2016 Small Explorer (SMEX)
Announcement of Opportunity and
Mission of Opportunity (MO)

Heliophysics Explorer Program
Concept Study Step-2 Q&A

Change Log		
Rev.	**Date**	**Description of Changes**
01	11/13/2017	Added Q&As 1 to 25
02	01/02/2018	Added Q&As 26 and 27
03	01/16/2018	Added Q&A 28
04	01/19/2018	Added Q&A 29
05	03/06/2018	Added Q&As 30 to 32
06	03/09/2018	Updated Q&A 30

Q1: Will the mission Launch Readiness Date (LRD) be slipped?

A1: The requirement for mission LRD will remain NLT August 2022, as specified in the Heliophysics SMEX 2016 AO and the 2016 Heliophysics Explorer MO PEA Q to the SALMON-2 AO. Down-selection decisions in early Spring of 2019 will allow sufficient time for completion of a nominal 36-month Explorers Program mission development (as specified in the AO and PEA Q), while meeting the stated LRD.

Q2: What date should proposers use for the start of Phase B?

A2: Proposers should assume that Phase B will start on April 19, 2019.

Q3: When will Site Visits occur?

A3: The SMEX and MO Site Visits are planned to take place between January 10, 2019 and February 14, 2019 (dates still TBR), inclusive. The SOMA Acquisition Manager contacted PIs in late 2017 to provide date options, and will contact PIs in early 2018 to schedule Site Visits. Note that the established date may necessitate a no-cost extension to a Concept Study team's Phase A Contract.

Q4: Do Institutional Letters of Commitments need to be renewed for Step 2?

A4: Yes.

Q5: Will SEOs provided by non-U.S. partners, which do not involve direct NASA funding, require international agreements?

A5: Given the possibility for transfer of export-controlled material, it is likely. Details of any such partnership must be included in the draft language provided in Appendix M.7 "Technical Content of any International Agreement(s)".

Q6: Can a Student Collaboration (SC) be added or adjusted during the concept study phase?

A6: Yes. Provision of an SC is highly encouraged. Note that SC enhances, but does not reform or redesign individual undergraduate or graduate courses or degree requirements. SC is not a form of teaching or research assistantship. SC must not be proposed to provide whole year or multi-year tuition and stipends normally provided by scholarships or fellowships. SC may be proposed to include the cost of incentives, stipends, travel, equipment or services, etc. designed to enable a student to successfully participate in Research and Development (R&D). Students supported on SC are not *interns*; they are

associates who work jointly on the proposed real R&D while receiving appropriate mentoring and other support.

Q7: Can concept study teams continue to work with the Launch Services Program (LSP) during the concept study phase?

A7: Yes. For LSP support, Phase A concept study teams *must* work through the LSP Point of Contact (POC), Ms. Alicia Mendoza-Hill, (321) 861-5914, alicia.mendoza-hill@nasa.gov. Note that Ms. Mendoza-Hill will relay – to the Heliophysics Program Scientist and SOMA Acquisition Manager – any question that may be applicable to more than one concept study team for possible posting as a Q&A in this document.

Q8: To whom should questions on alternative access to space be sent?

A8: Questions regarding alternative access to space are to be sent to the Heliophysics Explorers Program Scientist, Dr. J. Daniel Moses, dan.moses@nasa.gov. The LSP POC, Ms. Alicia Mendoza-Hill, alicia.mendoza-hill@nasa.gov should be cc'ed.

Q9: What is the expectation for the Memorandum of Understanding referenced on slide 18 of the NASA Launch Services Program presentation at the Concept Study Kickoff?

A9: For reference, the slide title is Alternative Access to Space: NASA Supplemental Mission Advisory and Risk Team Tenets. The fourth bullet specifies:

A Memorandum of Understanding (MOU) will be created between LSP and the Project defining the roles and responsibilities associated with a SMART [Supplemental Mission Advisory and Risk Team] with NASA SMD agreement and Agency Stakeholder knowledge

The MOU is a Phase B activity, so will be implemented after down-selection. However, the associated cost needs to be included in the PI-Managed Mission Cost. Contact Ms. Alicia Mendoza-Hill, (321) 861-5914, alicia.mendoza-hill@nasa.gov for details.

