

**State of California  
Air Resources Board**

**Executive Order DE-24-003**

**CARB Executive Orders for Verified Diesel Emission Control Strategies with Safety Systems for Engines on Commercial Harbor Craft**

Whereas on November 14, 2022, the California Air Resource Board (CARB) adopted the amended Commercial Harbor Craft Regulation, California Code of Regulations (Cal. Code Regs.), Title 13, section 2299.5 and Title 17, section 93118.5, which establishes emissions requirements for Commercial Harbor Craft operating in Regulated California Waters to reduce oxides of nitrogen (NOx), and diesel particulate matter (PM) emissions from main propulsion and auxiliary engines.

Whereas Cal. Code Regs., title 17, section 93118.5, subsection (e)(12) establishes performance standards for main propulsion and auxiliary engines on regulated in-use vessels that are equivalent to Tier 4 Marine Emission Standards or Tier 4 Final Off-road Emission Standards, or Tier 3 Marine or Off-road Emission Standards (for engines <600 kW where no Tier 4 engine is commercially available), plus a Level 3 Diesel Verified Diesel Emission Control Strategy (VDECS).

Whereas a VDECS is an emission control strategy that CARB has verified pursuant to the Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Verification Procedure), in Cal. Code Regs., title 13, section 2700 *et seq.* Level 3 means the VDECS reduces engine diesel PM emissions by 85 percent or greater, or to less than or equal to 0.01 grams per brake horsepower-hour (g/bhp-hr).

Whereas the Verification Procedure is a stringent process which requires manufacturers to demonstrate that their VDECS devices meets emissions reduction requirements, safe operation and durable in-field performance for over one thousand hours of operation.

Whereas approximately 9,000 hours of DPF operation have been accumulated on marine vessels operated in California waters with no documented safety incidents attributed to the DPF.

Whereas a "safety system," also known as a "bypass" or "override," refers to a physical system capable of diverting 100 percent of engine-out exhaust emission flow around a DPF substrate for the purpose of allowing continued engine operation in the case of an emergency loss of propulsion power due to DPF substrate face plugging or other malfunction of the DPF.

Whereas CARB has generally not allowed bypasses to be installed on verified equipment, consistent with Cal. Code Regs., title 17, section 2711(e); however, CARB recognizes that

section is intended to prohibit tampering of a diesel emission control strategy that has already been verified by CARB.

Whereas CARB recognizes that in the marine environment, if propulsion equipment fails, a vessel may not be able to seek or receive emergency assistance as quickly as on-road vehicles and other land-based equipment.

Whereas CARB has communicated extensively with the United States Coast Guard (USCG) throughout the regulatory process for the 2022 Commercial Harbor Craft Regulation amendments, and through monthly meetings since December 2022 focusing on CHC Regulation implementation.

Whereas the USCG's position on DPF safety systems, as communicated to CARB, is that it would be at the vessel owner/operator's discretion whether they want to install a safety system, then USCG would evaluate and approve the system on a case-by-case basis.

Whereas CARB submitted a letter to USCG on November 13, 2023 summarizing the communication between CARB and USCG on the issue of DPF safety systems, and stating the conditions that CARB would include in an Executive Order for a verified DPF (Attachment 1).

Whereas this Executive Order, the amended CHC Regulation, and the Verification Procedure do not amend or override applicable federal regulations, and USCG maintains the authority to inspect and approve or disapprove vessel and component additions and changes prior to allowing operation.

Whereas CARB intends that allowing the proper use of VDECS manufacturer-designed and installed safety systems that are approved by USCG and meet the conditions of CARB's Verification Procedure will serve as an additional measure of ensuring vessel safety while preserving the public health benefits of DPFs on CHC vessels.

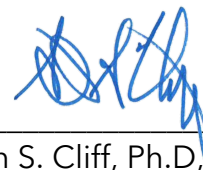
Whereas to date, there are multiple DPF systems for CHC undergoing CARB verification, however no DPF systems for CHC have completed verification, and the CHC Regulation provides an extension for lack of available verified DPF that is renewable until a verified DPF becomes available.

Whereas the Executive Officer finds it is appropriate to issue this Executive Order that establishes the requirements for safety systems that will be included in future Executive Orders for DPFs for CHC, and does not itself constitute an Executive Order for a specific emission control strategy.

