passive mitigation that were assumed to limit the quantity that could be released. The description must include the anticipated effect of the controls and mitigation on the release quantity and rate; (3) Estimated quantity released, release rate, and duration of release for each worst-case scenario and worst-case alternative scenario for each process; (4) A description of the methodology used to determine the toxic hazard distance for each toxic concentration threshold; (5) Data used to estimate off-site population receptors potentially affected; and (6) The following data for each worst-case scenario and worst-case alternative release scenario: (i) Chemical name; (ii) Physical state; (iii) Basis of results (provide model name if used, or other methodology); (iv) Scenario (explosion, fire, toxic gas release, or liquid spill and vaporization); (v) Quantity released in pounds; (vi) Release rate; (vii) Release duration; (viii) Wind speed and atmospheric stability class; (ix) Topography; (x) Toxics hazard distance; (xi) All members of the public within the toxic hazard distance; (xii) Any passive mitigation considered; and (xiii) Active mitigation considered (worst-case alternative release scenario only).

APPENDIX J TO PART 417—GROUND SAFETY ANALYSIS REPORT

J417.1 GENERAL

(a) This appendix provides the content and format requirements for a ground safety analysis report. A launch operator must perform a ground safety analysis as required by subpart E of part 417 and document the analysis in a ground safety analysis report that satisfies this appendix, as required by §417.402(d).

(b) A ground safety analysis report must contain hazard analyses that describe each hazard control, and describe a launch operator's hardware, software, and operations so that the FAA can assess the adequacy of the hazard analysis. A launch operator must document each hazard analysis on hazard analysis forms as required by §J417.3(d) and file each system and operation descriptions as a separate volume of the report.

(c) A ground safety analysis report must include a table of contents and provide definitions of any acronyms and unique terms used in the report.

(d) A launch operator's ground safety analysis report may reference other documents filed with the FAA that contain the information required by this appendix.

14 CFR Ch. III (1–1–14 Edition)

J417.3 Ground safety analysis report

(a) Introduction. A ground safety analysis report must include an introductory chapter that describes all administrative matters, such as purpose, scope, safety certification of personnel who performed any part of the analysis, and each special interest issue, such as a high-risk situation or potential non-compliance with any applicable FAA requirement.

(b) Launch vehicle and operations summary. A ground safety analysis report must include a chapter that provides general safety information about the vehicle and operations, including the payload and flight termination system. This chapter must serve as an executive summary of detailed information contained within the report.

(c) Systems, subsystems, and operations information. A ground safety analysis report must include a chapter that provides detailed safety information about each launch vehicle system, subsystem and operation and each associated interface. The data in this chapter must include the following:

(i) General description including nomenclature, function, and a pictorial overview;

(ii) Technical operating description including text and figures describing how a subsystem works and any safety features and fault tolerance levels;

(iii) Each safety critical parameter, including those that demonstrate established system safety approaches that are not evident in the technical operating description or figures, such as factors of safety for structures and pressure vessels;

(iv) Each major component, including any part of a subsystem that must be technically described in order to understand the subsystem hazards. For a complex subsystem
such as a propulsion subsystem, the ground safety analysis report must provide a majority of the detail of the subsystem including any figures at the major component level such as tanks, engines and vents. The presentation of figures in the report must progress in detail from broad overviews to narrowly focused figures. Each figure must have supporting text that explains what the figure is intended to illustrate;

(v) Ground operations and interfaces including interfaces with other launch vehicle and launch site subsystems. A ground safety analysis report must identify a launch operator’s and launch site operator’s hazard controls for all operations that are potentially hazardous to the public. The report must contain facility figures that illustrate where hazardous operations take place and must identify all areas where controlled access is employed as a hazard control; and

(vi) Hazard analysis summary of subsystem hazards that identifies each specific hazard and the threat to public safety. This summary must provide cross-references to the hazard analysis form required by paragraph (d) of this section and indicate the nature of the hazard analysis form provided in figure J417–1.

