

Commercial Orbital Transportation Services Demonstrations

Announcement Number COTS-01-05

**January 18, 2006
(As Amended February 17, 2006)**

Proposals Due: March 3, 2006

Commercial Crew/Cargo Project Office

Lyndon B. Johnson Space Center

Exploration Systems Mission Directorate

For Questions Regarding This Announcement:

<http://procurement.jsc.nasa.gov/cots/>



AMENDMENTS AND HISTORY PAGE

Amend No.	DESCRIPTION	DATE
-	Final Announcement Release	01/18/06
1	Update Sections 5.1.3, 5.1.5, and Appendix B	02/17/06

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1. BACKGROUND

The National Aeronautics and Space Administration (NASA) has established the Commercial Crew/Cargo Project Office at the Johnson Space Center as part of the Exploration Systems Mission Directorate. The objectives of the Commercial Crew/Cargo Project are to:

- implement U.S. Space Exploration policy with an investment to stimulate commercial enterprises in space,
- facilitate U.S. private industry demonstration of cargo and crew space transportation capabilities with the goal of achieving reliable, cost effective access to low-Earth orbit, and
- create a market environment in which commercial space transportation services are available to Government and private sector customers.

This announcement solicits proposals for the initial development and demonstration phase of the Commercial Crew/Cargo Project. Under this project, NASA intends to enter into agreements with private industry to develop and demonstrate the vehicles, systems, and operations needed to resupply, return cargo from, and transport crew to and from a human space facility, with the International Space Station providing the representative requirements for such a facility.

Once demonstrated, industry will be able to provide these new services to non-NASA customers. NASA also plans to enter the next phase of the Commercial Crew/Cargo Project and purchase services from commercial providers to support the International Space Station. In the future, NASA intends to extend its use of commercial space services to other NASA needs, such as in-space fuel delivery to support human exploration missions beyond the space station.

2. PROJECT STRUCTURE

2.1 Approach

This announcement and subsequent agreements with industry partners in this project are referred to as Commercial Orbital Transportation Services (COTS). COTS is envisioned to be executed in two phases:

- Phase 1 – A period of development and demonstration by private industry, in coordination with NASA, of various space transportation capabilities to and from low-Earth orbit (LEO) determined to be most desirable for the Government and other customers.
- Phase 2 – A potential competitive procurement of orbital transportation services to resupply the ISS with cargo and crew, if a capability is successfully demonstrated and the Government determines it is in its best interest.

The activities associated with the implementation of Phase 1, also referred to as COTS Demonstrations or COTS Demos, will be governed by this announcement and any resulting Space Act Agreement (SAA). All information, instructions, and periods of performance provided herein refer to the COTS Demos phase unless specifically mentioned otherwise. NASA intends to use its Space Act authority to enter into at least one and preferably multiple funded agreements resulting from this announcement. The actual number of SAAs will be based upon the types of proposed capabilities selected to fit within the available funding.

This announcement solicits proposals from industry for Earth to orbit space flight demonstrations of the following capabilities:

- Capability A: External cargo delivery and disposal
- Capability B: Internal cargo delivery and disposal
- Capability C: Internal cargo delivery and return
- Capability D: Crew transportation.

Capability A delivers cargo (payloads) that operate directly in the space environment to a LEO test bed and safely disposes cargo.

Capability B delivers cargo (payloads) that operate within a volume maintained at normal atmospheric pressure to a LEO test bed and safely disposes cargo.

Capability C delivers cargo (payloads) that operate within a volume maintained at normal atmospheric pressure to a LEO test bed and safely returns cargo.

Capability D delivers crew to a LEO test bed and safely returns crew.

The scope of the demonstrations involves the development and operation of an end-to-end space transportation system of services including ground operations and integration, launch, rendezvous, proximity operations, docking or berthing, orbital operations, reentry, and safe

disposal or return. The demonstrations will culminate with a crew/cargo transportation mission to and from a LEO test bed for the orbital phase of the mission. NASA intends to provide the ISS as the orbital destination and active test bed if the ISS visiting vehicle requirements are satisfied. Participants may propose an alternative orbital test bed for the capability demonstrations.

Proposals are solicited for crew transportation Capability D, but only as an option to proposals for Capability C. The Capability D demonstrations will consist of multiple missions to LEO and the orbital test bed. The option will be considered for execution only after the successful demonstration of Capability C. Participants are not precluded from incorporating crew transportation technical performance goals in the proposals for Capability C.

Participants may propose a system solution targeting any of the capabilities individually or propose a system that satisfies multiple capabilities. NASA prefers to award multiple agreements for demonstrations covering all capabilities; however, due to funding limitations this may not be possible.

Payments will be made upon the successful completion of performance milestones as proposed by the participants and negotiated with NASA. NASA's contribution will be a fixed amount and will not be increased based on the participant's ability to obtain private funding. A startup milestone payment will be considered.

2.2 Project Schedule

Capability A, B and/or C projects will commence upon the execution of the SAA targeted for June 2006 and will end after the successful flight demonstration of the selected capability expected to occur in the 2008-2010 timeframe.

Capability D option is planned to commence upon the successful demonstration of Capability C and will extend for the length of time proposed and negotiated to complete the demonstration objectives. The execution of this optional period may be contingent upon additional NASA funding availability.

The announcement schedule milestones are posted on the following COTS website: <http://procurement.jsc.nasa.gov/cots/>. Participants are encouraged to refer regularly to this site for updates to the schedule and other current news and information.

3. DEMONSTRATION PERFORMANCE GOALS

The objectives of the space flight demonstrations are broadly targeted for the general space transportation market. Specific requirements are provided for interfaces with the ISS orbital test bed. This approach is intended to open up trade space and encourage innovations and efficiencies in system design solutions.

The capabilities and performance goals for the COTS Demonstrations are summarized in the paragraphs below. Although derived from ISS potential services needs, the goals are representative of cargo and crew capabilities anticipated for human destinations in low-Earth orbit. Participants are asked to propose concepts that will meet as many of the goals as possible, and clearly articulate the limitations where the goals cannot be met. Proposals that do not meet all the goals will not be automatically excluded from the evaluation. The Draft COTS ISS Service Requirements Document (CI-SRD) is available in the COTS website Technical Library as a reference for further clarification of the performance goals. Goals that are stated in terms of annual need should be translated into the single mission equivalent for the demonstration flights. The CI-SRD includes Service Reference Missions (SRMs), which are required to be addressed in the technical proposal.

The COTS ISS Integration & Interface Requirements Document (CI-IIRD) is provided to clearly define the potential vehicle interfaces and integration activities with the ISS. This document is also available in the COTS website Technical Library.

NASA does not intend to provide cargo or crew for the demonstration phase.

3.1 Summary for All Capability Demonstrations

- 3.1.1 Demonstrate compliance with the CI-IIRD.
- 3.1.2 Satisfy, to the maximum extent practicable, the performance goals in the CI-SRD.
- 3.1.3 Provide crew training materials for operation of COTS vehicles.
- 3.1.4 Pick up cargo from NASA KSC depot.
- 3.1.5 Provide cargo compatible environment from pickup at NASA to delivery to the orbital test bed.
- 3.1.6 Deliver cargo to the orbital test bed within 2 days after launch and, where applicable, return cargo to Earth within 2 days after departure.
- 3.1.7 Stay at orbital destination long enough to process cargo (upmass capability dependent).

3.2 Capability A: External Cargo Delivery and Disposal

- 3.2.1 Single mission equivalent demonstration flight supporting:
 - 3.2.1.1 Ability to deliver up to 5000 kg/yr of external cargo.
 - 3.2.1.2 Safe disposal of up to 5000 kg/yr of external cargo.

- 3.2.2 Two to eight flights per year- to be optimized by the participant.
- 3.2.3 Late cargo loading: 10% of capability at Launch minus 4 (L-4) days.
- 3.2.4 100 W average, 120 Vdc power to cargo, per payload attachment site.
- 3.2.5 Robotic & EVA compatible cargo handling.
- 3.2.6 Mission reliability of at least 95% for high value cargo at a 50% confidence level.
- 3.2.7 Mission reliability of at least 90% for low value cargo at a 50% confidence level.

3.3 Capability B: Internal Cargo Delivery and Disposal

- 3.3.1 Single mission equivalent demonstration flight supporting up to 8,400 kg cargo per yr.
 - 3.3.1.1 Ability to deliver up to 7000 kg/yr of internal cargo.
 - 3.3.1.2 Ability to deliver up to 1100 kg/yr of water.
 - 3.3.1.3 Ability to deliver up to 300 kg/yr of atmospheric gas.
 - 3.3.1.4 Safe disposal of up to 7000 kg/yr of internal cargo.
- 3.3.2 Two to eight flights per year - to be optimized by the participant.
- 3.3.3 Late cargo loading:
 - 3.3.3.1 Unpowered cargo: 10% of capability at L-4 days.
 - 3.3.3.2 Twelve powered Mid-deck Locker Equivalent (MLE) per year, at L-24 hours.
- 3.3.4 75 W average, 28 Vdc power to cargo, per payload attachment site.
- 3.3.5 Mission reliability of at least 95% for high value cargo at a 50% confidence level.
- 3.3.6 Mission reliability of at least 90% for low value cargo at a 50% confidence level.

3.4 Capability C: Internal Cargo Delivery and Return

- 3.4.1 Single mission equivalent demonstration flight supporting up to 8,400 kg cargo per yr.
 - 3.4.1.1 Ability to deliver up to 7000 kg/yr of internal cargo.
 - 3.4.1.2 Ability to deliver up to 1100 kg/yr of water.
 - 3.4.1.3 Ability to deliver up to 300 kg/yr of atmospheric gas.
 - 3.4.1.4 Safe return to Earth of up to 3000 kg/yr of internal cargo.
- 3.4.2 Two to eight flights per year - to be optimized by the participant.
- 3.4.3 Late cargo loading:
 - 3.4.3.1 Unpowered cargo: 10% of capability at L-4 days.
 - 3.4.3.2 Twelve powered MLE per year, at L-24 hours.
- 3.4.4 Provide cargo compatible environment from pickup at orbital test bed to delivery to NASA.

- 3.4.5 Early cargo access after landing:
 - 3.4.5.1 Four powered MLE per year at Landing + 4 hours.
 - 3.4.5.2 Deliver at least 75% of returned cargo to NASA within Landing + 14 days.
- 3.4.6 75 W average, 28 Vdc power to cargo, per payload attachment site.
- 3.4.7 Mission reliability of at least 95% for high value cargo at a 50% confidence level.
- 3.4.8 Mission reliability of at least 90% for low value cargo at a 50% confidence level.

3.5 Capability D: Crew Transportation

- 3.5.1 Comply with COTS Human System Integration Requirements Document.
(To be developed by NASA/COTS participants collaboration, based on NASA Human Rating Requirements NPR 8705.2, Man Systems Integration Standard 3000, NASA JSC Design and Procedures Manual - JPG8080.5, and other associated safety resources as appropriate to COTS missions.)
- 3.5.2 Pick up flight crew from NASA JSC and transport to the launch site.
- 3.5.3 Crew transportation support:
 - 3.5.3.1 Maintain 3 crew members at the orbital destination.
 - 3.5.3.2 Provide exchange/rotation of individual crew members at least every 120 days and no longer than every 180 days.
 - 3.5.3.3 Two to four flights per year - to be optimized by the participant.
- 3.5.4 Provide any time return to Earth capability for 3 crew members.
- 3.5.5 Provide contingency support for crew members delivered by COTS.
 - 3.5.5.1 Emergency departure within 10 minutes.
 - 3.5.5.2 Safe Haven for at least 2 hours.
 - 3.5.5.3 Provide the capability to safely return the crew to Earth, without the ability to communicate with the ground, during all mission phases.
 - 3.5.5.4 Provide automated emergency return of the crew members COTS is supporting at the orbital test bed.
 - 3.5.5.5 Provide the capability to perform an emergency return of the crew from the orbital test bed to a Class 1 Earth medical facility within 24 hours or less from time of undocking.
 - 3.5.5.6 Provide the capability for the flight crew to override the automated return regime and manually pilot the COTS.
 - 3.5.5.7 Provide ability to isolate the COTS vehicle internal atmosphere from the orbital test bed atmosphere within three minutes.
 - 3.5.5.8 Provide life support within 1 minute upon COTS vehicle docking hatch closure.
- 3.5.6 Support crew baseline physiological data collection within 1 hour after landing.

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- 3.5.7 Crew survival probability of at least 99.9% per mission at a 50% confidence level.
- 3.5.8 Mission reliability of at least 99.5% at a 50% confidence level.
- 3.5.9 Deliver returning flight crews to NASA JSC within 2 days of landing.

4. INFORMATION FOR PARTICIPANTS

4.1 General Information

Agency: National Aeronautics and Space Administration

Project Office: Commercial Crew/Cargo Project Office
Exploration Systems Mission Directorate
Johnson Space Center, Mail Code QA
Houston, TX 77058-3696

Blackout: A blackout notice will be issued upon publication of the final announcement.

