Coast Guard, DHS § 154.2108

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 10 percentage points, whichever is lower;

(4) The second device activates closure of the remotely operated cargo vapor shutoff valve required by 33 CFR 154.2101(a) when the amount of enriching gas added results in a total flammable concentration in the vapor collection line either below 150 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 different 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. Alternatively, the mixture’s upper flammable limit or MOCC, which may be determined by using Coast Guard guidance available at http://homeport.uscg.mil, may be used.

(o) For controlling vapors of inert and non-inert cargoes at multiple berths while using enriching gas—

(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
the vapor collection system, the compressor must be installed with indicators and audible and visible alarms to warn against the following conditions:

1. Excessive gas temperature at the compressor outlet;
2. Excessive cooling water temperature;
3. Excessive vibration;
4. Low lube oil level;
5. Low lube oil pressure; and
6. Excessive shaft bearing temperature.

(d) If the vapor is handled by a liquid ring-type compressor in the vapor collection system, it must be installed with indicators and audible and visible alarms to warn against the following conditions:

1. Low level of liquid sealing medium;
2. Lack of flow of the liquid sealing medium;
3. Excessive temperature of the liquid sealing medium;
4. Low lube oil level;
5. Low lube oil pressure, if pressurized lubricating system; and
6. Excessive shaft bearing temperature.

(e) If the vapor is handled by a centrifugal compressor, fan, or lobe blower in the vapor collection system, construction of the blades or housing must be one of the following:

1. Blades or housing of nonmetallic construction;
2. Blades and housing of nonferrous material;
3. Blades and housing of corrosion resistant steel;
4. Ferrous blades and housing with one-half inch or more design tip clearance;
5. Nonferrous blades and ferrous housing with one-half inch or more design tip clearance; or
6. Blades of aluminum or magnesium alloy and a ferrous housing with a nonferrous insert sleeve at the periphery of the impeller.

§ 154.2109 Vapor recovery and vapor destruction units.

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

(a) The inlet to a vapor recovery unit that receives vapor that has not been inerted, enriched, or diluted in accordance with 33 CFR 154.2107 must be fitted with a detonation arrester.

(b) The inlet to a vapor destruction unit must:

1. Have a liquid seal that meets the requirements of paragraph (e) of this section, except as specified by paragraph (b)(3) of this section; and
2. Have two quick-closing stop valves installed in the vapor line. One of them must be installed upstream of the detonation arrester required by paragraph (c)(2) of this section. The quick-closing stop valves must—
   1. Close within 30 seconds after detection of a condition that requires the closing of these two quick-closing stop valves by a control component required by this subpart for a vapor control system (VCS) with a vapor destruction unit;
   2. Close automatically if the control signal is lost;
   3. Have a local valve position indicator or be designed so that the valve position is readily determined from the valve handle or valve stem position; and
   4. If the valve seat is fitted with resilient material, be a Category A valve as defined by 46 CFR 56.20-15 and not allow appreciable leakage when the resilient material is damaged or destroyed; and
3. Instead of a liquid seal as required by paragraph (b)(1) of this section, have the following:
   1. An anti-flashback burner accepted by the Commandant and installed at each burner within the vapor destruction unit;
   2. A differential pressure sensor that activates the quick-closing stop valves as required by paragraph (b)(2) of this section upon sensing a reverse flow condition.

(c) A vapor destruction unit must—

1. Not be within 30 meters (98.8 feet) of any tank vessel berth or mooring at the facility;
2. Have a detonation arrester fitted in the inlet vapor line; and
3. Activate an alarm that satisfies the requirements of 33 CFR 154.2100(e) and shut down when a flame is detected on the detonation arrester.