SUBCHAPTER A—GENERAL

PART 400—BASIS AND SCOPE

Sec.
400.1 Basis.
400.2 Scope.

AUTHORITY: 51 U.S.C. 50901–50923.

SOURCE: Docket No. 43810, 53 FR 11013, Apr. 4, 1988, unless otherwise noted.

§ 400.1 Basis.

The basis for the regulations in this chapter is the Commercial Space Launch Act of 1984, and applicable treaties and international agreements to which the United States is party.

§ 400.2 Scope.

The regulations in this chapter set forth the procedures and requirements applicable to the authorization and supervision under 51 U.S.C. subtitle V, chapter 509, of commercial space transportation activities conducted in the United States or by a U.S. citizen. The regulations in this chapter do not apply to—

(a) Space activities carried out by the United States Government on behalf of the United States Government;

(b) The launch of an amateur rocket as defined in §1.1 of chapter I of this title; or

(c) A launch of a tethered launch vehicle that meets all the following criteria:

(1) *Launch vehicle.* The launch vehicle must—

(i) Be unmanned;

(ii) Be powered by a liquid or hybrid rocket motor;

(iii) Not use any of the toxic propellants of Table I417–2 and Table I417–3 in Appendix I of part 417 of this chapter; and

(iv) Carry no more than 5,000 pounds of propellant.

(2) *Tether system.* The tether system must—

(i) Not yield or fail under—

(A) The maximum dynamic load on the system; or

(B) A load equivalent to two times the maximum potential engine thrust.

(ii) Have a minimum safety factor of 3.0 for yield stress and 5.0 for ultimate stress.

(iii) Constrain the launch vehicle within 75 feet above ground level as measured from the ground to the attachment point of the vehicle to the tether.

(iv) Display no damage prior to the launch.

(v) Be insulated or located such that it will not experience thermal damage due to the launch vehicle's exhaust.

(3) *Separation distances.* The launch operator must separate its launch from the public and the property of the public by a distance no less than that provided for each quantity of propellant listed in Table A of this section.

TABLE A—SEPARATION DISTANCES FOR TETHERED LAUNCHES

Propellant carried (lbs.)	Distance (ft.) of the public and property of the public from the launch point
1–500	900
501–1,000	1,200
1001–1,500	1,350
1,501–2,000	1,450
2,001–2,500	1,550
2,501–3,000	1,600
3,001–3,500	1,650
3,501–4,000	1,700
4,001–4,500	1,750
4,501–5,000	1,800

[Doc. No. FAA–2012–0045, 80 FR 31834, June 4, 2015]

PART 401—ORGANIZATION AND DEFINITIONS

Sec.
401.1 The Office of Commercial Space Transportation.
401.3 The Associate Administrator for Commercial Space Transportation.
401.5 Definitions.
401.7 Definitions.

AUTHORITY: 51 U.S.C. 50101–50923.

SOURCE: Docket No. 43810, 53 FR 11013, Apr. 4, 1988, unless otherwise noted.

§ 401.1 The Office of Commercial Space Transportation.

The Office of Commercial Space Transportation, referred to in these regulations as the ''Office,'' is a line of business within the Federal Aviation Administration and is located in the Federal Aviation Administration Headquarters, 800 Independence Avenue, SW., Room 331, Washington, DC 20591.

[Amdt. 401–3, 68 FR 35289, June 13, 2003]

§ 401.3 The Associate Administrator for Commercial Space Transportation.

The Office is headed by an Associate Administrator to exercise the Secretary's authority to license or permit and otherwise regulate commercial space transportation and to discharge the Secretary's responsibility to encourage, facilitate, and promote commercial space transportation by the United States private sector.

[Doc. No. FAA–2006–24197, 72 FR 17016, Apr. 6, 2007]

§ 401.5 Definitions.

For the purposes of parts 415, 417, 431, 435, 440, and 460 of this chapter, the following definitions apply:

Act means 51 U.S.C Subtitle V, Programs Targeting Commercial Opportunities, chapter 509—Commercial Space Launch Activities, 51 U.S.C. 50901–50923.