Proposal Due Date: March 3, 2006, 2:00 pm CST

Point of Contact: All questions shall be directed to the cognizant NASA official as specified below:

Contracting Officer/
Agreements Officer: James W. Bailey
Telephone: (281) 792-7537
Fax: (281) 333-9853
Email: james.bailey-1@nasa.gov

Additional Information: The announcement, related documents, as well as current news and other information may be obtained and downloaded over the Internet at:

<http://procurement.jsc.nasa.gov/cots/>

4.2 Eligible Participants

The following entities may submit proposals under this announcement: an entity organized under the laws of the United States or of a State, which is

- A. More than 50 percent owned by United States nationals; or
- B. A subsidiary of a foreign company and the Secretary of Transportation finds that –
 - (i) Such subsidiary has in the past evidenced a substantial commitment to the United States market through –

- a. Investments in the United States in long-term research, development, and manufacturing (including the manufacture of major components and subassemblies); and
- b. Significant contributions to employment in the United States; and

(ii) The country or countries in which such foreign company is incorporated or organized, and, if appropriate, in which it principally conducts its business, affords reciprocal treatment to companies described in subparagraph A. comparable to that afforded to such foreign company's subsidiary in the United States, as evidenced by –

- a. Providing comparable opportunities for companies described in subparagraph A. to participate in Government sponsored research and development similar to that authorized under Title 42 U.S.C. Chapter 141 (Commercial Space Opportunities and Transportation Services).
- b. Providing no barriers, to companies described in subparagraph A. with respect to local investment opportunities, that are not provided to foreign companies in the United States; and
- c. Providing adequate and effective protection for the intellectual property rights of companies described in subparagraph A.

4.3 Compliance With U.S. Laws, Regulations and Policies

Proposals must comply with all applicable U.S. laws, regulations and policies, including but not limited to the following:

4.3.1 Iran and Syria Nonproliferation Act (P.L. 106-178, amended by P.L. 109-112)

The Iran and Syria Nonproliferation Act (ISNA) currently prohibits NASA from making payments in cash or in kind after December 31, 2011 for work on the ISS to organizations or entities that are now or were in the past under the jurisdiction or control of Roscosmos (the Russian Federal Space Agency), or to any other organization, entity or element of the Government of Russia. NASA has applied the restrictions in this Act to include funding of Russian entities via U.S. contractors.

4.3.2 U.S. Space Transportation Policy, December 2004

4.3.3 Commercial Space Act of 1998 (P.L. 105-303; 42 U.S.C. 14701 et seq.)

4.3.4 Commercial Space Launch Act. (49 USC Chapter 701)

4.4 Intellectual Property

Under COTS, participants will retain maximum intellectual property rights allowed by law and regulations. Specifically:

1. NASA will not obtain rights in a participant's background intellectual property (data and inventions developed at private expense that existed or were made prior to, or outside of, the participant's agreement with NASA).
2. NASA may request a participant's technical data (engineering, software, etc.) arising from work under a COTS agreement with NASA. Such data will be used only to evaluate participant's performance under the COTS agreement.
3. For any inventions made by participants in performance of work under a COTS agreement, NASA is required by law – the National Aeronautics and Space Act of 1958 – to take title to such inventions. However, upon petition by a participant, NASA will grant an advanced waiver of title to such inventions to the participant. NASA will retain only a government purpose license to use waived inventions, but will refrain from NASA-use for a period specified in the COTS agreement (see Appendix A, Article 13).

Participant's proprietary data, both existing proprietary data and data arising from work conducted under this agreement which a participant considers proprietary, will be appropriately marked by the participant and protected by NASA.

In the event of termination of a COTS agreement due to failure by a participant to perform, NASA may immediately exercise any government-purpose license to inventions arising under the COTS agreement, and will have the right to use and disclose for governmental purposes any technical data produced by participant under the COTS agreement. The participant and NASA will negotiate rights in data in the event of termination for any other reason.

4.5 Title and Rights in Property

A principal goal of the COTS program is to facilitate the commercialization of space, a stated purpose of NASA under the National Aeronautics and Space Act of 1958, as amended. In order to foster such commercialization, NASA has determined that title to all property acquired for the COTS demonstrations will remain with the Participant(s). However, in the event of termination of the funded SAA, NASA will have the right to purchase property developed or acquired by the participant for the COTS demonstration pursuant to the terms of the agreement.

4.6 Legal Liability

Because the COTS demonstrations will be conducted by the participant(s) - not NASA/U.S. Government - the participant(s) will need to apply to the Federal Aviation Administration (FAA) for licenses or permits to conduct the demonstrations under 49 USC Subtitle IX, Chapter 701. The liability provisions of the licenses or permits will govern liabilities related to the demonstrations.

FAA licenses and permits include cross-waiver provisions. In a cross-waiver, each party promises not to bring claims against the other, or the other's related entities (e.g., contractors, subcontractors, users, customers or investigators) for any harm to its property or employees. This means that each party (the participant and the FAA for the U.S. government, including NASA), reciprocally agrees to accept the risk of its own participation in the activity and is thus freed from concern that other parties involved in the activity may bring claims against it. For a cross-waiver to apply, both the entity causing damage and the entity sustaining damage must be involved in activities under the agreement. Each party then requires its own related entities (e.g. contractors, subcontractors, users, customers or investigators) to agree to waive claims against similar entities that may be legally related to any other party. This is referred to as the requirement to "flow down" the cross-waiver.

The FAA also:

1. Provides limited, conditional government indemnification for third-party claims arising from activities conducted under the demonstration license. FAA cross-waivers require a private launch participant to be responsible for its employees' losses and property damage. [Financial Responsibility Requirements for Licensed Launch Activities; Final Rule, 63 Fed. Reg. 45592, 45597-98, 45615 (Aug. 26, 1998)].
2. Requires the COTS licensee/participant to obtain a specified amount of a) third party liability insurance, and b) property insurance for relevant government property involved in the licensed activity.

For COTS activities not subject to the provisions of a FAA license or permit, a risk allocation scheme will apply under the Space Act agreement(s) between NASA and participant(s). Specifically, the "Liability and Risk of Loss" Cross-Waiver found at 14 CFR Part 1266 applies and is currently being revised by NASA. The COTS participant(s) will be required to agree to utilize one of two risk allocation provisions depending on the LEO test bed used in the demonstration. If the participant is demonstrating rendezvous, proximity operations, docking or berthing, or other activities that are related to, or which could affect the ISS, then the Allocation of Risks provision for ISS activities will be used. If a LEO test bed unrelated and unaffected the ISS is selected, then the Allocation of Risks provision for non-ISS activities will be included in the Agreement with NASA.

NASA is not authorized to, and will not, indemnify a COTS participant for any claims/damages of any kind. Thus, COTS participants should consider obtaining appropriate insurance coverage, in addition to FAA requirements. Such insurance coverage could include coverage for damage caused by anyone to the participant's property (such as its launcher and any other flight hardware), and for third-party damages not subject to FAA requirements.

4.7 Anticipated Funding

FY 06	FY 07	FY 08	FY 09	TOTAL
\$50 M	\$120 M	\$200 M	\$130 M	\$500 M

The profile above is provided for planning purposes and covers **all** project costs internal and external to NASA. Participants should assume up to 3% of the funding will be withheld for NASA internal project costs. Additional integration costs internal to NASA, above this 3%, may also need to be covered out of the anticipated funding based on the complexity of a participant’s proposed approach (see Visiting Vehicle Integration section below).

Participants should propose their desired phasing for the proposed demonstrations. It should be recognized however, that the participant may need to replan during negotiations if NASA is not able to accommodate the proposed phasing. It is anticipated that multiple SAAs will be executed, therefore the allocation of funding to individual participants will be based on the number of participants selected and the type of capabilities proposed. In order to maximize capability coverage, participants are expected to secure additional funds to supplement the NASA funding as shown above.

The anticipated funding is not intended to cover the Capability D option. Depending on the final allocation of funding for Capabilities A, B, and/or C, the execution of the Capability D option may be contingent upon the availability of additional NASA funding.

The Government’s obligation to enter into agreements is contingent upon the availability of appropriated funds. NASA’s contribution will be a fixed amount and will not be increased based on the participant’s ability to obtain private funding.

4.8 Visiting Vehicle Integration with ISS Orbital Test Bed

If a participant intends to use the ISS orbital test bed during the COTS demonstrations, the participant shall provide for Visiting Vehicle Integration (VVI) requirements consistent with the CI-IIRD.

NASA’s role in VVI shall be funded internally and shall not be included in proposals. However, NASA’s internal VVI costs shall be considered part of total cost in evaluating proposals. For proposals that use a new or modified visiting vehicle or technology, NASA will add up to \$20M to account for NASA costs and associated VVI. For proposals that use an existing visiting vehicle, which is identical in design and operation to one that has been or is currently being integrated by the ISS Program, NASA will not add costs for VVI.

A participant using the ISS as the orbital test bed and proposing a new or modified visiting vehicle shall include the following in its proposal: all hardware, software, and data identified in section 4.10.1; support for joint verification of all proximity operations and attached interfaces; and sufficient insight for NASA to sign a certification of flight readiness prior to first flight to ISS.

4.9 Use of Government Resources

In support of this project, NASA will facilitate requests from participants for Government furnished resources and technologies such as spaceflight expertise, lessons learned, and access to facilities and spacecraft equipment.

Participants are permitted to seek fully reimbursable services from NASA Centers for the purpose of planning, analyzing, or executing the goals of this announcement. Such agreements will be independent of the terms of the funded COTS SAAs resulting from this announcement. If such reimbursable services are proposed, they must be identified and fully accounted for in the proposed price. Participants will be responsible for successful accomplishment of milestones; costs for such Center services will be the responsibility of participants. NASA will provide payments only upon successful accomplishment of specific milestones. NASA Center points of contact and relevant information are provided in Appendix B.

Participants may also submit requests for existing documents and information not contained in the Technical Library to the Contracting Officer/Agreements Officer.

4.10 Participant Provided Resources

4.10.1 The following items are required for ISS orbital test bed integration of new or modified visiting vehicles or technologies:

- Avionics and Software Necessary for ISS Integration Testing
- Crew Training Mock-ups
- ISS Integration Certification Plan, Reports and Data
- Training Materials

4.10.2 The following items are required from all participants:

- Quarterly Project Status Briefings
- Human Rating Certification Plan (Capability D only)

4.11 Ombudsman

An Ombudsman has been appointed to hear and facilitate the resolution of concerns from interested parties concerning the selection process for this announcement. Interested parties include the participants, potential participants, and agreement signatories. The existence of the Ombudsman is not to diminish the authority of the Contracting Officer/Agreements Officer, the Participant Evaluation Panel, evaluation process, or any formal adjudication of a matter related to this announcement. Interested parties are not to contact the Ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Contracting Officer/Agreements Officer as specified elsewhere in this document. Before consulting with the Ombudsman, interested parties must first address their concerns,

issues, disagreements, or recommendations to the Contracting Officer/Agreements Officer for resolution.

If resolution cannot be made by the Contracting Officer/Agreements Officer, interested parties may contact the Ombudsman. At his discretion, the Ombudsman may request that an interested party submit any concerns, issues, disagreements, or recommendations in writing. Submissions or inquiries made to either the Contracting Officer/Agreements Officer or the Ombudsman will neither suspend the selection process, the award or performance of the resulting agreement. The Ombudsman may be contacted at:

Randy K. Gish
Phone: 281-483-0490, Fax: 281-483-2200
Email: randy.k.gish@nasa.gov
Lyndon B. Johnson Space Center
2101 NASA Parkway, Mail Code AC
Houston, TX 77058-3696

5. INSTRUCTIONS FOR PROPOSALS

5.1 Proposal Submittal

- 5.1.1 NASA will not issue paper copies of this announcement. NASA reserves the right to select for negotiations all, some, or none of the proposals in response to this announcement. NASA provides no funding for direct reimbursement of proposal development costs. Proposals submitted in response to this announcement will not be returned. It is the policy of NASA to treat all proposals as sensitive competitive information and to disclose the contents only for the purposes of evaluation.
- 5.1.2 NASA will accept no more than one proposal per stand alone capability per company. If the proposed system solution is to accommodate multiple capabilities, then no more than two proposals for combined capabilities will also be accepted. For example, a proposal that addresses a combined A-B capability and another proposal that addresses a combined A-B-C capability may be submitted. Companies should submit the most preferred approach without options. A company may be a sub participant on multiple proposals.
- 5.1.3 The proposals shall be submitted in four sections. Section I is the Executive Summary, Section II is the Business Plan, Section III is the Technical Approach, and Section IV is Financial Information. The cover page of each section of the proposal shall clearly identify the targeted capability or multiple capabilities defined in the announcement (i.e., Capability A; B; C; A and B; C and D; B, C and D, etc.). Each section of the proposal shall be submitted in the following electronic format: Microsoft Word for Sections I, II, III, and Microsoft Excel for Section IV. Each section must be a separate file, and shall be electronically submitted on CD-ROM. Two copies of the electronic proposals shall be submitted and received by **March 3, 2006, by 2:00 p.m. CST** and will be used to determine timeliness of receipt. The CD-ROMs shall be delivered in person or by commercial carrier to the same address listed below for the hardcopy deliveries. The CD-ROMs shall be labeled as Copy 1 of 2 or Copy 2 of 2. The CD-ROMS shall be labeled with the same company and proposal identifiers used on the hardcopies.
- 5.1.4 Ten hardcopies of the proposals shall be submitted and received by **March 7, 2006, by 2:00 p.m. CST**. Each copy shall be labeled as Copy 1 of 10, 2 of 10, etc. All four sections of the proposal shall be included in one appropriately sized binder and tabbed by section. Hardcopies shall be delivered in person or by commercial carrier to:

NASA Commercial/Crew Cargo Project Office
1740 NASA Parkway, Suite 101
Houston, TX 77058

- 5.1.5 Sections I, II, and III combined have a 90 page maximum limit if multiple capabilities are proposed and the Capability D option is proposed; an 80 page maximum limit for a single capability and the Capability D option is proposed, a 65 page maximum limit for a single capability excluding the Capability D option. There is no page limit for Section IV

Financial Information. The page guidelines by Section are as follows:

Section	Page Guidelines
I Executive Summary	5
II Business Plan	30
II Business Plan (Capability D Option)	5 additional
III Technical (Single Capability)	30
III Technical (Multiple Capabilities)	40
III Technical (Capability D Option)	10 additional
IV Financial Information	Unlimited

A page is defined as one side of a sheet, 8 1/2" x 11", with at least one inch margins on all sides, using not smaller than 12 point type, with the exception of tables and figures, which may use 8 point type. Foldouts count as an equivalent number of 8 1/2" x 11" pages.

