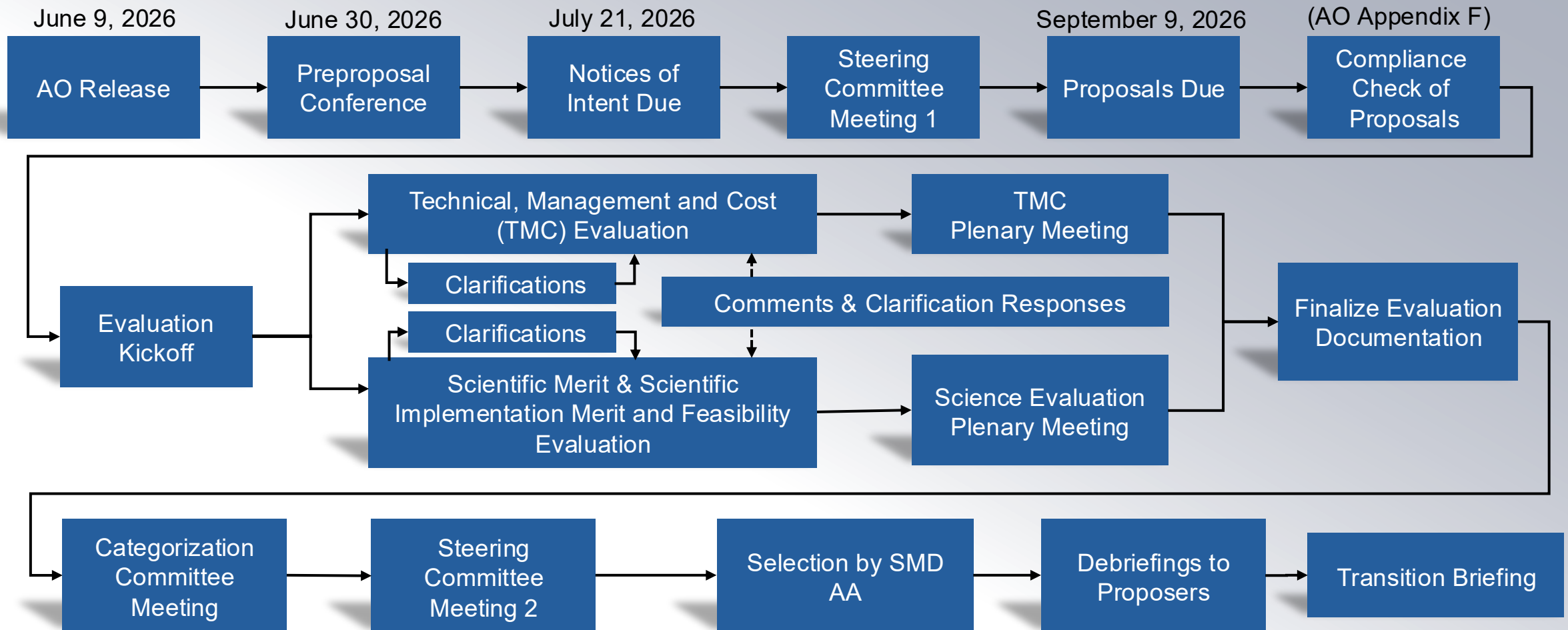
An Astrophysics Explorers investigation will be launched as the primary payload on a single launch vehicle (LV) that NASA will provide as Government Furnished Equipment (GFE)

- Standard launch services utilizing a domestic launch vehicle certified as category 1, 2 or 3 per NPD 8610.7D, *NASA Launch Services Risk Mitigation Policy for NASA-Owned and/or NASA-Sponsored Payloads/Missions*, regardless of the payload classification, will be provided,
- There will typically be a charge against the PI-Managed Mission Cost for any launch services beyond the standard launch services offered.

Evaluation Organization



Evaluation Process Flow



Compliance Checklist



Compliance Checklist

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

Administrative

1. Mandatory NOI submitted by deadline.
2. Electronic proposal received on time.
3. Augmented submission via the NASA Box service made on time.
4. Meets page limits.
5. Meets general requirements for format and completeness, including maximum 5.5 lines per vertical inch (6.5 lines per 3 vertical centimeters), maximum 15 characters per horizontal inch (6 characters per horizontal centimeter), and 12-pt font for text and figure captions.
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. Export-controlled information has been identified.
10. Restrictions Involving China acknowledged on Electronic Cover Page.

Scientific

- 11. Addresses solicited science research programs.
- 12. Requirements traceable from science to instruments to mission.
- 13. Data archiving plan included.
- 14. Baseline science investigation and threshold science investigation defined.