Associate Administrator means the Associate Administrator for Commercial Space Transportation, Federal Aviation Administration, or any person designated by the Associate Administrator to exercise the authority or discharge the responsibilities of the Associate Administrator.

Casualty means serious injury or death.

Contingency abort means cessation of vehicle flight during ascent or descent in a manner that does not jeopardize public health and safety and the safety of property, in accordance with mission rules and procedures. Contingency abort includes landing at an alternative location that has been designated as a contingency abort location in advance of vehicle flight.

Crew means any employee or independent contractor of a licensee, transferee, or permittee, or of a contractor or subcontractor of a licensee, transferee, or permittee, who performs activities in the course of that employment or contract directly relating to the launch, reentry, or other operation of or in a launch vehicle or reentry vehicle that carries human beings. A crew consists of flight crew and any remote operator.

Emergency abort means cessation of vehicle flight during ascent or descent in a manner that minimizes risk to public health and safety and the safety of property. Emergency abort involves failure of a vehicle, safety-critical system, or flight safety system such that contingency abort is not possible.

Equivalent level of safety means an approximately equal level of safety as determined by qualitative or quantitative means.

Expendable launch vehicle means a launch vehicle whose propulsive stages are flown only once.

Experimental permit or *permit* means an authorization by the FAA to a person to launch or reenter a reusable suborbital rocket.

Federal launch range means a launch site, from which launches routinely take place, that is owned and operated by the government of the United States.

Flight crew means crew that is on board a vehicle during a launch or reentry.

Flight safety system means a system designed to limit or restrict the hazards to public health and safety and the safety of property presented by a launch vehicle or reentry vehicle while in flight by initiating and accomplishing a controlled ending to vehicle flight. A flight safety system may be destructive resulting in intentional break up of a vehicle or nondestructive, such as engine thrust termination enabling vehicle landing or safe abort capability.

Government astronaut means an individual who—

(1) Is designated by the National Aeronautics and Space Administration under Title 51, United States Code, Section 20113(n);

(2) Is carried within a launch vehicle or reentry vehicle in the course of their employment, which may include performance of activities directly relating

to the launch, reentry, or other operation of the launch vehicle or reentry vehicle; and

(3) Is either—

(i) An employee of the United States Government, including the uniformed services, engaged in the performance of a Federal function under authority of law or an Executive act; or

(ii) An international partner astronaut.

Hazardous materials means hazardous materials as defined in 49 CFR 172.101.

Human space flight incident means an unplanned event that poses a high risk of causing a serious or fatal injury to a space flight participant, crew, or government astronaut.

Instantaneous impact point means an impact point, following thrust termination of a launch vehicle, calculated in the absence of atmospheric drag effects.

International partner astronaut means an individual designated under Article 11 of the International Space Station Intergovernmental Agreement, by a partner to that agreement other than the United States, as qualified to serve as an International Space Station crew member.

International Space Station Intergovernmental Agreement means the Agreement Concerning Cooperation on the International Space Station, signed in Washington, DC, on January 29, 1998 (TIAS 12927).

Launch means to place or try to place a launch vehicle or reentry vehicle and any payload, space flight participant, crew, or government astronaut from Earth in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space, and includes preparing a launch vehicle for flight at a launch site in the United States. Launch includes the flight of a launch vehicle and includes pre- and post-flight ground operations as follows:

(1) *Beginning of launch.* (i) Under a license, launch begins with the arrival of a launch vehicle or payload at a U.S. launch site.

(ii) Under a permit, launch begins when any pre-flight ground operation at a U.S. launch site meets all of the following criteria:

(A) Is closely proximate in time to flight,

(B) Entails critical steps preparatory to initiating flight,

(C) Is unique to space launch, and

(D) Is inherently so hazardous as to warrant the FAA's regulatory oversight.

(2) *End of launch.* (i) For launch of an orbital expendable launch vehicle (ELV), launch ends after the licensee's last exercise of control over its launch vehicle.

(ii) For launch of an orbital reusable launch vehicle (RLV) with a payload, launch ends after deployment of the payload. For any other orbital RLV, launch ends upon completion of the first sustained, steady-state orbit of an RLV at its intended location.

