



**National Aeronautics and Space Administration
NASA Headquarters
Human Exploration and Operations Mission Directorate
300 E ST SW
Washington, D.C. 20546-0001**

Asteroid Redirect Mission Umbrella for Partnerships (ARM-UP)

Broad Agency Announcement

Appendix B: ARM Investigation Team Phase 1

NNH16ZCQ002K-ITP1

**Issued: September 6, 2016
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Proposals Due: November 3, 2016**

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1 Description of Solicitation Topic

1.1 Overview

This is an Appendix to the umbrella Broad Agency Announcement (BAA) NNH16ZCQ002K – Asteroid Redirect Mission Umbrella for Partnerships. This Appendix contains information specific to this call for proposals, and only includes sections that have been changed from the umbrella BAA to apply to this specific opportunity. For sections that are not changed, and for general information about this solicitation, proposers are advised to refer to the umbrella BAA. Where this Appendix and the umbrella BAA are in conflict, this Appendix takes precedence.

The National Aeronautics and Space Administration (NASA) invites scientists, engineers, technologists, and other qualified and interested individuals to apply for membership on the Investigation Team (IT) for the Asteroid Redirect Mission (ARM). This solicitation is for investigations to maximize the knowledge gain from the mission and provide overall expertise in support of mission operations and risk reduction. This solicitation is open to U.S. government agencies, NASA, Jet Propulsion Laboratory (JPL), U.S. national laboratories, Federally Funded Research and Development Centers (FFRDCs), non-government U.S. institutions (companies, universities, nonprofit organizations), and international organizations. Additional eligibility information is included in the Broad Agency Announcement (BAA), titled “Asteroid Redirect Mission Umbrella for Partnerships (ARM-UP).” Proposals from international organizations must comply with Section 4.2 of the ARM-UP umbrella BAA, Guidelines for International Participation. Successful proposers to the separate solicitation found in “Appendix A: Hosted Payloads on ARRM” of this BAA and strategic international partners with which NASA has had prior and continuing relationships on ARM will be expected to provide one representative to serve as a member of the ARM Investigation Team. Approximately 1/4 time level-of-effort is anticipated for each Investigation Team member. The expected total program budget is indicated in Section 5, the Summary Table of Key Information.

1.2 Background

ARM is part of NASA’s plan to advance the new technologies and spaceflight capabilities needed for a human mission to the Martian system in the 2030s, as well as other future human and robotic missions. ARM includes the Asteroid Redirect Robotic Mission (ARRM) and the Asteroid Redirect Crewed Mission (ARCM), along with leveraging the global asteroid-observation community’s efforts to detect, track and characterize candidate asteroids. ARRM will be the first robotic mission to visit a large (greater than ~100 m diameter) near-Earth asteroid (NEA) and collect a multi-ton boulder from its surface. The spacecraft will use the multi-ton boulder to perform an Enhanced Gravity Tractor (EGT) asteroid deflection demonstration and then return it to a stable orbit around the Moon, where astronauts will explore the boulder and return with samples in the mid-2020s during the ARCM. Subsequent human and robotic missions to the returned material could also be facilitated by its availability in cislunar space and would benefit scientific and partnership interests, expanding our knowledge of small celestial bodies and enabling the demonstration of mining asteroid resources for commercial and exploration needs. NASA has identified the NEA (341843) 2008 EV₅ as the reference target for the ARM. The final target selection for ARM will be made approximately a year before launch of the ARRM spacecraft, but there is a strong preference that the target NEA be a volatile and organic-rich carbonaceous (C-type) asteroid.

The ARRM will utilize an advanced 50 kW-class Solar Electric Propulsion (SEP) spacecraft along with sensors and a robotic Capture Module to characterize the parent NEA, identify and select candidate boulders,

allow contact with the parent NEA, and collect the selected boulder from the surface. Following final restraint of the boulder, the ARRM spacecraft will demonstrate the EGT technique on the parent NEA, with the collected boulder augmenting the spacecraft mass and thereby greatly increasing the gravitational force between the objects. The instrumentation currently planned includes a sensor suite for high-resolution mapping during the Characterization Phase and navigation during the Boulder Collection and Planetary Defense Phases. The ARRM spacecraft is also planned to provide imagery of the boulder through descent and capture. After the ARRM spacecraft returns to a stable lunar orbit in the mid 2020s, initial astronaut exploration and sampling of the returned material will be performed during the ARCM. The capabilities, systems, and operational experience developed and implemented by ARM and subsequent missions to the returned asteroidal material will advance NASA's goal of sending humans to deep-space destinations and eventually to surface of Mars. Currently, the ARRM is planned to be launched at the end of 2021 and the ARCM is planned for 2026.

