

ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GLENN RESEARCH CENTER
AND
BLUE ORIGIN, LLC
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. 29343, DATED 2/8/2020 (ANNEX NUMBER 34)

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of NASA Glenn Research Center (“NASA” or “NASA GRC”) and Blue Origin, LLC (“Partner” or Blue Origin”) collaborating to investigate the possible use of the NASA GRC developed GRX-810 alloy for future additive manufactured components. This activity is consistent with the purpose set forth in Article 2 of the Space Act Umbrella Agreement (No. SAA-EA-20-29343) between the Parties (the “Umbrella Agreement”) to collaborate in the areas of engineering analysis and testing, human health and performance, flight operations, and related support in the development of commercial space transportation systems. NASA GRC will provide 60kgs of coated GRX-810 powder. Blue Origin will explore consolidating the powder using laser powder bed fusion and will brief NASA GRC on print trials and any non-proprietary mechanical test results that were performed. This activity is also consistent with NASA’s mission to facilitate the continued development of advanced materials for power and propulsion. Currently, NASA GRC is interested in the scale up of GRX-810 and its use in a multitude of applications, and this collaboration will further that goal.

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. Coat 60 kgs of GRX-810 powder and provide it to Blue Origin along with starting print parameters.
2. Provide Blue Origin with current optimized print and coating parameters for a variety of additive machines.
3. Provide Blue Origin with up-to-date properties of GRX-810.

B. Blue Origin will use reasonable efforts to:

1. Brief NASA GRC of their print trials and testing.

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 GRC to provide 60kgs of optimized coated GRX-810 powder. On or about one (1) month from the Effective Date of agreement.
2. Blue Origin to brief NASA GRC, via email or virtual meeting, on the results of the print trials and testing of GRX-810 powder. On or about one (1) year from the Effective Date of agreement.

ARTICLE 4. FINANCIAL OBLIGATIONS

A. Partner agrees to reimburse NASA an estimated cost of \$19,085.00 for NASA to carry out its responsibilities under this Annex. Each payment shall be marked with NASA Glenn Research Center, SAA-EA-20-29343-34, Annex number 34.

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. 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 two (2) 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 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 one (1) year 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. RIGHT TO TERMINATE

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.

Management Points of Contact

NASA

Randolph P. Lillard
Technology Transfer Manager
Mail Stop: XT
21000 Brookpark Road
Cleveland, OH 44135
Phone: 281.483.4629
randy.lillard-1@nasa.gov

BLUE ORIGIN, LLC

Chris Ramsay
Senior Manager, Procurement
21218 76th Avenue S
Kent, WA 98032-2442
Phone: 253.437.4451
cramsay@blueorigin.com

Technical Points of Contact

NASA

Timothy M. Smith
Materials Research Engineer

BLUE ORIGIN, LLC

Arash Ghabchi
21218 76th Avenue S

21000 Brookpark Road
Cleveland, OH 44135
Phone: 213.433.2632
timothy.m.smith@nasa.gov

Kent, WA 98032-2442
AGhabchi@blueorigin.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

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

BLUE ORIGIN, LLC

BY: _____
Timothy P. McCartney
Director, Aeronautics Directorate

BY: Jessica Curry

Jessica Curry
Sr. Manager, Subcontracts

DATE: _____

DATE: 4/27/23 _____