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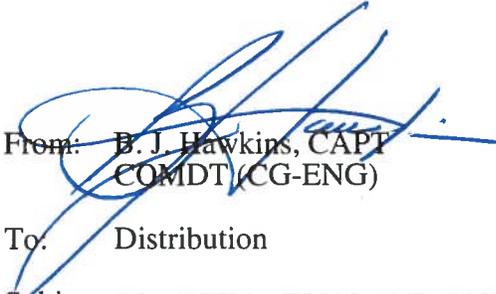
United States
Coast Guard



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CG-ENG Policy Letter
No. 02-16
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From:  B. J. Hawkins, CAPT
COMDT (CG-ENG)

To: Distribution

Subj: CLARIFICATION AND GUIDANCE FOR IMPLEMENTATION OF MARINE
VAPOR CONTROL SYSTEMS (VCS); EXEMPTION AND CERTIFICATION,
DETONATION ARRESTORS, AND ANTI-FLASHBACK BURNERS

Ref: (a) Title 33 Code of Federal Regulations (33 CFR) Part 154, Subpart P

1. Purpose. This policy letter provides guidance on the implementation and interpretation of the final rule for the design and operation of new and existing Marine Vapor Control Systems (VCS) designed and installed in accordance with reference (a). Specifically, this policy letter interprets requirements for line size expansion, liquid seals and anti-flashback burner compliance.
2. Directives Affected. None.
3. Background. The marine VCS regulations were first published in 1990 and updated on July 16, 2013 (78 FR 42596-42651) to promote maritime safety and marine environmental protection. The revisions promoted safe VCS operation in an expanded range of activities that are subject to Federal and State environmental requirements. They reflected industry advances in VCS technology and codified standards for the design and operation of a VCS at tank barge cleaning facilities. These regulations came into effect for new systems on August 15, 2013 and will become effective for existing systems on August 16, 2016.

In accordance with 33 CFR 154.107 and 108, the Hazardous Materials Division in the Office of Design and Engineering Standards (CG-ENG-5) receives and reviews requests for exemptions or alternative arrangements as facilities implement system upgrades to ensure compliance with the updated VCS regulations. This policy has been developed to address the regulatory citations that are most frequently the subject of requests for exemptions, interpretations or alternative arrangements.

4. Discussion.
 - a. Exemption and Certification of VCSs

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- i. Certifying Entities (CEs) will continue to certify marine VCSs in accordance with reference (a). This policy will enable their certification to incorporate the two exemptions addressed herein in accordance with 33 CFR 154.2025 (1).
- ii. Commandant (CG-ENG-5) will continue to consider requests for exemptions not described by this policy letter on a case-by-case basis as described in 33 CFR 154.108.

b. Definitions:

The following definitions are not provided in 33 CFR 154.2001, but may be helpful in interpreting 33 CFR Part 154, Subpart P.

Facility Vapor Connection Detonation Arrester (FVC DA) - means the detonation arrester required by 33 CFR 154.2105 (a-i). It is nearest to the facility vapor connection, and is the last detonation arresting device before the facility vapor connection.

Excluded Detonation Arresters (EDA) - means any detonation arrester not specifically required by 33 CFR 154.2105 excluding 33 CFR 154.2105 (j), (i.e., every detonation arrester which is not the FVC DA).

c. Detonation Arresters Installation

For facilities collecting vapors of flammable, combustible, or non-high flash point liquid cargoes, 33 CFR 154.2106(b) requires that line size expansions on either side of a detonation arrester, be installed in a straight pipe run and no closer than 120 times the pipe diameter from the detonation arrester unless the manufacturer has test data to show the expansion can be closer.

Detonation arresters are required in several sections of 33 CFR Part 154 (e.g. 154.2105 and 154.2109) and good engineering practice occasionally suggests additional detonation arresters be incorporated in the VCS arrangement. The installation of detonation arresters above and beyond what is required by the regulations does not present additional safety hazards; in fact, they provide additional levels of safety. Therefore, their presence does not trigger the need for safety mediation as prescribed by 33 CFR 154.2106 (b). However, in order to be excluded from 33 CFR 154.2105 as an EDA the following conditions must be met:

- 1) The system must have at least one FVC DA installed in the system in accordance with 33 CFR 154.2106; and
- 2) Be located as close as practical to the source of ignition it is installed to arrest, regardless of the location of a pipe expansion.

