NONREIMBURSABLE INTERAGENCY AGREEMENT BETWEEN THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GLENN RESEARCH CENTER AND THE U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND, ARMY RESEARCH LABORATORY FOR HIGH TEMPERATURE FERROELECTRIC RANDOM-ACCESS MEMORY.

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration 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" or “Agreement”) in accordance with 51 U.S.C. § 20113(e). U.S. Army Combat Capabilities Development Command Army Research Laboratory, located at 2800 Powder Mill Road, Adelphi, MD 20783-1197 (hereinafter referred to as "ARL"), enters into this IAA in accordance with Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e). NASA and ARL may be individually referred to as a "Party" and collectively referred to as the "Parties."

ARTICLE 2. PURPOSE

The purpose of this Agreement is for NASA GRC to collaborate with ARL to develop and test high temperature ($T \geq 460$ ℃ Venus surface temperature) ferroelectric Random-Access Memory (RAM) components for potential integration into the Junction Field Effect Transistor (JFET) fabrication process to meet HOTTech 21 project objectives. To accomplish this, NASA GRC will provide suitability prepared silicon and Silicon Carbide ("SiC") wafers to ARL upon which they will develop high temperature RAM materials/components. NASA GRC will advise ARL on their material development to ensure integration in the existing SiC JFET Integrated Cirucit (IC) fabrication. Once ARL completes fabrication of the high temperature RAM materials/compnents, they will provide those samples to NASA GRC for further evaluation and implementation in the GRC SiC JFET IC fabrication.

ARTICLE 3. RESPONSIBILITIES

NASA will use reasonable efforts to:

1. Provide suitability prepared silicon and SiC wafers to ARL.

2. Provide feedback to ARL on their material development to allow implementation into existing GRC SiC JFET IC fabrication towards meeting HOTTech 21 project objectives.

3. Utilize ARL-produced high temperature RAM material/component samples for further evaluation and implementation into the GRC SiC JFET IC fabrication.

4. Compose a final report with ARL.

ARL will use reasonable efforts to:

1. Develop high temperature RAM materials/components on NASA-provided silicon and SiC wafers.

2. Provide the high temperature RAM materials/component samples to NASA GRC for further evaluation and implementation in the GRC SiC JFET IC fabrication.

3. Compose a final report with NASA GRC.

ARTICLE 4. SCHEDULE AND MILESTONES

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

1. The Parties to establish target non-volatile RAM storage element device requirements and methods to test these requirements.	Two (2) months after Effective Date of Agreement.
2. The Parties to engage in preliminary in joint experiments evaluating non-volatile RAM storage element materials and SiC JFET IC materials durability, compatibility, and electrical performance.	Six (6) months after Effective Date of Agreement.
3. The Parties jointly construct and high temperature characterize first-trial non-volatile RAM storage element device approach compatible with NASA SiC JFET IC fabrication process flow.	Twelve (12) months after Effective Date of Agreement.
4. The Parties jointly computer-design and computer-simulate a complete SiC JFET non-volatile RAM IC demonstration chip comprised of at least 256 data storage bits.	Sixteen (16) months after Effective Date of Agreement.
5. The Parties jointly fabricate and high temperature test a complete SiC JFET non-volatile RAM IC demonstration chip comprised of at least 256 data storage bits.	Twenty (20) months after Effective Date of Agreement.
6. Exchange Final summary documentation between organizations and produce a final report with findings	Twenty-two (22) months after Effective Date of Agreement.

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

ARTICLE 7. LIABILITY

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 ARL 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 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 ARL (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). ARL shall use and protect the related data in accordance with this Article: 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 ARL, 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 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 ARL 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 ARL 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 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 two (2) 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 ["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 Agreement.

Technical Points of Contact

NASA
Gary W. Hunter, Ph.D.
Senior Electronics Engineer
Mail Stop: 77-1
21000 Brookpark Road
Cleveland, OH 44135
Phone: 216.433.6459
gary.w.hunter@nasa.gov

ARL
Brendan Hanrahan
Senior Materials Engineer
2800 Powder Mill Road
Adelphi, MD 20783-1197
Phone: 301-394-3192
brendan.m.hanrahan.civ@army.mil

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 ARL 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, Chapter 2, Part 4700, Appendix 10 (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 ARL.

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 U.S. ARMY COMBAT

SPACE ADMINISTRATION
GLENN RESEARCH CENTER

BY: Michael Barrett Digitally signed by Michael Barrett Date: 2024.03.07 12:55:36 -05'00'
Michael J. Barrett
Director, Space Flight Systems

DATE:_____

CAPABILITIES DEVELOPMENT
COMMAND
ARMY RESEARCH LABORATORY

BY: BAKER.PATRICK.J.1229383147 Digitally signed by BAKER.PATRICK.J.1229383147 Date: 2024.03.01 18:39:46 -05'00'
Patrick J. Baker
Director, U.S. Army Combat
Capabilities Development Command
Army Research Laboratory

DATE:_____