Title pages, tables of contents, tabs, and acronym listings are excluded from the specified page counts. The Financial section of the proposal is to be strictly limited to the information requested. Information belonging in one of the other sections of the proposal will not be evaluated. Any pages over the specified maximums will not be evaluated.

If video graphics are used in the electronic proposal files, they shall be embedded in the Microsoft Word document in Windows Media (.wmv) format. Each individual video clip shall not exceed 20 megabytes and the combined total length of all video clips shall be limited to approximately 10 minutes.

The electronic proposals shall have precedence over hardcopies for evaluation purposes.

- 5.1.6 Proposals received by the Government after the published date and time for receipt shall not be accepted.

5.2 Proposal Content

5.2.1 Outline Format

All proposals shall be submitted using the following outline format:

Section I Executive Summary

Section II Business Plan

B1 - Company Information

B2 - COTS Development and Demonstration Plan

B3 - COTS Operational Readiness Plan

- B4 - Financial Pro-forma
- B5 - Compliance
- B6 – Crew Exploration Vehicle (CEV)/Crew Launch Vehicle (CLV) Projects
(if applicable)

- Section III Technical Approach
- T1 - System Concept and Summary of Performance
 - T2 - Mission Compatibility and Performance Analysis
 - T3 - Development
 - T4 - Manufacturing
 - T5 - Test and Verification
 - T6 - COTS ISS Certification and Orbital Test Bed Integration
 - T7 - COTS Human Rating Certification (Capability D only)
 - T8 - Technical Risks
 - T9 - Safety and Mission Assurance

Section IV Financial Information

5.2.2 Section I: Executive Summary

Proposals shall include an executive summary describing the prominent and distinguishing features of the business plan, technical approach for the COTS product, and financial elements of the proposal. The summary should confirm eligibility as specified in section 4.2. The executive summary shall stand alone and not directly reference the other sections of the proposal.

5.2.3 Section II: Business Plan

This section shall describe the participant's plan for operating a sustained, profitable entity that may supply the market of space transportation services to NASA and other customers. To address this market, the participant will determine whether to provide a business plan for the entire corporation or for a division within the corporation. It is expected that larger companies will provide a division business plan focused specifically on the space transportation systems market. The subsections of the business plan section are as follows:

B1. Company Information

A. Business Strategy

The participant shall describe the core aspects of its business strategy that will enable it to be successful in this market.

B. Market

The participant shall define and describe the market to which it will provide products and services, including size, growth rate, target customers, and needs of these customers. The market can include customers other than NASA. Where appropriate, the market can be segmented into smaller sections for clearer analysis.

C. Products and Services

The participant shall describe in a product roadmap the attributes of the products and services that it will provide to its targeted market and the timing for the introduction of these products and services.

D. Competitor Analysis

The participant shall describe the strengths and weaknesses of competitors in the chosen markets.

E. Marketing and Sales

The participant shall describe the plan for marketing and selling company products and services to targeted markets.

F. Governance Structure

The participant shall provide information on the decision-making structure that impacts the business' continuation in future years. For public companies, this will include financial-return expectations. For private companies, this will include the composition of the board of directors as well as an explanation of corporate covenants that impact the decision-making process.

G. Management Team

The participant shall identify its top level management team and key personnel for this effort, including a description of the reporting structure, biographical information, history of relevant experience and business ventures, and professional references for each.

B2. COTS Development and Demonstration Plan

A. Plan and Schedule

The participant shall provide a plan and schedule for developing and demonstrating the capability(ies). Include a discussion of programmatic risks and strategy to mitigate each risk.

B. Resources

The participant shall describe key resources such as personnel, facilities and other assets, including intellectual property currently owned and yet to be obtained.

C. Teaming Arrangements

The participant shall describe teaming arrangements including respective roles and contributions to the project. A list of all partners and suppliers shall include name, address, country of incorporation, and contact name and phone number. Provide a brief description of any previous experiences working with these partners and suppliers. If foreign participation is included in the proposal, the participant shall describe the critical elements of the foreign content, an assessment of supplier risks, and any alternatives or mitigation of the identified risks.

D. Performance Milestone Payments from NASA

The participant shall provide a proposed schedule of performance milestones including payment amounts, objective success criteria, rationale, and planned achievement dates. This shall be summarized in Financial Template 2.

B3. COTS Operational Readiness Plan

The participant shall describe their approach to offer operational COTS services including the most likely, best case, and worst case operational readiness date, with assumptions.

B4. Financial Pro-forma

The participant shall provide a typical commercial Income Statement Summary using Financial Template 1a for the years 2006-2012. Template 1a shall be consistent with the scope of the business plan. Privately held participants shall also provide a typical commercial Cash Flow Statement Summary for the same time period in Template 1b. Where possible, identify likely sources of funding, both equity and debt, and provide contact information.

B5. Compliance

The participant shall describe compliance with eligibility requirements and applicable federal laws, regulations, and policies specified in sections 4.2 and 4.3. Participants that intend to rely on Russian suppliers for their COTS system shall explain how they would provide service capability after December 31, 2011, when the relief from the ISNA prohibition expires.

B6. Crew Exploration Vehicle (CEV)/Crew Launch Vehicle (CLV) Projects

If a participant is currently a prime contractor or subcontractor on the CEV and/or CLV projects, the participant shall describe how they intend to successfully perform these projects and the COTS demonstration concurrently.

5.2.4 Section III: Technical Approach

This section shall describe the participant's proposed approach for their system concept, performance specifications, mission compatibility, development, manufacturing, test and verification, ISS certification, human rating certification, technical risks, safety, and mission assurance. Participants are asked to propose concepts that meet as many of the goals as possible, and clearly articulate the limitations where the goals cannot be met. Innovations and efficiencies should be discussed throughout this section where appropriate. The subsections of the technical section are as follows:

T1. System Concept and Summary of Performance

The participant shall describe the space transportation system architecture, capabilities, features, system & performance specifications, and concept of operations for the targeted capabilities. Include technical description of the Phase 1 demonstration plan.

T2. Mission Compatibility and Performance Analysis

The participant shall describe the space transportation system's compatibility with the targeted COTS Service Reference Mission (SRM) and associated requirements described in the Draft COTS ISS Service Requirements Document (CI-SRD) and the COTS ISS Integration & Interface Requirements Document (CI-IIRD). Include discussion of the variances and technical work required to transition from the Phase 1 Demonstration project to the Phase 2 fully operational space transportation service for the ISS.

T3. Development

The participant shall describe the elements of the system that are either already operational or commercially available and elements that are under development or to be developed. For development elements, describe work completed to date including modeling results, prototypes, sub-component tests or any other relevant work pertaining to the proposed system. Also describe the technical approach for bringing the concept in its current state to a full scale prototype system ready for demonstration flights to the orbital test bed.

T4. Manufacturing

The participant shall describe the approach for manufacturing the elements of the space transportation system in support of flight demonstration(s).

T5. Test and Verification

The participant shall describe the approach for testing and verifying the performance of

the space transportation system before initial operational capability.

T6. COTS ISS Certification and Orbital Test Bed Integration

The participant shall describe the proposed approach for verifying and certifying that their COTS system can safely visit the ISS orbital test bed. Identify any ISS visiting vehicle requirements in the IIRD the participant proposes to deviate from and the rationale for each. The participant shall describe the COTS ISS integration impacts to NASA including hardware/software design and operations (such as pre-flight installation of docking targets or communications equipment). If an alternative orbital test bed is proposed, the participant shall describe how it will simulate the vehicle interfaces described in the ISS IIRD, its limitations, and how it will be used in the demonstrations.

T7. COTS Human Rating Certification (Capability D only)

This content applies only to participants proposing the Capability D option. The participant shall describe the proposed approach for certifying that the COTS system meets the requirements for flight of NASA crew or passengers. Identify any NASA Human Rating requirements the participant proposes to deviate from and the rationale for each.

T8. Technical Risks

Describe the technical risks associated with the effort and include the risk level (low, medium, or high) along with a strategy to mitigate each risk.

T9. Safety and Mission Assurance

The participant shall describe the approach for safety (range, ground, flight, etc.), reliability, maintainability, supportability, quality, software assurance, and risk management. The discussion may include S&MA organization including subcontractors, processes, tasks and products. If the participant plans to operate on a NASA facility, the participant shall describe how they plan to meet NASA facility safety requirements as described in the *NASA Facility Safety Requirements* document provided in the Technical Library.

5.2.5 Section IV: Financial Information

Participants shall complete all applicable templates as listed below in accordance with the instructions. The templates with instructions and examples are included in Appendix C. The data entered here shall be thorough and reflect the participant's business and technical approach.

Templates:

- 1 – Pro Forma Income and Cash Flow Statements
- 2 - Total Fixed Contribution from NASA with Milestone Detail
- 3 - Proposed Government Services, Facilities or Equipment

- 4 - Total Cost by System
- 5 - Phased Cost by Function
- 6 - Projected Operational Prices for Capabilities A, B, C
- 7 - Projected Operational Prices for Capability D

6. EVALUATION

6.1 Process

- 6.1.1 The evaluation process NASA intends to use for the selection of funded Space Act Agreement(s) has been designed for this announcement. Participants are reminded that this process does not involve the procedures set forth in the Federal Acquisition Regulation (FAR) nor the NASA FAR Supplement since this announcement will not result in the award of a contract, grant, or cooperative agreement. The first step of the evaluation process will be an initial screening of proposals based upon the Executive Summary. The Government will evaluate the Executive Summaries assessing the overall capability of the participant meeting the requirements and goals in the announcement.
- 6.1.2 Proposals favorably evaluated in the initial screening will move forward to a detailed evaluation, which will involve an evaluation of the entire proposal submitted. All information provided in the proposal will be evaluated including the executive summary, business plan, technical approach and financial information. In addition, NASA reserves the right to assess information outside the proposal.
- 6.1.3 After evaluating each proposal, NASA will compare the proposals against one another as part of a tradeoff analysis. The purpose of this tradeoff analysis is to select a portfolio of approaches that best meets the objectives of the COTS project. Considerations regarding the selection of the portfolio will include capability coverage, risk spread, and stimulation of the space transportation market.
- 6.1.4 The Government will notify those companies whose proposals are not selected to be in the portfolio after the completion of the tradeoff analysis and will begin negotiations with those companies whose proposals are part of the portfolio. The purpose of the negotiations is to obtain the best commercial approach possible and will involve questions about the business, technical, and financial aspects of the proposals; questions about NASA involvement/requirements, to include ISS Certification and Human Rating; and finalization of the terms and conditions of the SAA for each company whose proposal was selected for the portfolio. The Selection Authority will make the final selection after the completion of negotiations. Work will commence after the parties execute the SAA.

6.2 Personnel

The Government will likely use selected contractor support personnel to assist in providing technical, business and investment expertise regarding proposals. Any support contractor involvement in the evaluation process shall be free of conflicts of interest, will be bound by appropriate non-disclosure agreements to protect proprietary and competition sensitive information, and must have accepted limitations on future contracting.

Commercial Orbital Transportation Services Demonstrations

By submitting a proposal under this announcement, the participant is deemed to have consented to release of data in its proposal to NASA contractors supporting evaluation of proposals.

7. LIST OF APPENDICES

Appendix A: Draft Space Act Agreement

Appendix B: Government Services, Facilities or Equipment

Appendix C: Financial Templates

Appendix A: Draft Space Act Agreement (SAA)

The following is a draft SAA for the COTS project. This draft will be the subject of final negotiations of NASA and a participant, but establishes the basic parameters of the agreement between the parties. Questions or comments on the draft SAA may be submitted to the COTS Contracting Officer/Agreements Officer.