(iii) For a suborbital ELV or RLV launch, launch ends after reaching apogee if the flight includes a reentry, or otherwise after vehicle landing or impact on Earth, and after activities necessary to return the vehicle to a safe condition on the ground.

Launch accident means—

(1) An event that causes a fatality or serious injury (as defined in 49 CFR 830.2) to any person who is not associated with the flight;

(2) An event that causes damage estimated to exceed $25,000 to property not associated with the flight that is not located at the launch site or designated recovery area;

(3) An unplanned event occurring during the flight of a launch vehicle resulting in the impact of a launch vehicle, its payload, or any component thereof:

(i) For an expendable launch vehicle, outside designated impact limit lines; and

(ii) For a reusable launch vehicle, outside a designated landing site.

(4) For a launch that takes place with a person on board, a fatality or serious injury to a space flight participant, crew, or government astronaut.

Launch incident means an unplanned event during the flight of a launch vehicle, other than a launch accident, involving a malfunction of a flight safety system or safety-critical system, or a failure of the licensee's or permittee's safety organization, design, or operations.

Launch operator means a person who conducts or who will conduct the

launch of a launch vehicle and any payload.

Launch site means the location on Earth from which a launch takes place (as defined in a license the Secretary issues or transfers under this chapter) and necessary facilities at that location.

Launch site safety assessment means an FAA assessment of a Federal launch range to determine if the range meets FAA safety requirements. A difference between range practice and FAA requirements is documented in the LSSA.

Launch vehicle means a vehicle built to operate in, or place a payload in, outer space or a suborbital rocket.

Mishap means a launch or reentry accident, launch or reentry incident, launch site accident, failure to complete a launch or reentry as planned, or an unplanned event or series of events resulting in a fatality or serious injury (as defined in 49 CFR 830.2), or resulting in greater than $25,000 worth of damage to a payload, a launch or reentry vehicle, a launch or reentry support facility or government property located on the launch or reentry site.

Nominal means, in reference to launch vehicle performance, trajectory, or stage impact point, a launch vehicle flight where all vehicle aerodynamic parameters are as expected, all vehicle internal and external systems perform exactly as planned, and there are no external perturbing influences other than atmospheric drag and gravity.

Operation of a launch site means the conduct of approved safety operations at a permanent site to support the launching of vehicles and payloads.

Operation of a reentry site means the conduct of safety operations at a permanent site on Earth at which a reentry vehicle and its payload, if any, is intended to land.

Operator means a holder of a license or permit under 51 U.S.C. Subtitle V, chapter 509.

Payload means an object that a person undertakes to place in outer space by means of a launch vehicle, including components of the vehicle specifically designed or adapted for that object.

Person means an individual or an entity organized or existing under the laws of a state or country.

Physical electronic storage means a physical device that can store electronic documents and files including but not limited to an optical disc, a memory card, a USB flash drive, or an external hard drive.

Pilot means a flight crew member who has the ability to control, in real time, a launch or reentry vehicle's flight path.

Populated area means—

(1) An outdoor location, structure, or cluster of structures that may be occupied by people;

(2) Sections of roadways and waterways that are frequented by automobile and boat traffic; or

(3) Agricultural lands, if routinely occupied by field workers.

Public safety means, for a particular licensed launch, the safety of people and property that are not involved in supporting the launch and includes those people and property that may be located within the boundary of a launch site, such as visitors, individuals providing goods or services not related to launch processing or flight, and any other launch operator and its personnel.

Reenter; reentry means to return or attempt to return, purposefully, a reentry vehicle and its payload, space flight participant, crew, or government astronaut, if any, from Earth orbit or from outer space to Earth. The term ''reenter; reentry'' includes activities conducted in Earth orbit or outer space to determine reentry readiness and that are critical to ensuring public health and safety and the safety of property during reentry flight. The term ''reenter; reentry'' also includes activities conducted on the ground after vehicle landing on Earth to ensure the reentry vehicle does not pose a threat to public health and safety or the safety of property.

