

NONREIMBURSABLE INTERAGENCY AGREEMENT  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GLENN RESEARCH CENTER (SAA3-1696)  
AND  
THE FEDERAL AVIATION ADMINISTRATION (692M15-22-N-00004)  
FOR  
HIGH ICE WATER CONTENT FLIGHT CAMPAIGN IN HIGH AEROSOL  
CONCENTRATIONS COLLABORATION (NON-REIMBURSABLE ACTIVITIES)

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration ("NASA") Glenn Research Center, located at 21000 Brookpark Road, Cleveland, OH 44135 (hereinafter referred to as "NASA" or "NASA GRC") enters into this Interagency Agreement (hereinafter referred to as "IAA") in accordance with the National Aeronautics and Space Act, 51 U.S.C. § 20113(e). The Federal Aviation Administration ("FAA"), William J. Hughes Technical Center ("WJHTC"), located at Atlantic City International Airport, Building 300, Atlantic City, NJ 08405-0001 (hereinafter referred to as "FAA" or "Partner"), enters into this IAA in accordance with Federal Aviation Act of 1958, 49 U.S.C. 106(1) and 106(m), and 31 U.S.C. 1535. NASA and FAA may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

NASA and the FAA will collaborate to plan, conduct, and analyze ice crystal icing atmospheric data resulting from a High Ice Water Content ("HIWC") flight campaign using the NASA DC-8 Airborne Science Laboratory ("DC-8").

Through this collaborative research, the current 99th percentile Total Water Content ("TWC") envelopes will be assessed using new data acquired within deep convection and high-concentration aerosols atmospheric conditions. Results may affect turbine engine and air data probe certification(s) and establish atmospheric parameters for experimental and analytical simulations of ice crystal icing for new engine type design and development. This effort supports the FAA's mission to regulate civil aviation and promote aviation safety, while it aligns with NASA Aeronautics Research Mission Directorate's Strategic Thrust 1: Safe, Efficient Growth in Global Operations and Thrust 3: Ultra Efficient Subsonic Transports. The flight research will be conducted by NASA in accordance with NASA Procedural Requirement ("NPR") 7900.3D in its entirety.

ARTICLE 3. RESPONSIBILITIES

A. NASA will use reasonable efforts to:

1. Provide subject matter experts in icing cloud atmospheric instrumentation, airborne weather radar, and satellite-based convective storm detection ("NASA SMEs") to plan and conduct the HIWC flight campaign using the NASA DC-8 Airborne Science Laboratory. This includes defining mission objectives and concept of operations; performing climatology

studies and site surveys; identifying instrumentation payloads; and coordinating plans, budget, and schedule with the FAA, NASA Advanced Air Transport Technologies project office, NASA Armstrong, NASA Langley, and NASA Ames flight operations and research support members.

2. Provide icing cloud instrumentation and airborne weather radar for the HIWC flight campaign.
3. Collaborate with FAA to analyze ice crystal icing atmospheric data.
4. Participate in data review meetings with FAA.
5. Collaborate with FAA to prepare and present joint conference papers to disseminate the results of the data analysis.

B. The FAA will use reasonable efforts to:

1. Develop and execute additional agreements and contracts for subject matter expertise in support of the planning and conduct of the HIWC flight campaign.
2. Collaborate with NASA SMEs to analyze ice crystal icing atmospheric data.
3. Participate in data review meetings with NASA SMEs.
4. Collaborate with NASA SMEs to prepare and present joint conference papers to disseminate the results of the data analysis.

#### ARTICLE 4. SCHEDULE AND MILESTONES

The planned major milestones and estimated schedule for the activities defined in the "Responsibilities" Article are identified below. The current circumstances related to the COVID-19 pandemic may significantly impact the schedule and milestones of this Agreement and dates are therefore subject to a considerable degree of variability. The Parties may utilize a separate document labeled as "Appendix A: Schedule Coordination Matrix" ("Appendix A") to coordinate possible changes to the Agreement schedule. The Appendix is utilized only for Agreement performance planning purposes and the terms and conditions of this Agreement control. Any change to schedule identified in the Appendix must be signed or approved by the applicable FAA Contracting Officer and NASA GRC's Management Points of Contact or Technical Points of Contact for the respective Parties, as appropriate. The dates included in the aforementioned Appendix are the best approximation at the time this Agreement was created and may be amended.

- |                                                                                                                   |                 |
|-------------------------------------------------------------------------------------------------------------------|-----------------|
| 1. The Parties will conduct pre-campaign meetings and planning exercises to prepare for the HIWC flight campaign. | See Appendix A. |
| 2. The Parties will provide SMEs to conduct the HIWC flight campaign.                                             | See Appendix A. |
| 3. The Parties will conduct data analysis and participate in data review meetings.                                | See Appendix A. |
| 4. The Parties will prepare and present joint conference papers to disseminate the results.                       | See Appendix A. |

## 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 IAA 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 IAA.

## 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 IAA.

## ARTICLE 8. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

NASA and FAA agree that the information and data exchanged in furtherance of the activities under this IAA will be exchanged without use and disclosure restrictions unless required by national security regulations (e.g., classified information) or as otherwise provided in this IAA or agreed to by NASA and FAA 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. 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 FAA under a separate Software Usage Agreement (SUA). FAA shall use and protect the related data in accordance with this Article: None.

