

SPACE ACT AGREEMENT AMENDMENT THREE
BETWEEN
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
SPACE EXPLORATION TECHNOLOGIES CORP.
FOR
COMMERCIAL ORBITAL TRANSPORTATION SERVICES DEMONSTRATION (COTS)

PURPOSE AND AGENCY COMMITMENT

The purpose of this Amendment is to modify the Agreement NNJ06TA26S to define how the parties will collaborate on the provision of communication services and proximity operations support during the flight demonstrations under this Agreement. Specifically, the parties will collaborate to implement the COTS Ultra High Frequency (UHF) Communication Unit (CUCU) to provide required communications capabilities during proximity operations associated with the flight demonstrations under this Agreement. This Amendment is also necessary to enable other demonstration communications services and proximity operations support and completion of Milestone 16 in Appendix 2, CUCU Flight Unit Design, Acceptance, and Delivery.

Articles 3, 7, 10, 12, 15, 20, 27, 28, and Appendices 4, 5, and 6 are amended as follows:

ARTICLE 3. RESPONSIBILITIES

I. In paragraph A.(1) under the SpaceX responsibilities, “CI-IIRD” is replaced with “COTS Interface Requirements document (IRD) and SSP 50808 ISS to COTS Interface Requirements Document”

II. The following SpaceX responsibilities are added to Section A.:

SpaceX shall:

- (4) Perform all design, development, testing, evaluation, and production activities for the COTS Ultra High Frequency (UHF) Communication Unit (CUCU) and Dragon vehicle-side systems including the responsibilities listed below. SpaceX shall release data necessary to enable NASA or third-parties developing vehicle-side systems to design those systems to operate with CUCU [when such systems are in accordance with ICDs identified in Appendix 4]. SpaceX further agrees that, if requested by such third parties to support proximity operations with the ISS, SpaceX will provide, on a non-discriminatory basis and on reasonable commercial terms (including a waiver of liability consistent with Article 10 herein by such third party), (1) flight and flight-like Vehicle-Transmitter/Receivers and Vehicle-side antennas and cabling and (2) necessary permissions and/or licenses to use the ISS-integrated CUCUs.
 - (a) Develop and provide all Software, Radio Frequency (RF), and other Interface Control Documents (ICD)(s) to fully specify all telemetry transmitted/received between CUCU

and Dragon vehicle-side systems and between CUCU and NASA or third-party developed vehicle-side systems.

(b) Provide completed verifications to the ISS Program in accordance with NASA requirements for launch in Orbiter middeck or Multi-Purpose Logistics Module (MPLM), with subsequent installation and operation in EXPRESS Rack location.

(c) Provide safety verifications in accordance with NASA Safety Review Panel requirements.

(d) Support crew training, including providing training and data products, on the CUCU and associated systems.

(e) Provide support for CUCU ISS and Shuttle Program integration activities.

(f) Provide maintenance and sustaining engineering of the CUCU systems, connectors and RF couplers (both flight and flight-like), including all ground or on-orbit anomaly resolution

(g) Provide operational support for all CUCU systems.

(5) Provide equipment as identified and described in Appendix 4. All equipment provided by SpaceX to NASA shall include documentation stating build, revision, and traceability information.

III. The NASA responsibilities are renumbered beginning with (1) through (5).

IV. In paragraph (6) [renumbered paragraph (3)] under the NASA responsibilities, "CI-IIRD" is replaced with "COTS Interface Requirements document (IRD) and SSP 50808 ISS to COTS Interface Requirements Document"

V. The following NASA responsibilities are added:

NASA shall:

(6) Provide Shuttle and ISS program integration and launch of the CUCU system including:

(a) Provide launch, installation, checkout, and operation of CUCU in ISS EXPRESS Rack and associated ISS systems interface connections.

(b) Provide NASA verification requirement for launch in Orbiter middeck or MPLM, and with subsequent installation and operation in EXPRESS Rack.

(c) Provide NASA Safety Review Panel meetings and NASA Safety verification requirements.

(d) Provide technical expertise for interfacing to Orbiter and ISS.

