2021 Astrophysics Medium Explorer/Mission of Opportunity Phase A Concept Study Kickoff Meeting and PI Masters Forum

Welcome and Congratulations!

On Webex, please mute except to speak – prevent feedback!

Turning your camera off might reduce latency.

Use "chat" to ask questions during a presentation,

or "raise hand" during a question period.

- WebEx meeting number (access code): 2761 582 7320; password: xVBdFJ3c?75
- To dial in: 415-527-5035, Passcode 2761 582 7320 (don’t forget to enter the “#” sign)

Meeting Agenda

Phase A kickoff: Welcome	Mark Clampin, Director, Astrophysics Division
Concept Study Overview	Linda Sparke, Explorers Program Scientist (HQ)
TMC Requirements	Behzad Raiszadeh, SOMA Acquisition Manager
Explorers Program Office	Cathy Peddie, Explorers Program Office
Launch Vehicles	Charles (Chuck) Tatro, NASA Launch Services Program
Mission Assurance	Ronald Perison, Explorers Program Office
Export Control	Juan Santos, NASA HQ Export Administrator
ISS Research Office (Q&A only)	Jennifer Scott-Williams, ISS Research Integration Office
Kickoff Questions and Answers, followed by lunch break	
PI Masters Forum:	
Opening Remarks, Participant Introductions	Geoff Yoder, retired NASA Senior Executive
New Program Management Office, MAVEN	David Mitchell, former MAVEN PM, now NASA Chief Program Management Officer, HQ
SOMA lessons from PI-led missions	Odilyn Luck, SOMA Acquisition Manager
NICER lessons learned	Keith Gendreau, NICER PI, GSFC
IXPE lessons learned	Brian Ramsey, IXPE PI, MSFC
TESS lessons learned	Jeff Volosin, former TESS PM, now Assoc Director, Earth Science Projects Division, GSFC

2021 MIDEX/MO Selected Investigations

Explorer Missions (MIDEX)

- UVEX - UltraViolet Explorer – PI Fiona Harrison at the California Institute of Technology, Pasadena
- STAR-X - Survey and Time-domain Astrophysical Research Explorer – PI William Zhang at NASA's Goddard Space Flight Center, Greenbelt, MD

Mission of Opportunity (MO)

- MoonBEAM - Moon Burst Energetics All-sky Monitor, a rideshare mission – PI Chiumun Michelle Hui at NASA’s Marshall Space Flight Center in Huntsville, AL
- LEAP - A LargE Area burst Polarimeter, on the International Space Station – PI Mark McConnell at the University of New Hampshire in Durham

Phase A Overview

- Selected MIDEX teams will conduct 9-month Phase A Concept Studies, funded up to $3M (real year dollars).
- Selected Mission of Opportunity (MO) teams will conduct 9-month Phase A Concept Studies, funded up to $0.75M (real year dollars)
- Concept Study Reports (CSRs) will be due **June 1, 2023**.
- NASA will conduct detailed reviews of the Concept Study Reports to evaluate the implementation details of the selected investigations, including any modifications of the scientific objectives, and the implementation including all technical and management factors.
- As a result of this Phase A evaluation, NASA expects to confirm one MIDEX investigation and one or two MO investigations for Phase B.

