

ANNEX  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
GEORGE C. MARSHALL SPACE FLIGHT CENTER  
AND BLUE ORIGIN, LLC  
UNDER SPACE ACT UMBRELLA AGREEMENT  
NO. SAA-EA-20-2934, DATED 2/8/2020 SAA8-2029343.11.

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of providing testing OX Turbo Pump Assembly (TPA).

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

NASA MSFC will use reasonable efforts to:

1. Conduct a kick-off meeting to establish the programmatic and technical plan to test the additively manufactured TPA.
2. Prepare the test facility in accordance with the test request document provided by Blue Origin.
3. Install the TPA test article in the test facility.
4. Develop and document the final consensus test plan in coordination with Blue Origin, which will be limited to 15 days of testing (i.e., approximately ten individual tests).
5. Conduct a test readiness review (TRR), which will include (1) briefings by the test facility subsystem elements and the safety and mission assurance office and (2) a walk-down of the test facility.
6. Perform the test series consistent with the final consensus test plan, the TRR, and any ongoing coordination activities with Blue Origin during the test series.
7. Electronically deliver flash reports to Blue Origin after each test in the test series, provide access to full data set as available; and
8. Participate in regularly scheduled coordination meetings throughout the performance of this effort.

BLUE ORIGIN will use reasonable efforts to:

1. Support the kickoff meeting;
2. Prepare and deliver the test request document to NASA MSFC;
3. Support test buildup activities with a TPA mockup (or TPA test article);
4. Deliver the TPA test article (if not delivered for test buildup activities);
5. Assist NASA MSFC with the development of the final consensus test plan;
6. Support the TRR; and

7. Provide onsite technical support (including specific testing parameters) for each test in the test series.

### ARTICLE 3. SCHEDULE AND MILESTONES

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

NASA MSFC and Blue Origin will participate in a kickoff meeting.	Effective Date + one week
Blue Origin will provide Technical Requirements Documents.	Effective Date + two weeks
Blue Origin will deliver a TPA mockup (or TPA test article) to support pipe manufacturing.	Six weeks before Test Date
Blue Origin will deliver TPA test article (if not already provided).	Four weeks before Test Date
NASA MSFC will complete installation of TPA test article in test facility.	Two weeks before Test Date
NASA MSFC will complete final consensus test plan.	Two weeks before Test Date
NASA MSFC will conduct a TRR.	One week before Test Date

### ARTICLE 4. FINANCIAL OBLIGATIONS

A. Blue Origin agrees to reimburse NASA MSFC for NASA MSFC's actual costs incurred in carrying out its responsibilities under this Annex, which are estimated to be \$1,361,695.00. Furthermore, if desired by Blue Origin and agreed to by NASA MSFC, Blue Origin agrees to reimburse NASA MSFC for NASA MSFC's actual costs incurred in carrying out any testing performed that is in addition to what is enumerated in Articles 2 and 3 of this Annex. NASA MSFC agrees that it will not incur costs for any such additional testing in excess of an additional \$1,361,695.00 (for an anticipated potential total Annex value of no more than \$2,723,390.00). All payments made by Blue Origin pursuant to this Annex shall be marked with "MSFC SAA8-2029343.11."

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 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 five 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:

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 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 two 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 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.

Technical Points of Contact

NASA George C. Marshall Space Flight Center  
Nicholas Case  
Propulsion Test Branch Chief  
Marshall Space Flight Center, AL 35812  
Phone: 256-544-8789  
nicholas.l.case@nasa.gov

BLUE ORIGIN, LLC  
Jarret Morton  
21218 76th Avenue S  
Kent , WA 98032-2442  
Phone: 253-275-1659  
JMorton@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  
GEORGE C. MARSHALL SPACE  
FLIGHT CENTER

BLUE ORIGIN, LLC

BY: \_\_\_\_\_  
Mary Beth Koelbl  
Director Engineering Directorate

BY: \_\_\_\_\_  
Wade Davis  
Senior Commercial Advisor

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

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