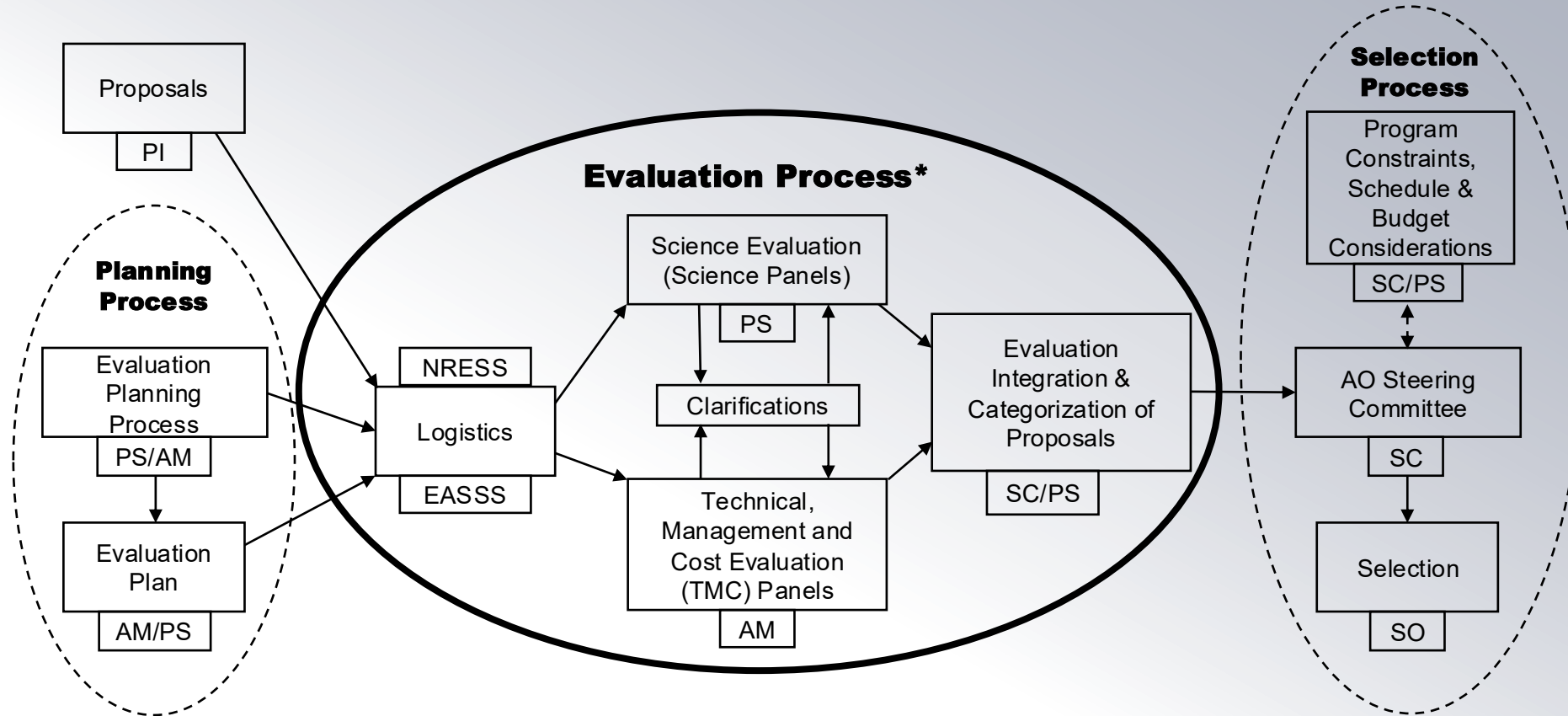
Technical

- 15. Complete spaceflight mission (Phases A-F) proposed.
- 16. Team led by a single PI.
- 17. Budget profile by year is stated and justified.
- 18. Phase A costs within Phase A cost limit.
- 19. Co-investigator costs in budget.
- 20. Proposed launch readiness date prior to AO-required launch readiness date.
- 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.



General Evaluation Requirements

NASA SMD Processes and Responsibilities



* The Evaluation Process is addressed in this document.

Pre-Evaluation - Steering Committee Meeting 1

As part of the Evaluation Planning Process, before the evaluation process begins, an AO Steering Committee Meeting 1 will be convened. This Committee is composed of the SMD Deputy Associate Administrator for Research (DAAR) 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.

Conflicts of Interest (COI) Prevention and Mitigation Requirements (1/2)

The non-Civil Servant Science and TMC Panel members are hired as contractors through the NASA Science Office for Mission Assessments (SOMA)'s Evaluations, Assessments, Studies, Services, and Support (EASSS) contractor.

The EASSS contractor cross-checks all contracted Panel members against the lists of personnel and organizations identified in each proposal to determine whether any organizational COI exists.

All contracted evaluators must divulge any financial, professional, or personal potential COIs, and whether they work for a profit-making company that directly competes with any profit-making proposing organization.

All Civil Servant (CS) and Intergovernmental Personnel Act (IPA) evaluators must self-certify their COI status by reviewing a combined listing of individuals and organizations associated with the APSMEX26 proposals.

The TMC evaluators must notify the SOMA Acquisition Manager in case of a potential COI.

The Science evaluators must notify the Program Scientist in case of a potential COI.

Conflicts of Interest (COI) Prevention and Mitigation Requirements (2/2)

Community standards for conflicts of interest will be applied to all evaluators as directed in SMD Policy Document SPD-01A, Handling Conflicts-of-Interest for Peer Reviews. Under certain restricted situations, a waiver for SPD-01A, Section 2(b)(v) may be requested. Standards for financial conflicts of interest as specified in 18 U.S.C. § 208 will be applied to Civil Servant and IPA evaluators. The HQ Office of General Counsel will be consulted as necessary.

All known potential COI 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 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 to expeditiously 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. If authorized by the Program Scientist, the DAAR will be notified.

Handling of Proprietary Data (1/2)

All proposal and evaluation materials are considered, and treated as, proprietary.

Viewing of proposal materials is only on a need-to-know basis.

Each evaluator who is not a CS or IPA will sign a Non-Disclosure Agreement (NDA) that must be on file with the EASSS contractor prior to any proposals being distributed to that evaluator.

CS and IPA evaluators are under statutory obligations and are not required to sign an NDA.