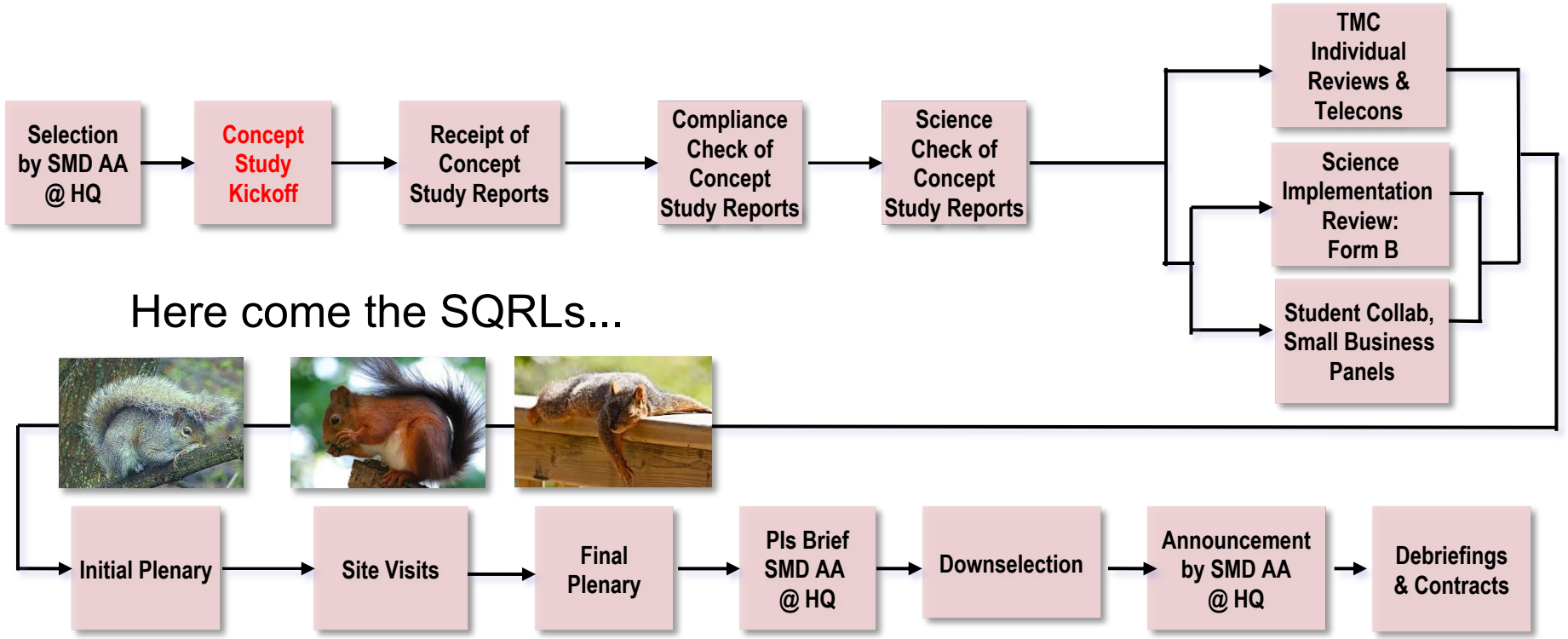
Management and Constraints

- This kickoff meeting will discuss instructions for the Phase A Concept Study.
- Phase A Study deliverables:
  - **Concept Study Report** must provide sufficient implementation detail and planning to allow NASA to judge probability of mission success; and
  - **Complete cost or pricing data** for Phase B shall be included with the CSR for each organization (Appendix L.4 specifies that this may be delayed till the site visit)
- Each mission's Concept Study Report must conclude with a commitment by the PI for the cost, schedule, and scientific performance of the investigation.
- NASA cannot guarantee that the proposed funding profile can be accommodated within the Explorer Program's budget. A funding profile for the selected mission will be negotiated during Phase B. Funding ramp-up for Explorers from the last 3 rounds (2014, 2016, 2019) has been slower than the PI requested.
- From minutes for July 2022 APAC: while the next MIDEX selection "will take place as announced, the mission's Phase B will be extended, resulting in a delayed launch".

Schedule

- The 9-month Phase A clock started on **18 August 2022**
- We have combined the PI Forum with the Phase A kickoff this year. SOMA hosts presentation slides from PI Forum 7 for the 2016 Astro & Helio Explorers, and PI Forum 8 (Helio MOs) at https://soma.larc.nasa.gov/pi-masters-forums/
- Concept Study Reports (CSRs) will be due at 4pm Eastern on **1 June 2023**
- Your team can change during Phase A. Draft conflicted-parties lists are due 3 months ahead, by 4pm Eastern on Monday **3 March 2023**: please let us know ASAP of subsequent changes.
- Document submission will use NASA Box (sad face emoji goes here), per CS-6.
- Linda Sparke (APD, HQ) will be the overall chair of the evaluation team and will lead the science evaluation.
- Behzad Raiszadeh (SOMA) will lead the TMC evaluation and coordinate site visits.