SPACE ACT AGREEMENT
BETWEEN
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
XYZ CORP.
FOR
COMMERCIAL ORBITAL TRANSPORTATION SERVICES DEMONSTRATION (COTS)

ARTICLE 1. AUTHORITY

This Agreement is entered into by the National Aeronautics and Space Administration, located at 4th and E Streets, SW, Washington, D.C. (hereinafter referred to as "NASA" or Government), and XYZ Corp., (hereinafter referred to as "XYZ" or "Participant") with a place of business at _____ [street, city and state, zip]. NASA's authority to enter into this Agreement is in accordance with the authority set forth in Sections 203(c)(5) and 203(c)(6) of the National Aeronautics and Space Act of 1958, as amended and NPR 1050.1G. This agreement will be implemented by NASA at the Lyndon B. Johnson Space Center in Houston, Texas.

ARTICLE 2. PURPOSE

The purpose of this Agreement is to conduct initial development and demonstration phase of the Commercial Orbital Transportation Services (COTS) Project. Under this Agreement, XYZ will receive milestone payments from NASA to develop and demonstrate vehicles, systems, and operations needed for XYZ to perform earth to orbit space flight demonstrations of the following capabilities: **[Select as applicable]**

Capability A: External cargo delivery and disposal – delivers cargo (payloads) that operate directly in the space environment to a LEO test bed and provides for its safe disposal.

Capability B: Internal cargo delivery and disposal – delivers cargo (payloads) that operates within a volume maintained at normal atmospheric pressure to a LEO test bed and provides for its safe disposal.

Capability C: Internal cargo delivery and return – delivers cargo (payloads) that operate within a volume maintained at normal atmospheric pressure to a LEO test bed and provides for its safe return to Earth.

Capability D (Option): Crew transportation – delivers crew to a LEO test bed and provides for safe return to Earth.

As part of the demonstrations, NASA will provide the ISS as the orbital destination and active test bed if the ISS visiting vehicle requirements are satisfied. [Insert if using alternate test bed: As part of the demonstrations, XYZ will provide _____ as an alternative orbital test bed for the capability demonstrations.]

The scope of the demonstrations, as applicable, involves the development and operation of an end-to-end space transportation system of services including ground operations and integration, launch, rendezvous, proximity operations, docking or berthing, orbital operations, reentry, and safe disposal or return.

ARTICLE 3. RESPONSIBILITIES

A. XYZ shall:

- (1) Conduct the COTS Demonstrations according to the milestones below.
- (2) [Insert if using alternate test bed: Provide _____ as an orbital test bed for the capability demonstrations.]

B. NASA shall:

- (1) Provide milestone payments to XYZ upon successful completion of each milestone, subject to limitations noted below.
- (2) [Insert if ISS to be used as test bed: Provide the ISS as the orbital destination and active test bed if the ISS visiting vehicle requirements are satisfied. NASA will provide associated technical expertise to facilitate proximity operations, specifically rendezvous and docking, with the International Space Station.
- (3) Provide relevant NASA data/information necessary for participant to provide for Visiting Vehicle Integration (VVI) requirements consistent with the CI-IIRD.

ARTICLE 4. SCHEDULE AND MILESTONES

The scheduled major milestones and acceptance criteria for each milestone for the COTS Demonstrations are identified in Appendix 1 to this Agreement

ARTICLE 5. FINANCIAL OBLIGATIONS

A. Obligation

- (1) The Government's liability to make payments to XYZ is limited to only those funds obligated annually under this Agreement or by amendment to the Agreement. NASA may obligate funds to the Agreement incrementally.

B. Acceptance and Payment for Milestones

(1) XYZ shall notify the NASA Key Personnel at least 30 days prior to the completion of any milestone to arrange for the NASA Technical Contact or designee to witness the event or accept delivery of documents. NASA shall have 30 working days to determine whether the milestone event meets its corresponding acceptance criteria as described in Appendix 1 of this Agreement and shall notify XYZ of NASA's acceptance or non-acceptance. Disagreement about the successful accomplishment of a milestone shall be deemed a Dispute and resolved in accordance with Article 19 of this Agreement.

(2) XYZ shall be able to submit an invoice requesting payment upon the accomplishment and acceptance by NASA of the milestone as identified and described in Appendix 1 of this Agreement. XYZ shall submit an original and one (1) copy of all invoices to the NASA Administrative Contact listed in this Agreement for review. After receipt and review of the invoice, the NASA Administrative Contact will prepare a written determination of milestone completion and authorize payment. Subject to change only through written Agreement modification, payment shall be made via electronic funds transfer to the address set forth below:

Bank Account of Payee:
Bank:
Address:
Routing Transit Number: 0000000000
Depositor Account Title:
Depositor Number: 0000000000

(3) The following information shall be included on each invoice:

Agreement Number
Invoice Number
A description of milestone event
Terms of Payment
Payment Office
Amount of the fixed contribution claimed

(4) Financial Records and Reports: Except as otherwise provided in this Agreement, XYZ's relevant financial records associated with this Agreement are not subject to examination or audit by NASA.

(5) Comptroller General Access to Records: The Comptroller General, at its discretion, shall have access to and the right to examine records of any party to the Agreement or any entity that participates in the performance of this Agreement that directly pertain to and involve transactions relating to, the Agreement for a period of three (3) years after the Government makes the final payment under this Agreement. This paragraph only applies to any record that is created or maintained in the ordinary course of business or pursuant to a provision of law. The terms of this paragraph shall be included in arrangements in excess of \$5,000,000.00, which XYZ has entered into for the execution of the milestone events in this Agreement.

ARTICLE 6. DISSEMINATION OF PUBLIC INFORMATION

A. NASA or XYZ may, consistent with Federal law and this Agreement, release general information regarding its participation in this Agreement as desired. XYZ agrees that all press releases resulting from activities conducted under this Agreement will be reviewed and concurred on by the NASA JSC Director of Public Affairs prior to release. Such approval will not be unreasonably withheld.

B. XYZ agrees the words “National Aeronautics and Space Administration” or the letters “NASA” will not be used in connection with a product or service in a manner reasonably calculated to convey any impression that such product or service has the authorization, support, sponsorship, or endorsement of NASA, which does not, in fact, exist. In addition, XYZ agrees that any proposed use of the NASA name or initials shall be submitted by XYZ in advance to the NASA Administrative Contact, who will submit the proposed use to the JSC Director of Public Affairs for review and approval. Such approval shall not be unreasonably withheld. Use of NASA emblems/devices (i.e., NASA Seal, NASA Insignia, NASA logotype, NASA Program Identifiers, and the NASA Flag) is governed by 14 C.F.R. Part 1221. XYZ agrees that any proposed use of such emblems/devices shall be submitted in advance to the NASA Administrative Contact, who will submit the proposed use the NASA JSC Director of Public Affairs for review and approval in accordance with such regulations.

C. NASA does not endorse or sponsor any commercial product, service, or activity. NASA’s participation in this Agreement and/or supply of goods (i.e., equipment, facilities, technical information) and services under this Agreement does not constitute endorsement by NASA. XYZ agrees that nothing in this Agreement will be construed to imply that NASA authorizes, supports, endorses, or sponsors any product or service of XYZ resulting from activities conducted under this Agreement, regardless of the fact that such product or service may employ NASA-developed technology.

ARTICLE 7. NASA FURNISHED INFORMATION AND SERVICES

A. NASA may, at its discretion, make a determination to provide Government Furnished Property or Services and associated technical expertise to facilitate proximity operations, specifically autonomous rendezvous and docking, with the International Space Station. If NASA determines that such property and services are required, the parties will modify this Agreement to add a description of NASA responsibilities.

B. There is no Government Furnished Property or Services furnished under this Agreement except for those that may be provided in Article 7.A. However, XYZ has the ability to enter into separate Space Act agreements with NASA Centers to use NASA resources in performance of this Agreement. The terms and conditions of other Space Act agreements will govern the use of NASA resources not being provided under this Agreement. With all its subcontractors/partners, including NASA Centers, XYZ will be responsible for ensuring timely, accurate work, and replacing such subcontractors/partners, in order to meet milestones.

ARTICLE 8. NONEXCLUSIVITY

This Agreement is not exclusive; accordingly, NASA may enter into similar Agreements for the same or similar purpose with other U.S. private or public entities.

ARTICLE 9: PARTICIPANT ANNUAL CERTIFICATIONS

XYZ shall annually certify the following to the COTS Administrative Contact:

- A. XYZ or any of its subcontractors/partners are not presently debarred, suspended, proposed for debarment, or otherwise declared ineligible for award of funding by any Federal agency.
- B. XYZ or any of its subcontractors/partners have not been convicted or had a civil judgment rendered against it within the last three (3) years for fraud in obtaining, attempting to obtain, or performing a Government contract.
- C. XYZ or any of its subcontractors/partners receiving \$100,000 or more in NASA funding for work performed under this Agreement must certify that they have not used any appropriated funds for lobbying purposes prohibited by 31 U.S.C. 1352.
- D. XYZ is an eligible participant as defined in Section 4.2 of the COTS announcement.

ARTICLE 10. LIABILITY AND RISK OF LOSS

[FOR ISS-RELATED COTS ACTIVITIES]

A. FAA license(s) or permit(s), including cross-waivers and insurance requirements, for COTS demonstrations conducted by XYZ under this Agreement will govern allocation of risks and liability of the U.S. government – including NASA – and XYZ. To the extent the FAA license(s) or permit(s) do not apply to activities under this Agreement, the following cross-waiver will apply. Under no circumstances will NASA be liable for indemnification of third-party claims:

(1) Purpose: The objective of this Article is to establish a cross-waiver of liability by the Parties and their related entities in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the COTS demonstrations.

(2) For the purposes of this Article:

(a) The term “Partner State” includes each contracting party for which the Agreement Among The Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America Concerning Cooperation on the Civil International Space Station (ISS) (signed January 29, 1998; hereinafter the “Intergovernmental Agreement”) has entered into force or become operative (pursuant to Sections 25 and 26, respectively, of the Intergovernmental Agreement), or any successor agreement. A Partner State includes its Cooperating Agency. It also includes any entity specified in the MOU between NASA and the Government of Japan to assist the Government of Japan's Cooperating Agency in the implementation of that MOU.

(b) The term “related entity” means:

- (i) a contractor or subcontractor of a Party or a Partner State at any tier;
- (ii) a user or customer of a Party or a Partner State at any tier; or
- (iii) a contractor or subcontractor of a user or customer of a Party or a Partner State at any tier.

(c) The term “damage” means:

- (i) bodily injury to, or other impairment of health of, or death of, any person;
- (ii) damage to, loss of, or loss of use of any property;
- (iii) loss of revenue or profits; or
- (iv) other direct, indirect or consequential damage.

(d) The term “launch vehicle” means an object or any part thereof intended for launch, launched from Earth, or returning to Earth which carries payloads or persons, or both.

(e) The term “Party” means a Party to this agreement.

(f) The term “payload” means all property to be flown or used on or in a launch vehicle or the ISS.

(g) The term “Protected Space Operations” means all launch vehicle activities, ISS activities, and payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of the IGA, MOUs concluded pursuant to the IGA, and implementing arrangements. It includes, but is not limited to:

(i) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles, the ISS, or a payload, as well as related support equipment and facilities and services; and

(ii) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

“Protected Space Operations” also includes all activities related to evolution of the ISS, as provided for in Article 14 of the IGA. “Protected Space Operations” excludes activities on Earth which are conducted on return from the ISS to develop further a payload's product or process for use other than for ISS related activities in implementation of the IGA.

(3) Cross Waiver of Liability

(a) Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in subsections (3)(a)(i) through (3)(a)(iv) below based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage, whatever the legal basis for such claims against:

- (i) another Party;
- (ii) a Partner State other than the United States of America;
- (iii) a related entity of any entity identified in subparagraphs (3)(a)(i) or (3)(a)(ii)

above;

(iv) the employees of any of the entities identified in subsections (3)(a)(i) through (3)(a)(iii) above.

(b) In addition, each Party shall, by contract or otherwise, extend the cross-waiver of liability as set forth in subsection (3)(a) above to its related entities by requiring them to:

(i) waive all claims against the entities or persons identified in subsections (3)(a)(i) through (3)(a)(iv) above; and

(ii) require that their related entities waive all claims against the entities or persons identified in subsections (3)(a)(i) through (3)(a)(iv) above.

(c) For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of liability arising from the Convention on International Liability for Damage Caused by Space Objects (which entered into force on September 1, 1972), where the person, entity, or property

causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(d) Notwithstanding the other provisions of this section, this cross-waiver of liability shall not be applicable to:

- (i) claims between a Party and its related entities or between its related entities;
- (ii) claims made by a natural person, his/her estate, survivors or subrogees (except when a subrogee is a Party to this Agreement or is otherwise bound by the terms of this cross-waiver) for bodily injury to, or other impairment of health of, or death of such natural person;
- (iii) claims for damage caused by willful misconduct;
- (iv) intellectual property claims;
- (v) claims for damage resulting from a failure of a Party to extend the cross-waiver of liability to its related entities, pursuant to subsection (c)(2) above;
- (vi) claims by or against a Party arising out of the other Party's failure to meet its contractual obligations as set forth in the Agreement.