Now, therefore, it is ordered that future CARB Executive Orders approving verification of DPFs that include a safety system for engines on CHC shall contain the following conditions, subject to modifications as applicable to a specific system:

- The DPF manufacturer must design and install the safety system on the DPF as part of the verified system;
- The DPF manufacturer must include the details of the safety system's design, operation, performance, safety, and how to effectively test it in the original verification application or a formal design modification application submitted for CARB staff's evaluation;
- The DPF manufacturer must equip the safety system with sequentially-numbered security seals as well as an electronic monitoring and tracking system to track each time the safety system is used;
- The vessel owner/operator must only use the safety system during an emergency situation, and the system must be designed to allow the DPF's operation to resume immediately after the emergency situation is resolved;
- The DPF manufacturer must provide written materials to the CHC vessel owner/operator regarding the safe and proper use of the safety system during an emergency situation;
- The DPF manufacturer must provide written materials to the CHC vessel owner/operator regarding how to document and report each use of the safety system to the DPF manufacturer within 30 calendar days. Reported information must include the emergency situation triggering use of the safety system, the operational time that the safety system was in use, when the safety system was deactivated, how using the safety system mitigated the emergency, the number on the security seal that was broken, and the number of the new seal placed on the safety system after it was deactivated; and
- The DPF manufacturer must provide documentation of all instances of safety system operation to CARB in their annual report by April 1 of each calendar year. Additionally, per Verification Procedure subsection 2702(o), CARB maintains the authority to request records be made available at any time upon the request of CARB staff.

Executed at Sacramento, California, this 12 day of September, 2024.



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Steven S. Cliff, Ph.D, Executive Officer  
California Air Resources Board

Attachment 1: CARB Letter to USCG dated November 13, 2023

November 13, 2023

Captain Ronald J. Caputo  
Commander (dp)  
Eleventh Coast Guard District  
Coast Guard Island, Building 50-7  
Alameda, CA 94501-5100  
[Ronald.J.Caputo@uscg.mil](mailto:Ronald.J.Caputo@uscg.mil)

Dear Captain Caputo:

This letter is following up on past communications as well as recent collaboration between the California Air Resources Board (CARB) and the United States Coast Guard (USCG), Eleventh District regarding the recently amended Commercial Harbor Craft (CHC) Regulation, California Code of Regulations, title 17, section 93118.5, and title 13, section 2299.5, which became effective on December 30, 2022. The CHC Regulation, as amended, requires most CHC vessels in California to be equipped with a U.S. Environmental Protection Agency (EPA) certified Tier 3 or Tier 4 engine and a CARB-verified diesel particulate filter (DPF) by specified compliance deadlines, beginning December 31, 2023. As provided in subsection (b)(5) of the CHC Regulation, the CHC Regulation does not amend or override any applicable USCG regulations. CARB also acknowledges that USCG maintains the authority to inspect all new, repowered, or retrofit vessels and components prior to being put into operation.

On August 6, 2021, prior to the formal public comment period for the amendments to the CHC Regulation's rulemaking action, CARB received a letter from the then-Chief of Prevention for the USCG Eleventh District, Captain Gregory Callaghan, raising issues for CARB's consideration regarding the then-proposed regulation amendments, including potential safety concerns arising from the use of DPFs on vessels, and proposing the potential implementation of bypass mechanisms on DPF systems on vessels, as a way to maintain propulsion during a casualty.

CARB responded to the Coast Guard's letter on November 5, 2021, reaffirming that safety is the top priority for vessel operations, and directly responded to the Coast Guard's expressed concerns regarding DPF safety. CARB's letter, in pertinent part, pointed out that there currently are millions of DPFs installed and successfully reducing diesel particulate matter emitted from engines in a variety of on-road and off-road equipment without bypass systems installed, and expressed CARB's concern that allowing vessel operators and owners to use a bypass system could result in both improper use of the bypass or poor maintenance of DPFs, and fewer emission reductions. The letter also stated CARB's intent to continuing its dialogue with the Coast Guard regarding considerations of DPF bypass systems on vessels and the safety and public health protections of CHC operations in California.

Since December 2022, CARB and USCG have held monthly virtual meetings as well as an in-person meeting in March 2023 to discuss CHC Regulation implementation topics, including the safety of CARB-verified DPFs, also known as CARB-verified diesel emission control strategies (VDECS), when installed on marine vessel engines. CARB's Verification Procedure, Warranty, and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines, California Code of Regulations, title 13, sections 2700 *et seq.* (Verification Procedure) is a robust process under which VDECS manufacturers must demonstrate safe and durable in-field performance of their devices for over one thousand hours of operation.