The mission objectives of ARM are to:

1. Conduct a human exploration mission involving in-space interaction with an asteroid boulder in the mid-2020's, providing systems and operational experience required for human exploration of Mars.
2. Demonstrate an advanced solar electric propulsion system, enabling future deep-space human and robotic exploration with applicability to the nation's public and private sector space needs.
3. Enhance detection, tracking, and characterization of near-Earth asteroids, enabling an overall strategy to defend our home planet.
4. Demonstrate basic planetary defense techniques that will inform impact threat mitigation strategies to defend our home planet.
5. Pursue a target of opportunity that benefits scientific and partnership interests, expanding our knowledge of small celestial bodies and enabling the mining of asteroid resources for commercial and exploration needs.

Please visit <http://www.nasa.gov/arm> for further details about the mission.

1.3 Investigation Team Opportunity

This solicitation (Appendix B) is for membership on the ARM Investigation Team (IT). The individuals selected to the ARM IT will lead or assist in the implementation of mission investigations focused on the following four main areas as they support the robotic and crewed segment objectives: science, planetary defense, asteroidal resources and in-situ resource utilization (ISRU), and capability and technology demonstrations. Selected members will be expected to work in a collaborative manner with other IT members after selection. The IT will initially consist of members who will participate in the ARRM definition, design, development, and operations planning with the goal of maximizing the probability of mission success and the knowledge return from the mission. The IT will work in collaboration with ARM management and technical personnel from NASA and the Jet Propulsion Laboratory (JPL) to provide expert knowledge and input in the planning of all aspects of the ARRM, which includes spacecraft interfaces, requirements, outbound cruise and asteroid rendezvous, asteroid characterization, boulder selection and capture, planetary defense demonstration, and transfer to cis-lunar space, as well as design considerations as they relate to the ARCM. The IT will also work with the ARCM project team to develop plans to explore the asteroidal material returned to cislunar space, investigate the boulder after capture during the ARRM, and assist in extra-vehicular activity (EVA) site selection, sample acquisition, and sample curation.

Investigations should address one or more of the ARM mission-level objectives listed above. A balanced set of investigations that addresses all four main areas of interest is anticipated to be selected, but priority will be given to proposed investigations that assist ARRM proximity operations in terms of performance and/or risk reduction (e.g., improved understanding of boulder strength, density, surface cohesion, etc.) or benefit the conduct of the ARCM by enhancing the safety or efficiency of crewed operations. Proposed investigations for this Phase 1 solicitation should only utilize the baseline engineering sensors as described in the ARRM Accommodation Description Document (ADD). Proposers are encouraged to explicitly make connections between their proposed research and the interpretation of data from the sensors and spacecraft subsystems. Additional payloads which may be hosted on ARRM are being solicited through Appendix A to this BAA. These hosted payloads could include instruments, technology demonstrations, deployable assets, and experiments as described in Appendix A. NASA has also been in discussions with strategic International Partners to provide certain payloads for hosting on ARRM. Proposers to this solicitation (Appendix B) are encouraged to identify additional investigations that they could support (i.e., interest and ability) with the inclusion of potential payloads that may be added through Appendix A as well as strategic international partner payloads described in Section 1 of Appendix A. Proposed investigations should make clearly stated assumptions regarding data needed to support the associated investigation. For example, science investigations could include in-depth characterization of the parent asteroid visited by the mission as well as characterization of the boulder and surrounding regolith. In addition, regolith samples are planned to be acquired during surface operations and investigations of the boulder may be conducted during the return trip and subsequent operations in cislunar space. ISRU investigations could be performed in-situ at the parent NEA or on the boulder during or after its return. The robotic mission includes a demonstration of the EGT technique for planetary defense, but could potentially accommodate other investigations. All ARM investigations will be required to operate within ARRM and ARCM capabilities, as well as programmatic constraints. The current baseline ARRM engineering sensors include visual cameras (narrow field-of-view, medium field-of-view, wide field-of-view, and situational awareness) and a Lidar system. More details about the specifics of the sensors, subsystems, and operations can be found in the ARRM ADD. Note that the ARRM spacecraft design has not, as yet, been selected.