Q10: Do proposers of International Space Station (ISS) payloads need to populate the Proposer ISS Instrument Resource Accommodation Table and the Proposer Requested ISS Resource Table?

A10: Yes, the tables must be provided as separate files on the CD/DVD. The tables have been posted in Microsoft Word format to the 2016 Heliophysics Explorer MO Program Library.

Q11: Please provide additional details on payload serial telemetry during launch and separation events for NASA-provided launch services.

A11: Refer to the Pegasus User's Guide sections 5.3.2 and 10.14 for details on Enhanced Telemetry Capabilities. The cost to be included in the PI-Managed Mission Cost for this nonstandard service is $150K.

Q12: What constitutes inadequate clearance margin within the Pegasus fairing static envelope?

A12: The Pegasus standard is to demonstrate clearance to the static envelope, but there is no exact clearance minimum because it is very dependent on the location of the closest approach in relation to the fairing configuration. This standard requires knowledge that the Spacecraft meets the frequency limits. Designing at an early design phase close to the static envelope does not allow for growth and increases the risk of violating the clearance to the static envelope during development. In addition, the Pegasus User's Guide states that the "static envelope does not account for payload non-rigid body deflections[;] payload dimensional errors due to manufacturing/design and tolerance stack-up shall be accounted for within the static envelope."

Q13: Is the Minotaur-C a viable launch vehicle option for consideration as a NASA-provided launch service?

A13: Proposers are advised to plan for compatibility for both Pegasus and Minotaur-C as mentioned in LSP's Concept Study Kickoff presentation. But Pegasus is the limiting/encompassing case, so if you design to a Pegasus, you will be able to fit on a Minotaur-C. The LSP Information Summary document in the Acquisition Program Library includes the limiting environments that will ensure compatibility with both launch vehicles.

Q14: How should separation analysis support be costed for NASA-provided launch services?

A14: Separation analysis for a single payload is included in the NASA-provided launch services if the separation system is provided by the launch vehicle. Separation of multiple spacecraft requires a nonstandard service. As stated in LSP's Concept Study Kickoff package, for Multiple Spacecraft Deployments the cost to be included in the PI-Managed Mission Cost is $750K. This cost includes additional separation analyses, GNC analyses, increased electrical capacity, and additional auxiliary PDU required for the separation of multiple spacecraft.

Q15: Has the NASA Headquarters POC for Space Communications and Space (SCaN) assets changed?

A15: Yes, the new POC is John Hudiburg, (202) 358- 9152, john.j.hudiburg@nasa.gov.

Q16: May proposers restate Step-1 weaknesses in CSRs?

A16: Yes, although it is not required.

Q17: If a CSR addresses Criterion A factors – apart from Factor A-3, which will be re-evaluated as Factor B-7 in Step 2 – but does not trigger a Criterion A re-evaluation, how might the changes be conveyed to the Step-2 Selection Official?

A17: If a PI believes that a change is an important consideration for down-selection, he/she may choose to address the changes in the CSR Executive Summary, and/or at the PI briefing to the Selection Official prior to down-selection.

Q18: Please provide clarification on Requirement CS-61 for the detailed cost proposal for Phase B. The Phase A SOW, section 3, states a deliverable of a Bridge Phase Detailed Cost Price Element. Is the priced element for the entire Phase B effort, or just the 5-month Bridge phase?

A18: The detailed cost proposal for Phase B in Requirement CS-61 is a CSR deliverable that must address the entirety of the Phase; it will be used for both evaluation and post-down-selection purposes. The requirement for a "Phase B Bridge Detailed Cost Estimate" in the SOW issued by the Explorers Program Office is limited to the 4- or 5-month Bridge Phase. Note the Concept Study Guidelines and Criteria statement: "[d]uring the Bridge Phase, NASA and the continued projects will negotiate and sign contract modification necessary for the remaining portion of Phase B."

Q19: Which version of Microsoft Project is required for delivery of the schedule file?

A19: Microsoft Project format project schedules may be submitted in 2007 (discouraged) or 2010 compatible file formats.