Reentry accident means—

(1) Any unplanned event occurring during the reentry of a reentry vehicle resulting in the impact of the reentry vehicle, its payload, or any component thereof, outside a designated reentry site;

(2) An event that causes a fatality or serious injury (as defined in 49 CFR 830.2) to any person who is not associated with the reentry;

(3) An event that causes damage estimated to exceed $25,000 to property not associated with the reentry and not located within a designated reentry site; and

(4) For a reentry that takes place with a person on board, a fatality or serious injury to a space flight participant, crew, or government astronaut.

Reentry incident means any unplanned event occurring during the reentry of a reentry vehicle, other than a reentry accident, involving a malfunction of a reentry safety-critical system or failure of the licensee's or permittee's safety organization, procedures, or operations.

Reentry operator means a person responsible for conducting the reentry of a reentry vehicle as specified in a license issued by the FAA.

Reentry site means the location on Earth where a reentry vehicle is intended to return. It includes the area within three standard deviations of the intended landing point (the predicted three-sigma footprint).

Reentry vehicle means a vehicle designed to return from Earth orbit or outer space to Earth substantially intact. A reusable launch vehicle that is designed to return from Earth orbit or outer space to Earth substantially intact is a reentry vehicle.

Remote operator means a crew member who

(1) Has the ability to control, in real time, a launch or reentry vehicle's flight path, and

(2) Is not on board the controlled vehicle.

Reusable launch vehicle (RLV) means a launch vehicle that is designed to return to Earth substantially intact and therefore may be launched more than one time or that contains vehicle stages that may be recovered by a launch operator for future use in the operation of a substantially similar launch vehicle.

Risk means a measure that accounts for both the probability of occurrence of a hazardous event and the consequence of that event to persons or property.

Safety critical means essential to safe performance or operation. A safety critical system, subsystem, component, condition, event, operation, process, or item is one whose proper recognition, control, performance, or tolerance is essential to ensuring public safety. Something that is safety critical item creates a safety hazard or provide protection from a safety hazard.

Sigma means a single standard deviation from a fixed value, such as a mean.

Space flight participant means an individual, who is not crew or a government astronaut, carried on board a launch vehicle or reentry vehicle.

State and United States means, when used in a geographical sense, the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the United States Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States; and

Suborbital rocket means a vehicle, rocket-propelled in whole or in part, intended for flight on a suborbital trajectory, and the thrust of which is greater than its lift for the majority of the rocket-powered portion of its ascent.

Suborbital trajectory means the intentional flight path of a launch vehicle, reentry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the Earth.

Tether system means a device that contains launch vehicle hazards by physically constraining a launch vehicle in flight to a specified range from its launch point. A tether system includes all components, from the tether's point of attachment to the vehicle to a solid base, that experience load during a tethered launch.

United States citizen means:

(1) Any individual who is a citizen of the United States;

(2) Any corporation, partnership, joint venture, association, or other entity organized or existing under the laws of the United States or any State; and

(3) Any corporation, partnership, joint venture, association, or other entity which is organized or exists under

the laws of a foreign nation, if the controlling interest in such entity is held by an individual or entity described in paragraph (1) or (2) of this definition. *Controlling interest* means ownership of an amount of equity in such entity sufficient to direct management of the entity or to void transactions entered into by management. Ownership of at least fifty-one percent of the equity in an entity by persons described in paragraph (1) or (2) of this definition creates a rebuttable presumption that such interest is controlling.

Validation means an evaluation to determine that each safety measure derived from a system safety process is correct, complete, consistent, unambiguous, verifiable, and technically feasible. Validation ensures that the right safety measure is implemented, and that the safety measure is well understood.

Vehicle safety operations personnel means those persons whose job performance is critical to public health and safety or the safety of property during RLV or reentry operations.

Verification means an evaluation to determine that safety measures derived from a system safety process are effective and have been properly implemented. Verification provides measurable evidence that a safety measure reduces risk to acceptable levels.