A record will be kept of the materials that are provided to each evaluator.

Evaluators will be briefed at a Kickoff meeting on handling proposal materials. Evaluators will be briefed that they are not allowed to discuss proposals with anyone outside the Evaluation Panels ever, unless authorized by NASA. Evaluators will be briefed to refrain from contacting anyone outside of the Evaluation Panels to gain insight on any proposal related matter without authorization from the Lead Program Scientist (Dr. Dan Moses).

Any Observers at Review Panel discussions will not be given access to proposals or evaluation materials (See [Slide 71](#) for more information).

Handling of Proprietary Data (2/2)

During the Evaluation, all proprietary information that needs to be exchanged between evaluators will be transferred securely via the Remote Evaluation System (RES) website maintained by SOMA, via the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), via NASA SharePoint system (including MS Teams), via controlled Webex, via NASA's Box, or via encrypted email, parcel post, fax, or regular mail. Proprietary information will not be sent via unencrypted email.

Web conferences or teleconferences among evaluators will be conducted via controlled Web conference and teleconference lines. Virtual meeting information is confidential. The meeting numbers and pass codes are posted in a file on the RES or on NASA's Box. Participants will be briefed to not provide this information to anyone or distribute this information via unencrypted email or text messages.

When the evaluation process is complete, evaluators will be directed to delete and/or destroy proposal and evaluation materials. Archive copies will be maintained at NASA HQ and SOMA. Also, all proposal material from the selected project(s) will be provided to the Explorers Program Office at NASA Goddard Spaceflight Center (GSFC). All other proposal materials will be destroyed.

Principles for Evaluation

All proposals are to be treated fairly and equally.

Merit and Risk are to be assessed on the basis of the material provided in the proposal and through the clarification process.

Evaluation Ratings shall 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 APSMEX26 AO, and without comparison to other proposals.

All evaluators are experts in the areas that they evaluate.

Non-panelist/mail-in evaluators (to provide special science expertise to the Science Panels) and specialist evaluators (to provide special technical expertise to the TMC Panel) may be used, respectively, based on need for expertise in a specific science or technology/engineering area that is proposed.

Evaluation Criteria for APSMEX26 AO

- A. Scientific Merit of the Proposed Investigation (Form A, AO Section 7.2.2);
- B. Scientific Implementation Merit and Feasibility of the Proposed Investigation (Form B, AO Section 7.2.3);
- C. TMC Feasibility of the Proposed Mission Implementation (Form C, AO Section 7.2.4).

Weighting: the first criterion is weighted approximately 35%; the second criterion is weighted approximately 30%; the third criterion is weighted approximately 35%.

Other Selection Factors (Section 7.3):

Programmatic factors

PI-Managed Mission Cost

Science Evaluation



- Science Panel Composition and Organization (1/2)

The Program Scientist leads the Science Panel.

Science evaluators are typically, but not exclusively, recruited from the academic, governmental, and industrial research communities.

The approach to evaluator identification is reviewed by the pre-evaluation Steering Committee convened by the DAAR (Steering Committee Meeting 1, [slide 15](#)).

The Science Panel evaluates the Scientific Merit of the Proposed Investigation (A Factors, AO Section 7.2.2), and the Scientific Implementation Merit and Feasibility of the Proposed Investigation (B Factors, AO Section 7.2.3)

The science evaluation is conducted via one Science Panel; however, sub-panels may be employed, depending on the number and variety of proposed investigations.

All sub-panels will be chaired by the Lead Program Scientist or Deputy Program Scientist.

Sub-panels may have an Executive Secretary.

Science Panel Composition and Organization (2/2)

Each proposal is evaluated by assigned panel members.

- The Lead Evaluator for each proposal leads the discussion. At least two secondary (supporting) evaluators are assigned to each proposal.
- At the request of the Lead Evaluator, a Supporting Evaluator or the Executive Secretary, if available, takes notes on the discussion.

The TMC Panel may provide comments and questions to the Science Panel, and vice versa.

The Science Panel may request clarifications from proposers on any Potential Major Weaknesses (PMWs) that are identified during the evaluation process in Forms A and B.

A&B

Science Panel Procedures (1/3)

If non-U.S. persons are selected for the Science Panel, evaluators will review a version of the proposal in which any export-controlled material has been redacted. Proposers are required to indicate such material; NRESS will redact the proposal pdf.

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

- If special science expertise is required, the Science Panels may use non-panelist evaluators to assist with one or more proposals.
- Non-panelist evaluators evaluate only those parts of proposals pertinent to their scientific specialties.

Each assigned evaluator provides an individual evaluation prior to panel web conferences.

Science Panel Procedures (2/3)

Each proposal is discussed by the evaluators in web conferences.

- Findings in the form of Strengths and Weaknesses form the basis for initial panel discussions.
- During the web conference(s), the proposal and the individual evaluations, including those from non-panelist/mail-in evaluators, are discussed.
- Following the web conference(s), the Lead Evaluator captures/synthesizes individual evaluations including discussions and generates a Draft Evaluation Form including draft findings. Draft findings include PMWs that are shared with proposers for clarification.
- After PMW clarification responses are received, a web conference is held to consider clarification responses. Draft findings are updated where applicable.
- No overall merit rating is assigned at the individual proposal evaluation web conferences.

Science Panel Procedures (3/3)

A Meeting of the Science Panel or sub-panels is held upon completion of draft evaluations for all proposals.

