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

PURPOSE AND AGENCY COMMITMENT

The purpose of this Amendment is to modify the Agreement NNJ06TA26S to define how the parties will collaborate to implement the exchange of data and perform ground and flight testing of a SpaceX DragonEye flash LIDAR Development Test Objective ("DragonEye DTO") sensor system to increase knowledge of, and confidence in, the sensor's performance in a spacecraft environment to support proximity operations, specifically autonomous rendezvous and docking, with the International Space Station.

Article 3 and Appendices 4 and 6 are amended as follows:

ARTICLE 3. RESPONSIBILITIES

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

SpaceX shall:

(6) Perform all design, development, testing, evaluation, production, and operational support activities for the DragonEye DTO, to include;

(a) Support Shuttle Program flight integration of DragonEye DTO into the Space Shuttle according to the unique NASA DragonEye DTO Integration Plan; and

(b) Perform design reviews with, and provide verifications to, NASA's Commercial Cargo and Crew Program Office ("C3PO") for the Shuttle and International Space Station (ISS) Programs in accordance with NASA requirements for the DragonEye Orbiter DTO as documented in the Integration Plan; and

(c) Support flight and ground crew training, including providing training and data products, for DragonEye and its associated systems; and

(d) Support DTO flight operations and any ground or on-orbit anomaly resolution; and

(e) Support testing activities; and

(f) Provide data and results from ground and flight tests and evaluations of the DragonEye DTO to NASA, including:

(i) Flash LIDAR system design data and specifications package including transmitter laser (such as pulse energy, repetition rate, pulsewidth, wavelength, beam size and divergence), receiver focal plane array (number of pixels, pixel pitch size, detector pixel size), and receiver optics (field of view, focal length, aperture diameter); and

(ii) Description of DragonEye DTO integration design including mechanical, electrical, and thermal interfaces; and

(iii) Specifications of the data handling and command system; and

(iv) Details of pre-flight performance verification tests and their results including operational range, measurement accuracy, precision, repeatability, and data drop-outs; and

(v) Results of all pre-flight Qualification activities, such as environmental tests including vibration and thermal/vacuum tests, including a report of Flight Qualification challenges and solutions (specific components that may have been challenging) when taking the DragonEye sensor from a ground based unit to Manned Spaceflight Qualification; and

(vi) Flight test raw data, post-flight report including performance analysis, lessons learned and assessment of any anomalies. Data conversion software if needed for NASA to use the raw data where SpaceX has rights in the software allowing transfer to NASA or otherwise provide reference to a source for such software.

The Parties agree that the items furnished by SpaceX in Paragraph 6(f) of Article 3 shall not be considered "Proprietary Data" as that term is defined in Article 12.

II. The following NASA responsibilities are added to Section B:

NASA shall:

(10) Provide Shuttle Program flight integration of DragonEye DTO into the Space Shuttle according to the unique NASA DragonEye DTO Integration Plan, to include;

(a) Support of laser and electromagnetic compatibility testing of DragonEye with Trajectory Control Sensor (TCS) simulator at JSC as needed; and

(b) Fabrication of Orbiter-compatible thermal blankets for DragonEye units; and

(c) Provision of data and technical experiences from NASA testing and evaluations of rendezvous and proximity sensors and related technologies, including: NASA lessons learned and performance assessments of rendezvous and proximity sensors and related technologies, where beneficial to assisting SpaceX in the qualification of the DragonEye sensor for use in manned spaceflight.

APPENDIX 4: SpaceX Provided Property to NASA

The following is added:

8) Two (2), flight (prime and back-up) DragonEye DTO equipment to Kennedy Space Center (KSC) for Orbiter integration.	NLT Feb 16, 2009

APPENDIX 6: NASA Equipment Loaned to SpaceX

The following is added:

14) Orbiter interface connectors and fasteners for DragonEye DTO.	Return date: Not later than 2 months following completion of DragonEye DTO
15) Orbiter compatible thermal blankets for DragonEye units.	Return date: Not later than 2 months following completion of DragonEye DTO

ARTICLE 28. SIGNATURE BLOCK

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

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BY: Douglas R Cooke
Doug Cooke
Associate Administrator
for Exploration Systems

Date: 1/30/2009

SPACE EXPLORATION TECHNOLOGIES CORP.

BY: [signature]
Elon Musk
Chief Executive Officer

Date: 1/9/09