

Commercial Space Transportation License

License Number: LRLS 18-106 (Rev 2)

**VIRGIN
ORBIT, LLC**

is authorized, subject to the provisions of 51 USC Subtitle V, ch. 509, and the orders, rules, and regulations issued under it, to conduct reusable launch vehicle (RLV) missions.

General. Virgin Orbit, LLC is authorized to conduct three RLV missions to launch LauncherOne (L1) utilizing a Boeing 747-400 carrier aircraft. The RLV missions authorized by this license commence and conclude at Mojave Air and Space Port.

This license is granted subject to the terms, conditions, and limitations set forth in licensing orders A, B, C, and any subsequent orders issued by the Office of Commercial Space Transportation.

The licensee shall at all times conduct its operations in accordance with the regulations prescribed by the Office of Commercial Space Transportation for the activities authorized by this license.



US Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

Original Issued: June 29, 2018
Rev 2 Issued: December 18, 2020
Rev 2 Effective: December 18, 2020

Manager, Safety Authorization Division

License Order No. LRLS 18-106 (Rev 2)

Revision History:

Original License - Issued June 29, 2018

Revision 1 - Issued June 25, 2019

- 1) Under General, changed "conduct an RLV mission" to "conduct two RLV missions."
- 2) Changed "Issued: June 29, 2018" to "Original Issued: June 29, 2018" and added "Rev 1 Issued: June 25, 2019"
- 3) Changed "Effective: June 29, 2018" to "Rev 1 Effective: June 25, 2019"

Revision 2 - Issued December 18, 2020

- 1) Under General, changed "conduct two RLV missions" to "conduct three RLV missions."
- 2) Changed "Rev 1 Issued: June 25, 2019" to "Rev 2 Issued: December 18, 2020"
- 3) Changed "Manager, Licensing and Evaluation Division" to "Manager Safety Authorization Division"

License Order No. LRLS 18-106A (Rev 3)

OFFICE OF
COMMERCIAL SPACE TRANSPORTATION
LICENSE ORDER REGARDING

REUSABLE LAUNCH VEHICLE (RLV) MISSIONS

AUTHORIZED BY LICENSE NO. LRLS 18-106
ISSUED TO

VIRGIN ORBIT, LLC

1. Authority: This Order is issued to Virgin Orbit, LLC (referred to as VO) under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. Ch. III.
2. Purpose: This Order modifies License No. LRLS 18-106 originally issued June 29, 2018, by the Federal Aviation Administration's Office of Commercial Space Transportation, authorizing VO to conduct three RLV missions to launch the LauncherOne (L1) launch vehicle utilizing a Boeing 747-400 (747-400) carrier aircraft; and prescribes as conditions to License No. LRLS 18-106 certain requirements applicable to this license.
3. Definitions: For purposes of License No. LRLS 18-106 and any orders issued by the FAA pertaining to activities covered by License No. LRLS 18-106:
 - (a) "Launch" means pre-flight ground operations, flight, and activities after flight necessary to bring the 747-400 to a safe condition.
 - (b) "Pre-flight ground operations" involve VO's pre-flight preparations of L1 and Boeing 747-400 at Mojave Air and Space Port.
 - (c) "Flight" means flight of L1 commencing upon take-off of the 747-400 from Mojave Air and Space Port with the intent to launch L1. Flight ends upon safing of the L1 launch vehicle stages or components that reach Earth orbit following separation of the payload from the L1 launch vehicle or upon wheels stopping after landing of the 747-400 at Mojave Air and Space Port, whichever occurs later.

License Order No. LRLS 18-106A (Rev 3)

4. License Term: License No. LRLS 18-106 terminates upon completion of the RLV missions authorized by the license, or on December 31, 2021, whichever occurs first.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

By: _____
Daniel Murray, Manager
Safety Authorization Division

Original Issued: June 29, 2018
Rev 3 Issued: December 18, 2020
Rev 3 Effective: December 18, 2020

License Order No. LRLS 18-106A (Rev 3)

Revision History:

Original License - Issued June 29, 2018

Revision 1 - Issued June 25, 2019

- 1) In paragraph 2, changed "an RLV mission" to "two RLV missions."
- 2) Changed "Issued: June 29, 2018" to "Original Issued: June 29, 2018" and added "Rev 1 Issued: June 25, 2019"
- 3) Changed "Effective: June 29, 2018" to "Rev 1 Effective: June 25, 2019"

Revision 2 - Issued December 9, 2019

- 1) Changed "Issued: June 29, 2018" to "Original Issued: June 29, 2018" and added "Rev 2 Issued: December 9, 2019"
- 2) In paragraph 4, changed "December 31, 2019" to "December 31, 2020"
- 3) Changed "Effective: June 29, 2018" to "Rev 2 Effective: December 9, 2019"

Revision 3 - Issued December 28, 2020

- 1) Changed In paragraph 2, changed "two RLV missions" to "three RLV missions."
- 2) In paragraph 4, changed "December 31, 2020" to "December 31, 2021"
- 3) Changed "Rev 2 Effective: December 9, 2019, to "Rev 3 Effective: December 18, 2020"

License Order No. LRLS 18-106B (Rev 3)