(e) Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

(f) This cross-waiver shall not be applicable when the Commercial Space Launch Act cross-waiver (49 U.S.C. 70101 *et seq*) is applicable.

[Insert if using alternate test bed or **for non-ISS related COTS activities:**

A. FAA license(s) or permit(s), including cross-waivers and insurance requirements, for COTS demonstrations conducted by XYZ under this Agreement will govern allocation of risks and liability of the U.S. government – including NASA – and XYZ. To the extent the FAA license(s) or permit(s) do not apply to activities under this Agreement, the following cross-waiver will apply. Under no circumstances will NASA be liable for indemnification of third-party claims:

(1) Purpose: The objective of this Article is to establish a cross-waiver of liability by the Parties and their related entities in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the COTS demonstrations.

(2) For purposes of this Article:

- (a) The term “Party” means a party to this Agreement.
- (b) The term “related entity” means:
 - (i) a contractor or subcontractor of a Party at any tier;
 - (ii) a user or customer of a Party at any tier; or
 - (iii) a contractor or subcontractor of a user or customer of a Party at any tier.
- (c) The term “damage” means:
 - (i) bodily injury to, or other impairment of health of, or death of, any person;
 - (ii) damage to, loss of, or loss of use of any property;
 - (iii) loss of revenue or profits; or
 - (iv) other direct, indirect, or consequential damage.
- (d) The term “launch vehicle” means an object or any part thereof intended for launch, launched from Earth, or returning to Earth which carries payloads or persons, or both.
- (e) The term “payload” means all property to be flown or used on or in a launch vehicle.

(f) The term “Protected Space Operations” means all expendable or reusable launch vehicle activities and payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of this Agreement. It includes, but is not limited to:

- (i) research, design, development, test, manufacture, assembly, integration, operation, or use of launch or transfer vehicles, payloads, or instruments, as well as related support equipment and facilities and services;
- (ii) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

The term "Protected Space Operations" excludes activities on Earth that are conducted on return from space to develop further a payload's product or process for use other than for the activities within the scope of this Agreement.

(3) Cross-waiver of liability

(a) Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in subsections (3)(a)(i) through (3)(a)(iv) below based on damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for damage against:

- (i) another Party;
- (ii) a party to another NASA agreement that includes flight on the same launch vehicle;
- (iii) a related entity of any entity identified in subsection (3)(a) or (3)(b) above;
- (iv) the employees of any of the entities identified in subsections (3)(a) through (3)(c) above.

(b) In addition, each Party shall extend the cross-waiver of liability as set forth in subsection (3)(a) to its own related entities by requiring them, by contract or otherwise, to:

- (i) waive all claims against the entities or persons identified in subsections (3)(a)(i) through (3)(a)(iv) above; and
- (ii) require that their related entities waive all claims against the entities or persons identified in subsections (3)(a)(i) through (3)(a)(iv) above.

(c) For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of claims arising from the Convention on International Liability for Damage Caused by Space Objects (which entered into force on September 1, 1972), where the person, entity, or property causing the damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

(d) Notwithstanding the other provisions of this section, this cross-waiver of liability shall not be applicable to:

- (i) claims between a Party and its own related entity or between its own related entities;
- (ii) claims made by a natural person, his/her estate, survivors, or subrogees (except when a subrogee is a Party to this Agreement or is otherwise bound by the terms of this cross-waiver) for bodily injury to, or other impairment of health of, or death of such natural person;
- (iii) claims for damage caused by willful misconduct;
- (iv) intellectual property claims;
- (v) claims for damages resulting from a failure of a Party to extend the cross-waiver of liability to its related entities, pursuant to subsection (c)(2) above; or

(vi) claims by or against a Party arising out of or relating to the other Party's failure to meet its contractual obligations set forth in the Agreement.

(e) Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

(f) This cross-waiver shall not be applicable when the Commercial Space Launch Act cross-waiver (49 U.S.C. 70101 *et seq*) is applicable.]

ARTICLE 11. LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS

XYZ shall not use any funds provided under this Agreement to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

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

A. General

(1) "Related Entity" as used in this Article, means a contractor, subcontractor, grantee, or other entity having a legal relationship with NASA or XYZ that is assigned, tasked, or contracted with to perform specified NASA or XYZ activities under this Agreement.

(2) "Data," as used in this Agreement, means recorded information, regardless of form, the media on which it may be recorded, or the method of recording. The term includes, but is not limited to, data of a scientific or technical nature, software and documentation thereof, and data comprising commercial and financial information.

(3) "Proprietary Data," as used in this Article, means Data embodying trade secrets or comprising commercial or financial information that is privileged or confidential.

(4) The Data rights set forth herein are applicable to employees of XYZ and employees of any Related Entity of XYZ. XYZ shall ensure that its employees and employees of any Related Entity that perform XYZ activities under this Agreement are aware of the obligations under this Article and that all such employees are bound to such obligations.

(5) Data exchanged between NASA and XYZ under this Agreement will be exchanged without restriction as to its disclosure, use, or duplication except as otherwise provided in this Article.

(6) No preexisting Proprietary Data will be exchanged between the parties under this Agreement unless specifically authorized in this Article or in writing by the owner of the Proprietary Data.

(7) In the event that Data exchanged between NASA and XYZ include a restrictive notice that NASA or XYZ deems to be ambiguous or unauthorized, NASA or XYZ may inform the other party of such condition. Notwithstanding such a notice, as long as such notice provides an indication that a restriction on use or disclosure was intended, the party receiving such Data will

treat the Data pursuant to the requirements of this clause unless otherwise directed in writing by the party providing such Data.

(8) Notwithstanding any restriction on use, disclosure, or reproduction of Data provided in this clause, the parties will not be restricted in the use, disclosure, or reproduction of Data provided under this Agreement that: (a) is publicly available at the time of disclosure or thereafter becomes publicly available without breach of this Agreement; (b) is known to, in the possession of, or developed by the receiving party independent of carrying out the receiving party's responsibilities under this Agreement and independent of any disclosure of, or without reference to, Proprietary Data or otherwise protectable Data hereunder; (c) is received from a third party having the right to disclose such information without restriction; or (d) is required to be produced by the receiving party pursuant to a court order or other legal requirement.

(9) If either NASA or XYZ believes that any of the events or conditions that remove restriction on the use, disclosure, or reproduction of the Data apply, NASA or XYZ will promptly notify the other party of such belief prior to acting on such belief, and, in any event, will notify the other party prior to an unrestricted use, disclosure, or reproduction of such Data.

(10) Disclaimer of Liability: Notwithstanding any restriction on use, disclosure, or reproduction of Data provided in this Article, NASA will not be restricted in, nor incur any liability for, the use, disclosure, or reproduction of any Data not identified with a suitable restrictive notice in accordance with paragraphs B and G of this Article or of any Data included in Data which XYZ has furnished, or is required to furnish to the U.S. Government without restriction on disclosure and use.

(11) XYZ may use the following, or a similar, restrictive notice as required by paragraphs B and G of this Article. In addition to identifying Proprietary Data with such a restrictive notice, XYZ should mark each page containing Proprietary Data with the following, or a similar, legend: "PROPRIETARY DATA – use and disclose only in accordance with notice on title or cover page."

Proprietary Data Notice

These data herein include *<enter as applicable: "Background Data" or "Data Produced by Participant under a Space Act Agreement">* in accordance with the Data Rights provisions under Space Act Agreement *<provide applicable identifying information>* and embody Proprietary Data. In accordance with the Space Act Agreement, NASA will use reasonable efforts to maintain the data in confidence and limit use, disclosure, and reproduction by NASA and any Related Entity of NASA (under suitable protective conditions) in accordance with restrictions identified in the Space Act Agreement *<may list specific restrictions listed in the Agreement>*.

B. Data First Produced by XYZ under this Agreement

(1) Data first produced by XYZ in carrying out XYZ's responsibilities under this Agreement, including but not limited to technical data related to inventions made under this Agreement, will be furnished to NASA upon request and such Data will be disclosed and used by NASA and any Related Entity of NASA (under suitable protective conditions) during the term of this Agreement only for evaluating XYZ's performance under this Agreement. If XYZ considers any such Data to be Proprietary Data, and such Data is identified with a suitable restrictive notice, NASA will use reasonable efforts to maintain the Data in confidence.

(2) Upon a successful completion by XYZ of all milestones under this Agreement, NASA shall not assert rights in such Data or use such Data for any purpose except that NASA shall retain the right to: (1) maintain a copy of such Data for archival purposes; and (2) use or disclose such archived Data by or on behalf of NASA for Government purposes in the event the NASA determines that

(a) Such action is necessary because XYZ, its assignee, or other successor has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of inventions or software related to such Data;

(b) Such action is necessary because XYZ, its assignee, or other successor, having achieved practical application of inventions or software related to such Data, has failed to maintain practical application of such inventions;

(c) Such action is necessary because XYZ, its assignee, or other successor has discontinued making the benefits of inventions or software related to such Data available to the public or to the Federal Government;

(d) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by XYZ, its assignee, or other successor; or

(e) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by XYZ, its assignee, or successor.

(3) In the event NASA terminates this Agreement in accordance with Article 17.B., Termination for Failure to Perform, NASA shall have the right to use or disclose Data first produced by XYZ in carrying out XYZ's responsibilities under this Agreement by or on behalf of NASA for Government purposes.

(4) The parties will negotiate rights in Data in the event of termination for any other reason.

C. Data First Produced by NASA under this Agreement

(1) As to Data first produced by NASA (or any Related Entity of NASA) in carrying out NASA responsibilities under this Agreement that would be Proprietary Data if it had been obtained from XYZ, such Data will be appropriately marked with a restrictive notice and maintained in confidence for the duration of this Agreement, with the express understanding that during the aforesaid restricted period such Data may be disclosed and used by NASA and any Related Entity of NASA (under suitable protective conditions) only for carrying out NASA responsibilities under this Agreement.

(2) Upon a successful completion by XYZ of all milestones under this Agreement, NASA shall not use such Data for any purpose except that NASA shall retain the right to: (1) maintain a copy of such Data for archival purposes; and (2) use or disclose such archived Data by or on behalf of the NASA for Government purposes in the event the NASA determines that

(a) Such action is necessary because XYZ, its assignee, or other successor has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of inventions or software related to such Data;

(b) Such action is necessary because XYZ, its assignee, or other successor, having achieved practical application of inventions or software related to such Data, has failed to maintain practical application of such inventions;

(c) Such action is necessary because XYZ, its assignee, or other successor has discontinued making the benefits of inventions or software related to such Data available to the public or to the Federal Government;

(d) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by XYZ, its assignee, or other successor; or

(e) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by XYZ, its assignee, or successor.

(3) In the event NASA terminates this Agreement in accordance with Article 17.B., Termination for Failure to Perform, NASA shall have the right to use or disclose Data first produced by NASA in carrying out NASA's responsibilities under this Agreement by or on behalf of NASA for Government purposes.

(4) The parties will negotiate rights in Data in the event of termination for any other reason.

D. Publication of Results

(1) Recognizing that section 203 of the National Aeronautics and Space Act of 1958 (42 U.S.C. § 2473), as amended, requires NASA to provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof, and that the dissemination of the results of NASA activities is one of the considerations for this Agreement, NASA will coordinate proposed publication of results with XYZ in a manner that allows XYZ a reasonable amount of time to review and comment on proposed publications.

(2) Consistent with other obligations in this Article, NASA agrees that it will not publish any results without first receiving permission from XYZ.

E. Data Disclosing an Invention

In the event Data exchanged between NASA and XYZ discloses an invention for which patent protection is being considered, the furnishing party specifically identifies such Data, and the disclosure and use of such Data is not otherwise limited or restricted herein, the receiving party agrees to withhold such Data from public disclosure for a reasonable time (presumed to be 1 year unless mutually agreed otherwise) in order for patent protection to be obtained.

F. Data Subject to Export Control

Technical data, whether or not specifically identified or marked, that is subject to the export laws and regulations of the United States and that is provided to XYZ under this Agreement will be treated as such, and will not be further provided to any foreign persons or transmitted outside the United States without proper U.S. Government authorization, where required.

G. Background Data

(1) In the event XYZ furnishes NASA with Data developed at private expense that existed prior to, or was produced outside of, this Agreement, and such Data embody Proprietary Data, and such Data is so identified with a suitable restrictive notice, NASA will use reasonable efforts to maintain the Data in confidence and such Data will be disclosed and used by NASA and any Related Entity of NASA (under suitable protective conditions) only for evaluating XYZ's performance under this Agreement. Upon completion of activities under this Agreement, such Data will be disposed of as requested by XYZ.

(2) At the time of execution of this Agreement, the parties agree that the following Background Data embodies Proprietary Data that will be provided to NASA: *<insert specific listing of data items or, if none, insert "None" or "Not Applicable">*

H. Handling of Data

(1) In the performance of this Agreement, XYZ and any Related Entity of XYZ may have access to, be furnished with, or use the following categories of Data:

(a) Proprietary Data of third parties that the U.S. Government has agreed to handle under protective arrangements; and/or

(b) U.S. Government Data, the use and dissemination of which, the U.S. Government intends to control.