- The Science Panel (or sub-panel) compiles all findings for each proposal.
- If the sub-panels meet separately, a web conference of the sub-panel chairs, or of sub-panel members explicitly tasked with consistency, review the draft findings of all sub-panels for consistency ahead of the sub-panel meetings.
- For each proposal, the Chair or designated Lead Evaluator leads the discussion, summarizes the proposed investigation, and documents the results.
- Evaluations of all proposals are reviewed during the Science Panel Meeting to ensure that standards are applied uniformly and in an appropriate and fair manner.
- After the discussion, each member of the Panel or sub-panel assigns a rating for Science Merit (Form A) and for Science Implementation and Feasibility (Form B) to each proposal. Non-panelist evaluators do not assign ratings.
- The Lead Evaluator synthesizes and documents Panel evaluations.

Criterion A: Scientific Merit of the Proposed Investigation

This criterion assesses the intrinsic scientific merit of the proposed investigation.

Factors from APSMEX26 AO, Section 7.2.2:

Factor A-1. Compelling nature and scientific priority of the proposed investigation's science goals and objectives.

Factor A-2. Programmatic value of the proposed investigation.

Factor A-3. Likelihood of scientific success.

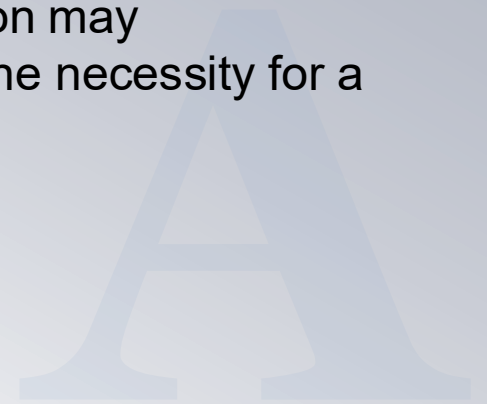
Factor A-4. Scientific value of the Threshold Science Investigation.

Factors A-1 through A-3 are evaluated for the Baseline Science Investigation assuming it is implemented as proposed and achieves technical success. Factor A-4 is similarly evaluated for the Threshold Science Investigation.

Evaluation Criterion A Factors (1/2)

Factor A-1. Compelling nature and scientific priority of the proposed investigation's science goals and objectives. This factor includes the clarity of the goals and objectives; how well the goals and objectives reflect program, Agency, and national priorities; the potential scientific impact of the investigation on program, Agency, and national science objectives; and the potential for fundamental progress, as well as filling gaps in our knowledge relative to the current state of the art.

Factor A-2. Programmatic value of the proposed investigation. This factor includes the unique value of the investigation to make scientific progress in the context of other ongoing and planned missions; the relationship to the other elements of NASA's science programs; how well the investigation may synergistically support ongoing or planned missions by NASA and other agencies; and the necessity for a space mission to realize the goals and objectives.



Evaluation Criterion A Factors (2/2)

Factor A-3. Likelihood of scientific success. This factor includes how well the anticipated measurements support the goals and objectives; the adequacy of the anticipated data to complete the investigation and meet the goals and objectives; and the appropriateness of the mission requirements for guiding development and ensuring scientific success.

Factor A-4. Scientific value of the Threshold Science Investigation. This factor includes the scientific value of the Threshold Science Investigation using the standards in the first factor of this section and whether that value is sufficient to justify the proposed cost of the project.



Criterion B: Scientific Implementation Merit and Feasibility of the Proposed Investigation

This criterion assesses the merit of the plan for completing the proposed investigation, including the scientific implementation merit, feasibility, resiliency, and probability of scientific success of the proposed investigation.

Factors from APSMEX26 AO, Section 7.2.3:

Factor B-1. Merit of the instruments and mission design for addressing the science goals and objectives.

Factor B-2. Probability of technical success.

Factor B-3. Merit of the Open Science and Data Management Plan.

Factor B-4. Science resiliency.

Factor B-5. Probability of science team success.

Factor B-6. Maturity of proposed Level 1 science requirements and driving Level 2 project requirements.

Evaluation Criterion B Factors (1/3)

Factor B-1. Merit of the instruments and mission design for addressing the science goals and objectives. This factor includes the degree to which the proposed mission will address the goals and objectives; the appropriateness of the selected instruments and mission design for addressing the goals and objectives; the degree to which the proposed instruments and mission can provide the necessary data; and the sufficiency of the data gathered to complete the scientific investigation.

Factor B-2. Probability of technical success. This factor includes the maturity and technical readiness of the instruments or demonstration of a clear path to achieve necessary maturity; the adequacy of the plan to develop the instruments within the proposed cost and schedule; the robustness of those plans, including recognition of risks and mitigation plans for retiring those risks; the likelihood of success in developing any new technology that represents an untested advance in the state of the art; the ability of the development team—both institutions and individuals—to successfully implement those plans; and the likelihood of success for both the development and the operation of the instruments within the mission design.

Evaluation Criterion B Factors (2/3)

Factor B-3. Merit of the Open Science and Data Management Plan including data analysis, Data Management Plan, Software Management Plan, and Open Science 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; and to preserve data and analysis 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-4. Science resiliency. This factor includes both developmental and operational resiliency. Developmental resiliency includes the approach to descoping the Baseline Science Investigation to the Threshold Science Investigation in the event that development problems force reductions in scope. Operational resiliency includes the ability to withstand adverse circumstances, the capability to degrade gracefully, and the potential to recover from anomalies in flight.

