

(iii) If the launch takes place from a Federal launch range, a method approved as part of the FAA's launch site safety assessment of the Federal range's processes.

(2) Appendix A of this part contains requirements that apply to all methods of flight safety analysis. A licensee must notify the FAA for any change to the flight safety analysis method. A licensee must file any material change with the FAA as a request for license modification before the launch to which the proposed change would apply. Section 417.11 contains requirements governing a license modification.

(c) *Alternate analysis method.* The FAA will approve an alternate flight safety analysis method if a launch operator demonstrates, in accordance with § 406.3(b), that its proposed analysis method provides an equivalent level of fidelity to that required by this subpart. A launch operator must demonstrate that an alternate flight safety analysis method is based on accurate data and scientific principles and is statistically valid. The FAA will not find a launch operator's application for a license or license modification sufficiently complete to begin review under § 413.11 of this chapter until the FAA approves the alternate flight safety analysis method.

(d) *Analyses performed by a Federal launch range.* This provision applies to all sections of this subpart. The FAA will accept a flight safety analysis used by a Federal launch range without need for further demonstration of compliance to the FAA, if:

(1) A launch operator has contracted with a Federal launch range for the provision of flight safety analysis; and

(2) The FAA has assessed the Federal launch range, through its launch site safety assessment, and found that the range's analysis methods satisfy the requirements of this subpart. In this case, the FAA will treat the Federal launch range's analysis as that of a launch operator.

(e) *Analysis products.* For a licensed launch that does not satisfy paragraph (d) of this section, a launch operator must demonstrate to the FAA compliance with the requirements of this subpart, and must include in its dem-

onstration the analysis products required by part 415 subpart F of this chapter, part 417 subpart A, and appendices A, B, C, and I of this part, depending on whether the launch vehicle uses a flight safety system or a wind-weighting safety system.

§ 417.205 General.

(a) *Public risk management.* A flight safety analysis must demonstrate that a launch operator will, for each launch, control the risk to the public from hazards associated with normal and malfunctioning launch vehicle flight. The analysis must employ risk assessment, hazard isolation, or a combination of risk assessment and partial isolation of the hazards, to demonstrate control of the risk to the public.

(1) *Risk assessment.* When demonstrating control of risk through risk assessment, the analysis must demonstrate that any risk to the public satisfies the public risk criteria of § 417.107(b). The analysis must account for the variability associated with:

(i) Each source of a hazard during flight;

(ii) Normal flight and each failure response mode of the launch vehicle;

(iii) Each external and launch vehicle flight environment;

(iv) Populations potentially exposed to the flight; and

(v) The performance of any flight safety system, including time delays associated with the system.

(2) *Hazard isolation.* When demonstrating control of risk through hazard isolation, the analysis must establish the geographical areas from which the public must be excluded during flight and any operational controls needed to isolate all hazards from the public.

(3) *Combination of risk assessment and partial isolation of hazards.* When demonstrating control of risk through a combination of risk assessment and partial isolation of the hazards from the public, the analysis must demonstrate that the residual public risk due to any hazard not isolated from the public under paragraph (a)(2) of this section satisfies the public risk criteria of § 417.107(b).

(b) *Dependent analyses.* Because some analyses required by this subpart are

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inherently dependent on one another, the data output of any one analysis must be compatible in form and content with the data input requirements of any other analysis that depends on that output. Figure 417.205–1 illustrates

the flight safety analyses that might be performed for a launch flown with a flight safety system and the typical dependencies that might exist among the analyses.

| <p style="text-align: center;">Data Source Analyses</p> <p style="text-align: center;">(These analyses provide data to the dependent analyses indicated with an X.)</p> | <p style="text-align: center;">Dependent Analyses</p> <p style="text-align: center;">(These analyses use data from the data source analyses indicated as input.)</p> | | | | | | | | | |
|--|---|----------------------|------------------|--------------------------|-----------------------|---------------------|----------------------|-------------------------------|---|---|
| | Malfunction Turn | Flight Safety Limits | Straight Up Time | No-Longer Terminate Gate | Data Loss Flight Time | Flight Hazard Areas | Debris Risk Analysis | Toxic Release Hazard Analysis | Far Field Overpressure Blast Effects Analysis | |
| Trajectory Analysis | X | X | X | X | X | X | X | X | X | X |
| Malfunction Turn Analysis | | X | X | | X | X | X | X | X | |
| Debris Analysis | | X | X | X | X | X | X | X | X | X |
| Flight Safety Limits | | | X | X | X | X | X | X | X | |
| Straight-Up Time | | | | | | | | X | X | |
| Planned Safe Flight State | | | | | X | | X | X | X | |
| Data Loss Flight Time | X | | | | | | | | | |
| Time-Delay Analysis | X | X | X | X | X | X | X | X | X | X |

Figure 417.205-1, Illustration of dependent flight safety analyses that might be performed for a launch that uses a flight safety system