What Follows Selection?



SQRL = Significant weaknesses, Questions and Requests for information List

These are sent ahead of the site visit, after the site visit, and (maybe) from the final plenary

Site Visits

- We plan to conduct one-day site visits in-person in September or early October of 2023. A rough timeline, based on the 2016 Astro MIDEX/MO:
  - *November 2022:* NASA asks teams where they intend to host the site visit
  - *December/January:* **possible dates offered to teams, considering expected reviewer travel, Federal and major religious holidays. Dates set.**
  - *July 2023:* request to Study Teams for logistics info; SQRL timing and format.
  - *August 2023:* more information on site visit, SQRLs, secure information transfer, etc
  - *September 2023:* site visits

Concept Study Guidelines

- Astrophysics Explorer 2021 Draft Guidelines and Criteria for the Phase A Concept Study may be found at the Explorer Program Acquisition Website
  - *https://explorers.larc.nasa.gov/2021APMIDEX/*
  - Changes for the final version are expected to be small.
- Please send comments and questions to Linda Sparke by COB Monday October 10 so we can get the final version approved.
- The Q&A page on the website *https://explorers.larc.nasa.gov/2021APMIDEX/* will track answers to questions, and note changes to documents in the Program Libraries

Phase A Contract

- Following the Step-1 selection, the Explorers Program Office issues a **Request for Proposals** to each CSR team for the **Phase A contract,** plus a priced option for a **Bridge Phase,** to be exercised only when that investigation is down-selected to proceed into Phase B. The Bridge Phase provides program continuity while negotiations are completed to modify the contract to include the remainder of Phase B through KDP-C.
- **The Bridge Phase for both MIDEX and MO** will cover:
  - **project work** planned for the first 5 months of phase B (after downselect);
  - participation in the project kickoff meeting;
  - interactions with the Explorers Program Office, including work to award the balance of Phase B funding.
- The Explorers Program Office will then negotiate a priced option for this Bridge Phase into the Phase A contract, so that Phase B work can begin promptly.
- The period of performance of the Phase A contract will be set such that the contract does not expire before the expected down-selection.

Evaluation Criteria

- All three criteria from the AO or PEA will be used:
  - Scientific Merit
  - Science Implementation Merit
  - Feasibility including Cost Risk
- The Step-2 evaluators will not have access to the Step-1 proposals, nor to the Step-1 reviews.
- Weighting between criteria will be different from Step 1, some individual factors are tweaked, some factors are added
- The TMC review (Criterion C) will be weighted most heavily:
  - Scientific Merit of the investigation: medium weighting
  - Scientific Implementation Merit and Feasibility of the investigation: medium weighting
  - Feasibility of Mission Implementation, including Cost Risk: **largest weighting**
  - Quality of plans for Small (Disadvantaged) Business Sub-contracting, and for an optional Student Collaboration, if proposed: approximately 5%

Scientific Merit Evaluation: Criterion A

- Step 1 selections were primarily based on *science balanced by feasibility*. Unless the science has changed, the Step-2 Science evaluation *will emphasize implementation*.
  - Unless directed, or Concept Study results demand it, objectives of Baseline and Threshold Science Missions should not change.
  - Science section from Step 1 proposal **must** be repeated in the CSR.
  - Any and all changes from Step-1 must be highlighted (e.g. change bars).
  - If there are no **significant** changes (= likely to change the Form A rating) to the **science objectives** or other aspects of the **proposed Baseline and Threshold Science Missions**, the Form A rating remains unchanged from Step-1.

