ANNEX NO. 1
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER
AND
GULFSTREAM AEROSPACE CORPORATION
UNDER
NONREIMBURSABLE SPACE ACT UMBRELLA AGREEMENT SAA1-45087
FOR
2026 SAF EMISSIONS FLIGHT & GROUND TEST

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of investigating the role of sustainable aviation fuels (SAFs) on the emissions of particles and trace gases. The collaborative effort leverages the unique capabilities of the Gulfstream Flight Test Program, the NASA Langley Aerosol Research Group (LARGE) and the NASA Langley Mobile Laboratory to sample the exhaust particles, trace gases, and contrails formed from aircraft engines of a Gulfstream aircraft as part of the Federal Aviation Administration (FAA) led field campaign as formalized in an Interagency Agreement between NASA and FAA as well as a separate agreement with Missouri Science and Technology, who leads the FAA's Center of Excellence for Alternative Jet Fuels & Environment (ASCENT) Project 002 for "Understanding Changes in Aviation Emissions Due to SAF With New Combustor Engine Technology". This Annex covers technical Data sharing between NASA and Gulfstream.

Aircraft engine emissions have impacts on the local air quality near airports as well regional-to-global climate impacts through the interaction between engine particle exhaust to form contrail-cirrus clouds. Understanding these impacts is of vital importance for predicting and mitigating the environmental effects of the aviation sector. Previous research has shown that blends of SAFs with conventional, petroleum-based jet fuels lead to substantially reduced engine particle emissions. However, these tests have historically been carried out using relatively older model aircraft engines. Consequently, there is a need to understand and quantify the emissions reductions from burning SAFs in modern engines such as those on the Gulfstream 700/800-series aircraft or other Gulfstream aircraft. In addition, there are very few observations of cruise emissions and contrails, and yet these Data are critically important for constraining models and improving our understanding of the environmental impact on aviation. The Data scarcity is even more acute for modern engines burning sustainable aviation fuels.

This Annex supports NASA's 2022 Strategic Plan and Strategic Objective 1.1: Understand the Earth system and its climate, Strategic Objective 1.3: Ensure NASA's science Data are accessible to all and produce practical benefits to society, Strategic Objective 3.2: Drive efficient and sustainable aviation, Strategic Objective 4.2: Transform mission support capabilities for the next era of aerospace.

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 Langley will use reasonable efforts to:

1. Contribute to meetings, planning, and publications related to the FAA-led SAF Emissions Flight and Ground test.
2. Make available to Partner a copy of all scientific Data produced by NASA during the 2026 SAF Emissions Flight and Ground Test.
3. Archive and make publicly available any scientific non-Proprietary Data produced during the 2026 SAF Emissions Flight and Ground Test.

B. Partner will use reasonable efforts to:

1. Contribute to meetings, planning, and publications related to the FAA-led SAF Emissions Flight and Ground test.
2. Make available to NASA a copy of the following Gulfstream non-Proprietary Data: G700 and G800 aircraft position/inertial Data, meteorological parameters, engine low-pressure fan speeds (%N1), contrail ice crystal microphysical Data and test condition/event markers, obtained during the 2026 SAF Emissions Flight & Ground Test. The non-Proprietary Data is provided for the purpose of coordinating test Data, quality assurance, and evaluation.
3. Make available to NASA a copy of the following Gulfstream non-Proprietary Data: G700 and G800 aircraft position/inertial Data, meteorological parameters, engine low-pressure fan speeds (%N1), contrail ice crystal microphysical Data and test condition/event markers, obtained during the 2026 SAF Emissions Flight & Ground Test. The non-Proprietary Data is provided for the purpose of public Data archival and dissemination via a NASA-administered Data archive.

ARTICLE 3. SCHEDULE AND MILESTONES

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

1. NASA and Partner shall exchange scientific Data and compare results from the FAA-led SAF Emissions Flight and Ground test.	After the Effective Date of this Annex, contingent on obtaining the necessary test Data in a timely manner.
2. NASA and Partner shall archive and make publicly available scientific non-Proprietary Data and results from the test.	Within twelve (12) months of completion of Milestone 1, contingent on obtaining the necessary test Data in a timely manner.

ARTICLE 4. 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 one year.

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:
   None
2. Third Party Proprietary Data:
   None
3. Controlled Government Data:
   None
4. The following software and related Data will be provided to Partner under a separate Software Usage Agreement:
   None

ARTICLE 5. 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 6. TERMINATION

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

ARTICLE 7. POINTS OF CONTACT

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

Management Points of Contact

NASA Langley Research Center
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Technical Points of Contact

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ARTICLE 8. 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 9. SIGNATORY AUTHORITY

The signatories to this Annex covenant and warrant that they have authority to execute this Annex. By signing below, the undersigned agrees to the above terms and conditions.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER

BY: John Koelling Digitally signed by John Koelling Date: 2026.05.18 09:01:55 -04'00'
John H. Koelling
Director, Aeronautics Research Directorate

DATE: 5/18/26

GULFSTREAM AEROSPACE CORPORATION

BY: Robert M. Vieito Digitally signed by Robert M. Vieito Date: 2026.05.15 07:10:35 -04'00'
Robert Vieito
Government Contracts Manager

DATE: 5/15/26