[Doc. No. FAA–1999–5535, 65 FR 56656, Sept. 19, 2000, as amended by Amdt. 401–2, 65 FR 62861, Oct. 19, 2000; Amdt. 401–4, 71 FR 50530, Aug. 25, 2006; 71 FR 75631, Dec. 15, 2006; Amdt. 401–5, 72 FR 17016, Apr. 6, 2007; Amdt. 401–6, 73 FR 73782, Dec. 4, 2008; Amdt. 401–7, 77 FR 20532, Apr. 5, 2012; 80 FR 30151, May 27, 2015; Amdt. 401–8, 80 FR 31834, June 4, 2015; Doc. No. FAA–2019–0229, Amdt. 401–9, 85 FR 79707, Dec. 10, 2020; Doc. No. FAA–2023–1656, Amdt. No.401–10, 89 FR 76725, Sept. 19, 2024]

EFFECTIVE DATE NOTE: At 85 FR 79707, Dec. 10, 2020, § 401.5 was removed and reserved, effective Mar. 10, 2026.

§ 401.7 Definitions.

For the purposes of this chapter unless otherwise excepted, the following definitions apply:

Act means 51 U.S.C Subtitle V, Programs Targeting Commercial Opportunities, chapter 509—Commercial Space Launch Activities, 51 U.S.C. 50901–50923.

Anomaly means any condition during licensed or permitted activity that deviates from what is standard, normal, or expected, during the verification or operation of a system, subsystem, process, facility, or support equipment.

Associate Administrator means the Associate Administrator for Commercial Space Transportation, Federal Aviation Administration, or any person designated by the Associate Administrator to exercise the authority or discharge the responsibilities of the Associate Administrator.

Casualty means serious injury or death.

Casualty area means the area surrounding each potential debris or vehicle impact point where serious injuries, or worse, can occur.

Command control system means the portion of a flight safety system that includes all components needed to send a flight abort control signal to the onboard portion of a flight safety system.

Contingency abort means a flight abort with a landing at a planned location that has been designated in advance of vehicle flight.

Countdown means the timed sequence of events that must take place to initiate flight of a launch vehicle or reentry of a reentry vehicle.

Crew means any employee or independent contractor of a licensee, transferee, or permittee, or of a contractor or subcontractor of a licensee, transferee, or permittee, who performs activities in the course of that employment or contract directly relating to the launch, reentry, or other operation of or in a launch vehicle or reentry vehicle that carries human beings. A crew consists of flight crew and any remote operator.

Critical asset means an asset that is essential to the national interests of the United States. Critical assets include property, facilities, or infrastructure necessary for national security purposes, high priority civil space purposes, or assured access to space for national priority missions.

Critical payload means a payload and essential infrastructure directly supporting such a payload that is a critical asset that:

(1) Is so costly or unique that it cannot be readily replaced; or

(2) The time frame for its replacement would adversely affect the national interests of the United States.

Crossrange means the distance measured along a line whose direction is either 90 degrees clockwise (right crossrange) or counter-clockwise (left crossrange) to the projection of a vehicle's planned nominal velocity vector azimuth onto a horizontal plane tangent to the ellipsoidal Earth model at the vehicle's sub-vehicle point. The terms right crossrange and left crossrange may also be used to indicate direction.

Deorbit means the flight of a vehicle that begins with the final command to commit to a perigee below 70 nautical miles (approximately 130 kilometers), and ends when all vehicle components come to rest on the Earth.

Disposal means the return or attempt to return, purposefully, a launch vehicle stage or component, not including a reentry vehicle, from Earth orbit to Earth, in a controlled manner.

Downrange means the distance measured along a line whose direction is parallel to the projection of a vehicle's planned nominal velocity vector azimuth into a horizontal plane tangent to the ellipsoidal Earth model at the vehicle sub-vehicle point. The term downrange may also be used to indicate direction.

Effective casualty area means the aggregate casualty area of each piece of debris created by a vehicle failure at a particular point on its trajectory. The effective casualty area for each piece of debris is a modeling construct in which the area within which 100 percent of the population are assumed to be a casualty, and outside of which 100 percent of the population are assumed not to be a casualty.

Equivalent level of safety means an approximately equal level of safety as determined by qualitative or quantitative means.

Expected casualty means the mean number of casualties predicted to occur per flight operation if the operation were repeated many times.

Expendable launch vehicle means a launch vehicle whose propulsive stages are flown only once.

