

# Commercial Space Transportation License

License Number: LLO 00-051

## ORBITAL SCIENCES CORPORATION

is authorized, subject to the provisions of 49 USC Subtitle IX, ch. 701, and the orders, rules, and regulations issued under it, to conduct commercial space launches.

General. Orbital Sciences Corporation is authorized to conduct:

- (i) flights of Taurus launch vehicles from Vandenberg Air Force Base (VAFB), on flight azimuths and transporting classes of payloads to orbital destinations as specified in license orders issued by the Federal Aviation Administration; and
- (ii) pre-flight ground operations at VAFB.

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

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



US Department  
of Transportation  
Federal Aviation  
Administration

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

Issued On: April 27, 2000

Effective On: April 27, 2000

  
Manager, Licensing and Safety Division

License Order No. LLO 00-051A (Rev 1)

OFFICE OF  
COMMERCIAL SPACE TRANSPORTATION  
LICENSE ORDER REGARDING

LAUNCHES

AUTHORIZED BY LICENSE NO. LLO 00-051  
ISSUED TO

ORBITAL SCIENCES CORPORATION

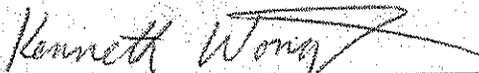
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1. Authority: This Order is issued to Orbital Sciences Corporation (OSC) under 49 U.S.C. Subtitle IX, chapter 701, and 14 C.F.R. Ch. III.
2. Purpose: This Order modifies License No. LLO 00-051, issued on April 27, 2000, and renewed on April 20, 2005, by the Office of Commercial Space Transportation (the Office), authorizing OSC to conduct commercial space launches; and prescribes as conditions to License No. LLO 00-051 certain requirements applicable to those launches.
3. Definitions: For purposes of License No. LLO 00-051 and any orders issued by the Office pertaining to activities covered by License No. LLO 00-051:
  - (a) "Launch activities" and "launches" shall mean (i) flights, and (ii) pre-flight ground operations, as defined in this section.
  - (b) "Flight" shall mean the flight commencing from a Taurus first stage ignition from Vandenberg Air Force Base (VAFB), on flight azimuths and transporting classes of payloads to orbital destinations as specified in License Order No. LLO 00-051B (Rev 1) issued concurrently by the Office. A nominal flight is deemed concluded upon OSC's last exercise of control over the Taurus launch vehicle, including the safing of Taurus launch vehicle stages or components that reach earth orbit following separation of the payload.
  - (c) "Pre-flight ground operations" shall mean OSC's activities at VAFB associated with the conduct of any launches, beginning with the arrival of a Taurus launch vehicle at VAFB.

License Order No. LLO 00-051A (Rev 1)

4. License Term: The term of License No. LLO 00-051 authorizing OSC to conduct commercial space launches is five (5) years from the effective date of the renewal of the license (April 26, 2010).

OFFICE OF COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By:   
Kenneth Wong, Manager  
Licensing and Safety Division

Issued: April 14, 2010  
Effective: April 26, 2010

**Revision History:**

Original License Order - Issued April 27, 2000

Revision 1 - Revision and Renewal, issued April 14, 2010

- 1) Redesignate License Order No. LLO 00-051A with "(Rev 1)" following
- 2) Replace "Associate Administrator for" with "Office of" prior to all the name Commercial Space Transportation
- 3) In paragraph 2, replace "amends" with "modifies", "concurrently" with "on April 27, 2000, and renewed on April 20, 2005," and "each launch" with "those launches."
- 4) Replace "AST" with "the Office" in all instances.
- 5) In paragraph 3(a), replace "Launch," with "Launch activities" and "launches.", and after(i), pluralize "flight."
- 6) In paragraph 3(b), replace "of a Taurus launch vehicle" with "commencing from a Taurus first stage ignition," after "LLO 00-051B" add "(Rev 1)," and remove the sentence "Flight commences upon first-stage engine ignition of a Taurus launch vehicle."
- 7) Replace "shall be deemed" with "is" for the sake of plain English
- 8) In paragraph 3(c), replace "involved in the preparation of a Taurus launch vehicle for flight" with "at VAFB associated with the conduct of any launches."
- 9) Eliminate paragraphs 4 through 12 that restated regulations, and renumber paragraph 13 as paragraph 4.
- 10) In the new paragraph 4, replace "this license" with "the renewal of the license (April 26, 2010)." This incorporates the renewal for an additional five year period beyond that originally introduced in License Order No. LLO 00-051E (now obsolete).