- (e) Provide standard and unique interface cabling between the CUCU and ISS, and incorporating connectors and couplers provided by SpaceX.
 - (f) Develop Interface Control Document (ICD)(s) between CUCU and ISS EXPRESS Rack/ISS Systems and associated Interface Requirements Document (IRD).
 - (g) Provide use of NASA EXPRESS rack simulator (i.e. STEP and/or EXPRESS Rack Simulator at MSFC or KSC), ISS avionics, and Software test facilities and setup.
 - (h) Provide Crypto Keys and supporting software as needed.
- (7) Provide TDRSS communications and NISN network services for SpaceX Dragon and Falcon 9 vehicles through completion of three (3) Cargo Demonstration flights under NASA's standard terms and conditions for the provision of such services, at no cost to SpaceX.
 - (8) Provide NASA Standard Detonators (NSDs) as specified in the design of the Dragon vehicle as required to support completion of three (3) Cargo Demonstration flights.
 - (9) Provide equipment as identified and described in Appendix 5 and Appendix 6.

ARTICLE 7. NASA FURNISHED INFORMATION AND SERVICES

Paragraph A is replaced in its entirety with the following:

A. NASA may, at its sole discretion and on terms to be negotiated between the Parties, provide SpaceX additional NASA services, technical expertise, or Government Property. Additional NASA services, technical expertise, or Government Property may be provided on either a reimbursable or non-reimbursable basis. Specific services and property will be identified in modifications to this Agreement. Unless NASA specifically requires SpaceX to use NASA furnished services, technical expertise or Government Property to fulfill its obligations under this Agreement, any decision by SpaceX to use NASA furnished services, technical expertise or Government Property shall be at SpaceX's option and sole discretion. SpaceX shall remain solely responsible for completion of its milestones under this Agreement regardless of the availability or use of such optional NASA services, technical expertise, or Government Property.

ARTICLE 10. LIABILITY AND RISK OF LOSS

Paragraph B is added as follows:

B. Government Provided Property

For all property provided by NASA to SpaceX under this Agreement, including property provided on a reimbursable or non-reimbursable basis, the following provisions apply:

(1) SpaceX hereby waives any claims against NASA, its employees, its related entities, (including, but not limited to, contractors and subcontractors at any tier, grantees, investigators, customers, users, and their contractors and subcontractors, at any tier) and employees of NASA's related entities for any injury to, or death of, SpaceX employees or the employees of SpaceX's related entities, or for damage to, or loss of, SpaceX property or the property of its related entities arising from or related to activities conducted under this Agreement, whether such injury, death, damage, or loss arises through negligence or otherwise, except in the case of willful misconduct.

(2) SpaceX further agrees to extend this unilateral waiver to its related entities by requiring them, by contract or otherwise, to waive all claims against NASA, its related entities, and employees of NASA and employees of NASA's related entities for injury, death, damage, or loss arising from or related to activities conducted under this Agreement.

Paragraph C is added as follows:

B. SpaceX Provided Property

For all property provided by SpaceX to NASA under this Agreement, the following provisions apply:

(1) NASA hereby waives any claims against SpaceX, its officers, its directors, its employees, its related entities, and its contractors, and subcontractors, and third parties using SpaceX property, and their employees for any injury to, or death of, NASA employees or the employees of NASA's related entities or contractors generally, or for damage to, or loss of, NASA property or the property of its related entities or contractors or subcontractors arising from or related to the use of any property provided by SpaceX under this Agreement, whether such injury, death, damage, or loss arises through negligence or otherwise, except in the case of willful misconduct.

(2) NASA further agrees to extend this unilateral waiver to its related entities or contractors or subcontractors or third parties using SpaceX property provided under this Agreement by requiring them, by contract or otherwise, to waive all claims against SpaceX, its employees, its related entities, and contractors and subcontractors, and their employees for injury, death, damage, or loss arising from or related to the use of any property provided by SpaceX under this Agreement.

ARTICLE 12. INTELLECTUAL PROPERTY AND DATA RIGHTS - RIGHTS IN DATA

Add to paragraph H,2.a:

Note: From time-to-time during the term of this Agreement, SpaceX may request from NASA, and NASA may provide, such Proprietary Data of third parties.

Add to paragraph H,2 b:

Note: From time-to-time during the term of this Agreement, SpaceX may request from NASA, and NASA may provide, such U. S. Government Data.

Add to paragraph H,2, c:

Note: From time-to-time during the term of this Agreement, SpaceX may request from NASA, and NASA may provide, such software and related data.

Delete from paragraph H, 2,a, b, and c the three instances of:

The Parties agree that within 30 days of execution by NASA of this Agreement, Space X may provide NASA with a list of that will be provided to SpaceX, and NASA shall have 60 days following such delivery to consider such designation.

