



**MEMORANDUM OF UNDERSTANDING
BETWEEN
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND
THE FEDERAL AVIATION ADMINISTRATION
REGARDING
ACHIEVEMENT OF MUTUAL GOALS IN COMMERCIAL SPACE ACTIVITIES**

The National Aeronautics and Space Administration ("NASA") and the Federal Aviation Administration ("FAA"), through this Memorandum of Understanding ("MOU"), affirm their intent to continue their longstanding partnership on mutually beneficial commercial space activities in furtherance of U.S. national space policy and commercial space transportation-related interests. In this MOU, NASA and the FAA may be individually referred to as a "Party" and collectively referred to as the "Parties."

I. Background

NASA and the FAA have enjoyed a successful and longstanding relationship in support of both Parties' efforts to bring commercial crew and cargo activities to fruition as well as bolstering the pace and scope of American aerospace innovations. This cooperation was highlighted by the successful Commercial Crew Program's demonstration and operational missions to the International Space Station, which greatly benefitted from several years of effective cooperation between NASA and the FAA. The close partnership between NASA and the FAA has afforded the Parties the opportunity to further other activities in their respective mission areas based on experiences and lessons learned through this partnership.

NASA and the FAA also have a strong existing relationship on commercial suborbital spaceflight whereby NASA's Flight Opportunities program relies on FAA licensing and regulations when fulfilling its mission of facilitating rapid demonstration of promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital testing with industry flight providers. NASA's Flight Opportunities program also has provided test flights for FAA-sponsored safety enabling technologies, in particular through the FAA's Center of Excellence for Commercial Space Transportation. Recently, NASA and the FAA Office of Commercial Space Transportation collaborated on developing the framework for flying NASA-sponsored spaceflight participants on commercial suborbital flights, allowing researchers from industry and academia to propose to fly with their NASA-sponsored payloads for the first time. NASA is also collaborating with the FAA on commercial suborbital spaceflight activities through the Commercial Crew Program's Suborbital Crew (SubC) efforts to extend suborbital space transportation capabilities for NASA astronauts and other NASA

personnel. NASA seeks to enter into public-private partnerships to improve airspace, passenger, and crew safety while enhancing the capabilities of commercial suborbital point-to-point spacecraft.

NASA and the FAA have complementary and interdependent interests in (1) creating a robust commercial space industry to achieve safe, reliable, and cost-effective access to space, and (2) enhancing the competitiveness, safety, and affordability of American aerospace capabilities including next-generation capabilities such as suborbital spaceflight systems. Continuing this partnership is critical to achieving the goals and objectives of multiple U.S. space policies, including the 2020 National Space Policy and Space Policy Directives 1, 2, and 3.

II. Scope

This MOU is intended to support commercial space activities related to the transport of government and non-government passengers, cargo, and payloads for both orbital and suborbital missions in a safe, cost-effective manner that avoids conflicting requirements and multiple sets of standards. The MOU is also intended to advance U.S. Government and commercial interests in developing a prosperous American commercial space industry. In support of these goals, the Parties intend to exchange knowledge and best practices and may pursue collaborative commercial aerospace-related activities in a variety of areas consistent with each Party's mission and applicable law.

Areas in which the Parties seek to work together to continue their successful cooperation and pursue new collaborations include but are not limited to:

- Launch and Reentry Industry Framework
 - Provide a stable framework between NASA requirements and FAA regulations for the U.S. space launch industry, including human spaceflight, that is transparent, avoids conflicting requirements and multiple sets of standards, and encourages growth and innovation.
 - Increase transparency during the license review process by developing applicant guidance in the form of an Advisory Circular and interagency standard operating procedures for when agencies may seek additional information.
 - Develop and foster best practices for spacecraft conjunction assessment and on-orbit operations, including large constellations.
 - Advance the interests of those supporting private astronaut missions by collaborating to ensure consistency between NASA contract or agreement requirements and FAA statutes and regulations.
 - Advance the interests of U.S. commercial launch operators responsible for transporting domestic and international partner astronauts on suborbital crewed missions, as well as missions to low-Earth orbit ("LEO," including to the International Space Station, and future private sector free-flying platforms).