(2) Data provided by the U.S. Government under the Agreement

(a) At the time of execution of this Agreement, the parties agree that the following Proprietary Data of third parties will be provided to XYZ with the express understanding that XYZ will use and protect such Data in accordance with this Article:

<insert specific listing of data items or, if none, insert "None" or "Not Applicable">

(b) At the time of execution of this Agreement, the parties agree that the following U.S. Government Data will be provided to XYZ with the express understanding that XYZ will use and protect such U.S. Government Data in accordance with this Article:

<insert specific listing of data items or, if none, insert "None" or "Not Applicable">

(c) At the time of execution of this Agreement, the parties agree that the following software and related Data will be provided to XYZ under a separate Software Usage Agreement with the express understanding that XYZ will use and protect such related Data in accordance with this Article. Unless XYZ has entered into a license, consistent with 37 C.F.R. Part 404, for software provided under this Agreement, upon completion of activities under this Agreement, such related Data will be disposed of as instructed by NASA:

<insert name and NASA Case No. of the software; if none, , insert "None" or "Not Applicable">

(3) With respect to such Data specifically identified in this Agreement or specifically marked with a restrictive notice, XYZ agrees to:

(a) Use, disclose, or reproduce such Data only to the extent necessary to perform the work required under this Agreement;

(b) Safeguard such Data from unauthorized use and disclosure;

(c) Allow access to such Data only to its employees and any Related Entity that require access for their performance under this Agreement;

(d) Except as otherwise indicated in (3)(c) above, preclude access and disclosure of such Data outside XYZ's organization;

(e) Notify its employees who may require access to such Data about the obligations under this Article, obtain written affirmation from all such employees that they have received such notification, administer a monitoring process to ensure that such employees comply with such obligations, and ensure that any Related Entity performs the same functions with respect to its employees; and

(f) Return or dispose of such Data, as NASA may direct, when the Data is no longer needed for performance under this Agreement.

I. Oral and visual information

If information that XYZ considers to be Proprietary Data is disclosed orally or visually to NASA, NASA will have no duty to limit or restrict, and will not incur any liability for, any disclosure or use of such information unless (1) XYZ orally informs NASA before initial disclosure that such information is considered to be Proprietary Data, and (2) XYZ reduces such

information to tangible, recorded form that is identified and marked with a suitable restrictive notice as required by paragraphs B and G above and furnishes the resulting Data to NASA within 10 days after such oral or visual disclosure.

ARTICLE 13. INTELLECTUAL PROPERTY AND DATA RIGHTS - INVENTION AND PATENT RIGHTS

A. Definitions

(1) "Administrator," as used in this Article, means the Administrator of the National Aeronautics and Space Administration (NASA) or duly authorized representative.

(2) "Patent Representative" as used in this Article means the NASA Johnson Space Center Patent Counsel. Correspondence with the Patent Representative under this clause will be sent to the address below:

Patent Counsel
NASA Johnson Space Center
Mail Code AL
2101 NASA Parkway
Houston, TX 77058

(3) "Invention," as used in this Agreement, means any innovation or discovery that is or may be patentable or otherwise protectable under title 35 of the U.S.C.

(4) "Made," as used in relation to any invention, means the conception or first actual reduction to practice of such invention.

(5) "Practical application," as used in this Agreement, means to manufacture, in the case of a composition or product; to practice, in the case of a process or method; or to operate, in case of a machine or system; and, in each case, under such conditions as to establish that the invention, software, or related Data is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public or to the Federal Government on reasonable terms.

(6) "Related Entity" as used in this Article, means a contractor, subcontractor, grantee, or other entity having a legal relationship with NASA or XYZ that is assigned, tasked, or contracted with to perform specified NASA or XYZ activities under this Agreement.

B. Allocation of principal rights

(1) Presumption of title

(a) Any invention made under this Agreement shall be presumed to have been made in the manner specified in paragraph (1) or (2) of section 305(a) (42 U.S.C. § 2457(a)) of the National Aeronautics and Space Act of 1958 (hereinafter called "the Act"), and the above presumption shall be conclusive unless at the time of reporting such invention XYZ submits to the Patent Representative a written statement, containing supporting details, demonstrating that the invention was not made in the manner specified in paragraph (1) or (2) of section 305(a) of the Act.

(b) Regardless of whether title to such an invention would otherwise be subject to an advance waiver or is the subject of a petition for waiver as described in paragraph B.(3) and paragraph I, XYZ may nevertheless file the statement described in paragraph B.(1)(a) of this Article. The Administrator (or his designee) will review the information furnished by XYZ in

any such statement and any other available information relating to the circumstances surrounding the making of the invention and will notify XYZ whether the Administrator has determined that the invention was made in the manner specified in paragraph (1) or (2) of section 305(a) of the Act.

(2) Property rights in inventions. Each invention made under this Agreement for which the presumption of paragraph B.(1)(a) of this clause is conclusive or for which there has been a determination that it was made in the manner specified in paragraph (1) or (2) of section 305(a) of the Act shall be the exclusive property of the United States as represented by the Administrator of NASA unless the Administrator waives all or any part of the rights of the United States to XYZ's invention, as provided in paragraph B.(3) of this clause.

(3) Waiver of rights.

(a) The NASA Patent Waiver Regulations, 14 C.F.R. Part 1245, Subpart 1, have adopted the Presidential Memorandum on Government Patent Policy of February 18, 1983, as a guide in acting on petitions (requests) for waiver of rights to any invention or class of inventions made or that may be made in the manner specified in paragraph (1) or (2) of Section 305(a) of the Act.

(b) NASA has determined that to stimulate and support the capability of a United States commercial provider to provide space and orbital transportation services to the public and the Federal Government, the interest of the United States would be served by waiving to XYZ, in accordance with provisions of 14 C.F.R. Part 1245, Subpart 1, rights to inventions made by XYZ in the performance of work under this Agreement. Therefore, upon petition submitted by XYZ, as provided in 14 C.F.R. Part 1245, Subpart 1, either prior to execution of the Agreement or within 30 days after execution of the Agreement, for advance waiver of rights to any or all of the inventions that may be made under this Agreement, NASA will waive such rights to XYZ. If such a petition is not submitted, XYZ may petition for waiver of rights to an identified invention within eight months of first disclosure of invention in accordance with paragraph E.(2) of this clause or within such longer period as may be authorized in accordance with 14 CFR 1245.105. Further procedures are provided in paragraph I of this clause.

C. Minimum rights reserved by the Government

(1) With respect to each XYZ invention made under this Agreement for which a waiver of rights is applicable in accordance with 14 C.F.R. Part 1245, Subpart 1, the Government reserves:

(a) An irrevocable, royalty-free license for the practice of such invention throughout the world by or on behalf of the United States or any foreign government in accordance with any treaty or agreement with the United States; and

(b) Such other March-in rights as given in Paragraph H below.

(2) NASA will not exercise the government purpose license reserved in paragraph C.(1)(a) during the term of this Agreement.

(3) Upon a successful completion by XYZ of all milestones under this Agreement, NASA will refrain from exercising the government purpose license reserved in paragraph C.(1)(a) for a period of five (5) years following the expiration of this Agreement or until December 31, 2015, whichever is later.

(4) Nothing contained in this paragraph shall be considered to grant to the Government any rights with respect to any invention other than an invention made under this Agreement.

D. Minimum rights to XYZ

(1) XYZ is hereby granted a revocable, nonexclusive, royalty-free license in each patent application filed in any country on an invention made by XYZ under this Agreement and any resulting patent in which the Government acquires title, unless XYZ fails to disclose such invention within the times specified in paragraph E.(2) of this clause. XYZ's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which XYZ is a party and includes the right to grant sublicenses of the same scope to the extent XYZ was legally obligated to do so at the time the Agreement was awarded. The license is transferable only with the approval of the Administrator except when transferred to the successor of that part of XYZ's business to which the invention pertains.

(2) XYZ's domestic license may be revoked or modified by the Administrator to the extent necessary to achieve expeditious practical application of such invention pursuant to an application for an exclusive license submitted in accordance with 37 C.F.R. Part 404, Licensing of Government Owned Inventions. This license will not be revoked in that field of use or the geographical areas in which XYZ has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the Administrator to the extent XYZ, its licensees, or its domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, XYZ will be provided a written notice of the Administrator's intention to revoke or modify the license, and XYZ will be allowed 30 days (or such other time as may be authorized by the Administrator for good cause shown by XYZ) after the notice to show cause why the license should not be revoked or modified. XYZ has the right to appeal, in accordance with 14 C.F.R. 1245.112, any decision concerning the revocation or modification of its license.

E. Invention identification, disclosures, and reports

(1) XYZ shall establish and maintain active and effective procedures to assure that inventions made under this Agreement are promptly identified and disclosed to XYZ personnel responsible for the administration of this clause within six months of conception and/or first actual reduction to practice, whichever occurs first in the performance of work under this Agreement. These procedures shall include the maintenance of laboratory notebooks or equivalent records and other records as are reasonably necessary to document the conception and/or the first actual reduction to practice of such inventions, and records that show that the procedures for identifying and disclosing such inventions are followed. Upon request, XYZ shall furnish the Patent Representative a description of such procedures for evaluation and for determination as to their effectiveness.

(2) XYZ will disclose each such invention to the Patent Representative within two months after the inventor discloses it in writing to XYZ personnel responsible for the administration of this clause or, if earlier, within six months after XYZ becomes aware that such an invention has been made, but in any event before any on sale, public use, or publication of such invention known to XYZ. XYZ shall use the NASA electronic New Technology Reporting system (eNTRe), accessible at <http://invention.nasa.gov>, to disclose inventions. The invention disclosure shall identify this Agreement and shall be sufficiently complete in technical detail to convey a clear understanding, to the extent known at the time of the disclosure, of the nature, purpose, operation, and physical, chemical, biological, or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale, or public use of any such

invention and whether a manuscript describing such invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to NASA, XYZ will promptly notify NASA of the acceptance of any manuscript describing such an invention for publication or of any on sale or public use planned by XYZ for such invention.

(3) XYZ shall furnish the Patent Representative the following:

(a) Interim reports every 12 months (or such longer period as may be specified by the Patent Representative) from the date of the Agreement, listing inventions made under this Agreement during that period, and certifying that all such inventions have been disclosed (or that there are no such inventions) and that the procedures required by paragraph E.(2) of this clause have been followed.

(b) A final report, within three months after completion of the work, listing all inventions made under this Agreement or certifying that there were no such inventions, and listing all subcontracts or other agreements with a Related Entity containing a patent and invention rights clause (as required under paragraph G of this clause) or certifying that there were no such subcontracts or other agreements.

(c) Interim and final reports shall be submitted electronically at the eNTRe Web-site <http://invention.nasa.gov>.

(4) XYZ agrees, upon written request of the Patent Representative, to furnish additional technical and other information available to XYZ as is necessary for the preparation of a patent application on an invention made under this Agreement in which the Government retains title and for the prosecution of the patent application, and to execute all papers necessary to file patent applications on such inventions and to establish the Government's rights in the inventions.

(5) Protection of reported inventions. When inventions made under this Agreement are reported and disclosed to NASA in accordance with the provisions of this Article, NASA agrees to withhold such reports or disclosures from public access for a reasonable time (presumed to be 1 year unless otherwise mutually agreed) in order to facilitate the allocation and establishment of the invention and patent rights under these provisions.

F. Examination of records relating to inventions

(1) The Patent Representative or designee shall have the right to examine any books (including laboratory notebooks), records, and documents of XYZ relating to the conception or first actual reduction to practice of inventions in the same field of technology as the work under this Agreement to determine whether

(a) Any such inventions were made in performance of this Agreement;

(b) XYZ has established and maintained the procedures required by paragraph E.(1) of this clause; and

(c) XYZ and its inventors have complied with the procedures.

(2) If the Patent Representative learns of an unreported XYZ invention that the Patent Representative believes may have been made under this Agreement, XYZ may be required to disclose the invention to NASA for a determination of ownership rights.

(3) Any examination of records under this paragraph will be subject to appropriate conditions to protect the confidentiality of the information involved.

G. Subcontracts or Other Agreements

(1)(a) Unless otherwise authorized or directed by the Patent Representative, XYZ shall include this *Invention and Patent Rights* Article (suitably modified to identify the parties) in any subcontract or other agreement with a Related Entity hereunder (regardless of tier) for the performance of experimental, developmental, or research work.

(b) In the *Invention and Patent Rights* Article included in any such subcontract or other agreement, the following (suitably modified to identify the parties) shall be substituted for paragraph B(3)(b):

As provided in 14 C.F.R. Part 1245, Subpart 1, XYZ may petition, either prior to execution of the Agreement or within 30 days after execution of the Agreement, for advance waiver of rights to any or all of the inventions that may be made under this Agreement. If such a petition is not submitted, or if after submission it is denied, XYZ may petition for waiver of rights to an identified invention within eight months of first disclosure of invention in accordance with paragraph E.(2) of this Article or within such longer period as may be authorized in accordance with 14 CFR 1245.105. Further procedures are provided in paragraph H of this Article.