OFFICE OF
COMMERCIAL SPACE TRANSPORTATION
LICENSE ORDER REGARDING

FLIGHT

AUTHORIZED BY LICENSE NO. LRLS 18-106
ISSUED TO

VIRGIN ORBIT, LLC

1. Authority: This Order is issued to Virgin Orbit, LLC (referred to as VO), under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. Ch. III.
2. Purpose: This Order modifies License No. LRLS 18-106 issued originally June 29, 2018, by the Federal Aviation Administration's Office of Commercial Space Transportation, authorizing VO to conduct three RLV missions to launch the LauncherOne (L1) launch vehicle utilizing the Boeing 747-400 carrier aircraft; and prescribes as conditions to License No. LRLS 18-106 certain requirements applicable to the authorization to conduct a flight.
3. Authorization: VO is authorized to conduct three flights:
 - (a) Using L1, in combination with the 747-400 carrier aircraft that must hold a valid FAA experimental airworthiness certificate and must operate in accordance with the operating limitations of that certificate and the applicable sections of 14 C.F.R. part 91;
 - (b) From Mojave Air and Space Port, California;
 - (c) Transporting educational payloads to low Earth orbit;
 - (d) On L1 launch number one, an azimuth of 157.46 degrees; on L1 launch number two, an azimuth of 145.7 degrees; and L1 launch number three, an azimuth of 145.7 degrees;
4. Verification Test Data:

No less than two weeks prior to flight, VO must provide the FAA for review and acceptance:

License Order No. LRLS 18-106B (Rev 3)

- (a) Test data identified in the VO license application that verifies risk mitigation and elimination measures for captive-carry and launch operations.
- (b) System test results from flight testing of the fully integrated space flight launch system.

5. Autonomous Flight Safety System (AFSS) Testing:

No less than one week prior to flight, VO must provide the FAA with the following for review and acceptance:

AFSS Valve Acceptance & Qualification Test Reports:

- (a) Delta Qualification AFSS Test Reports for the Stage pilot valves, the fuel GG valve, and the oxidizer GG valve, for the engine ATP hotfire exceedances.
- (b) Flight Computer Qualification Test Report.
- (c) Flight Computer Acceptance Test Report.
- (d) End-to-End and Hardware in the Loop Test Plan and Procedures.
- (e) Associated AFSS analysis (Timing, Breakup, Fracticide).

6. Flight Safety Analysis (FSA):

VO must provide the FAA with an acceptable Flight Safety Analysis for the second flight under this license no less than sixty days prior to that flight.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

By: _____
Daniel Murray, Manager
Safety Authorization Division

Originally Issued: June 29, 2018
Rev 3 Issued: December 18, 2020
Rev 3 Effective: December 18, 2020

License Order No. LRLS 18-106B (Rev 3)

Revision History:

Original License - Issued June 29, 2018

Revision 1 - Issued June 25, 2019

- 1) In paragraph 2, changed "an RLV mission" to "two RLV missions."
- 2) In paragraph 3(c), updated payloads.
- 3) In paragraph 3(d), added an azimuth of 145.7 degrees for launch number 2.
- 4) Changed "Issued: June 29, 2018" to "Original Issued: June 29, 2018" and added "Rev 1 Issued: June 25, 2019"
- 5) Changed "Effective On: June 29, 2018" to "Rev 1 Effective: June 25, 2019"
- 6) Added Flight Safety Analysis requirement for flight two.

Revision 2 - Issued May 11, 2020

- 1) Changed Rev 1 to Rev 2 Issued: May 11, 2019.
- 2) In paragraph 3(d), changed "On L1 launch number one, an azimuth of 163 degrees" to "On L1 launch number one, an azimuth of 157.46" degrees.

Revision 3 - Issued December 18, 2020

- 1) Changed Rev 2 to Rev 3 Issued: December 18, 2020.
- 2) In paragraph 2, changed "two RLV missions" to "three RLV missions."
- 3) In paragraph 3, changed "VO is authorized to conduct two flights" to "VO is authorized to conduct three flights."
- 4) In paragraph 3(d), added L1 launch number three, an azimuth of 145.7 degrees.

License Order No. LRLS 18-106C

OFFICE OF
COMMERCIAL SPACE TRANSPORTATION
LICENSE ORDER REGARDING

FINANCIAL RESPONSIBILITY REQUIREMENTS

UNDER LICENSE NO. LRLS 18-106
ISSUED TO

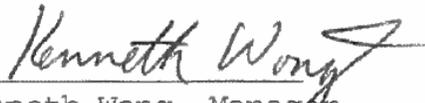
VIRGIN ORBIT, LLC

1. Authority: This Order is issued to Virgin Orbit, LLC (referred to as VO), under 51 U.S.C. subtitle V, chapter 509, and 14 C.F.R. part 440.
2. Purpose: This Order modifies License No. LRLS 18-106 issued concurrently by the Federal Aviation Administration's Office of Commercial Space Transportation, by prescribing financial responsibility requirements for licensed launch activities in accordance with 14 C.F.R. part 440.

Definitions: For purposes of this Order, "licensed launch activities" shall mean activities authorized by the License. Other terms used in this Order are defined in accordance with 14 C.F.R. § 440.3.

3. Liability Insurance: VO shall maintain a policy or policies of liability insurance (or otherwise demonstrate financial responsibility) in accordance with 14 C.F.R. § 440.9(b) in the following amounts:
 - (a) Sixty-Four Million Dollars (\$64,000,000) for covered claims resulting from a flight, commencing upon take-off of the Boeing 747-400 carrier aircraft from Mojave Air and Space Port.
 - (b) Three Million Dollars (\$3,000,000) for covered claims resulting from pre-flight ground operations performed at Mojave Air and Space Port.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

By: 
Kenneth Wong, Manager
Licensing and Evaluation Division

Originally Issued: June 29, 2018

Effective: June 29, 2018