USCG's August 6 letter stated that there are no prescriptive federal regulations that require a bypass, therefore it would be at the vessel owner/operator's discretion whether they want to install one, then it would be on a case-by-case basis for USCG's review and approval. In June 2023, USCG subsequently cited multiple federal regulations as a potential basis for justifying the use of a bypass system on a DPF, also known as an override or a safety system, generally pointing to the need to maintain a minimum level of vessel propulsion in the event of a component failure or malfunction.

CARB has generally not allowed bypasses to be installed on verified equipment, and that practice is consistent with subsection 2711(e) of the Verification Procedure, which states that "no person shall alter, physically disable, disconnect, bypass, or tamper with an installed ARB verified diesel emission control strategy." However, CARB recognizes that subsection 2711(e) of the Verification Procedure is intended to prohibit tampering of a diesel emission control strategy that has already been verified by CARB. In the case of marine vessels, CARB recognized in the November 5, 2021 letter, and continues to recognize that in the marine environment, if propulsion equipment fails, a vessel may not be able to seek or receive emergency assistance as quickly as on-road vehicles and other land-based equipment.

To address this concern, CARB has developed a solution that allows safety systems to be installed on DPFs on marine vessels to ensure vessel safety, in a manner that is compatible with both federal requirements and CARB's Verification Procedure. CARB will include in a DPF verification Executive Order that a safety system may be installed on a DPF on a marine vessel engine under the following conditions:

- The DPF manufacturer must design and install the safety system on the DPF as part of the verified system.
- The DPF manufacturer must include the details of the safety system's design, operation, performance, safety, and how to effectively test it in the original verification application or a formal design modification application submitted for CARB staff's evaluation.
- The DPF manufacturer must equip the safety system with sequentially-numbered security seals as well as an electronic monitoring and tracking system to track each time the safety system is used.

Captain Ronald J. Caputo

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- The vessel owner/operator must only use the safety system during an emergency situation, and the system must be designed to allow the DPF's operation to resume immediately after the emergency situation is resolved.
- The DPF manufacturer must provide written materials to the CHC vessel owner/operator regarding the safe and proper use of the safety system during an emergency situation.
- The DPF manufacturer must provide written materials to the CHC vessel owner/operator regarding how to document and report each use of the safety system to the DPF manufacturer within 30 calendar days. Reported information must include the emergency situation triggering use of the safety system, the operational time that the safety system was in use, when the safety system was deactivated, how using the safety system mitigated the emergency, the number on the security seal that was broken, and the number of the new seal placed on the safety system after it was deactivated.
- The DPF manufacturer must provide documentation of all instances of safety system operation to CARB in their annual report by April 1 of each calendar year. Additionally, per Verification Procedure subsection 2702(o), CARB maintains the authority to request records be made available at any time upon the request of CARB staff.

We wish to emphasize that to date, approximately 9,000 hours of DPF operation has been accumulated on marine vessels operated in California waters, with no documented safety incidents attributed to DPF operation on vessels. It is CARB's intention that allowing the proper use of VDECS manufacturer-designed and installed safety systems that are approved by USCG and meet the conditions of verification, will serve as an additional measure of ensuring vessel safety while preserving the public health benefits of DPFs on CHC vessels.

We again acknowledge that the CHC Regulation does not amend or override USCG Regulations, and that USCG maintains the authority to inspect and approve or disapprove vessel and component additions and changes prior to allowing operation. To date, no DPF systems for CHC have completed verification, however there are multiple products currently undergoing the verification process. Prior to verified DPFs becoming available, vessel owners/operators are eligible to apply for compliance extensions for lack of available equipment, which are renewable until the equipment becomes available.

CARB appreciates the ongoing dialogue with USCG, and looks forward to continuing to collaborate throughout implementation of the CHC Regulation. If you have any questions, please contact Tracy Haynes, Staff Air Pollution Specialist, Freight Activity Branch, at [Tracy.Haynes@arb.ca.gov](mailto:Tracy.Haynes@arb.ca.gov).

Sincerely,



Tracy Haynes for Bonnie Soriano, Chief, Freight Activity Branch

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cc: Commander Rebecca Sheehan  
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Robin Pritchard, Manager, CARB Freight Approvals Section