

ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GLENN RESEARCH CENTER
AND
PRATT & WHITNEY
UNDER
SPACE ACT UMBRELLA AGREEMENT
NO. SAA3-1828, PAM NO. 40808 (ANNEX NO. 1)

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of NASA GRC providing the Icing Research Tunnel ("IRT") facility for the verification of analytical analysis of inlet case struts and Inlet Guide Vanes ("IGV"). Testing will be performed at sea level icing conditions at typical icing temperatures. This test is a continuation of the Greensboro 2019 Test Plan ("Greensboro Test") and will validate a design change to the IGV internal geometry. The Greensboro Test scope included a verification test of strut/IGV design for a hot air anti-iced inlet case. This Agreement will test simulated ground idle and flight idle conditions. Testing will be done with and without water to identify the impact of the water on the strut and IGV metal temperatures.

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 GRC will use reasonable efforts to:

1. Provide the use of NASA GRC's IRT and associated equipment and facilities necessary to operate the tunnel and conduct the test.
2. Provide personnel to install the test hardware and operate the IRT and associated facilities.
3. Provide the necessary mounting system and any additional tunnel modifications required to accommodate the test hardware and conduct the test.
4. Provide the power and other expendables necessary to operate the tunnel, associated facilities, and the test hardware.
5. Provide the use of the NASA GRC Data System, recording devices, video cameras, and necessary cabling.
6. Provide the following test data information as available or as agreed upon by the completion of testing: test facility description, specimen instrumentation and configurations, test case performed, test measurement techniques, data reduction methodology, as well as data accuracy and repeatability assessment.
7. Complete the test program within the allocated test window.

8. Remove and package the test article and associated hardware from the IRT.

B. Partner will use reasonable efforts to:

1. Provide the test article, and use thereof, instrumented as necessary, and any associated hardware, approximately seven (7) days prior to testing.
2. Provide the use of any special data systems other than the NASA GRC data system.
3. Provide personnel to monitor and or assist with the test.
4. Provide the NASA GRC Point of Contact with a test plan, approximately one (1) month prior to test.
5. Provide a stress analysis of the test article to NASA GRC, to assure the safety of operation, approximately one (1) month prior to test.
6. Provide NASA GRC with requested information that may be needed to assure the safety of operation.
7. Ensure compliance by participating test personnel with the NASA GRC facility and safety regulations, procedures, and area safety requirements as stated in the current revision.
8. Ensure that all participating personnel comply with all applicable laws, regulations, and policies.
9. Coordinate and fund the packing and shipping of all test equipment, before and after testing.
10. Remove the test article and associated hardware from the IRT facility.

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. P&W to provide test plan and stress analysis to NASA GRC IRT facility engineers. | Approximately one (1) month prior to testing. |
| 2. P&W to provide payment in full. | Approximately fourteen (14) days prior to testing. |
| 3. P&W to deliver the test article and associated hardware to NASA GRC IRT. | Approximately seven (7) days prior to testing. |
| 4. NASA GRC to install the test article in the NASA IRT facility. | Approximately Q4 of FY24. |
| 5. NASA GRC to conduct test in NASA IRT facility. | Approximately Q4 of FY24. |
| 6. Both Parties to remove the test article and associated hardware from IRT. | Approximately Q4 of FY24. |

ARTICLE 4. FINANCIAL OBLIGATIONS

- A. Partner agrees to reimburse NASA an estimated cost of \$455,355 for NASA to carry out its responsibilities under this Annex. Payment shall be marked with NASA GRC SAA3-1828, Annex No. 1.
- B. NASA will not provide services or incur costs beyond the current funding. Although NASA has made a good faith effort to accurately estimate its costs, it is understood that NASA provides no assurance that the proposed effort under this Annex will be accomplished for the estimated amount. Should the effort cost more than the estimate, Partner will be advised by NASA as soon as possible. Partner shall pay all costs incurred and have the option of canceling the remaining effort, or providing additional funding in order to continue the proposed effort under the revised estimate. Should this Annex be terminated, or the effort completed at a cost less than the agreed-to estimated cost, NASA shall account for any unspent funds within one (1) year after completion of all effort under this Annex, and promptly thereafter, at Partner's option return any unspent funds to Partner or apply any such unspent funds to other activities under the Umbrella Agreement. Return of unspent funds will be processed via Electronic Funds Transfer (EFT) in accordance with 31 C.F.R. Part 208 and, upon request by NASA, Partner agrees to complete the Automated Clearing House (ACH) Vendor/Miscellaneous Payment Enrollment Form (SF 3881).

ARTICLE 5. LIABILITY

For the responsibilities and activities conducted under this Annex, and any claims arising thereunder, the following sentence shall be added to the end of Paragraph C, Article 8 (titled "Liability") of the Umbrella Agreement:

Partner's liability for such repair and restoration shall not exceed \$500,000.

ARTICLE 6. 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: None.

ARTICLE 7. 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 8. RIGHT TO TERMINATE

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

ARTICLE 9. 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

Michael McVetta
Test Facility Management Branch Chief
Mail Stop: 6-8
21000 Brookpark Road
Cleveland, OH 44135
Phone: 216-433-2832
michael.s.mcvetta@nasa.gov

PRATT & WHITNEY

Bret Bonarrigo
CIPTL
400 Main Street
East Hartford, CT 06118-1873
Phone: 860-343-2442
bret.bonarrigo@prattwhitney.com

Technical Points of Contact

NASA

Dennis Eck
IRT Facility Manager
Mail Stop: 6-8
21000 Brookpark Road
Cleveland, OH 44135
Phone: 216-433-3071
dennis.g.eck@nasa.gov

PRATT & WHITNEY

William Oldach
IPT Leader
400 Main Street
East Hartford, CT 06118-1873
Phone: 860-565-8377
william.oldach@prattwhitney.com

ARTICLE 10. 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 11. 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
GLENN RESEARCH CENTER

PRATT & WHITNEY

BY: _____
W. Allen Kilgore
Acting Director of Aeronautics

BY: S. Bret Bonarrigo
Bret Bonarrigo
CIPTL

DATE: _____

DATE: 06/06/2024