Furthermore, line size expansions on the vessel side (or upstream) of the FVC DA do not affect the FVC DA's ability to protect the FVC and, subsequently, the vessel. Therefore, with verification by the CE, as part of the CE Certification documentation, the line size

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expansions between the FVC and the FVC DA may alternatively comply with 33CFR 154.2106 by meeting the following conditions:

- 1) A FVC DA is installed within 18 meters or 59.1 feet from the FVC;
 - 2) All piping between the FVC and the FVC DA is fully protected from external mechanical damage; and
 - 3) No internal or external ignition sources are installed between the FVC and the FVC DA.
- d. Liquid Seal replaced by Anti-Flashback Burner §154.2109 (b)(3)(i)

In accordance with 46 CFR 154.2109(b)(3)(i), anti-flashback burners may be used instead of liquid seals provided they are accepted by the Commandant. In the past acceptance of anti-flashback burners has been given through the course of plan review on an individual, case-by-case, site specific basis. However, to reduce the administrative burden on industry and the Coast Guard for submission and review of anti-flashback burners for site specific installations, CG-ENG-5 will post a list of Coast Guard accepted anti-flashback burners on Homeport (www.homeport.uscg.mil). All previously issued acceptances for anti-flashback burners will remain in effect.

An anti-flashback burner acceptance request need only be requested once per anti-flashback model number. An anti-flashback burner installation will be considered acceptable provided the conditions below and any conditions listed in the Coast Guard acceptance letter are met. A list of model numbers for Coast Guard accepted anti-flashback burners will be posted on Homeport alongside all other VCS approved lists. Requests for anti-flashback burner acceptance should be directed to Commandant (CG-ENG-5) at the address listed above.

Conditions for anti-flashback burner acceptance:

1. The anti-flashback burner is proven to have greater ability than a liquid seal to prevent flame flashback, (i.e., passing a longer endurance burn test than a liquid seal as per manufacturer's specifications or claims).
2. A thermocouple is securely installed upstream of each anti-flashback burner so that the temperature of the anti-flashback burners can be measured continuously throughout the entire VCS operation. The thermocouple is installed within ten feet of the burner or within six inches of the burner stack/shell.
3. Any thermocouple penetration in the flare or vapor piping is sealed to prevent flame from entering the VCS piping.
4. The thermocouple activates the emergency shutdown system required by 33 CFR 154.550 and VCS shutdown systems required by 154.2109(d) when the temperature

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measured by the thermocouple rises above a shutdown set point. The set point shall be 250°F or less for cargoes with an auto-ignition temperature equal to or higher than 300°F, or it shall be 50°F lower than the auto-ignition temperature for cargoes with an auto-ignition temperature lower than 300°F.

5. A differential pressure transmitter or other suitable method that activates a means to prevent backflow is installed in conjunction with the detonation arrester in the combustion system inlet to prevent vapor backflow.
 6. The purge cycle required by 33 CFR 154.2107(a) provides enough enriching gas downstream of the injection point such that the vapor collection line achieves a minimum of two-volume exchanges of enriching gas prior to receiving cargo vapor with extra precaution for startup and purging conditions which may exceed burner heat capacities.
5. Applicability. This policy is applicable to all facilities subject to 33 CFR Part 154, Subpart P regulations.
 6. Disclaimer. While the guidance contained in this document may assist the industry, public, Coast Guard, and other Federal and State regulators in applying statutory and regulatory requirements, the guidance is not a substitute for applicable legal requirements nor is it a regulation itself. Thus, it is not intended to nor does it impose legally binding requirements on any party outside the Coast Guard.
 7. Changes. This policy letter will be posted on the web at www.homeport.uscg.mil Changes to this policy will be issued as necessary. Suggestions for improvements of this policy should be submitted in writing to Commandant (CG-ENG-5) at the address listed above.

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