(d) Hazard analysis. A ground safety analysis report must include a chapter containing a hazard analysis of the launch vehicle and launch vehicle processing and interfaces. The hazard analysis must identify each hazardous subsystem and each hazardous control that the launch operator will implement. A ground safety analysis report must contain the results of the launch operator’s hazard analysis of each system, subsystem, and operation using a standardized format that includes the items listed on the example hazard analysis form provided in figure J417–1 and that satisfies the following:

(1) Introduction. A ground safety analysis report must contain an introduction that serves as a roadmap and checklist to the launch operator’s hazard analysis forms. A launch operator must identify all flight hardware, ground hardware, interfacing hardware, and operations with a reference to where the items are discussed in the ground safety analysis report. The introduction must explain how a launch operator presents its hazard analysis in terms of hazard identification numbers as identified in figure J417–1.

(2) Analysis. A launch operator may present each hazard on a separate form or consolidate hazards of a specific system, subsystem, component, or operation onto a single form. There must be at least one form for each hazardous subsystem and each hazardous subsystem operation. A launch operator must state which approach it has chosen in the introduction to the hazard analysis section. A launch operator must track each identified hazard control separately.

(3) Numbering. A launch operator must number each hazard analysis form with the applicable system or subsystem identified. A launch operator must number each line item.
on a hazard analysis form with numbers and letters provided for multiple entries against an individual line item. A line item consists of a hardware or operation description and a hazard.

(A) Hazard analysis data. A hazard analysis form must contain or reference all information necessary to understand the relationship of a system, subsystem, component, or operation with a hazard cause, control, and verification.

(e) Hazard analysis supporting data. A ground safety analysis report must include data that supports the hazard analysis. If such data does not fit onto the hazard analysis form, a launch operator must provide the data in a supporting data chapter. This chapter must contain a table of contents and may reference other documents that contain supporting data.

PARTS 418–419 [RESERVED]

PART 420—LICENSE TO OPERATE A LAUNCH SITE

Subpart A—General

Sec.
420.1 Scope.
420.3 Applicability.
420.5 Definitions.
420.6–420.14 [Reserved]

Subpart B—Criteria and Information Requirements for Obtaining a License

420.15 Information requirements.
420.17 Bases for issuance of a license.
420.19 Launch site location review—general.
420.21 Launch site location review—launch site boundary.
420.23 Launch site location review—flight corridor.
420.25 Launch site location review—risk analysis.
420.27 Launch site location review—information requirements.
420.29 Launch site location review for unproven launch vehicles.
420.30 Launch site location review for permitted launch vehicles.
420.31 Agreements.
420.32–420.40 [Reserved]

Subpart C—License Terms and Conditions

420.41 License to operate a launch site—general.
420.43 Duration.
420.45 Transfer of a license to operate a launch site.
420.47 License modification.
420.49 Compliance monitoring.

Subpart D—Responsibilities of a Licensee

420.51 Responsibilities—general.
420.53 Control of public access.
420.55 Scheduling of launch site operations.
420.57 Notifications.
420.59 Launch site accident investigation plan.
420.61 Records.
420.63 Explosive siting.
420.65 Separation distance requirements for handling division 1.1 and 1.3 explosives.
420.66 Separation distance requirements for storage of hydrogen peroxide, hydrazine, and liquid hydrogen and any incompatible energetic liquids stored within an intraline distance.
420.67 Separation distance requirements for handling incompatible energetic liquids that are co-located.
420.69 Separation distance requirements for co-location of division 1.1 and 1.3 explosives with liquid propellants.
420.70 Separation distance measurement requirements.
420.71 Lightning protection.

APPENDIX A TO PART 420—METHOD FOR DEFINING A FLIGHT CORRIDOR

APPENDIX B TO PART 420—METHOD FOR DEFINING A FLIGHT CORRIDOR

APPENDIX C TO PART 420—RISK ANALYSIS

APPENDIX D TO PART 420—IMPACT DISPERSION AREAS AND CASUALTY EXPECTANCY ESTIMATE FOR AN UNGUIDED SUBORBITAL LAUNCH VEHICLE

APPENDIX E TO PART 420—TABLES FOR EXPLOSIVE SITE PLAN


Subpart A—General

§ 420.1 Scope.

This part prescribes the information and demonstrations that must be provided to the FAA as part of a license application, the bases for license approval, license terms and conditions, and post-licensing requirements with which a licensee shall comply to remain licensed. Requirements for preparing a license application are contained in part 413 of this subchapter.

§ 420.3 Applicability.

This part applies to any person seeking a license to operate a launch site or to a person licensed under this part. A