Each partner selected through Appendix A will be expected to provide one representative to serve as a member of the ARM Investigation Team. An individual identified as an IT representative in a proposal to Appendix A may also submit a proposal under this solicitation (Appendix B). However, the same individual cannot be selected under this solicitation (Appendix B) if they are serving as an IT representative for a payload selected under Appendix A.

It is anticipated that following the ARRM spacecraft Preliminary Design Review (PDR), a Phase 2 solicitation for the IT is planned to allow the proposal of additional investigations that utilize the data from the full suite of payloads and capabilities of ARRM. Subsequent solicitations are planned for updating the IT membership prior to the ARRM asteroid operations and also prior to initiation of the ARCM. IT membership duration will be dependent on the mission phase activities and IT function needs.

Limited support for postdoctoral research is planned to be provided as part of the ARM Investigation Team effort. Support for postdoctoral personnel will be limited by overall funding availability. The inclusion of postdoctoral research in response to this solicitation is not mandatory and each postdoc will be evaluated and awarded as an optional part of the proposer's response.

The IT will support ARM Program-level and Project-level functions, provide technical expertise, and support NASA Headquarters interactions with the technical communities through mission formulation, mission design and vehicle development, and mission implementation.

Additional specific duties of the IT members expected during the entire duration of mission activities may include but not be limited to:

- Become familiar with the basic functions of the spacecraft, its instruments, and investigations;
- Plan and advocate for the proposed investigations as an Investigation Team Member (ITM);
- Participate in ARM IT meetings (two in-person meetings per year and virtual tag-ups on a weekly to monthly basis);
- Participate, as appropriate, in ARM IT working groups;
- Provide technical expertise to ARRM and ARCM project teams to assist in the mission operations and vehicle development (e.g., NEA/surface/boulder properties estimates, test suites, support engineering, etc.) and extensibility/technology opportunities;
- Perform analyses to support spacecraft and mission design;
- Perform initial data analysis to support operations and carry out subsequent analysis necessary to complete the proposed investigation;
- Prepare, validate, and deliver data products, documentation, and other pertinent investigation information for which they are responsible to the Planetary Data System (PDS);
- Publish the results in peer-reviewed journals in accordance with NASA and ARM program data release and publication policies;
- Support of postdocs in their research activities related to ARM (if applicable);
- Support the education and public outreach efforts of the Asteroid Redirect Mission;
- Provide inputs into NEA target selection process – criteria and decision;
- Assist in the development of boulder and landing site selection criteria;
- Provide inputs into pre-capture characterization;
- Support site/boulder selection;
- Provide inputs to planning and implementation of planetary defense demonstration;
- Provide inputs into post-capture characterization and EVA sampling and investigation sites (e.g., planning and procedures);
- Provide input for curation, contamination control, and the types/amounts of samples to be obtained and returned to Earth.

The above duties are expected to be carried out in timely manner in support of mission development and operations.

1.4 Evaluation Criteria

Review of proposals submitted in response to this solicitation (Appendix B) will be consistent with the general policies and provisions described in Appendix C.1 through C.4 of the NASA Guidebook for Proposers. NASA will prescreen all proposals for compliance with the requirements as described in Section 6.1 of the ARM-UP umbrella BAA and this appendix. Compliant proposals will undergo a comprehensive review using the evaluation criteria described in Section 6.5 of the ARM-UP umbrella BAA and below. This Appendix specifically uses the following subfactors for the evaluation of the three evaluation factors to select a diverse set of IT members which represents a balance of expertise and perspective.

1.4.1 Factor 1: Relevance

- The extent to which the proposal meets the objectives of the ARM outlined in this solicitation (Appendix B).