ARTICLE 15. DISCLAIMER OF WARRANTY

Add to the end of the first paragraph:

Neither NASA nor its contractors shall be liable for special, consequential, indirect, or incidental damages attributed to such goods, services, materials, products, processes, information, or data to be furnished under this Agreement.

Add to the end of the second paragraph:

Neither SpaceX nor its contractors shall be liable for special, consequential, indirect, or incidental damages attributed to such goods, services, materials, products, processes, information, or data to be furnished under this Agreement.

ARTICLE 20. PRINCIPAL POINTS OF CONTACT

NASA Administrative Contact: The following name, title, and contact information shall be inserted:

Keith Hutto
Agreements Officer
Phone: (281) 483-4165

NASA Technical Contact: The following name, title, and contact information shall be inserted:

Alan Lindenmoyer
Manager, Commercial Crew & Cargo Program
Phone: (281) 244-7064

SpaceX Administrative Contact: The address shall be replaced with the following:

1 Rocket Road
Hawthorne, CA 90250

SpaceX Technical Contact: The address and contact information shall be replaced with the following:

1 Rocket Road
Hawthorne, CA 90250
Phone: (310) 363-6311
Fax: (310) 363-6001

ARTICLE 27. SIGNATURE BLOCK

Article 27 SIGNATURE BLOCK shall be renumbered to Article 28 and Article 27 shall be replaced in its entirety with the following:

ARTICLE 27. LOAN OF GOVERNMENT PROPERTY

(A) In order to further activities set forth in this Agreement, the Parties acknowledge that NASA shall loan the following Government property to Partner: Property Listed in Appendix 6

(B) The property listed above (hereinafter referred to as the "PROPERTY") is not being provided to Partner as a substitute for the purchasing of the same type of property by Partner under any contract or grant that Partner has, or may have, with a third party. Furthermore, such PROPERTY is not excess to NASA's requirements and its use is anticipated upon its return to NASA.

(C) In support of this loan the Partner shall:

- (1) Install, operate, and maintain the PROPERTY at Partner's expense;
- (2) Furnish all utilities (e.g., water, electricity) and operating materials required for the operation of the PROPERTY;
- (3) Bear all costs associated with the use and enjoyment of the PROPERTY under the terms of this Agreement, including but not limited to such costs as packing, crating, shipping, installing, maintaining, licensing, and operating the PROPERTY;
- (4) Transport the PROPERTY in accordance with good commercial practice;
- (5) Acknowledge that the privilege of using and enjoying the said PROPERTY exists solely by virtue of this Agreement with NASA, the owner of said PROPERTY, and not as of right;
- (6) Identify, mark, and record all of the PROPERTY promptly upon receipt, and maintain such identity so long as it remains in the custody, possession, or control of Partner.
- (7) Maintain suitable records for each item of PROPERTY. As a minimum, such records shall show description, identification number, unit cost, quantity, dates of receipt, condition upon receipt, and location. Partner shall perform an inventory of the PROPERTY one (1) year from the effective date of this Agreement, and every year thereafter, if the Agreement is still in effect, and send such inventory report to NASA. The report shall include a statement validating any

requirement to continue the loan. Further, Partner shall provide to NASA upon reasonable request, records sufficient to disclose the date of inspections, the deficiencies discovered as a result of inspections, and the maintenance actions performed. This annual report shall be submitted to the following NASA point of contact (POC):

NASA Johnson Space Center
ATTN: Supply Equipment Management Officer (SEMO)
Mail Code JB / Logistics Division
2101 NASA Parkway
Houston, Texas 77058

(8) Assume responsibility for loss or damage to the PROPERTY, reasonable wear and tear excepted and, with the same limitation for wear and tear, agrees to return the PROPERTY to NASA in as good condition as when received. It is understood that Partner is financially responsible (up to the price paid for the Property by NASA, as documented on the NASA shipping forms/documents) for any damage to the PROPERTY while it is in the care, custody, and control of Partner, its employees, contractors, subcontractors, agents, or principal investigators.

(9) Report any loss, damage, or destruction of PROPERTY to the NASA POC identified above within ten (10) working days from the date of the discovery thereof.

