

ANNEX NO. 3
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
AND
JOBY AERO, INC.
UNDER NONREIMBURSABLE SPACE ACT UMBRELLA AGREEMENT
FOR
STIMULI SUPPORT FOR VARIED ADVANCED AIR MOBILITY NOISE AND
GEOGRAPHIC AREA RESPONSE DIFFERENCE TEST

ARTICLE 1. PURPOSE

The purpose of this Annex is to enable the Parties to continue their Advanced Air Mobility (AAM) national campaign activities, that are designed to facilitate and advance testing and development of AAM aircraft as well as facilitate and improve the management of air traffic in a AAM setting. The Parties will engage in basic and applied research in the field of testing AAM/Urban Air Mobility (UAM) aircraft annoyance levels. In support of this mutual research, Joby Aero, Inc. will permit NASA to use sounds of the Joby Aero, Inc. aircraft with test subjects in the Varied Advanced Air Mobility Noise and Geographic Area Response Difference (VANGARD) human noise response test. NASA will provide Joby Aero, Inc. test subject responses to the Joby Aero, Inc. aircraft sounds. In the VANGARD test, test subjects from across the United States will listen to recorded and auralized (i.e., simulated) sounds of various AAM/UAM aircraft and provide their annoyance response. The test will be conducted using NASA's Remote Psychoacoustic Test Platform, which deploys an online test application from NASA's Amazon Web Service to test subjects' computers. The test is accessed through a web browser, and test sounds (i.e., stimuli) are played through the test subjects' audio devices.

This Annex supports NASA's FY2022 Strategic Objective 3.2: Drive Efficient and Sustainable Aviation.

The legal authority for this Annex, consistent with the Umbrella Agreement, is in accordance with the Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e).

ARTICLE 2. RESPONSIBILITIES

A. NASA LaRC will use reasonable efforts to:

1. Prepare a set of acoustic test stimuli for presentation to subjects in the VANGARD experiment, that are derived by post-processing recorded sounds of the Joby Aero, Inc. aircraft.

2. Provide Joby Aero, Inc. test subject responses to all VANGARD test stimuli and reference which stimuli originated from sounds of the Joby Aero, Inc. aircraft.
3. Document results and analyses of the VANGARD test to allow NASA and Joby Aero, Inc. to understand acoustic and operational factors that affect subject's annoyance response.
4. Assure that the sources of stimuli presented to test subjects are anonymized and not associated with the Joby Aero, Inc. aircraft in any presentation or document released outside NASA.

B. Partner will use reasonable efforts to:

1. Permit NASA to post-process existing recorded sounds of the Joby Aero, Inc. aircraft into test stimuli.
2. Offer NASA assistance and provide NASA the technical information on the sounds of Joby Aero, Inc. aircraft necessary for post-processing into final test stimuli and for test design. Technical information includes answers to questions that NASA may have regarding phase of flight (e.g., landing, takeoff, level cruise), aircraft trajectory, and if specific aircraft sounds are appropriate as test stimuli.

ARTICLE 3. SCHEDULE AND MILESTONES

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

- | | |
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| 1. Joby Aero, Inc. shall provide recorded sounds of Joby Aero, Inc. aircraft proposed for VANGARD Test. | Upon the Effective Date of this Annex |
| 2. NASA and Joby Aero, Inc. agree on the final sounds used for the VANGARD Test. | Within six (6) weeks after the Effective Date of this Annex |
| 3. NASA will use sounds of Joby Aero, Inc. when administering VANGARD Test. | Within six (6) to twelve (12) months after the Effective Date of this Annex |
| 4. NASA will provide Joby Aero, Inc. VANGARD Test subject responses to the sounds of the Joby Aero, Inc. aircraft. | Within three (3) months of completing the VANGARD test administration |

ARTICLE 4. 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 5. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

A. Data produced under this Annex which is subject to paragraph C. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement will be protected for the period of five (5) years.

B. Under paragraph H. of the Intellectual Property Rights - Data Rights Article of the Umbrella Agreement, 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 provided.

1. Background Data: *The Disclosing Party's Background Data, if any, will be identified in a separate technical document.*
2. Third Party Proprietary Data: *The Disclosing Party's Third Party Proprietary Data, if any, will be identified in a separate technical document.*
3. Controlled Government Data: *The Disclosing Party's Controlled Government Data, if any, will be identified in a separate technical document.*
4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement: *N/A.*

ARTICLE 6. TERM OF ANNEX

This Annex 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 two (2) years from the Effective Date, whichever comes first, unless such term exceeds the duration of the Umbrella Agreement. The term of this Annex shall not exceed the term of the Umbrella Agreement. The Annex automatically expires upon the expiration of the Umbrella Agreement.

ARTICLE 7. TERMINATION

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

ARTICLE 8. POINTS OF CONTACT

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

Technical Points of Contact

NASA Langley Research Center
Siddhartha Krishnamurthy

Joby Aero, Inc
Jeremy Bain

Research Ast, Flight Vehicle Acoustics
Mail Stop: 463
Hampton, VA 23681
Phone: 757-864-4392
siddhartha.krishnamurthy@nasa.gov

CFD and Aeroacoustics Lead
333 Encinal St
Santa Cruz, CA 95060-2132
Phone: 404-987-5481
jeremy.bain@jobyaviation.com

ARTICLE 9. MODIFICATIONS

Any modification to this Annex shall be executed, in writing, and signed by an authorized representative of NASA and the Partner. Modification of an Annex does not modify the terms of the Umbrella Agreement.

ARTICLE 10. SIGNATORY AUTHORITY

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER

JOBY AERO, INC

BY: _____
John H. Koelling
Director, Aeronautics Research
Directorate

Signed by:
BY: Didier Papadopoulos
Didier Papadopoulos
President of Aircraft OEM

DATE: _____

DATE: 8/7/2024 | 10:14 PDT