Evaluation Criterion B Factors (3/3)

Factor B-5. Probability of science team success. This factor will be evaluated by assessing the experience, expertise, and organizational structure of the science team and the mission design in light of any proposed instruments. The *scientific* expertise of the PI will be evaluated but not their experience with NASA missions. The role of each Co-Investigator will be evaluated for necessary contributions to the proposed investigation; the inclusion of Co-Is who do not have a well-defined and appropriate role may be cause for downgrading during evaluation. Additionally, career development opportunities supporting the next generation of space science leaders will be evaluated as part of this Factor.

Factor B-6. Maturity of proposed Level 1 science requirements and driving Level 2 project requirements. This factor includes assessment of whether the Level 1 science requirements are mature enough to guide the achievement of the objectives of the Baseline Investigation and the Threshold Investigation, and whether the Level 2 requirements are consistent with the Level 1 requirements. The Level 1 requirements will be evaluated for whether they are stated in unambiguous, objective, quantifiable, and verifiable terms that do not conflict and for whether they are traceable to the science objectives. The driving Level 2 requirements will be evaluated for their utility for evaluating the capability of the mission profile, instruments and other systems to achieve the mission objectives.

Science Evaluation Products: 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: An aspect of the proposal that is judged to contribute to the ability of the project to meet its scientific objectives.

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

A&B

Form A and B Grade 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.

Excellent/Very Good: 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 whose strengths fully outbalance any 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.

Very Good/Good: A competent proposal of high merit that fully responds to the objectives of the AO, whose strengths outbalance any weaknesses.

Good: A competent proposal that represents a credible response to the AO, having neither significant strengths nor weaknesses 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).

Science Evaluation Products

For each proposal, this process results in Form A and Form B, each of which includes :

- Proposal title, PI name, and submitting organization;
- Proposal summary;
- Based on findings, adjectival median rating for *Scientific Merit of the Proposed Investigation* (Form A) and for *Scientific Implementation Merit and Feasibility of the Proposed Investigation* (Form B)*;
 - If the median rating falls between two grades, the stated score will be “rounded” towards the less favorable grade option*;
- Summary rationale for the adjectival median rating;
- Narrative findings, identified as major or minor strengths or weaknesses; and
- Comments to the Proposers, comments to the Selection Official*, and comments to the TMC Panel* (optional).

* Note: not provided to proposers



TMC Evaluation

TMC Panel Composition and Organization (1/2)

The Lead Acquisition Manager, who is a Civil Servant in 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 subject matter experts in the areas of the proposals that they evaluate.

The TMC Panel develops findings for each proposal that are based on individual comments and reflect the general agreement of the entire panel.

- Comments that are as expected are not included as findings.
- Comments that are above expectations result in strengths.
- Comments that are below expectations result in weaknesses.

TMC Panel Composition and Organization (2/2)

Additionally, specialist evaluators may be called upon in cases where technical expertise is needed that is not represented on the panel.

- Specialist Evaluators evaluate only those parts of a proposal that are specific to their particular expertise.
- Specialist Evaluators provide only findings; they do not participate in polling on Form C.

Consistency Review for Form C findings ensures similar findings are treated equivalently across different proposals.

Only TMC evaluators who participate in-person or virtually in the TMC Plenary may participate in polling on Form C.

Criterion C: TMC Feasibility of the Proposed Mission Implementation

This criterion assesses the likelihood that the investigations will be successfully implemented as proposed, including an assessment of the likelihood of completion within the proposed cost and schedule.

Factors from APSMEX26 AO, Section 7.2.4:

- Factor C-1. Adequacy and robustness of the instrument implementation plan.
- Factor C-2. Adequacy and robustness of the mission design and plan for mission 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.

Evaluation Criterion C Factors (1/7)

Factor C-1. Adequacy and robustness of the instrument implementation plan. This factor includes assessment of the following:

- Maturity and technical readiness of the instrument complement, and the ability of the instruments to meet investigation requirements.
- Instrument design, accommodation, interface, heritage, and technology readiness.
- Instrument hardware and software designs, heritage, and margins.
- Processes, products, and activities required to accomplish development and integration of the instrument complement, including where applicable the approach to multiple builds.
- Ability to build, test, and integrate the required number of instrument flight units with repeatable quality and performance standards and the system design's impact on the repeat manufacturability.
- Adequacy of the plans for instrument systems engineering and dealing with environmental concerns.
- Plans for the development and use of new instrument technology and plans for advanced engineering developments to mature systems within the proposed cost and schedule when systems having a TRL less than 6 are proposed.

Evaluation Criterion C Factors (2/7)

Factor C-2. Adequacy and robustness of the mission design and plan for mission operations. This factor includes assessment of the following:

- Overall mission design and mission architecture, the spacecraft design and design margins (including margins for launch mass, delta-v, and propellant);
- Concept for mission operations (including communication and, if applicable, constellation management),
- Plans for launch services.
- Mission resiliency—the flexibility to recover from problems during both development and operations—including:
 - Technical resource reserves and margins,
 - System and subsystem redundancy,
 - Reductions and other changes that can be implemented without impact to the Baseline Science Investigation.