Experimental permit or *permit* means an authorization by the FAA to a person to launch or reenter a reusable suborbital rocket.

Explosive debris means solid propellant fragments or other pieces of a vehicle or payload that result from breakup of the vehicle during flight and that explode upon impact with the Earth's surface and cause overpressure.

Federal launch or reentry site means a launch or reentry site, from which launches routinely take place, that is owned and operated by the government of the United States.

Flight abort means the process to limit or restrict the hazards to public safety, and the safety of property, presented by a launch vehicle or reentry vehicle, including any payload, while in flight by initiating and accomplishing a controlled ending to vehicle flight.

Flight abort rules means the conditions under which a flight safety system must abort the flight to ensure compliance with the safety criteria in §450.101.

Flight crew means crew that is on board a vehicle during a launch or reentry.

Flight hazard area means any region of land, sea, or air that must be surveyed, publicized, controlled, or evacuated to ensure compliance with the safety criteria in §450.101.

Flight safety limit means criteria to ensure that public safety and critical assets are protected from the flight of a vehicle when a flight safety system functions properly.

Flight safety system means a system used to implement flight abort. A flight safety system includes any flight safety system located on board a launch or reentry vehicle; any ground based command control system; any support system, including telemetry subsystems and tracking subsystems, necessary to support a flight abort decision; and the functions of any personnel who operate the flight safety system hardware or software.

Government astronaut means an individual who—

(1) Is designated by the National Aeronautics and Space Administration under Title 51, United States Code, Section 20113(n);

(2) Is carried within a launch vehicle or reentry vehicle in the course of their

employment, which may include performance of activities directly relating to the launch, reentry, or other operation of the launch vehicle or reentry vehicle; and

(3) Is either—

(i) An employee of the United States Government, including the uniformed services, engaged in the performance of a Federal function under authority of law or an Executive act; or

(ii) An international partner astronaut.

Hazard control means a preventative measure or mitigation put in place for systems or operations to reduce the severity of a hazard or the likelihood of the hazard occurring.

Hazardous debris means any object or substance capable of causing a casualty or loss of functionality to a critical asset. Hazardous debris includes inert debris and explosive debris such as an intact vehicle, vehicle fragments, any detached vehicle component whether intact or in fragments, payload, and any planned jettison bodies.

Hazardous materials means hazardous materials as defined in 49 CFR 172.101.

Instantaneous impact point means a predicted impact point, following thrust termination of a vehicle.

International partner astronaut means an individual designated under Article 11 of the International Space Station Intergovernmental Agreement, by a partner to that agreement other than the United States, as qualified to serve as an International Space Station crew member.

International Space Station Intergovernmental Agreement means the Agreement Concerning Cooperation on the International Space Station, signed in Washington, DC, on January 29, 1998 (TIAS 12927).

Key flight safety event means a flight activity that has an increased likelihood of causing a failure compared with other portions of flight.

Launch means to place or try to place a launch vehicle or reentry vehicle and any payload or human being from Earth in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space, including activities involved in the preparation of a launch vehicle or payload for launch, when those activities take place at a launch site in the United States.

Launch operator means a person who conducts or who will conduct the launch of a launch vehicle and any payload.

Launch or reentry system means the integrated set of subsystems, personnel, products, and processes that, when combined, carries out a launch or reentry.

Launch site means the location on Earth from which a launch takes place (as defined in a license the Secretary issues or transfers under this chapter) and necessary facilities at that location.

Launch vehicle means a vehicle built to operate in, or place a payload in, outer space or a suborbital rocket.

Launch window means an approved period of time during which the flight of a launch vehicle may be initiated.

Liftoff means any motion of the launch vehicle with intention to initiate flight.

Limits of a useful mission means the trajectory data or other parameters that bound the performance of a useful mission, including flight azimuth limits.