ASSOCIATE ADMINISTRATOR  
FOR COMMERCIAL SPACE TRANSPORTATION  
LICENSE ORDER REGARDING

**FLIGHT**

AUTHORIZED BY LICENSE NO. LLO 00-051  
ISSUED TO

ORBITAL SCIENCES CORPORATION

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1. Authority: This Order is issued to Orbital Sciences Corporation (OSC) under 49 U.S.C. Subtitle IX, chapter 701, and 14 C.F.R. Ch. III.
2. Purpose: This Order amends License No. LLO 00-051, issued concurrently by the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation (AST), authorizing OSC to conduct commercial space launches; and prescribes as conditions to License No. LLO 00-051 certain requirements applicable to the authorization to conduct flights.
3. Authorization: OSC is authorized to conduct flights:
  - (a) Using Taurus and Taurus XL launch vehicles. For the Taurus launch vehicle, a nominal flight shall be deemed concluded upon OSC's last exercise of control over the Taurus launch vehicle, including the safing of Taurus launch vehicle stages or components that reach earth orbit following separation of the payload.
  - (b) From Vandenberg Air Force Base (VAFB), California;
  - (c) On initial flight azimuths from 198 to 235 degrees, inclusive;
  - (d) Transporting (i) U.S. Government payloads to any orbit, and (ii) communications, remote sensing, Celestis and scientific research payloads to low earth orbit at apogees of less than 25,000 nautical miles and at perigees between 100 and 500 nautical miles; and
  - (e) According to the launch vehicle, launch vehicle systems, and equipment designs and the safety management program including organization, personnel, functions and procedures represented or referenced in the Taurus application as of the date

License Order No. LLO 00-051B (REV 1)

of this Order, all of which are incorporated by reference into this order.

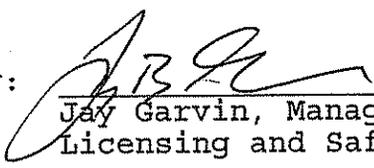
4. Agreement(s) With Federal Launch Range: In accordance with 14 C.F.R. § 415.75, OSC shall enter into an agreement with Vandenberg Air Force Base (VAFB) providing for access to and use of U.S. Government property and services required to support a safe flight. The agreement (or agreements) shall be in effect prior to commencement of a flight. OSC shall comply with any requirements of the agreement(s) that may affect public safety and safety of property during the conduct of a flight, including flight safety procedures and requirements.
5. Public Safety Responsibility: In accordance with 14 C.F.R. § 415.71, OSC is responsible for ensuring the safe conduct of each flight and for ensuring that public safety and safety of property are protected at all times during each flight.
6. Launch Risk: In accordance with 14 C.F.R. § 415.35, the risk level associated with debris from any flight shall not exceed an expected average number of 0.00003 casualties per launch ( $E_c \leq 30 \times 10^{-6}$ ).
7. Safety at End of Launch: In accordance with 14 C.F.R. § 415.39, OSC shall ensure for any flight that for all launch vehicle stages or components that reach earth orbit, there will be no unplanned physical contact between the vehicle or its components and the payload after payload separation, and debris generation will not result from the conversion of energy sources into energy that fragments the vehicle or its components. Energy sources include chemical, pressure, and kinetic energy.
8. Reporting Requirements:
  - (a) Sixty (60) Days Prior to Flight: In accordance with 14 C.F.R. § 415.79 (a), not later than sixty (60) days prior to each of the commercial space flights carried out under License No. LLO 00-051, OSC shall report the following to AST:
    - (1) Payload information, including payload name; payload class; physical dimensions and weight of the payload; payload owner and operator; orbital parameters for parking, transfer and final orbits; hazardous materials, as defined in 14 C.F.R. § 401.5, and radioactive materials, and the amounts of each; intended payload operations during the life of the payload; and

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delivery point in flight at which the payload will no longer be under OSC's control.

