

NONREIMBURSABLE UMBRELLA MEMORANDUM OF AGREEMENT
between the
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
and the
UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FOR
PROMOTING SAFE BEHAVIORAL HEALTH AND PERFORMANCE GUIDANCE
FOR COMMERCIAL SPACE OPERATIONS AND SPACE FLIGHT PARTICIPANTS

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration Lyndon B. Johnson Space Center, located at 2101 NASA Parkway, Houston, Texas 77058 (hereinafter referred to as "NASA" or "NASA JSC"), acting by and through the Human Factors and Behavioral Performance Element ("HFBP") of the Human Research Program (HRP), enters into this Memorandum of Agreement (hereinafter referred to as "MOA") in accordance with 51 U.S.C. § 20113(e). The Federal Aviation Administration ("FAA"), an administration of the United States Department of Transportation, acting by and through the Civil Aerospace Medical Institute (CAMI), located at 6500 S. MacArthur Blvd, Oklahoma City, OK 73169-6918 (hereinafter referred to as "CAMI"), enters into this MOA in accordance with 49 U.S.C. § 106(l) and (m). CAMI and HFBP may each be individually referred to herein as a "Party" and collectively as the "Parties."

ARTICLE 2. PURPOSE AND IMPLEMENTATION

This Umbrella MOA (hereinafter referred to as the "MOA" or "Umbrella MOA") shall be for the purpose of the following objectives: The FAA and NASA have common interests in promoting safe behavioral health and performance guidance for commercial space operations and space flight participants. The Parties have not yet fully determined what regulations will be needed for commercial space operators, however, the moratorium issued by the U.S. Congress in 2004 on regulatory actions will expire, at which point, research will be needed to understand what the current and future regulatory concerns or guidance may be.

NASA subject matter experts (SMEs) have previously agreed that current NASA operations are successful due in large part to the rigorous astronaut selection and training processes, and the robust set of countermeasures available to crewmembers in-flight (e.g., private crew quarters, volume to accommodate team activities, medical/psychological support, real-time communication with Mission Control, and friends/family). However, the integration of private and commercial astronauts (a.k.a., PAMs or private astronaut missions) into NASA spaceflight operations will require new consideration of selection and training processes, and the implementation of onboard countermeasures. For example, team skills and resilience in extreme environments is a central aspect to astronaut selection, but current PAM-related selection processes are less stringent and focused on minimum psychiatric, psychological, and medical requirements.

Because NASA is already experiencing commercial crew missions to the International Space Station (ISS), research efforts to understand these impacts and the associated countermeasures provides useful information for both NASA and the FAA. As both parties have a mutual interest in understanding the Human Factors and Behavioral Health and Performance aspects of commercial space missions, it would be beneficial for the parties to collaborate and engage in open information sharing with regard to concerns and best practices to support crew on these missions.

The activities facilitated by this Umbrella MOA will allow the Parties to implement their desire and intent to collaborate with one another to achieve mutual goals and leverage resources for information sharing and research planning and implementation regarding commercial space operations.

The Parties shall execute one (1) Annex Agreement (hereinafter referred to as the "Annex") concurrently with this Umbrella MOA. The Parties may execute subsequent Annexes under this Umbrella MOA consistent with the purpose and terms of this Umbrella MOA. This Umbrella MOA shall govern all Annexes executed hereunder; no Annex shall amend this Umbrella MOA. Each Annex will detail the specific purpose of the proposed activity, responsibilities, schedule and milestones, and any goods, services, facilities or equipment to be utilized under the task. This Umbrella MOA takes precedence over any Annexes. In the event of a conflict between the Umbrella MOA and any Annex concerning the meaning of its provisions, and the rights, obligations and remedies of the Parties, the Umbrella MOA is controlling.