1.4.2 Factor 2: Scientific/Technical Merit

- Overall scientific or technical merit of the proposal and/or unique and innovative methods, approaches, concepts, or advanced technologies demonstrated by the proposal;
- Proposer’s capabilities, related experience, facilities, techniques, or unique combination of these which are integral factors for achieving the proposal’s objectives;
- The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives;
- Technical consideration of the capability of the ARM to reasonably accomplish the proposed investigation;
- Value added to the ARM by the proposed investigation;
- Expertise in the understanding of solar system small bodies or in areas highly relevant to the ARM robotic and crewed mission operations and objectives;
- Ability to lead or assist in the implementation of mission investigations in one or more of the four primary areas of interest to ARM (science, planetary defense, asteroidal resources and in-situ resource utilization, and capability and technology demonstrations);
- Experience with spacecraft missions, spacecraft hardware (small body or microgravity environment emphasis preferred), or relevant technologies;
- Ability to support the specific duties of the IT members described above;
- Soundness of implementation plan;
- Technical consideration of the capability of the ARM to reasonably accomplish the proposed investigation;
- The value added to the ARM by the proposed investigation;
- Relevance or potential benefit to ARM of a proposed investigation and ability to be successfully completed within the ARM operational and budgetary constraints;
- The rationale for the inclusion of postdoctoral research support at the level proposed (applies only to those proposals requesting postdoctoral support).

1.4.3 Factor 3: Resource Plan/Price Estimate

- Overall realism and reasonableness of the estimated cost;
- Offered capabilities or contributed resources (see Section 4.3 of the ARM-UP umbrella BAA) in support of the proposed investigation(s) or other specific duties of the IT members described above;
- Optional separate cost proposal for postdoctoral personnel.

1.5 Programmatic Relevance/Balance

Only those proposals most highly rated under the above factors will be reviewed for programmatic relevance/balance. NASA personnel will conduct this review. Evaluation of the proposed effort includes consideration of the realism and reasonableness of the cost of the effort and the relationship of the effort to the mission objectives of ARM. Consideration will be given to achieving diversity and a suitable balance among selected team members to increase overall knowledge return from ARM mission and achieving the mission objectives of ARM.

1.6 Review Process

A panel of scientific and/or technical subject matter experts will evaluate the three factors described in sections 1.4.1-1.4.3 to determine the merit of the proposals. This panel of experts may include non-NASA and other non-government personnel. The number and diversity of experts required will be determined by the response to this solicitation (Appendix B). The merit evaluation panel may include in its critique of a proposal any comments concerning the proposal's budget and programmatic relevance to NASA; however, the panel merit score will not be impacted by the cost or the programmatic relevance of the proposed work to NASA.

NASA personnel will conduct the programmatic relevance/balance review as described in Section 6.6 of the ARM-UP umbrella BAA and Section 1.5 of this appendix.

2 Eligibility Information

Please see Section 4 of the ARM-UP umbrella BAA for eligibility requirements.

3 Proposal Submission Information

3.1 Proposal Guidelines

Response to this solicitation (Appendix B) must be provided via the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) no later than 11:59 p.m. EDT on November 3, 2016. IT members will be selected by NASA from the pool of respondents. The selected members will have demonstrated expertise and knowledge in areas highly relevant to one or more of the four ARM primary areas of interest described above and propose investigation(s) relevant to these areas and the ARM mission objectives. The response should describe the applicant's current research and expertise along with any relevant affiliations. The response may also contain a brief list of references to scientific or technical papers the applicant has published that establish her/him as a leader in these areas. Proposals should also identify ideas and unique theoretical and analytical capabilities that best meet the objectives of the ARM, as described in this solicitation (Appendix B). Key projected milestones, accomplishments, and deliverables during each year of the proposed investigation should be identified.

See Section 5 of the ARM-UP umbrella BAA for general instructions and proposal format. Where instructions are different, the specific instructions in this solicitation (Appendix B) are in addition to or supersede the general instructions in the umbrella BAA.