Evaluation Criterion C Factors (3/7)

Factor C-3. Adequacy and robustness of the flight systems. This factor includes assessment of:

- Flight hardware and software designs, heritage, and margins.
- Plans, products, and activities required to accomplish maturation, development, integration, and verification of all elements of the flight system, including the approach to multiple builds if applicable.
- (if multiple builds are proposed) Ability to build, test, and integrate the required number of flight system flight units with repeatable quality and performance standards and the system design's impact on the repeat manufacturability.
- The adequacy of all elements of flight system resiliency, including flight software/hardware fault management, system and subsystem redundancy, and hardware reliability.
- The adequacy of the plans for mission assurance.
- The plans for the development and use of new technology, plans for advanced engineering developments, and the adequacy of those plans to ensure success of the investigation when systems having a TRL less than 6 are proposed.
- The maturity and technical readiness of the spacecraft and subsystems.

Evaluation Criterion C Factors (4/7)

Factor C-4. Adequacy and robustness of the management approach and schedule, including the capability of the management team. This factor includes assessment of the following:

- Adequacy of the proposed organizational structure;
- Management approach including the roles,
- Commitment, qualifications, and experience of any named Key Management Team members, the implementing organization, and the known partners;
- Expected commitment, qualifications and experience of the Key Management Team members not named;
- Spaceflight experience of any named Key Management Team members (PI excepted),
- Implementing organization and known partners against the needs of the investigation;
- Prior working relationships of the implementing organization and known partners;
- Commitments of partners and contributors;
- The scope of work covering all elements of the project, including contributions.

(C-4 continued on next slide)

Evaluation Criterion C Factors (5/7)

Factor C-4. (Continued) Also, evaluated under this factor:

- Approach to managing commercial suppliers that will use their own SMA practices.
- Adequacy of the proposed risk management approach, including any risk mitigation plans for new technologies, any long-lead items, and the adequacy and availability of any required manufacturing, test, or other facilities.
- If multiple builds are proposed, the proposer's management of any subcontracted manufacturer, and the ability to capture and apply lessons learned for the effective production of subsequent units.
- The management of the risk of contributed critical goods and services, including:
 - Plans for any international participation.
 - Commitment of partners and contributors as documented in Letters of Commitment.
 - Technical adequacy of contingency plans, where they exist, for coping with the failure of a proposed cooperative arrangement or contribution.

(C-4 continued on next slide)

Evaluation Criterion C Factors (6/7)

Factor C-4. (Continued) This factor also includes assessment of elements such as:

- The relationship of the work to the project schedule.
- Project element interdependencies including the resiliency of the production and test schedule to problems appearing in multiple-unit builds if applicable.
- Associated schedule margins, and an assessment of the likelihood of meeting the proposed launch readiness date.
- Proposed project and schedule management tools to be used on the project.

The capability of the management team will be evaluated as a whole, as opposed to assessing the capabilities of each of the Key Team Members independently.

Evaluation Criterion C Factors (7/7)

Factor C-5. Adequacy and robustness of the cost plan, including cost feasibility and cost risk. This factor includes elements such as:

- Cost
- Cost risk
- Cost realism, and cost completeness including assessment of:
 - the basis of estimate,
 - adequacy of the approach used to develop the estimated cost (including how multiple unit builds are costed),
 - discussion of cost risks,
 - adequacy and allocation of cost reserves by phase,
 - the scope of work.
- Adequacy of the cost reserves and understanding of the cost risks.
- This factor also includes an assessment of the proposed cost relative to estimates generated by the evaluation team using parametric models and analogies.

Additional TMC Considerations

The panel evaluating the criterion C, *TMC Feasibility of the Proposed Mission Implementation*, will also provide comments to the Selection Official regarding the bulleted items below. While these comments will not be considered in the evaluation, they may be considered during selection.

- The managerial and spaceflight experience of the PI, and whether appropriate mentoring and support tools are in place when necessary.
- The extent to which the proposed mission provides career development opportunities to train the next generation of engineering and management leaders.
- Other examples include, but are not limited to, the stability and reliability of proposed partners and their contributions, the size and nature of contributions, environmental assessment approvals, and late/non-delivery of NASA-provided project elements

TMC Cost Evaluation

The evaluation assesses the cost risk, cost realism, and cost completeness including the basis of estimate, the adequacy of the approach used to develop the estimated cost, the discussion of cost risks, the adequacy and allocation of cost reserves by phase, and the scope of work (covering all elements of the mission).

An independent cost verification of the proposed cost for Phases A-D is performed using at least two independent cost models.

An independent cost verification of the proposed cost for Phase E is performed using at least one cost model.

The likelihood and cost impact of major weaknesses is assessed.

Cost threat impacts to the proposed unencumbered cost reserves are assessed.

The adequacy of the remaining unencumbered cost reserves is assessed.

All draft Forms C and Cost Evaluation Summaries (CESs) are completed prior to the Plenary Meeting.

The entire panel participates in the Cost deliberations. All information from the entire evaluation process is considered in the final cost assessment.

All cost findings are included on the Form C and considered in the TMC Risk Rating.

Cost Threat Analysis

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. (next slide)

A weakness with an *unquantified cost threat* represents a risk for which the cost of retiring cannot be quantified. The impact of a weakness with an *unquantified cost threat* may be significant since the identified risk may prevent the accomplishment of the baseline investigation within the proposed resource envelope.

The minimum cost threat threshold for the APSMEX26 evaluation is \$1M for Phases B/C/D and **\$250k for Phase E**.