ARTICLE 3. RESPONSIBILITIES

As part of this Umbrella MOA, activities and products deemed by the parties to be desirable or appropriate for cooperation and coordination may be identified and pursued individually and/or collaboratively by the Parties. Potential collaborative projects and efforts include:

- a. Literature Review
- b. Information Exchange
- c. Data Exchange
- d. Research
- e. Data Collection and/or Analysis
- f. Reporting Review

A. HFBP will use reasonable efforts to:

- 1. Provide support of projects undertaken in any Annex;
- 2. Provide internal coordination of approvals for Annexes; and
- 3. Provide for a single point of contact for Annex development and operations.

B. CAMI will use reasonable efforts to:

1. Provide support of projects undertaken in any Annex;
2. Provide internal coordination of approvals for Annexes; and
3. Provide for a single point of contact for Annex development and operations.

ARTICLE 4. SCHEDULE AND MILESTONES

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

The Parties will execute one (1) Annex concurrently with this Umbrella Agreement. The initial Annex and any subsequent Annexes will be performed on the schedule and in accordance with the milestones set forth in each respective Annex.

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

ARTICLE 7. LIABILITY

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 FAA 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 other Federal Agency 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 FAA (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. Identification of Data:

1. Third Party Proprietary Data and Controlled Government Data shall be identified in the Annex under which it will be provided.
2. NASA software and related Data shall be identified in the Annex under which it will be used, and provided under a separate Software Usage Agreement (SUA). FAA shall use and protect the related data in accordance with this clause.

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 FAA, 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 a 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 FAA may, consistent with Federal law and this Agreement, release general information regarding its own participation in this MOA as desired. Insofar as participation of either Party in this MOA is included in a public release, NASA and FAA 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 Umbrella MOA or any Annex(es) by providing thirty (30) calendar days written notice to the other Party. Termination of an Annex does not terminate this Umbrella Agreement. However, the termination or

expiration of this Umbrella MOA also constitutes the termination of all outstanding Annexes.

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 ["Financial Obligations" if reimbursable] 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 MOA. Annexes may designate Points of Contact for purposes of the Annex activities.

Management Points of Contact:

NASA Lyndon B. Johnson Space Center
Carol Mullenax, PhD, PE, PMP
HFBP Element Manager, NASA HRP
Mail Stop: SA2
2101 NASA Parkway
Houston, Texas 77058
Phone: 281-244-7068
Email: carol.a.mullenax@nasa.gov

Civil Aerospace Medical Institute (CAMI)
Tracy Streagle
Program Manager – (AAM-520)
6500 S. MacArthur Blvd
Oklahoma City, OK 73169-6918
Phone: 405-562-5329
Email: tracy.streagle@faa.gov

Technical Points of Contact:

NASA Lyndon B. Johnson Space Center
Alexandra Whitmire, PhD
HFBP Element Scientist, NASA HRP
Mail Suite: SA2
2101 NASA Parkway
Houston, Texas 77058
Phone: 281-483-4539
Email: alexandra.m.whitmire@nasa.gov

Civil Aerospace Medical Institute (CAMI)
Dr. Jamie Barrett
NAS HF Safety Research Lab
Principal Investigator
6500 S. MacArthur Blvd
Oklahoma City, OK 73169-6918
Phone: 405-954-1199
Email: Jamie.barrett@faa.gov

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 for purposes of the activities undertaken in the MOA, or Annex(es), for purposes of the activities

undertaken in the Annex(es), as the "Points of Contact." The persons identified as the "Points of Contact" for NASA and the FAA will consult and attempt to resolve all issues arising from the implementation of this Agreement. If they are unable to come to agreement on any issue, the dispute will be referred to the signatories to the MOA, or Annex, as appropriate, 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 FAA. Accompanying Annexes may be modified under the same terms. Modification of an Annex does not modify the Umbrella Agreement.

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 execute NASA Form 893, Loan of NASA Equipment, for any NASA equipment loaned to Partner.

ARTICLE 20. SIGNATORY AUTHORITY

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE
CENTER

UNITED STATES DEPARTMENT
OF TRANSPORTATION
CIVIL AEROSPACE MEDICAL
INSTITUTE (CAMI)

BY: _____
David Baumann
Director, NASA HRP

BY: _____
Neil Amaral
FAA Contracting Officer

DATE: _____

DATE: _____