Mishap means any event, or series of events associated with a licensed or permitted activity resulting in any of the following:

(1) A fatality or serious injury (as defined in 49 CFR 830.2);

(2) A malfunction of a safety-critical system;

(3) A failure of the licensee's or permittee's safety organization, safety operations, safety procedures;

(4) High risk, as determined by the FAA, of causing a serious or fatal injury to any space flight participant, crew, government astronaut, or member of the public;

(5) Substantial damage, as determined by the FAA, to property not associated with licensed or permitted activity;

(6) Unplanned substantial damage, as determined by the FAA, to property associated with licensed or permitted activity;

(7) Unplanned permanent loss of a launch or reentry vehicle during licensed activity or permitted activity;

(8) The impact of hazardous debris outside the planned landing site or designated hazard area; or

(9) Failure to complete a launch or reentry as planned as reported in § 450.213(b).

Neighboring operations personnel means those members of the public located within a launch or reentry site, or an adjacent launch or reentry site, who are not associated with a specific hazardous licensed or permitted operation currently being conducted, but are required to perform safety, security, or critical tasks at the site and are notified of the operation.

Nominal means, in reference to launch vehicle performance, trajectory, or stage impact point, a launch vehicle flight where all vehicle aerodynamic parameters are as expected, all vehicle internal and external systems perform exactly as planned, and there are no external perturbing influences other than atmospheric drag and gravity.

Normal flight means the flight of a properly performing vehicle whose real-time vacuum instantaneous impact point does not deviate from the nominal vacuum instantaneous impact point by more than the sum of the wind effects and the three-sigma guidance and performance deviations in the uprange, downrange, left-crossrange, or right-crossrange directions.

Normal trajectory means a trajectory that describes normal flight.

Operating environment means an environment that a launch or reentry vehicle component will experience during its lifecycle. Operating environments include shock, vibration, thermal cycle, acceleration, humidity, thermal vacuum, or other environments relevant to system or material degradation.

Operation hazard means a hazard created by an operating environment or by an unsafe act.

Operation of a launch site means the conduct of approved safety operations at a permanent site to support the launching of vehicles and payloads.

Operation of a reentry site means the conduct of safety operations at a permanent site on Earth at which a reentry vehicle and its payload, if any, is intended to land.

Operator means a holder of a license or permit under 51 U.S.C. Subtitle V, chapter 509.

Orbital insertion means the point at which a vehicle achieves a minimum 70-nautical mile perigee based on a computation that accounts for drag.

Payload means an object that a person undertakes to place in outer space by means of a launch vehicle, including components of the vehicle specifically designed or adapted for that object.

Person means an individual or an entity organized or existing under the laws of a State or country.

Physical containment means a launch vehicle does not have sufficient energy for any hazards associated with its flight to reach the public or critical assets.

Physical electronic storage means a physical device that can store electronic documents and files including but not limited to an optical disc, a memory card, a USB flash drive, or an external hard drive.

Pilot means a flight crew member who has the ability to control, in real time, a launch or reentry vehicle's flight path.

Populated area means—

(1) An outdoor location, structure, or cluster of structures that may be occupied by people;

(2) Sections of roadways and waterways that are frequented by automobile and boat traffic; or

(3) Agricultural lands, if routinely occupied by field workers.

Probability of casualty means the likelihood that a person will suffer a serious injury or worse, including a fatal injury, due to all hazards from an operation at a specific location.

Public means, for a particular licensed or permitted launch or reentry, people that are not involved in supporting the launch or reentry and includes those people who may be located within the launch or reentry site, such as visitors, individuals providing goods or services not related to launch or reentry processing or flight, and any other operator and its personnel.

Reenter; reentry means to return or attempt to return, purposefully, a reentry vehicle and its payload or human being, if any, from Earth orbit or from outer space to Earth.

Reentry operator means a person responsible for conducting the reentry of a reentry vehicle as specified in a license issued by the FAA.

Reentry site means the location on Earth where a reentry vehicle is intended to return. It includes the area within three standard deviations of the intended landing point (the predicted three-sigma footprint).

Reentry vehicle means a vehicle designed to return from Earth orbit or outer space to Earth substantially intact. A reusable launch vehicle that is designed to return from Earth orbit or outer space to Earth substantially intact is a reentry vehicle.

Reentry window means an approved period of time during which the reentry of a reentry vehicle may be initiated.