All proposals shall contain the elements described in Section 2 of the *NASA Guidebook for Proposers*. The central Science/Technical/Management section for this solicitation (Appendix B) is limited to 15 pages. The Data Management Plan is to be included as a section no more than one page in length in the proposal document after the Scientific/Technical/Management Section and not as part of the proposal Cover Page. Furthermore, the proposal shall include a Quad Chart summarizing the objectives and major milestones for the proposed investigation. The Quad Chart shall follow the format specified in the MS PowerPoint template posted on the webpage for this Appendix. The Quad Chart must be included as the last section of the proposal document PDF file. No other proposal components or appendices beyond those described in Section 2 of the

NASA Guidebook for Proposers and the Quad Chart specified in this Appendix shall be included in the proposal document. The Proposer is expected to be the primary, if not sole, individual contributing to the proposed investigation and all proposals should indicate a commitment level in each of the fiscal years FY 2017-FY 2022.

Responses are invited from individuals, not groups. Collaborations and teams are not solicited, except in proposing support for postdoctoral researchers under the guidance of the proposer. Questions regarding this invitation should be sent to the ARM Mission Investigator (e-mail is the preferred method of correspondence and must include “**ARM-UP BAA Appendix B**” in the subject field).

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Fax: 757-864-1975

3.2 Budget Information

The budget must follow the guidelines described in the NASA Guidebook for Proposers, and the budget must include funding for any training and data analysis to support the proposed investigation along with any proposed postdoctoral support. The budget should include salary, all page charges for publication and reprints, attendance at conferences, all travel, and other necessary expenses. The proposal budget should include adequate funds for the ITM to attend two in-person Investigation Team meetings each year. Approximately 1/4 time level-of-effort is anticipated for each ITM. The expected total program budget is indicated in Section 5, the Summary Table of Key Information.

3.3 Proposal Formatting

All proposals submitted must conform to the formatting rules in Section 5 of the ARM-UP umbrella BAA and Chapter 2 of the *NASA Guidebook for Proposers*. Any proposal found to violate these formatting rules may be rejected without review. In previous years, problems with the following aspects of formatting proposals have been noted. Proposers should pay particular attention to:

- Margins: 1 inch on all sides, with a standard page size of 8.5 × 11 inches.
- Font: The *NASA Guidebook for Proposers* requires easily read fonts having, on average, no more than 15 characters per inch (e.g., 12-point Times New Roman and Arial). Proposers may not adjust the character spacing or otherwise condense a font from its default appearance.
- Line spacing: Font and line-spacing settings should produce text that contains no more than 5.5 lines per inch. Proposers may not adjust line-spacing settings for a selected font below single-spaced.
- Figure captions: Must follow the same font and spacing rules as the main text.
- Figures and tables: For text in figures and tables, font and spacing rules listed above do not apply, but all text must be judged to be legible to reviewers without magnification above 100%. Proposers may not place expository text in tables or figures in order to gain space.

3.4 General Information for Participants

- **Agency:** National Aeronautics and Space Administration
- **Announcement Title:** ARM-UP BAA, Appendix B: Investigation Team Phase 1
- **Responsible Office:** Human Exploration and Operations Mission Directorate
NASA Headquarters
Washington, DC 20546
- **Point of Contact:** Mr. Daniel D. Mazanek
Mission Investigator, Asteroid Redirect Mission
NASA Langley Research Center
E-mail: hq-armup-baa-it@mail.nasa.gov
- **Notice of Intent: Due October 6, 2016, 11:59 p.m. Eastern Time.** To assist in the planning of the proposal evaluation process, NASA strongly encourages the submission of a Notice of Intent (NOI) to propose by all prospective offerors. The NOI should contain the following information: name, address, telephone number, e-mail address, and institutional affiliation of the offeror. It is encouraged that the NOI also include a brief abstract (300 word limit) of the planned project submitted as the NSPIRES Proposal Summary. The abstract needs to include the following information:
 1. A brief description of planned investigation(s);
 2. A summary of expertise relevant to the ARM robotic and crewed mission operations and objectives;
 3. The names and organizations of any proposed postdoctoral personnel.NOIs shall be submitted electronically to the NSPIRES address (<http://nspires.nasaprs.com/>). **Please note that NOIs are strongly encouraged, but are not required. Not submitting an NOI will not impact the selection process.**
- **Inquiries: Due October 24, 2016, 11:59 p.m. Eastern Time.** There will be an opportunity to submit written questions. Questions shall not contain proprietary information nor require proprietary information in the response. NASA will not provide evaluations, opinions, or recommendations regarding any suggested approaches or concepts. All questions shall be directed to the ARM-UP e-mail box hq-armup-baa-it@mail.nasa.gov no later than the date specified above. Inquiries must include “**ARM-UP BAA Appendix B**” in the subject field of e-mail correspondence. NASA may use inquiries in order to populate an FAQ document, at the program officer’s discretion, that will be posted alongside the solicitation on NSPIRES and on the ARM website.
- **Industry Forum:** An ARM-UP virtual forum to include both the Hosted Payload opportunity, Appendix A, and this Investigation Team, Appendix B, will be held. Proposers will have a chance to ask questions about this particular solicitation. NASA may use inquiries in order to populate an FAQ document, at the program officer’s discretion, that will be posted alongside the solicitation on NSPIRES and on the ARM website. The planned date for the forum is **September 14, 2016**. The meeting agenda and related information will be posted to the ARM-UP website and NSPIRES.

