(1) For division 1.1 explosives, the launch site operator must use tables E–1, E–2, and E–3 of appendix E of this part to determine the distance to each public area and public traffic route, and to determine each intraline distance.

(2) For division 1.3 explosives, the launch site operator must use table E–4 of appendix E of this part to determine the distance to each public area and public traffic route, and to determine each intraline distance.

(c) *Separation distance by weight and table.* A launch site operator must:

(1) Employ no less than the public area distance, calculated under paragraph (b) of this section, to separate an explosive hazard facility from each public area, including the launch site boundary.

(2) Employ no less than an intraline distance to separate an explosive hazard facility from all other explosive hazard facilities used by a single customer. For explosive hazard facilities used by different customers a launch site operator must use the greater public area distance to separate the facilities from each other.

(3) Separate each public area containing any member of the public in the open by a distance equal to −1133.9 + [389 *ln(NEW)], where the NEW is greater than 450 pounds and less than 501,500 pounds.

(d) *NEW Quantities that Fall between Table Entries.* A launch site operator must, when determining a separation distance for NEW quantities that fall between table entries, use the equation provided by tables E–1, E–3, or E–4 of appendix E of this part.

(e) *Calculating Maximum Permissible NEW Given a Distance. A launch site operator must, when determining* a permissible quantity of explosives, calculate maximum permissible NEW using the equation of tables E–1, E–3, or E–4 of appendix E of this part.

[Docket No. FAA–2011–0105, 77 FR 55114, Sept. 7, 2012]

§ 420.66 Separation distance requirements for storage of hydrogen peroxide, hydrazine, and liquid hydrogen and any incompatible energetic liquids stored within an intraline distance.

(a) *Separation of energetic liquids and determination of distances.* A launch site operator must separate each explosive hazard facility from each other explosive hazard facility, each public area, and each public traffic route in accordance with the minimum separation distance determined under this section for each explosive hazard facility storing:

(1) Hydrogen peroxide in concentrations of greater than 91 percent;

(2) Hydrazine;

(3) Liquid hydrogen; or

(4) Any energetic liquid that is:

(i) Incompatible with any of the energetic liquids of paragraph (a)(1) through (3) of this section; and

(ii) Stored within an intraline distance of any of them.

(b) *Quantity.* For each explosive hazard facility, a launch site operator must determine the total quantity of all energetic liquids in paragraph (a)(1) through (4) of this section as follows:

(1) The quantity of energetic liquid in a tank, drum, cylinder, or other container is the net weight in pounds of the energetic liquid in the container. The determination of quantity must include any energetic liquid in associated piping to any point where positive means exist for:

(i) Interrupting the flow through the pipe, or

(ii) Interrupting a reaction in the pipe in the event of a mishap.

(2) A launch site operator must convert the quantity of each energetic liquid from gallons to pounds using the conversion factors provided in table E–6 of appendix E of this part and the following equation:

Pounds of energetic liquid = gallons × density of energetic liquid (pounds per gallon).

(3) Where two or more containers of compatible energetic liquids are stored in the same explosive hazard facility, the total quantity of energetic liquids is the total quantity of energetic liquids in all containers, unless:

(i) The containers are each separated from each other by the distance required by paragraph (c) of this section; or

(ii) The containers are subdivided by intervening barriers that prevent mixing, such as diking.

(4) Where two or more containers of incompatible energetic liquids are stored within an intraline distance of each other, paragraph (d) of this section applies.

(c) *Determination of separation distances for compatible energetic liquids.* A launch site operator must determine separation distances for compatible energetic liquids as follows:

(1) To determine each intraline, public area, and public traffic route distance, a launch site operator must use the following tables in appendix E of this part:

(i) Table E–7 for hydrogen peroxide in concentrations of greater than 91 percent; and

(ii) Table E–8 for hydrazine and liquid hydrogen.

(2) For liquid hydrogen and hydrazine, a launch site operator must use the ''intraline distance to compatible energetic liquids'' for the energetic liquid that requires the greater distance under table E–8 of appendix E of this part as the minimum separation distance between compatible energetic liquids.

(d) *Determination of separation distances for incompatible energetic liquids.* If incompatible energetic liquids are stored within an intraline distance of each other, a launch site operator must determine the explosive equivalent in pounds of the combined liquids as provided by paragraph (d)(2) of this section unless intervening barriers prevent mixing.

(1) If intervening barriers prevent mixing, a launch site operator must separate the incompatible energetic liquids by no less than the intraline distance that tables E–7 and E–8 of appendix E of this part apply to compatible energetic liquids using the quantity or energetic liquid requiring the greater separation distance.

(2) A launch site operator must use the formulas provided in table E–5 of appendix E of this part, to determine the explosive equivalent in pounds of the combined incompatible energetic liquids. A launch site operator must then use the explosive equivalent in pounds requiring the greatest separation distance to determine the minimum separation distance between each explosive hazard facility and all other explosive hazard facilities and each public area and public traffic route as required by tables E–1, E–2 and E–3 of appendix E of this part.

[Docket No. FAA–2011–0105, 77 FR 55114, Sept. 7, 2012]

§ 420.67 Separation distance requirements for handling incompatible energetic liquids that are co-located.

(a) *Separation of energetic liquids and determination of distances.* Where incompatible energetic liquids are co-located in a launch or reentry vehicle tank or other vessel, a launch site operator must separate each explosive hazard facility from each other explosive hazard facility, each public area, and each public traffic route in accordance with the minimum separation distance determined under this section for each explosive hazard facility.

(b) *Quantity.* For each explosive hazard facility, a launch site operator must determine the total quantity of all energetic liquids as follows:

(1) The quantity of energetic liquid in a launch or reentry vehicle tank is the net weight in pounds of the energetic liquid. The determination of quantity must include any energetic liquid in associated piping to any point where positive means exist for:

(i) Interrupting the flow through the pipe; or

(ii) Interrupting a reaction in the pipe in the event of a mishap.

(2) A launch site operator must convert each energetic liquid's quantity from gallons to pounds using the conversion factors provided by table E–6 of appendix E of this part and the following equation:

Pounds of energetic liquid = gallons × density of energetic liquid (pounds per gallon).

(c) *Determination of separation distances for incompatible energetic liquids.* A launch site operator must determine separation distances for incompatible energetic liquids as follows: