2016 Medium Explorer (MIDEX)
Announcement of Opportunity

Astrophysics Explorer Program
Q&A

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Q1 : If a mission requires a balloon as the launch vehicle, but it does not fit within the Mission of Opportunity (MO) cost cap, can such a mission be proposed above the MO cost cap, but below the MIDEX cost cap, to be considered as a full-scale MIDEX and reviewed as such?

A1 : No, a MIDEX mission is a space mission not a suborbital mission.

Q2 : Page 4 of the Draft Astrophysics Explorers 2016 MIDEX AO says that the date for the Downselections of Investigations for Flight is "Late fall/early winter 2019." Is that correct?

A2 : No, the correct date for the Downselections of Investigations for Flight is "Late fall/early winter **2018**."

Q3 : Requirements 21 and 22 provide proposal instructions for describing use of radioactive materials. In response to previous AOs, this was covered in a "Special Processes" paragraph within F.3, Development Approach. There appears to no longer be a logical location in the proposal to address this requirement.

A3 : This information can still be contained in Section F.3.

Q4 : Requirements 23 and 26. This requires the use of Ka-band for the return of science data. In the past, this requirement has been limited to deep space missions, where the signal strength is low and where the S and X band spectrum are shared with other users in Spain and Australia. This requirement is not needed for missions in low earth orbit. In fact, it is risky for low inclination missions, since there is limited Ka band service outside of the polar regions. The Mission Operations and Communication Services document in the Program Library makes no mention of any restriction on Ka-band. What constitutes sufficient justification for use of an alternative communications approach? Given that these requirements necessitate potentially significant, and costly, changes to designs that were expected to be compliant based upon previous AOs, recommend deleting these requirements, limiting them to high data volume missions that use the DSN, or limiting this requirement to polar missions.

A4 : Alternative communications approaches that are critical to mission success should be justified in the proposal. The Program Library has been updated with documents with more specific information on Science Mission data communications.

Q5 : Requirement 26. The AO requires Ka-band for science data downlink. While the DSN has numerous Ka-band assets, the NEN currently has a very limited number of Ka-band assets to support near-Earth missions, especially non-polar orbiting spacecraft. Will proposals to use Ka-band with NEN in order to meet the AO requirement be considered higher risk than more robust solutions involving X or S-band with NEN? If the result of the Ka-band requirement is higher risk, then would that be adequate justification for missions to propose using X and/or S-band with NEN?

A5 : Requirement 26 of the AO states that "the proposal shall contain a justification for the use of an alternative communications approach." Proposers can propose to use X and/or S-band with NEN and include a justification.

Q6 : Requirement 26. In cases where the science data volume is low, the requirement to use Ka-band for science data downlink adds an additional telecom system beyond a likely S-band/X-band CMD/TLM telecom system. If a lower data rate telecom system permits all mission data volume rate requirements to be met, the inclusion of a required Ka-band adds cost to the mission without providing any comm benefits. Is a cost increase with no benefit to data volume/rate an acceptable justification for the use of other bands for science data downlink?

A6 : Requirement 26 of the AO states that "the proposal shall contain a justification for the use of an alternative communications approach." Proposers can propose to use X and/or S-band include a justification based on heritage and cost benefits to the mission.

Q7 : Section 7.2.4, TMC Feasibility of the Proposed Mission Implementation Evaluation. Factor C-3 "…includes an assessment of the adequacy of the plans for ….. mission assurance, …." With the deletion of the requirement for a Mission Assurance description as part of the Development Approach section, if feels proposers are at risk of being downgraded against C-3 evaluation criteria TMC panels will use.

A7 : Mission assurance will be assessed, as stated in the Evaluation Factor C-3, as part of "an assessment of the proposer's understanding of the processes, products, and activities required to accomplish development and integration of all elements…" As a guide, a Draft Mission Assurance Document for Class C Missions from the Explorers Program Office is posted in the Program Library.