- **Proposals Due:** Proposals must be submitted electronically via NSPIRES (<http://nspires.nasaprs.com/>) or Grants.gov (<http://grants.gov>) in accordance with instructions given in Section 2.2 of the ARM-UP umbrella BAA no later than **November 3, 2016, 11:59 p.m.** Eastern Time.
- **Web Site for BAA Reference Information:** <http://www.nasa.gov/armup>

3.5 NASA Proposal Data System

3.5.1 NSPIRES Registration

This solicitation (Appendix B) requires that the proposers register key data concerning their intended submission with NSPIRES located at <http://nspires.nasaprs.com>. Potential applicants are urged to access this site well in advance of the NOI and proposal due dates to familiarize themselves with its structure and enter the requested identifier information. Each proposer must be registered in NSPIRES and must perform this registration themselves; that is, no one may register a second party. This website is secure and all information entered is strictly for NASA use only.

Every individual that intends to submit a proposal in response to this solicitation (Appendix B), including educational institutions, industry, nonprofit institutions, NASA Centers, the Jet Propulsion Laboratory, other U.S. Government agencies, and foreign entities and government agencies must be registered in NSPIRES, regardless of the electronic system used to submit proposals. Such registration must be performed by an organization's electronic business point-of-contact (EBPOC) in the System for Award Management (SAM) at <http://sam.gov/>.

3.5.2 Electronic Submission

Proposals must be submitted electronically using one of the electronic proposal submission systems described below by one of the officials at the proposer's organization who is authorized to make such a submission, the Authorized Organizational Representative (AOR). No emailed or hard copy of the proposal will be accepted. All team members, including postdoctoral personnel, must be registered in NSPIRES and confirm their organizational affiliation when added to a proposal before the AOR can submit. It is strongly recommended that the proposer work closely with his/her organization official to ensure the proposal is submitted by the due date and time listed in this solicitation (Appendix B). Proposals will not be accepted after the listed due dates and times.

Notices of Intent must be submitted through NSPIRES. For the submission of a full proposal, proposers may use either NSPIRES (<http://nspires.nasaprs.com>) or Grants.gov (<http://www.grants.gov/>). Regardless of the electronic submission system used, all proposers and agency officials must be registered with NSPIRES before proposal submission.

NSPIRES accepts fully electronic proposals through a combination of data-based information (e.g., the electronic Cover Page and its associated forms) and uploaded PDF file(s) that contain the body of the proposal. The system will conduct an element check to identify any item(s) that may be missing or incomplete. Proposers are strongly encouraged to begin their submission process early.

Requests for assistance in accessing and/or using the NSPIRES website may be directed by e-mail to nspires-help@nasaprs.com or by telephone to 202-479-9376, Monday through Friday, 8:00 a.m. – 5:00 p.m.

Eastern Time. Frequently Asked Questions (FAQ) may be accessed through NSPIRES Help page at <http://nspires.nasaprs.com/external/help.do>. Tutorials of NSPIRES are available at <http://nspires.nasaprs.com/tutorials/>.