Cost Threat Matrix

For each Proposal, the percentages in the table are converted to dollars by the TMC cost analyst.		Cost Impact (CI) % of PI-Managed Mission Cost to complete Phases B/C/D or % of <i>Phase E</i> not including unencumbered cost reserves or contributions					
		Very Minimal	Minimal	Limited	Moderate	Significant	Very Significant
		\$1M < CI ≤ 2.5%	2.5% < CI ≤ 5%	5% < CI ≤ 10%	10% < CI ≤ 15%	15% < CI ≤ 20%	CI > 20%
		<i>\$0.25M < CI ≤ 2.5%</i>	<i>2.5% < CI ≤ 5%</i>	<i>5% < CI ≤ 10%</i>	<i>10% < CI ≤ 15%</i>	<i>15% < CI ≤ 20%</i>	<i>CI > 20%</i>
Likelihood (L, %)	Almost Certain (L > 80%)						
	Very Likely (60% < L ≤ 80%)						
	Likely (40% < L ≤ 60%)						
	Possible (20% < L ≤ 40%)						
	Unlikely (L ≤ 20%)						

TMC Panel Product: Form C

For each proposal, the TMC Evaluation results in a Form C for Categorization, Steering, and Selection that contains:

- Proposal title, PI name, and submitting organization;
- Based on the findings, an adjectival median risk rating for the TMC Feasibility of the Proposed Mission Implementation of “Low Risk,” “Low-Medium”, “Medium Risk”, “Medium-High”, or “High Risk;”
 - A median score that falls between two risk ratings is “rounded” to the less favorable risk rating
- Summary rationale for the median risk rating;
- Narrative findings, identified as major or minor strengths or weaknesses;
- Optional comments to the Proposers, comments to the Selection Official*, and comments to the Science Panel*.

* Not provided to proposers

TMC Evaluation Products: Findings

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

- **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.

Findings that are considered “as expected” are not documented on the Form C.

TMC Evaluation Products: Risk Ratings for APSMEX26

Rating	Definition
Low Risk	The proposal strongly supports accomplishment of the investigation well within the proposed resource envelope. Benefits associated with the identified strength(s) significantly outweigh the negative impacts associated with any identified weakness(es). The information presented instills high confidence in the team's ability to accomplish the investigation.
Low-Medium Risk	The proposal supports accomplishment of the investigation within the proposed resource envelope. Benefits associated with any identified strength(s) outweigh negative impacts associated with any identified weakness(es). Any identified weakness is considered to be within the team's abilities to correct.
Medium Risk	Accomplishment of the investigation within the proposed resource envelope may be challenging . Benefits associated with any identified strength(s) essentially balance negative impacts associated with identified weakness(es). Identified weakness(es) are considered to be within the team's abilities to correct with effective management and application of engineering resources .
Medium-High Risk	Accomplishment of the investigation within the proposed resource envelope will be challenging . Benefits associated with any identified strength(s) are outweighed by negative impacts associated with the identified weakness(es). One or more weaknesses are of sufficient magnitude and complexity to be considered difficult for the team to correct within the proposed resources.
High Risk	Accomplishment of the investigation is expected to significantly exceed the proposed resource envelope. Benefits associated with any identified strength(s) are significantly outweighed by negative impacts associated with the identified weakness(es). One or more weaknesses are of sufficient magnitude and complexity as to be deemed unsolvable by the team within the proposed resources.

Only Major findings are considered in the risk rating.

PMW Clarification Process



PMW Clarification Process

Section 7.1.1 of the AO states “Proposers should be aware that, during the evaluation and selection process, NASA plans to request clarification of specific points in a proposal; if so, such a request from NASA and the proposer’s response must be in writing. In particular, before finalizing the evaluation of the *Scientific Merit of the Proposed Investigation* (Form A, see Section 7.2.2), the *Scientific Implementation Merit and Feasibility of the Proposed Investigation* (Form B, see Section 7.2.3) and, the *TMC Feasibility of the Proposed Mission Implementation* (Form C, see Section 7.2.4), NASA will request clarification on specific, potential major weaknesses (PMWs) identified in the proposal for each Form. NASA will request clarification in a uniform manner from all proposers.

For this opportunity, NASA will conduct two distinct rounds of clarifications to address Factors A, B, and C PMWs.

- PIs whose proposals have no PMWs will be informed that no PMWs were identified.
- All PIs are allowed the same number of pages for Clarifications, including those who have no PMWs.
- The full set of clarification responses to the factors above will be provided to all evaluators on both the Science Panel and the TMC Panel. Only the responses will be provided to the other panel but not the PMWs.

Clarification Response Requirements (1/6)

- Requirement CL-1:** The first round of clarification responses must be received within 72 hours after provision of the first round of PMW documents. The second round of clarification responses must be received within 24 hours after provision of the second round of PMW documents.
- Requirement CL-2:** In each round, the clarification responses shall consist of two documents: one Clarification Response Document that addresses the PMWs for the A and B Factors (combined) and one Clarification Response Document that addresses the PMWs for the C Factors.
- Requirement CL-3:** Each Clarification Response Document 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. Comment fields shall not be inserted.

Clarification Response Requirements (2/6)

- Requirement CL-4:** The Clarification Response Documents shall be formatted for printing 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 CL-5:** For the PMWs for the A and B Factors combined, the Clarification Response Documents shall not exceed ten pages in the first round, and six pages in the second round of clarifications. For the PMWs for the C Factor, the Clarification Response Documents shall not exceed eight pages in the first round, and five pages in the second round of clarifications. Text, table(s) and figure(s) are permitted; however, all material shall be within the page limits specified above and shall abide by limitations in Requirements CL-3, CL-4 and CL-10. Each response file shall not exceed 10 MB.
- Requirement CL-6:** The Clarification Response Documents shall not contain International Traffic in Arms Regulations (ITAR), Export Administration Regulations (EAR), or classified material.