- (2) Flight information, including the launch vehicle, planned flight path, including staging and impact locations, and on-orbit activity of the launch vehicle including payload delivery point(s); and
  - (3) Mission specific launch waivers, approved or pending, from VAFB that are unique to the flight and may affect public safety.
- (b) Fifteen (15) Days Prior to Flight: In accordance with 14 C.F.R. § 415.79(b), not later than noon, Eastern Time, 15 days before each commercial space flight OSC shall submit to AST a completed Federal Aviation Administration/U.S. Space Command (FAA/USSPACECOM) Launch Notification Form (OMB No. 2120-0608).
- (c) Thirty (30) Days After Flight: In accordance with 14 C.F.R. § 415.81, OSC shall provide to AST the information listed below for all objects placed in space by a flight, including a launch vehicle and any components, except any object owned and registered by the U.S. Government and any object owned by a foreign entity. OSC shall submit the following information:
- (1) The international designator of the space object(s);
  - (2) Date and location of commercial space flight;
  - (3) General function of the space object(s); and
  - (4) Final orbital parameters, including nodal period, inclination, apogee, and perigee.

ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By: 

Jay Garvin, Manager  
Licensing and Safety Division

Issued: September 12, 2003

Revision History:

Original License Order - Issued April 27, 2000

Revision 1 - Issued September 12, 2003

- 1) Change paragraph 3(c) from "On initial flight azimuths from 205 to 235 degrees, inclusive" to "On initial flight azimuths from 198 to 235 degrees, inclusive"

ASSOCIATE ADMINISTRATOR  
FOR COMMERCIAL SPACE TRANSPORTATION  
LICENSE ORDER REGARDING

PRE-FLIGHT GROUND OPERATIONS

AUTHORIZED BY LICENSE NO. LLO 00-051  
ISSUED TO

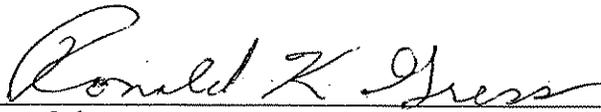
ORBITAL SCIENCES CORPORATION

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1. Authority: This Order is issued to Orbital Sciences Corporation (OSC) under 49 U.S.C. Subtitle IX, chapter 701, and 14 C.F.R. Ch. III.
2. Purpose: This Order amends License No. LLO 00-051 issued concurrently by the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation (AST), authorizing OSC to conduct launches, and prescribes as conditions to License No. LLO 00-051 certain additional requirements applicable to the authorization to conduct pre-flight ground operations.
3. Authorization: OSC is authorized to conduct pre-flight ground operations at Vandenberg Air Force Base (VAFB).
4. Agreement(s) With Federal Launch Range: In accordance with 14 C.F.R. § 415.75, OSC shall enter into an agreement with VAFB providing for access to and use of U.S. Government property and services required to support safe pre-flight ground operations. The agreement (or agreements) shall be in effect prior to commencement of pre-flight ground operations. OSC shall comply with any requirements of the agreement(s) that may affect public safety and safety of property during the conduct of pre-flight ground operations.

5. Public Safety Responsibility: In accordance with 14 C.F.R. § 415.71, OSC is responsible for ensuring the safe conduct of pre-flight ground operations and for ensuring that public safety and safety of property are protected at all times during pre-flight ground operations.

ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By:   
Ronald K. Gress, Manager  
Licensing and Safety Division

Issued: April 27, 2000

ASSOCIATE ADMINISTRATOR  
FOR COMMERCIAL SPACE TRANSPORTATION  
LICENSE ORDER REGARDING

**FINANCIAL RESPONSIBILITY REQUIREMENTS**

Under License No LLO 00-051  
Issued to

ORBITAL SCIENCES CORPORATION

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1. Authority: This Order is issued to Orbital Sciences Corporation (OSC) under 49 U.S.C. Subtitle IX, chapter 701, and 14 C.F.R. Part 440.
2. Purpose: This Order amends License No. LLO 00-051 issued concurrently by the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation (AST), by prescribing financial responsibility requirements for licensed launch activities in accordance with 14 C.F.R. Part 440.
3. 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.
4. Demonstration of Compliance: OSC shall demonstrate compliance with this Order as required by 14 C.F.R. § 440.15, by filing with AST one or more certificates of insurance evidencing insurance coverage or other evidence of financial responsibility. Certificates of insurance shall be signed by the issuing insurance broker and accompanied by an opinion of the insurance broker that the insurance complies with 14 C.F.R. Part 440 and this Order. Demonstration of financial responsibility shall not relieve OSC of responsibility for liability, loss or damage sustained by the United States resulting from licensed launch activities, except as provided in 14 C.F.R. § 440.5(c).
5. Preemption: In accordance with 14 C.F.R. § 440.15(b), upon demonstrating to AST that it has complied with requirements of this Order, this Order shall preempt any provisions in agreements between OSC and any agency of the United States Government governing access to or use of United States Government property or services at Vandenberg Air Force Base (VAFB) for the conduct of licensed launch activities which address financial responsibility, allocation of risk and related matters covered by 49 U.S.C. §§ 70112, 70113.