Instructions for submitting proposals to NASA via Grants.gov may be found on the Grants.gov portal at <http://www.grants.gov/>.

Proposers are advised to note that even though this solicitation (Appendix B) is a call for individuals to participate in the IT, the proposals must be submitted by the individual’s organization, and specifically the Authorized Organizational Representative of the organization.

4 Programmatic Information

4.1 Duration of Award and Funding

Selected ITMs are expected to be funded during this initial call for the period of approximately June 1, 2017 through May 31, 2022, which is approximately five months after the planned launch readiness date of December 1, 2021. This start date is contingent on funding availability. It is expected that most ITMs will propose for the maximum of five years, but other time intervals can be proposed along with an explanation for the shorter duration. Annual award renewal is contingent upon availability of funds and annual assessment of performance by NASA Headquarters and the continued relevance of the research effort to the ARM program objectives and requirements.

4.2 Selection and Award Dates

Selections are anticipated on or about March 31, 2017 and awards will be made as soon as possible after selections. Any reduced appropriations or continuing resolution may affect ARM plans and NASA’s ability to award selected offerors.

4.3 Progress Reports and Deliverables

After selection, each ITM shall provide an Implementation Plan to the ARM Mission Investigator and to the NASA Headquarters ARM Program Director, including a schedule for deliverables (software, data products, reports, plans), and details regarding plans for data analysis, computing facilities, Ground Data System support, software development, and data archiving. The ITM shall provide semiannual reports to the ARM Mission Investigator and to the NASA Headquarters ARM Program Director that include: accomplishments over the past two quarters; plans for the next two quarters; issues; concerns; schedule performance; financial performance; and status of publications and other deliverables.

5 Summary of Key Information

Expected total program budget for new awards	\$2M per year
Maximum duration of awards	5 years
Number of new awards pending adequate proposals of merit	10-15
Due date for Notice of Intent (NOI)	October 6, 2016
Due date for Inquiries	October 24, 2016
Due date for Proposals	November 3, 2016

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Planning date for start of IT membership	June 1, 2017
Page limit for the central Science-Technical-Management section of proposal	15 pp; see also Chapter 2 of the <i>NASA Guidebook for Proposers</i>
General information and overview of this solicitation	See <i>Asteroid Redirect Mission Umbrella for Partnerships (ARM-UP)</i> - NASA BAA NNH16ZCQ002K
Detailed instructions for the preparation and submission of proposals	See Section 3 of this Appendix and the <i>NASA Guidebook for Proposers</i> , which is available at: http://www.hq.nasa.gov/office/procurement/nraguidebook/
Submission medium	Electronic proposal submission is required; no hard copy is required or permitted. See Section 3 of this Appendix and Chapter 3 of the <i>NASA Guidebook for Proposers</i>
Web site for submission of NOIs and proposals via NSPIRES	http://nspires.nasaprs.com/ (help desk available at nspires-help@nasaprs.com or (202) 479-9376)
Web site for submission of proposals via Grants.gov	http://grants.gov (help desk available at support@grants.gov or (800) 518-4726)
Accommodation Description Document (ADD)	https://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=532195/solicitationId=%7BA425E03C-5CA3-8F67-EB63-81E83524E959%7D/viewSolicitationDocument=1/D-97188_ARM_ADD_Prelim_ReleaseVersion.pdf
Foreign PI Affiliation instructions document	https://nspires.nasaprs.com/external/viewrepositorydocument/cmdocumentid=532356/solicitationId=%7BA425E03C-5CA3-8F67-EB63-81E83524E959%7D/viewSolicitationDocument=1/Foreign_PI_Affiliation_Instructions.pdf
Funding opportunity number for downloading an application package from Grants.gov	NNH16ZCQ002K-ITP1
NASA point of contact concerning this program	Mr. Daniel D. Mazanek ARM Mission Investigator NASA Langley Research Center 1 N Dryden Mail Stop 462 Hampton, VA 23681 E-mail: hq-armup-baa-it@mail.nasa.gov Phone: 757-864-1739 Fax: 757-864-1975