Q20: AO Requirements B-55 and B-56 required an exploded diagram and explanatory table for cooperative contributions. The Step 1 appendix containing these is absent from the CSR outline for Step 2. Where in the outline are we required to include these data?

A20: AO Requirements B-55 and B-56 remain in force for CSRs. Please provide the associated diagram and table as part of the page-unlimited Cost Proposal section.

Q21: Appendix M.5, Requirement CS-81 is about the Data Management Plan, but the language is not limited to science data. Is the requirement limited to science data only or intended to include other "project data" as stated (e.g., CADRe data)?

A21: "Data" in Data Management Plan refers to the science data. Requirement CS-81 is closely linked to Requirement CS-23, and Data Management Plan in both requirements refers to the proposer's plan to disseminate the science data.

Q22: Appendix M.13, Requirement CS-87 includes the statement "Certain items should include additional details sufficient to assess functionality and/or cost, to identify and separate individual elements." What is the list of the "certain items" for which SOMA expects such additional details?

A22: There is no definitive SOMA list. The key consideration for determining whether or not an item should be described in additional detail in the MEL is the necessity of that information "to assess functionality and/or cost".

Q23: Regarding "all elements associated with a non-NASA launch or rideshare provider" in Factor C-5 of the Guidelines and Criteria for the Concept Study, could examples of mission-unique serviced be provided?

A23: Examples include loads isolation systems, unique mechanical/electrical interfaces, payload processing facilities, commodities, post-encapsulation access requirements, supplemental propulsion systems, deployable telemetry tracking assets, and GN2 Purge.

Q24: Please confirm that the Phase B Contract Implementation Data is not due until the Site Visit.

A24: The answer is institution dependent, and also affects Bridge Phase proposals:

- Because the Explorers Program Office does not issue contracts to NASA Centers, these institutions are not required to address the Bridge Phase proposal or Appendix M.4 Phase B Contract Implementation Data.
- Because of constraints on modifications to JPL task orders, missions for which the Explorers Program Office awarded the institution Phase A task orders are not required to provide Bridge Phase proposals for JPL's role in Phase B. Draft Phase B task plans, which will facilitate modification of the applicable JPL task order(s) upon down-selection, are not required until each mission's site visit.
- Institutions to which the Explorers Program Office awarded a Phase A contract will be required to provide Bridge Phase proposals at the time of CSR submission. However, provision of Appendix M.4 Phase B Contract Implementation Data may be delayed from CSR submission to each mission's site visit.

All other Phase B requirements (e.g., Section J. Preliminary Design and Technology Completion [Phase B] Plan) remain in effect.

Q25: Can investigations that reside at institutions with NASA-approved Safety and Mission assurance standards use their own institutional practices in lieu of *SMall EXplorers (SMEX) Mission Assurance Requirements (MAR), Mission Risk Classification - NPR 7120.5 Class D?*

A25: No, the SMEX MAR for Class D is the standard against which quality assurance and all other mission assurance related processes are evaluated, ensuring that all CSRs will be held to the same mission assurance standards. Note that the MAR requires a Mission Assurance Implementation Plan (MAIP) and Compliance Matrix to be submitted with the CSR.

Q26: Will funds set aside by the Heliophysics Division for Unallocated Future Expenses (UFE) be available to address launch-driven cost growth?

A26: UFE "retained above the level of the project" as specified in NPR 7120.5E is intended to address unknown risks that are outside the control of a project. The portion of a project's PI-Managed Mission Cost designated as "encumbered cost reserve" and "unencumbered cost reserves" (i.e., "project-held UFE" as specified in NPR 7120.5E) are intended to address the project's known and unknown risks respectively.

Consequently, mission teams providing their own access to space/near space must include the effects of any known risks as quantified risk assessments. Uncertainty associated with unknown risks must be included in the basis of the proposed unencumbered cost reserves; it is expected that the impact of this uncertainty will result in unencumbered cost reserves *in addition* to those driven by other uncertainties (e.g., instrument development).

Note that given the specification of fixed costs for NASA-provided launch services (SMEX) and access to space/near space (MO) in the AO and PEA respectively, the Heliophysics Division will assume responsibility for costs in excess of any in the AO or PEA, as well as the mission impact of delays driven by either NASA-provided service. Services that are included in addition to Basic Launch Services are identified in the *NASA_Provided_Launch_Services* document located in the SMEX Program Library.