APPENDIX 4: SpaceX Provided Property to NASA
is added as follows:

<p>1) Two (2), flight, CUCU systems [prime and back-up] for launch in Orbiter and subsequent installation in ISS EXPRESS Rack. [NOTE: Each CUCU system is internally redundant and contained within an ISS middeck locker. Crew Command Panel (CCP) and cabling and display software are part of each CUCU] CUCU-to-Dragon Vehicle Transmitter/Receivers ICDs.</p>	<p>May 2009 ICDs: July 2008, w/update November 2008</p>
<p>2) One (1), flight-like, CUCU system for use in NASA ground testing and training. [NOTE: Each CUCU system is internally redundant and contained within an ISS middeck locker. Crew Command Panel (CCP) and cabling and display software are part of each CUCU.]</p>	<p>May 2009</p>
<p>3) Two (2), flight-like, Dragon Vehicle-Transmitter/Receivers and two (2), flight-like, Communications (Crypto) RIOs for use in NASA ground testing and training.</p>	<p>May 2009</p>
<p>4) Two (2), flight-like sets of Dragon Vehicle-side antennas and cabling, for use in NASA ground testing and training.</p>	<p>May 2009</p>
<p>5) Eight (8), flight, data and coaxial connectors that mate with CUCU, to allow NASA to incorporate these in the NASA provided cabling that will interface CUCU to ISS.</p>	<p>October 2008</p>
<p>6) Six (6), flight, Radio Frequency (RF) couplers, that connect to NASA provided cabling to allow interfacing CUCU to ISS systems.</p>	<p>Nov. 2008</p>
<p>7) Four (4), flight-like, Radio Frequency (RF) couplers, that connect to NASA provided cabling to allow interfacing CUCU to ISS systems simulator, for use in NASA ground testing and training.</p>	<p>Aug. 2008</p>

APPENDIX 5: Government Furnished Equipment to SpaceX
is added as follows:

<p>1) One Hundred (100), flight, NASA Standard Detonators (NSDs) for use on SpaceX Dragon and Falcon 9 vehicles through completion of three (3) Cargo Demonstration flights, including development and qualification testing of the system.</p>

APPENDIX 6: NASA Equipment Loaned to SpaceX
 is added as follows:

<p>1) Softgoods Cargo (Crew Transfer Bags -half, single, double, triple, M01, M02, M03 bags, Contingency Water Containers, Recharge Tank Assemblies and COLDBAGS) needed to verify the interface.</p>	<p>Return date: Not later than 2 months following completion of Demonstration 3</p>
<p>2) Powered Cargo and Powered Cargo Ground Support Equipment needed to verify the interface.</p>	<p>Return date: Not later than 2 months following completion of Demonstration 3</p>
<p>3) ISS Command and Data Handling simulators.</p>	<p>Return date: Not later than 1 month following completion of ISS C&DH interface testing</p>
<p>4) EXPRESS Rack simulators.</p>	<p>Return date: Not later than 1 month following completion of ISS interface testing</p>
<p>5) Ground and Flight Cables needed to test the interfaces.</p>	<p>Return date: Not later than 2 months following completion of Demonstration 3</p>
<p>6) Crypto Keys and supporting software and Electronic Key Management System Hardware as needed.</p>	<p>Return date: Not later than 2 months following completion of Demonstration 3</p>
<p>7) Four (4) ISS Stowage Lockers.</p>	<p>Return date: Not later than 2 months following completion of Demonstration 3</p>

8) Berthing Mechanisms or components, including test equipment needed to verify the interface and up to 2 forgings.	Return date: Not later than 2 months following completion of Demonstration 3
9) Interface connectors and quick disconnects.	Return date: Not later than 2 months following completion of Demonstration 3
10) IVA and EVA Labels.	Return date: Not later than 2 months following completion of Demonstration 3
11) Rendezvous and Proximity Operations Targets.	Return date: Not later than 2 months following completion of Demonstration 3
12) Restraints and Mobility Aids.	Return date: Not later than 2 months following completion of Demonstration 3
13) One (1) Flight Releasable Grapple Fixtures (FRGF).	Return date: Not later than 2 months following completion of Demonstration 3

ARTICLE 28. SIGNATURE BLOCK

The terms and conditions of SAA-NNJ06TA26S, as modified by this Amendment, are hereby incorporated herein.

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION

SPACE EXPLORATION
TECHNOLOGIES CORP.

BY: R. Gilbrech
Richard J. Gilbrech
Associate Administrator for Exploration
Systems
Date: 6-20-08

BY: [Signature]
Elon Musk
Chief Executive Officer
Date: 5/28/08