

## §415.119

States may be subject to the requirements of the governing jurisdiction.

(b) *Ground safety analysis.* A ground safety analysis must review each system and operation used in launch processing and post-flight operations as required by §417.109 of this chapter, and subpart E of part 417 of this chapter.

(1) An applicant must file an initial ground safety analysis report no later than 12 months for any orbital or guided suborbital launch vehicle, and nine months for an unguided suborbital launch vehicle, before the applicant brings any launch vehicle to the proposed launch site. An initial ground safety analysis report must be in a proposed final or near final form and identify any incomplete items. An applicant must document any incomplete items and track them to completion. An applicant must resolve any FAA comments on the initial report and file a complete ground safety analysis report, no later than two months before the applicant brings any launch vehicle to the proposed launch site. Furthermore, an applicant must keep its ground safety analysis report current. Any late developing change to a ground safety analysis report must be coordinated with the FAA as an application amendment as required by §413.17 of this chapter as soon as the applicant identifies the need for a change.

(2) An applicant must file a ground safety analysis report that satisfies the ground safety analysis requirements of §417.109 of this chapter, and subpart E of part 417 of this chapter.

(3) The person designated under §417.103(b)(1) of this chapter and the person designated under §417.103(b)(2) of this chapter must approve and sign the ground safety analysis report.

(c) *Ground safety plan.* An applicant's safety review document must contain a ground safety plan that satisfies §417.111(c) of this chapter. The applicant must file this plan with the FAA no later than six months prior to bringing the launch vehicle to the proposed launch site. This ground safety plan must describe implementation of the hazard controls identified by an applicant's ground safety analysis and implementation of the ground safety requirements of subpart E of part 417 of this chapter. A ground safety plan

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must address all public safety related issues and may include other ground safety issues if an applicant intends it to have a broader scope.

### §415.119 Launch plans.

An applicant's safety review document must contain the plans required by §417.111 of this chapter, except for the countdown plan of §417.111(l) of this chapter. An applicant's launch plans do not have to be separate documents, and may be part of other applicant documentation. An applicant must incorporate each launch safety rule established under §417.113 of this chapter into a related launch safety plan.

### §415.121 Launch schedule.

An applicant's safety review document must contain a generic launch processing schedule that identifies each review, rehearsal, and safety critical preflight operation to be conducted as required by §§417.117, 417.119, and 417.121 of this chapter. The launch schedule must also identify day of flight activities. The launch processing schedule must show each of these activities referenced to liftoff, such as liftoff minus three days.

### §415.123 Computing systems and software.

(a) An applicant's safety review document must describe all computing systems and software that perform a safety-critical computer system function for any operation performed during launch processing or flight that could have a hazardous effect on the public as required by §417.123 of this chapter.

(b) An applicant's safety review document must list and describe all safety-critical computer system functions involved in a proposed launch, including associated hardware and software interfaces. For each system with a safety-critical computer system function, an applicant's safety review document must:

(1) Describe all safety-critical computer system functions, including each safety-critical interface with any other system;

(2) Describe all systems, including all hardware and software, and the layout of each operator console and display;

(3) Provide flow charts or diagrams that show all hardware data busses, hardware interfaces, software interfaces, data flow, and power systems, and all operations of each safety-critical computer system function;

(4) Provide all logic diagrams and software designs;

(5) List all operator user manuals and documentation by title and date;

(6) Describe the computing system and software system safety process as required by §417.123(a).

(7) Provide all results of computing system and software hazard analyses as required by §417.123(c).

(8) Provide all plans and results of computing systems and software validation and verification as required by §417.123(d).

(9) Provide all plans for software development as required by §417.123(e).

**§415.125 Unique safety policies, requirements and practices.**

An applicant's safety review document must identify any public safety-related policy, requirement, or practice that is unique to the proposed launch, or series of launches, as required by §417.127 of this chapter. An applicant's safety review document must describe how each unique safety policy, requirement, or practice ensures the safety of the public.

**§415.127 Flight safety system design and operation data.**

(a) *General.* This part applies to an applicant launching an orbital or guided sub-orbital expendable launch vehicle that uses a flight safety system to protect public safety as required by §417.107(a) of this chapter. An applicant's safety review document must contain the flight safety system data identified by this section. The applicant must file all data required by this section no later than 18 months before bringing any launch vehicle to a proposed launch site.

(b) *Flight safety system description.* A safety review document must describe an applicant's flight safety system and its operation. Part 417, subpart D of this chapter and appendices D, E, and F of part 417 of this chapter contain the flight safety system and subsystems design and operational requirements.

(c) *Flight safety system diagram.* An applicant's safety review document must contain a block diagram that identifies all flight safety system subsystems. The diagram must include the following subsystems defined in part 417, subpart D of this chapter: flight termination system; command control system; tracking; telemetry; communications; flight safety data processing, display, and recording system; and flight safety official console.

(d) *Subsystem design information.* An applicant's safety review document must contain all of the following data that applies to each subsystem identified in the block diagram required by paragraph (c) of this section:

(1) *Subsystem description.* A physical description of each subsystem and its components, its operation, and interfaces with other systems or subsystems.

(2) *Subsystem diagram.* A physical and functional diagram of each subsystem, including interfaces with other systems and subsystems.

(3) *Component location.* Drawings showing the location of all subsystem components, and the details of the mounting arrangements, as installed on the vehicle, and at the launch site.

(4) *Electronic components.* A physical description of each subsystem electronic component, including operating parameters and functions at the system and piece-part level. An applicant must also provide the name of the manufacturer and any model number of each component and identify whether the component is custom designed and built or off-the-shelf-equipment.

(5) *Mechanical components.* An illustrated parts breakdown of all mechanically operated components for each subsystem, including the name of the manufacturer and any model number.

(6) *Subsystem compatibility.* A demonstration of the compatibility of the onboard launch vehicle flight termination system with the command control system.

(7) *Flight termination system component storage, operating, and service life.* A listing of all flight termination system components that have a critical storage, operating, or service life and a summary of the applicant's procedures for ensuring that each component does