Q27: Please provide additional information regarding NASA launch vehicle monitoring functions and advisory services.

A27: See the *2017_Advisory_Services_Overview_for_2016_Heliophysics_Explorer* document located in the SMEX and MO Program Libraries for a nine-page overview.

Q28: Requirement CS-75 in the Concept Study Guidelines and Criteria document lists three classes that require Letters of Commitment. Please clarify who each class represents.

A28: Class (i) maps directly to AO Requirements 69 and 75 for contributions. Class (iii) was intended to map to AO Requirement 77, but for Personal Letters of Commitment, rather than the NSPIRES-based commitments that were required in Step 1. Consequently, the class is hereby changed from "every U.S. or non-U.S. Co-I and collaborator" to "every Proposal Team member". The "major […] participants" in class (ii) is meant to be "major partners" covered under AO Requirement 76. The "critical participants" in class (ii) is intended to represent organizations *and* individuals who are "considered by the PI to be critical to the success of the mission" per Requirement CS-75. Note that participants may be members of multiple classes, in which case, provide a Letter of Commitment for each applicable class.

Q29: Should Concept Study teams use the most recent versions of NASA documents from NODIS (e.g., NPR 8000.4B, versus NPR 8000.4A specified in the CSR Guidelines and Criteria document)?

A29: To ensure a consistent basis for evaluations, Concept Study teams are to use the versions of NASA documents that are posted in the applicable Program Library, as specified (in descending order of precedence) in the CSR Guidelines and Criteria document, the Helio SMEX AO, the MO PEA Q, and/or the SALMON-2 AO, as applicable. Unless otherwise noted, the documents that were in force upon AO release shall remain so, for the duration of the opportunity, until down-selection.

Q30: Should Concept Study teams follow the SMD Class D Tailoring guidance provided in the *NASA Science Mission Directorate Class-D Tailoring/Streamlining Decision Memorandum* (signed 7 December 2017)?

A30: The SMD DAAR has provided a **MEMORANDUM FOR THE RECORD (signed 12 February 2018) RE: Guidance on the Application of *NASA Science Mission Directorate Class-D Tailoring/Streamlining Decision Memorandum* (signed 07 December 2017) to Currently Active AO Competitions**, which is posted in the SMEX and MO Program Libraries. As a consequence of this recent guidance memo, the Concept Studies for the SMEX and MO 2016 Step-2 competition should be based on the original Class D mission requirements in place when the proposals were submitted. Details are contained in Section N of the updated Guidance and Criteria for the Phase A Concept Study [Amended March 5, 2018], now posted to the program libraries.

Q31: When are the Concept Study Reports due to NASA?

A31: As stated in the Guidelines and Criteria for the Phase A Concept Study document [Amended November 13, 2017],

CDs/DVDs containing the CSRs and all required files, along with 2 signed, original hardcopies, are due by 4 p.m. Eastern Time, July 30, 2018 – *unless a slip is necessitated by a delay in the award of a contract or task to a given investigation team* [italics amended November 13, 2017]

If a slip in a team's Concept Study Report due date is granted, that team's Principal Investigator will be notified of the delay and its duration by the Heliophysics Explorers Program Scientist.

Q32: Slide 17 of the NASA Launch Services Program presentation at the Project Initiation Conference (Concept Study Kickoff) included the Minotaur-C as one of two "[m]ost likely candidate vehicles for this SMEX AO that are available on the NLS II contract". Is more performance beyond what is specified in Figure 1 of the *ELV Launch Services Program Information Summary* available for concept studies?

A32: As indicated in each version of the *ELV Launch Services Program Information Summary* provided in the Heliophysics Explorers Program 2016 SMEX Program Library as of and subsequent to final AO release, and reinforced by Step-1 Q&A-80, "[f]or a NASA-provided ELV launch service, the proposal must be designed to the enveloping launch vehicle characteristics and capabilities provided in Attachment 1". Designing to the specifications in Attachment 1 will ensure that concepts remain compatible with both candidate vehicles.