

MEMORANDUM OF AGREEMENT  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
AND  
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY  
FOR  
DEMONSTRATION ROCKET FOR AGILE CISLUNAR OPERATIONS (DRACO)

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration George C. Marshall Space Flight Center, located at Marshall Space Flight Center, AL 35812 (hereinafter referred to as "NASA" or "NASA MSFC") enters into this Memorandum of Agreement (hereinafter referred to as "MOA") in accordance with 51 U.S.C. § 20113(e). Defense Advanced Research Projects Agency, located at 675 N. Randolph St., Arlington, VA 22203-0000 (hereinafter referred to as "DARPA"), enters into this MOA in accordance with the Economy Act (31 U.S.C. § 1535). NASA and DARPA may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

This agreement enacts collaboration activities between DARPA and NASA toward defining, scoping, and enabling a future joint on-orbit demonstration of a nuclear thermal propulsion (NTP) propelled spacecraft. Under this agreement, DARPA will incorporate members of NASA as part of the Government team on the DRACO program. This includes incorporation of NASA employees to provide subject matter expert (SME) support and support discussions on areas of potential DARPA-NASA collaboration including NTP and cryogenic fluid management (CFM). In addition, NASA and DARPA will collaborate on meeting launch prerequisites through DARPA's ongoing efforts to meet the National Security Memorandum 20 (NSPM-20) launch approval process and the National Environmental Policy Act (NEPA).

ARTICLE 3. RESPONSIBILITIES

A. NASA MSFC will use reasonable efforts to:

1. Provide a Contract Officer's Representative to DARPA for the DRACO performer contracts.
2. Provide best efforts to advise DRACO performers with subject matter expertise in the areas of NTP and CFM during recurring meetings as needed, at technical interchange meetings, and at major milestone reviews.
3. Participate in discussions with DARPA regarding DRACO performers.
4. Provide support to drafting and scoping solicitations for future DRACO phases that could lead to a joint DARPA-NASA NTP flight demonstration.
5. Provide the best efforts evaluating proposals to DRACO solicitations.

6. Facilitate engagement of DRACO performers with NASA test facilities required to execute scope, as specified in DRACO performers' separate Space Act Agreement Annexes.
7. Participate in discussions on areas of potential future NASA-DARPA collaborations.
8. Coordinate areas of on-going, overlapping NTP investment with DARPA to ensure mutual progress towards joint goals.
9. Coordinate areas of on-going, overlapping CFM investment with DARPA to ensure mutual progress towards joint goals.

B. DARPA will use reasonable efforts to:

1. Provide DRACO program and contract information necessary to accomplish NASA's responsibilities, to include:
  - a. Adequate fidelity on DRACO program budget and expenditure forecast information.
  - b. Review packages, such as those provided at the various Design Reviews
2. Provide technical information needed for NASA to assist or participate DARPA in the DRACO program, to include:
  - a. DRACO nuclear thermal propulsion (NTP) vehicle information, such as nuclear reactor materials testing needs
  - b. Design information in particular as it applies to cross-applicability with the NASA NTP effort
3. Coordinate areas of overlapping NTP investment with NASA to ensure mutual progress towards joint goals.
4. Coordinate areas of overlapping CFM investment with NASA to ensure mutual progress towards joint goals.
5. Pursue approval for 91.b AEA authority for DARPA to be granted authorization to acquire and utilize an NTP reactor.
6. Pursue Public Law 85-804 indemnity.
7. Pursue meeting NSPM-20 launch approval process including the developing of analysis processes, results, and reports.
8. Pursue meeting NEPA requirements for launch of the DRACO flight-demonstration system.
9. Provide enriched uranium material required for ground and flight-test articles under the DRACO program.
10. Facilitate and coordinate joint nuclear criticality experiments (such as, tests that involve the use of National Nuclear Security Site facilities for zero power critical tests) with NASA

#### ARTICLE 4. SCHEDULE AND MILESTONES

The planned major milestones for the activities defined in the "Responsibilities" Article are as follows:

- |   |                                       |
|---|---------------------------------------|
| 1. NASA will provide a Contract Officer's Representative to DARPA for the DRACO performer contracts | At least once a month through the MOA |
|---|---------------------------------------|

