

ANNEX
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER
AND
UNITED LAUNCH ALLIANCE
UNDER SPACE ACT UMBRELLA AGREEMENT
NO. SAA8-1726580, DATED 10/31/2017
SAA8-1726580.16

ARTICLE 1. PURPOSE

This Annex shall be for the purpose of installing the Centaur V Structural Test Article Number Two (STA2) into Test Stand 4699 and performing a cryogenic structural qualification test for United Launch Alliance (ULA) in support of the Vulcan rocket program.

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 MSFC will use reasonable efforts to:

1. Provide a single engineering point of contact for all communication between NASA and ULA.
2. Provide specialized personnel, test systems, and procedures to install and configure hardware into Test Stand 4699 to meet requirements in specified ULA SOW.
3. Install STA2 into Test Stand 4699 and complete all test stand and test equipment integration.
4. Conduct Test Readiness Review.
5. Conduct cryogenic structural qualification test on Centaur V STA2.
6. Deliver test data to Partner.
7. Conduct Post Test Review.
8. Deliver test report package to Partner.
9. Conduct post-test teardown, STA2 removal, and return stand back to ready to test state.

B. Partner will use reasonable efforts to:

1. Provide a single engineering point of contact for all communication between NASA and ULA.
2. Deliver instrumented Centaur V STA2 to MSFC Test Stand 4699.
3. Conduct Test Readiness Review.
4. Conduct cryogenic structural qualification test on Centaur V STA2.

5. Conduct Post Test Review.
6. Authorize break of configuration for test teardown to begin.

ARTICLE 3. SCHEDULE AND MILESTONES

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

- | | |
|---|-----------------------|
| 1. Both parties provide a single engineering point of contact for all communication between NASA and ULA. | Effective Date |
| 2. NASA provide specialized personnel, test systems, and procedures to install and configure hardware into Test Stand 4699 to meet requirements in specified ULA SOW. | Milestone 1 + 70 days |
| 3. ULA deliver instrumented Centaur V STA2 to MSFC Test Stand 4699. | Milestone 1 + 72 days |
| 4. NASA install STA2 into Test Stand 4699 and complete all test stand and test equipment integration. | Milestone 3 + 1 day |
| 5. NASA and ULA conduct Test Readiness Review. | Milestone 4 + 50 days |
| 6. NASA and ULA conduct cryogenic structural qualification test on Centaur V STA2. | Milestone 5 + 35 days |
| 7. NASA deliver test data to Partner. | Milestone 6 + 1 day |
| 8. NASA and Partner conduct Post Test Review. | Milestone 6 + 3 days |
| 9. ULA authorize break of configuration for test teardown to begin. | Milestone 8 + 5 days |
| 10. NASA deliver test report package to ULA. | Milestone 8 + 15 days |
| 11. NASA conduct post-test teardown, STA2 removal, and return stand back to ready to test state. | Milestone 9 + 35 days |

ARTICLE 4. FINANCIAL OBLIGATIONS

A. Partner agrees to reimburse NASA an estimated cost of \$10,607,872.00 for NASA to carry out its responsibilities under this Annex.

The Partner agrees to pay NASA MSFC

Payment #1 \$2,000,000.00 prior to initiation of work under this Agreement

Payment #2 \$7,807,872.00 prior to milestone 5

Payment #3 \$800,000.00 prior to milestone 8

Each payment shall be marked with SAA8-1726580.16.

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. 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 \$18,000,000.00.

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 one year.

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 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 one 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 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.

Technical Points of Contact

NASA George C. Marshall Space Flight Center
Mike Lau
Structural Strength Test Branch Chief
Mail Suite: 4619:144B
Marshall Space Flight Center, AL 35812
Phone: 256-544-5609
mike.p.lau@nasa.gov

United Launch Alliance
Patrick Jones
Test and Verification Project Manager
7670 South Chester Street
Centennial, CO 801123439
Phone: 720-425-6311
Patrick.Jones@ulalaunch.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
GEORGE C. MARSHALL SPACE
FLIGHT CENTER

UNITED LAUNCH ALLIANCE

BY: _____
Mary E. Koelbl
Director Engineering Directorate

BY: _____
Don Tidwell
Contract Management Specialist

DATE: _____

DATE: _____