33 CFR 154.2101(a) when the oxygen concentration exceeds 70 percent by volume of the MOCC for the specific combination of cargo vapors and gases; and

(3) The MOCC in paragraphs (k)(2)(i) and (k)(2)(ii) of this section is either the cargo’s MOCC or the enriching gas’s MOCC, whichever is lower. Alternatively, the mixture’s MOCC, which may be determined using Coast Guard VCS guidance available at http://homeport.uscg.mil, may be used.

(l) An air dilution system must—

(1) Supply a sufficient amount of additional air to the vapor stream to keep the total flammable concentration downstream of the injection point below 30 percent by volume of the lower flammable limit;

(2) Activate an alarm that satisfies the requirements of 33 CFR 154.2100(e) when the total flammable concentration in the vapor collection line exceeds 30 percent by volume of the lower flammable limit; and

(3) Close the remotely operated cargo vapor shutoff valve required by 33 CFR 154.2101(a) when the total flammable concentration in the vapor collection line exceeds 50 percent by volume of the lower flammable limit.

(m) An enriching system may use a base loading method to control the amount of enriching gas in a vapor collection system if—

(1) The flow rate of enriching gas is determined by assuming the vapor entering the facility vapor connection consists of 100 percent air;

(2) Two independent devices are used to verify the correct enriching gas volumetric flow rate. One of the two devices must be a flow meter;

(3) One of the devices activates an alarm that satisfies the requirements of 33 CFR 154.2100(e) when the amount of enriching gas added results in a total flammable concentration in the vapor collection line either below 170 percent by volume of the upper flammable limit or below the upper flammable limit plus 7.5 percentage points, whichever is lower; and

(5) The upper flammable limit in paragraphs (m)(3) and (4) of this section is either the cargo’s upper flammable limit or the enriching gas’s upper flammable limit, whichever is higher. Alternatively, the mixture’s upper flammable limit, which may be determined using Coast Guard guidance available at http://homeport.uscg.mil, may be used.

(n) For controlling vapors of inert and non-inert cargoes at multiple berths while using enriching gas, the highest upper flammable limit or the lowest MOCC of the cargo or enriching gas, whichever is applicable, is used to determine the analyzer alarm and shutdown setpoints.

(1) The lowest MOCC of the cargo or enriching gas is used to determine the analyzer alarm and shutdown setpoints at all berths. Alternatively, the mixture’s MOCC, which may be determined using Coast Guard guidance available at http://homeport.uscg.mil, may be used; or

(2) A base loading method meeting the requirements of paragraph (m) of this section is used for all berths.

§ 154.2108 Vapor-moving devices.

(a) Paragraphs (b) and (e) of this section apply only to facilities collecting vapors of flammable, combustible, or non-high flash point liquid cargoes.

(b) Each inlet and outlet to a vapor-moving device that handles vapor that has not been inerted, enriched, or diluted in accordance with 33 CFR 154.2107 must be fitted with a detonation arrester; however, the outlet detonation arrester may be omitted if the vapor-moving device is within 50 times the pipe’s diameter of the detonation arrester required by 33 CFR 154.2109(a).

(c) If the vapor is handled by a reciprocating or screw-type compressor in
Paragraphs (a), (b), and (e) of this section apply only to facilities collecting vapors of flammable, combustible, or non-high flash point liquid cargoes.