- Medical
 - Through their respective Chief Health and Medical Officer and Federal Air Surgeon or their designees, seek to share de-identified spaceflight clinical medical data, information, and knowledge on the biomedical (physiological and pathological) effects of orbital and suborbital spaceflight (long and short-duration) among occupants of space vehicles and space habitats, including post-flight medical aspects.
- Safety
 - Advance both public safety and human spaceflight safety.
 - Coordinate on lessons learned from mishap investigations.
 - Coordinate on an approach for sharing safety data with the public to enhance understanding of the known risks of space.
- Suborbital Spaceflight
 - NASA seeks to work with and rely on FAA regulation and licensing of commercial suborbital spaceflight transportation providers to strategically invest in and facilitate rapid demonstration of promising space technologies including point-to-point transportation, test and qualify spaceflight hardware, and conduct human-tended microgravity research, astronaut training, and human spaceflight activities.
 - Seek out areas for collaborative research opportunities, jointly and with academia or industry when practical, to advance technologies and scientific knowledge that will benefit the commercial space transportation industry.
 - NASA and the FAA seek to advance the interests of a commercial suborbital point-to-point pilot program with designated spaceports, airspace design, sequencing, launch and landing windows, etc.
- Individual Preparation for Human Spaceflight
 - Collaborate on best practices for familiarization of participants with spaceflight safety factors (individual, operational, and environmental), individual evaluation/selection techniques, and personal qualifications for orbital and suborbital flights.

III. Collaboration on Specific Activities

The roles and responsibilities of each Party for specific activities will be documented in non-binding Joint Program Management Plans at the program level if needed. Should both Parties agree to enter into binding obligations in connection with the activities described in this MOU, the Parties will negotiate and enter into separate agreements, fully independent of this MOU, and as permitted by and in accordance with law and the respective Parties' policies and processes.

IV. Authority

The FAA is entering into this MOU under the authority of 49 U.S.C. 106(l) (6) and 106(m).

V. Points of Contact

The following personnel are designated as the Points of Contact between the Parties in the performance of this MOU:

Technical Points of Contact

NASA

Philip McAlister
Director, Commercial Spaceflight Development
Division
Human Exploration and Operations
Mission Directorate
Philip.Mcalister@nasa.gov
Office: 202-358-0712

FAA

Randy Repcheck
(A) Exec Dir, Office of Operational Safety
Office of Commercial Space
Transportation, FAA
Randy.Repcheck@faa.gov
Office: 202-267-8660

Christopher Baker
Small Spacecraft Technology and
Flight Opportunities Program Executive
Space Technology Mission Directorate
Christopher.E.Baker@nasa.gov
Office: 202-358-2455

Administrative Points of Contact

NASA

Jennifer Troxell
Senior Interagency Programs Specialist
Office of International and Interagency
Relations
Jennifer.L.Troxell@nasa.gov
Office: 202-358-0724

FAA

Pam Underwood
Director, Office of Spaceports
FAA Office of Commercial
Space Transportation
Pam.Underwood@faa.gov
Office: 321-474-9570

VI. Miscellaneous


- A. NASA and FAA agree that the information and data exchanged in furtherance of the activities under this MOU will be exchanged without use and disclosure restrictions,

unless required by law in accordance with restrictive markings on the information or data. Each party shall take appropriate measures to protect proprietary, privileged or otherwise confidential information obtained as a result of its activities under this MOU.


- B. This MOU is strictly for the management and planning purposes of each of the Parties.
- C. This MOU does not support an obligation of funds, nor does it constitute a binding commitment upon either Party or create any legal rights or obligations for either Party.
- D. Nothing in this MOU shall be interpreted as limiting, superseding, or otherwise affecting a Party from conducting normal operations or making decisions in carrying out its mission and duties.
- E. This MOU does not limit or restrict the Parties from participating in similar activities or arrangements with other entities.
- F. Each Party shall be responsible for any and all expenses incurred by that Party relating to this MOU, and neither Party will be responsible for any expense incurred by the other Party unless specifically agreed to in writing, separate from and independent of this MOU.
- G. Administration of this MOU and coordination of subsequent NASA-FAA agreements for activities identified in section II of this MOU will be the responsibility of the offices identified as the "Administrative Points of Contact" in section V of this MOU.
- H. Either Party may unilaterally terminate this MOU upon ninety (90) calendar days written notice to the other Party.
- I. This MOU becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until either (a) a Party decides to terminate its participation according to Section VI (H) of this MOU, or (b) ten (10) calendar years from the Effective Date, whichever comes first.
- J. Any modification to this MOU will be executed in writing and signed by an authorized representative of NASA and the FAA.

VII. Signatures

The respective authorized officials of each organization hereby execute this MOU on the date set forth below.


James Bridenstine, Administrator
National Aeronautics and Space Administration

Date: January 4, 2021


Steve Dickson, Administrator
Federal Aviation Administration

Date: January 4, 2021