Remote operator means a crew member who—

(1) Has the ability to control, in real time, a launch or reentry vehicle's flight path; and

(2) Is not on board the controlled vehicle.

Reusable launch vehicle (RLV) means a launch vehicle that is designed to return to Earth substantially intact and therefore may be launched more than one time or that contains vehicle stages that may be recovered by a launch operator for future use in the operation of a substantially similar launch vehicle.

Risk means a measure that accounts for both the probability of occurrence of a hazardous event and the consequence of that event to persons or property.

Safety critical means essential to safe performance or operation. A safety-critical system, subsystem, component, condition, event, operation, process, or item, is one whose proper recognition, control, performance, or tolerance, is essential to ensuring public safety and the safety of property.

Service life means, for a safety-critical system component, the sum total of the component's storage life and operating life.

Sigma means a single standard deviation from a fixed value, such as a mean.

Software function means a collection of computer code that implements a requirement or performs an action. This includes firmware and operating systems.

Space flight participant means an individual, who is not crew or a government astronaut, carried on board a launch vehicle or reentry vehicle.

State and United States means, when used in a geographical sense, the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the United States Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States.

Suborbital rocket means a vehicle, rocket-propelled in whole or in part, intended for flight on a suborbital trajectory, and the thrust of which is greater than its lift for the majority of the rocket-powered portion of its ascent.

Suborbital trajectory means the intentional flight path of a launch vehicle, reentry vehicle, or any portion thereof, whose vacuum instantaneous impact point does not leave the surface of the Earth.

Sub-vehicle point means the location on an ellipsoidal Earth model where the normal to the ellipsoid passes through the vehicle's center of gravity.

System hazard means a hazard associated with a system and generally exists even when no operation is occurring.

Tether system means a device that contains launch vehicle hazards by physically constraining a launch vehicle in flight to a specified range from its launch point. A tether system includes all components, from the tether's point of attachment to the vehicle to a solid base, that experience load during a tethered launch.

Toxic hazard area means a region on the Earth's surface where toxic concentrations and durations may be greater than accepted toxic thresholds for acute casualty, in the event of a worst case release or maximum credible release scenario during launch or reentry.

Uncontrolled area is an area of land not controlled by a launch or reentry operator, a launch or reentry site operator, an adjacent site operator, or other entity by agreement.

Unguided suborbital launch vehicle means a suborbital rocket that does

not contain active guidance or a directional control system.

United States citizen means:

(1) Any individual who is a citizen of the United States;

(2) Any corporation, partnership, joint venture, association, or other entity organized or existing under the laws of the United States or any State; and

(3) Any corporation, partnership, joint venture, association, or other entity which is organized or exists under the laws of a foreign nation, if the controlling interest in such entity is held by an individual or entity described in paragraph (1) or (2) of this definition. Controlling interest means ownership of an amount of equity in such entity sufficient to direct management of the entity or to void transactions entered into by management. Ownership of at least fifty-one percent of the equity in an entity by persons described in paragraph (1) or (2) of this definition creates a rebuttable presumption that such interest is controlling.

Uprange means the distance measured along a line that is 180 degrees to the downrange direction.

Useful mission means a mission that can attain one or more objectives.

Validation means an evaluation to determine that each safety measure derived from a system safety process is correct, complete, consistent, unambiguous, verifiable, and technically feasible. Validation ensures that the right safety measure is implemented, and that the safety measure is well understood.

Verification means an evaluation to determine that safety measures derived from a system safety process are effective and have been properly implemented. Verification provides measurable evidence that a safety measure reduces risk to acceptable levels.

Wind weighting safety system means equipment, procedures, analysis and personnel functions used to determine the launcher elevation and azimuth settings that correct for wind effects that an unguided suborbital launch vehicle will experience during flight.

Window closure means a period of time when launch or reentry is not permitted in order to avoid a collision with an object in orbit. A window closure may occur within a launch or reentry window, may delay the start of a window, or terminate a window early.

[Doc. No. FAA–2019–0229, Amdt. 401–9, 85 FR 79707, Dec. 10, 2020; Doc. No. FAA–2023–1656, Amdt. No. 401–10, 89 FR 76726, Sept. 19, 2024]