- |   |   |
|---|---|
| 2. NASA will provide best efforts to advise DRACO performers with subject matter expertise in the areas of NTP and CFM during recurring meetings as needed, at technical interchange meetings, and at major milestone reviews | Multiple trips as needed  |
| 3. NASA will participate in discussions with DARPA regarding DRACO performers   | Monthly   |
| 4. NASA will provide support to drafting and scoping solicitations for future DRACO phases that could lead to a joint DARPA-NASA NTP flight demonstration   | Estimated August 1, 2021  |
| 5. NASA will provide the best efforts evaluating proposals to DRACO phase 2/3 solicitations   | Estimated 2 months after release of Broad Agency Announcement (BAA) |
| 6. NASA will facilitate engagement of DRACO performers with NASA test facilities required to execute scope, as specified in DRACO performers' separate Space Act Agreement Annexes  | Monthly   |
| 7. NASA will participate in discussions on areas of potential future NASA-DARPA collaborations  | Quarterly   |
| 8. NASA will coordinate areas of on-going, overlapping NTP investment with DARPA to ensure mutual progress towards joint goals  | Quarterly   |
| 9. NASA will coordinate areas of on-going, overlapping CFM investment with DARPA to ensure mutual progress towards joint goals  | Quarterly   |

**ARTICLE 5. FINANCIAL OBLIGATIONS**

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act (31 U.S.C. § 1341).

**ARTICLE 6. PRIORITY OF USE**

Any schedule or milestone in this MOA is estimated based upon the Parties' current understanding of the projected availability of its respective goods, services, facilities, or equipment. In the event that either Party's projected availability changes, NASA or DARPA, respectively, shall be given reasonable notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that NASA's

and DARPA use of its own goods, services, facilities, or equipment shall have priority over the use planned in this MOA.

#### ARTICLE 7. LIABILITY AND RISK OF LOSS

Each Party agrees to assume liability for its own risks arising from or related to activities conducted under this MOA.

#### ARTICLE 8. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

NASA and DARPA agree that the information and data exchanged in furtherance of the activities under this MOA will be exchanged without use and disclosure restrictions unless required by national security regulations (e.g., classified information) or as otherwise provided in this MOA or agreed to by NASA and DARPA for specifically identified information or data (e.g., information or data specifically marked with a restrictive notice).

#### ARTICLE 9. INTELLECTUAL PROPERTY RIGHTS - HANDLING OF DATA

A. In the performance of this Agreement, NASA or DARPA (as "Disclosing Party") may provide the other Party (as "Receiving Party") with:

1. data of third parties that the Disclosing Party has agreed to handle under protective arrangements or is required to protect under the Trade Secrets Act (18 U.S.C. § 1905) ("Third Party Proprietary Data"), or
2. Government data, including software, the use and dissemination of which, the Disclosing Party intends to control ("Controlled Government Data").

B. All Third Party Proprietary Data and Controlled Government Data provided by Disclosing Party to Receiving Party shall be marked by Disclosing Party with a restrictive notice and protected by Receiving Party in accordance with this Article.

C. Disclosing Party provides the following Data to Receiving Party. The lists below may not be comprehensive, are subject to change, and do not supersede any restrictive notice on the Data.

1. Third Party Proprietary Data:

The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.

2. Controlled Government Data:

The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.

3. NASA software and related Data will be provided to Partner under a separate Software Usage Agreement (SUA). DARPA shall use and protect the related data in accordance with this Article:

[insert name and NASA Case No. of the software; if none, insert "None."]

D. For such Data identified with a restrictive notice pursuant to paragraph B of this Article, including Data identified in an accompanying funding document, Receiving Party shall:

1. Use, disclose, or reproduce such Data only as necessary under this Agreement;
2. Safeguard such Data from unauthorized use and disclosure;
3. Allow access to such Data only to its employees and any Related Entity requiring access under this Agreement;
4. Except as otherwise indicated in D.3., preclude disclosure outside Receiving Party's organization;
5. Notify its employees with access about their obligations under this Article and ensure their compliance, and notify any Related Entity with access about their obligations under this Article; and
6. Dispose of such Data as Disclosing Party directs.

E. If the Parties exchange Data having a notice deemed ambiguous or unauthorized by the receiving Party, it should tell the providing Party. If the notice indicates a restriction, the receiving Party must protect the Data under this Article unless otherwise directed in writing by the providing Party.

F. Notwithstanding any restrictions provided in this Article, the Parties are not restricted in the use, disclosure, or reproduction of Data provided under this Agreement that is:

1. known or available from other sources without restriction;
2. known, possessed, or developed independently, and without reference to the Proprietary Data;
3. made available by the owners to others without restriction; or
4. required by law or court order to be disclosed.

If a Party believes that any exceptions apply, it shall notify the other Party before any unrestricted use, disclosure, or reproduction of the Data.