Clarification Response Requirements (3/6)

- Requirement CL-7.** The Clarification Response Documents shall label each PMW response with the PMW number provided but need not repeat the PMW text. Each PMW clarification response shall contain only information specific to the PMW. A clarification response may point back to references in the proposal; however, PMWs' references to locations in the proposal indicate that they have already been evaluated and a re-reference alone does not obligate a re-consideration of those data. References to proposal material is expected to use the proposal section numbers and page number on the proposal page (as opposed to the electronic PDF file page number).
- Requirement CL-8:** Each Clarification Response Document may include 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 additional information counts against the total page limitation for the Clarification Response Document that contains it.

Clarification Response Requirements (4/6)

Requirement CL-9: New references included in clarification responses shall be limited to two per PMW. Two additional references may be included in each clarification response document. All references shall be to peer-reviewed literature, or to full conference proceeding papers (not just abstracts) that are published and accessible. References included in the proposal do not constitute new references. References shall be restricted to those with a publication or release date before the PMW sent date.

Clarification Response Requirements (5/6)

Requirement CL-10: Each round of the clarification responses may include, outside the three Clarification Response Documents, complete versions of the following content if, and only if, modified by a response:

- a. Science Traceability Matrix (STM; Table B1),
- b. Mission Traceability Matrix (MTM; Table B2),
- c. Total Mission Cost Profile table (Tables B3 and B3a in Excel format),
- d. Master Equipment List (MEL; Table B5 in Excel format),
- e. Schedule foldout (AO Requirements B-44) and associated table of dates (AO Requirement B-45 in Excel format),
- f. Summary of Proposed Program Cooperative Contributions table (AO Requirement B-65),
- g. Quad Chart (AO Requirement B-16),
- h. and/or Letters of Commitment (AO Requirement B-63).

(Requirement CL-10 continues the next slide)

Clarification Response Requirements (6/6)

Requirement CL-10 (cont): These modified fold-out(s)/table(s)/chart(s) shall have modifications clearly marked by the use of a different color font or by a colored-bordered box (labeled “PMW Clarification”). The page-limited Clarification Response Documents shall provide the description of the updates and changes to the modified fold-out(s)/table(s)/chart(s) as text. The complete versions of the modified STM, MTM, Total Mission Cost Profile table, MEL, and schedule, Summary of Proposed Program Cooperative Contributions table, Quad Chart, and Letters of Commitment will not count against the page limit.

Requirement CL-11: Any new or other fold-out(s) will each count as two pages against the response page limit.

Categorization, Steering, and Selection



Categorization Process

Subsequent to the evaluation process, NASA will convene a Categorization Committee, composed wholly of Civil Servants and IPA appointees (some of whom may be from Government agencies other than NASA) and appointed by the Associate Administrator for the Science Mission Directorate.

The Categorization Committee considers the Scientific Merit, Scientific Implementation Merit and Feasibility, and the TMC Feasibility of the Proposed Mission Implementation.

Based on the evaluations, the Categorization Committee categorizes the proposals in accordance with procedures required by NFS CG 1872.44.

Categorization Process: Proposal Categories

The categories are defined in NFS CG 1872.44(k) as follows:

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.

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 which are recommended for rejection for the particular opportunity under consideration, whatever the reason.

Evaluation Conclusion and Steering Committee

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

NASA will convene a Steering Committee, composed wholly of CS and IPA appointees (some of whom may be from Government agencies other than NASA), appointed by the Associate Administrator for the Science Mission Directorate.

The Steering Committee reviews the results of the evaluations and categorizations.

The Steering Committee conducts 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 Process

After the review by the Steering Committee, the sponsoring Division prepares one or more options for the selection decision.

The sponsoring Division presents the final evaluation results and its selection recommendation to the Associate Administrator for the Science Mission Directorate, who will make the final selection(s).

The Selection Official may consult with senior members of SMD and the Agency concerning the selections.

As part of the selection process, a decision will be made as to whether any Category III proposals will receive funding for technology development.

Observers

Observers Approval and Compliance

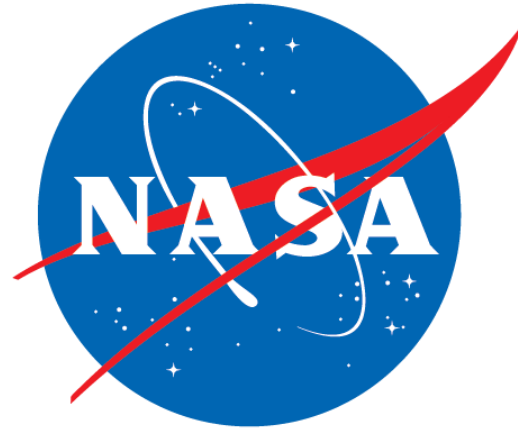
Civil Servants, IPAs, and/or contractors with downstream implementation responsibilities may attend panel meetings as Observers.

Observer participation must be approved by the Program Scientist and the Deputy Associate Administrator for Research.

Observers must comply with SMD Policy Document SPD-17, *Statement of Policy on Observers at Panel Reviews of Proposals*. This policy is provided to all approved Observers who have implementation responsibilities.

Approved Observers include (this list will be updated as Observers are approved):

<u>Name</u>	<u>Affiliation</u>
Joe McKenney	SOMA
Sridhar Manthripragada	Explorers Program Office



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