Q8 : Table B3b Template. Section 7.4.3 implies that the bridge phase funding will be identified in phase A, leading to an amendment of the phase A contract. Recommend deleting the Phase B bridge phase funding line at the bottom of the Table B3b template.

A8 : The bridge phase funding needs to be identified in the Step 1 proposal and included in Table B3b.

Q9 : Requirement B-5 states that "Links to other parts of the proposal are permitted, but links to materials outside of the proposal are not." Please confirm that URL links are permitted for documents outside the proposal for the List of References (Appendix J.12).

A9 : Yes, URL links for documents are permitted in the reference list. However, as Section J.12 states, "proposals must be self-contained: any data or other information intended as part of a proposal must be included within the proposal itself."

Q10 : Will the Falcon 9 be one of the launch vehicles supplied by the NASA Launch Services Program?

A10 : The launch service for this mission would be competed and awarded approximately 30 months before launch. The launch providers currently on contract who, depending on size of AO-selected mission, would be expected to compete are Orbital ATK (Pegasus, Minotaur-C, and Antares), Lockheed Martin (Athena), SpaceX (Falcon 9FT), and United Launch Alliance (Atlas V).

Q11 : Will the MIDEX AO Preproposal Conference be in-person or via web/teleconference? And when do you expect it to be?

A11 : It will be via web/teleconference, and take place two to three weeks after the AO release.

Q12 : Section 5.9.2 of the draft MIDEX AO said that there would be a charge against the PI-Managed Cost Cap for a low Earth orbit of less than 38-degrees inclination. Is that still the case?

A12 : No, please refer to the revised ELV Launch Services Program Information Summary document now in the Program Library, which specifies the orbits covered by the standard launch services. Although the maximum mass allowed under the standard launch service for this AO at 5- and 10-degree inclinations are still to be provided (TBP), they are expected to be adequate for MIDEX applications.

Q13 : What date does NASA anticipate providing the TBP values for the LEO 5- and 10-degree low inclination @ 600 km TBP performance values contained on page 3 of the MIDEX AO ELV Launch Services Program Information Summary dated 9/12/2016?

A13 : The TBP Performance value is 1500 kg for the LEO low inclination 600 km, 5-degree case. The TBP Performance value for the LEO low inclination 600 km, 10-degree case will be provided later in October 2016. *[Update, 10/14/2016: Performance value is 1740 kg for LEO low inclination 600 km, 10-degree case. See updated document in the Program Library]*

Q14 : Page 5 of the MIDEX AO ELV Launch Services Program Information Summary dated 9/12/2016 refers to a "Large PLF uses a 56.2 inch (1427mm) separation system." Would it be possible for NASA to provide additional interface dimensions/information or refer proposers to a particular Launch Users Guide where this information can be found?

A14 : The Launch Services Program currently has the option to fly multiple different separation systems, but none are sized at 56.2 in (1427 mm) as quoted from the ELV Launch Services Program Information Summary. This is an error in the Summary document. The correct information is that the standard service for the "Large PLF" is the 1194 mm separation system.

Q15 : What is the page limit for the classified heritage appendix? Is it also 30 pages, in addition to 30 pages of an unclassified heritage appendix?

A15 : No, the total page limit for both unclassified plus any classified appendices is 30. In other words, the page count of the unclassified appendix plus a classified appendix must not exceed 30 pages. Extra pages for the classified appendix are allowed only for Letters of Validation from the technology sponsor of the classified heritage technology.

Q16 : For a mission proposed for a low inclination orbit with an altitude of 575 km, could you please provide the performance for both 5- and 10-deg inclination?

A16 : Typically for LEO, lower altitudes result in higher performance, but because of the efforts to get to such a low inclination, the performance can actually go down with lower altitudes. Per the latest Launch Services Program (LSP) ELV Launch Service Summary document in the AO library, the Explorers Program has provided a planning value of 1500 kg to the representative 600 km @ 5-deg orbit - for 575 km, LSP estimates the performance to be 1475 kg. Explorers has provided a planning value of 1740 kg to the representative 600 km @ 10-deg orbit - for 575 km, LSP estimates the performance to be 1715 kg.