Science Implementation Evaluation: Criterion B

- All of the factors defined in Section 7.2.3 of the MIDEX AO or the SALMON-2 AO apply to the Concept Study and will be re-evaluated from the data supplied in the CSR and at the site visit (unlike Step-1, you can give us new information):
  - Factor additions:
    - Details of data collection plans added to Factor B-1
    - Added instrument design to Factor B-2
    - New Factor B-6 on Science Enhancement Options: SEO does not contribute to Form B rating. Note AO Sec 5.1.5: "an extended mission, or a guest observer/guest investigator program, may be proposed after downselection; these activities need not be proposed in the CSR"
    - New Factor B-7: Maturity of proposed Level 1 science requirements and Level 2 project requirements (see next slide)
- The science panel will provide comments to NASA on how far the proposed investigation provides career development opportunities to train the next generation of science leaders. These comments may be considered during down-selection.

Science Implementation Evaluation: Criterion B-7

- Factor B-7: Maturity of proposed Level 1 science requirements and Level 2 project requirements
  - …whether the Level 1 science requirements are mature enough to guide the achievement of the objectives of the Baseline Mission and the Threshold Mission, and whether the Level 2 requirements are consistent with the Level 1 requirements
  - Levels 1 and 2 requirements … stated in unambiguous, objective, quantifiable, and verifiable terms that do not conflict and … are traceable to the science objectives.
    - If you can do your science without meeting your stated technical requirements, then those are NOT your technical requirements
  - They will be evaluated for the adequacy, sufficiency, and completeness, including their utility for evaluating the capability of the instruments and other systems to achieve the mission objectives.
  - The stability of the Level 1 science requirements and Level 2 project requirements … including whether the requirements are ready, upon initiation of Phase B, to be placed under configuration control with little or no expected modifications for the lifecycle of the mission.

Evaluation: Other Criteria

Feasibility Evaluation: Criterion C – will be covered in the TMC presentation following.
Odilyn Luck (SOMA) will present this afternoon on common causes of major weakness.

Plans for Small (Disadvantaged) Business sub-contracting, and any proposed Student Collaboration – will be assessed separately

Step-2 CSR evaluation is different from Step-1 proposal evaluation

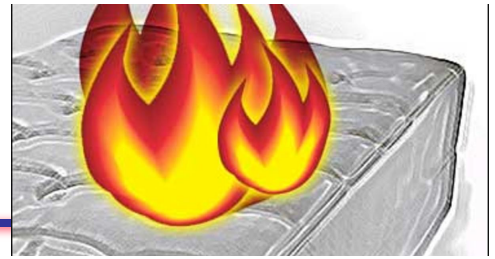
At Step-1, evaluators give the proposing team the "benefit of the doubt"; this is no longer true at Step-2.

At Step-2, proposing teams may give free-form answers to significant weaknesses, questions and requests for information from the review panels. Information from answers to reviewer questions and from the site visits will be considered along with the content of the Concept Study Reports.

Communicating with NASA Program Offices

- Communications between Study Teams and the various NASA program offices will be focused to ensure fairness.
  - Communications after this meeting will be controlled.
  - Requests for technical and expert advice should be posed directly to identified Points of Contact (POC's). We will share MIDEX Qs via the Q&A; also MO Qs unless very specific to ISS or rideshare. Your POCs are on your side: if you don't know how to write something up to show how it makes sense or fits the rules, ask! You can rope in the POCs to help answer SQRLs and to support you during the site visit.
  - All programmatic questions, including questions of policy, questions of interpretation, and questions of clarification, should come to HQ/Linda Sparke
  - Generic versions of questions and answers will be posted as "Questions and Answers" available from the Explorer Program Acquisition website

PI Masters Forum ("burn your bed"?)



- From **PI Masters Forum 8**, see the presentation explaining Level 1 and Level 2 requirements. A low-graphics version of this presentation has been added to the 2021 MIDEX/MO Program Library.
- From **PI Masters Forum 7**, these slides give a good account of what the presenters said:
  - NICER PI Keith Gendreau (especially the last 5 slides, on how he recruited and managed his team)
  - Kepler Project Manager Charlie Sobeck ("things *will* go wrong...": how the Kepler team prepared in anticipation of problems)
- The **SOMA main page** at https://soma.larc.nasa.gov links to all the presentations from PI Masters Forum 7 and 8.
- Go talk to experienced PIs and PMs locally – what do they wish they had known?

QUESTIONS?