(c) In the case of subcontracts or other agreements at any tier, NASA, the Related Entity, and XYZ agree that the mutual obligations of the parties created by this Article constitute privity of contract between the Related Entity and NASA with respect to those matters covered by this Article.

(2) In the event of a refusal by a prospective Related Entity to accept such a clause, XYZ:

(a) Shall promptly submit a written notice to the Patent Representative setting forth the prospective Related Entity's reasons for such refusal and other pertinent information that may expedite disposition of the matter; and

(b) Shall not proceed with such subcontract or other agreement without the written authorization of the Patent Representative.

(3) XYZ shall promptly notify the Patent Representative in writing upon the award of any subcontract or other agreement with a Related Entity (at any tier) containing an invention and patent rights clause by identifying the Related Entity, the applicable invention and patent rights clause, the work to be performed under the subcontract or other agreement, and the dates of award and estimated completion. Upon request of the Patent Representative, XYZ shall furnish a copy of such subcontract or other agreement, and, no more frequently than annually, a listing of the subcontracts or other agreements that have been awarded.

(4) The Related Entity will retain all rights provided for XYZ in paragraph G.(1) of this Article, and XYZ will not, as part of the consideration for awarding the subcontract or other agreement, obtain rights in any Related Entity inventions made under this Agreement.

(5) Notwithstanding paragraph G.(4) of this Article, and in recognition of XYZ's substantial contribution of funds, facilities and/or equipment to the work performed under this Agreement, XYZ is authorized, subject to the rights of NASA set forth elsewhere in this Article, to:

(a) Acquire by negotiation and mutual agreement rights to an invention made under this Agreement by a Related Entity as XYZ may deem necessary to obtaining and maintaining of private support; and

(b) Request, in the event of inability to reach agreement pursuant to paragraph 7(e)(i) of this Article, that NASA request that such rights for XYZ be included as an additional reservation in a waiver granted pursuant to 14 CFR Part 1245, Subpart 1. Any such requests to NASA should be prepared in consideration of the following guidance and submitted to the Patent Representative. Notwithstanding paragraph B.(3)(b) of this Article, the Related Entity

should be advised that unless it requests a waiver of title pursuant to the NASA Patent Waiver Regulations (14 C.F.R. Part 1245, Subpart 1), NASA will acquire title to inventions made under this Agreement. If a waiver is not requested or granted, XYZ may request a license from NASA consistent with the requirements of 37 CFR Part 404. A Related Entity requesting a waiver must follow the procedures set forth in paragraph I of this Article.

H. March-in rights

(1) XYZ agrees that, with respect to any invention made under this Agreement in which it has acquired title, NASA has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the agency to require XYZ, or an assignee or exclusive licensee of such an invention, to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if XYZ, its assignee, or exclusive licensee refuses such a request NASA has the right to grant such a license itself if the Federal agency determines that

(a) Such action is necessary because XYZ, assignee, or exclusive licensee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of such invention in such field of use;

(b) Such action is necessary because XYZ, assignee, or exclusive licensee, having achieved practical application of such invention, has failed to maintain practical application of such invention in such field of use;

(c) Such action is necessary because XYZ, assignee, or exclusive licensee has discontinued making the benefits of such invention available to the public or to the Federal Government;

(d) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by XYZ, assignee, or exclusive licensee; or

(e) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by XYZ, assignee, or exclusive licensee.

I. Requests for Waiver of Rights

(1) In accordance with the NASA Patent Waiver Regulations, 14 C.F.R. Part 1245, Subpart 1, waiver of rights to any or all inventions made or that may be made under this Agreement may be requested at different time periods. Advance waiver of rights to any or all such inventions may be requested prior to the execution of the Agreement, or within 30 days after execution thereof. In addition, waiver of rights to an identified invention made and reported under this Agreement may be requested, even though a request for an advance waiver was not previously requested or, if previously requested, was not granted.

(2) Each request for waiver of rights shall be by petition to the Administrator and shall include an identification of the petitioner; place of business and address; if petitioner is represented by counsel, the name, address, and telephone number of the counsel; the signature of the petitioner or authorized representative; and the date of signature. No specific forms need be used, but the request should contain a positive statement that waiver of rights is being requested under the NASA Patent Waiver Regulations; a clear indication of whether the request is for an advance waiver or for a waiver of rights for an individual identified invention; whether foreign rights are also requested and, if so, for which countries, and a citation of the specific

section(s) of the regulations under which such rights are requested; and the name, address, and telephone number of the party with whom to communicate when the request is acted upon.

(3) All petitions for waiver, whether advanced or individual petitions, will be submitted to the Patent Representative designated in this Article.

(4) A Petition submitted in advance of this Agreement will be forwarded by the Patent Representative to the Inventions and Contributions Board. The Board will consider the petition and where the Board makes the findings to support the waiver, the Board will recommend to the Administrator that waiver be granted, and will notify the petitioner and the Patent Representative of the Administrator's determination. The Patent Representative will be informed by the Board whenever there is insufficient time or information to permit a decision to be made on an advance waiver without unduly delaying the execution of the Agreement. In the event a request for an advanced waiver is not granted or is not decided upon before execution of the Agreement, the petitioner will be so notified by the Patent Representative. All other petitions will be processed by the Patent Representative and forwarded to the Board. The Board shall notify the petitioner of its action and if waiver is granted, the conditions, reservations, and obligations thereof will be included in the Instrument of Waiver. Whenever the Board notifies a petitioner of a recommendation adverse to, or different from, the waiver requested, the petitioner may request reconsideration under procedures set forth in the NASA Patent Waiver Regulations.

ARTICLE 14. [RESERVED]

ARTICLE 15. DISCLAIMER OF WARRANTY

Goods (i.e., equipment, facilities, technical information, data, prototypes) and services, if provided by NASA under this Agreement, are provided "as is" and no warranty related to availability, title, or suitability for any particular use, nor any implied warranty of merchantability or fitness for a particular purpose, is provided under this Agreement. NASA makes no express or implied warranty as to any intellectual property, generated information, or product made or developed under this Agreement, or that the goods, services, materials, products, processes, information, or data to be furnished hereunder will accomplish intended results or are safe for any purpose including the intended purpose.

ARTICLE 16. TERM OF AGREEMENT

This Agreement becomes effective upon the date of the last signature below and shall remain in effect until the completion of all obligations of both parties hereto, or __ years from the date of the last signature, whichever comes first.

ARTICLE 17. TERMINATION

A. Termination by Mutual Consent.

This Agreement may be terminated at any time upon mutual written consent of both parties.

B. Termination for Failure to Perform

(1) NASA may terminate this Agreement 30 days after issuance of a written notification that XYZ has failed to perform under this Agreement, including failure to meet a scheduled

milestone as identified and described in Appendix 1. Before making such a notification, NASA will consult with XYZ to ascertain the cause of the failure and determine whether additional efforts are in the best interest of the parties. Upon such a notification and determination, NASA will take all rights identified in Articles 12 and 13 of this agreement.

(2) XYZ will not be entitled to any additional payments from the Government due to a termination for failure to meet a milestone. NASA and XYZ will negotiate in good faith any other outstanding issues between the parties. Failure of the parties to agree will be resolved pursuant to Article 19, Dispute Resolution.

C. Unilateral Termination by NASA:

(1) NASA may terminate this Agreement upon written notice. NASA's obligations under this Agreement may be terminated, in whole or in part, (a) upon a declaration of war by the Congress of the United States; or (b) upon a declaration of a national emergency by the President of the United States; or (c) upon a NASA determination, in writing, that NASA is required to terminate for reasons beyond its control. For purposes of this Article, reasons beyond NASA's control include, but are not limited to, acts of God or of the public enemy, acts of the U.S. Government other than NASA, in either its sovereign or contractual capacity (to include failure of Congress to appropriate sufficient funding), fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or unusually severe weather.

(2) Upon receipt of written notification that the Government is unilaterally terminating this Agreement, XYZ shall immediately stop work under this Agreement and shall immediately cause any and all of its partners and suppliers to cease work, except to the extent that XYZ wishes to pursue these demonstrations exclusively using its own funding. Upon such a termination, NASA and XYZ agree to negotiate in good faith a final settlement payment to be made by NASA. However, in no instance shall NASA's liability for termination exceed the total amount due under the next milestone of this Agreement and is subject to the provisions of Article 5. Failure of the parties to agree will be resolved pursuant to Article 19, Dispute Resolution.

D. Limitation on Damages.

In the event of any termination by NASA, neither NASA nor XYZ shall be liable for any loss of profits, revenue, or any indirect or consequential damages incurred by the other Party, its contractors, subcontractors, or customers as a result of any termination of this Agreement. A Party's liability for any damages under this Agreement is limited solely to direct damages, incurred by the other Party, as a result of any termination of this Agreement subject to mitigation of such damages by the complaining party. However, in no instance shall NASA's liability for termination exceed the total amount due under the next milestone under this Agreement.

E. Rights in Property

XYZ will have title to property acquired or developed by XYZ and its contractors/partners with government funding, in whole or in part to conduct the work specified under this Agreement. In the event of termination of this Agreement for any reason, NASA may purchase such property as provided in Article 26 below. Upon any termination under this Article, NASA may immediately exercise all rights identified in Articles 12 and 13.

ARTICLE 18. CONTINUING OBLIGATIONS

The obligations of the parties set forth in the provisions of Articles 10 (Liability and Risk of Loss) and 12-13 (Intellectual Property and Data Rights) of this Agreement concerning liability and intellectual property rights shall continue to apply after the expiration or termination of this Agreement.

ARTICLE 19. DISPUTE RESOLUTION

All disputes concerning questions of fact or law arising under this Agreement shall be referred by the claimant in writing to the XYZ Administrative Contact and the NASA Administrative Contact, who shall seek to resolve such disputes by Agreement. If they are unable to resolve the dispute, then the dispute will be referred to the JSC Commercial Crew Cargo Project Manager and the CEO of XYZ for joint resolution. If the parties are still unable to resolve the dispute, the Associate Administrator for Exploration Systems Mission Directorate, or the Deputy of the Directorate, will seek to resolve the dispute, but if necessary issue a written decision that shall be a final Agency decision for all purposes including judicial review.

Pending resolution of any disputes pursuant to this Article, the Parties agree that performance of all obligations shall be pursued diligently in accordance with the direction of the JSC Commercial Crew Cargo Project Manager.

The Parties agree that this Disputes Resolution procedure shall be the exclusive procedure followed by the Parties in resolving any dispute arising under, or based on, an express or implied provision of this Agreement, including an alleged breach.

ARTICLE 20. PRINCIPAL POINTS OF CONTACT

The following personnel are designated as the Administrative and Technical Contacts between the parties in the performance of this Agreement.

NASA Administrative Contact

XYZ Corp Administrative Contact

Name and Title
Johnson Space Center
2101 NASA Parkway
Houston, TX 77058
Phone: 281-
Fax:
E-mail:

XYZ Technical Contact
Name and Title

NASA Technical Contact
Name and Title

Johnson Space Center
Mail Stop: QA
2101 NASA Parkway
Houston, TX 77058
Phone: 281-
Fax:
E-mail:

123 Main Street
Houston, TX 77058
Phone:
Fax:
E-mail

ARTICLE 21. MODIFICATION/AMENDMENTS

All modifications and amendments to this Agreement shall be by mutual agreement of the Parties and shall be executed, in writing, and signed by the signatories to this Agreement, or their respective successor or designee.

ARTICLE 22. ASSIGNMENT OF RIGHTS

Neither this Agreement nor any interest arising under it will be assigned by either Party without the express written consent of the other party.

ARTICLE 23. ANTI-DEFICIENCY ACT

All activities under or pursuant to this Agreement are subject to the availability of appropriated funds, and no provision shall be interpreted to require obligation or provision of funds in violation of the Anti-Deficiency Act, 31 U.S.C. 1341.

ARTICLE 24. APPLICABLE LAW

U.S. Federal law governs this Agreement for all purposes, including, but not limited to, determining the validity of this Agreement, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 25. EXPORT LICENSES

XYZ will be responsible for:

A. Compliance with all U.S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this Agreement. In the absence of available license exemptions/exceptions, XYZ will be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of hardware, technical data, and software, or for the provision of technical assistance.

B. Obtaining export licenses, if required, before utilizing foreign persons in the performance of this Agreement, including instances where COTS efforts are to be performed on-

site at NASA Centers, where the foreign person will have access to export-controlled technical data or software.

C. All regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

D. Ensuring that the provisions of this Article apply to its subcontractors.

In the event that either party intends to utilize a foreign person (as defined in the International Traffic in Arms Regulations and the Export Administration Regulations) in the performance of this Agreement, such party shall be responsible for obtaining the required export licenses in advance of the foreign person's participation.

ARTICLE 26. TITLE AND RIGHTS IN PROPERTY

XYZ will have title to property acquired or developed under this Agreement, including developed or acquired by XYZ for COTS demonstrations. In the event of termination of this Agreement for any reason under Article 17, NASA will have the right to purchase any such property. The Parties will negotiate in good faith purchase prices for specific items of property. The negotiated prices will be based on XYZ's actual costs for purchase or development of the specific item(s), or fair market value, whichever is less. This price will then be discounted by a percentage that reflects the ratio of government funding provided under the Agreement versus the amount of XYZ funding used to develop the specific item(s) of property. (\$2 of government funds v. \$1 of participant funds = $2/3 = 66.6\%$ discount.).