Q17 : Please confirm that as long as it remains below the $250M cost cap, the Phase A CSR cost can exceed the proposal cost estimate.

A17 : Yes, but there is a limitation on how much it can grow. Section 7.4.4 of the AO states "the PI-Managed Mission Cost will not increase by more than 20% from that in the Step-1 proposal to that in the Phase A Concept Study Report, and, in any case, will not exceed the AO Cost Cap."

Q18 : What level of detail is expected in the electronic version of the master schedule? Are there any expectations from reviewers that it be at a significantly higher level of detail than contained in the 3 schedule fold-outs in the proposal?

A18 : The level of detail should be the same as in the fold outs. As the AO states in Requirement B-41, "…the project schedule provided on each CD-ROM shall address the items specified in Requirement B-40 at a level of detail commensurate with that of the graphical foldout. The Microsoft Project schedule is not intended to be a fully Integrated Master Schedule for the project, but rather, it is to be a representation of the summarized schedule foldout that provides a quantified data set …"

Q19 : Will the Preproposal Conference charts be public?

A19 : The charts can be found via the acquisition page at https://explorers.larc.nasa.gov/APMIDEX2016/prepropconf.html. They were posted there prior to the preproposal conference on October 6, 2016, and some were updated to correct typos or errors noted during the presentations.

Q20 : Do launch vehicle delays have to be funded by the project? We understand that project I&T delays, etc, are funded by the project.

A20 : If the launch vehicle itself is delayed, the project will not be responsible for costs related to the delay. Therefore, funding reserves do not need to be held under the PI-Managed Mission Cost for launch vehicle delays. Costs related to integration and test delays must be borne by the project under the PI-Managed Mission Cost, and should be planned for accordingly.

Q21 : Requirement 18 of the MIDEX AO asks to "describe the investigation's proposed systems engineering approach, including plans, tools, and processes for requirements, interfaces, and configuration management" and refers to Appendix B, Section F for additional detail. Section F in Appendix B does not specifically state "plans, tools, and processes for requirements, interfaces, and configuration management." What specifically needs to be addressed in Section F?

A21 : Appendix B, Section F of the MIDEX AO, entitled "Mission Implementation" contains 16 requirements, B26 – B41. Although these requirements and supporting text may not state, verbatim, some of the examples given in Requirement 18, they do collectively describe the systems engineering approach of the investigation. These requirements must all be addressed.

Q22 : Is the use of AMMOS required? If it is not required, is there a requirement to justify not using it?

A22 : The use of AMMOS is not required. Not using AMMOS does not need to be justified. However, if a ground/operations system solution other than the AMMOS or mission-unique adaptations to the AMMOS are proposed, the other solution or adaptation needs be described and budgeted for in the proposal.

Q23 : Are we or aren't we expected to include the DSN aperture fee and/or the NEN/SN per-minute fees in the cost plan requested in Requirements 23 / 24? Section 5 of the Mission Operations & Comm. Services document says "NASA missions that use standard services will not be charged for aperture or per minute fees." But in the same paragraph it also says "the calculated estimate of services provided is required to document the full value of the mission and its services." Please explain.

A23 : Yes, the DSN aperture fee and/or the NEN/SN per-minute fees need to be included in the cost plan. To level the playing field, SMD requires all communication costs paid by NASA to be included in the PI-Managed Mission Cost, even if the mission will not be directly billed.

Q24 : Can you please confirm that in Q&A 18, the direction is to not expand any further the information on the fold-outs as provided electronically in MS Project format? Additional verbiage in requirement B-41 regarding the MS Schedule file to be included on the CD-ROM seems to be allowing, in the electronic document, supporting information that could not be physically represented within the limits of the three page schedule foldouts not counted against the section F+G page limit.

A24 : The electronic schedule document should not expand on (i.e., add to) material contained in the text of Sections F and G, and the information in the foldout material. The electronic document is meant to provide a numerical representation of the pdf version of the schedule foldout and any details in the verbiage of the main body of the proposal pertaining to schedule.