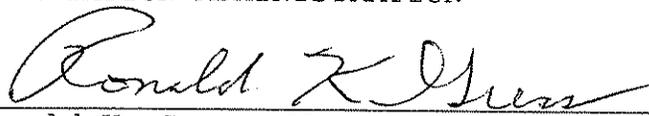
6. Liability Insurance: OSC shall maintain a policy or policies of liability insurance (or otherwise demonstrate financial responsibility) in accordance with 14 C.F.R. § 440.9(b) in the following amounts:
  - (a) Liability insurance in the amount of Forty Million Dollars (\$40,000,000) for covered claims resulting from a flight, commencing upon first-stage engine ignition of a Taurus from VAFB; and
  - (b) Liability insurance in the amount of Ten Million Dollars (\$10,000,000) for covered claims resulting from pre-flight ground operations performed at VAFB.
7. Government Property Insurance: OSC shall maintain a policy or policies of insurance (or otherwise demonstrate financial responsibility) in accordance with 14 C.F.R. § 440.9(d) in the following amounts:
  - (a) Insurance in the amount of Two Million Three Hundred Thousand Dollars (\$2,300,000) for covered property claims resulting from a flight, commencing upon first-stage engine ignition of a Taurus from VAFB; and
  - (b) Insurance in the amount of Twenty Seven Million Two Hundred Thousand Dollars (\$27,200,000) for covered property claims resulting from pre-flight ground operations performed at VAFB.
8. Duration of Coverage; Renewals; Modifications: Financial responsibility required by this Order shall remain in full force and effect as directed in 14 C.F.R. § 440.11, and shall not expire by its own terms unless evidence of renewal is provided 30 days in advance of the expiration date. Insurance or other evidence of financial responsibility required by this Order may not be replaced, canceled, changed, withdrawn, or in any way modified to reduce the limits of liability or the extent of coverage unless AST is notified at least 30 days in advance and expressly approves the modification.
9. Conditions of Insurance Coverage: Policies of insurance shall satisfy the terms and conditions contained in 14 C.F.R. § 440.13(a).
10. Certifications: OSC shall certify compliance with insurance requirements set forth in sections 6 and 7 of this Order in accordance with 14 C.F.R. § 440.15(c)(1)(i). In the event exclusions to insurance coverage are specified, as required by 14 C.F.R. § 440.13(a)(5), OSC shall certify that insurance covering the excluded risks is not commercially available at reasonable cost. Certifications required under this section must be signed by a duly authorized officer of

OSC.

11. Waiver of Claims: OSC shall implement waivers of claims as provided in 14 C.F.R. § 440.17(b). For each launch in which the U.S. Government, its agencies, or its contractors and subcontractors are involved in licensed launch activities, or for which insurance is required under section 7 of this Order, OSC shall enter into a reciprocal waiver of claims agreement with each customer and the Federal Aviation Administration, Department of Transportation, in the form provided in 14 C.F.R. Part 440, Appendix B, or that satisfies its requirements.
12. Time Periods for Demonstrating Compliance:
  - (a) Financial Responsibility: OSC shall submit evidence of insurance and the certifications required under section 10 of this Order at least 30 days before commencement of licensed launch activities. OSC may submit evidence of financial responsibility other than insurance, as provided under 14 C.F.R. § 440.9(f), and shall do so at least 60 days before commencement of licensed launch activities.
  - (b) Waivers of Claims: OSC shall submit the three-party waiver of claims agreement required under 14 C.F.R. § 440.17(c), signed by OSC and each customer at least 30 days before commencement of licensed launch activities involving the customer.

ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By:

  
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Ronald K. Gress, Manager  
Licensing and Safety Division

Issued: April 27, 2000