ARTICLE 27. SIGNATURE BLOCK

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION

XYZ CORP.

BY: _____
Name
Associate Administrator for Exploration
Systems

BY: _____
Name
123 Main Street
Houston, TX 77058

DATE: _____

DATE: _____

APPENDIX 1: Milestones and Acceptance Criteria

Milestone 1: Acceptance Criteria:_____	Amount \$ _____ Date
Milestone 2: Acceptance Criteria:_____	Amount \$ _____ Date
Milestone 3: Acceptance Criteria:_____	Amount \$ _____ Date

Appendix B: Government Services, Facilities or Equipment

Participants planning to include NASA services, facilities or equipment in the proposals must enter into Reimbursable Space Act Agreements (SAAs) with the NASA Center(s). Services, including use of equipment and facilities, may be provided on a full-cost basis and will be provided equally to all potential COTS participants, if available. The SAAs shall include the tasks to be performed, facilities to be used with dates, and a full-cost assessment of all the work to be performed. Each participant shall include with its proposal a signed letter of commitment from an authorized NASA official at the respective Center for all NASA-specific work. If a letter of commitment is not available, the participant shall provide their own cost estimate for the requested resources. Such agreements will be independent of the terms of the funded Space Act agreement in Appendix A of this announcement. Participants will be responsible for ensuring timely, accurate work of subcontractors, including NASA Centers, to meet milestones.

Participants will be responsible for successful accomplishment of milestones; costs for such Center services will be the responsibility of participants. NASA will provide payments only upon successful accomplishment of specific milestones,

Listings of NASA Major Facility Inventory and COTS related equipment are provided in the Technical Library on the COTS website.

Participants shall communicate directly with the following points of contact for facilitation of Government resources and agreements. Communications with points of contact and their designated representatives may continue during the blackout period.

Commercial Orbital Transportation Services Demonstrations

Points of Contact

Installation/Name	Telephone	Email
Ames Research Center (ARC) / Daniel J. Rasky	650-604-1098	daniel.j.rasky@nasa.gov
Dryden Flight Research Center (DFRC) / David McBride	661-276-2851	david.d.mcbride@nasa.gov
Glenn Research Center (GRC) / Kathy Schubert	216-433-5331	kathleen.e.schubert@nasa.gov
Goddard Space Flight Center (GSFC)/ Stan Wojnar	301-286-8776	stanley.m.wojnar@nasa.gov
Jet Propulsion Laboratory (JPL) / James K. Wolfenbarger	818-354-3821	james.k.wolfenbarger@jpl.nasa.gov
Johnson Space Center (JSC) / Ralph Anderson	281-483-1272	ralph.v.anderson@nasa.gov
Kennedy Space Center (KSC) / Maynette E. Smith	321-867-5834	maynette.e.smith@nasa.gov
Langley Research Center (LaRC) / Kenneth M. Jones	757-864-2327	kenneth.m.jones-1@nasa.gov
Marshall Space Flight Center (MSFC) / Freida S. Lowery	256-544-2507	freida.s.lowery@nasa.gov
Stennis Space Center (SSC) / Robert Bruce	228-688-1646	robert.c.bruce@nasa.gov
Wallops Flight Facility (Wallops)/ Bruce E. Underwood	757-824-1479	bruce.e.underwood@nasa.gov
White Sands Test Facility (WSTF)/ Sandy Ruttle	505-524-5134	sandra.r.ruttle@nasa.gov

Appendix C: Financial Templates

The requested templates, examples, and instructions are not intended to influence the participant's specific design approach and should not be construed as indicating any preference. NASA is requiring templates in order to facilitate a streamlined and equitable evaluation process.

The data entered here shall be thorough and reflect the participant's unique business and technical approach.

The following information is requested in order to establish an understanding and confidence in the proposal for each capability. With a focus on cost effective access to low-Earth orbit, price must be understood, evaluated, and analyzed from inception of the concept through operations.

Participants shall complete all applicable templates listed below along with a narrative in sufficient detail to support the numbers provided in the templates. At a minimum, the narrative shall include references to the Business and Technical sections which include the supporting detail.

Templates will be provided in the Technical Library.

- Template 1 - Pro Forma Income and Cash Flow Statements
- Template 2 - Total Fixed Contribution from NASA with Milestone Detail
- Template 3 - Proposed Government Services, Facilities or Equipment
- Template 4 - Total Cost by System
- Template 5 - Phased Cost by Function
- Template 6 - Projected Operational Prices for Capabilities A, B, C
- Template 7 - Projected Operational Prices for Capability D

Template 1 - Income and Cash Flow Statements

The purpose of this template is to capture the financial plan of the corporation or division as explained in 5.2.3.

Note: Template 1b is not required for publicly traded companies.

Example Template 1a

Pro Forma Income Statement							
Fiscal Year	2006	2007	2008	2009	2010	2011	2012
Revenue							
Cost of Goods Sold							
Gross Profit							
Operating Expenses							
Research and Development							
Sales, Marketing and Business Development							
Other							
Total Operating Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Example Template 1b

Pro Forma Cash Flow Statement							
Fiscal Year	2006	2007	2008	2009	2010	2011	2012
Beginning Cash							
Cash Flow from Operating Activities							
Cash from Operations							
Changes in Working Capital							
Total Cash Flow from Operating Activities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Capital Expenditures							
Cash Flow from Financing Activities							
Equity							
Debt							
Total Cash Flow from Financing Activities	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Change in Cash	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Ending Cash	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Template 2 - Total Fixed Contribution from NASA with Milestone Detail

Complete the following template with the planned date of completion for each of the milestones. This template shall align with the milestones proposed in the Business Plan. Insert a short description of the milestone, the funding for that milestone, and the reference page number.

Example Template 2

Company Name:

Capability:

Milestone Number	Planned Date	Milestone Description	NASA Contribution	Section B2.D. Reference
x	11/31/2005	Test ABC	\$100	Page #
1				
2				
3				
Total NASA COTS Demo Contribution			0	

Template 3 - Proposed Government Services, Facilities or Equipment

Complete the following template only if the participant plans to utilize any Government services, facilities or equipment. Provide a description of the services, facilities or equipment included in the proposal, the location of the services, a contact name, and phone number. Include the estimate of the Government cost of using the services, property or equipment, state when it is needed (round to the month) and provide a basis for the estimated cost. Note whether or not a Letter of Commitment has been obtained. If a Letter of Commitment has been obtained, then the participant shall include it within the Financial Section of the proposal. These costs shall be included as part of the participant's COTS Demonstration proposal.

The requested template and the example are not in any way intended to influence the participant's specific business or technical approach and should not be construed as indicating any preference. This information will help NASA ensure equitable treatment of participants and assist in coordination within the Government.

Example Template 3

Company Name:
Capability:

Proposed Use of Government Services, Facilities and Equipment						
Brief Description of Service, Facilities or Equipment required	Location of Service, Facilities or Equipment	Government Point of Contact and Phone Number	Government Price	Timing of Need	Letter of Commitment (Yes or No)	Basis for Estimated Cost
<i>ex. Wind Tunnel - 200 hours</i>	<i>Glenn Research Center - (Cleveland, Ohio)</i>	<i>Bill Smith #555-867-5309</i>	<i>\$10</i>	<i>October to December 2007</i>	<i>Yes</i>	<i>Letter from GRC</i>

Template 4 – Total Cost by System

Template 4 includes a generic list of systems necessary to complete the capability demonstration.

Template 4 is intended to capture the total cost breakdown of the COTS Demonstration, to include all funding necessary to complete the demonstration. The first column shall be used to identify the elements with a number scheme that distinguishes systems. The remaining three columns shall show a brief description of the element, cost, and the participant’s estimate of percentage of new development. This is an example only, however the systems listed as #1 Launch Vehicle through #3 Ground Segment shall be included in the participant’s system level breakdown. The participant shall also breakout the cost associated with Rendezvous, Proximity Operations, and Docking (also known as “last mile” capability). If proposed, the participant shall also breakout the costs associated with Vehicle Extended Stay Capability (Reference 3.5.3.2, and 3.5.4) and Vehicle Contingency Crew Support (Reference 3.5.5).

The participant may provide additional breakout of the systems, along with the associated cost and percentage of new development. The example includes “#4 Other Systems/ Segments” as a place holder. The participant may use additional rows to identify additional systems/segments. Any additional element requires description, total cost, and an estimate of percent new development.

Example Template 4

Commercial Orbital Transportation Services Demonstrations

Company Name:

Capability:

Element #	Description	Cost (\$M)	% New Development
0	COTS Demonstration Total	\$ 50.0	
1	Launch Vehicle/ Services	12.5	10%
2	Transfer Vehicle/ Cargo Carrier	12.5	20%
3	Ground Segment	12.5	30%
4	<i>Other Systems/ Segments</i>	12.5	40%

Breakout of costs included above:

Element #	Description	Cost (\$M)	% New Development
	Rendezvous, Proximity Operations & Docking Capability	1.0	10%
	Vehicle Extended Stay Capability	2.0	20%
	Vehicle Contingency Crew Support	3.0	30%

Template 5 – Phased Cost by Function

Template 5 is intended to summarize the functional costs, by Government fiscal year, necessary to complete the capability demonstration. The template shall be completed using the classifications of Design, Prototype Manufacturing, Testing, and Demonstration Operations. NASA understands that this data will be pro forma.

Include in the narrative a brief description of what is included in Design, Prototype Manufacturing, Testing, and Demonstration Operations. Also include any reconciliation information between the Management volume and this template, such as differences between participant’s Fiscal Year and Government Fiscal Year.

Example Template 5

Company Name:

Capability:

Description	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	COTS Demo Total (\$M)
COTS Demo Total(\$M)	10	10	10	10	10	\$ 50
Design	1	1	1	1	1	\$ 5
Prototype Manufacturing	2	2	2	2	2	\$ 10
Testing	3	3	3	3	3	\$ 15
Demonstration Operations	4	4	4	4	4	\$ 20

Template 6 - Projected Operational Prices for Capabilities A, B, C

Two copies of this template are required; one with estimated operational prices per kilogram of useful cargo by Government Fiscal Year, the second with estimated prices per launch. Separate templates shall be provided for delivery and return mass. Complete the template up to the maximum number of annual flights proposed in the participant’s technical and business approach over a six-year period following successful demonstration. For example, if the proposal is based on a maximum of six flights annually, the rows from 1 to 6 shall be completed, while rows 7 and 8 shall be left blank. Include a narrative describing any assumptions made in order to complete the template.

Example Template 6

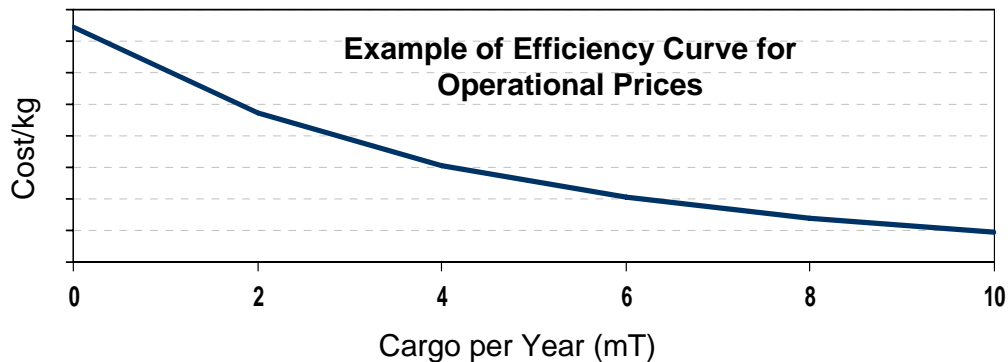
Company Name:

Capability: A

Number of Flights	Fiscal Year 1	Fiscal Year 2	Fiscal Year 3	Fiscal Year 4	Fiscal Year 5	Fiscal Year 6
1						
2						
3						
4						
5						
6						
7						
8						

Provide a graphical representation (as in the format shown below) of the estimated average price per kilogram for the period 2011 through 2015.

Example Graph 1



Template 7 - Projected Operational Prices for Capability D

Complete the following template with estimated operational prices per passenger (defined here as Government crew member or passenger). Complete the template up to the maximum number of annual flights proposed in the participant’s technical and business approach over a six-year period following successful demonstration. For example, if the proposal is based on six flights annually, the rows from 1 to 6 shall be completed, while rows 7 and 8 shall be left blank. Include a narrative describing any assumptions made in order to complete the template.

Example Template 7

Company Name:
Capability: **D**

Number of Flights	Fiscal Year 1	Fiscal Year 2	Fiscal Year 3	Fiscal Year 4	Fiscal Year 5	Fiscal Year 6
1						
2						
3						
4						
5						
6						
7						
8						

Provide a graphical representation (as in the format shown below) of the estimated average price per passenger for the period 2011 through 2015.

Example Graph 2