#### ARTICLE 10. INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS

Unless otherwise agreed upon by NASA and DARPA, custody and administration of inventions made (conceived or first actually reduced to practice) under this MOA will remain with the respective inventing Party. In the event an invention is made jointly by employees of the Parties (including by employees of an Party's contractors or subcontractors for which the U.S. Government has ownership), the Parties will consult and agree as to future actions toward establishment of patent protection for the invention.

#### ARTICLE 11. RELEASE OF GENERAL INFORMATION TO THE PUBLIC AND MEDIA

NASA or DARPA may, consistent with Federal law and this Agreement, release general information regarding its own participation in this MOA as desired. Insofar as participation of the other Party in this MOA is included in a public release, NASA and

DARPA will seek to consult with each other prior to any such release, consistent with the Parties' respective policies.

Pursuant to Section 841(d) of the NASA Transition Authorization Act of 2017, Public Law 115-10 (the "NTAA"), NASA is obligated to publicly disclose copies of all agreements conducted pursuant to NASA's 51 U.S.C. §20113(e) authority in a searchable format on the NASA website within 60 days after the agreement is signed by the Parties. The Parties acknowledge that, if this MOA is entered into pursuant to NASA's 51 U.S.C. §20113(e) authority, this MOA will be disclosed, without redaction, in accordance with the NTAA.

#### ARTICLE 12. TERM OF AGREEMENT

This MOA becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or five years from the effective date, whichever comes first.

#### ARTICLE 13. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Agreement by providing thirty (30) calendar days written notice to the other Party.

#### ARTICLE 14. CONTINUING OBLIGATIONS

The rights and obligations of the Parties that, by their nature, would continue beyond the expiration or termination of this Agreement, e.g., "Liability and Risk of Loss" and "Intellectual Property Rights" and related clauses shall survive such expiration or termination of this Agreement.

#### ARTICLE 15. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Agreement.

##### Management Points of Contact

##### NASA George C. Marshall Space Flight Center

Dayna Ise  
Program Manager, Space Nuclear  
Propulsion Program  
Mail Stop: ST23  
Marshall Space Flight Center, AL 35812  
Phone: 256-544-4123  
dayna.ise@nasa.gov

##### Defense Advanced Research Projects Agency

Nathan Greiner, Maj USAF PhD  
Program Manager, Tactical Technology  
Office  
675 N. Randolph St.  
Arlington, VA 22203-0000  
Phone: 703-526-2774  
nathan.greiner@darpa.mil

Technical Points of Contact

NASA George C. Marshall Space Flight Center

Michael Houts  
Principle Investigator, Space Nuclear Propulsion Program  
Mail Suite: ST23  
Marshall Space Flight Center, AL 35812  
Phone: 256-544-5853  
michael.houts@nasa.gov

Defense Advanced Research Projects Agency

Tabitha Dodson  
DRACO Chief Engineer  
Mail Suite: DARPA Tactical Technology Office  
675 N. Randolph St.  
Arlington, VA 22203-0000  
Phone: 571-384-9739  
tabitha.dodson.ctr@darpa.mil

ARTICLE 16. DISPUTE RESOLUTION

All disputes concerning questions of fact or law arising under this MOA shall be referred by the claimant in writing to the appropriate person identified in this MOA as the "Points of Contact." The persons identified as the "Points of Contact" for NASA and DARPA will consult and attempt to resolve all issues arising from the implementation of this MOA. If they are unable to come to agreement on any issue, the dispute will be referred to the signatories to this MOA, or their designees, for joint resolution after the Parties have separately documented in writing clear reasons for the dispute. As applicable, disputes will be resolved pursuant to The Department of the Treasury's Intragovernmental Transaction Guide (Treasury Financial Manual, Vol. 1, Chapter 2, Part 4700, Appendix 10 (hereinafter, the "Intragovernmental Transaction Guide")).

ARTICLE 17. MODIFICATIONS

Any modification to this MOA shall be executed, in writing, and signed by an authorized representative of NASA and the DARPA.

ARTICLE 18. APPLICABLE LAW

U.S. Federal law governs this MOA for all purposes, including, but not limited to, determining the validity of the MOA, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 19. LOAN OF GOVERNMENT PROPERTY

The parties shall enter into a NASA Form 893, Loan of NASA Equipment, for NASA equipment loaned to Partner.

ARTICLE 20. SIGNATORY AUTHORITY

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND  
SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE  
FLIGHT CENTER

DEFENSE ADVANCED RESEARCH  
PROJECTS AGENCY

BY: \_\_\_\_\_  
David M. Burns, Ph.D.  
Manager, Science Technology Office

BY: \_\_\_\_\_  
Michael Leahy, Ph.D.  
Director, Tactical Technology Office

DATE: \_\_\_\_\_

DATE: \_\_\_\_\_