D. For Data with a restrictive notice and Data identified in this Agreement or an accompanying funding document, Receiving Party shall:

1. Use, disclose, or reproduce the Data only as necessary under this Agreement;
2. Safeguard the Data from unauthorized use and disclosure;
3. Allow access to the 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 the 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 IAA 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 FAA may, consistent with Federal law and this Agreement, release general information regarding its own participation in this IAA as desired. Insofar as participation of the other Party in this IAA 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 sixty (60) days after the agreement is signed by the Parties. The Parties acknowledge that, if this IAA is entered into pursuant to NASA's 51 U.S.C. §20113(e) authority, this IAA will be disclosed, without redaction, in accordance with the NTAA.

#### ARTICLE 12. TERM OF AGREEMENT

This IAA 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 (5) 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. In the event of such termination, the parties will agree to the terms of the termination, including costs attributable to each party and the disposition of awarded and pending actions. (See the Intragovernmental Transaction Guide.)

#### 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 R. Schmidt  
Chief, Propulsion Division  
Mail Stop: 5-3  
21000 Brookpark Road  
Cleveland, OH 44135  
Phone: 216-433-3944  
George.R.Schmidt@nasa.gov

Federal Aviation Administration  
William J. Hughes Technical Center  
Chris Dumont  
Structures and Propulsions Branch  
Atlantic City International Airport  
Building 300, ANG-E282  
Atlantic City, NJ 08405-0001  
Phone: 609-485-6663  
[chris.dumont@faa.gov](mailto:chris.dumont@faa.gov)

Technical Points of Contact:

NASA  
Thomas P. Ratvasky  
Research Aerospace Engineer  
Mail Stop: 11-2  
21000 Brookpark Road  
Cleveland, OH 44135  
Phone: 216-433-3905  
thomas.p.ratvasky@nasa.gov

Federal Aviation Administration  
William J. Hughes Technical Center  
Timothy G. Smith  
Structures and Propulsions Branch  
Atlantic City International Airport  
Building 210, ANG-E282  
Atlantic City, NJ 08405-0001  
Phone: 609-485-4145  
[timothy.g.smith@faa.gov](mailto:timothy.g.smith@faa.gov)

FAA Contracting Officer:

Federal Aviation Administration  
William J. Hughes Technical Center  
Trina M. Bellamy  
Contracting Officer  
Atlantic City International Airport  
Building 300, AAQ-630  
Atlantic City, NJ 08405-0001  
Phone: 609-485-7483  
[Trina.Bellamy@faa.gov](mailto:Trina.Bellamy@faa.gov)

#### ARTICLE 16. DISPUTE RESOLUTION

All disputes concerning questions of fact or law arising under this IAA shall be referred by the claimant in writing to the appropriate person identified in this IAA as the "Points of Contact." The persons identified as the "Points of Contact" for NASA and FAA will consult and attempt to resolve all issues arising from the implementation of this IAA. If they are unable to come to agreement on any issue, the dispute will be referred to the signatories to this IAA, 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, Part 2, Chapter 4700, Appendix 5 (hereinafter, the "Intragovernmental Transaction Guide")).

#### ARTICLE 17. MODIFICATIONS

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

#### ARTICLE 18. APPLICABLE LAW

U.S. Federal law governs this IAA for all purposes, including, but not limited to, determining the validity of the IAA, 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  
GLENN RESEARCH CENTER

FEDERAL AVIATION ADMINISTRATION  
WILLIAM J. HUGHES TECHNICAL  
CENTER

BY: \_\_\_\_\_  
Marla E. Pérez-Davis, Ph.D.  
Center Director

BY: TRINA MARIE BELLAMY  
Trina M. Bellamy  
Contracting Officer

Digitally signed by TRINA MARIE BELLAMY  
Date: 2022.03.22 10:51:32 -04'00'

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

DATE: 03/22/2022 \_\_\_\_\_

**APPENDIX A: SCHEDULING COORDINATION MATRIX**

<b>Associated Agreement (the “Agreement”):</b>	<p align="center">NONREIMBURSABLE INTERAGENCY AGREEMENT BETWEEN THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GLENN RESEARCH CENTER AND THE FEDERAL AVIATION ADMINISTRATION FOR HIGH ICE WATER CONTENT FLIGHT CAMPAIGN IN HIGH AEROSOL CONCENTRATIONS COLLABORATION (NON- REIMBURSABLE ACTIVITIES)</p>
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The following matrix is provided as a means for the Parties to coordinate scheduling changes associated with the applicable Agreement milestones. Any schedule changes identified in this Appendix must be approved by the Federal Aviation Administration (FAA) Contracting Officer and the NASA Glenn Research Center (GRC) Management Point of Contact or Technical Point of Contact, as appropriate. This Appendix and the activities and dates contemplated herein are governed by the terms and conditions of the Agreement. In the event of a conflict or ambiguity between this Appendix and the Agreement, the terms of the Agreement shall control.

Reference to Agreement Milestone	Schedule	POC Initials & Date (for Changes to Schedule)
1. The Parties will conduct pre-campaign meetings and planning exercises to prepare for the HIWC flight campaign.	On or before April 2022	
2. The Parties will provide SMEs to conduct the HIWC flight campaign.	On or about July 2022	
3. The Parties will conduct data analysis and participate in data review meetings.	On or before December 2023	
4. The Parties will prepare and present joint conference papers to disseminate the results.	On or about September 2024	

The initial dates populated above are the best approximation at the time the Agreement was created. Any dates above that exceed the term of the Agreement are invalid as such dates automatically expire upon the expiration of the Agreement.

Instructions for Change to Appendix: FAA Contracting Officer and the NASA GRC Management Point of Contact or Technical Point of Contact, as appropriate, are to strikethrough matrix items intended for change and insert new information. Thereafter, each item changed will be initialed and dated by both the FAA Contracting Officer and the NASA GRC Management Point of Contact or Technical Point of Contact accordingly. The change becomes effective on the date of last initials.